ANDREWS & BURGIN
ATTORNEYS AT LAW

675 MORGANTON SQUARE DRIVE
MARYVILLE, TENNESSEE 37801

KIRK ANDREWS
HILARY WILLIAMS BURGIN

(865) 982-0135
FAX (865) 982-0163

December 8, 2021

Knoxville-Knox County Planning Commission
City-County Building, Suite 403
400 Main Street
Knoxville, Tennessee 37902

RE: Agenda Item No. 8 – File Nos. 11-B-21-SP and 11-F-21-RZ
December 9, 2021 Planning Commission Meeting

Dear Commissioners:

I represent landowners residing on Sevierville Pike in their opposition to Thunder Mountain Properties, LLC's application to amend the South Knox County Sector Plan from AG (Agricultural) and HP (Hillside Protection) to LDR (Low Density Residential) and HP (Hillside Protection) and to rezone from substantially A (Agricultural) to PR (Planned Residential). My clients have worked closely with other concerned community members and the KCPA (Knox County Planning Alliance) in opposition to this proposed development located at 8802 Sevierville Pike. The fundamental opposition to the developer's request is outlined in KCPA's letter dated December 7, 2021. Additionally, the concerned community has organized the public Dry Hollow Community Facebook group with 474 members, the petition drive in opposition with 560 signatures to date, the distribution of "No Rezone Keep Sevierville Pike Rural" signs throughout the impacted area and interviews with WBIR Channel 10.

The concerned community has engaged in outreach to the developer, elected officials and governmental staff regarding their concerns to ensure that their voices are heard. We join in concurrence with KCPA's letter and would offer the following additional information and data to support the denial of both the request for the sector plan amendment and the rezoning as none of the criteria has been met:

A. Criteria for Amending the Sector Plan

1. Changes of conditions, introduction of significant new roads or utilities that were not anticipated in the plan

- The recent change to the intersection of East Simpson Road/Chapman Highway is not a change of condition warranting amendment of the land use plan or a new road that was not anticipated in the plan as the realignment was intended to reduce crashes and address immediate safety needs. Please see the attached Exhibit B explanation of the project from TDOT's website.

- With regard to the sewer system and pump station, Valley Grove Baptist Church Single-handedly paid for the improvements in 1999. At this time, there are only three or four other customers across from the Church that are on the wastewater system. The entire light industrial park located on the semi-private Valgro Road (surrounded by the proposed development) is on a septic system along.

2. Obvious and significant error or omission in the plan

- There has not been a gradual expansion of commercial and industrial zoning since 2001. These changes were to align existing industrial uses with the plan except for one zoning downgrade to agriculture and the return to light industrial in 2019.

3. Trends in development, population or traffic that warrant reconsideration of the original plan proposal

- There is no trend toward residential development on/near Sevierville Pike. Only five (5) detached dwelling residential permits have been issued in the area since 2010. Please see attached Exhibit C.

B. Proposed Amendment shall not adversely affect any other part of the county nor shall any direct or indirect adverse effects result

- We have been working with Cannon & Cannon on peer reviews and estimated traffic impact on the developer's request, additional property owned by the developer in the area (Bower Field area) along with two (2) developments approved by Planning Commission and within the growth plan on the opposite side of Chapman Highway. The summary provides:

> Estimated Trips to be generated:
> Daily Trips – 12,676
> AM Peak Hour Trips – 957
> PM Peak Hour Trips -1279
>
> In order to provide some perspective, the most recent AADT counts from TDOT at nearby count stations show the total traffic on Chapman Hwy. plus Sevierville Pike to be about 35,000. Although the generated trips will not likely all be on these two roadways, I suspect the vast majority will. Therefore, these developments alone have the potential to increase traffic significantly, maybe approaching something on the order of 36%.

We believe that this proposed development will unduly burden Sevierville Pike/Hendron Chapel Road/Whites School Road, which are excluded from any proposed work in the Mobility 2045 plan.

Two (2) separate TDEC (Tennessee Department of Conservation) complaints have been lodged against the property. One for stormwater construction/ARAP issues has been referred back to Knox County. Attached as Exhibit A please find a copy of the Hydrology Determination Report prepared on behalf of the developer dated September 10, 2021 and TDEC's concurrence dated October 7, 2021that three (3) streams and two (2) wet water conveyances are within the proposed development area. We believe that it is important to note that the concerned community believes that these waters have continued to be altered in the absence of the appropriate permit after the date of the Report, which clearly states that Stream #3 "banks have been graded recently, had "been highly impacted" and "recently disturbed." The second complaint has been referred to the Tennessee Division of Forestry. It is our understanding that complaints and inquiries made to Knox County on the bulldozing of land and trees and the cutting in of roads is not actionable as

For these reasons and those outlined by KCPA, my clients, those that have signed the Petition and the residents and landowners in the impacted are request you deny the Sector Plan Amendment and Rezoning Request.

Yours Very Truly,

Hilary Williams Burgin
HWB: dmr
Attachments
Via Electronic Transmission

Exh.

A

TN Department of Environment & Conservation

**Tennessee Division of Water Resources (DWR)**

Permits Documents Permit Appeals Moratoriums Complaints Inspections Eng. Plans Hydrologic Det. Exceptional Waters Ambient Monitoring

No site associated with this complaint.

**COMPLAINT**

Help Back to Previous Page

**Complaint Number** 116328
**Division** WPC
**Date Received** OCT-29-2021
**How Received** Phone
**Concerning** Logging
**Concerning (Other)**
**Assigned Date** OCT-29-2021

**Location**

**County** Knox ..... **EFO** - Knoxville
**Site** Large tracts located off Sevierville Pike and Dry Hollow Rd
**Location** 8802 Sevierville Pike
**Site City ... Zip**
**Site Description**
**Latitude** 35.897629 ..... **Longitude**-83.794085
**Site Owner** Thunder Mountain Properties, LLC

**Investigation Results**

**Date Investigated** OCT-29-2021
**Status** Referred to other Agency
**Status Detail** Referred complaint to local forester, Brook Smith and District Forester, Darren Bailey.
**Responsible Party**
**Resp Party Phone**
**Date Completed**
**Referred To** District Forester Darren Bailey
**Date Referred** OCT-29-2021
**Photos**

**Last updated** 29-OCT-2021 02:33PM

**Complaint Description and Writeup**

Logging operation without BMPs. Sediment discharged into Hines Creek.

TN Department of Environment & Conservation

**Tennessee Division of Water Resources (DWR)**

Permits Documents Permit Appeals Moratoriums Complaints Inspections Eng. Plans Hydrologic Det. Exceptional Waters Ambient Monitoring

No site associated with this complaint.

**COMPLAINT**

Help Back to Previous Page

**Complaint Number** 115771
**Division** WPC
**Date Received** OCT-20-2021
**How Received** Phone
**Concerning** Stormwater - Construction
**Concerning (Other)**
**Assigned Date** OCT-20-2021

**Location**

**County** Knox . . . . . **EFO** - Knoxville
**Site** On 8802 Sevierville Pike
**Location** Off Bay Mountain Road
**Site City** Knoxville. . . **Zip**
**Site Description** Ag field
**Latitude** . . . . . **Longitude**
**Site Owner** Chris Arnold, Michael Mallicote, developer

**Investigation Results**

**Date Investigated** NOV-02-2021
**Status** Referred to other Agency
**Status Detail** Examined disturbance. Took photographs. Discussed site with Mr. Darryl Smith and Brice Scott.
**Responsible Party** Thunder Mountain Properties - Chris Arnold
**Resp Party Phone** 423-871-3430
**Date Completed** NOV-05-2021
**Referred To** Knox County
**Date Referred** NOV-05-2021
**Photos** Yes

**Last updated** 08-NOV-2021 10:24AM

**Complaint Description and Writeup**

Thunder Mountain developing beyond vegetation clearing. Crossing a creek and damaging banks? Awaited review of H.D. done by Leigh Yates.

**STATE OF TENNESSEE**
**DEPARTMENT OF ENVIRONMENT AND CONSERVATION**
**KNOXVILLE ENVIRONMENTAL FIELD OFFICE**
**DIVISION OF WATER POLLUTION CONTROL**
**3711 MIDDLEBROOK PIKE**
**KNOXVILLE, TN 37921**
**PHONE 865-594-6035 STATEWIDE 1-888-891-8332 FAX 865-594-6105**

October 7, 2021

Mr. Robert Campbell
Robert Campbell & Associates
7523 Taggart Lane
Knoxville, Tennessee 37938

Re: Hydrologic Determination Report
Sevierville Pike Project
Knox County, Tennessee
Unnamed tributaries to Hines Creek

Dear Mr. Campbell:

According to the information presented in the *Hydrologic Determination Report, Sevierville Pike Project, Knox County, Tennessee, GEOServices Project No. 24-21945*, TDEC agrees with the finding that there are three **streams** and two **wet weather conveyance** within the area investigated.

Changes in long-term weather patterns, as well as physical and geological changes within a watershed, can cause the determination to change. Therefore, the Division of Water Resources reserves the right to change this classification if warranted.

Please be aware that a valid aquatic resource alteration permit (ARAP) must be obtained prior to initiating any work to the bed or bank of the streams.

If you have any questions, please contact me at 865-606-0678 or by e-mail at Leigh.Yates@tn.gov.

Sincerely,

Leigh Yates, Jr.
Environmental Scientist
Division of Water Resources

Enclosures

cc: File: Waters of the State/ Knox County
LTY

GEOS
Geotechnical, Environmental and Materials Engineers

September 10, 2021

Robert G. Campbell & Associates
7523 Taggart Lane
Knoxville, Tennessee 37938

Attention: Mr. Robert Campbell, PE

Subject: **Hydrologic Determination Report**
Sevierville Pike Project
Knox County, Tennessee
GEOServices Project No. 24-21945

Dear Mr. Campbell:

GEOServices, LLC has completed a Hydrologic Determination Report for a multiple drainage features at the above-referenced project, located at 8802 Sevierville Pike in Knox County, 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
Senior Project Manager

Byron L. Barton, P.G.
Senior Geologist

# HYDROLOGIC DETERMINATION REPORT

# FOR

# SEVIERVILLE PIKE PROJECT

# KNOX COUNTY, TENNESSEE

Prepared For:

Robert G. Campbell & Associates
7523 Taggart Lane
Knoxville, Tennessee 37938

Prepared by:

GEOServices, LLC
2561 Willow Point Way
Knoxville, Tennessee 37931

September 10, 2021

GEOServices Project # 24-21945

## 1.0 INTRODUCTION

GEOServices, LLC (GEOServices) performed a hydrologic determination on a five (5) drainage features located in the headwaters of Hines Creek, located at 8802 Sevierville Pike in Knox County, Tennessee. The site investigation and hydrologic determination were conducted on August 9, 2021 by Jason Mann of GEOServices.

## 2.0 SITE DESCRIPTION

The subject project location consists of two parcels; the parcels are described on Map 138, Parcels 270 and 274 102.00 according to the Knox County Property Assessor. The overall project footprint is roughly 173 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 commercial properties

**Map 2** in Appendix A illustrates the location of the hydrologic resources evaluated on site. Two (2) of the channels are wet weather conveyances, and three (3) channels are jurisdictional streams. All of the channels evaluated drain toward the Hines Creek. The channels on-site were evaluated for geomorphological, hydrological, and biological stream indicators.

Based on the Shooks Gap USGS 7.5 - Minute Topographic Quadrangle (**Map 3** in Appendix A), three (3) of the subject channels are designated as "blue line" features, and two (2) are not. Additionally, the topography of the parcel has an approximate elevation range between approximately 1062 and 920 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. Steadman Silt Loam is listed as a hydric soil.

The entire project lies in the Hines Creek Watershed (HUC 060101070405), which is nested within the Lower French Broad Watershed (HUC 06010107). Hines Creek is not listed on the most-

recent 303(d) list of impaired waterways in Tennessee. The receiving stream is considered to be fully supporting of the seven designated surface water uses in Tennessee.

## 3.0 RESOURCE DESCRIPTION

Three (3) of the channels found on site have sustained flows, and are considered jurisdictional streams. One of the streams has been recently altered, and the determination process has been influenced by current conditions. Two (2) of the channels are wet weather conveyances. No other water resources were found or evaluated during this investigation.

## 4.0 METHODS

The channels have been 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

**UT Hines Creek, Channel 1 – Stream** due to secondary stream indicators; a secondary score of 31.0 was calculated using a rigorous and reasonable amount of effort.

**UT Hines Creek, Channel 2 – Stream** due to secondary stream indicators; a secondary score of 20.0 was calculated using a rigorous and reasonable amount of effort.

**UT Hines Creek, Channel 3 – Stream** due to primary and secondary stream indicators; a secondary score of 21.5 was calculated using a rigorous and reasonable amount of effort. The channel has been recently disturbed and the alterations impact the score.

**UT Hines Creek, Channel 4 – Wet Weather Conveyance** due to secondary stream indicators; a secondary score of 11.0 was calculated using a rigorous and reasonable amount of effort.

**UT Hines Creek, Channel 5 – Wet Weather Conveyance** due to secondary stream indicators; a secondary score of 18.0 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.

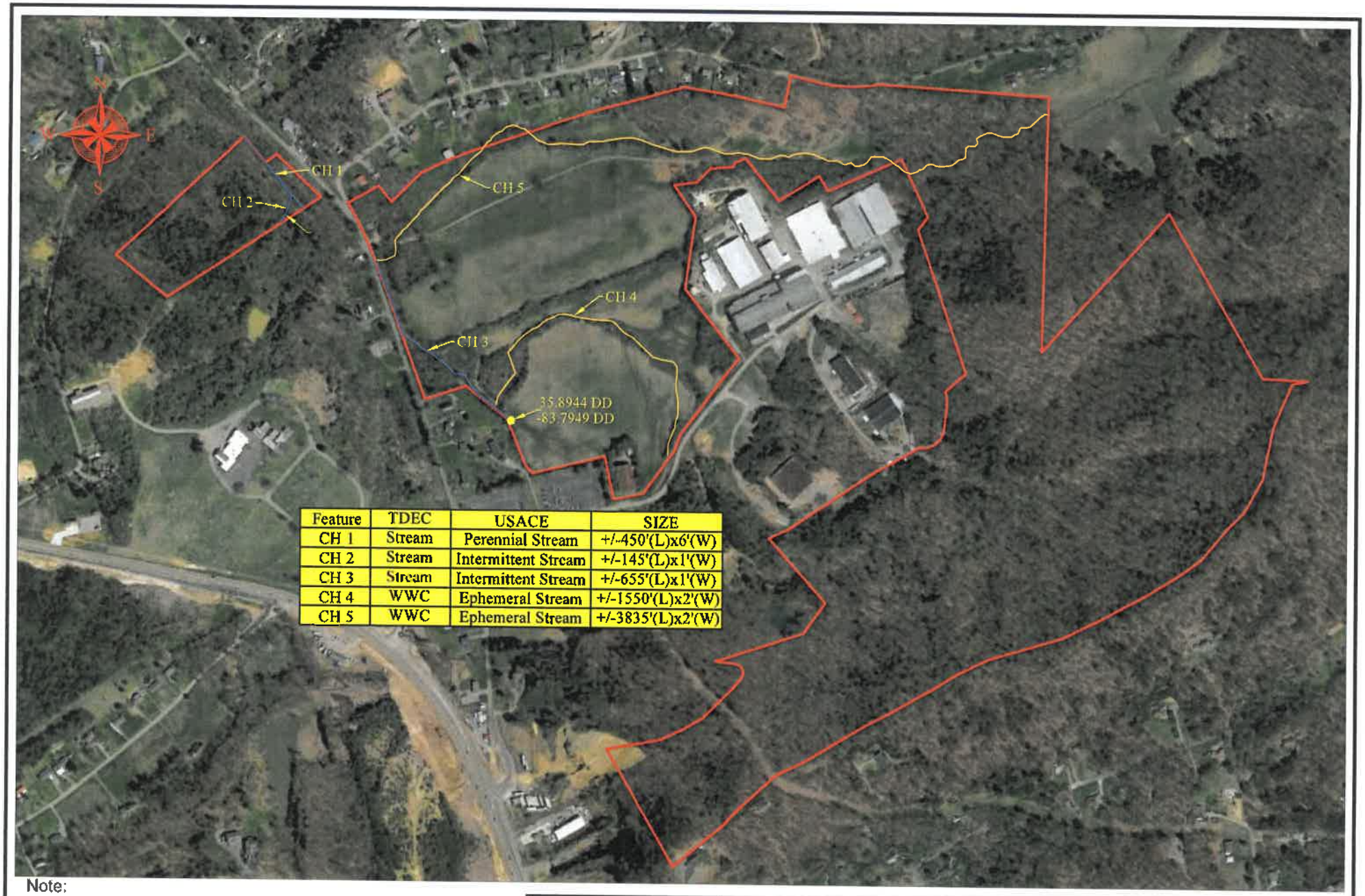
| | |
|---|---|
| SCALE: | NTS |
| CHECKED BY: | JM |
| DRAWN BY: | CSG |
| DATE: | 9–4–2021 |

GEOServices, LLC-Geotechnical and Materials Engineers
2951 Willow Point Way
Knoxville, Tennessee 37931
Phone: (865) 539-8242
Fax: (865) 539-8252

SUBJECT LOCATION
SEVIERVILLE PIKE
STREAM DETERMINATION
8802 SEVIERVILLE PIKE
KNOX COUNTY, TENNESSEE

JOB NO: 24–21945

1




| Feature | TDEC | USACE | SIZE |
|---|---|---|---|
| CH 1 | Stream | Perennial Stream | +/-450'(L)x6'(W) |
| CH 2 | Stream | Intermittent Stream | +/-145'(L)x1'(W) |
| CH 3 | Stream | Intermittent Stream | +/-655'(L)x1'(W) |
| CH 4 | WWC | Ephemeral Stream | +/-1550'(L)x2'(W) |
| CH 5 | WWC | Ephemeral Stream | +/-3835'(L)x2'(W) |

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

Subject Property.

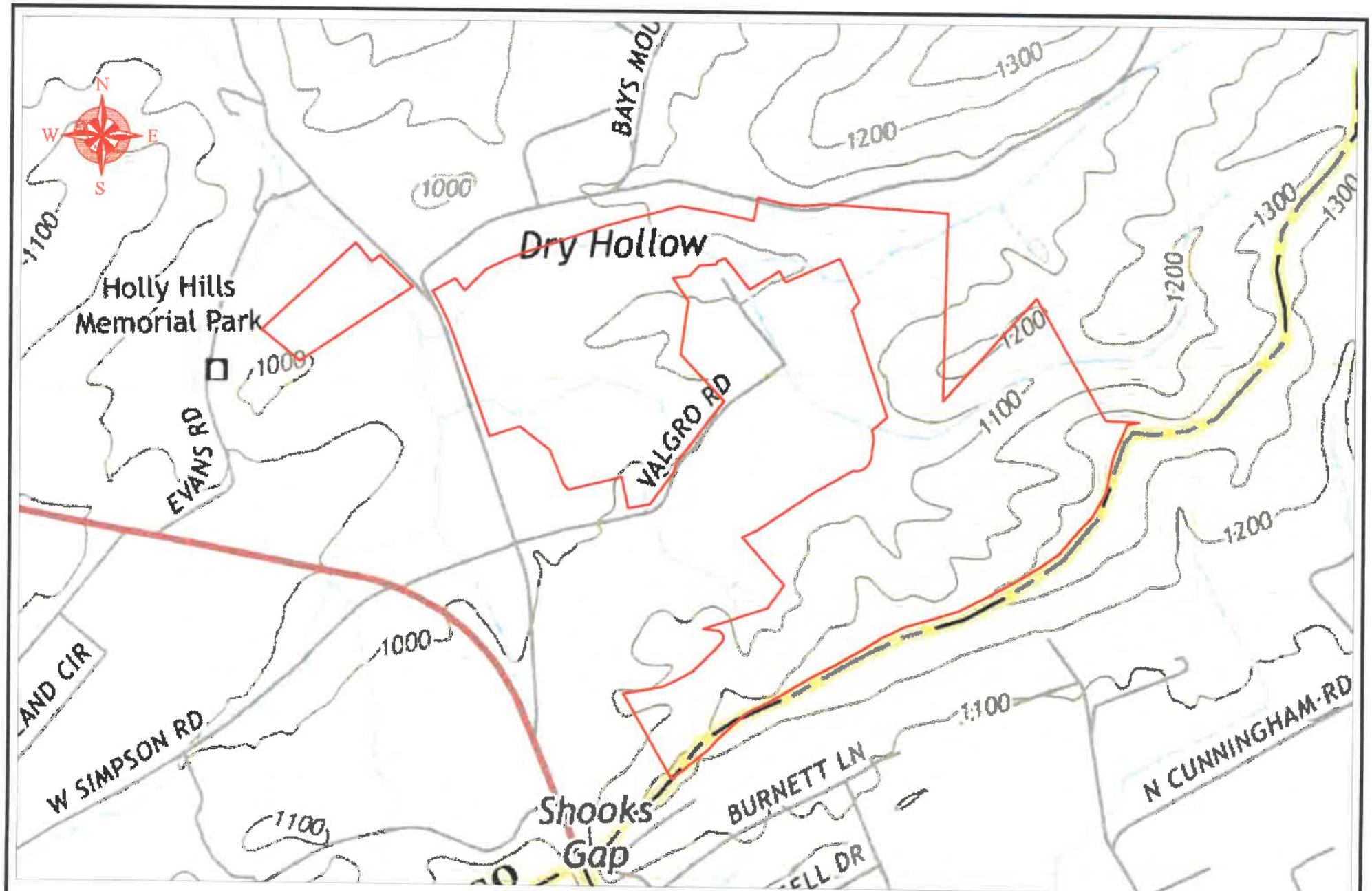
| | |
|---|---|
| SCALE: | NTS |
| CHECKED BY: | JM |
| DRAWN BY: | CSG |
| DATE: | 9-4-2021 |

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

WATER RESOURCE MAP
SEVIERVILLE PIKE
STREAM DETERMINATION
8802 SEVIERVILLE PIKE
KNOX COUNTY, TENNESSEE

JOB NO: 24-21945

2




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

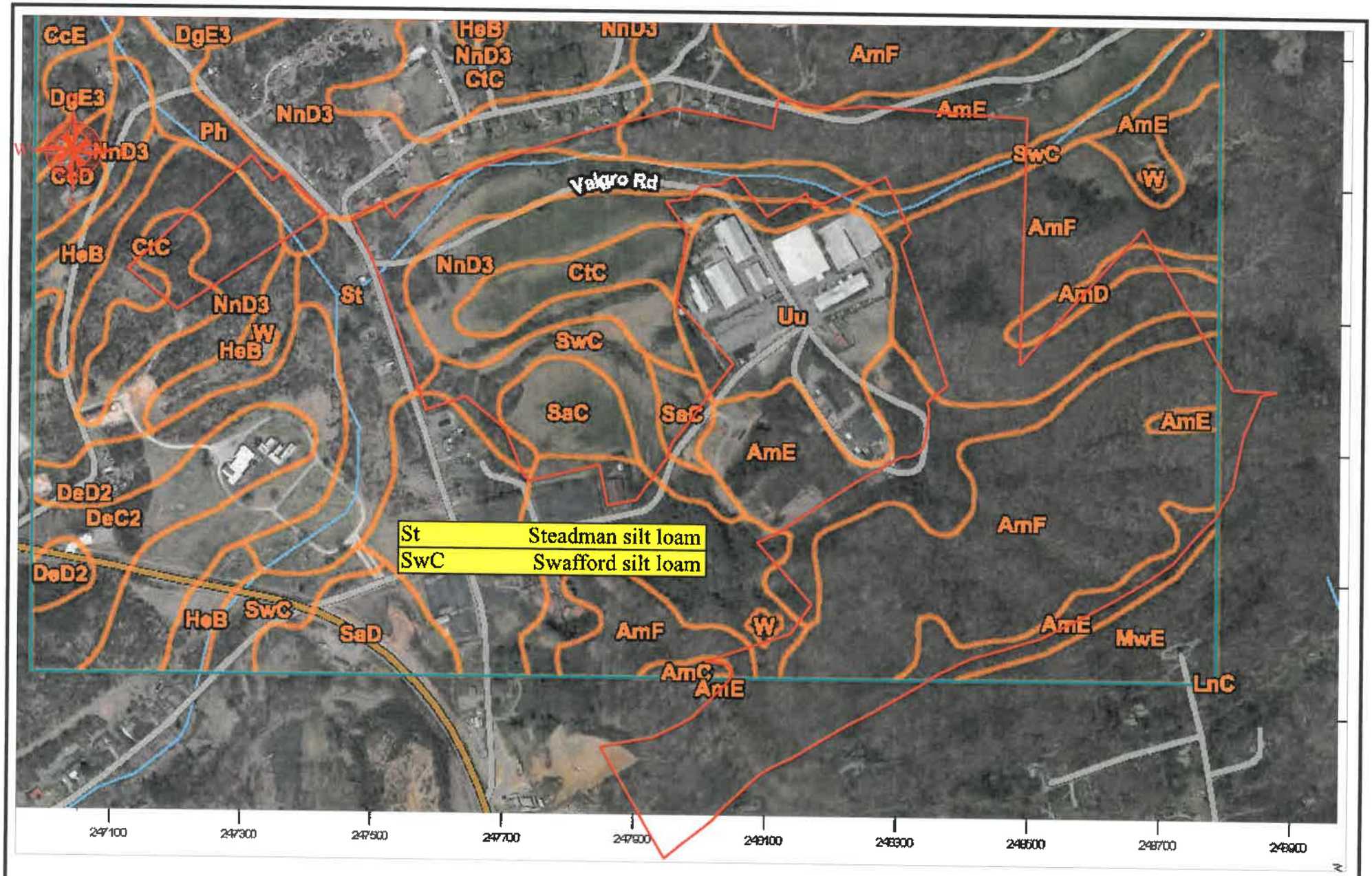
| | |
|---|---|
| SCALE: | NTS |
| CHECKED BY: | JM |
| DRAWN BY: | CSG |
| DATE: | 9–4–2021 |

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

TOPOGRAPHIC MAP
SEVIERVILLE PIKE
STREAM DETERMINATION
8802 SEVIERVILLE PIKE
KNOX COUNTY, TENNESSEE

JOB NO: 24–21945

3




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: | 9-4-2021 |

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

WEB SOIL SURVEY
SEVIERVILLE PIKE
STREAM DETERMINATION
8802 SEVIERVILLE PIKE
KNOX COUNTY, TENNESSEE

JOB NO: 24-21945

4

**Appendix B**

**Photographs**

GEOS
Geotechnical, Environmental and Materials Engineers

# SITE PHOTOGRAPHS

Photo 1: Photo of Channel 1 as it enters the subject property

Photo 2: Photo of Channel 2 as it enters the subject parcel

Photo 3: Photo of Channel 2 at the confluence with Channel 1

Photo 4: Channel 3 originates with a culvert, acting as a springhead; no water source could be found upgradient of this location

Photo 5: The lower section of Channel 3 has been altered

Photo 6: Typical representation of the Channel 3

Photo 7: Photo of Channel 4 as it exits the subject parcel

Photo 8: Typical representation of the Channel 4 near the confluence with Channel 3

GEOS
Geotechnical, Environmental and Materials Engineers

# SITE PHOTOGRAPHS

Photo 9: Photo of the Channel 5 as it enters the subject parcel

Photo 10: Typical representation of the Channel 5 midway through the property

# Appendix C

## Field Data Sheets

## Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

| | | | |
|---|---|---|---|
| Named Waterbody: | UT Hines Creek - Channel # 1 | Date/Time: | 8/9/21 |
| Assessors/Affiliation: | Jason Mann, GEOServices | Project ID : | 24-21945 |
| Site Name/Description: | Sevierville Pike Project | | |
| Site Location: | Sevierville Pike, Knox County, TN | | |
| HUC (12 digit): | 060101070405 | Lat/Long: | 35.8963 |
| Previous Rainfall (7-days) : | 0.19" | | -83.7955 |
| Precipitation this Season vs. Normal : abnormally wet elevated average low abnormally dry unknown<br>Source of recent & seasonal precip data : NOAA - See Attached | | | |
| Watershed Size : | 895 acres | County: | Knox |
| Soil Type(s) / Geology : | Steadman Silt Loam | Source: | WSS |
| Surrounding Land Use : | Residential & Commercial | | |
| Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) :<br>Severe Moderate (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 | NA | 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-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

**Overall Hydrologic Determination =** Stream

**Secondary Indicator Score (if applicable) =** 31

**Justification / Notes :**

U/S : 35.8972°, -83.7984°
d/s : 35.8982°, -83.7993°

## Secondary Field Indicator Evaluation 24-21945 CH1

| A. Geomorphology (Subtotal = 15.5) | 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 = 5.5) | 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 = 10) | Absent | Weak | Moderate | Strong |
|---|---|---|---|---|
| 20. Fibrous roots in channel bed [1] | (3) | 2 | 1 | 0 |
| 21. Rooted plants in the thalweg [1] | (3) | 2 | 1 | 0 |
| 22. Crayfish in stream (exclude in floodplain) | (0) | 1 | 2 | 3 |
| 23. Bivalves/mussels | 0 | 1 | (2) | 3 |
| 24. Amphibians | (0) | 0.5 | 1 | 1.5 |
| 25. Macrobenthos (record type & abundance) | 0 | (1) | 2 | 3 |
| 26. Filamentous algae; periphyton | 0 | (1) | 2 | 3 |
| 27. Iron oxidizing bacteria/fungus | (0) | 0.5 | 1 | 1.5 |
| 28. Wetland plants in channel bed [2] | (0) | 0.5 | 1 | 1.5 |

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

Total Points = 31

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

**Notes :**

# Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

| | | | |
|---|---|---|---|
| Named Waterbody: | UT Hines Creek - Channel # 2 | Date/Time: | 8/9/21 |
| Assessors/Affiliation: | Jason Mann, GEOServices | Project ID : | 24-21945 |
| Site Name/Description: | Sevierville Pike Project | | |
| Site Location: | Sevierville Pike, Knox County, TN | | |
| HUC (12 digit): | 060101070405 | Lat/Long: | 35.8963 |
| Previous Rainfall (7-days) : | 0.19" | | -83.7955 |
| Precipitation this Season vs. Normal : abnormally wet elevated average low abnormally dry unknown<br>Source of recent & seasonal precip data : NOAA - See Attached | | | |
| Watershed Size : | ~ 13 acres | County: | Knox |
| Soil Type(s) / Geology : | Steadman silt loam | Source: | WSS |
| Surrounding Land Use : | Residential & Commercial | | |
| Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) :<br>Severe Moderate (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 | NA | 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-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

**Overall Hydrologic Determination =** Stream

**Secondary Indicator Score (if applicable) =** 20

**Justification / Notes :**

U/S: 35.8971°, -83.7987° property boundary

d/s: 35.8974°, -83.7985° confluence w/ CH1

## Secondary Field Indicator Evaluation 24-21945 CH2

| A. Geomorphology (Subtotal = 7.5) | 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 = 5) | 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 = 7.5) | Absent | Weak | Moderate | Strong |
|---|---|---|---|---|
| 20. Fibrous roots in channel bed [1] | 3 | (2) | 1 | 0 |
| 21. Rooted plants in the thalweg [1] | 3 | (2) | 1 | 0 |
| 22. Crayfish in stream (exclude in floodplain) | (0) | 1 | 2 | 3 |
| 23. Bivalves/mussels | 0 | (1) | 2 | 3 |
| 24. Amphibians □ | 0 | (0.5) | 1 | 1.5 |
| 25. Macrobenthos (record type & abundance) ★ | 0 | (1) | 2 | 3 |
| 26. Filamentous algae; periphyton | 0 | 1 | 2 | 3 |
| 27. Iron oxidizing bacteria/fungus | 0 | (0.5) | 1 | 1.5 |
| 28. Wetland plants in channel bed [2] | 0 | (0.5) | 1 | 1.5 |

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

Total Points = 20

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

**Notes :** □ egg masses

★ amphipods & isopods found

# Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

| | | | |
|---|---|---|---|
| Named Waterbody: | UT Hines Creek - Channel # 3 | Date/Time: | 8/9/21 |
| Assessors/Affiliation: | Jason Mann, GEOServices | Project ID : | 24-21945 |
| Site Name/Description: | Sevierville Pike Project | | |
| Site Location: | Sevierville Pike, Knox County, TN | | |
| HUC (12 digit): | 060101070405 | Lat/Long: | 35.8963 |
| Previous Rainfall (7-days) : | 0.19" | | -83.7955 |
| Precipitation this Season vs. Normal : abnormally wet elevated average low abnormally dry unknown<br>Source of recent & seasonal precip data : NOAA - See Attached | | | |
| Watershed Size : | ~ 42 acres | County: | Knox |
| Soil Type(s) / Geology : | Steadman Silt Loam | Source: | WSS |
| Surrounding Land Use : | Residential & Commercial | | |
| Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) :<br>Severe Moderate 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 | NA | 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-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

**Overall Hydrologic Determination =** Stream

**Secondary Indicator Score (if applicable) =** 21.5

**Justification / Notes :**

u/s : 35.8944°, -83.7949° culvert end / spring (?)
d/s : 35.8964°, -83.7972° confluence w/ CH 5

Stream banks have been graded recently, which impacts this determination.

## Secondary Field Indicator Evaluation 24-21945 CH 3

| A. Geomorphology (Subtotal = 7.5) | 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 = 6.5) | 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 = 7.5) | Absent | Weak | Moderate | Strong |
|---|---|---|---|---|
| 20. Fibrous roots in channel bed [1] | (3) | 2 | 1 | 0 |
| 21. Rooted plants in the thalweg [1] | (3) | 2 | 1 | 0 |
| 22. Crayfish in stream (exclude in floodplain) | (0) | 1 | 2 | 3 |
| 23. Bivalves/mussels | (0) | 1 | 2 | 3 |
| 24. Amphibians | (0) | 0.5 | 1 | 1.5 |
| 25. Macrobenthos (record type & abundance) | (0) | 1 | 2 | 3 |
| 26. Filamentous algae; periphyton | 0 | (1) | 2 | 3 |
| 27. Iron oxidizing bacteria/fungus | 0 | (0.5) | 1 | 1.5 |
| 28. Wetland plants in channel bed [2] | (0) | 0.5 | 1 | 1.5 |

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

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

Total Points = 21.5

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

**Notes :**

Highly impacted

# Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

| | | | |
|---|---|---|---|
| Named Waterbody: | UT Hines Creek - Channel # 4 | Date/Time: | 8/9/21 |
| Assessors/Affiliation: | Jason Mann, GEOServices | Project ID : | 24-21945 |
| Site Name/Description: | Sevierville Pike Project | | |
| Site Location: | Sevierville Pike, Knox County, TN | | |
| HUC (12 digit): | 060101070405 | Lat/Long: | 35.8963 |
| Previous Rainfall (7-days) : | 0.19" | | -83.7955 |
| Precipitation this Season vs. Normal : abnormally wet elevated average low abnormally dry unknown<br>Source of recent & seasonal precip data : NOAA - See Attached | | | |
| Watershed Size : | ~26 acres | County: | Knox |
| Soil Type(s) / Geology : | Swafford Silt Loam | Source: | WSS |
| Surrounding Land Use : | Residential & Commercial | | |
| Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) :<br>Severe Moderate 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 | NA | 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-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

**Overall Hydrologic Determination =** WWC

**Secondary Indicator Score (if applicable) =** 11

**Justification / Notes :**

U/S: 35.8936°, -83.7926° property boundary

d/s: 35.8947°, -83.7952° confluence w/ CH3

## Secondary Field Indicator Evaluation 24-21945 CH4

| A. Geomorphology (Subtotal = 7.5) | 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 = 1) | Absent | Weak | Moderate | Strong |
|---|---|---|---|---|
| 14. Subsurface flow/discharge into channel | (0) | 1 | 2 | 3 |
| 15. Water in channel and >48 hours since sig. rain | (0) | 1 | 2 | 3 |
| 16. Leaf litter in channel (January – September) | 1.5 | 1 | (0.5) | 0 |
| 17. Sediment on plants or on debris | (0) | 0.5 | 1 | 1.5 |
| 18. Organic debris lines or piles (wrack lines) | 0 | (0.5) | 1 | 1.5 |
| 19. Hydric soils in channel bed or sides of channel | (No = 0) | | Yes = 1.5 | |

| C. Biology (Subtotal = 2.5) | Absent | Weak | Moderate | Strong |
|---|---|---|---|---|
| 20. Fibrous roots in channel bed [1] | 3 | 2 | (1) | 0 |
| 21. Rooted plants in the thalweg [1] | 3 | 2 | (1) | 0 |
| 22. Crayfish in stream (exclude in floodplain) | (0) | 1 | 2 | 3 |
| 23. Bivalves/mussels | (0) | 1 | 2 | 3 |
| 24. Amphibians | (0) | 0.5 | 1 | 1.5 |
| 25. Macrobenthos (record type & abundance) | (0) | 1 | 2 | 3 |
| 26. Filamentous algae; periphyton | (0) | 1 | 2 | 3 |
| 27. Iron oxidizing bacteria/fungus | (0) | 0.5 | 1 | 1.5 |
| 28. Wetland plants in channel bed [2] | 0 | (0.5) | 1 | 1.5 |

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

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

Total Points = 11

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

**Notes :**

## Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.5

| | | |
|---|---|---|
| Named Waterbody: | UT Hines Creek - Channel # 5 | Date/Time: 8/9/21 |
| Assessors/Affiliation: | Jason Mann, GEOServices | Project ID : 24-21945 |
| Site Name/Description: | Sevierville Pike Project | |
| Site Location: | Sevierville Pike, Knox County, TN | |
| HUC (12 digit): | 060101070405 | Lat/Long: 35.8963 |
| Previous Rainfall (7-days) : | 0.19" | -83.7955 |
| Precipitation this Season vs. Normal : abnormally wet elevated average low abnormally dry unknown<br>Source of recent & seasonal precip data : NOAA - See Attached | | |
| Watershed Size : | ~170 acres | County: Knox |
| Soil Type(s) / Geology : | Steadman silt loam | Source: WSS |
| Surrounding Land Use : | Residential & Commercial | |
| Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) :<br>Severe Moderate (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 | NA | 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-WPC Guidance For Making Hydrologic Determinations, Version 1.5*

**Overall Hydrologic Determination =** WWC

**Secondary Indicator Score (if applicable) =** 18.0

**Justification / Notes :**

u/s: 35.8983°, -83.7864° property line
d/s: 35.8967°, -83.7972° property line

## Secondary Field Indicator Evaluation 24-21945 CH5

| A. Geomorphology (Subtotal = 11) | 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 = 2) | 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 [1] | 3 | (2) | 1 | 0 |
| 21. Rooted plants in the thalweg [1] | 3 | (2) | 1 | 0 |
| 22. Crayfish in stream (exclude in floodplain) | (0) | 1 | 2 | 3 |
| 23. Bivalves/mussels | (0) | 1 | 2 | 3 |
| 24. Amphibians | (0) | 0.5 | 1 | 1.5 |
| 25. Macrobenthos (record type & abundance) | (0) | 1 | 2 | 3 |
| 26. Filamentous algae; periphyton | (0) | 1 | 2 | 3 |
| 27. Iron oxidizing bacteria/fungus | (0) | 0.5 | 1 | 1.5 |
| 28. Wetland plants in channel bed [2] ★ | 0 | 0.5 | (1) | 1.5 |

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

Total Points = 18.0

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

**Notes :**

★ a few FACW species, but zero OBL species

# Appendix D

## Weather Data

# Normal Weather Conditions Calculations Table

## Knoxville - August 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** |
| **1st prior month*** | JUL | 2.47 | 1.77 | 4.24 | 6.71 | 1.70 | LOW | 1 | 3 | 3 |
| **2nd prior month*** | JUN | 1.80 | 2.01 | 3.81 | 5.61 | 2.85 | AVE | 2 | 2 | 4 |
| **3rd prior month*** | MAY | 1.97 | 1.83 | 3.80 | 5.77 | 3.62 | AVE | 2 | 1 | 2 |
| | | | | | | | | | Sum = | 9 |

Note:

| **If sum is:** | 9 - DRY |
|---|---|
| 6-9 | then prior period has been abnormally dry |
| 10-14 | then prior period has been normal (average) |
| 15-18 | Then prior period has been abnormally wet |

| **Condition value:** | |
|---|---|
| Low = | 1 |
| Average = | 2 |
| Elevated = | 3 |

CLIMATE REPORT
NATIONAL WEATHER SERVICE MORRISTOWN, TN
414 PM EDT SUN AUG 01 2021

.....

...THE KNOXVILLE MCGHEE TYSON AIRPORT CLIMATE SUMMARY FOR THE MONTH OF JULY 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 | 97 | 07/28 | | |
| LOWEST | 59 | 07/04 | | |
| AVG. MAXIMUM | 88.5 | | 88.4 | 0.1 |
| AVG. MINIMUM | 68.9 | | 68.7 | 0.2 |
| MEAN | 78.7 | | 78.5 | 0.2 |
| DAYS MAX >= 90 | 16 | | | |
| DAYS MAX <= 32 | 0 | | | |
| DAYS MIN <= 32 | 0 | | | |
| DAYS MIN <= 0 | 0 | | | |
| PRECIPITATION (INCHES) | | | | |
| RECORD | | | | |
| MAXIMUM | 13.16 | 1917 | | |
| MINIMUM | 0.33 | 1995 | | |
| TOTALS | 1.70 | | 5.25 | -3.55 |
| DAYS >= .01 | 10 | | | |
| DAYS >= .10 | 4 | | | |
| DAYS >= .50 | 2 | | | |
| DAYS >= 1.00 | 0 | | | |
| GREATEST | | | | |
| 24 HR. TOTAL | 0.70 | 07/01 TO 07/02 | | |
| SNOWFALL (INCHES) | | | | |
| TOTALS | 0.0 | | 0.0 | 0.0 |
| SINCE 7/1 | 0.0 | | | |
| SNOWDEPTH AVG. | 0 | | | |
| DAYS >= TRACE | 0 | | | |
| GREATEST | | | | |
| SNOW DEPTH | 0 | | | |

| DEGREE DAYS | | | |
|---|---|---|---|
| HEATING TOTAL | 0 | 0 | 0 |
| SINCE 7/1 | 0 | 0 | 0 |
| COOLING TOTAL | 432 | 420 | 12 |
| SINCE 1/1 | 907 | 915 | -8 |

WEATHER CONDITIONS. NUMBER OF DAYS WITH

| | | | |
|---|---|---|---|
| THUNDERSTORM | 7 | RAIN | 6 |
| SNOW | 0 | FOG | 13 |
| 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.

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.

000
CXUS54 KMRX 011030
CF6IYS
PRELIMINARY LOCAL CLIMATOLOGICAL DATA (WS FORM: F-6)

STATION: KNOXVILLE MCGHEE TYSON AIRPORT
MONTH: AUGUST
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 | 86 | 69 | 78 | 0 | 0 | 13 | 0.58 | 0.0 | 0 | 8.2 | 16 | 230 | M | M | 8 | 13 | 21 | 230 |
| 2 | 86 | 63 | 75 | -3 | 0 | 10 | 0.00 | 0.0 | 0 | 5.0 | 14 | 30 | M | M | 5 | 12 | 12 | 360 |
| 3 | 85 | 68 | 77 | -1 | 0 | 12 | T | 0.0 | 0 | 3.7 | 13 | 70 | M | M | 8 | 3 | 17 | 60 |
| 4 | 79 | 62 | 74 | -4 | 0 | 9 | 0.18 | 0.0 | 0 | 4.0 | 17 | 80 | M | M | 8 | 138 | 24 | 80 |
| 5 | 89 | 63 | 76 | -2 | 0 | 11 | 0.00 | 0.0 | 0 | 2.3 | 8 | 250 | M | M | 5 | 12 | 12 | 340 |
| 6 | 89 | 68 | 79 | 1 | 0 | 14 | 0.00 | 0.0 | 0 | 2.3 | 12 | 260 | M | M | 9 | | 14 | 260 |
| 7 | 86 | 68 | 77 | -1 | 0 | 12 | 0.01 | 0.0 | 0 | 5.5 | 15 | 100 | M | M | 7 | 3 | 19 | 110 |
| 8 | 90 | 63 | 77 | -1 | 0 | 12 | 0.00 | 0.0 | 0 | 2.9 | 9 | 190 | M | M | 3 | 1 | 13 | 280 |
| 9 | 93 | 68 | 81 | 3 | 0 | 16 | 0.02 | 0.0 | 0 | 5.5 | 20 | 210 | M | M | 6 | | 23 | 180 |
| 10 | 92 | 69 | 81 | 3 | 0 | 16 | 0.01 | 0.0 | 0 | 3.9 | 16 | 310 | M | M | 7 | 3 | 22 | 320 |
| 11 | 94 | 70 | 82 | 4 | 0 | 17 | 0.00 | 0.0 | 0 | 6.2 | 20 | 280 | M | M | 6 | 3 | 25 | 270 |
| 12 | 93 | 68 | 81 | 3 | 0 | 16 | 0.00 | 0.0 | 0 | 4.8 | 12 | 290 | M | M | 5 | 3 | 17 | 280 |
| 13 | 95 | 71 | 83 | 5 | 0 | 18 | 0.00 | 0.0 | 0 | 5.2 | 16 | 280 | M | M | 5 | | 22 | 290 |
| 14 | 96 | 72 | 84 | 6 | 0 | 19 | 0.05 | 0.0 | 0 | 5.8 | 17 | 210 | M | M | 5 | 3 | 25 | 60 |
| 15 | 90 | 70 | 80 | 2 | 0 | 15 | 0.39 | 0.0 | 0 | 4.0 | 30 | 40 | M | M | 8 | 138 | 38 | 40 |
| 16 | 84 | 69 | 77 | -1 | 0 | 12 | 1.29 | 0.0 | 0 | 3.3 | 17 | 220 | M | M | 10 | 13 | 29 | 220 |
| 17 | 73 | 70 | 72 | -6 | 0 | 7 | 2.81 | 0.0 | 0 | 8.8 | 18 | 30 | M | M | 10 | 1 | 30 | 20 |
| 18 | 89 | 69 | 79 | 1 | 0 | 14 | 0.00 | 0.0 | 0 | 4.1 | 10 | 230 | M | M | 6 | | 14 | 210 |
| 19 | 88 | 72 | 79 | 0 | 0 | 13 | 0.05 | 0.0 | 0 | 7.2 | 13 | 200 | M | M | 9 | 13 | 17 | 220 |
| 20 | 90 | 72 | 81 | 3 | 0 | 16 | 0.71 | 0.0 | 0 | 3.1 | 10 | 10 | M | M | 6 | 13 | 15 | 340 |
| 21 | 85 | 69 | 77 | 0 | 0 | 12 | 0.04 | 0.0 | 0 | 4.9 | 18 | 230 | M | M | 7 | 12 | 23 | 240 |
| 22 | 91 | 73 | 82 | 5 | 0 | 17 | 1.15 | 0.0 | 0 | 4.3 | 12 | 50 | M | M | 7 | 1 | 16 | 350 |
| 23 | 91 | 69 | 80 | 3 | 0 | 15 | 0.00 | 0.0 | 0 | 3.0 | 10 | 340 | M | M | 1 | | 15 | 90 |
| 24 | 93 | 70 | 82 | 5 | 0 | 17 | 0.00 | 0.0 | 0 | 3.7 | 12 | 40 | M | M | 2 | 1 | 16 | 50 |
| 25 | 93 | 72 | 83 | 6 | 0 | 18 | T | 0.0 | 0 | 3.8 | 16 | 340 | M | M | 3 | 38 | 24 | 340 |
| 26 | 91 | 70 | 81 | 4 | 0 | 16 | 0.21 | 0.0 | 0 | 4.1 | 21 | 30 | M | M | 5 | 138 | 32 | 20 |
| 27 | 91 | 71 | 81 | 4 | 0 | 16 | 0.00 | 0.0 | 0 | 2.7 | 9 | 210 | M | M | 3 | | 13 | 310 |
| 28 | 91 | 71 | 81 | 5 | 0 | 16 | T | 0.0 | 0 | 3.9 | 12 | 60 | M | M | 4 | 3 | 15 | 60 |
| 29 | 91 | 72 | 82 | 6 | 0 | 17 | 0.00 | 0.0 | 0 | 3.7 | 9 | 260 | M | M | 5 | 3 | 11 | 210 |
| 30 | 86 | 69 | 78 | 2 | 0 | 13 | 0.81 | 0.0 | 0 | 3.8 | 33 | 210 | M | M | 8 | 13 | 43 | 200 |
| 31 | 77 | 69 | 73 | -3 | 0 | 8 | 1.71 | 0.0 | 0 | 7.1 | 14 | 50 | M | M | 10 | 1 | 18 | 200 |
| SM | 2742 | 2145 | | | 0 | 437 | 10.12 | 0.0 | | 140.7 | | | M | | 191 | | | |
| AV | 88.5 | 69.2 | | | | | | | | 4.5 | FASTST | | M | M | 6 | | MAX(MPH) | |
| | | | | | | | | | MISC ----> | | 33 | 210 | | | | | 43 | 200 |

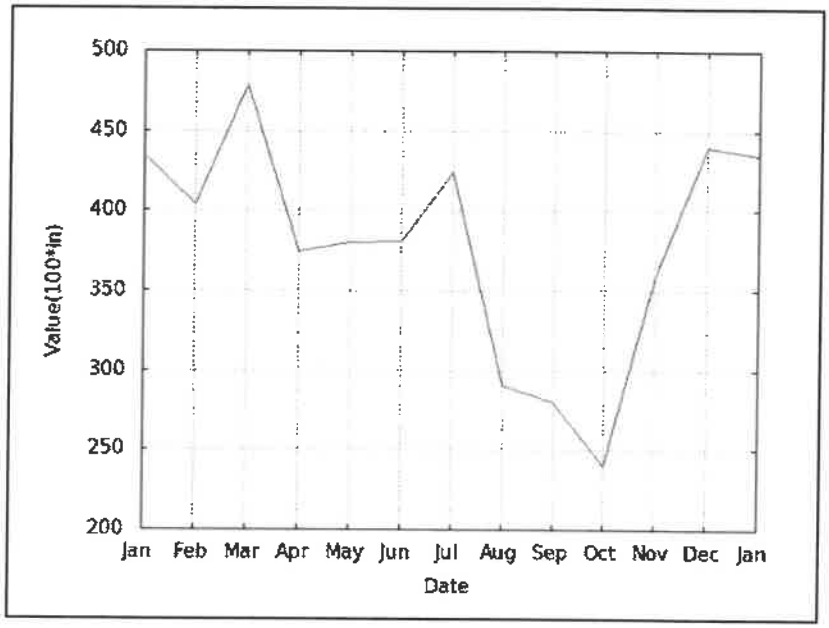
NOTES:
# LAST OF SEVERAL OCCURRENCES

Knoxville Normal Weather Data

1991-2020

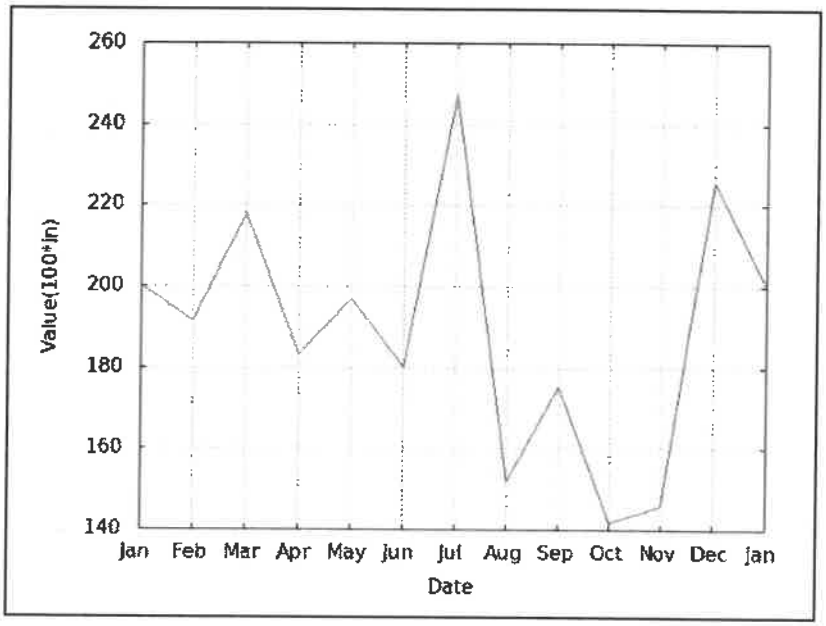
Mean (in.)

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**

TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION

TNQHP TENNESSEE QUALIFIED HYDROLOGIC PROFESSIONAL

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 for refresher course details and application forms.

Sincerely,

Paul E. Davis

Paul E. Davis, Director
Water Pollution Control

Cc: Timothy Gangaware
TN-HDT Training Program
Coordinator

TDEC **Tennessee Qualified Hydrologic Professional** TNQHP

This card certifies that:

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
Paul E. Davis, P.E.
Director, TDEC-WPC

Timothy Gangaware, AICP
Director, TNWRRC-UT

C-1
8/11

# 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

TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION

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

TNQHP
TENNESSEE QUALIFIED HYDROLOGIC PROFESSIONAL

# 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*

Exh.
B

# State Route 71 (US 441) Chapman Highway - Evans Road to Burnett Lane

***Knox County***

## Overview

The project along State Route 71 (US 441/Chapman Highway), from Evans Road to Burnett Lane in Knox County, includes widening the existing roadway for approximately 0.9 miles.

This project is part of a larger effort to improve the safety and efficiency of the Chapman Highway corridor in Knox, Blount, and Sevier Counties. Due to the significant size of the overall project, the proposed improvements have been separated into six smaller sections or phases. To read more about all improvements to the corridor, visit the Chapman Highway project website .

**Purpose and Need**

Chapman Highway is a major connection between Knoxville and Sevierville, accommodating commercial and residential traffic. Increased growth and development along the corridor, and the resulting high volume of traffic, have resulted in negative safety and capacity issues.
The proposed improvements are intended to reduce crashes and address the immediate safety needs of the heavily-traveled corridor.

**Design**

Chapman Highway from Evans Road to Burnett Lane is one of six sections that will improve the corridor in Knox, Blount, and Sevier Counties. (see Chapman Highway project website )

The section between Evans Road and Burnett Lane will follow the existing alignment, widening the roadway to five lanes with four 11-foot travel lanes (two in each direction), a dedicated 12-foot center turn lane, and 3-foot paved shoulders.

A small portion of the project, between East Simpson Road and Sevierville Pike, will be realigned to improve access to the corridor. Driveway connections along this stretch will be modified to accommodate the new alignment. Additionally, Evans Road will be converted into a cul-de-sac and will not intersect Chapman Highway.

Drainage structures will be installed and an existing box culvert near Sevierville Pike will be extended. Two retaining walls will also be constructed west of West Simpson Road.

Traffic signals, bike lanes, and sidewalks are not planned for this project.

Exh.
C

# Development Activity Dashboard An Inside Look at Knox County Building Permits (2010 - Present)