

**APPENDIX G – USACE WOTUS DELINEATION REPORTS &
JD VERIFICATION LETTERS**



DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS
SAVANNAH DISTRICT
100 W. OGLETHORPE AVENUE
SAVANNAH, GEORGIA 31401-3604

24 JAN 2020

Regulatory Branch
SAS-2018-00554

Steven R. Ingle (single@twinpinesminerals.com)
Twin Pines Minerals, LLC
2100 Southbridge Parkway,
Birmingham, Alabama 35209

Dear Mr. Ingle:

I refer to the request submitted on your behalf by TTL, requesting a delineation of aquatic resources for your Adirondack and TIAA sites located West of the town of Saint George, and North of State Route 94, in Charleston County, Georgia (Adirondack: Latitude 30.524, Longitude -82.098, TIAA: Latitude 30.529, Longitude -82.138). This project has been assigned number SAS-2018-00554 and it is important that you refer to this number in all communication concerning this matter.

The enclosed exhibits entitled, "Waters of the U.S. Delineation Map (Verified), Twin Pines Minerals – Adirondack Tract", dated November 6, 2019, and "Waters of the U.S. Delineation Map (Verified), Twin Pines Minerals – TIAA Tract", dated November 6, 2019, identifies the delineation limits of all aquatic resources within these review areas. The wetlands were delineated in accordance with criteria contained in the 1987 "Corps of Engineers Wetland Delineation Manual," as amended by the most recent regional supplements to the manual. This delineation will remain valid for a period of 5-years unless new information warrants revision prior to that date.

If you intend to sell property that is part of a project that requires Department of the Army Authorization, it may be subject to the Interstate Land Sales Full Disclosure Act. The Property Report required by Housing and Urban Development Regulation must state whether, or not a permit for the development has been applied for, issued or denied by the U.S. Army Corps of Engineers (Part 320.3(h) of Title 33 of the Code of Federal Regulations).

This communication does not convey any property rights, either in real estate or material, or any exclusive privileges. It does not authorize any injury to property, invasion of rights, or any infringement of federal, state or local laws, or regulations. It does not obviate your requirement to obtain state or local assent required by law for the development of this property. If the information you have submitted, and on which the

U.S. Army Corps of Engineers has based its decision is later found to be in error, this decision may be revoked.

A copy of this letter is being provided to the following parties: Cindy House-Pearson chpearson@ttlusa.com, and Christopher Terrell cterrell@ttlusa.com.

Thank you in advance for completing our on-line Customer Survey Form located at http://corpsmapu.usace.army.mil/cm_apex/f?p=regulatory_survey. We value your comments and appreciate your taking the time to complete a survey each time you have interaction with our office.

If you have any questions, please call Holly Ross, at (678) 422-2727.

Sincerely,

METIVIER.STEV
EN.V.1228803185

Digitally signed by
METIVIER.STEVEN.V.1228803
185
Date: 2020.01.24 08:52:03
-05'00'

Steven V. Metivier
Acting Chief, Regulatory Division

Enclosures





WATERS OF THE U.S. DELINEATION MAP (VERIFIED)

TWIN PINES MINERALS - ADIRONDACK TRACT

ST. GEORGE, CHARLTON COUNTY, GEORGIA

BASEMAP: DigitalGlobe, 3/24/2018 (0.46 m Resolution)

DRAWN BY: DEK
CHECKED BY: CMS
DRAWING DATE: 1/1/2019
REVISION DATE: 11/8/2019
TTL JOB NO: 0002180200804.00
APPROXIMATE SCALE: 1" = 1,000'



DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS
SAVANNAH DISTRICT
100 W. OGLETHORPE AVENUE
SAVANNAH, GEORGIA 31401-3604

December 18, 2018

Regulatory Branch
SAS-2018-00554

Mr. Steve Ingle
Twin Pines Minerals, LLC
2100 Southbridge Parkway, Ste. 540
Birmingham, Alabama 35209

Dear Mr. Ingle:

I refer to a letter dated October 3, 2018, submitted on your behalf by Ms. Cindy House-Pearson of Resource and TTL Inc., requesting a delineation of aquatic resources for your 1,034 acre and 1,012 acre sites located in Charlton County, Georgia (Latitude 30.5266, Longitude -81.1157). This project has been assigned number SAS-2018-00554 and it is important that you refer to this number in all communication concerning this matter.

The enclosed exhibits entitled "Figure 6: Waters of the U.S. Delineation Map, Twin Pines Minerals - Loncala Tract, Charlton County, Georgia" and "Figure 6: Waters of the US Delineation Map - Keystone Properties, Waters of the U.S. Delineation", dated December 6, 2018, identifies the delineation limits of all aquatic resources within the review area. The wetlands were delineated in accordance with criteria contained in the 1987 "Corps of Engineers Wetland Delineation Manual," as amended by the most recent regional supplements to the manual. This delineation will remain valid for a period of 5-years unless new information warrants revision prior to that date.

If you intend to sell property that is part of a project that requires Department of the Army Authorization, it may be subject to the Interstate Land Sales Full Disclosure Act. The Property Report required by Housing and Urban Development Regulation must state whether, or not a permit for the development has been applied for, issued or denied by the U.S. Army Corps of Engineers (Part 320.3(h) of Title 33 of the Code of Federal Regulations).

This communication does not convey any property rights, either in real estate or material, or any exclusive privileges. It does not authorize any injury to property, invasion of rights, or any infringement of federal, state or local laws, or regulations. It does not obviate your requirement to obtain state or local assent required by law for the development of this property. If the information you have submitted, and on which the U.S. Army Corps of Engineers has based its determination is later found to be in error, this decision may be revoked.

A copy of this letter is being provided to the following party:
Ms. Cindy House-Pearson of TTL Inc., 3516 Greensboro Avenue, Tuscaloosa, Alabama 35401.

Thank you in advance for completing our on-line Customer Survey Form located at http://corpsmapu.usace.army.mil/cm_apex/f?p=regulatory_survey. We value your comments and appreciate your taking the time to complete a survey each time you have interaction with our office.

If you have any questions, please call me at (912) 652-5022.

Sincerely,

A handwritten signature in blue ink, appearing to read "Scott Guinn", followed by a long horizontal line.

Scott Guinn
Regulatory Specialist, Coastal Section

Enclosures



This map is not a survey and represents features that were mapped with a Trimble Geo7x GPS unit set to submeter accuracy. These features are jurisdictional upon verification by the USACE.

VERIFICATION DATE: _____

USACE FILE NO.: SAS-2018-00554

OW1

WD

WD

WA

WC

S2

WA

S1





WA

WB

WA

WA

LEGEND

-  Loncala Property Boundary (1,012 ac)
-  Intermittent Stream (3,020± lf)
-  Open Water (0.34± ac)
-  Wetland (405.11± ac)

0 1,300
Feet

Feature	Classification	Area (ac)	Length (lf)
WA	Wetland	306.80	—
WB	Wetland	11.96	—
WC	Wetland	19.51	—
WD	Wetland	66.84	—
S1	Intermittent Stream	0.33	2210
S2	Intermittent Stream	0.07	810
OW1	Open Water	0.34	—
TOTAL	Wetland	405.11	---
TOTAL	Intermittent Stream	0.40	3020

TTL

**FIGURE 6: WATERS OF THE US
DELINEATION MAP**
TWIN PINES MINERALS - LONCALA TRACT
CHARLTON COUNTY, GEORGIA

BASEMAP: Google Earth & Europa Technologies (3/6/2018)

DRAWN BY: CMS

CHECKED BY: CGT

DRAWING DATE: 07/30/2018

REVISION DATE: 12/06/2018

TTL JOB NO: 000180206804.00

APPROX SCALE: 1" = 1,300'

Feature	Classification	Area (AC)	Length (lf)
S1	Intermittent	0.020	297
WA-Total	Wetland	504.304	—
WA-1		161.637	—
WA-2		153.254	—
WA-3		103.714	—
WA-4		11.596	—
WA-5		28.786	—
WA-6		7.936	—
WA-7		16.980	—
WA-8		1.304	—
WA-9		19.097	—
WB	Wetland	2.194	—
WC	Wetland	0.957	—
WD	Wetland	6.323	—
WF	Wetland	0.704	—
WG	Wetland	5.970	—
WH	Wetland	14.141	—
WI	Wetland	6.068	—
WJ	Wetland	1.072	—
WK	Wetland	2.500	—
Wetland Total: 544.233± AC			
Total Stream: 0.020± AC, 297± LF			

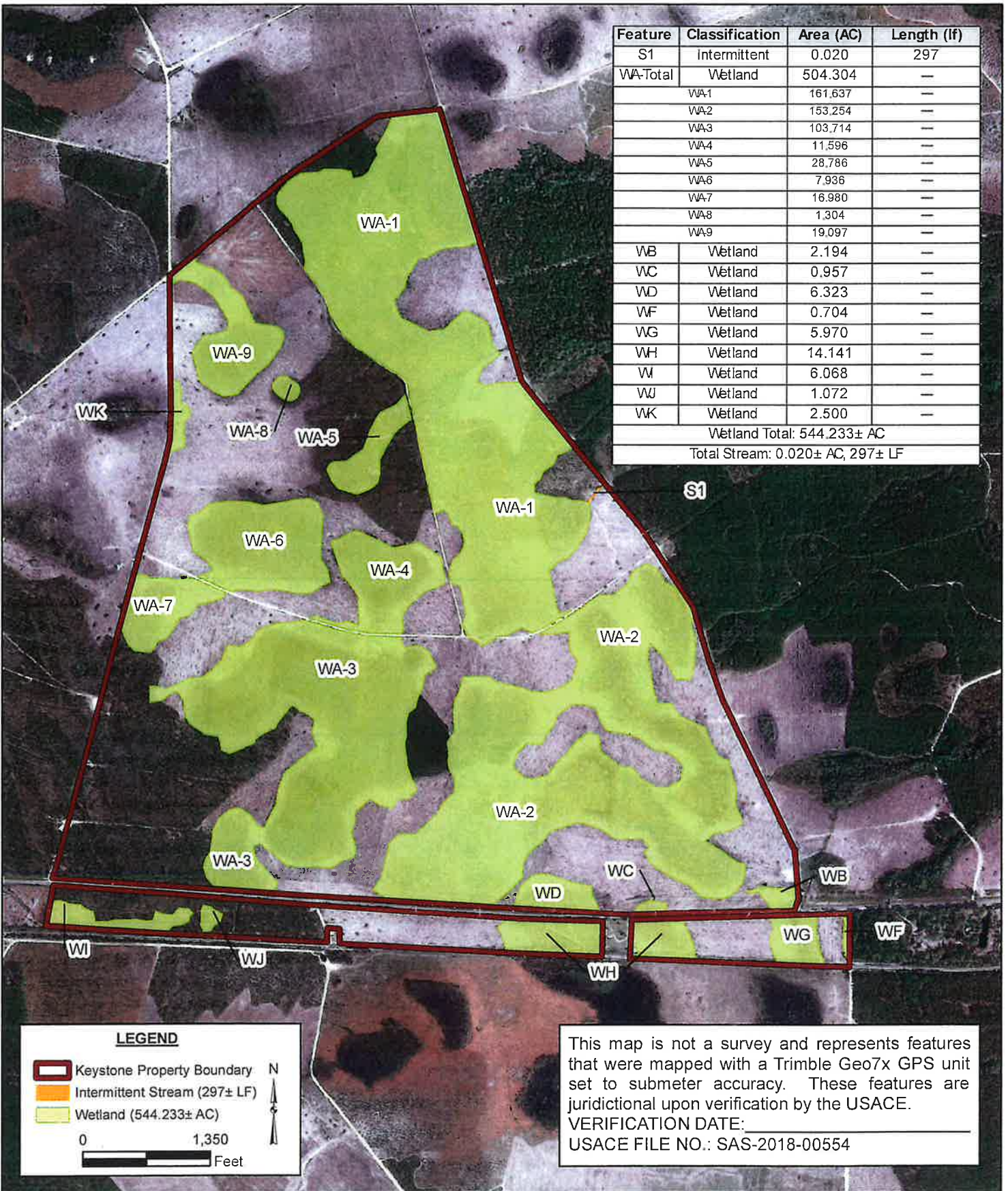


FIGURE 6: WATERS OF THE US DELINEATION MAP
TWIN PINES MINERALS - KEYSTONE PROPERTIES
WATERS OF THE U.S. DELINEATION

BASEMAP: Google Earth, Europa Technologies (C) 2018. Image Date: 3/6/2018

DRAWN BY: CMS
CHECKED BY: CGT
DRAWING DATE: 09/18/2018
REVISION DATE: 12/06/2018
TTL JOB NO. 000180200804.00
APPROX. SCALE: 1" = 2,000'

WATERS OF THE UNITED STATES DELINEATION REPORT

APPROXIMATELY 551.1-ACRE ADIRONDACK TRACT
SAINT GEORGE, CHARLTON COUNTY, GEORGIA

Submitted to:



Twin Pines Minerals, LLC

Attn: Mr. Steve Ingle, P.E.
2100 Southbridge Parkway
Birmingham, Alabama 35209

Prepared by:

TTL, Inc.
2743-B Gunter Park Drive West
Montgomery, Alabama 36109

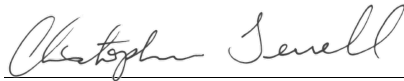
Project No. 000180200804.00

July 3, 2019



SIGNATURE OF ENVIRONMENTAL PROFESSIONALS


TTL, Inc. has performed a waters of the United States (U.S.) delineation in general conformance with the scope and limitations of the *U. S. Army Corps of Engineers Wetland Delineation Manual, 1987 Edition*, and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region Version 2.0* (2010). Identification of ephemeral, intermittent and perennial streams has been performed in general conformance with methodology outlined in *Methodology for Identification of Intermittent and Perennial Streams and their Origins, Version 4.11* (2010).



Christopher Terrell
Environmental Professional

July 3, 2019

Date



Cindy House-Pearson
Senior Natural Resources
Client Manager

July 3, 2019

Date

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Figure 6	Waters of the U.S. Delineation Map

APPENDICES

Appendix A	Normal Weather Conditions Table Agricultural Applied Climate Information System (AgACIS) Data U.S. Drought Monitor – Georgia Palmer Drought Index
Appendix B	Selected Site Photographs
Appendix C	U.S. Army Corps of Engineers Wetland Determination Data Forms
Appendix D	North Carolina (NC) Division of Water Quality (DWQ) Stream Identification Forms
Appendix E	USACE Savannah District Request for Corps of Engineers Jurisdictional Determination (JD) and/or Delineation Review Form

1.0 INTRODUCTION

TTL, Inc. (TTL) was contracted by Twin Pines Minerals, LLC (Twin Pines) to perform a delineation of the waters of the United States (WOTUS) associated with a proposed development of a heavy mineral mining operation in Saint George, Charlton County, Georgia (Figure 1). TTL conducted the field activities for this project from March 8, 2019 to March 22, 2019. The U.S. Army Corps of Engineers (USACE) project number is SAS-2018-00554.

Activities within jurisdictional waters of the U.S. are regulated by the USACE. Authority to permit discharges (fill) within jurisdictional wetlands or non-navigable waters of the U.S. is granted under Section 404 of the Clean Water Act (CWA) of 1972. Authority to permit work and placement of structures in navigable waters of the U.S. is granted under Sections 9 and 10 of the Rivers and Harbors Act of 1899. For regulatory purposes under the CWA, wetlands are defined by the USACE as:

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

2.0 SITE DESCRIPTION

The site is an approximately 551.1-acre area depicted on the U.S. Geological Survey (USGS) 7.5-minute Topographic Map of Saint George, Georgia (Figure 1). The center of the site is located near latitude 30.537849 and longitude -82.099831. According to the USGS Topographic Map, the elevation at the site ranges from approximately 120 to 170 feet above mean sea level.

The western delineation area boundary follows a portion of Trail Ridge Road. The delineation area has historically been used for silvicultural activities. The primary sources of hydrology for the delineation area are onsite rainfall and surface water flow.

Driving directions to the site are as follows: from the intersection of GA-23 and GA-94 (in St. George, GA), travel west along GA-94 for approximately 6.93 miles to the intersection of GA-94 and Trail Ridge Road (dirt road). Turn north (right) onto Trail Ridge Road and the western boundary of the delineation area is located immediately east.

3.0 LITERATURE AND RECORDS REVIEW

Prior to conducting the field effort, TTL performed a literature and records review to develop an understanding of the potential for the presence of waters of the U.S. on the subject site or surrounding properties. These data sources and the review findings are described below.

3.1 Hydric Soils

The Natural Resources Conservation Service (NRCS) maintains a database of soil types (map units) for most areas of the U.S. (NRCS, 2017). The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit which represents a large area dominated by one or more major types of soil. Map units are further classified with a rating of hydric, partially hydric or non-hydric. Map units are useful for planning purposes to provide an overall understanding of the soils that occur in a general area. However, due to the natural variability of the landscape, direct observation of the soils profile is necessary to identify hydric soil indicators.

A classification of hydric means that the soil components listed for a given map unit are rated as being hydric. "Predominantly hydric" means that more than 66 percent to less than 100 percent of soil components are hydric. "Partially hydric" means that more than 33 percent to less than 65 percent of soil components are hydric. "Predominantly non-hydric" means that more than 0 percent and less than 32 percent of soil components are hydric. "Not hydric" means that all soil components are rated as not hydric. "Unknown hydric" indicates that at least one component is not rated so a definitive rating for the map unit cannot be made. A NRCS map of the soils located on the site with the associated hydric rating is presented in Figure 3 and summarized in Table 1 below.

Table 1: Soil Map Units Classifications

Map Unit Symbol	Description	Hydric Rating	Hydric Description
LeA	Leon fine sand, 0 to 2 percent slopes	97	Predominantly hydric
LvA	Lynn Haven fine sand, 0 to 2 percent slopes	90	Predominantly hydric
LYA	Lynn Haven, Allanton and Kingsferry soils, ponded, 0 to 1 percent slopes	97	Predominantly hydric
MaA	Mandarin fine sand, 0 to 2 percent slopes	6	Predominantly non-hydric
KJA	Kinston and Johnston soils, 0 to 2 percent slopes, frequently flooded	100	Hydric

3.2 National Wetland Inventory

The U.S. Fish and Wildlife Service (USFWS) created and maintains the National Wetland Inventory (NWI) database of information on the characteristics, extent, and status of the wetlands and deepwater habitats within the U.S. This information is useful for planning purposes and provides an overall understanding of the habitats that may be present in or around the site. The NWI classifies habitat types as marine, estuarine, riverine, lacustrine or palustrine with additional modifiers as appropriate to identify the water regime, water chemistry, soil or other characteristics based on *Classification of Wetlands and Deepwater Habitats of the U.S.* (Cowardin, 1979).

TTL reviewed the NWI data for the site using the USFWS NWI Wetlands Mapper web-based tool to determine the potential for wetlands to exist on the site. The USFWS NWI Mapper identified numerous wetland and stream features within the delineation area boundary. Figure 4 depicts the NWI Map, and Table 2 summarizes the habitat below.

Table 2: NWI Classifications

Map Unit Symbol	Description of Habitat
PFO1/4C	Palustrine; Forested; Broad-leaved Deciduous; Needle-Leaved Evergreen, Seasonally Flooded.
PFO1C	Palustrine; Forested; Broad-leaved Deciduous; Seasonally Flooded.
PFO6/4C	Palustrine; Forested; Deciduous; Needle-Leaved Evergreen, Seasonally Flooded.
PFO6F	Palustrine; Forested; Deciduous; Semipermanently Flooded.
R4SBC	Riverine; Intermittent; Streambed; Seasonally flooded.
R5UBH	Riverine; Unknown Perennial; Unconsolidated Bottom; Permanently Flooded.

3.3 Hydrologic Unit Code

The U.S. is divided and sub-divided into successively smaller hydrologic units which are classified into six levels: regions, sub-regions, accounting units, watershed, sub-watershed, and cataloging units. The hydrologic units are arranged within each other, from the smallest (cataloging unit) to the largest (regions). Each hydrologic unit is identified by a unique hydrologic unit code (HUC) consisting of two to 12 digits based on the six levels of classification in the hydrologic system (Seaber, Kapinos, Knapp, 1987). The site is located within the Boone Creek cataloging unit 12-Digit HUC 030702040603. This cataloging unit is located within the Middle Saint Mary's River sub-watershed, 10-Digit HUC 0307020406. The Middle Saint Mary's River sub-watershed is located within the St Mary's River watershed, 8-Digit HUC 03070204 (Figure 5).

3.4 Normal Weather Conditions

TTL calculates a subject site's normal weather conditions before performing site work to understand whether aquatic features in the landscape may exhibit certain characteristics related to current and near past hydrologic regime. TTL calculates data obtained from an on-line NRCS climactic database, Agricultural Applied Climate Information System (AgACIS), and derives its calculation method from the Tennessee Department of Environment and Conservation's guide for making hydrologic determinations (TDEC, 2011). An evaluation of weather conditions was performed for the three-month period prior to the field activities. Calculations for the site indicate that the weather conditions were drier than normal for the time of year that field work was performed.

The Palmer Drought Severity Index provided by National Oceanic and Atmospheric Administration (NOAA) is accessed at <http://www.ncdc.noaa.gov/oa/climate/research/prelim/drought/palmer.html> and was used to cross-reference the results calculated. The Palmer Drought Severity Index indicates that the region of the site experienced no drought conditions during the weeks prior to the site visit.

As an additional cross-reference, the U.S. Drought Monitor was accessed and evaluated. The U.S. Drought Monitor is produced through a partnership between the National Drought Mitigation Center at the University of Nebraska-Lincoln, the United States Department of Agriculture (USDA), and NOAA. The most recent update of the U.S. Drought Monitor (March 12, 2019) Map of Georgia exhibited no drought conditions in the vicinity of the review area.

The Normal Weather Conditions Table, AgACIS data, Palmer Drought Severity Index Map, and U.S. Drought Monitor Map of Georgia are included in Appendix A.

4.0 WETLAND AND WATERS DELINEATION

4.1 Wetland Identification Methodology

TTL utilizes the *U.S. Army Corps of Engineers Wetland Delineation Manual* (USACE, 1987) and *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region* (USACE, 2010) technical guidelines for determining the presence of wetlands. This determination requires that a positive wetland indicator be present for each of the three parameters (hydrology, soil, and vegetation), with the exception of areas altered by recent human activities or natural events. During field activities, TTL assessed the project area for the presence of hydrophytic vegetation and used a Dutch hand-auger to evaluate the project area for the presence of hydric soils. TTL examined the soil for hydric soil indicators as identified in the *Field Indicators of Hydric Soils in the United States*, V. 8.1 (NRCS, 2017). Additionally, TTL observed the project area

for indications of inundated or saturated soils, water marks, drift lines, crayfish burrows, sediment deposits and other wetland hydrology indicators. TTL used *Wetland Determination Data Forms – Atlantic and Gulf Coastal Plain Region* (2010) to record field conditions for the soil, vegetation and hydrology for wetlands and uplands located on the site. At least one data point was established in each habitat type observed within the review area.

TTL traversed the delineation area on foot and placed orange flagging labeled with Upland Data Point (UDP) or Wetland Data Point (WDP) point identification at the data point location. The location of the data point flagging was mapped with a Trimble Geo7x Global Positioning System (GPS) unit, which was set to sub-meter tolerances. Field data was post-processed using Trimble PathfinderOffice V 5.3 and exported to ESRI's ArcMap 10.2. Area features were manually digitized in ArcGIS using the flag locations; geographic coordinates and area quantities were calculated using ArcGIS "area" function.

4.2 Wetland Findings

The delineation area contains five wetland areas (WA-WE) consisting of approximately 149.602 acres. The boundaries of the wetland areas and data point locations are depicted on Figure 6. Selected site photographs of our field observations are provided in Appendix B. Wetland Determination Data Forms are included in Appendix C. Table 3 summarizes the wetland findings below.

Table 3: Wetland Summary

Wetland ID	Cowardin Habitat Description	Area (acres)
WA	Palustrine; Forested; Broad-leaved Deciduous; Needle-Leaved Evergreen, Seasonally Flooded	105.552
WB	Palustrine; Forested; Broad-leaved Deciduous; Needle-Leaved Evergreen, Seasonally Flooded	8.915
WC	Palustrine; Forested; Broad-leaved Deciduous; Needle-Leaved Evergreen, Seasonally Flooded	2.555
WD	Riverine; Unknown Perennial; Unconsolidated bottom; Permanently flooded	15.568
WE	Palustrine; Forested; Deciduous; Needle-Leaved Evergreen, Seasonally Flooded	4.233
WF	Palustrine; Forested; Deciduous; Semipermanently Flooded	4.055
WG	Palustrine; Forested; Deciduous; Semipermanently Flooded	5.544
WH	Palustrine; Forested; Deciduous; Semipermanently Flooded	3.180

Wetland WA is the largest wetland within the delineation area. Wetland WA is located in the central portion of the delineation area. Wetland WD is located along the northwestern portion of the delineation area. Wetlands WB, WE, WF, WG and WH are located in the northern portion of the delineation area. Wetland WC is located in the southwestern portion of the delineation area. The soils textures within the wetland areas are comprised of a sand content that meets hydric soil indicator S8 – Stripped Matrix, and a peat/mucky mineral content that meets hydric soil indicator A7 - 5cm Mucky Mineral. The hydrology for this area is supported by localized stormwater and a shallow water table. The wetland vegetation communities within the delineation area vary from large areas of hipped and benched, planted pine habitat [dominated by slash pine (*Pinus elliottii*) whose growth has been stunted due to hydric conditions, inkberry (*Ilex glabra*), red maple (*Acer rubrum*), Carolina redroot (*Lachnanthes caroliniana*), loblolly bay (*Gordonia lasianthus*), broomsedge (*Andropogon virginicus*) and Virginia chain fern (*Woodwardia virginica*)], to forested pocosin habitat that exhibited few signs of silvicultural activities [dominated by pond cypress (*Taxodium ascendens*), swamp tupelo

(*Nyssa biflora*), large gallberry (*Ilex coriacea*), myrtle leaf holly (*Ilex myrtifolia*), manyhead rush (*Juncus polycephalus*) and Virginia chain fern.

4.3 Streams Identification and Methodology

TTL used the *North Carolina Division of Water Quality – Methodology for Identification of Intermittent and Perennial Streams and Their Origins v. 4.11, September 1, 2010 (NC Method)* technical guideline to determine the most appropriate classification of each subject stream. This technical guideline for stream identification is the preferred methodology for distinguishing between intermittent and perennial streams in the southeast United States and requires evaluation of 26 attributes of the stream and assigning a numeric score to each on the *NC DWQ Stream Identification Form Version 4.11*. A four-tiered, weighted scale is utilized for evaluating and scoring the features categorized in sets of geomorphic, hydrologic, and biological attributes. Additionally, TTL utilized the *Regulatory Guidance Letter No. 05-05: Ordinary High Water Mark Identification* (USACE, 2005) as the basis for the delineation, mapping, and linear footage/areal estimations of on-site streams.

Identified streams were mapped using the method described in Section 4.1. Stream Identification Forms (v. 4.11) were used to classify streams that were not clearly perennial (i.e. flowing water at greater than 48 hours since rainfall, strong morphology and obvious biological presence). TTL traversed the stream channels on foot and placed blue flagging labeled with stream data point identifications near the observed ordinary high water mark (OHWM). The locations of the boundary flags were mapped with a Trimble Geo7x Global Positioning System (GPS) unit, which was set to sub-meter tolerances. Field data was post-processed using Trimble Pathfinder Office V 5.3 and exported to ESRI's ArcMap 10.2. Area features were manually digitized in ArcGIS using the flag locations; geographic coordinates and area quantities were calculated using ArcGIS "area" function.

4.4 Stream and Ditch Findings

TTL identified eleven channels within the delineation area consisting of approximately 8,658 linear feet (1.454 acres) of channels (S-1-S-11). The channels consist of three non-jurisdictional ditches as well as ephemeral, intermittent, and perennial streams. These channels are located throughout the delineation area. Stream S-1 has an intermittent flow regime along one reach and ephemeral flow along another reach. Stream S-11 has an intermittent flow regime along one reach and perennial flow along another reach. All streams drain to Boone Creek. Table 4 summarizes the stream findings below.

Table 4: Stream and Ditch Summary

Stream ID	Cowardin Habitat Description	Length (linear feet)/ Area (acres)
S-1	Riverine; Perennial; Streambed; Mud	387/ 0.064
S-1	Riverine; Intermittent; Streambed; Mud	3,043/ 0.307
S-2	Ditch	3,239/ 0.265
S-3	Riverine; Intermittent; Streambed; Mud	2,161/ 0.156
S-4	Ditch	39/ 0.004
S-5	Riverine; Intermittent; Streambed; Mud	638/ 0.052
S-6	Riverine; Intermittent; Streambed; Mud	646/ 0.055
S-6A	Riverine; Intermittent; Streambed; Mud	486/0.027
S-7	Riverine; Intermittent; Streambed; Mud	755/ 0.053
S-8	Ditch	524/ 0.065
S-9	Ditch	3,530/ 0.363
S-10	Riverine; Intermittent; Streambed; Mud	198/ 0.019
S-11i	Riverine; Intermittent; Streambed; Mud	71/ 0.005
S-11e	Riverine; Ephemeral; Streambed; Mud	273/0.019

4.5 Jurisdictional Determination Request

The USACE has the sole authority to determine whether wetlands or water features are “jurisdictional.” Under certain circumstances, wetland areas are considered non-jurisdictional because they lack a significant nexus with other wetlands or waters of the U.S. TTL utilized the *USACE Jurisdictional Determination Form Instructional Guidebook* (USACE and EPA, 2007) to complete a *SAS APPENDIX 1: Request for Corps of Engineers Jurisdictional Determination (JD) and/or Delineation Review Form* (Appendix E).

It is TTL’s opinion that with the exception of the ditches (S-2, S-4, S-8, S-9), all observed tributaries and wetlands within the delineation area are jurisdictional features due to their significant nexus to nearby relatively permanent waters. Copies of tables of the aquatic features details and flag locations are also included in Appendix E. The ditches that occur within wetlands have been included and calculated as part of the wetland total acreage.

TTL recommends that a delineation review of aquatic resources of the potentially jurisdictional site features be requested from the USACE Savannah District. If the USACE is not engaged regarding a jurisdictional determination or delineation review of aquatic resources, TTL is neither responsible for the final determination of jurisdictional features within the review corridor, nor responsible for

violations associated with unauthorized activities that may occur within areas deemed jurisdictional by the USACE at a later time.

5.0 CONCLUSIONS

- Approximately 149.602 acres of forested wetland were identified within the delineation area.
- Approximately 387 linear feet (0.064 acres) of perennial stream were identified within the delineation area.
- Approximately 7,998 linear feet (0.674 acres) of intermittent stream were identified within the delineation area.
- Approximately 273 linear feet (0.019 acre) of ephemeral stream were identified within the delineation area.
- Approximately 7,332 linear feet (0.697 acre) of non-jurisdictional ditches were identified within the delineation area.
- Upon approval by the client, TTL will submit a request for a delineation review of aquatic resources from the USACE of all aquatic features within the delineation area.

5.0 REFERENCES

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FIGURES

Figure 1	Site Location and Topographic Map
Figure 2	Site Location & Aerial Photograph
Figure 3	Natural Resources Conservation Service (NRCS) Soil Map w/Hydric Rating
Figure 4	National Wetland Inventory (NWI) Classification Map
Figure 5	Hydrologic Unit Code (HUC) Map
Figure 6	Waters of the U.S. Delineation Map

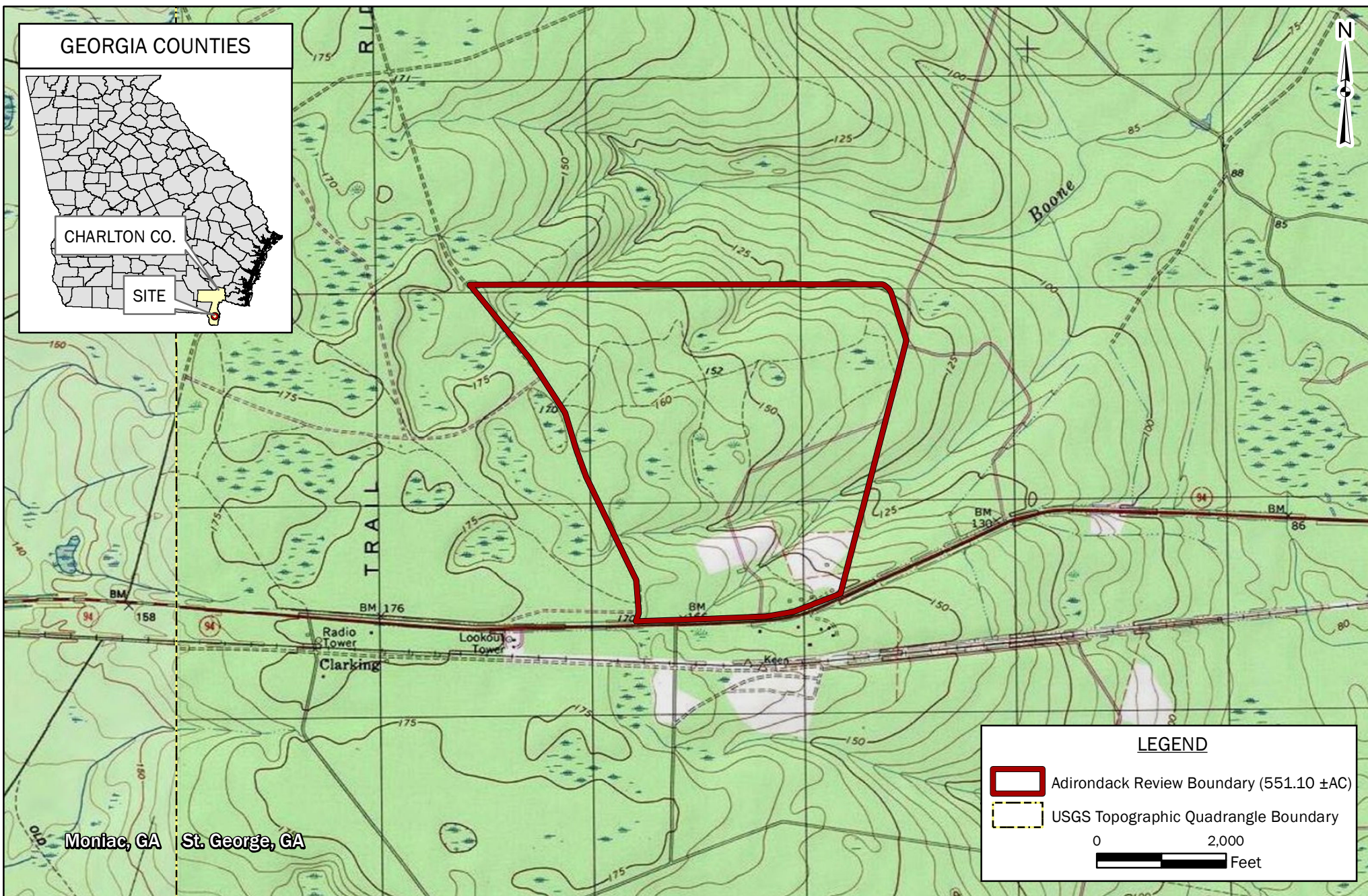


FIGURE 1: SITE LOCATION & TOPOGRAPHIC MAP
 TWIN PINES MINERALS - ADIRONDACK TRACT
 WATERS OF THE U.S. DELINEATION - USACE FILE NO. SAS-2018-00554

BASEMAP: Saint George, Georgia USGS 7.5 Minute Quadrangle Map, 1994.

DRAWN BY: AGW

CHECKED BY: CMS

DRAWING DATE: 7/1/2019

REVISION DATE: N/A

TTL JOB NO.: 000180200804.00

APPROXIMATE SCALE: 1" = 2,000'

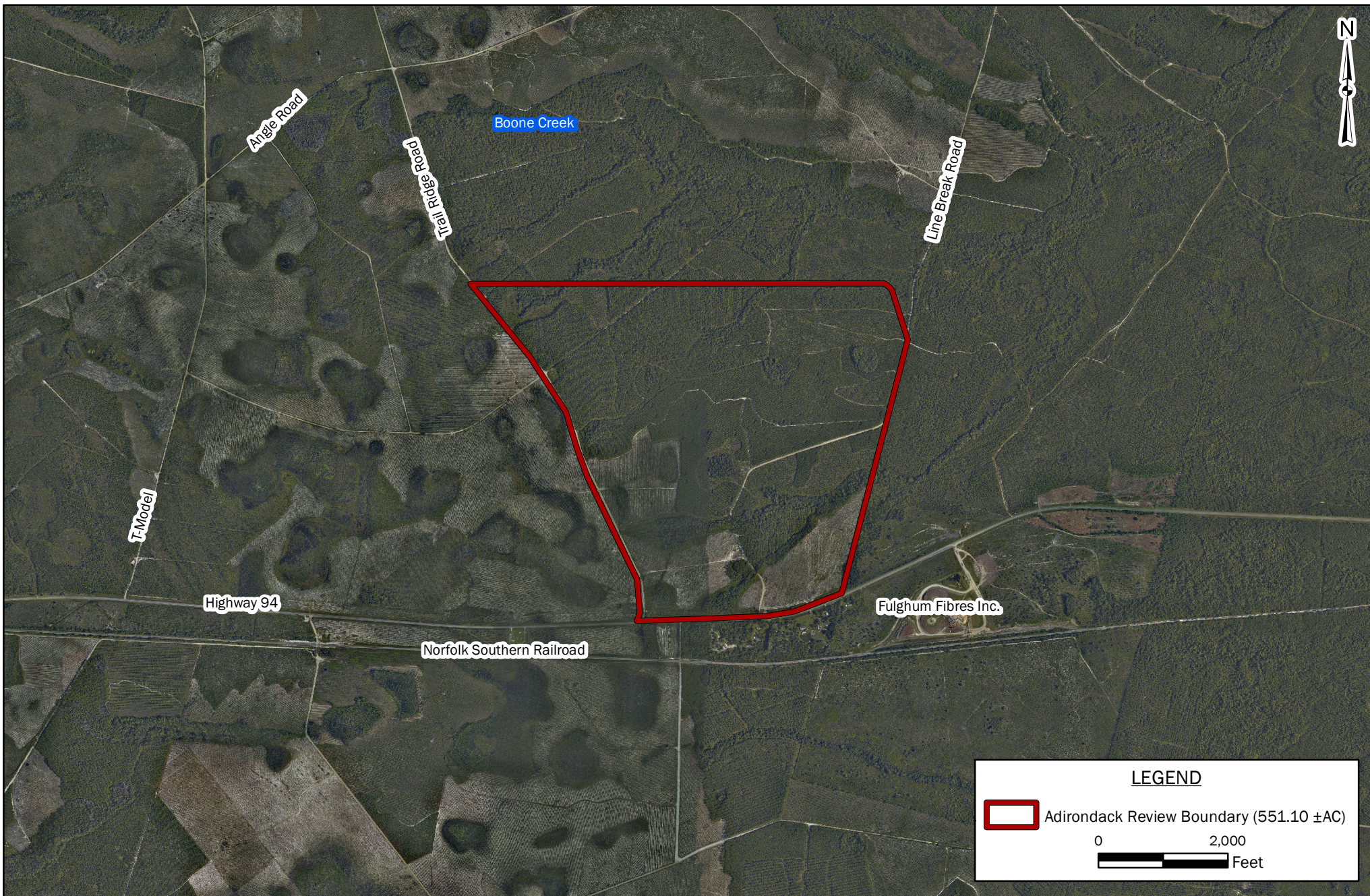


FIGURE 2: SITE LOCATION & AERIAL PHOTOGRAPH
TWIN PINES MINERALS - ADIRONDACK TRACT
WATERS OF THE U.S. DELINEATION - USACE FILE NO. SAS-2018-00554

BASEMAP: Twin Pines Ortho Imagery, 09/2018.

DRAWN BY: AGW

CHECKED BY: CMS

DRAWING DATE: 7/1/2019

REVISION DATE: N/A

TTL JOB NO.: 000180200804.00

APPROXIMATE SCALE: 1" = 2,000'

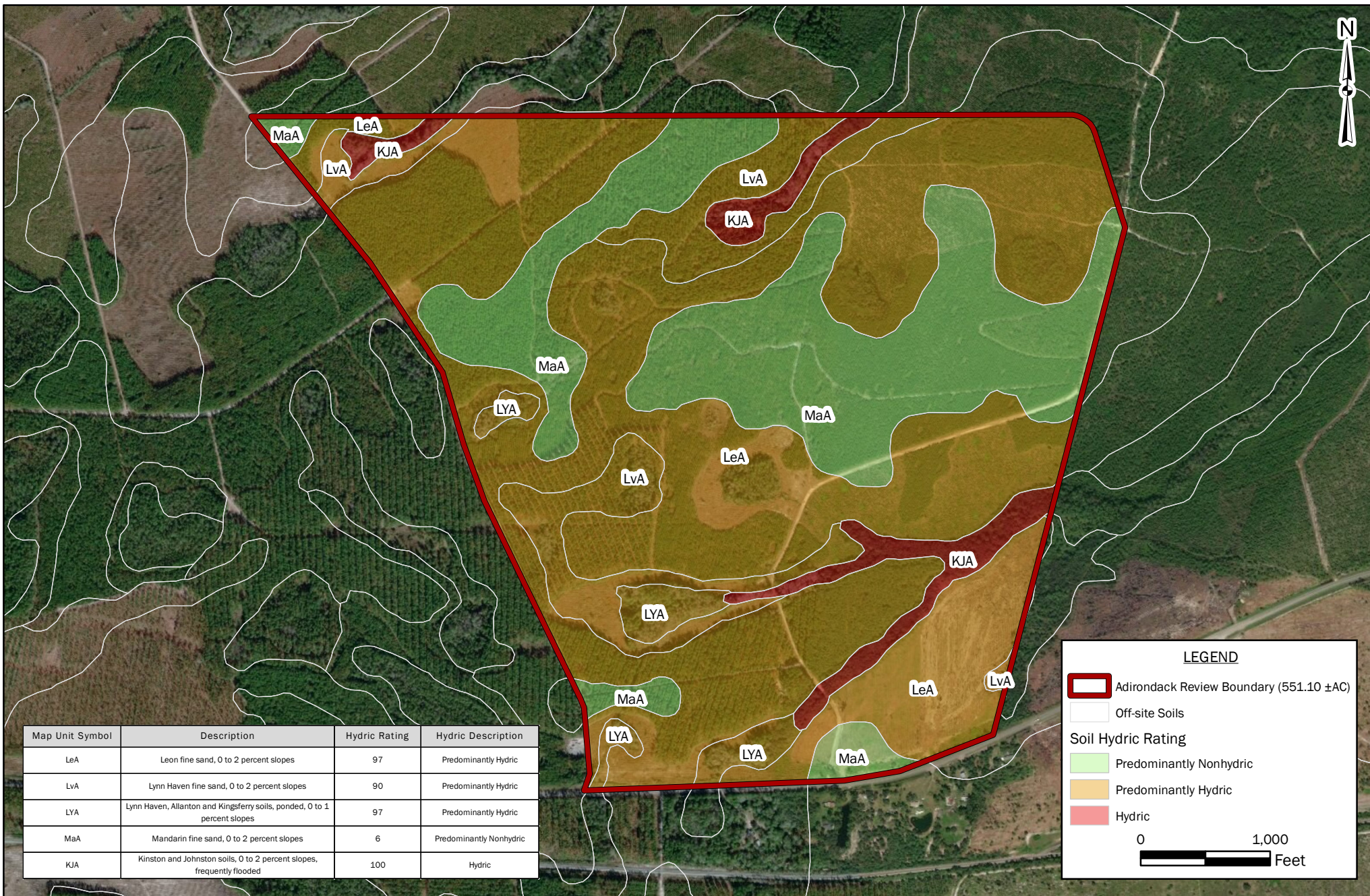


FIGURE 3: NATURAL RESOURCES CONSERVATION SERVICE (NRCS) MAP WITH HYDRIC RATING

TWIN PINES MINERALS - ADIRONDACK TRACT
WATERS OF THE U.S. DELINEATION - USACE FILE NO. SAS-2018-00554
BASEMAP: DigitalGlobe, 1/24/2017 & 9/17/2017.

DRAWN BY: AGW

CHECKED BY: CMS

DRAWING DATE: 7/1/2019

REVISION DATE: N/A

TTL JOB NO.: 000180200804.00

APPROXIMATE SCALE: 1" = 1,000'

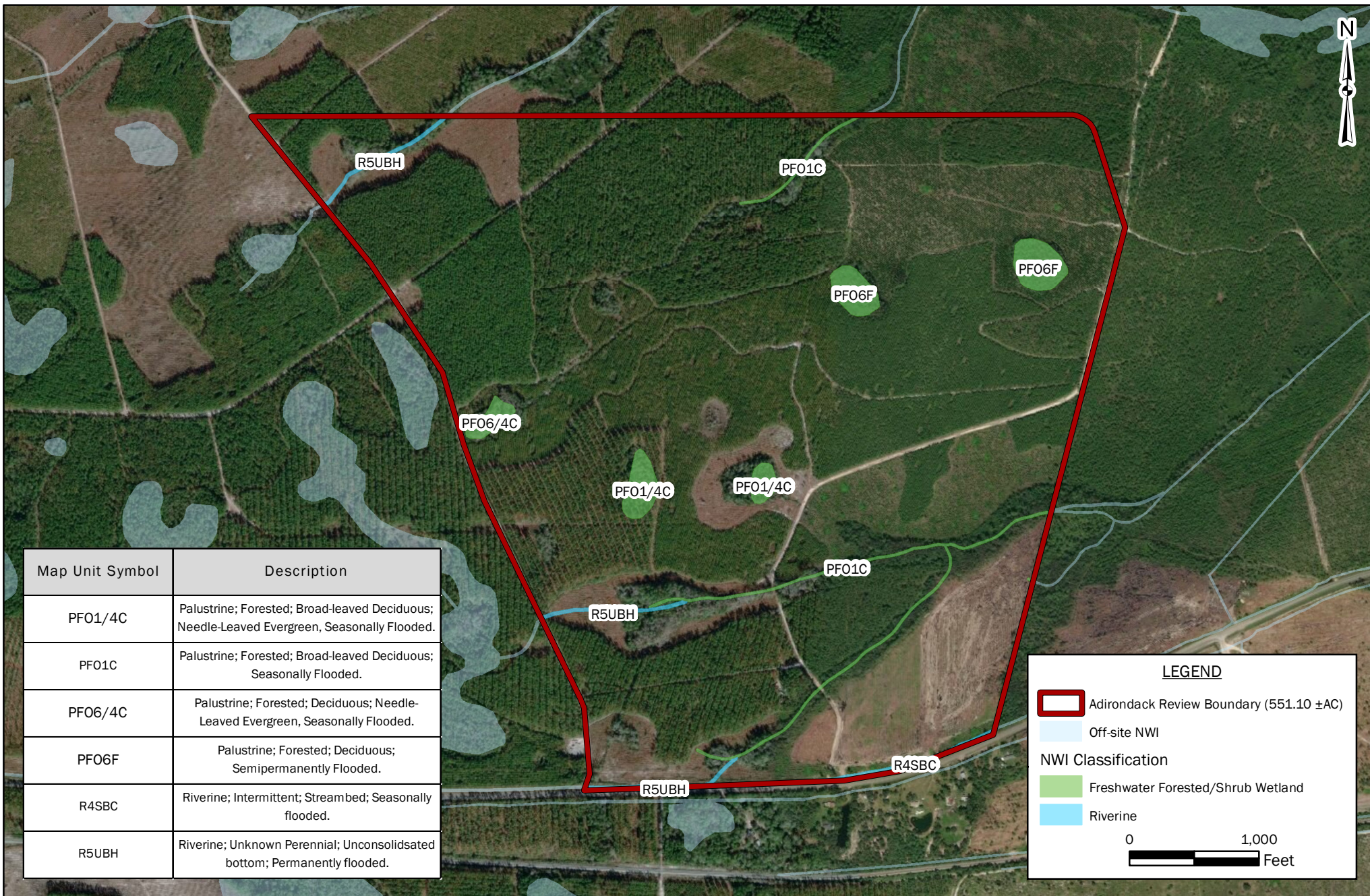


FIGURE 4: NATIONAL WETLAND INVENTORY (NWI) MAP
 TWIN PINES MINERALS - ADIRONDACK TRACT
 WATERS OF THE U.S. DELINEATION - USACE NO. SAS-2018-00554

BASEMAP: DigitalGlobe, 1/24/2017 & 9/17/2017.

DRAWN BY: AGW

CHECKED BY: CMS

DRAWING DATE: 7/1/2019

REVISION DATE: N/A

TTL JOB NO.: 000180200804.00

APPROXIMATE SCALE: 1" = 1,000'

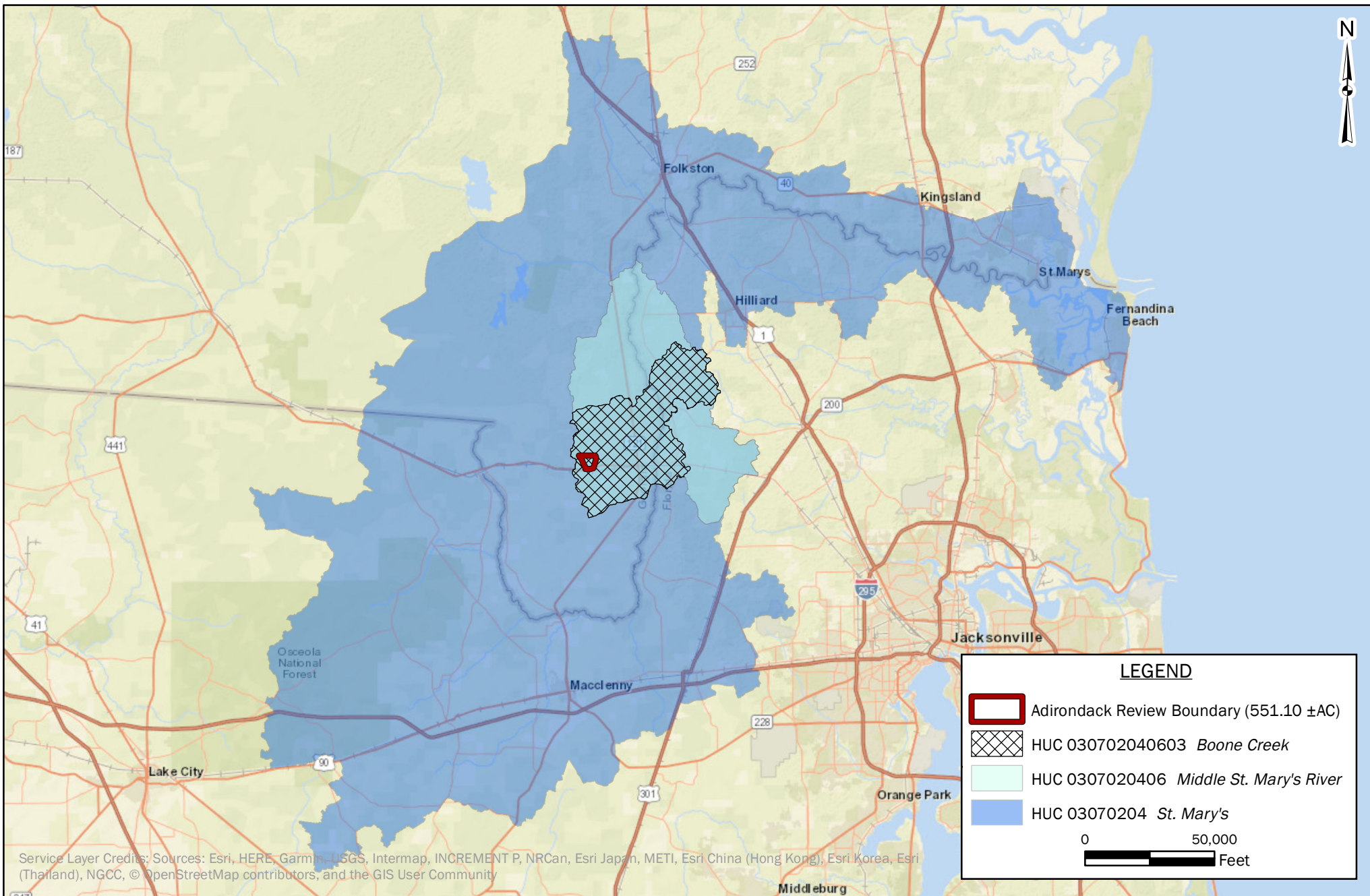


FIGURE 5: HYDROLOGIC UNIT CODE (HUC) MAP
TWIN PINES MINERALS - ADIRONDACK TRACT
 WATERS OF THE U.S. DELINEATION - USACE PERMIT NO. SAS-2018-00554

DRAWN BY: AGW
CHECKED BY: CMS
DRAWING DATE: 5/23/2019
REVISION DATE: N/A
TTL JOB NO.: 000180200804.00
APPROXIMATE SCALE: 1" = 50,000'

APPENDIX A

Normal Weather Conditions Table
AgACIS Data
Palmer Drought Index
U.S. Drought Monitor – Georgia

Calculation of Normal Weather Conditions
General Project Location: Folkston, Georgia
Analysis for March 2019 Site Visits

		Long-Term Rainfall Records								
	Month	Standard Deviation*	Minus One Standard Deviation (Dry)	Normal* (Mean Inches)	Plus One Standard Deviation (Wet)	Actual Rainfall**	Condition (wet, normal, dry)	Condition Value***	Month Weight Value	Weighted Value
1st prior month	2/8/2019 - 3/8/2019	1.89	1.79	3.68	5.57	1.58	Dry	1	3	3
2nd prior month	1/7/2019 - 2/7/2019	2.48	1.04	3.52	6.00	2.07	Normal	2	2	4
3rd prior month	12/6/2018 - 1/6/2019	1.68	1.32	3.00	4.68	2.18	Normal	2	1	2
									Sum:	9

Sum:	Conclusion:
6-9	prior period has been drier than normal
10-14	prior period has been normal
15-18	prior period has been wetter than normal

* Standard Deviation and Mean Values can be found through the National Oceanic and Atmospheric Associations Earth System Research Laboratory:
<http://www.esrl.noaa.gov/psd/data/usstation/>

** Rainfall data can be found through AgACIS

*** Condition Values: 1 = dry, 2 = normal, 3 = wet

Climatological Data for FARGO 17 NE, GA - December 2018

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2018-12-01	72	46	59.0	19	9	0.12	M	M
2018-12-02	M	M	M	M	M	M	M	M
2018-12-03	M	M	M	M	M	M	M	M
2018-12-04	M	M	M	M	M	M	M	M
2018-12-05	64	42	53.0	13	3	0.00	M	M
2018-12-06	56	38	47.0	7	0	0.00	M	M
2018-12-07	M	M	M	M	M	M	M	M
2018-12-08	M	M	M	M	M	M	M	M
2018-12-09	66	54	60.0	20	10	0.91	M	M
2018-12-10	73	43	58.0	18	8	0.02	M	M
2018-12-11	M	M	M	M	M	M	M	M
2018-12-12	55	39	47.0	7	0	0.00	M	M
2018-12-13	61	45	53.0	13	3	0.00	M	M
2018-12-14	67	45	56.0	16	6	0.86	M	M
2018-12-15	M	M	M	M	M	M	M	M
2018-12-16	68	51	59.5	20	10	0.06	M	M
2018-12-17	M	M	M	M	M	M	M	M
2018-12-18	M	M	M	M	M	M	M	M
2018-12-19	65	44	54.5	15	5	0.00	M	M
2018-12-20	64	52	58.0	18	8	0.02	M	M
2018-12-21	64	56	60.0	20	10	0.15	M	M
2018-12-22	M	M	M	M	M	M	M	M
2018-12-23	M	M	M	M	M	M	M	M
2018-12-24	64	47	55.5	16	6	0.00	M	M
2018-12-25	M	M	M	M	M	M	M	M
2018-12-26	64	44	54.0	14	4	0.00	M	M
2018-12-27	66	52	59.0	19	9	0.00	M	M
2018-12-28	M	M	M	M	M	M	M	M
2018-12-29	M	M	M	M	M	M	M	M
2018-12-30	79	61	70.0	30	20	0.01	M	M
2018-12-31	M	M	M	M	M	M	M	M
Average Sum	65.5	47.4	56.5	265	111	2.15	M	M

Climatological Data for FARGO 17 NE, GA - January 2019

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2019-01-01	M	M	M	M	M	M	M	M
2019-01-02	M	M	M	M	M	M	M	M
2019-01-03	77	62	69.5	30	20	0.00	M	M
2019-01-04	76	63	69.5	30	20	0.15	M	M
2019-01-05	M	M	M	M	M	M	M	M
2019-01-06	M	M	M	M	M	M	M	M
2019-01-07	M	M	M	M	M	M	M	M
2019-01-08	75	52	63.5	24	14	0.00	M	M
2019-01-09	M	M	M	M	M	M	M	M
2019-01-10	61	42	51.5	12	2	0.00	M	M
2019-01-11	M	M	M	M	M	M	M	M
2019-01-12	62	35	48.5	9	0	T	M	M
2019-01-13	M	M	M	M	M	M	M	M
2019-01-14	M	M	M	M	M	M	M	M
2019-01-15	52	47	49.5	10	0	0.00	M	M
2019-01-16	M	M	M	M	M	M	M	M
2019-01-17	M	M	M	M	M	M	M	M
2019-01-18	67	48	57.5	18	8	0.00	M	M
2019-01-19	M	M	M	M	M	M	M	M
2019-01-20	M	M	M	M	M	M	M	M
2019-01-21	M	M	M	M	M	M	M	M
2019-01-22	M	M	M	M	M	M	M	M
2019-01-23	66	48	57.0	17	7	0.01	M	M
2019-01-24	78	58	68.0	28	18	1.60	M	M
2019-01-25	M	M	M	M	M	M	M	M
2019-01-26	M	M	M	M	M	M	M	M
2019-01-27	57	44	50.5	11	1	0.00	M	M
2019-01-28	M	M	M	M	M	M	M	M
2019-01-29	M	M	M	M	M	M	M	M
2019-01-30	M	M	M	M	M	0.03	M	M
2019-01-31	47	34	40.5	1	0	0.00	M	M
Average Sum	65.3	48.5	56.9	190	90	1.79	M	M

Climatological Data for FARGO 17 NE, GA - February 2019

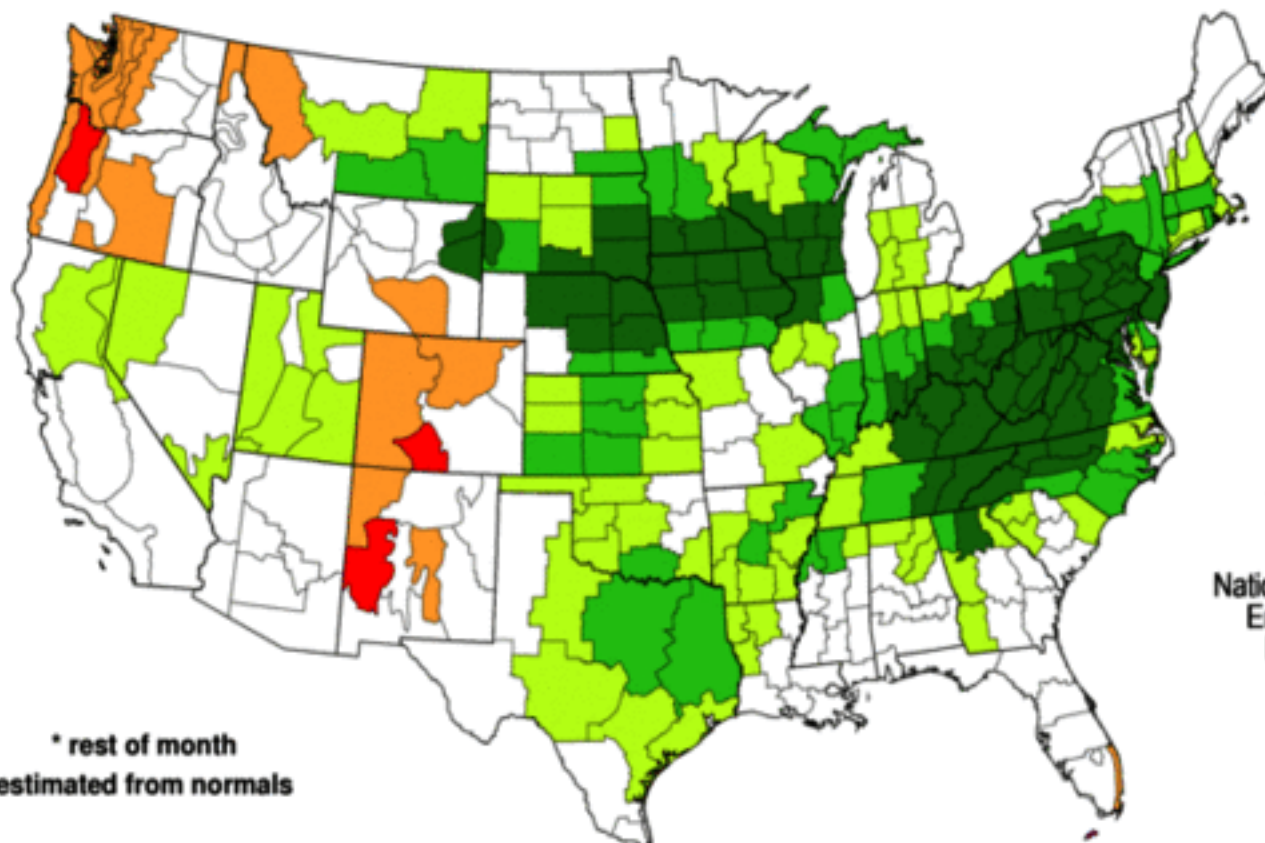
Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2019-02-01	M	M	M	M	M	M	M	M
2019-02-02	61	52	56.5	17	7	0.19	M	M
2019-02-03	M	M	M	M	M	M	M	M
2019-02-04	64	55	59.5	20	10	0.24	M	M
2019-02-05	70	50	60.0	20	10	0.00	M	M
2019-02-06	M	M	M	M	M	M	M	M
2019-02-07	M	M	M	M	M	M	M	M
2019-02-08	M	M	M	M	M	M	M	M
2019-02-09	M	M	M	M	M	M	M	M
2019-02-10	M	M	M	M	M	M	M	M
2019-02-11	M	M	M	M	M	M	M	M
2019-02-12	M	M	M	M	M	0.00	M	M
2019-02-13	82	50	66.0	26	16	0.13	M	M
2019-02-14	M	M	M	M	M	M	M	M
2019-02-15	M	M	M	M	M	M	M	M
2019-02-16	73	41	57.0	17	7	0.00	M	M
2019-02-17	M	M	M	M	M	M	M	M
2019-02-18	M	M	M	M	M	M	M	M
2019-02-19	M	M	M	M	M	M	M	M
2019-02-20	79	51	65.0	25	15	0.07	M	M
2019-02-21	M	M	M	M	M	M	M	M
2019-02-22	M	M	M	M	M	M	M	M
2019-02-23	M	M	M	M	M	M	M	M
2019-02-24	M	M	M	M	M	M	M	M
2019-02-25	M	M	M	M	M	M	M	M
2019-02-26	M	M	M	M	M	M	M	M
2019-02-27	M	M	M	M	M	M	M	M
2019-02-28	74	57	65.5	26	16	0.13	M	M
Average Sum	71.9	50.9	61.4	151	81	0.76	M	M

Climatological Data for FARGO 17 NE, GA - March 2019

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2019-03-01	M	M	M	M	M	M	M	M
2019-03-02	76	59	67.5	28	18	0.96	M	M
2019-03-03	M	M	M	M	M	M	M	M
2019-03-04	81	53	67.0	27	17	0.29	M	M
2019-03-05	M	M	M	M	M	M	M	M
2019-03-06	M	M	M	M	M	M	M	M
2019-03-07	M	M	M	M	M	M	M	M
2019-03-08	M	M	M	M	M	M	M	M
2019-03-09	78	52	65.0	25	15	0.00	M	M
2019-03-10	83	61	72.0	32	22	0.00	M	M
2019-03-11	M	M	M	M	M	M	M	M
2019-03-12	M	M	M	M	M	M	M	M
2019-03-13	86	54	70.0	30	20	0.00	M	M
2019-03-14	M	M	M	M	M	M	M	M
2019-03-15	M	M	M	M	M	M	M	M
2019-03-16	M	M	M	M	M	M	M	M
2019-03-17	M	M	M	M	M	M	M	M
2019-03-18	M	M	M	M	M	M	M	M
2019-03-19	M	M	M	M	M	M	M	M
2019-03-20	M	M	M	M	M	M	M	M
2019-03-21	M	M	M	M	M	M	M	M
2019-03-22	M	M	M	M	M	M	M	M
2019-03-23	M	M	M	M	M	M	M	M
2019-03-24	M	M	M	M	M	M	M	M
2019-03-25	M	M	M	M	M	M	M	M
2019-03-26	M	M	M	M	M	M	M	M
2019-03-27	M	M	M	M	M	M	M	M
2019-03-28	M	M	M	M	M	M	M	M
2019-03-29	M	M	M	M	M	M	M	M
2019-03-30	M	M	M	M	M	M	M	M
2019-03-31	M	M	M	M	M	M	M	M
Average Sum	80.8	55.8	68.3	142	92	1.25	M	M

Palmer Hydrological Drought Index Long-Term (Hydrological) Conditions

March 2019: through March 9 2019*



National Centers for
Environmental
Information

extreme
drought



-4.00
and
below

severe
drought



-3.00
to
-3.99

moderate
drought



-2.00
to
-2.99

mid-
range



-1.99
to
+1.99

moderately
moist



+2.00
to
+2.99

very
moist



+3.00
to
+3.99

extremely
moist

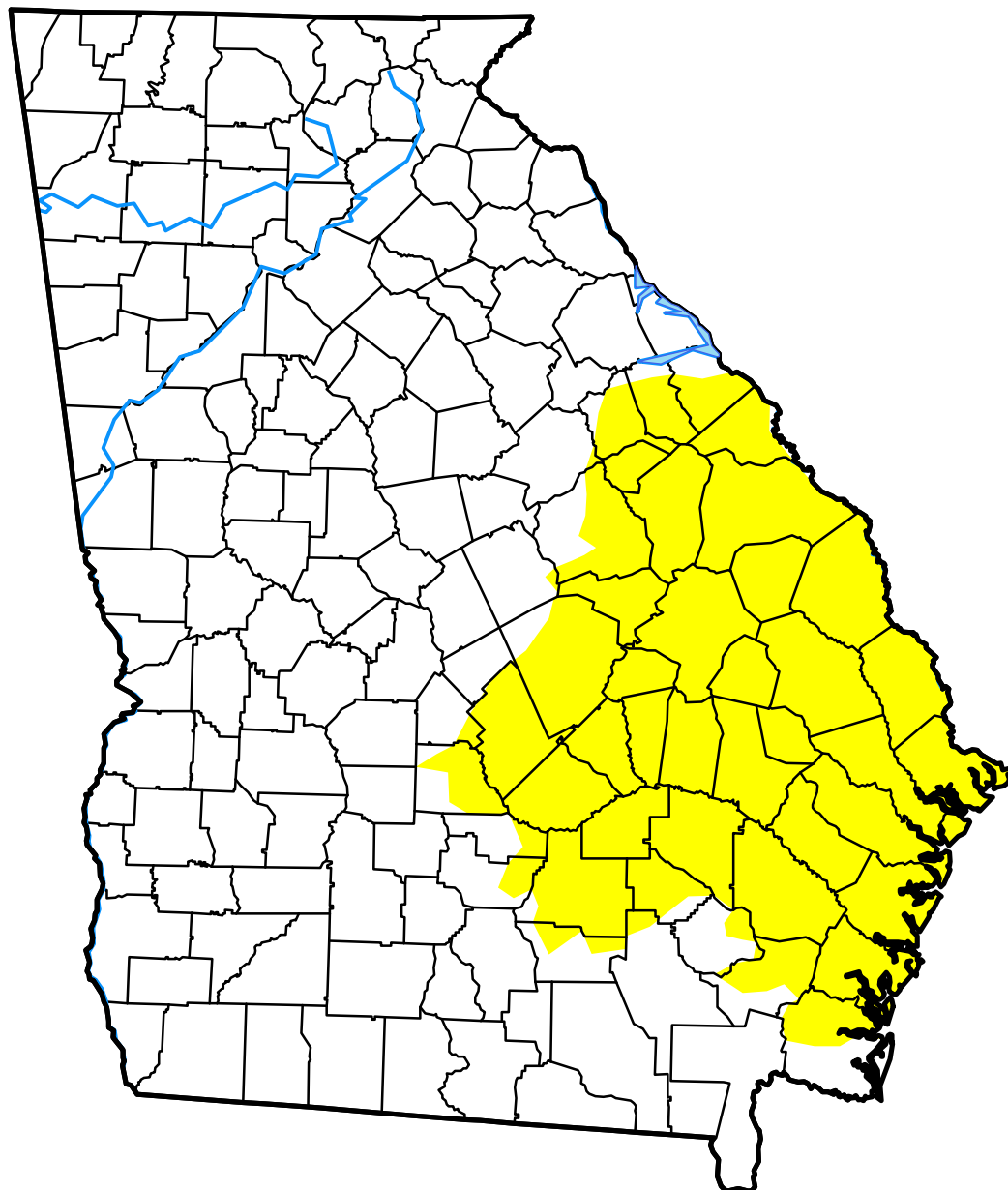


+4.00
and
above

U.S. Drought Monitor

Georgia

March 12, 2019
(Released Thursday, Mar. 14, 2019)
 Valid 8 a.m. EDT



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	72.77	27.23	0.00	0.00	0.00	0.00
Last Week <i>03-05-2019</i>	98.19	1.81	0.00	0.00	0.00	0.00
3 Months Ago <i>12-11-2018</i>	100.00	0.00	0.00	0.00	0.00	0.00
Start of Calendar Year <i>01-01-2019</i>	100.00	0.00	0.00	0.00	0.00	0.00
Start of Water Year <i>09-25-2018</i>	70.95	29.05	6.72	0.00	0.00	0.00
One Year Ago <i>03-13-2018</i>	31.80	68.20	51.71	7.46	0.00	0.00

Intensity:

 D0 Abnormally Dry	 D3 Extreme Drought
 D1 Moderate Drought	 D4 Exceptional Drought
 D2 Severe Drought	

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:

Jessica Blunden
 NCEI/NOAA



<http://droughtmonitor.unl.edu/>

APPENDIX B

Site Photographs

Site Photographs

Waters of the U.S. Delineation: Adirondack Tract – TTL Project No. 000180200804.00
Twin Pines Minerals • Charlton County, Georgia
Photos taken March 8, 2019 – March 22, 2019



Photograph 1: View of perennial Stream 1 (S1).



Photograph 2: View of non-jurisdictional ditch (S2).

TTL

Site Photographs

Waters of the U.S. Delineation: Adirondack Tract – TTL Project No. 000180200804.00
Twin Pines Minerals • Charlton County, Georgia
Photos taken March 8, 2019 – March 22, 2019



Photograph 3: View of intermittent Stream 3 (S3).



Photograph 4: View of non-jurisdictional ditch (S4).

TTL

Site Photographs

Waters of the U.S. Delineation: Adirondack Tract – TTL Project No. 000180200804.00
Twin Pines Minerals • Charlton County, Georgia
Photos taken March 8, 2019 – March 22, 2019



Photograph 5: View of intermittent Stream 5 (S5).



Photograph 6: View of intermittent Stream 6 (S6).

TTL

Site Photographs

Waters of the U.S. Delineation: Adirondack Tract – TTL Project No. 000180200804.00
Twin Pines Minerals • Charlton County, Georgia
Photos taken March 8, 2019 – March 22, 2019



Photograph 7: View of intermittent Stream 7 (S7).



Photograph 8: View of non-jurisdictional ditch (S8).

TTL

Site Photographs

Waters of the U.S. Delineation: Adirondack Tract – TTL Project No. 000180200804.00
Twin Pines Minerals • Charlton County, Georgia
Photos taken March 8, 2019 – March 22, 2019



Photograph 9: View of non-jurisdictional ditch (S9).



Photograph 10: View of intermittent Stream 10 (S10).

TTL

Site Photographs

Waters of the U.S. Delineation: Adirondack Tract – TTL Project No. 000180200804.00
Twin Pines Minerals • Charlton County, Georgia
Photos taken March 8, 2019 – March 22, 2019



Photograph 11: View of ephemeral portion of Stream 11 (S11).



Photograph 12: View of intermittent portion of Stream 11 (S11).

TTL

Site Photographs

Waters of the U.S. Delineation: Adirondack Tract – TTL Project No. 000180200804.00
Twin Pines Minerals • Charlton County, Georgia
Photos taken March 8, 2019 – March 22, 2019



Photograph 13: View of the Wetland Data Point 1 (WDP-1) location.



Photograph 14: View of the Upland Data Point 1 (UDP-1) location.

TTL

Site Photographs

Waters of the U.S. Delineation: Adirondack Tract – TTL Project No. 000180200804.00
Twin Pines Minerals • Charlton County, Georgia
Photos taken March 8, 2019 – March 22, 2019



Photograph 15: View of the Wetland Data Point 2 (WDP-2) location.



Photograph 16: View of the Upland Data Point 2 (UDP-2) location.

TTL

Site Photographs

Waters of the U.S. Delineation: Adirondack Tract – TTL Project No. 000180200804.00
Twin Pines Minerals • Charlton County, Georgia
Photos taken March 8, 2019 – March 22, 2019



Photograph 17: View of the Wetland Data Point 3 (WDP-3) location.



Photograph 18: View of the Upland Data Point 3 (UDP-3) location.

TTL

Site Photographs

Waters of the U.S. Delineation: Adirondack Tract – TTL Project No. 000180200804.00
Twin Pines Minerals • Charlton County, Georgia
Photos taken March 8, 2019 – March 22, 2019



Photograph 19: View of the Wetland Data Point 4 (WDP-4) location.



Photograph 20: View of the Upland Data Point 4 (UDP-4) location.

TTL

Site Photographs

Waters of the U.S. Delineation: Adirondack Tract – TTL Project No. 000180200804.00
Twin Pines Minerals • Charlton County, Georgia
Photos taken March 8, 2019 – March 22, 2019



Photograph 21: View of the Wetland Data Point 5 (WDP-5) location.



Photograph 22: View of the Upland Data Point 5 (UDP-5) location.

TTL

APPENDIX C

U.S. Army Corps of Engineers Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Adirondack Tract City/County: Charlton County Sampling Date: 03/22/2019
 Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: UDP-1
 Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
 Landform (hillslope, terrace, etc.): Flatwoods Local relief (concave, convex, none): None Slope (%): 0-2%
 Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.5191001892089 Long: -82.0980987548828 Datum: NAD83
 Soil Map Unit Name: Leon fine sand, 0 to 2 percent slopes NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ☒ (If no, explain in Remarks.)
 Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No _____
 Are Vegetation No, Soil No, or Hydrology No 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 <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/>	
Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	
Remarks:	
- Vegetation historically impacted by silvicultural activities (planted pine). - Soils/Hydrology historically impacted by silvicultural activities (bedding for planted pine). - Drier than normal, but not drought conditions.	

HYDROLOGY

Wetland Hydrology Indicators:		<u>Secondary Indicators (minimum of two required)</u>
<u>Primary Indicators (minimum of one is required; check all that apply)</u>		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Marl Deposits (B15) (LRR U)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> FAC-Neutral Test (D5)
		<input type="checkbox"/> Sphagnum moss (D8) (LRR T,U)
Field Observations:		
Surface Water Present? Yes _____ No <input checked="" type="checkbox"/>	Depth (inches): _____	Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>
Water Table Present? Yes <input checked="" type="checkbox"/> No _____	Depth (inches): <u>20</u>	
Saturation Present? Yes _____ No <input checked="" type="checkbox"/>	Depth (inches): _____	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: FAC-Neutral Test Results: Negative FACW and OBL: 1 to FACU and UPL: 2		

VEGETATION – Use scientific names of plants.

 Sampling Point: UDP-1

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: <u>35.00</u> 20% of total cover: <u>14.00</u>	<u>0.0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species <u>30</u> x 2 = <u>60</u> FAC species <u>20</u> x 3 = <u>60</u> FACU species <u>20</u> x 4 = <u>80</u> UPL species _____ x 5 = _____ Column Totals: <u>70</u> (A) <u>200</u> (B) Prevalence Index = B/A = <u>2.85</u>
Sapling Stratum (<u>30 ft radius</u>)				
1. <u><i>Pinus elliotii</i></u>	<u>30.0</u>	<u>yes</u>	<u>FACW</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>15.00</u> 20% of total cover: <u>6.00</u>	<u>30.0</u>	= Total Cover		Hydrophytic Vegetation Indicators: <u>1</u> - Rapid Test for Hydrophytic Vegetation <u>2</u> - Dominance Test is >50% <input checked="" type="checkbox"/> <u>3</u> - Prevalence Index is ≤3.0 ¹ <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Shrub Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		Definitions of 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 <input checked="" type="checkbox"/> No _____
Herb Stratum (<u>30 ft radius</u>)				
1. <u><i>Andropogon virginicus</i></u>	<u>20.0</u>	<u>yes</u>	<u>FAC</u>	
2. <u><i>Smilax auriculata</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACU</u>	
3. <u><i>Dichanthelium aciculare</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACU</u>	
4. <u><i>Eleocharis sp.</i></u>	<u>5.0</u>	<u>no</u>	<u>NI</u>	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
50% of total cover: <u>22.50</u> 20% of total cover: <u>9.00</u>	<u>45.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.

 Indicators of hydrology and hydric soils were not observed although the prevalence index was less than 3.

SOIL

Sampling Point: UDP-1**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-18"	10YR 3/1	60					Sa	masked sand grains
	10YR 6/1	40					Sa	unmasked sand grains

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

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ Organic Bodies (A6) **(LRR P, T, U)**
☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
☐ Muck Presence (A8) **(LRR U)**
☐ 1 cm Muck (A9) **(LRR P, T)**
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Coast Prairie Redox (A16) **(MLRA 150A)**
☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
☐ Thin Dark Surface (S9) **(LRR S, T, U)**
☐ Loamy Mucky Mineral (F1) **(LRR O)**
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Marl (F10) **(LRR U)**
☐ Depleted Ochric (F11) **(MLRA 151)**
☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
☐ Umbric Surface (F13) **(LRR P, T, U)**
☐ Delta Ochric (F17) **(MLRA 151)**
☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
☐ 2 cm Muck (A10) **(LRR S)**
☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
☐ Anomalous Bright Loamy Soils (F20)
(MLRA 153B)
☐ Red Parent Material (TF2)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ☒

Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mu=Muck; Pe= Peat; Sa= Sand; Si=Silt

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Adirondack Tract City/County: Charlton County Sampling Date: 03/22/2019
 Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: UDP-2
 Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
 Landform (hillslope, terrace, etc.): Flatwoods Local relief (concave, convex, none): None Slope (%): 0-2%
 Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.5249004364013 Long: -82.0971984863281 Datum: NAD83
 Soil Map Unit Name: Leon fine sand, 0 to 2 percent slopes NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ☒ (If no, explain in Remarks.)
 Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No _____
 Are Vegetation No, Soil No, or Hydrology No 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 <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/>	
Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	
Remarks:	
- Vegetation historically impacted by silvicultural activities (planted pine). - Soils/Hydrology historically impacted by silvicultural activities (bedding for planted pine). - Drier than normal, but not drought conditions.	

HYDROLOGY

Wetland Hydrology Indicators:		<u>Secondary Indicators (minimum of two required)</u>
<u>Primary Indicators (minimum of one is required; check all that apply)</u>		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Marl Deposits (B15) (LRR U)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> FAC-Neutral Test (D5)
		<input type="checkbox"/> Sphagnum moss (D8) (LRR T,U)
Field Observations:		Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>
Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>21</u> Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>19</u> (includes capillary fringe)		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: FAC-Neutral Test Results: Negative FACW and OBL: 1 to FACU and UPL: 4		

VEGETATION – Use scientific names of plants.

 Sampling Point: **UDP-2**

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u><i>Pinus elliotii</i></u>	<u>60.0</u>	<u>yes</u>	<u>FACW</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>33%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: <u>30.00</u> 20% of total cover: <u>12.00</u>	<u>60.0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species <u>60</u> x 2 = <u>120</u> FAC species _____ x 3 = _____ FACU species <u>80</u> x 4 = <u>320</u> UPL species _____ x 5 = _____ Column Totals: <u>140</u> (A) <u>440</u> (B) Prevalence Index = B/A = <u>3.14</u>
Sapling Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		
Shrub Stratum (<u>30 ft radius</u>)				
1. <u><i>Serenoa repens</i></u>	<u>50.0</u>	<u>yes</u>	<u>FACU</u>	Hydrophytic Vegetation Indicators: <u>1</u> - Rapid Test for Hydrophytic Vegetation <u>2</u> - Dominance Test is >50% <u>3</u> - Prevalence Index is ≤3.0 ¹ <u>_____</u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u><i>Vaccinium myrsinites</i></u>	<u>10.0</u>	<u>no</u>	<u>FACU</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: <u>30.00</u> 20% of total cover: <u>12.00</u>	<u>60.0</u>	= Total Cover		
Herb Stratum (<u>30 ft radius</u>)				
1. <u><i>Smilax smallii</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACU</u>	Definitions of 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 <u>✓</u>
2. <u><i>Smilax auriculata</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACU</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
50% of total cover: <u>10.00</u> 20% of total cover: <u>4.00</u>	<u>20.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.

SOIL

Sampling Point: UDP-2

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6"	10YR 3/1	50					Sa	masked sand grains
	10YR 7/1	50					Sa	unmasked sand grains
6-16"	10YR 7/1	100					Sa	
16-18"	10YR 3/3	100					Sa	spodic horizon

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ☒

Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mu=Muck; Pe= Peat; Sa= Sand; Si=Silt

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Adirondack Tract City/County: Charlton County Sampling Date: 03/22/2019
 Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: UDP-3
 Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
 Landform (hillslope, terrace, etc.): Flatwoods Local relief (concave, convex, none): None Slope (%): 0-2%
 Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.5282001495361 Long: -82.0950012207031 Datum: NAD83
 Soil Map Unit Name: Leon fine sand, 0 to 2 percent slopes NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ☒ (If no, explain in Remarks.)
 Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No _____
 Are Vegetation No, Soil No, or Hydrology No 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 <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/>	
Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	
Remarks:	
- Vegetation historically impacted by silvicultural activities (planted pine). - Soils/Hydrology historically impacted by silvicultural activities (bedding for planted pine). - Drier than normal, but not drought conditions.	

HYDROLOGY

Wetland Hydrology Indicators:		<u>Secondary Indicators (minimum of two required)</u>
<u>Primary Indicators (minimum of one is required; check all that apply)</u>		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Marl Deposits (B15) (LRR U)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> FAC-Neutral Test (D5)
		<input type="checkbox"/> Sphagnum moss (D8) (LRR T,U)
Field Observations:		Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>
Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>23</u> Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>20</u> (includes capillary fringe)		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: FAC-Neutral Test Results: Negative FACW and OBL: 2 to FACU and UPL: 3		

VEGETATION – Use scientific names of plants.

 Sampling Point: **UDP-3**

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u><i>Pinus elliottii</i></u>	<u>50.0</u>	<u>yes</u>	<u>FACW</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>7</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>43%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: <u>25.00</u> 20% of total cover: <u>10.00</u>	<u>50.0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species <u>55</u> x 2 = <u>110</u> FAC species <u>40</u> x 3 = <u>120</u> FACU species <u>40</u> x 4 = <u>160</u> UPL species _____ x 5 = _____ Column Totals: <u>135</u> (A) <u>390</u> (B) Prevalence Index = B/A = <u>2.89</u>
Sapling Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		
Shrub Stratum (<u>30 ft radius</u>)				
1. <u><i>Serenoa repens</i></u>	<u>20.0</u>	<u>yes</u>	<u>FACU</u>	Hydrophytic Vegetation Indicators: ___ 1 - Rapid Test for Hydrophytic Vegetation ___ 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u><i>Ilex glabra</i></u>	<u>5.0</u>	<u>yes</u>	<u>FACW</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: <u>12.50</u> 20% of total cover: <u>5.00</u>	<u>25.0</u>	= Total Cover		
Herb Stratum (<u>30 ft radius</u>)				
1. <u><i>Gelsemium sempervirens</i></u>	<u>30.0</u>	<u>yes</u>	<u>FAC</u>	Definitions of 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 <input checked="" type="checkbox"/> No _____
2. <u><i>Smilax auriculata</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACU</u>	
3. <u><i>Rubus cuneifolius</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACU</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
50% of total cover: <u>25.00</u> 20% of total cover: <u>10.00</u>	<u>50.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				
1. <u><i>Vitis rotundifolia</i></u>	<u>10.0</u>	<u>yes</u>	<u>FAC</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>5.00</u> 20% of total cover: <u>2.00</u>	<u>10.0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.

SOIL

Sampling Point: UDP-3

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6"	10YR 2/1	60					Sa	masked sand grains
	10YR 5/1	40					Sa	unmasked sand grains
6-18"	10YR 6/2	100					Sa	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ☒

Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mu=Muck; Pe= Peat; Sa= Sand; Si=Silt

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Adirondack Tract City/County: Charlton County Sampling Date: 03/22/2019
 Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: UDP-4
 Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
 Landform (hillslope, terrace, etc.): Flatwoods Local relief (concave, convex, none): None Slope (%): 0-2%
 Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.5259990692138 Long: -82.1038970947265 Datum: NAD83
 Soil Map Unit Name: Leon fine sand, 0 to 2 percent slopes NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☒ (If no, explain in Remarks.)
 Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation No, Soil No, or Hydrology No 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Remarks:	
- Vegetation historically impacted by silvicultural activities (planted pine). - Soils/Hydrology historically impacted by silvicultural activities (bedding for planted pine). - Drier than normal, but not drought conditions.	

HYDROLOGY

Wetland Hydrology Indicators:		<u>Secondary Indicators (minimum of two required)</u>	
<u>Primary Indicators (minimum of one is required; check all that apply)</u>			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Marl Deposits (B15) (LRR U)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Water-Stained Leaves (B9)		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
		<input type="checkbox"/> Sphagnum moss (D8) (LRR T,U)	
Field Observations:			
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): <u> </u>	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): <u>18</u>		
Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> (includes capillary fringe)	Depth (inches): <u>16</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: FAC-Neutral Test Results: Positive FACW and OBL: 3 to FACU and UPL: 1			

VEGETATION – Use scientific names of plants.

 Sampling Point: **UDP-4**

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u><i>Pinus elliotii</i></u>	<u>70.0</u>	<u>yes</u>	<u>FACW</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A) Total Number of Dominant Species Across All Strata: <u>6</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>83%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: <u>35.00</u> 20% of total cover: <u>10.00</u>	<u>70.0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (<u>30 ft radius</u>)				
1. <u><i>Acer rubrum</i></u>	<u>10.0</u>	<u>yes</u>	<u>FAC</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>5.00</u> 20% of total cover: <u>2.00</u>	<u>10.0</u>	= Total Cover		Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <u> </u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Shrub Stratum (<u>30 ft radius</u>)				
1. <u><i>Serenoa repens</i></u>	<u>40.0</u>	<u>yes</u>	<u>FACU</u>	
2. <u><i>Ilex glabra</i></u>	<u>5.0</u>	<u>no</u>	<u>FACW</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>22.50</u> 20% of total cover: <u>9.00</u>	<u>45.0</u>	= Total Cover		Definitions of 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>
Herb Stratum (<u>30 ft radius</u>)				
1. <u><i>Andropogon virginicus</i></u>	<u>30.0</u>	<u>yes</u>	<u>FAC</u>	
2. <u><i>Scleria triglomerata</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
50% of total cover: <u>20.00</u> 20% of total cover: <u>8.00</u>	<u>40.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				
1. <u><i>Vitis rotundifolia</i></u>	<u>10.0</u>	<u>yes</u>	<u>FAC</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>5.00</u> 20% of total cover: <u>2.00</u>	<u>10.0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4"	10YR 3/1	30					Sa	masked sand grains
	10YR 7/1	70					Sa	unmasked sand grains
4-18"	10YR 6/2	100					Sa	

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

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ Organic Bodies (A6) **(LRR P, T, U)**
☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
☐ Muck Presence (A8) **(LRR U)**
☐ 1 cm Muck (A9) **(LRR P, T)**
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Coast Prairie Redox (A16) **(MLRA 150A)**
☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
☐ Thin Dark Surface (S9) **(LRR S, T, U)**
☐ Loamy Mucky Mineral (F1) **(LRR O)**
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Marl (F10) **(LRR U)**
☐ Depleted Ochric (F11) **(MLRA 151)**
☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
☐ Umbric Surface (F13) **(LRR P, T, U)**
☐ Delta Ochric (F17) **(MLRA 151)**
☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
☐ 2 cm Muck (A10) **(LRR S)**
☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
☐ Anomalous Bright Loamy Soils (F20)
(MLRA 153B)
☐ Red Parent Material (TF2)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ☒

Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mu=Muck; Pe= Peat; Sa= Sand; Si=Silt

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Adirondack Tract City/County: Charlton County Sampling Date: 03/22/2019
 Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: UDP-5
 Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
 Landform (hillslope, terrace, etc.): Flatwoods Local relief (concave, convex, none): None Slope (%): 0-2%
 Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.5231990814208 Long: -82.102798461914 Datum: NAD83
 Soil Map Unit Name: Leon fine sand, 0 to 2 percent slopes NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ☒ (If no, explain in Remarks.)
 Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No _____
 Are Vegetation No, Soil No, or Hydrology No 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 <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/>	
Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	
Remarks:	
- Vegetation historically impacted by silvicultural activities (planted pine). - Soils/Hydrology historically impacted by silvicultural activities (bedding for planted pine). - Drier than normal, but not drought conditions.	

HYDROLOGY

Wetland Hydrology Indicators:		<u>Secondary Indicators (minimum of two required)</u>
<u>Primary Indicators (minimum of one is required; check all that apply)</u>		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Marl Deposits (B15) (LRR U)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> FAC-Neutral Test (D5)
		<input type="checkbox"/> Sphagnum moss (D8) (LRR T,U)
Field Observations:		Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>
Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>22</u> Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>19</u> (includes capillary fringe)		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: FAC-Neutral Test Results: Negative FACW and OBL: 1 to FACU and UPL: 3		

VEGETATION – Use scientific names of plants.

 Sampling Point: **UDP-5**

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>80%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (<u>30 ft radius</u>)				
1. <u><i>Pinus elliotii</i></u>	<u>30.0</u>	<u>yes</u>	<u>FAC</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>15.00</u> 20% of total cover: <u>6.00</u>	<u>30.0</u>	= Total Cover		Hydrophytic Vegetation Indicators: <u>1</u> - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Shrub Stratum (<u>30 ft radius</u>)				
1. <u><i>Serenoa repens</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACU</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>5.00</u> 20% of total cover: <u>2.00</u>	<u>10.0</u>	= Total Cover		Definitions of 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 <input checked="" type="checkbox"/> No _____
Herb Stratum (<u>30 ft radius</u>)				
1. <u><i>Andropogon virginicus</i></u>	<u>20.0</u>	<u>yes</u>	<u>FAC</u>	
2. <u><i>Lachnanthes caroliniana</i></u>	<u>10.0</u>	<u>yes</u>	<u>OBL</u>	
3. <u><i>Dichanthelium aciculare</i></u>	<u>5.0</u>	<u>no</u>	<u>FACU</u>	
4. <u><i>Eupatorium capillifolium</i></u>	<u>5.0</u>	<u>no</u>	<u>FACU</u>	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
50% of total cover: <u>20.00</u> 20% of total cover: <u>8.00</u>	<u>40.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				
1. <u><i>Vitis rotundifolia</i></u>	<u>10.0</u>	<u>yes</u>	<u>FAC</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
50% of total cover: <u>5.00</u> 20% of total cover: <u>2.00</u>	<u>10.0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.

SOIL

Sampling Point: UDP-5**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-5"	10YR 5/1	100					Sa	
5-12"	10YR 7/1	100					Sa	
12-18"	10YR 3/3	100					Sa	

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

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ Organic Bodies (A6) **(LRR P, T, U)**
☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
☐ Muck Presence (A8) **(LRR U)**
☐ 1 cm Muck (A9) **(LRR P, T)**
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Coast Prairie Redox (A16) **(MLRA 150A)**
☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
☐ Thin Dark Surface (S9) **(LRR S, T, U)**
☐ Loamy Mucky Mineral (F1) **(LRR O)**
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Marl (F10) **(LRR U)**
☐ Depleted Ochric (F11) **(MLRA 151)**
☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
☐ Umbric Surface (F13) **(LRR P, T, U)**
☐ Delta Ochric (F17) **(MLRA 151)**
☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
☐ 2 cm Muck (A10) **(LRR S)**
☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
☐ Anomalous Bright Loamy Soils (F20)
(MLRA 153B)
☐ Red Parent Material (TF2)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ☒

Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mu=Muck; Pe= Peat; Sa= Sand; Si=Silt

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Adirondack Tract City/County: Charlton County Sampling Date: 03/22/2019
 Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: WDP-1
 Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-1%
 Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.5188999176025 Long: -82.0979995727539 Datum: NAD83
 Soil Map Unit Name: Lynn Haven, Allanton and Kingsferry soils, ponded, 0 to 1 percent slopes NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ☒ (If no, explain in Remarks.)
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No _____
 Are Vegetation No, Soil No, or Hydrology No 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 <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____	
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	
Remarks:	
- Vegetation historically impacted by silvicultural activities (planted pine) which are stunted due to hydric conditions. - Drier than normal, but not drought conditions.	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)		<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input checked="" type="checkbox"/> Sphagnum moss (D8) (LRR T,U)
Field Observations: Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>12"</u> Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>8"</u> (includes capillary fringe)		Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: FAC-Neutral Test Results: <u>Positive</u> FACW and OBL: <u>9</u> to FACU and UPL: <u>0</u>		

VEGETATION – Use scientific names of plants.

 Sampling Point: **WDP-1**

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u><i>Pinus elliottii</i></u>	<u>25.0</u>	<u>yes</u>	<u>FACW</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>7</u> (A) Total Number of Dominant Species Across All Strata: <u>7</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: <u>12.50</u> 20% of total cover: <u>5.00</u>	<u>25.0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (<u>30 ft radius</u>)				
1. <u><i>Gordonia lasianthus</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>	
2. <u><i>Acer rubrum</i></u>	<u>10.0</u>	<u>yes</u>	<u>FAC</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>10.00</u> 20% of total cover: <u>4.00</u>	<u>20.0</u>	= Total Cover		Hydrophytic Vegetation Indicators: <u>1</u> - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ _____ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Shrub Stratum (<u>30 ft radius</u>)				
1. <u><i>Cliftonia monophylla</i></u>	<u>10.0</u>	<u>yes</u>	<u>OBL</u>	
2. <u><i>Ilex glabra</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>	
3. <u><i>Lyonia lucida</i></u>	<u>5.0</u>	<u>yes</u>	<u>FACW</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>12.50</u> 20% of total cover: <u>5.00</u>	<u>25.0</u>	= Total Cover		Definitions of 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 <input checked="" type="checkbox"/> No _____
Herb Stratum (<u>30 ft radius</u>)				
1. <u><i>Andropogon virginicus</i></u>	<u>40.0</u>	<u>yes</u>	<u>FAC</u>	
2. <u><i>Lachnanthes caroliniana</i></u>	<u>10.0</u>	<u>no</u>	<u>OBL</u>	
3. <u><i>Woodwardia virginica</i></u>	<u>10.0</u>	<u>no</u>	<u>OBL</u>	
4. <u><i>Scleria triglomerata</i></u>	<u>10.0</u>	<u>no</u>	<u>FACW</u>	
5. <u><i>Woodwardia areolata</i></u>	<u>5.0</u>	<u>no</u>	<u>OBL</u>	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
50% of total cover: <u>37.50</u> 20% of total cover: <u>15.00</u>	<u>75.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.

SOIL

Sampling Point: WDP-1**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-18"	10YR 3/1	75					Sa	
	10YR 5/1	25					Sa	stripped areas

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

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ Organic Bodies (A6) **(LRR P, T, U)**
☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
☐ Muck Presence (A8) **(LRR U)**
☐ 1 cm Muck (A9) **(LRR P, T)**
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Coast Prairie Redox (A16) **(MLRA 150A)**
☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☒ Stripped Matrix (S6)
☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
☐ Thin Dark Surface (S9) **(LRR S, T, U)**
☐ Loamy Mucky Mineral (F1) **(LRR O)**
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Marl (F10) **(LRR U)**
☐ Depleted Ochric (F11) **(MLRA 151)**
☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
☐ Umbric Surface (F13) **(LRR P, T, U)**
☐ Delta Ochric (F17) **(MLRA 151)**
☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
☐ 2 cm Muck (A10) **(LRR S)**
☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
☐ Anomalous Bright Loamy Soils (F20)
(MLRA 153B)
☐ Red Parent Material (TF2)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mu=Muck; Pe= Peat; Sa= Sand; Si=Silt

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Adirondack Tract City/County: Charlton County Sampling Date: 03/22/2019
 Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: WDP-2
 Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-1%
 Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.5249004364013 Long: -82.0973968505859 Datum: NAD83
 Soil Map Unit Name: Leon fine sand, 0 to 2 percent slopes NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ☒ (If no, explain in Remarks.)
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No _____
 Are Vegetation No, Soil No, or Hydrology No 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 <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____	
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	
Remarks:	
- Vegetation historically impacted by silvicultural activities (planted pine) which are stunted due to hydric conditions. - Drier than normal, but not drought conditions.	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input checked="" type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)		<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input checked="" type="checkbox"/> Sphagnum moss (D8) (LRR T,U)
Field Observations: Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>8.5"</u> Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>6"</u> (includes capillary fringe)		Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: FAC-Neutral Test Results: Positive FACW and OBL: 5 to FACU and UPL: 0		

VEGETATION – Use scientific names of plants.

 Sampling Point: **WDP-2**

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>6</u> (A) Total Number of Dominant Species Across All Strata: <u>6</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (<u>30 ft radius</u>)				
1. <u><i>Pinus elliotii</i></u>	<u>25.0</u>	<u>yes</u>	<u>FACW</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>12.50</u> 20% of total cover: <u>5.00</u>	<u>25.0</u>	= Total Cover		Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <u> </u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Shrub Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>12.50</u> 20% of total cover: <u>5.00</u>	<u>0.0</u>	= Total Cover		Definitions of 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>
Herb Stratum (<u>30 ft radius</u>)				
1. <u><i>Juncus polycephalus</i></u>	<u>30.0</u>	<u>yes</u>	<u>OBL</u>	
2. <u><i>Lachnanthes caroliniana</i></u>	<u>10.0</u>	<u>yes</u>	<u>OBL</u>	
3. <u><i>Woodwardia virginica</i></u>	<u>10.0</u>	<u>yes</u>	<u>OBL</u>	
4. <u><i>Xyris elliotii</i></u>	<u>10.0</u>	<u>yes</u>	<u>OBL</u>	
5. <u><i>Andropogon virginicus</i></u>	<u>10.0</u>	<u>yes</u>	<u>FAC</u>	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
50% of total cover: <u>35.00</u> 20% of total cover: <u>14.00</u>	<u>70.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.

SOIL

Sampling Point: WDP-2**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12"	10YR 2/1	60					Sa	
	10YR 6/1	40					Sa	stripped areas
12-18"	10YR 7/1	100					Sa	

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

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ Organic Bodies (A6) **(LRR P, T, U)**
☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
☐ Muck Presence (A8) **(LRR U)**
☐ 1 cm Muck (A9) **(LRR P, T)**
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Coast Prairie Redox (A16) **(MLRA 150A)**
☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☒ Stripped Matrix (S6)
☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
☐ Thin Dark Surface (S9) **(LRR S, T, U)**
☐ Loamy Mucky Mineral (F1) **(LRR O)**
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Marl (F10) **(LRR U)**
☐ Depleted Ochric (F11) **(MLRA 151)**
☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
☐ Umbric Surface (F13) **(LRR P, T, U)**
☐ Delta Ochric (F17) **(MLRA 151)**
☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
☐ 2 cm Muck (A10) **(LRR S)**
☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
☐ Anomalous Bright Loamy Soils (F20)
(MLRA 153B)
☐ Red Parent Material (TF2)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mu=Muck; Pe= Peat; Sa= Sand; Si=Silt

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Adirondack Tract City/County: Charlton County Sampling Date: 03/22/2019
 Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: WDP-3
 Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-1%
 Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.5282001495361 Long: -82.0951995849609 Datum: NAD83
 Soil Map Unit Name: Leon fine sand, 0 to 2 percent slopes NWI classification: PFO6F

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ☒ (If no, explain in Remarks.)
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No _____
 Are Vegetation No, Soil No, or Hydrology No 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 <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____	
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	
Remarks: - Vegetation historically impacted by silvicultural activities (planted pine) which are stunted due to hydric conditions.	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input checked="" type="checkbox"/> Surface Water (A1) _____ Aquatic Fauna (B13) <input checked="" type="checkbox"/> High Water Table (A2) _____ Marl Deposits (B15) (LRR U) <input checked="" type="checkbox"/> Saturation (A3) _____ Hydrogen Sulfide Odor (C1) _____ Water Marks (B1) _____ Oxidized Rhizospheres along Living Roots (C3) _____ Sediment Deposits (B2) _____ Presence of Reduced Iron (C4) _____ Drift Deposits (B3) _____ Recent Iron Reduction in Tilled Soils (C6) <input checked="" type="checkbox"/> Algal Mat or Crust (B4) _____ Thin Muck Surface (C7) _____ Iron Deposits (B5) _____ Other (Explain in Remarks) _____ Inundation Visible on Aerial Imagery (B7) _____ Water-Stained Leaves (B9)		<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Sparsely Vegetated Concave Surface (B8) _____ Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input checked="" type="checkbox"/> Sphagnum moss (D8) (LRR T,U)
Field Observations: Surface Water Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>6"</u> Water Table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>2"</u> Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0"</u> (includes capillary fringe)		Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: FAC-Neutral Test Results: Positive FACW and OBL: 8 to FACU and UPL: 0		

VEGETATION – Use scientific names of plants.

 Sampling Point: **WDP-3**

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <i>Pinus elliottii</i>	50.0	yes	FACW	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>8</u> (A) Total Number of Dominant Species Across All Strata: <u>8</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
2. <i>Taxodium ascendens</i>	20.0	yes	OBL	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: <u>35.00</u> 20% of total cover: <u>14.00</u>	<u>70.0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>12.50</u> 20% of total cover: <u>5.00</u>	<u>0.0</u>	= Total Cover		Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Shrub Stratum (<u>30 ft radius</u>)				
1. <i>Ilex myrtifolia</i>	20.0	yes	FACW	
2. <i>Hypericum tetrapetalum</i>	10.0	yes	OBL	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>15.00</u> 20% of total cover: <u>6.00</u>	<u>30.0</u>	= Total Cover		Definitions of 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>
Herb Stratum (<u>30 ft radius</u>)				
1. <i>Juncus polycephalus</i>	10.0	yes	OBL	
2. <i>Lachnanthes caroliniana</i>	10.0	yes	OBL	
3. <i>Sagittaria graminea</i>	10.0	yes	OBL	
4. <i>Xyris elliottii</i>	10.0	yes	OBL	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
50% of total cover: <u>20.00</u> 20% of total cover: <u>8.00</u>	<u>40.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.

SOIL

Sampling Point: WDP-3

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6"	10YR 3/1	60					Sa	
	10YR 5/1	40					Sa	stripped areas
6-18"	10YR 6/1	100					Sa	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☒ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mu=Muck; Pe= Peat; Sa= Sand; Si=Silt

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Adirondack Tract City/County: Charlton County Sampling Date: 03/22/2019
 Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: WDP-4
 Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-1%
 Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.525800704956 Long: -82.1039962768554 Datum: NAD83
 Soil Map Unit Name: Lynn Haven, Allanton and Kingsferry soils, ponded, 0 to 1 percent slopes NWI classification: PFO6/4C

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ☒ (If no, explain in Remarks.)
 Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No _____
 Are Vegetation No, Soil No, or Hydrology No 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 <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____	
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	
Remarks: - Drier than normal, but not drought conditions.	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input checked="" type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)		<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T,U)
Field Observations: Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0"</u> Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0"</u> (includes capillary fringe)		Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: FAC-Neutral Test Results: <u>Positive</u> FACW and OBL: <u>9</u> to FACU and UPL: <u>0</u> Buttressed trunk bases and multiply trunkated canopy trees.		

VEGETATION – Use scientific names of plants.

 Sampling Point: **WDP-4**

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status		
1. <u><i>Taxodium ascendens</i></u>	<u>40.0</u>	<u>yes</u>	<u>OBL</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>10</u> (A) Total Number of Dominant Species Across All Strata: <u>10</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)	
2. <u><i>Acer rubrum</i></u>	<u>20.0</u>	<u>yes</u>	<u>FAC</u>		
3. <u><i>Nyssa biflora</i></u>	<u>20.0</u>	<u>yes</u>	<u>OBL</u>		
4. <u><i>Magnolia virginiana</i></u>	<u>10.0</u>	<u>no</u>	<u>FACW</u>		
5. _____	_____	_____	_____	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____	
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
50% of total cover: <u>45.00</u> 20% of total cover: <u>18.00</u>	<u>90.0</u>	= Total Cover			
Sapling Stratum (<u>30 ft radius</u>)					
1. _____	_____	_____	_____	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
2. _____	_____	_____	_____		
3. _____	_____	_____	_____		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____	Definitions of 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.	
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
50% of total cover: <u>12.50</u> 20% of total cover: <u>5.00</u>	<u>0.0</u>	= Total Cover			
Shrub Stratum (<u>30 ft radius</u>)					
1. <u><i>Ilex myrtifolia</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____	
2. <u><i>Lyonia lucida</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>		
3. <u><i>Morella caroliniensis</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>		
4. _____	_____	_____	_____		
5. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____	
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
50% of total cover: <u>15.00</u> 20% of total cover: <u>6.00</u>	<u>30.0</u>	= Total Cover			
Herb Stratum (<u>30 ft radius</u>)					
1. <u><i>Toxicodendron radicans</i></u>	<u>10.0</u>	<u>yes</u>	<u>FAC</u>	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____	
2. <u><i>Woodwardia areolata</i></u>	<u>10.0</u>	<u>yes</u>	<u>OBL</u>		
3. <u><i>Woodwardia virginica</i></u>	<u>10.0</u>	<u>yes</u>	<u>OBL</u>		
4. <u><i>Smilax laurifolia</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>		
5. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____	
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
8. _____	_____	_____	_____		
9. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____	
10. _____	_____	_____	_____		
11. _____	_____	_____	_____		
12. _____	_____	_____	_____		
50% of total cover: <u>20.00</u> 20% of total cover: <u>8.00</u>	<u>40.0</u>	= Total Cover		Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____	
Woody Vine Stratum (<u>30 ft radius</u>)					
1. _____	_____	_____	_____		
2. _____	_____	_____	_____		
3. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____	
4. _____	_____	_____	_____		
5. _____	_____	_____	_____		
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover			

Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-18"	10YR 2/1	100					Mu Mi	

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

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ Organic Bodies (A6) (**LRR P, T, U**)
☒ 5 cm Mucky Mineral (A7) (**LRR P, T, U**)
☐ Muck Presence (A8) (**LRR U**)
☐ 1 cm Muck (A9) (**LRR P, T**)
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Coast Prairie Redox (A16) (**MLRA 150A**)
☐ Sandy Mucky Mineral (S1) (**LRR O, S**)
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Dark Surface (S7) (**LRR P, S, T, U**)

- ☐ Polyvalue Below Surface (S8) (**LRR S, T, U**)
☐ Thin Dark Surface (S9) (**LRR S, T, U**)
☐ Loamy Mucky Mineral (F1) (**LRR O**)
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Marl (F10) (**LRR U**)
☐ Depleted Ochric (F11) (**MLRA 151**)
☐ Iron-Manganese Masses (F12) (**LRR O, P, T**)
☐ Umbric Surface (F13) (**LRR P, T, U**)
☐ Delta Ochric (F17) (**MLRA 151**)
☐ Reduced Vertic (F18) (**MLRA 150A, 150B**)
☐ Piedmont Floodplain Soils (F19) (**MLRA 149A**)
☐ Anomalous Bright Loamy Soils (F20) (**MLRA 149A, 153C, 153D**)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (**LRR O**)
☐ 2 cm Muck (A10) (**LRR S**)
☐ Reduced Vertic (F18) (**outside MLRA 150A,B**)
☐ Piedmont Floodplain Soils (F19) (**LRR P, S, T**)
☐ Anomalous Bright Loamy Soils (F20)
(MLRA 153B)
☐ Red Parent Material (TF2)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mu=Muck; Pe= Peat; Sa= Sand; Si=Silt; Mi=Mineral

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Adirondack Tract City/County: Charlton County Sampling Date: 03/22/2019
 Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: WDP-5
 Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-1%
 Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.523000717163 Long: -82.1031036376953 Datum: NAD83
 Soil Map Unit Name: Lynn Haven fine sand, 0 to 2 percent slopes NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ☒ (If no, explain in Remarks.)
 Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No _____
 Are Vegetation No, Soil No, or Hydrology No 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 <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____	
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	
Remarks: -Drier than normal, but not drought conditions.	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input checked="" type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)		<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T,U)
Field Observations: Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0"</u> Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0"</u> (includes capillary fringe)		Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: FAC-Neutral Test Results: Positive FACW and OBL: 9 to FACU and UPL: 0 Buttressed trunk bases and multiply trunkated canopy trees.		

VEGETATION – Use scientific names of plants.

 Sampling Point: **WDP-5**

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u><i>Taxodium ascendens</i></u>	<u>40.0</u>	<u>yes</u>	<u>OBL</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>10</u> (A) Total Number of Dominant Species Across All Strata: <u>10</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
2. <u><i>Acer rubrum</i></u>	<u>20.0</u>	<u>yes</u>	<u>FAC</u>	
3. <u><i>Nyssa biflora</i></u>	<u>20.0</u>	<u>yes</u>	<u>OBL</u>	
4. <u><i>Magnolia virginiana</i></u>	<u>10.0</u>	<u>no</u>	<u>FACW</u>	
5. _____	_____	_____	_____	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: <u>45.00</u> 20% of total cover: <u>18.00</u>	<u>90.0</u>	= Total Cover		
Sapling Stratum (<u>30 ft radius</u>)				Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	Definitions of 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.
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: <u>12.50</u> 20% of total cover: <u>5.00</u>	<u>0.0</u>	= Total Cover		Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____
Shrub Stratum (<u>30 ft radius</u>)				
1. <u><i>Ilex myrtifolia</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>	
2. <u><i>Lyonia lucida</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>	
3. <u><i>Morella caroliniensis</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____
50% of total cover: <u>15.00</u> 20% of total cover: <u>6.00</u>	<u>30.0</u>	= Total Cover		
Herb Stratum (<u>30 ft radius</u>)				
1. <u><i>Toxicodendron radicans</i></u>	<u>10.0</u>	<u>yes</u>	<u>FAC</u>	
2. <u><i>Woodwardia areolata</i></u>	<u>10.0</u>	<u>yes</u>	<u>OBL</u>	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____
3. <u><i>Woodwardia virginica</i></u>	<u>10.0</u>	<u>yes</u>	<u>OBL</u>	
4. <u><i>Smilax laurifolia</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
50% of total cover: <u>20.00</u> 20% of total cover: <u>8.00</u>	<u>40.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		
Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.				

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-18"	10YR 2/1	100					Mu Mi	

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

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ Organic Bodies (A6) (**LRR P, T, U**)
☒ 5 cm Mucky Mineral (A7) (**LRR P, T, U**)
☐ Muck Presence (A8) (**LRR U**)
☐ 1 cm Muck (A9) (**LRR P, T**)
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Coast Prairie Redox (A16) (**MLRA 150A**)
☐ Sandy Mucky Mineral (S1) (**LRR O, S**)
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Dark Surface (S7) (**LRR P, S, T, U**)

- ☐ Polyvalue Below Surface (S8) (**LRR S, T, U**)
☐ Thin Dark Surface (S9) (**LRR S, T, U**)
☐ Loamy Mucky Mineral (F1) (**LRR O**)
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Marl (F10) (**LRR U**)
☐ Depleted Ochric (F11) (**MLRA 151**)
☐ Iron-Manganese Masses (F12) (**LRR O, P, T**)
☐ Umbric Surface (F13) (**LRR P, T, U**)
☐ Delta Ochric (F17) (**MLRA 151**)
☐ Reduced Vertic (F18) (**MLRA 150A, 150B**)
☐ Piedmont Floodplain Soils (F19) (**MLRA 149A**)
☐ Anomalous Bright Loamy Soils (F20) (**MLRA 149A, 153C, 153D**)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (**LRR O**)
☐ 2 cm Muck (A10) (**LRR S**)
☐ Reduced Vertic (F18) (**outside MLRA 150A,B**)
☐ Piedmont Floodplain Soils (F19) (**LRR P, S, T**)
☐ Anomalous Bright Loamy Soils (F20)
(MLRA 153B)
☐ Red Parent Material (TF2)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mu=Muck; Pe= Peat; Sa= Sand; Si=Silt; Mi=Mineral

APPENDIX D

North Carolina (NC) Division of Water Quality (DWQ) Stream Identification Forms

**NC Division of Water Quality –Methodology for Identification of Intermittent and
Perennial Streams and Their Origins v. 4.11**

NC DWQ Stream Identification Form Version 4.11

Stream ID: S1

Date: 03/09/2019	Project/Site: Adirondack Tract	Latitude: 30.5233993530273
Evaluator: TTL, Inc./C. Terrell	County: Charlton	Longitude: -82.0914001464843
Total Points: <i>Stream is at least intermittent if ≥ 19 or perennial if ≥ 30*</i>	Stream Determination: Perennial	St. George, GA <i>e.g. Quad Name:</i>

A. Geomorphology (Subtotal = <u>13.50</u>)				
	Absent	Weak	Moderate	Strong
1 ^a . Continuity of channel bed and bank	0	1	2 ✓	3
2. Sinuosity of channel along thalweg	0	1	2 ✓	3
3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0	1	2 ✓	3
4. Particle size of stream substrate	0	1 ✓	2	3
5. Active/relict floodplain	0	1	2 ✓	3
6. Depositional bars or benches	0	1 ✓	2	3
7. Recent alluvial deposits	0	1 ✓	2	3
8. Headcuts	0	1 ✓	2	3
9. Grade control	0	0.5	1 ✓	1.5
10. Natural valley	0	0.5 ✓	1	1.5
11. Second or greater order channel	No = 0 ✓		Yes = 3	

^a artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = <u>8.00</u>)				
12. Presence of Baseflow	0	1	2 ✓	3
13. Iron oxidizing bacteria	0	1 ✓	2	3
14. Leaf litter	1.5	1 ✓	0.5	0
15. Sediment on plants or debris	0	0.5 ✓	1	1.5
16. Organic debris lines or piles	0	0.5 ✓	1	1.5
17. Soil-based evidence of high water table?	No = 0		Yes = 3 ✓	

C. Biology (Subtotal = <u>9.00</u>)				
18. Fibrous roots in streambed	3	2 ✓	1	0
19. Rooted upland plants in streambed	3 ✓	2	1	0
20. Macroinvertebrates (note diversity and abundance)	0	1 ✓	2	3
21. Aquatic Mollusks	0 ✓	1	2	3
22. Fish	0	0.5 ✓	1	1.5
23. Crayfish	0	0.5 ✓	1	1.5
24. Amphibians	0	0.5 ✓	1	1.5
25. Algae	0 ✓	0.5	1	1.5
26. Wetland plants in streambed	FACW = 0.75 ✓ OBL = 1.5 Other = 0			

*perennial streams may also be identified using other methods. See p. 35 of manual.

Notes:

Sketch:

**NC Division of Water Quality –Methodology for Identification of Intermittent and
Perennial Streams and Their Origins v. 4.11**

NC DWQ Stream Identification Form Version 4.11

Stream ID: S3

Date: 03/09/2019	Project/Site: Adirondack Tract	Latitude: 30.520299911499
Evaluator: TTL, Inc./C. Terrell	County: Charlton	Longitude: -82.0955963134765
Total Points: <i>Stream is at least intermittent if ≥ 19 or perennial if ≥ 30*</i>	Stream Determination: Intermittent	St. George, GA <i>e.g. Quad Name:</i>

A. Geomorphology (Subtotal = <u>8.00</u>)				
	Absent	Weak	Moderate	Strong
1 ^a . Continuity of channel bed and bank	0	1 ✓	2	3
2. Sinuosity of channel along thalweg	0	1 ✓	2	3
3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0	1 ✓	2	3
4. Particle size of stream substrate	0	1 ✓	2	3
5. Active/relict floodplain	0	1 ✓	2	3
6. Depositional bars or benches	0	1 ✓	2	3
7. Recent alluvial deposits	0	1 ✓	2	3
8. Headcuts	0 ✓	1	2	3
9. Grade control	0	0.5 ✓	1	1.5
10. Natural valley	0	0.5 ✓	1	1.5
11. Second or greater order channel	No = 0 ✓		Yes = 3	

^a artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = <u>7.50</u>)				
12. Presence of Baseflow	0	1	2 ✓	3
13. Iron oxidizing bacteria	0	1 ✓	2	3
14. Leaf litter	1.5	1	0.5 ✓	0
15. Sediment on plants or debris	0	0.5 ✓	1	1.5
16. Organic debris lines or piles	0	0.5 ✓	1	1.5
17. Soil-based evidence of high water table?	No = 0		Yes = 3 ✓	

C. Biology (Subtotal = <u>9.50</u>)				
18. Fibrous roots in streambed	3	2 ✓	1	0
19. Rooted upland plants in streambed	3 ✓	2	1	0
20. Macroinvertebrates (note diversity and abundance)	0	1 ✓	2	3
21. Aquatic Mollusks	0 ✓	1	2	3
22. Fish	0	0.5 ✓	1	1.5
23. Crayfish	0	0.5 ✓	1	1.5
24. Amphibians	0	0.5 ✓	1	1.5
25. Algae	0	0.5 ✓	1	1.5
26. Wetland plants in streambed	FACW = 0.75 ✓ OBL = 1.5 Other = 0			

*perennial streams may also be identified using other methods. See p. 35 of manual.

Notes:

Sketch:

**NC Division of Water Quality –Methodology for Identification of Intermittent and
Perennial Streams and Their Origins v. 4.11**

NC DWQ Stream Identification Form Version 4.11

Stream ID: S5

Date: 03/09/2019	Project/Site: Adirondack Tract	Latitude: 30.5233001708984
Evaluator: TTL, Inc./C. Terrell	County: Charlton	Longitude: -82.0967025756835
Total Points: <i>Stream is at least intermittent if ≥ 19 or perennial if ≥ 30*</i>	Stream Determination: Intermittent	St. George, GA <i>e.g. Quad Name:</i>

A. Geomorphology (Subtotal = <u>6.00</u>)				
	Absent	Weak	Moderate	Strong
1 ^a . Continuity of channel bed and bank	0	1 ✓	2	3
2. Sinuosity of channel along thalweg	0 ✓	1	2	3
3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0 ✓	1	2	3
4. Particle size of stream substrate	0	1 ✓	2	3
5. Active/relict floodplain	0	1 ✓	2	3
6. Depositional bars or benches	0	1 ✓	2	3
7. Recent alluvial deposits	0	1 ✓	2	3
8. Headcuts	0 ✓	1	2	3
9. Grade control	0	0.5 ✓	1	1.5
10. Natural valley	0	0.5 ✓	1	1.5
11. Second or greater order channel	No = 0 ✓		Yes = 3	

^a artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = <u>7.50</u>)				
12. Presence of Baseflow	0	1	2 ✓	3
13. Iron oxidizing bacteria	0	1 ✓	2	3
14. Leaf litter	1.5	1	0.5 ✓	0
15. Sediment on plants or debris	0	0.5 ✓	1	1.5
16. Organic debris lines or piles	0	0.5 ✓	1	1.5
17. Soil-based evidence of high water table?	No = 0		Yes = 3 ✓	

C. Biology (Subtotal = <u>8.50</u>)				
18. Fibrous roots in streambed	3	2 ✓	1	0
19. Rooted upland plants in streambed	3 ✓	2	1	0
20. Macroinvertebrates (note diversity and abundance)	0	1 ✓	2	3
21. Aquatic Mollusks	0 ✓	1	2	3
22. Fish	0 ✓	0.5	1	1.5
23. Crayfish	0	0.5 ✓	1	1.5
24. Amphibians	0	0.5 ✓	1	1.5
25. Algae	0 ✓	0.5	1	1.5
26. Wetland plants in streambed	FACW = 0.75 ✓ OBL = 1.5 Other = 0			

*perennial streams may also be identified using other methods. See p. 35 of manual.

Notes:

Sketch:

**NC Division of Water Quality –Methodology for Identification of Intermittent and
Perennial Streams and Their Origins v. 4.11**

NC DWQ Stream Identification Form Version 4.11

Stream ID: S6

Date: 03/09/2019	Project/Site: Adirondack Tract	Latitude: 30.5312995910644
Evaluator: TTL, Inc./C. Terrell	County: Charlton	Longitude: -82.0962982177734
Total Points: <i>Stream is at least intermittent if ≥ 19 or perennial if ≥ 30*</i>	Stream Determination: Intermittent	St. George, GA <i>e.g. Quad Name:</i>

A. Geomorphology (Subtotal = <u>10.00</u>)				
	Absent	Weak	Moderate	Strong
1 ^a . Continuity of channel bed and bank	0	1	2 ✓	3
2. Sinuosity of channel along thalweg	0	1	2 ✓	3
3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0	1 ✓	2	3
4. Particle size of stream substrate	0	1 ✓	2	3
5. Active/relict floodplain	0	1 ✓	2	3
6. Depositional bars or benches	0	1 ✓	2	3
7. Recent alluvial deposits	0	1 ✓	2	3
8. Headcuts	0 ✓	1	2	3
9. Grade control	0	0.5 ✓	1	1.5
10. Natural valley	0	0.5 ✓	1	1.5
11. Second or greater order channel	No = 0 ✓		Yes = 3	

^a artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = <u>8.00</u>)				
12. Presence of Baseflow	0	1	2 ✓	3
13. Iron oxidizing bacteria	0	1 ✓	2	3
14. Leaf litter	1.5	1 ✓	0.5	0
15. Sediment on plants or debris	0	0.5 ✓	1	1.5
16. Organic debris lines or piles	0	0.5 ✓	1	1.5
17. Soil-based evidence of high water table?	No = 0		Yes = 3 ✓	

C. Biology (Subtotal = <u>9.00</u>)				
18. Fibrous roots in streambed	3	2 ✓	1	0
19. Rooted upland plants in streambed	3 ✓	2	1	0
20. Macroinvertebrates (note diversity and abundance)	0	1 ✓	2	3
21. Aquatic Mollusks	0 ✓	1	2	3
22. Fish	0	0.5 ✓	1	1.5
23. Crayfish	0	0.5 ✓	1	1.5
24. Amphibians	0	0.5 ✓	1	1.5
25. Algae	0 ✓	0.5	1	1.5
26. Wetland plants in streambed	FACW = 0.75 ✓ OBL = 1.5 Other = 0			

*perennial streams may also be identified using other methods. See p. 35 of manual.

Notes:

Sketch:

**NC Division of Water Quality –Methodology for Identification of Intermittent and
Perennial Streams and Their Origins v. 4.11**

NC DWQ Stream Identification Form Version 4.11

Stream ID: S7

Date: 03/13/2019	Project/Site: Adirondack Tract	Latitude: 30.5312995910644
Evaluator: TTL, Inc./C. Terrell	County: Charlton	Longitude: -82.1066970825195
Total Points: <i>Stream is at least intermittent if ≥ 19 or perennial if ≥ 30*</i>	Stream Determination: Intermittent	St. George, GA <i>e.g. Quad Name:</i>

A. Geomorphology (Subtotal = <u>9.00</u>)				
	Absent	Weak	Moderate	Strong
1 ^a . Continuity of channel bed and bank	0	1	2 ✓	3
2. Sinuosity of channel along thalweg	0	1 ✓	2	3
3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0	1 ✓	2	3
4. Particle size of stream substrate	0	1 ✓	2	3
5. Active/relict floodplain	0	1 ✓	2	3
6. Depositional bars or benches	0	1 ✓	2	3
7. Recent alluvial deposits	0	1 ✓	2	3
8. Headcuts	0 ✓	1	2	3
9. Grade control	0	0.5 ✓	1	1.5
10. Natural valley	0	0.5 ✓	1	1.5
11. Second or greater order channel	No = 0 ✓		Yes = 3	

^a artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = <u>8.00</u>)				
12. Presence of Baseflow	0	1	2 ✓	3
13. Iron oxidizing bacteria	0	1 ✓	2	3
14. Leaf litter	1.5	1 ✓	0.5	0
15. Sediment on plants or debris	0	0.5 ✓	1	1.5
16. Organic debris lines or piles	0	0.5 ✓	1	1.5
17. Soil-based evidence of high water table?	No = 0		Yes = 3 ✓	

C. Biology (Subtotal = <u>9.00</u>)				
18. Fibrous roots in streambed	3	2 ✓	1	0
19. Rooted upland plants in streambed	3 ✓	2	1	0
20. Macroinvertebrates (note diversity and abundance)	0	1 ✓	2	3
21. Aquatic Mollusks	0 ✓	1	2	3
22. Fish	0	0.5 ✓	1	1.5
23. Crayfish	0	0.5 ✓	1	1.5
24. Amphibians	0	0.5 ✓	1	1.5
25. Algae	0 ✓	0.5	1	1.5
26. Wetland plants in streambed	FACW = 0.75 ✓ OBL = 1.5 Other = 0			

*perennial streams may also be identified using other methods. See p. 35 of manual.

Notes:

Sketch:

**NC Division of Water Quality –Methodology for Identification of Intermittent and
Perennial Streams and Their Origins v. 4.11**

NC DWQ Stream Identification Form Version 4.11

Stream ID: S10

Date: 03/10/2019	Project/Site: Adirondack Tract	Latitude: 30.5301990509033
Evaluator: TTL, Inc./C. Terrell	County: Charlton	Longitude: -82.1087036132812
Total Points: <i>Stream is at least intermittent if ≥ 19 or perennial if ≥ 30*</i>	Stream Determination: Intermittent	St. George, GA <i>e.g. Quad Name:</i>

A. Geomorphology (Subtotal = <u>7.00</u>)				
	Absent	Weak	Moderate	Strong
1 ^a . Continuity of channel bed and bank	0	1 ✓	2	3
2. Sinuosity of channel along thalweg	0	1 ✓	2	3
3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0	1 ✓	2	3
4. Particle size of stream substrate	0	1 ✓	2	3
5. Active/relict floodplain	0	1 ✓	2	3
6. Depositional bars or benches	0 ✓	1	2	3
7. Recent alluvial deposits	0	1 ✓	2	3
8. Headcuts	0 ✓	1	2	3
9. Grade control	0	0.5 ✓	1	1.5
10. Natural valley	0	0.5 ✓	1	1.5
11. Second or greater order channel	No = 0 ✓		Yes = 3	

^a artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = <u>7.00</u>)				
12. Presence of Baseflow	0	1 ✓	2	3
13. Iron oxidizing bacteria	0	1 ✓	2	3
14. Leaf litter	1.5	1 ✓	0.5	0
15. Sediment on plants or debris	0	0.5 ✓	1	1.5
16. Organic debris lines or piles	0	0.5 ✓	1	1.5
17. Soil-based evidence of high water table?	No = 0		Yes = 3 ✓	

C. Biology (Subtotal = <u>9.00</u>)				
18. Fibrous roots in streambed	3	2 ✓	1	0
19. Rooted upland plants in streambed	3 ✓	2	1	0
20. Macroinvertebrates (note diversity and abundance)	0	1 ✓	2	3
21. Aquatic Mollusks	0 ✓	1	2	3
22. Fish	0	0.5 ✓	1	1.5
23. Crayfish	0	0.5 ✓	1	1.5
24. Amphibians	0	0.5 ✓	1	1.5
25. Algae	0 ✓	0.5	1	1.5
26. Wetland plants in streambed	FACW = 0.75 ✓ OBL = 1.5 Other = 0			

*perennial streams may also be identified using other methods. See p. 35 of manual.

Notes:

Sketch:

**NC Division of Water Quality –Methodology for Identification of Intermittent and
Perennial Streams and Their Origins v. 4.11**

NC DWQ Stream Identification Form Version 4.11

Stream ID: S11e

Date: 03/21/2019	Project/Site: Adirondack Tract	Latitude: 30.5284004211425
Evaluator: TTL, Inc./C. Terrell	County: Charlton	Longitude: -82.0898971557617
Total Points: <i>Stream is at least intermittent if ≥ 19 or perennial if ≥ 30*</i>	Stream Determination: Ephemeral	St. George, GA <i>e.g. Quad Name:</i>

A. Geomorphology (Subtotal = <u>6.00</u>)				
	Absent	Weak	Moderate	Strong
1 ^a . Continuity of channel bed and bank	0	1 ✓	2	3
2. Sinuosity of channel along thalweg	0	1 ✓	2	3
3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0	1 ✓	2	3
4. Particle size of stream substrate	0	1 ✓	2	3
5. Active/relict floodplain	0	1 ✓	2	3
6. Depositional bars or benches	0 ✓	1	2	3
7. Recent alluvial deposits	0 ✓	1	2	3
8. Headcuts	0 ✓	1	2	3
9. Grade control	0	0.5 ✓	1	1.5
10. Natural valley	0	0.5 ✓	1	1.5
11. Second or greater order channel	No = 0 ✓		Yes = 3	

^a artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = <u>3.00</u>)				
12. Presence of Baseflow	0 ✓	1	2	3
13. Iron oxidizing bacteria	0	1 ✓	2	3
14. Leaf litter	1.5	1 ✓	0.5	0
15. Sediment on plants or debris	0	0.5 ✓	1	1.5
16. Organic debris lines or piles	0	0.5 ✓	1	1.5
17. Soil-based evidence of high water table?	No = 0 ✓		Yes = 3	

C. Biology (Subtotal = <u>7.00</u>)				
18. Fibrous roots in streambed	3	2 ✓	1	0
19. Rooted upland plants in streambed	3	2	1 ✓	0
20. Macroinvertebrates (note diversity and abundance)	0	1 ✓	2	3
21. Aquatic Mollusks	0 ✓	1	2	3
22. Fish	0	0.5 ✓	1	1.5
23. Crayfish	0	0.5 ✓	1	1.5
24. Amphibians	0	0.5 ✓	1	1.5
25. Algae	0 ✓	0.5	1	1.5
26. Wetland plants in streambed	FACW = 0.75 ✓ OBL = 1.5 Other = 0			

*perennial streams may also be identified using other methods. See p. 35 of manual.

Notes:

Sketch:

**NC Division of Water Quality –Methodology for Identification of Intermittent and
Perennial Streams and Their Origins v. 4.11**

NC DWQ Stream Identification Form Version 4.11

Stream ID: S11i

Date: 03/21/2019	Project/Site: Adirondack Tract	Latitude: 30.528600692749
Evaluator: TTL, Inc./C. Terrell	County: Charlton	Longitude: -82.0904006958007
Total Points: <i>Stream is at least intermittent if ≥ 19 or perennial if ≥ 30*</i>	Stream Determination: Intermittent	St. George, GA <i>e.g. Quad Name:</i>

A. Geomorphology (Subtotal = <u>7.00</u>)				
	Absent	Weak	Moderate	Strong
1 ^a . Continuity of channel bed and bank	0	1 ✓	2	3
2. Sinuosity of channel along thalweg	0	1 ✓	2	3
3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0	1 ✓	2	3
4. Particle size of stream substrate	0	1 ✓	2	3
5. Active/relict floodplain	0	1 ✓	2	3
6. Depositional bars or benches	0 ✓	1	2	3
7. Recent alluvial deposits	0	1 ✓	2	3
8. Headcuts	0 ✓	1	2	3
9. Grade control	0	0.5 ✓	1	1.5
10. Natural valley	0	0.5 ✓	1	1.5
11. Second or greater order channel	No = 0 ✓		Yes = 3	

^a artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = <u>4.00</u>)				
12. Presence of Baseflow	0	1 ✓	2	3
13. Iron oxidizing bacteria	0	1 ✓	2	3
14. Leaf litter	1.5	1 ✓	0.5	0
15. Sediment on plants or debris	0	0.5 ✓	1	1.5
16. Organic debris lines or piles	0	0.5 ✓	1	1.5
17. Soil-based evidence of high water table?	No = 0 ✓		Yes = 3	

C. Biology (Subtotal = <u>9.00</u>)				
18. Fibrous roots in streambed	3	2 ✓	1	0
19. Rooted upland plants in streambed	3	2 ✓	1	0
20. Macrobenthos (note diversity and abundance)	0	1 ✓	2	3
21. Aquatic Mollusks	0 ✓	1	2	3
22. Fish	0	0.5 ✓	1	1.5
23. Crayfish	0	0.5 ✓	1	1.5
24. Amphibians	0	0.5 ✓	1	1.5
25. Algae	0	0.5	1 ✓	1.5
26. Wetland plants in streambed	FACW = 0.75 ✓ OBL = 1.5 Other = 0			

*perennial streams may also be identified using other methods. See p. 35 of manual.

Notes: Sketch:

APPENDIX E

USACE Savannah District Request for Corps of Engineers Jurisdictional
Determination (JD) and/or Delineation Review Form

SAS APPENDIX 1: Request for Corps of Engineers Jurisdictional Determination (JD) and/or Delineation Review

I. Reason for request: (check as many as applicable)

- ☐ I intend to construct/develop a project or perform activities on this parcel which would be designed to avoid all aquatic resources.
- ☐ I intend to construct/develop a project or perform activities on this parcel which would be designed to avoid all jurisdictional aquatic resources under Corps authority.
- ☒ I intend to construct/develop a project or perform activities on this parcel which may require authorization from the Corps, and the JD would be used to avoid and minimize impacts to jurisdictional aquatic resources and as an initial step in a future permitting process.
- ☐ I intend to construct/develop a project or perform activities on this parcel which may require authorization from the Corps; this request is accompanied by my permit application and the JD is to be used in the permitting process.
- ☐ I intend to construct/develop a project or perform activities in a navigable water of the U.S. which is included on the district Section 10 list and/or is subject to the ebb and flow of the tide.
- ☐ A Corps JD is required in order to obtain my local/state authorization.
- ☐ I intend to contest jurisdiction over a particular aquatic resource and request the Corps confirm that jurisdiction does/does not exist over the aquatic resource on the parcel.
- ☐ I believe that the site may be comprised entirely of dry land.
- ☐ Other: _____

II. I am requesting that the U.S. Army Corps of Engineers, Savannah District, provide me with the following:

- ☒ **Delineation Review of Aquatic Resources** - Concurrence with an aquatic resource delineation is a written notification from the Corps concurring, not concurring, or commenting on the aquatic resource boundaries, or limits, delineated on a property.
- ☐ **Preliminary Jurisdictional Determination** - (PJD). A PJD is defined in Corps regulations at 33 CFR 331.2, as "written indications that there may be waters of the United States on a parcel". When the Corps provides a PJD, the Corps is making no legally binding determination of any type regarding whether jurisdiction exists over the particular aquatic resource in question.
- ☐ **Approved Jurisdictional Determination** - (AJD) An AJD is defined in Corps regulations at 33 CFR 331.2. A definitive, official determination that there are, or that there are not, jurisdictional aquatic resources on a parcel.
- ☐ I am unclear as to what I would like to request and require additional information to inform my decision.

SECTION 1

Parcel Number of Property:

Lat. 30.537849

Long. - 82.099831

(in decimal degrees)

Parcel Address:

Parcel City : Saint George

Parcel County: Charlton

Zip:

Size of Review Area: 551.1

Acre(s) Variable

Linear feet

SECTION 2

LANDOWNER NAME

First: Steven

Last: Ingle

Company: Twin Pines Minerals, LLC

Email Address: single@greenfuelsenergy.com

Address: 2100 Southbridge Parkway, Ste. 540

City: Birmingham

State: AL

Zip: 35209

Phone: 205-545-8759

AUTHORIZED AGENT'S NAME

First: Cindy

Last: House-Pearson

Company: TTL, Inc.

Email Address: chpearson@ttlusa.com

Address: 3516 Greensboro Avenue

City: Tuscaloosa

State: AL

Zip: 35401

Phone: 251-327-6153

PROPERTY ACCESS PERMISSION, AKNOWLEDGEMENT OF 18 U.S.C. SECTION 1001 AND STATEMENT OF AGENT AUTHORIZATION

Initial ONLY One:

SI By signing below, I certify that I am the owner of record of the property referenced in III, Section 1 above, and I hereby authorize representatives of the U.S. Army Corps of Engineers, Savannah District, to enter the property for purposes of conducting on-site inspections, and issuing an aquatic resource delineation concurrence and/or a jurisdictional determination. My signature shall also be an affirmation that I possess the requisite property rights to request a delineation review and/or a jurisdictional determination on the property referenced in III - Section 1. Further, I authorize the agent in III - Section 2, to act on my behalf in the processing of this request and to furnish supplemental information in support of this request.

N/A By signing below, I certify that I am acting as the duly authorized agent of the owner of record of the property referenced in III, Section 1 above, and have been given the authority to: 1) request a delineation review and/or a jurisdictional determination (JD) on the property referenced in III - Section 1, and 2) authorize representatives of the U.S. Army Corps of Engineers, Savannah District, to enter the property for purposes of conducting on-site inspections, and issuing an aquatic resource delineation concurrence and/or a jurisdictional determination. I understand that I may be required to provide documentary evidence of my authority to request a delineation review and/or JD, and/or to grant Corps of Engineers personnel access to the property.

Please Print Name Legibly: Steven R. Ingle

Signature

Date: 07/03/2019

* Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103,

33 USC 1413; Regulatory Program of the U.S. Army Corps of Engineers; Final Rule for 33 CFR Parts 320-332.

Principal Purpose: The information that you provide will be used in evaluating your request to determine whether there are any aquatic resources within the project area subject to federal jurisdiction under the regulatory authorities referenced above.

Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public, and may be made

**US Army Corps of Engineers
Savannah District, Regulatory Division
Global Positioning Systems (GPS) Datasheet
Delineation of Wetlands, Streams and Other Waters
Within the State of Georgia**

USACE File Number SAS-2018-00554 Date of Delineation 3/8-3/22/2019

Name of Delineator Present Chris Terrell & Chris Stanford

Make and Model of GPS Device Used (must be capable of sub-meter accuracy)

Trimble Geo7x GPS (model 88161)

Geographic Coordinate System Used US State Plane GA East - NAD 1983 (Conus)

Name of Continually Operated Reference Station Used for Post-processing

CORS, Jacksonville 1 (ZJX1), Florida

Date Post-processing Performed 5/23/2019

Percent Dilution of Position (PDOP) (6 or less is required) NA (use Trimble Smart Settings)

Name and Coordinates of Known Property Corner and/or Monument

GPS Reading of Known Property Corner and/or Monument

Frequency of Waypoints Taken During Survey as needed per field observations

Note: GPS data must be provided, if requested. If GPS data and/or a GPS delineation is determined unacceptable by the Savannah District, a survey sealed by a surveyor licensed in Georgia will be required.



2743-B Gunter Park Drive West
Montgomery, AL 36109
334.244.0766
www.TTLUSA.com

November 7, 2019

Transmitted Via: Email (Holly.A.Ross@usace.army.mil)

Ms. Holly Ross, Sr. Project Manager
U.S. Army Corps of Engineers
Savannah District - Regulatory Division
1104 N. Westover Blvd. Unit 9
Albany, Georgia 31707

Subject: ***Waters of the U.S. Delineation Field Verification – Revisions Submittal (Revision 01)***
Approximately 551.1-Acre Adirondack Tract
Twin Pines, LLC
Saint George, Charlton County, Georgia
USACE Project No.: SAS-2018-00554
TTL Project No.: 000180200804.00

Dear Ms. Ross,

In response to the field verification conducted by the United States Army Corps of Engineers (USACE) and TTL on October 21-25, 2019 and the original field verification submittal letter dated November 1, 2019, TTL provides the following summary of revisions. Attachment A provides the revised Waters of the U.S. Delineation Map per the USACE field verification. This Revision 01 submittal includes corrections for the following:

- a. Wetland A (WA) acreage was revised from 105.947 acres to 105.798 acres. This correction was to account for removing the acreage of Stream 2 (S-2) from WA.
- b. Wetland B (WB) acreage was revised from 105.947 acres to 105.798 acres. This correction was to account for removing the acreage of Stream 6 (S-6 & S-6A) from WB.
- c. Wetland C (WC) acreage was revised from 2.555 acres to 2.523 acres. This correction was to account for removing the acreage of S-2 from WC.
- d. Wetland E (WE) acreage was revised from 4.233 acres to 4.218 acres. This correction was to account for removing the acreage of Stream 9 (S-9e) from WE.
- e. Wetland G (WG) acreage was revised from 5.544 acres to 5.550 acres. This correction was to account for removing the acreage of Stream 11 (S-11i) from Wetland WG.

- f. Stream 11 (S-11) was removed due to it being reclassified as a non-jurisdictional ditch.
- g. Overall, the total intermittent stream measurement was revised from 0.663 acre and 7,891 linear feet to 0.657 acre and 7,784 linear feet.
- h. Overall, the total ephemeral stream measurement was revised from 0.340 acre and 3,924 linear feet to 0.321 acre and 3,669 linear feet.
- i. Overall, the total stream acreage (which originally included ditches and streams) was revised from 1.067 acres and 12,202 linear feet to 1.042 acres and 11,840 linear feet.
- j. Overall, the total wetland acreage was revised from 150.008 acres to 149.602 acres.

A separate letter for the other delineated property that was field verified (TIAA) at the same time has been prepared and sent separately.

Please let TTL representatives know if additional information or revisions are needed for the project.

Sincerely,

TTL, Inc.



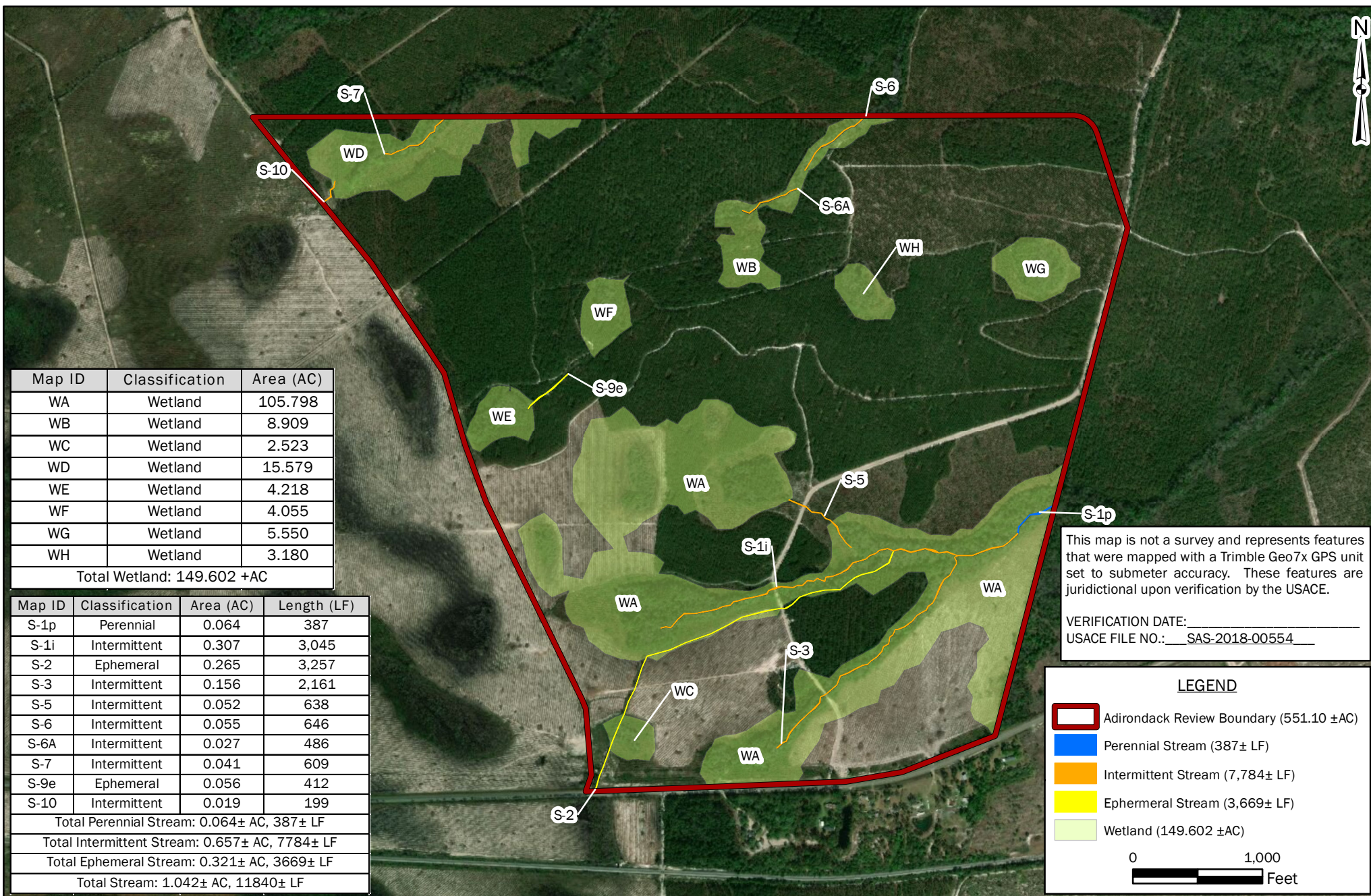
Christopher Terrell
Project Professional



Cindy House-Pearson
Senior Natural Resources
Client Manager

ATTACHMENT A

REVISED WATERS OF THE US DELINEATION MAP



Map ID	Classification	Area (AC)
WA	Wetland	105.798
WB	Wetland	8.909
WC	Wetland	2.523
WD	Wetland	15.579
WE	Wetland	4.218
WF	Wetland	4.055
WG	Wetland	5.550
WH	Wetland	3.180

Total Wetland: 149.602 +AC

Map ID	Classification	Area (AC)	Length (LF)
S-1p	Perennial	0.064	387
S-1i	Intermittent	0.307	3,045
S-2	Ephemeral	0.265	3,257
S-3	Intermittent	0.156	2,161
S-5	Intermittent	0.052	638
S-6	Intermittent	0.055	646
S-6A	Intermittent	0.027	486
S-7	Intermittent	0.041	609
S-9e	Ephemeral	0.056	412
S-10	Intermittent	0.019	199

Total Perennial Stream: 0.064± AC, 387± LF

Total Intermittent Stream: 0.657± AC, 7784± LF

Total Ephemeral Stream: 0.321± AC, 3669± LF

Total Stream: 1.042± AC, 11840± LF



WATERS OF THE U.S. DELINEATION MAP (VERIFIED) TWIN PINES MINERALS - ADIRONDACK TRACT ST. GEORGE, CHARLTON COUNTY, GEORGIA

BASEMAP: DigitalGlobe, 3/24/2018 (0.46 m Resolution)

DRAWN BY: DEK

CHECKED BY: CMS

DRAWING DATE: 7/1/2019

REVISION DATE: 11/6/2019

TTL JOB NO.: 000180200804.00

APPROXIMATE SCALE: 1" = 1,000'

WATERS OF THE UNITED STATES DELINEATION REPORT

**APPROXIMATELY 1,034-ACRE KEYSTONE TRACT
SAINT GEORGE, CHARLTON COUNTY, GEORGIA**

Submitted to:

**Twin Pines Minerals, LLC
Attn: Mr. Steve Ingle, P.E.
2100 Southbridge Parkway
Birmingham, Alabama 35209**

Prepared by:

**TTL, Inc.
2743-B Gunter Park Drive West
Montgomery, Alabama 36109**

Project No. 000180200804.00

September 28, 2018



SIGNATURE OF ENVIRONMENTAL PROFESSIONALS

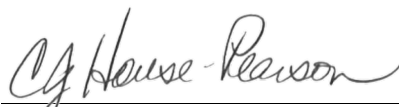
TTL, Inc. has performed a waters of the United States (U.S.) delineation in general conformance with the scope and limitations of the *U. S. Army Corps of Engineers Wetland Delineation Manual, 1987 Edition*, and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region Version 2.0* (2010). Identification of ephemeral, intermittent and perennial streams has been performed in general conformance with methodology outlined in *Methodology for Identification of Intermittent and Perennial Streams and their Origins, Version 4.11* (2010).



Christopher Terrell
Environmental Professional

September 28, 2018

Date



Cindy House-Pearson
Senior Natural Resources
Client Manager

September 28, 2018

Date

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Figure 2	Site Location & Aerial Photograph
Figure 3	Natural Resources Conservation Service (NRCS) Soil Map w/Hydric Rating
Figure 4	National Wetland Inventory (NWI) Classification Map
Figure 5	Hydrologic Unit Code (HUC) Map
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APPENDICES

Appendix A	Normal Weather Conditions Table Agricultural Applied Climate Information System (AgACIS) Data U.S. Drought Monitor – Georgia Palmer Drought Index
Appendix B	Selected Site Photographs
Appendix C	U.S. Army Corps of Engineers Wetland Determination Data Forms
Appendix D	North Carolina (NC) Division of Water Quality (DWQ) Stream Identification Forms
Appendix E	USACE Savannah District Request for Corps of Engineers Jurisdictional Determination (JD) and/or Delineation Review Form

1.0 INTRODUCTION

TTL, Inc. (TTL) was contracted by Twin Pines Minerals, LLC (Twin Pines) to perform a delineation of the waters of the United States (WOTUS) associated with a proposed development of a heavy mineral mining operation in Saint George, Charlton County, Georgia (Figure 1). TTL conducted the field activities for this project from August 20-31, 2018.

Activities within jurisdictional waters of the U.S. are regulated by the U.S. Army Corps of Engineers (USACE). Authority to permit discharges (fill) within jurisdictional wetlands or non-navigable waters of the U.S. is granted under Section 404 of the Clean Water Act (CWA) of 1972. Authority to permit work and placement of structures in navigable waters of the U.S. is granted under Sections 9 and 10 of the Rivers and Harbors Act of 1899. For regulatory purposes under the CWA, wetlands are defined by the USACE as:

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

2.0 SITE DESCRIPTION

The site is an approximately 1,034-acre area depicted on the U.S. Geological Survey (USGS) 7.5-minute Topographic Maps of Moniac, Georgia and Saint George, Georgia (Figure 1). The center of the site is located near latitude 30.526662 and longitude -82.115773. According to the USGS Topographic Map, the elevation at the site ranges from approximately 170 to 175 feet above mean sea level.

The delineation area is located near the eastern limits of the Okefenokee National Wildlife Refuge. The western delineation area boundary follows a portion of T-Model Road. The eastern delineation area boundary follows a portion of Trail Ridge Road. Although not well-defined, the historic Trail Ridge is located along the eastern portion of the delineation area. The delineation area has historically been used for silvicultural activities. The primary sources of hydrology for the delineation area are onsite rainfall and surface water flow.

Driving directions to the site are as follows: from the intersection of GA-23 and GA-94 (in St. George, GA), travel west along GA-94 for approximately 3.9 miles to the intersection of GA-94 and Trail Ridge Road (dirt road). This location is near the southeast corner of the delineation area.

3.0 LITERATURE AND RECORDS REVIEW

Prior to conducting the field effort, TTL performed a literature and records review to develop an understanding of the potential for the presence of waters of the U.S. on the subject site or surrounding properties. These data sources and the review findings are described below.

3.1 Hydric Soils

The Natural Resources Conservation Service (NRCS) maintains a database of soil types (map units) for most areas of the U.S. (NRCS, 2017). The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit which represents a large area dominated by one or more major types of soil. Map units are further classified with a rating of hydric, partially hydric or non-hydric. Map units are useful for planning purposes to provide an overall understanding of the soils that occur in a general area. However, due to the natural variability of the landscape, direct observation of the soils profile is necessary to identify hydric soil indicators.

A classification of hydric means that the soil components listed for a given map unit are rated as being hydric. "Predominantly hydric" means that more than 66 percent to less than 100 percent of soil components are hydric. "Partially hydric" means that more than 33 percent to less than 65 percent of soil components are hydric. "Predominantly non-hydric" means that more than 0 percent and less than 32 percent of soil components are hydric. "Not hydric" means that all soil components are rated as not hydric. "Unknown hydric" indicates that at least one component is not rated so a definitive rating for the map unit cannot be made. A NRCS map of the soils located on the site with the associated hydric rating is presented in Figure 3 and summarized in Table 1 below.

Table 1: Soil Map Units Classifications

Map Unit Symbol	Description	Hydric Rating
LeA	Leon fine sand, 0-2% slopes	Predominantly Hydric
LoA	Leon fine sand, frequently ponded, 0-2% slopes	Hydric
LvA	Lynn Haven fine sand, 0-2% slopes	Predominantly Hydric
LYA	Lynn Haven, Allanton and Kingsferry soils, ponded, 0-1% slopes	Predominantly Hydric
MaA	Mandarin fine sand, 0-2% slopes	Predominantly Nonhydric

3.2 National Wetland Inventory

The U.S. Fish and Wildlife Service (USFWS) created and maintains the National Wetland Inventory (NWI) database of information on the characteristics, extent, and status of the wetlands and

deepwater habitats within the U.S. This information is useful for planning purposes and provides an overall understanding of the habitats that may be present in or around the site. The NWI classifies habitat types as marine, estuarine, riverine, lacustrine or palustrine with additional modifiers as appropriate to identify the water regime, water chemistry, soil or other characteristics based on *Classification of Wetlands and Deepwater Habitats of the U.S.* (Cowardin, 1979).

TTL reviewed the NWI data for the site using the USFWS NWI Wetlands Mapper web-based tool to determine the potential for wetlands to exist on the site. The USFWS NWI Mapper identified numerous wetland, stream, and open water features within the delineation area boundary. Figure 4 depicts the NWI Map, and Table 2 summarizes the habitat below.

Table 2: NWI Classifications

Map Unit Symbol	Description of Habitat
PEM1C	Palustrine; Emergent; Persistent; Seasonally Flooded
PF04C	Palustrine; Forested; Needle-Leaved Evergreen; Seasonally Flooded
PF03/4B	Palustrine; Forested; Broad-Leaved Evergreen/Needle-Leaved Evergreen; Seasonally Saturated
PF03/4C	Palustrine; Forested; Broad-Leaved Evergreen/Needle-Leaved Evergreen; Seasonally Flooded
PF06/4C	Palustrine; Forested; Deciduous/Needle-Leaved Evergreen; Seasonally Flooded
PF06F	Palustrine; Forested; Deciduous; Semipermanently Flooded
PSS3B	Palustrine; Scrub-shrub; Broad-leaved Evergreen; Seasonally Saturated
R4SBC	Riverine; Intermittent; Streambed; Seasonally Flooded
R5UBH	Riverine; Unknown Perennial; Unconsolidated Bottom; Permanently Flooded

3.3 Hydrologic Unit Code

The U.S. is divided and sub-divided into successively smaller hydrologic units which are classified into six levels: regions, sub-regions, accounting units, watershed, sub-watershed, and cataloging units. The hydrologic units are arranged within each other, from the smallest (cataloging unit) to the largest (regions). Each hydrologic unit is identified by a unique hydrologic unit code (HUC) consisting of two to 12 digits based on the six levels of classification in the hydrologic system (Seaber, Kapinos, Knapp, 1987). The western portion of the delineation area is located within the Soldiers Camp Island watershed, cataloging unit 12-Digit HUC 030702040303. The eastern portion of the delineation area is located within the Boone Creek watershed, cataloging unit 12-Digit HUC 030702040602. Both cataloging units are located within the St Marys watershed, cataloging unit 8-Digit HUC 03070204 (Figure 5).

3.4 Normal Weather Conditions

TTL calculates a subject site's normal weather conditions before performing site work to understand whether aquatic features in the landscape may exhibit certain characteristics related to current and near past hydrologic regime. TTL calculates data obtained from an on-line NRCS climactic database, Agricultural Applied Climate Information System (AgACIS), and derives its calculation method from the Tennessee Department of Environment and Conservation's guide for making hydrologic determinations (TDEC, 2011). An evaluation of weather conditions was performed for the three-month period prior to the field activities. Calculations for the site indicate that the weather conditions were wetter than normal for the time of year that field work was performed.

The Palmer Drought Severity Index provided by National Oceanic and Atmospheric Administration (NOAA) is accessed at <http://www.ncdc.noaa.gov/oa/climate/research/prelim/drought/palmer.html> and was used to cross-reference the results calculated. The Palmer Drought Severity Index indicates that the region of the site experienced "mid-range" conditions during the weeks prior to the site visit.

As an additional cross-reference, the U.S. Drought Monitor was accessed and evaluated. The U.S. Drought Monitor is produced through a partnership between the National Drought Mitigation Center at the University of Nebraska-Lincoln, the United States Department of Agriculture (USDA), and NOAA. The most recent update of the U.S. Drought Monitor (August 21, 2018) Map of Georgia exhibited no drought conditions in the vicinity of the review area.

The Normal Weather Conditions Table, AgACIS data, Palmer Drought Severity Index Map, and U.S. Drought Monitor Map of Georgia and are included in Appendix A.

4.0 WETLAND AND WATERS DELINEATION

4.1 Wetland Identification Methodology

TTL utilizes the *U.S. Army Corps of Engineers Wetland Delineation Manual* (USACE, 1987) and *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region* (USACE, 2010) technical guidelines for determining the presence of wetlands. This determination requires that a positive wetland indicator be present for each of the three parameters (hydrology, soil, and vegetation), with the exception of areas altered by recent human activities or natural events. During field activities, TTL assessed the project area for the presence of hydrophytic vegetation and used a Dutch hand-auger to evaluate the project area for the presence of hydric soils. TTL examined the soil for hydric soil indicators as identified in the *Field Indicators of Hydric Soils in the United States*, V. 8.1 (NRCS, 2017). Additionally, TTL observed the project area

for indications of inundated or saturated soils, water marks, drift lines, crayfish burrows, sediment deposits and other wetland hydrology indicators. TTL used *Wetland Determination Data Forms – Atlantic and Gulf Coastal Plain Region* (2010) to record field conditions for the soil, vegetation and hydrology for wetlands and uplands located on the site. At least one data point was established in each habitat type observed within the review area.

TTL traversed the project area on foot and placed orange flagging labeled with Upland Data Point (UDP) or Wetland Data Point (WDP) identification at the data point location. The location of the data point flagging was mapped with a Trimble Geo7x Global Positioning System (GPS) unit, which was set to sub-meter tolerances. Field data was post-processed using Trimble PathfinderOffice V 5.3 and exported to ESRI's ArcMap 10.2. Area features were manually digitized in ArcGIS using the flag locations; geographic coordinates and area quantities were calculated using ArcGIS "area" function.

4.2 Wetland Findings

The project area contains twelve wetland areas (WA-WL) consisting of approximately 631.105 acres. The boundaries of the wetland areas and data point locations are depicted on Figure 6. Selected photographs of our field observations are provided in Appendix B. Wetland Determination Data Forms are included in Appendix C. Table 3 summarizes the wetland findings below.

Table 3: Wetland Summary

Wetland ID	Cowardin Habitat Description	Area (acres)
WA	Palustrine; Forested, Broad-Leaved Evergreen/Needle-Leaved Evergreen; Seasonally & Semi permanently Flooded	580.475
WB	Palustrine; Forested, Broad-Leaved Evergreen/Needle-Leaved Evergreen; Seasonally Saturated	2.041
WC	Palustrine; Forested, Broad-Leaved Evergreen/Needle-Leaved Evergreen; Seasonally Saturated	0.957
WD	Palustrine; Forested, Broad-Leaved Evergreen/Needle-Leaved Evergreen; Seasonally Saturated	6.323
WE	Palustrine; Forested, Broad-Leaved Deciduous/Needle-Leaved Evergreen; Seasonally Saturated	10.400
WF	Palustrine; Forested, Broad-Leaved Deciduous/Needle-Leaved Evergreen; Seasonally Saturated	0.704
WG	Palustrine; Forested, Broad-Leaved Deciduous/Needle-Leaved Evergreen; Seasonally Saturated	5.957
WH	Palustrine; Forested, Broad-Leaved Deciduous/Needle-Leaved Evergreen; Seasonally Saturated	14.562
WI	Palustrine; Forested, Broad-Leaved Deciduous/Needle-Leaved Evergreen; Seasonally Saturated	6.068
WJ	Palustrine; Forested, Broad-Leaved Deciduous/Needle-Leaved Evergreen; Seasonally Saturated	1.072
WK	Palustrine; Forested, Broad-Leaved Deciduous/Needle-Leaved Evergreen; Seasonally Saturated	2.500
WL	Palustrine; Forested, Broad-Leaved Deciduous/Needle-Leaved Evergreen; Seasonally Saturated	0.046

Wetland A is the largest wetland and is located throughout the delineation area. Wetlands B, C, D, F, G, and H are located along the southeastern portion of the delineation area. Wetlands E, I, J, and L are located along the southwestern portion of the delineation area. Wetland K is located along the northwestern portion of the delineation area. The soils textures within the wetland areas are comprised of a sand content that meets hydric soil indicators S7 – Dark Surface, S8 – Polyvalue Below Surface, A5 - Stratified Layers, A4 – Hydrogen Sulfide, and/or A7 - 5cm Mucky Mineral. The hydrology for this area is supported by localized stormwater and a shallow water table. The wetland vegetation communities within the delineation area vary from large areas of hipped and benched, planted pine habitat [dominated by slash pine (*Pinus elliotii*), inkberry (*Ilex glabra*), Carolina redroot (*Lachnanthes caroliniana*), and Virginia chain fern (*Woodwardia virginica*)] to forested pocosin habitat that exhibited no signs of silvicultural activities [dominated by pond pine (*Pinus serotina*),

pond cypress (*Taxodium ascendens*), loblolly bay (*Gordonia lasianthus*), swamp tupelo (*Nyssa biflora*), large gallberry (*Ilex coriacea*), and Virginia chain fern.

4.3 Streams Identification and Methodology

TTL used the *North Carolina Division of Water Quality – Methodology for Identification of Intermittent and Perennial Streams and Their Origins v. 4.11, September 1, 2010 (NC Method)* technical guideline to determine the most appropriate classification of each subject stream. This technical guideline for stream identification is the preferred methodology for distinguishing between intermittent and perennial streams in the southeast United States and requires evaluation of 26 attributes of the stream and assigning a numeric score to each on the *NC DWQ Stream Identification Form Version 4.11*. A four-tiered, weighted scale is utilized for evaluating and scoring the features categorized in sets of geomorphic, hydrologic, and biological attributes. Additionally, TTL utilized the *Regulatory Guidance Letter No. 05-05: Ordinary High Water Mark Identification* (USACE, 2005) as the basis for the delineation, mapping, and linear footage/areal estimations of on-site streams.

Identified streams were mapped using the method described in Section 4.1. Stream Identification Forms (v. 4.11) were used to classify streams that were not clearly perennial (i.e. flowing water at greater than 48 hours since rainfall, strong morphology and obvious biological presence). TTL traversed the stream channels on foot and placed blue flagging labeled with stream data point identifications near the observed ordinary high water mark (OHWM). The locations of the boundary flags were mapped with a Trimble Geo7x Global Positioning System (GPS) unit, which was set to sub-meter tolerances. Field data was post-processed using Trimble Pathfinder Office V 5.3 and exported to ESRI's ArcMap 10.2. Area features were manually digitized in ArcGIS using the flag locations; geographic coordinates and area quantities were calculated using ArcGIS "area" function.

4.4 Streams Findings

TTL identified four tributaries within the delineation area consisting of approximately 1,977 linear feet of intermittent stream (S1-S3) and 600 linear feet of perennial stream (S4). Streams S1 and S2 are located within the northeastern portion of the delineation area. Stream S3 is located along the southwestern portion of the delineation area. Stream S4 is located along the southeastern portion of the delineation area. Table 4 summarizes the stream findings below.

Table 4: Stream Summary

Wetland ID	Cowardin Habitat Description	Length (linear feet)/ Area (acres)
S1	Riverine; Intermittent; Streambed; Mud	297/ 0.020
S2	Riverine; Intermittent; Streambed; Mud	1268/ 0.233
S3	Riverine; Intermittent; Streambed; Mud	412/ 0.112
S4	Riverine; Lower Perennial; Unconsolidated Bottom; Mud	600/ 0.194

4.5 Jurisdictional Determination Request

The USACE has the sole authority to determine whether wetlands or water features are “jurisdictional.” Under certain circumstances, wetland areas are considered non-jurisdictional because they lack a significant nexus with other wetlands or waters of the U.S. TTL utilized the *USACE Jurisdictional Determination Form Instructional Guidebook* (USACE and EPA, 2007) to complete a *SAS APPENDIX 1: Request for Corps of Engineers Jurisdictional Determination (JD) and/or Delineation Review Form* (Appendix E).

It is TTL’s opinion that all observed tributaries, wetlands, and open waters within the delineation area are jurisdictional features due to their significant nexus to nearby relatively permanent waters.

TTL recommends that a delineation review of aquatic resources of the potentially jurisdictional site features be requested from the USACE Savannah District. If the USACE is not engaged regarding a jurisdictional determination or delineation review of aquatic resources, TTL is neither responsible for the final determination of jurisdictional features within the review corridor, nor responsible for violations associated with unauthorized activities that may occur within areas deemed jurisdictional by the USACE at a later time.

5.0 CONCLUSIONS

- Approximately 631.105 acres of forested wetland were identified within the delineation area.
- Approximately 1,977 linear feet (0.365 acres) of intermittent stream were identified within the delineation area.
- Approximately 600 linear feet (0.194 acres) of perennial stream were identified within the delineation area.
- Upon approval by the client, TTL will submit a request for a delineation review of aquatic resources from the USACE of all aquatic features within the site.

6.0 REFERENCES

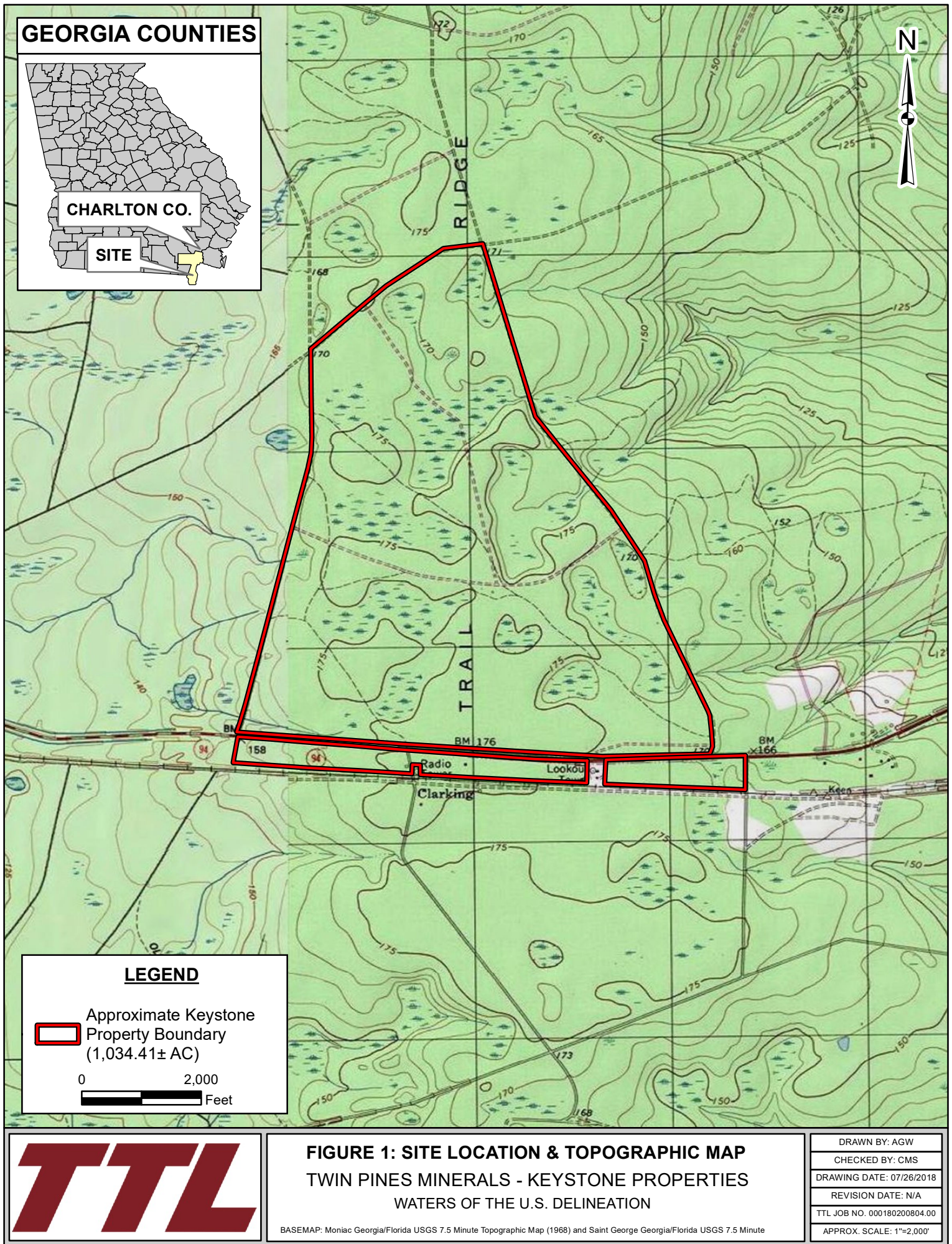
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FIGURES

Figure 1	Project Location and Topographic Map
Figure 2	Site Location & Aerial Photograph
Figure 3	Natural Resources Conservation Service (NRCS) Soil Map w/Hydric Rating
Figure 4	National Wetland Inventory (NWI) Classification Map
Figure 5	Hydrologic Unit Code (HUC) Map
Figure 6	Waters of the U.S. Delineation Map



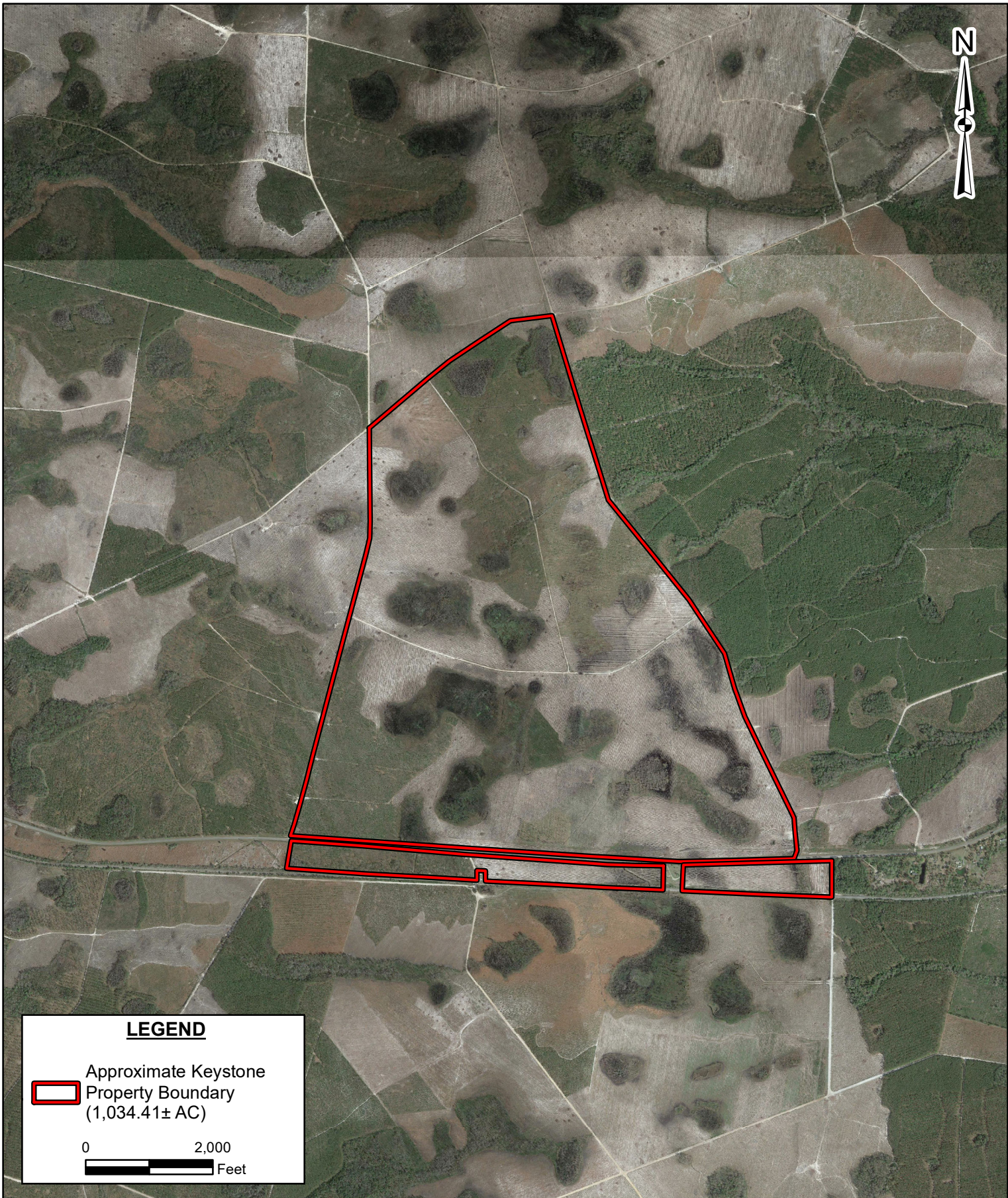
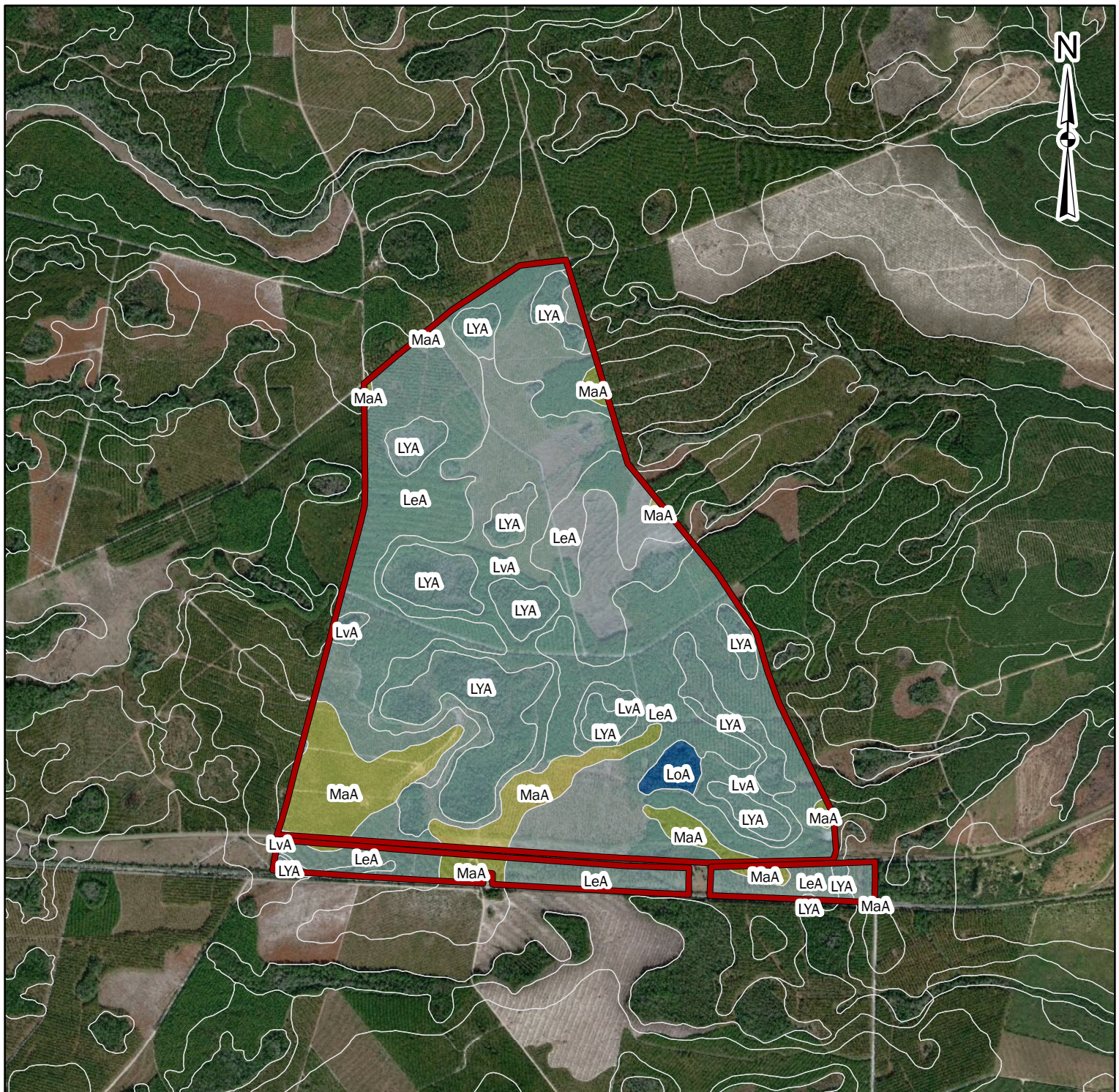


FIGURE 2: SITE LOCATION & AERIAL PHOTOGRAPH
TWIN PINES MINERALS - KEYSTONE PROPERTIES
WATERS OF THE U.S. DELINEATION

BASEMAP: Google Earth, Europa Technologies (C) 2018. Image Date: 3/6/2018

DRAWN BY: CMS
CHECKED BY: CGT
DRAWING DATE: 09/25/2018
REVISION DATE: N/A
TTL JOB NO. 000180200804.00
APPROX SCALE: 1"=2,000'



LEGEND

Approximate Keystone Property Boundary (1,034.41 ±AC)

Off-Site Soils

Hydric Rating

Hydric

Predominantly Hydric

Predominantly Nonhydryc

0 2,000 Feet

Map Unit Symbol	Description	Hydric Rating	Hydric Description
LeA	Leon fine sand, 0 to 2 percent slopes	97	Predominantly Hydric
LoA	Leon fine sand, frequently ponded, 0 to 2 percent slopes	100	Hydric
LvA	Lynn Haven fine sand, 0 to 2 percent slopes	90	Predominantly Hydric
LYA	Lynn Haven, Allanton and Kingsferry soils, ponded, 0 to 1	97	Predominantly Hydric
MaA	Mandarin fine sand, 0 to 2 percent slopes	6	Predominantly Nonhydryc



FIGURE 3: NATURAL RESOURCES CONSERVATION SERVICE (NRCS) MAP WITH HYDRIC RATING
TWIN PINES MINERALS - KEYSTONE PROPERTIES
WATERS OF THE U.S. DELINEATION

BASEMAP: DigitalGlobe, 01/24/2016

DRAWN BY: AGW
CHECKED BY: CMS
DRAWING DATE: 07/26/2018
REVISION DATE: N/A
TTL JOB NO. 000180200804.00
APPROXIMATE SCALE: 1" = 2,000'

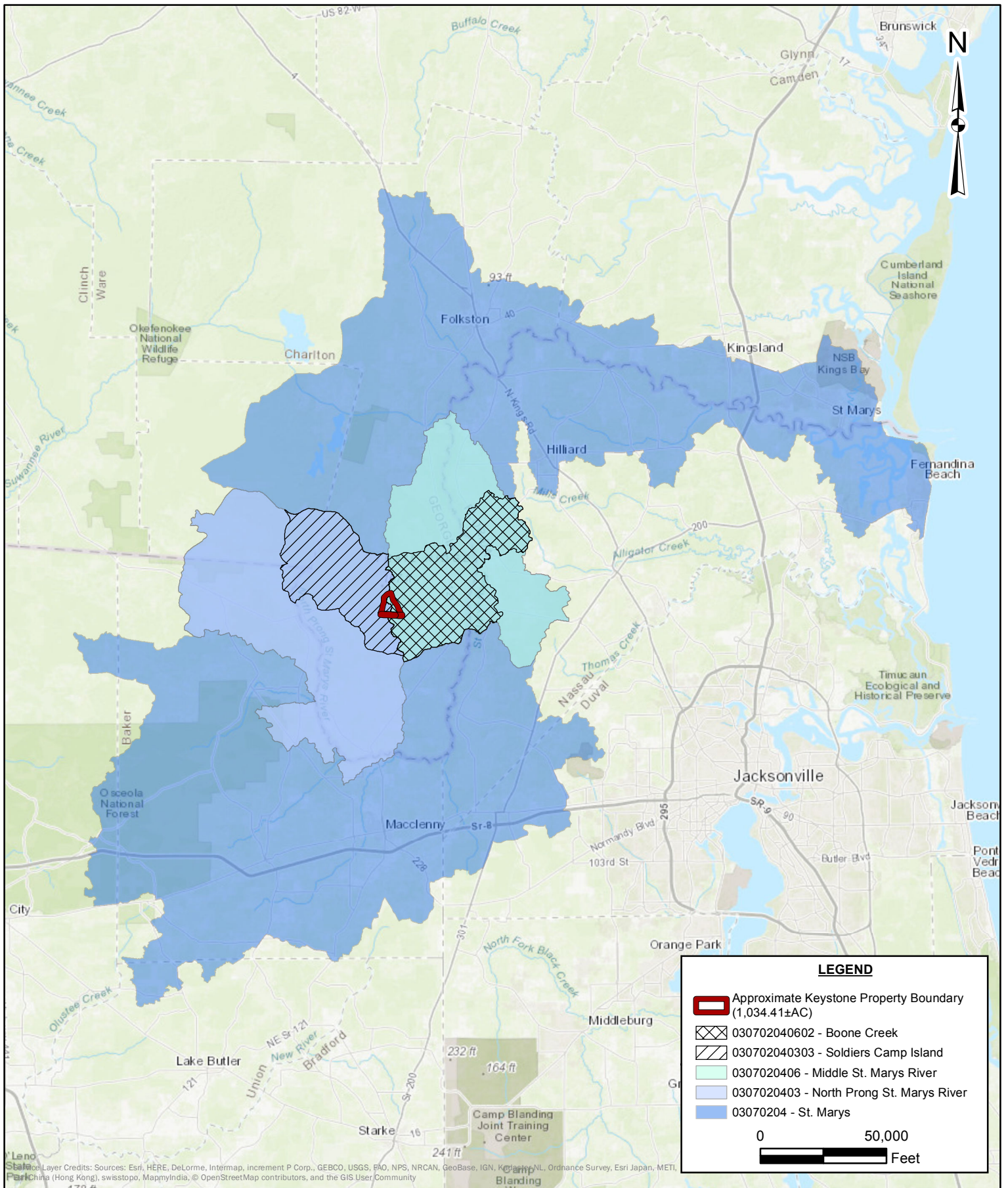
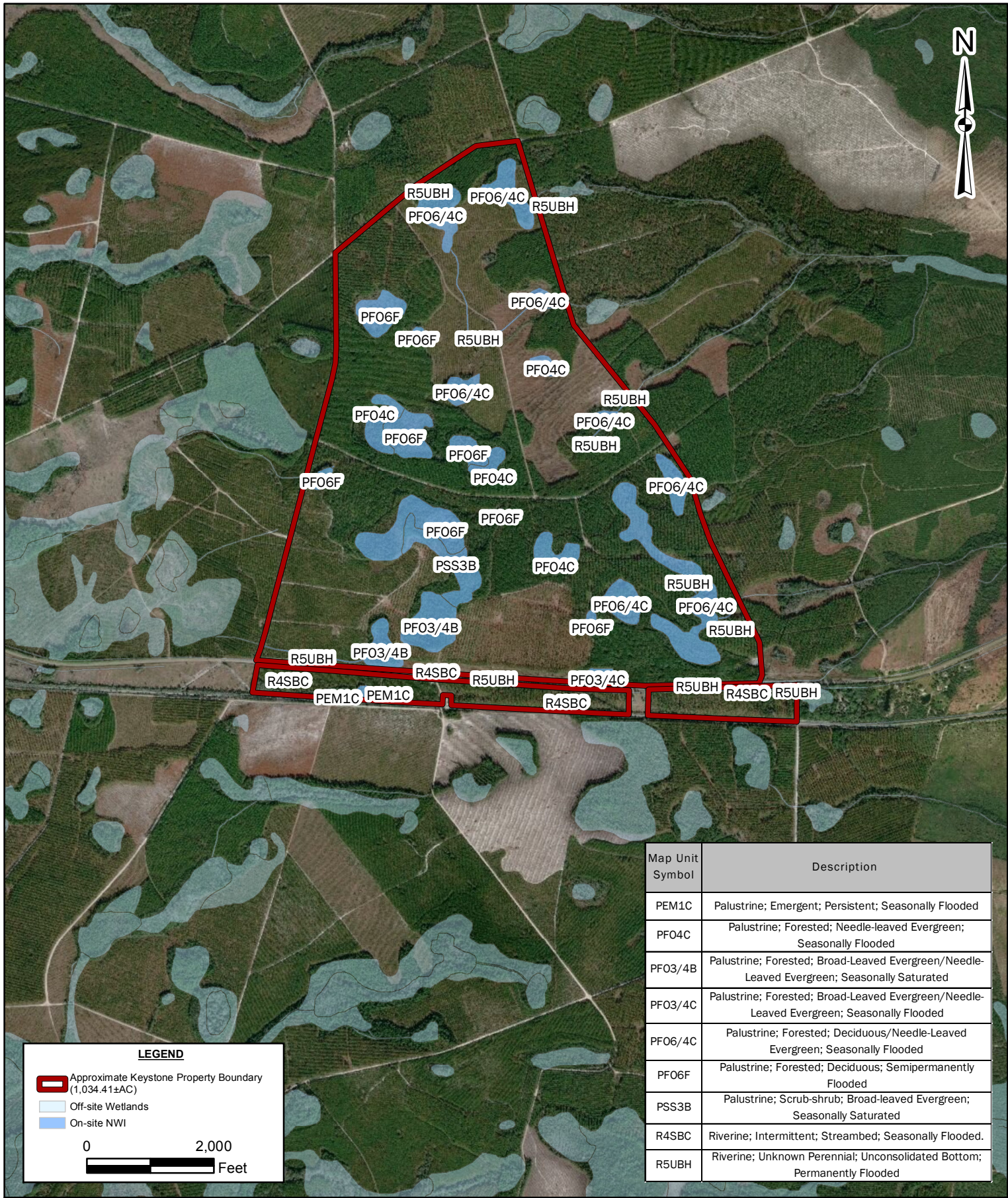


FIGURE 5: HYDROLOGIC UNIT CODE (HUC) MAP
TWIN PINES MINERALS - KEYSTONE PROPERTIES
WATERS OF THE U.S. DELINEATION

DRAWN BY: AGW
CHECKED BY: CMS
DRAWING DATE: 07/26/2018
REVISION DATE: N/A
TTL JOB NO. 000180200804.00
APPROXIMATE SCALE: 1" = 50,000'





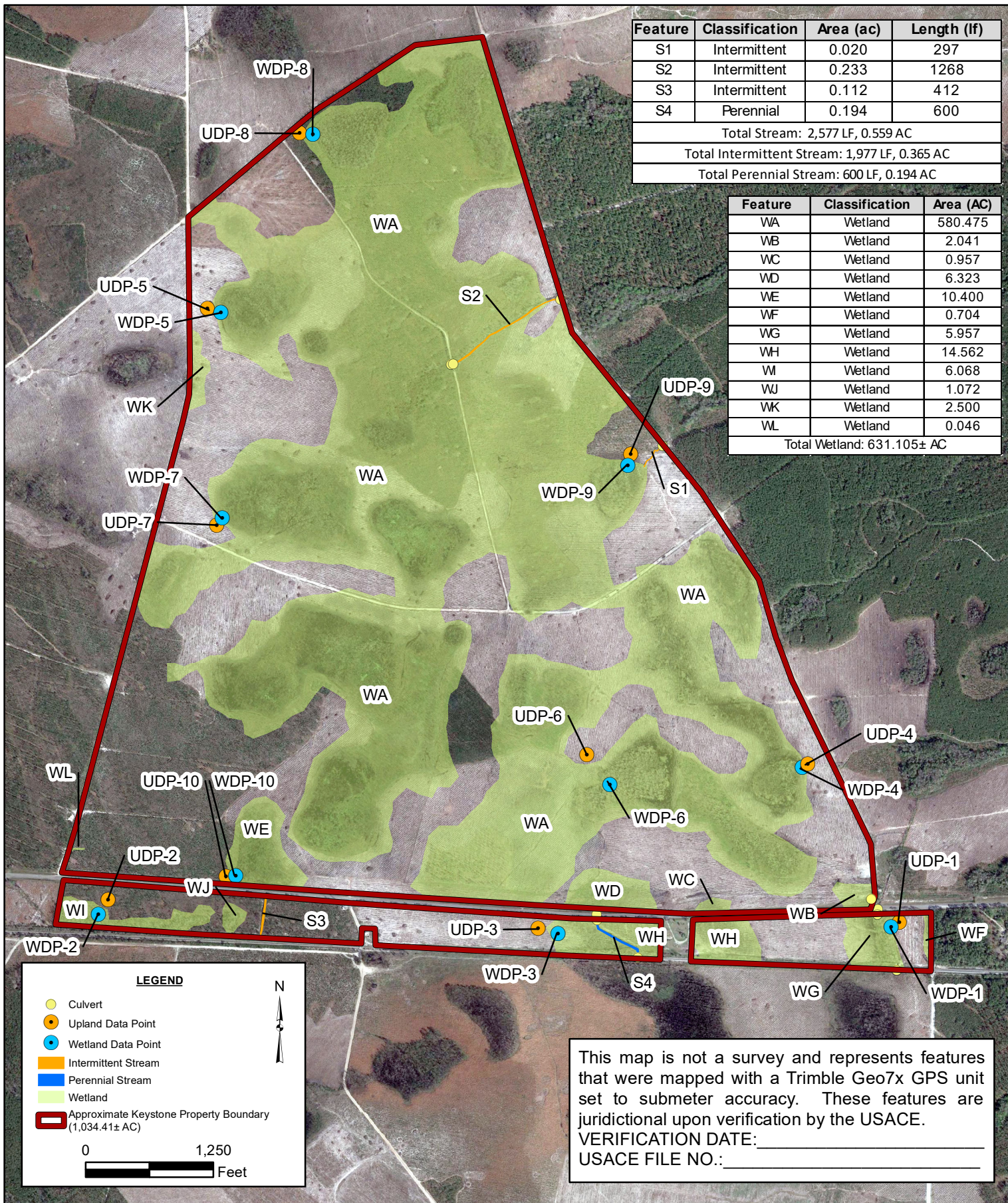
Map Unit Symbol	Description
PEM1C	Palustrine; Emergent; Persistent; Seasonally Flooded
PF04C	Palustrine; Forested; Needle-leaved Evergreen; Seasonally Flooded
PF03/4B	Palustrine; Forested; Broad-Leaved Evergreen/Needle-Leaved Evergreen; Seasonally Saturated
PF03/4C	Palustrine; Forested; Broad-Leaved Evergreen/Needle-Leaved Evergreen; Seasonally Flooded
PF06/4C	Palustrine; Forested; Deciduous/Needle-Leaved Evergreen; Seasonally Flooded
PF06F	Palustrine; Forested; Deciduous; Semipermanently Flooded
PSS3B	Palustrine; Scrub-shrub; Broad-leaved Evergreen; Seasonally Saturated
R4SBC	Riverine; Intermittent; Streambed; Seasonally Flooded.
R5UBH	Riverine; Unknown Perennial; Unconsolidated Bottom; Permanently Flooded



FIGURE 5: NATIONAL WETLAND INVENTORY (NWI) MAP
TWIN PINES MINERALS - KEYSTONE PROPERTIES
WATERS OF THE U.S. DELINEATION

BASEMAP: DigitalGlobe, 01/24/2016

DRAWN BY: AGW
CHECKED BY: CMS
DRAWING DATE: 07/26/2018
REVISION DATE: N/A
TTL JOB NO. 000180200804.00
APPROXIMATE SCALE: 1" = 2,000'



Feature	Classification	Area (ac)	Length (lf)
S1	Intermittent	0.020	297
S2	Intermittent	0.233	1268
S3	Intermittent	0.112	412
S4	Perennial	0.194	600
Total Stream: 2,577 LF, 0.559 AC			
Total Intermittent Stream: 1,977 LF, 0.365 AC			
Total Perennial Stream: 600 LF, 0.194 AC			

Feature	Classification	Area (AC)
WA	Wetland	580.475
WB	Wetland	2.041
WC	Wetland	0.957
WD	Wetland	6.323
WE	Wetland	10.400
WF	Wetland	0.704
WG	Wetland	5.957
WH	Wetland	14.562
WI	Wetland	6.068
WJ	Wetland	1.072
WK	Wetland	2.500
WL	Wetland	0.046
Total Wetland: 631.105± AC		

LEGEND

- Culvert
- Upland Data Point
- Wetland Data Point
- Intermittent Stream
- Perennial Stream
- Wetland
- Approximate Keystone Property Boundary (1,034.41± AC)

0 1,250 Feet

N

This map is not a survey and represents features that were mapped with a Trimble Geo7x GPS unit set to submeter accuracy. These features are jurisdictional upon verification by the USACE.

VERIFICATION DATE: _____

USACE FILE NO.: _____



FIGURE 6: WATERS OF THE US DELINEATION MAP

TWIN PINES MINERALS - KEystone PROPERTIES

WATERS OF THE U.S. DELINEATION

BASEMAP: Google Earth, Europa Technologies (C) 2018. Image Date: 3/6/2018

DRAWN BY: CMS
CHECKED BY: CGT
DRAWING DATE: 09/18/2018
REVISION DATE: N/A
TTL JOB NO. 000180200804.00
APPROX. SCALE: 1" = 2,000'

APPENDIX A

Normal Weather Conditions Table
AgACIS Data
U.S. Drought Monitor – Alabama
Palmer Drought Index

Calculation of Normal Weather Conditions
General Project Location: Folkston, Georgia
Analysis for August 2018 Site Visit

		Long-Term Rainfall Records								
	Month	Standard Deviation*	Minus One Standard Deviation (Dry)	Normal* (Mean Inches)	Plus One Standard Deviation (Wet)	Actual Rainfall**	Condition (wet, normal, dry)	Condition Value***	Month Weight Value	Weighted Value
1st prior month	Jul 20 - Aug 20	3.06	3.64	6.70	9.76	13.56	wet	3	3	9
2nd prior month	Jun 20 - Jul 20	2.91	4.32	7.23	10.14	5.38	normal	2	2	4
3rd prior month	May 20 - Jun 20	2.76	3.14	5.90	8.66	7.00	normal	2	1	2
									Sum:	15

Sum: Conclusion:
6-9 prior period has been drier than normal
10-14 prior period has been normal

15-18	prior period has been wetter than normal
--------------	---

* Standard Deviation and Mean Values can be found through the National Oceanic and Atmospheric Associations Earth System Research Laboratory:
<http://www.esrl.noaa.gov/psd/data/usstation/>

** Rainfall data can be found through Natural Resources Conservation Service, Agricultural Applied Climate Information System

*** Condition Values: 1 = dry, 2 = normal, 3 = wet

Climatological Data for FOLKSTON 9 SW, GA - May 2018

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2018-05-01	85	53	69.0	29	19	0.00	M	M
2018-05-02	85	54	69.5	30	20	0.00	M	M
2018-05-03	84	55	69.5	30	20	0.00	M	M
2018-05-04	87	58	72.5	33	23	0.00	M	M
2018-05-05	88	57	72.5	33	23	0.00	M	M
2018-05-06	87	63	75.0	35	25	0.00	M	M
2018-05-07	88	59	73.5	34	24	0.00	M	M
2018-05-08	89	58	73.5	34	24	0.00	M	M
2018-05-09	87	59	73.0	33	23	0.00	M	M
2018-05-10	94	61	77.5	38	28	0.00	M	M
2018-05-11	96	64	80.0	40	30	0.00	M	M
2018-05-12	96	63	79.5	40	30	0.00	M	M
2018-05-13	95	63	79.0	39	29	0.00	M	M
2018-05-14	93	62	77.5	38	28	0.00	M	M
2018-05-15	85	70	77.5	38	28	0.48	M	M
2018-05-16	85	66	75.5	36	26	0.14	M	M
2018-05-17	83	68	75.5	36	26	1.72	M	M
2018-05-18	88	69	78.5	39	29	0.43	M	M
2018-05-19	89	67	78.0	38	28	0.01	M	M
2018-05-20	89	69	79.0	39	29	0.87	M	M
2018-05-21	81	67	74.0	34	24	0.56	M	M
2018-05-22	85	69	77.0	37	27	0.79	M	M
2018-05-23	89	67	78.0	38	28	0.04	M	M
2018-05-24	91	69	80.0	40	30	0.61	M	M
2018-05-25	93	70	81.5	42	32	0.06	M	M
2018-05-26	89	69	79.0	39	29	0.20	M	M
2018-05-27	85	72	78.5	39	29	0.35	M	M
2018-05-28	88	73	80.5	41	31	0.80	M	M
2018-05-29	90	73	81.5	42	32	0.46	M	M
2018-05-30	86	71	78.5	39	29	0.44	M	M
2018-05-31	91	72	81.5	42	32	0.25	M	M
Average Sum	88.4	64.8	76.6	1145	835	8.21	M	M

Climatological Data for FARGO 17 NE, GA - June 2018

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2018-06-01	92	74	83.0	43	33	0.75	M	M
2018-06-02	94	74	84.0	44	34	0.06	M	M
2018-06-03	M	M	M	M	M	M	M	M
2018-06-04	95	75	85.0	45	35	0.00	M	M
2018-06-05	M	M	M	M	M	M	M	M
2018-06-06	87	72	79.5	40	30	0.00	M	M
2018-06-07	M	M	M	M	M	M	M	M
2018-06-08	83	71	77.0	37	27	0.00	M	M
2018-06-09	93	72	82.5	43	33	0.00	M	M
2018-06-10	M	M	M	M	M	M	M	M
2018-06-11	91	69	80.0	40	30	0.00	M	M
2018-06-12	88	72	80.0	40	30	0.65	M	M
2018-06-13	M	M	M	M	M	M	M	M
2018-06-14	94	71	82.5	43	33	0.00	M	M
2018-06-15	93	72	82.5	43	33	0.00	M	M
2018-06-16	M	M	M	M	M	M	M	M
2018-06-17	93	73	83.0	43	33	0.09	M	M
2018-06-18	M	M	M	M	M	0.02	M	M
2018-06-19	M	M	M	M	M	0.00	M	M
2018-06-20	98	75	86.5	47	37	0.00	M	M
2018-06-21	98	73	85.5	46	36	0.09	M	M
2018-06-22	99	76	87.5	48	38	0.00	M	M
2018-06-23	M	M	M	M	M	M	M	M
2018-06-24	96	77	86.5	47	37	0.00	M	M
2018-06-25	98	75	86.5	47	37	0.00	M	M
2018-06-26	99	72	85.5	46	36	1.25	M	M
2018-06-27	95	73	84.0	44	34	0.00	M	M
2018-06-28	97	73	85.0	45	35	0.60	M	M
2018-06-29	94	74	84.0	44	34	0.36	M	M
2018-06-30	M	M	M	M	M	M	M	M
Average Sum	93.9	73.2	83.5	875	675	3.87	M	M

Climatological Data for FOLKSTON 9 SW, GA - July 2018

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2018-07-01	93	71	82.0	42	32	0.36	M	M
2018-07-02	93	72	82.5	43	33	0.00	M	M
2018-07-03	93	73	83.0	43	33	0.00	M	M
2018-07-04	90	73	81.5	42	32	0.02	M	M
2018-07-05	89	71	80.0	40	30	0.57	M	M
2018-07-06	88	73	80.5	41	31	0.03	M	M
2018-07-07	92	71	81.5	42	32	0.00	M	M
2018-07-08	88	70	79.0	39	29	0.00	M	M
2018-07-09	92	72	82.0	42	32	0.00	M	M
2018-07-10	95	73	84.0	44	34	0.00	M	M
2018-07-11	96	72	84.0	44	34	0.00	M	M
2018-07-12	98	73	85.5	46	36	0.00	M	M
2018-07-13	98	74	86.0	46	36	0.00	M	M
2018-07-14	98	75	86.5	47	37	0.00	M	M
2018-07-15	95	73	84.0	44	34	0.61	M	M
2018-07-16	93	73	83.0	43	33	0.50	M	M
2018-07-17	93	74	83.5	44	34	0.10	M	M
2018-07-18	94	75	84.5	45	35	0.06	M	M
2018-07-19	95	75	85.0	45	35	0.75	M	M
2018-07-20	89	75	82.0	42	32	0.08	M	M
2018-07-21	90	72	81.0	41	31	0.35	M	M
2018-07-22	91	72	81.5	42	32	0.02	M	M
2018-07-23	87	69	78.0	38	28	0.00	M	M
2018-07-24	92	70	81.0	41	31	0.00	M	M
2018-07-25	93	70	81.5	42	32	3.46	M	M
2018-07-26	92	73	82.5	43	33	0.01	M	M
2018-07-27	95	75	85.0	45	35	0.00	M	M
2018-07-28	97	71	84.0	44	34	1.02	M	M
2018-07-29	97	74	85.5	46	36	0.13	M	M
2018-07-30	93	72	82.5	43	33	0.63	M	M
2018-07-31	89	75	82.0	42	32	0.09	M	M
Average Sum	92.8	72.6	82.7	1331	1021	8.79	M	M

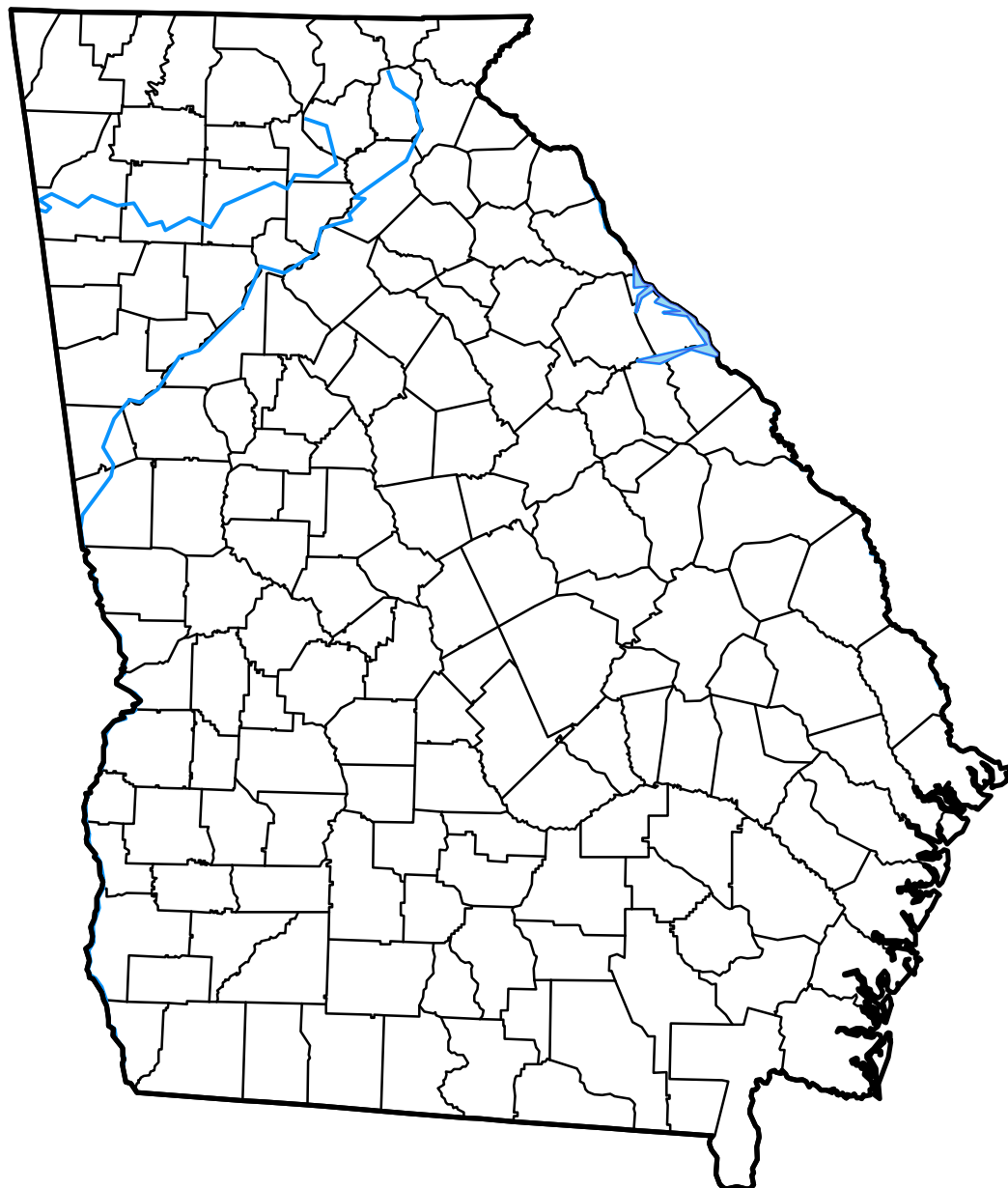
Climatological Data for FARGO 17 NE, GA - August 2018

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2018-08-01	83	73	78.0	38	28	1.08	M	M
2018-08-02	90	75	82.5	43	33	0.72	M	M
2018-08-03	92	72	82.0	42	32	1.96	M	M
2018-08-04	92	73	82.5	43	33	1.32	M	M
2018-08-05	M	M	M	M	M	M	M	M
2018-08-06	95	75	85.0	45	35	0.00	M	M
2018-08-07	95	74	84.5	45	35	0.21	M	M
2018-08-08	94	76	85.0	45	35	0.00	M	M
2018-08-09	97	77	87.0	47	37	0.00	M	M
2018-08-10	93	74	83.5	44	34	0.25	M	M
2018-08-11	95	74	84.5	45	35	0.00	M	M
2018-08-12	M	M	M	M	M	M	M	M
2018-08-13	M	M	M	M	M	M	M	M
2018-08-14	95	76	85.5	46	36	0.02	M	M
2018-08-15	95	76	85.5	46	36	0.00	M	M
2018-08-16	90	73	81.5	42	32	1.00	M	M
2018-08-17	96	73	84.5	45	35	1.21	M	M
2018-08-18	M	M	M	M	M	M	M	M
2018-08-19	M	M	M	M	M	M	M	M
2018-08-20	M	M	M	M	M	M	M	M
2018-08-21	M	M	M	M	M	M	M	M
2018-08-22	M	M	M	M	M	M	M	M
2018-08-23	93	74	83.5	44	34	0.01	M	M
2018-08-24	93	76	84.5	45	35	0.00	M	M
2018-08-25	M	M	M	M	M	M	M	M
2018-08-26	93	75	84.0	44	34	0.00	M	M
2018-08-27	94	74	84.0	44	34	0.00	M	M
2018-08-28	94	74	84.0	44	34	0.01	M	M
2018-08-29	M	M	M	M	M	M	M	M
2018-08-30	91	72	81.5	42	32	0.06	M	M
2018-08-31	91	72	81.5	42	32	0.15	M	M
Average Sum	92.9	74.2	83.5	921	711	8.00	M	M

U.S. Drought Monitor

Georgia

August 21, 2018
 (Released Thursday, Aug. 23, 2018)
 Valid 8 a.m. EDT



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	100.00	0.00	0.00	0.00	0.00	0.00
Last Week <i>08-14-2018</i>	100.00	0.00	0.00	0.00	0.00	0.00
3 Months Ago <i>05-22-2018</i>	66.63	33.37	0.00	0.00	0.00	0.00
Start of Calendar Year <i>01-02-2018</i>	12.14	87.86	40.66	0.00	0.00	0.00
Start of Water Year <i>09-26-2017</i>	100.00	0.00	0.00	0.00	0.00	0.00
One Year Ago <i>08-22-2017</i>	100.00	0.00	0.00	0.00	0.00	0.00

Intensity:

 D0 Abnormally Dry	 D3 Extreme Drought
 D1 Moderate Drought	 D4 Exceptional Drought
 D2 Severe Drought	

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:

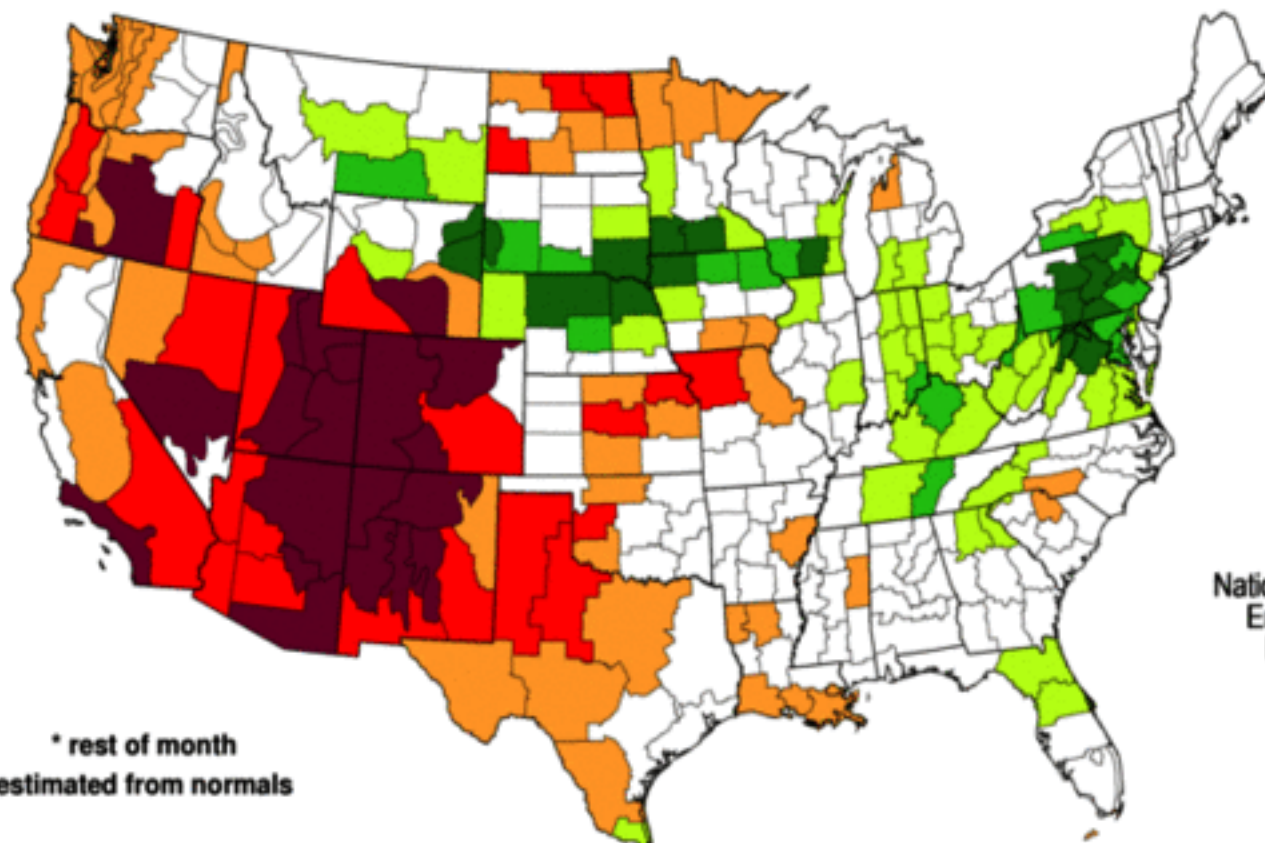
Jessica Blunden
 NCEI/NOAA



<http://droughtmonitor.unl.edu/>

Palmer Hydrological Drought Index Long-Term (Hydrological) Conditions

August 2018: through August 18 2018*



National Centers for
Environmental
Information

* rest of month
estimated from normals

extreme
drought



-4.00
and
below

severe
drought



-3.00
to
-3.99

moderate
drought



-2.00
to
-2.99

mid-
range



-1.99
to
+1.99

moderately
moist



+2.00
to
+2.99

very
moist



+3.00
to
+3.99

extremely
moist



+4.00
and
above

APPENDIX B

Site Photographs

Site Photographs

Waters of the U.S. Delineation – Keystone Tract – TTL Project No. 000180200804.00
Twin Pines Minerals • Charlton County, Georgia
Photos taken August 20-31, 2018



Photograph 1: View of the typical planted pine habitat within Wetland A (WA).



Photograph 2: View of the intermittent Stream 1 (S1).

TTL

Site Photographs

Waters of the U.S. Delineation – Keystone Tract – TTL Project No. 000180200804.00
Twin Pines Minerals • Charlton County, Georgia
Photos taken August 20-31, 2018



Photograph 3: View of the intermittent Stream 2 (S2).



Photograph 4: View of the Upland Data Point 1 (UDP-1) location.

TTL

Site Photographs

Waters of the U.S. Delineation – Keystone Tract – TTL Project No. 000180200804.00
Twin Pines Minerals • Charlton County, Georgia
Photos taken August 20-31, 2018



Photograph 5: View of the Wetland Data Point 1 (WDP-1) location within Wetland G (WG).



Photograph 6: View of the Upland Data Point 2 (UDP-2) location.

TTL

Site Photographs

Waters of the U.S. Delineation – Keystone Tract – TTL Project No. 000180200804.00
Twin Pines Minerals • Charlton County, Georgia
Photos taken August 20-31, 2018



Photograph 7: View of the Wetland Data Point 2 (WDP-2) location within a forested (planted pine) portion of Wetland I (WI).



Photograph 8: View of the Upland Data Point 3 (UDP-3) location.

TTL

Site Photographs

Waters of the U.S. Delineation - Keystone Tract - TTL Project No. 000180200804.00
Twin Pines Minerals • Charlton County, Georgia
Photos taken August 20-31, 2018



Photograph 9: View of the Wetland Data Point 3 (WDP-3) location within Wetland H (WH).



Photograph 10: View of the Wetland Data Point 4 (WDP-4) location within Wetland A (WA).

TTL

Site Photographs

Waters of the U.S. Delineation - Keystone Tract - TTL Project No. 000180200804.00
Twin Pines Minerals • Charlton County, Georgia
Photos taken August 20-31, 2018



Photograph 11: View of the Upland Data Point 4 (UDP-4) location.



Photograph 12: View of the Upland Data Point 5 (UDP-5) location.

TTL

Site Photographs

Waters of the U.S. Delineation – Keystone Tract – TTL Project No. 000180200804.00
Twin Pines Minerals • Charlton County, Georgia
Photos taken August 20-31, 2018



Photograph 13: View of the Wetland Data Point 5 (WDP-5) location within Wetland A (WA).



Photograph 14: View of the Upland Data Point 6 (UDP-6) location.

TTL

Site Photographs

Waters of the U.S. Delineation – Keystone Tract – TTL Project No. 000180200804.00
Twin Pines Minerals • Charlton County, Georgia
Photos taken August 20-31, 2018



Photograph 15: View of the Wetland Data Point 6 (WDP-6) location within Wetland A (WA).



Photograph 16: View of the Upland Data Point 7 (UDP-7) location.

TTL

Site Photographs

Waters of the U.S. Delineation – Keystone Tract – TTL Project No. 000180200804.00
Twin Pines Minerals • Charlton County, Georgia
Photos taken August 20-31, 2018



Photograph 17: View of the Wetland Data Point 7 (WDP-7) location within Wetland A (WA).



Photograph 18: View of the Upland Data Point 8 (UDP-8) location.

TTL

Site Photographs

Waters of the U.S. Delineation – Keystone Tract – TTL Project No. 000180200804.00
Twin Pines Minerals • Charlton County, Georgia
Photos taken August 20-31, 2018



Photograph 19: View of the Wetland Data Point 8 (WDP-8) location within Wetland A (WA).



Photograph 20: View of the Upland Data Point 9 (UDP-9) location.

TTL

Site Photographs

Waters of the U.S. Delineation - Keystone Tract - TTL Project No. 000180200804.00
Twin Pines Minerals • Charlton County, Georgia
Photos taken August 20-31, 2018



Photograph 21: View of the Wetland Data Point 9 (WDP-9) location within Wetland A (WA).



Photograph 22: View of the Upland Data Point 10 (UDP-10) location.

TTL

Site Photographs

Waters of the U.S. Delineation - Keystone Tract - TTL Project No. 000180200804.00
Twin Pines Minerals • Charlton County, Georgia
Photos taken August 20-31, 2018



Photograph 23: View of the Wetland Data Point 10 (WDP-10) location within Wetland E (WE).



Photograph 24: View of the perennial Stream 4 (S4).

TTL

Site Photographs

Waters of the U.S. Delineation - Keystone Tract - TTL Project No. 000180200804.00
Twin Pines Minerals • Charlton County, Georgia
Photos taken August 20-31, 2018



Photograph 25: View of the intermittent Stream 3 (S3).

APPENDIX C

U.S. Army Corps of Engineers Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Keystone Tract City/County: Charlton County Sampling Date: 08/27/2018
 Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: UDP-1
 Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
 Landform (hillslope, terrace, etc.): Flatwoods Local relief (concave, convex, none): None Slope (%): 0-2%
 Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.51715391350 Long: -82.10152815020 Datum: NAD83
 Soil Map Unit Name: Leon fine sand, 0-2% slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)
 Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____
 Are Vegetation No, Soil No, or Hydrology No 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>✓</u> No _____	Is the Sampled Area within a Wetland? Yes _____ No <u>✓</u>
Hydric Soil Present? Yes _____ No <u>✓</u>	
Wetland Hydrology Present? Yes _____ No <u>✓</u>	
Remarks:	
- Site observations and local hydrological data support moderately wet conditions present during site visit. - Vegetation historically impacted by silvicultural activities (planted pine). - Soils/Hydrology historically impacted by silvicultural activities (hipping/benching for planted pine).	

HYDROLOGY

Wetland Hydrology Indicators:		<u>Secondary Indicators (minimum of two required)</u>
<u>Primary Indicators (minimum of one is required; check all that apply)</u>		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Marl Deposits (B15) (LRR U)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> FAC-Neutral Test (D5)
		<input type="checkbox"/> Sphagnum moss (D8) (LRR T,U)
Field Observations:		
Surface Water Present? Yes _____ No <u>✓</u>	Depth (inches): _____	Wetland Hydrology Present? Yes _____ No <u>✓</u>
Water Table Present? Yes _____ No <u>✓</u>	Depth (inches): _____	
Saturation Present? Yes _____ No <u>✓</u> (includes capillary fringe)	Depth (inches): _____	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: FAC-Neutral Test Results: Negative FACW and OBL: 2 to FACU and UPL: 3		

VEGETATION – Use scientific names of plants.

 Sampling Point: UDP-1

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>75%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: <u>35.00</u> 20% of total cover: <u>14.00</u>	<u>0.0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (<u>30 ft radius</u>)				
1. <u><i>Pinus elliotii</i></u>	<u>20.0</u>	<u>yes</u>	<u>FACW</u>	
2. <u><i>Quercus pumila</i></u>	<u>5.0</u>	<u>yes</u>	<u>UPL</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>12.50</u> 20% of total cover: <u>5.00</u>	<u>25.0</u>	= Total Cover		Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Shrub Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>22.50</u> 20% of total cover: <u>9.00</u>	<u>0.0</u>	= Total Cover		Definitions of 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>
Herb Stratum (<u>30 ft radius</u>)				
1. <u><i>Euphorbia curtisii</i></u>	<u>20.0</u>	<u>yes</u>	<u>FAC</u>	
2. <u><i>Kyllinga brevifolia</i></u>	<u>15.0</u>	<u>yes</u>	<u>FACW</u>	
3. <u><i>Smilax auriculata</i></u>	<u>10.0</u>	<u>no</u>	<u>FACU</u>	
4. <u><i>Andropogon virginicus</i></u>	<u>10.0</u>	<u>no</u>	<u>FAC</u>	
5. <u><i>Paspalum dilatatum</i></u>	<u>5.0</u>	<u>no</u>	<u>FAC</u>	
6. <u><i>Smilax pumila</i></u>	<u>5.0</u>	<u>no</u>	<u>UPL</u>	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
50% of total cover: <u>32.50</u> 20% of total cover: <u>13.00</u>	<u>65.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.

SOIL

Sampling Point: UDP-1**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-5"	10YR 5/1	100					Sa	
5-18"	10YR 7/1	100					Sa	

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

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ Organic Bodies (A6) **(LRR P, T, U)**
☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
☐ Muck Presence (A8) **(LRR U)**
☐ 1 cm Muck (A9) **(LRR P, T)**
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Coast Prairie Redox (A16) **(MLRA 150A)**
☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
☐ Thin Dark Surface (S9) **(LRR S, T, U)**
☐ Loamy Mucky Mineral (F1) **(LRR O)**
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Marl (F10) **(LRR U)**
☐ Depleted Ochric (F11) **(MLRA 151)**
☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
☐ Umbric Surface (F13) **(LRR P, T, U)**
☐ Delta Ochric (F17) **(MLRA 151)**
☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
☐ 2 cm Muck (A10) **(LRR S)**
☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
☐ Anomalous Bright Loamy Soils (F20)
(MLRA 153B)
☐ Red Parent Material (TF2)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ☒

Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mu=Muck; Pe= Peat; Sa= Sand; Si=Silt

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Keystone Tract City/County: Charlton County Sampling Date: 08/27/2018
 Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: UDP-2
 Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
 Landform (hillslope, terrace, etc.): Flatwoods Local relief (concave, convex, none): None Slope (%): 0-2%
 Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.51776282830 Long: -82.12612354620 Datum: NAD83
 Soil Map Unit Name: Leon fine sand, 0-2% slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ☒ (If no, explain in Remarks.)
 Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No _____
 Are Vegetation No, Soil No, or Hydrology No 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 <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/>	
Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	
Remarks:	
- Site observations and local hydrological data support moderately wet conditions present during site visit. - Vegetation historically impacted by silvicultural activities (planted pine). - Soils/Hydrology historically impacted by silvicultural activities (hipping/benching for planted pine).	

HYDROLOGY

Wetland Hydrology Indicators:		<u>Secondary Indicators (minimum of two required)</u>
<u>Primary Indicators (minimum of one is required; check all that apply)</u>		_____ Surface Soil Cracks (B6)
_____ Surface Water (A1)	_____ Aquatic Fauna (B13)	_____ Sparsely Vegetated Concave Surface (B8)
_____ High Water Table (A2)	_____ Marl Deposits (B15) (LRR U)	_____ Drainage Patterns (B10)
_____ Saturation (A3)	_____ Hydrogen Sulfide Odor (C1)	_____ Moss Trim Lines (B16)
_____ Water Marks (B1)	_____ Oxidized Rhizospheres along Living Roots (C3)	_____ Dry-Season Water Table (C2)
_____ Sediment Deposits (B2)	_____ Presence of Reduced Iron (C4)	_____ Crayfish Burrows (C8)
_____ Drift Deposits (B3)	_____ Recent Iron Reduction in Tilled Soils (C6)	_____ Saturation Visible on Aerial Imagery (C9)
_____ Algal Mat or Crust (B4)	_____ Thin Muck Surface (C7)	_____ Geomorphic Position (D2)
_____ Iron Deposits (B5)	_____ Other (Explain in Remarks)	_____ Shallow Aquitard (D3)
_____ Inundation Visible on Aerial Imagery (B7)		_____ FAC-Neutral Test (D5)
_____ Water-Stained Leaves (B9)		_____ Sphagnum moss (D8) (LRR T,U)
Field Observations:		Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>
Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____	Water Table Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____	
Saturation Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: FAC-Neutral Test Results: Negative FACW and OBL: 3 to FACU and UPL: 4		

VEGETATION – Use scientific names of plants.

 Sampling Point: UDP-2

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u><i>Pinus elliottii</i></u>	<u>70.0</u>	<u>yes</u>	<u>FACW</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>6</u> (A) Total Number of Dominant Species Across All Strata: <u>10</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>60%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: <u>35.00</u> 20% of total cover: <u>14.00</u>	<u>70.0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>15.00</u> 20% of total cover: <u>6.00</u>	<u>0.0</u>	= Total Cover		Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Shrub Stratum (<u>30 ft radius</u>)				
1. <u><i>Ilex glabra</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>	
2. <u><i>Serenoa repens</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACU</u>	
3. <u><i>Gaylussacia dumosa</i></u>	<u>10.0</u>	<u>yes</u>	<u>FAC</u>	
4. <u><i>Rhus copallinum</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACU</u>	
5. _____	_____	_____	_____	
50% of total cover: <u>20.00</u> 20% of total cover: <u>8.00</u>	<u>40.0</u>	= Total Cover		Definitions of 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>
Herb Stratum (<u>30 ft radius</u>)				
1. <u><i>Dichanthelium aciculare</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACU</u>	
2. <u><i>Andropogon virginicus</i></u>	<u>10.0</u>	<u>yes</u>	<u>FAC</u>	
3. <u><i>Scleria triglomerata</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>	
4. <u><i>Pteridium aquilinum</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACU</u>	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
50% of total cover: <u>20.00</u> 20% of total cover: <u>8.00</u>	<u>40.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				
1. <u><i>Vitis rotundifolia</i></u>	<u>10.0</u>	<u>yes</u>	<u>FAC</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>5.00</u> 20% of total cover: <u>2.00</u>	<u>10.0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.

SOIL

Sampling Point: UDP-2**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features			Loc ²	Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹			
0-18"	10YR 3/1	60	10YR 5/1	40	MS	M	Sa	

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

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ Organic Bodies (A6) **(LRR P, T, U)**
☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
☐ Muck Presence (A8) **(LRR U)**
☐ 1 cm Muck (A9) **(LRR P, T)**
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Coast Prairie Redox (A16) **(MLRA 150A)**
☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
☐ Thin Dark Surface (S9) **(LRR S, T, U)**
☐ Loamy Mucky Mineral (F1) **(LRR O)**
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Marl (F10) **(LRR U)**
☐ Depleted Ochric (F11) **(MLRA 151)**
☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
☐ Umbric Surface (F13) **(LRR P, T, U)**
☐ Delta Ochric (F17) **(MLRA 151)**
☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
☐ 2 cm Muck (A10) **(LRR S)**
☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
☐ Anomalous Bright Loamy Soils (F20)
(MLRA 153B)
☐ Red Parent Material (TF2)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ☒

Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mu=Muck; Pe= Peat; Sa= Sand; Si=Silt

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Keystone Tract City/County: Charlton County Sampling Date: 08/27/2018
 Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: UDP-3
 Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
 Landform (hillslope, terrace, etc.): Flatwoods Local relief (concave, convex, none): None Slope (%): 0-2%
 Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.51698859260 Long: -82.11275598270 Datum: NAD83
 Soil Map Unit Name: Leon fine sand, 0-2% slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ☒ (If no, explain in Remarks.)
 Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No _____
 Are Vegetation No, Soil No, or Hydrology No 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 <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/>	
Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	
Remarks: - Site observations and local hydrological data support moderately wet conditions present during site visit. - Vegetation historically impacted by silvicultural activities (planted pine) - Soils/Hydrology historically impacted by silvicultural activities (hipping/benching for planted pine).	

HYDROLOGY

Wetland Hydrology Indicators:		<u>Secondary Indicators (minimum of two required)</u>
<u>Primary Indicators (minimum of one is required; check all that apply)</u>		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Marl Deposits (B15) (LRR U)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input checked="" type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
		<input type="checkbox"/> Sphagnum moss (D8) (LRR T,U)
Field Observations:		
Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____	Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	
Water Table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>13</u>		
Saturation Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: FAC-Neutral Test Results: Positive FACW and OBL: 3 to FACU and UPL: 2		

VEGETATION – Use scientific names of plants.

 Sampling Point: UDP-3

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (<u>30 ft radius</u>)				
1. <u><i>Pinus elliotii</i></u>	<u>40.0</u>	<u>yes</u>	<u>FACW</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>20.00</u> 20% of total cover: <u>8.00</u>	<u>40.0</u>	= Total Cover		Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Shrub Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		Definitions of 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>
Herb Stratum (<u>30 ft radius</u>)				
1. <u><i>Andropogon virginicus</i></u>	<u>60.0</u>	<u>yes</u>	<u>FAC</u>	
2. <u><i>Lachnanthes caroliniana</i></u>	<u>10.0</u>	<u>no</u>	<u>OBL</u>	
3. <u><i>Kyllinga pumila</i></u>	<u>5.0</u>	<u>no</u>	<u>OBL</u>	
4. <u><i>Erechtites hieraciifolius</i></u>	<u>5.0</u>	<u>no</u>	<u>UPL</u>	
5. <u><i>Eupatorium compositifolium</i></u>	<u>5.0</u>	<u>no</u>	<u>FAC</u>	
6. <u><i>Smilax aciculare</i></u>	<u>5.0</u>	<u>no</u>	<u>FACU</u>	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
50% of total cover: <u>45.00</u> 20% of total cover: <u>18.00</u>	<u>90.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.

SOIL

Sampling Point: UDP-3

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6"	10YR 3/1	90	10YR 5/1	10	D	M	Sa	
6-11"	10YR 5/1	100					Sa	
11-13"	10YR 2/1	100					Sa	
13-18"	10YR 2.5/2	100					Lo	Spodic Horizon

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes _____ No ☒

Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mu=Muck; Pe= Peat; Sa= Sand; Si=Silt

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Keystone Tract City/County: Charlton County Sampling Date: 08/27/2018
 Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: UDP-4
 Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
 Landform (hillslope, terrace, etc.): Flatwoods Local relief (concave, convex, none): None Slope (%): 0-2%
 Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.52142007510 Long: -82.10437138440 Datum: NAD83
 Soil Map Unit Name: Leon fine sand, 0-2% slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)
 Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____
 Are Vegetation No, Soil No, or Hydrology No 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 <u>✓</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>✓</u>
Hydric Soil Present? Yes _____ No <u>✓</u>	
Wetland Hydrology Present? Yes _____ No <u>✓</u>	
Remarks:	
- Site observations and local hydrological data support moderately wet conditions present during site visit. - Vegetation/Soils/Hydrology historically impacted by silvicultural activities (hipped/benched planted pine) .	

HYDROLOGY

Wetland Hydrology Indicators:		<u>Secondary Indicators (minimum of two required)</u>
<u>Primary Indicators (minimum of one is required; check all that apply)</u>		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Marl Deposits (B15) (LRR U)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> FAC-Neutral Test (D5)
		<input type="checkbox"/> Sphagnum moss (D8) (LRR T,U)
Field Observations:		
Surface Water Present? Yes _____ No <u>✓</u>	Depth (inches): _____	Wetland Hydrology Present? Yes _____ No <u>✓</u>
Water Table Present? Yes _____ No <u>✓</u>	Depth (inches): _____	
Saturation Present? Yes _____ No <u>✓</u> (includes capillary fringe)	Depth (inches): _____	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: FAC-Neutral Test Results: Negative FACW and OBL: 2 to FACU and UPL: 4		

VEGETATION – Use scientific names of plants.

 Sampling Point: UDP-4

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>40%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species <u>30</u> x 2 = <u>60</u> FAC species <u>25</u> x 3 = <u>75</u> FACU species <u>35</u> x 4 = <u>140</u> UPL species _____ x 5 = _____ Column Totals: <u>90</u> (A) <u>275</u> (B) Prevalence Index = B/A = <u>3.1</u>
Sapling Stratum (<u>30 ft radius</u>)				
1. <u><i>Pinus elliotii</i></u>	<u>25.0</u>	<u>yes</u>	<u>FACW</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>12.50</u> 20% of total cover: <u>5.00</u>	<u>25.0</u>	= Total Cover		Hydrophytic Vegetation Indicators: ___ 1 - Rapid Test for Hydrophytic Vegetation ___ 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤3.0 ¹ ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Shrub Stratum (<u>30 ft radius</u>)				
1. <u><i>Serenoa repens</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACU</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>5.00</u> 20% of total cover: <u>2.00</u>	<u>10.0</u>	= Total Cover		Definitions of 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 <u>✓</u>
Herb Stratum (<u>30 ft radius</u>)				
1. <u><i>Andropogon virginicus</i></u>	<u>20.0</u>	<u>yes</u>	<u>FAC</u>	
2. <u><i>Pteridium aquilinum</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACU</u>	
3. <u><i>Cyperus retrorsus</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACU</u>	
4. <u><i>Smilax auriculata</i></u>	<u>5.0</u>	<u>no</u>	<u>FACU</u>	
5. <u><i>Sabatia brevifolia</i></u>	<u>5.0</u>	<u>no</u>	<u>FACW</u>	
6. <u><i>Gratiola hispida</i></u>	<u>5.0</u>	<u>no</u>	<u>FAC</u>	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
50% of total cover: <u>27.50</u> 20% of total cover: <u>11.00</u>	<u>55.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.

 Indicators of hydrology and hydric soils are not present.

SOIL

Sampling Point: UDP-4

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6"	10YR 3/1	50	10YR 7/1	50			Sa	
6-10"	10YR 6/1	100					Sa	
10-18"	10YR 7/1	100					Sa	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ☒

Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mu=Muck; Pe= Peat; Sa= Sand; Si=Silt

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Keystone Tract City/County: Charlton County Sampling Date: 08/27/2018
 Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: UDP-5
 Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
 Landform (hillslope, terrace, etc.): Flatwoods Local relief (concave, convex, none): None Slope (%): 0-2%
 Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.53366975150 Long: -82.12302731820 Datum: NAD83
 Soil Map Unit Name: Leon fine sand, 0-2% slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)
 Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____
 Are Vegetation No, Soil No, or Hydrology No 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>✓</u> No _____	Is the Sampled Area within a Wetland? Yes _____ No <u>✓</u>
Hydric Soil Present? Yes _____ No <u>✓</u>	
Wetland Hydrology Present? Yes _____ No <u>✓</u>	
Remarks: - Site observations and local hydrological data support moderately wet conditions present during site visit. - Vegetation/Soils/Hydrology historically impacted by silvicultural activities (hipping/benching for planted pine).	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Aquatic Fauna (B13) ___ High Water Table (A2) ___ Marl Deposits (B15) (LRR U) ___ Saturation (A3) ___ Hydrogen Sulfide Odor (C1) ___ Water Marks (B1) ___ Oxidized Rhizospheres along Living Roots (C3) ___ Sediment Deposits (B2) ___ Presence of Reduced Iron (C4) ___ Drift Deposits (B3) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Algal Mat or Crust (B4) ___ Thin Muck Surface (C7) ___ Iron Deposits (B5) ___ Other (Explain in Remarks) ___ Inundation Visible on Aerial Imagery (B7) ___ Water-Stained Leaves (B9)		<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Sparsely Vegetated Concave Surface (B8) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ FAC-Neutral Test (D5) ___ Sphagnum moss (D8) (LRR T,U)
Field Observations: Surface Water Present? Yes _____ No <u>✓</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>✓</u> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes _____ No <u>✓</u> Depth (inches): _____		Wetland Hydrology Present? Yes _____ No <u>✓</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: FAC-Neutral Test Results: Negative FACW and OBL: 3 to FACU and UPL: 5		

VEGETATION – Use scientific names of plants.

 Sampling Point: UDP-5

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (<u>30 ft radius</u>)				
1. <u><i>Pinus elliotii</i></u>	<u>40.0</u>	<u>yes</u>	<u>FACW</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>20.00</u> 20% of total cover: <u>8.00</u>	<u>40.0</u>	= Total Cover		Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Shrub Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		Definitions of 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>
Herb Stratum (<u>30 ft radius</u>)				
1. <u><i>Andropogon virginicus</i></u>	<u>40.0</u>	<u>yes</u>	<u>FAC</u>	
2. <u><i>Kyllinga pumila</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>	
3. <u><i>Fimbristylis dichotoma</i></u>	<u>5.0</u>	<u>no</u>	<u>OBL</u>	
4. <u><i>Dichanthelium aciculare</i></u>	<u>5.0</u>	<u>no</u>	<u>FACU</u>	
5. <u><i>Rubus cuneifolius</i></u>	<u>5.0</u>	<u>no</u>	<u>FACU</u>	
6. <u><i>Erechtites heiraciifolius</i></u>	<u>5.0</u>	<u>no</u>	<u>UPL</u>	
7. <u><i>Smilax auriculata</i></u>	<u>5.0</u>	<u>no</u>	<u>FACU</u>	
8. <u><i>Crotolaria rotundifolia</i></u>	<u>5.0</u>	<u>no</u>	<u>FACU</u>	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
50% of total cover: <u>40.00</u> 20% of total cover: <u>18.00</u>	<u>80.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.

SOIL

Sampling Point: UDP-5

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4"	10YR 7/1	30	10YR 4/1	70	MS	M	Sa	
4-18"	10YR 6/1	100					Sa	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes _____ No ☒

Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mu=Muck; Pe= Peat; Sa= Sand; Si=Silt

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Keystone Tract City/County: Charlton County Sampling Date: 08/27/2018
Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: UDP-6
Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
Landform (hillslope, terrace, etc.): Flatwoods Local relief (concave, convex, none): None Slope (%): 0-2%
Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.52167257060 Long: -82.11123142050 Datum: NAD83
Soil Map Unit Name: Leon fine sand, 0-2% slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ☒ (If no, explain in Remarks.)
Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No _____
Are Vegetation No, Soil No, or Hydrology No 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 <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/>	
Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	
Remarks: - Site observations and local hydrological data support abnormally dry conditions present during site visit. - Vegetation/Soils/Hydrology historically impacted by silvicultural activities (hipping/benching for planted pine).	

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)	_____ Aquatic Fauna (B13)	_____ Sparsely Vegetated Concave Surface (B8)
_____ High Water Table (A2)	_____ Marl Deposits (B15) (LRR U)	_____ Drainage Patterns (B10)
_____ Saturation (A3)	_____ Hydrogen Sulfide Odor (C1)	_____ Moss Trim Lines (B16)
_____ Water Marks (B1)	_____ Oxidized Rhizospheres along Living Roots (C3)	_____ Dry-Season Water Table (C2)
_____ Sediment Deposits (B2)	_____ Presence of Reduced Iron (C4)	_____ Crayfish Burrows (C8)
_____ Drift Deposits (B3)	_____ Recent Iron Reduction in Tilled Soils (C6)	_____ Saturation Visible on Aerial Imagery (C9)
_____ Algal Mat or Crust (B4)	_____ Thin Muck Surface (C7)	_____ Geomorphic Position (D2)
_____ Iron Deposits (B5)	_____ Other (Explain in Remarks)	_____ Shallow Aquitard (D3)
_____ Inundation Visible on Aerial Imagery (B7)		_____ FAC-Neutral Test (D5)
_____ Water-Stained Leaves (B9)		_____ Sphagnum moss (D8) (LRR T,U)
Field Observations:		Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>
Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____		
Water Table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>13</u>		
Saturation Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: FAC-Neutral Test Results: Negative FACW and OBL: 3 to FACU and UPL: 5		

VEGETATION – Use scientific names of plants.

 Sampling Point: UDP-6

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		
Sapling Stratum (<u>30 ft radius</u>)				
1. <u><i>Pinus elliotii</i></u>	<u>25.0</u>	<u>yes</u>	<u>FACW</u>	
2. <u><i>Quercus pumila</i></u>	<u>5.0</u>	<u>yes</u>	<u>UPL</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: <u>15.00</u> 20% of total cover: <u>6.00</u>	<u>30.0</u>	= Total Cover		
Shrub Stratum (<u>30 ft radius</u>)				
1. <u><i>Ilex glabra</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACU</u>	
2. <u><i>Serenoa repens</i></u>	<u>5.0</u>	<u>yes</u>	<u>FACU</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: <u>7.50</u> 20% of total cover: <u>3.00</u>	<u>15.0</u>	= Total Cover		
Herb Stratum (<u>30 ft radius</u>)				
1. <u><i>Andropogon virginicus</i></u>	<u>60.0</u>	<u>yes</u>	<u>FAC</u>	
2. <u><i>Scleria triglomerata</i></u>	<u>10.0</u>	<u>no</u>	<u>FACW</u>	
3. <u><i>Dichanthelium commutatum</i></u>	<u>5.0</u>	<u>no</u>	<u>FAC</u>	
4. <u><i>Dichanthelium aciculare</i></u>	<u>5.0</u>	<u>no</u>	<u>FACU</u>	
5. <u><i>Cyperus retrorsus</i></u>	<u>5.0</u>	<u>no</u>	<u>FACU</u>	
6. <u><i>Woodwardia virginica</i></u>	<u>5.0</u>	<u>no</u>	<u>OBL</u>	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
50% of total cover: <u>45.00</u> 20% of total cover: <u>18.00</u>	<u>90.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		

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

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

 Percent of Dominant Species That Are OBL, FACW, or FAC: 40% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species <u>5</u>	x 1 = <u>5</u>
FACW species <u>35</u>	x 2 = <u>70</u>
FAC species <u>65</u>	x 3 = <u>195</u>
FACU species <u>25</u>	x 4 = <u>100</u>
UPL species <u>5</u>	x 5 = <u>25</u>
Column Totals: <u>135</u> (A)	<u>395</u> (B)

Prevalence Index = B/A = 2.9

Hydrophytic Vegetation Indicators:
 ___ 1 - Rapid Test for Hydrophytic Vegetation
 ___ 2 - Dominance Test is >50%
☒ 3 - Prevalence Index is ≤3.0¹
 ___ Problematic Hydrophytic Vegetation¹ (Explain)
¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of 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 _____

Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.

SOIL

Sampling Point: UDP-6

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6"	10YR 6/1	40	10YR 3/1	60	MS	M	Sa	
6-15"	10YR 7/1	100					Sa	
15-18"	7.5YR 2.5/2	100					Lo	Spodic Horizon

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes _____ No ☒

Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mu=Muck; Pe= Peat; Sa= Sand; Si=Silt

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Loncala Tract City/County: Charlton County Sampling Date: 04/26/2018
 Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: UDP-7
 Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
 Landform (hillslope, terrace, etc.): Flatwoods Local relief (concave, convex, none): None Slope (%): 0-2%
 Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.52785688430 Long: -82.12274658110 Datum: NAD83
 Soil Map Unit Name: Lynn Haven fine sand, 0-2% slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ☒ (If no, explain in Remarks.)
 Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No _____
 Are Vegetation No, Soil No, or Hydrology No 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 <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/>	
Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	
Remarks: - Site observations and local hydrological data support moderately wet conditions present during site visit. - Vegetation/Soils/Hydrology historically impacted by silvicultural activities (hipping/benching for planted pine).	

HYDROLOGY

Wetland Hydrology Indicators:		<u>Secondary Indicators (minimum of two required)</u>	
<u>Primary Indicators (minimum of one is required; check all that apply)</u>			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Marl Deposits (B15) (LRR U)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> FAC-Neutral Test (D5)	
		<input type="checkbox"/> Sphagnum moss (D8) (LRR T,U)	
Field Observations:			
Surface Water Present? Yes _____ No <input checked="" type="checkbox"/>	Depth (inches): _____	Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	
Water Table Present? Yes _____ No <input checked="" type="checkbox"/>	Depth (inches): _____		
Saturation Present? Yes _____ No <input checked="" type="checkbox"/> (includes capillary fringe)	Depth (inches): _____		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: FAC-Neutral Test Results: Negative FACW and OBL: 3 to FACU and UPL: 3			

VEGETATION – Use scientific names of plants.

 Sampling Point: UDP-7

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>60%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (<u>30 ft radius</u>)				
1. <u><i>Pinus elliotii</i></u>	<u>20.0</u>	<u>yes</u>	<u>FACW</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>10.00</u> 20% of total cover: <u>4.00</u>	<u>20.0</u>	= Total Cover		Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Shrub Stratum (<u>30 ft radius</u>)				
1. <u><i>Ilex glabra</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>	
2. <u><i>Serenoa repens</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACU</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>10.00</u> 20% of total cover: <u>4.00</u>	<u>20.0</u>	= Total Cover		Definitions of 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>
Herb Stratum (<u>30 ft radius</u>)				
1. <u><i>Cyperus retrorsus</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACU</u>	
2. <u><i>Pteridium aquilinum</i></u>	<u>10.0</u>	<u>no</u>	<u>FACU</u>	
3. <u><i>Sabatia brevifolia</i></u>	<u>5.0</u>	<u>no</u>	<u>FACW</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
50% of total cover: <u>12.50</u> 20% of total cover: <u>5.00</u>	<u>25.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				
1. <u><i>Vitis rotundifolia</i></u>	<u>5.0</u>	<u>yes</u>	<u>FAC</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
50% of total cover: <u>2.50</u> 20% of total cover: <u>1.00</u>	<u>5.0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.

SOIL

Sampling Point: UDP-7

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-5"	10YR 6/1	40	10YR 3/1	60	MS	M	Sa	
5-18"	10YR 6/1	100					Sa	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes _____ No ☒

Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mu=Muck; Pe= Peat; Sa= Sand; Si=Silt

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Keystone Tract City/County: Charlton County Sampling Date: 08/28/2018
 Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: UDP-8
 Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
 Landform (hillslope, terrace, etc.): Flatwoods Local relief (concave, convex, none): None Slope (%): 0-2%
 Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.53839987900 Long: -82.12016031940 Datum: NAD83
 Soil Map Unit Name: Leon fine sand, 0-2% slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ☒ (If no, explain in Remarks.)
 Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No _____
 Are Vegetation No, Soil No, or Hydrology No 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 <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/>	
Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	
Remarks:	
- Site observations and local hydrological data support abnormally dry conditions present during site visit. - Vegetation/Soils/Hydrology historically impacted by silvicultural activities (hipping/benching for planted pine).	

HYDROLOGY

Wetland Hydrology Indicators:		<u>Secondary Indicators (minimum of two required)</u>
<u>Primary Indicators (minimum of one is required; check all that apply)</u>		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Marl Deposits (B15) (LRR U)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
		<input type="checkbox"/> Sphagnum moss (D8) (LRR T,U)
Field Observations:		
Surface Water Present? Yes _____ No <input checked="" type="checkbox"/>	Depth (inches): _____	Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>
Water Table Present? Yes _____ No <input checked="" type="checkbox"/>	Depth (inches): _____	
Saturation Present? Yes _____ No <input checked="" type="checkbox"/> (includes capillary fringe)	Depth (inches): _____	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: FAC-Neutral Test Results: Positive FACW and OBL: 5 to FACU and UPL: 3		

VEGETATION – Use scientific names of plants.

 Sampling Point: UDP-8

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>75%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (<u>30 ft radius</u>)				
1. <u><i>Pinus elliotii</i></u>	<u>60.0</u>	<u>yes</u>	<u>FACW</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>30.00</u> 20% of total cover: <u>15.00</u>	<u>60.0</u>	= Total Cover		Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Shrub Stratum (<u>30 ft radius</u>)				
1. <u><i>Serenoa repens</i></u>	<u>20.0</u>	<u>yes</u>	<u>FACU</u>	
2. <u><i>Ilex glabra</i></u>	<u>20.0</u>	<u>yes</u>	<u>FACW</u>	
3. <u><i>Kalmia hirsuta</i></u>	<u>5.0</u>	<u>no</u>	<u>FACW</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>22.50</u> 20% of total cover: <u>9.00</u>	<u>45.0</u>	= Total Cover		Definitions of 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>
Herb Stratum (<u>30 ft radius</u>)				
1. <u><i>Scleria triglomerata</i></u>	<u>25.0</u>	<u>yes</u>	<u>FACW</u>	
2. <u><i>Sabatia brevifolia</i></u>	<u>5.0</u>	<u>no</u>	<u>FACW</u>	
3. <u><i>Dichanthelium aciculare</i></u>	<u>5.0</u>	<u>no</u>	<u>FACU</u>	
4. <u><i>Pterocaulon pyncnostachyum</i></u>	<u>5.0</u>	<u>no</u>	<u>FACU</u>	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
50% of total cover: <u>20.00</u> 20% of total cover: <u>8.00</u>	<u>40.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.

SOIL

Sampling Point: UDP-8

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4"	10YR 7/1	40	10YR 3/1	60	MS	M	Sa	
4-18"	10YR 7/1	100					Sa	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ☒

Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mu=Muck; Pe= Peat; Sa= Sand; Si=Silt

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Keystone Tract City/County: Charlton County Sampling Date: 08/28/2018
 Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: UDP-9
 Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
 Landform (hillslope, terrace, etc.): Flatwoods Local relief (concave, convex, none): None Slope (%): 0-2%
 Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.52975621760 Long: -82.10986383050 Datum: NAD83
 Soil Map Unit Name: Lynn Haven fine sand, 0-2% slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)
 Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____
 Are Vegetation No, Soil No, or Hydrology No 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>✓</u> No _____	Is the Sampled Area within a Wetland? Yes _____ No <u>✓</u>
Hydric Soil Present? Yes _____ No <u>✓</u>	
Wetland Hydrology Present? Yes _____ No <u>✓</u>	
Remarks: - Site observations and local hydrological data support moderately wet conditions present during site visit. - Vegetation/Soils/Hydrology historically impacted by silvicultural activities (hipping/benching for planted pine).	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Aquatic Fauna (B13) ___ High Water Table (A2) ___ Marl Deposits (B15) (LRR U) ___ Saturation (A3) ___ Hydrogen Sulfide Odor (C1) ___ Water Marks (B1) ___ Oxidized Rhizospheres along Living Roots (C3) ___ Sediment Deposits (B2) ___ Presence of Reduced Iron (C4) ___ Drift Deposits (B3) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Algal Mat or Crust (B4) ___ Thin Muck Surface (C7) ___ Iron Deposits (B5) ___ Other (Explain in Remarks) ___ Inundation Visible on Aerial Imagery (B7) ___ Water-Stained Leaves (B9)		<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Sparsely Vegetated Concave Surface (B8) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ FAC-Neutral Test (D5) ___ Sphagnum moss (D8) (LRR T,U)
Field Observations: Surface Water Present? Yes _____ No <u>✓</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>✓</u> Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes _____ No <u>✓</u> Depth (inches): _____		Wetland Hydrology Present? Yes _____ No <u>✓</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: FAC-Neutral Test Results: Negative FACW and OBL: 5 to FACU and UPL: 2		

VEGETATION – Use scientific names of plants.

 Sampling Point: UDP-9

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u><i>Pinus elliottii</i></u>	<u>40.0</u>	<u>yes</u>	<u>FACW</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>6</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>67%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: <u>20.00</u> 20% of total cover: <u>8.00</u>	<u>40.0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Shrub Stratum (<u>30 ft radius</u>)				
1. <u><i>Serenoa repens</i></u>	<u>5.0</u>	<u>yes</u>	<u>FACU</u>	
2. <u><i>Ilex glabra</i></u>	<u>5.0</u>	<u>no</u>	<u>FACW</u>	
3. <u><i>Rhus copallinum</i></u>	<u>5.0</u>	<u>no</u>	<u>FACW</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>7.50</u> 20% of total cover: <u>3.00</u>	<u>15.0</u>	= Total Cover		Definitions of 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>
Herb Stratum (<u>30 ft radius</u>)				
1. <u><i>Rubus cuneifolius</i></u>	<u>20.0</u>	<u>yes</u>	<u>FACU</u>	
2. <u><i>Eupatorium compositifolium</i></u>	<u>10.0</u>	<u>yes</u>	<u>FAC</u>	
3. <u><i>Scleria triglomerata</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>	
4. <u><i>Sabatia brevifolia</i></u>	<u>5.0</u>	<u>no</u>	<u>FACW</u>	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
50% of total cover: <u>22.50</u> 20% of total cover: <u>9.00</u>	<u>45.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				
1. <u><i>Vitis rotundifolia</i></u>	<u>5.0</u>	<u>yes</u>	<u>FAC</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>2.50</u> 20% of total cover: <u>1.00</u>	<u>5.0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.

SOIL

Sampling Point: UDP-9

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6"	10YR 6/1	30	10YR 3/1	70	MS	M	Sa	
6-18"	10YR 5/1	100						

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ☒

Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mu=Muck; Pe= Peat; Sa= Sand; Si=Silt

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Keystone Tract City/County: Charlton County Sampling Date: 08/28/2018
 Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: UDP-10
 Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
 Landform (hillslope, terrace, etc.): Flatwoods Local relief (concave, convex, none): None Slope (%): 0-2%
 Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.51839983580 Long: -82.12246140230 Datum: NAD83
 Soil Map Unit Name: Leon fine sand, 0-2% slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)
 Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____
 Are Vegetation No, Soil No, or Hydrology No 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>✓</u> No _____	Is the Sampled Area within a Wetland? Yes _____ No <u>✓</u>
Hydric Soil Present? Yes _____ No <u>✓</u>	
Wetland Hydrology Present? Yes _____ No <u>✓</u>	
Remarks: - Site observations and local hydrological data support moderately wet conditions present during site visit. - Vegetation/Soils/Hydrology historically impacted by silvicultural activities (hipping/benching for planted pine).	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> ___ Surface Water (A1) ___ Aquatic Fauna (B13) ___ High Water Table (A2) ___ Marl Deposits (B15) (LRR U) ___ Saturation (A3) ___ Hydrogen Sulfide Odor (C1) ___ Water Marks (B1) ___ Oxidized Rhizospheres along Living Roots (C3) ___ Sediment Deposits (B2) ___ Presence of Reduced Iron (C4) ___ Drift Deposits (B3) ___ Recent Iron Reduction in Tilled Soils (C6) ___ Algal Mat or Crust (B4) ___ Thin Muck Surface (C7) ___ Iron Deposits (B5) ___ Other (Explain in Remarks) ___ Inundation Visible on Aerial Imagery (B7) ___ Water-Stained Leaves (B9)		<u>Secondary Indicators (minimum of two required)</u> ___ Surface Soil Cracks (B6) ___ Sparsely Vegetated Concave Surface (B8) ___ Drainage Patterns (B10) ___ Moss Trim Lines (B16) ___ Dry-Season Water Table (C2) ___ Crayfish Burrows (C8) ___ Saturation Visible on Aerial Imagery (C9) ___ Geomorphic Position (D2) ___ Shallow Aquitard (D3) ___ FAC-Neutral Test (D5) ___ Sphagnum moss (D8) (LRR T,U)
Field Observations: Surface Water Present? Yes _____ No <u>✓</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>✓</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>✓</u> Depth (inches): _____ (includes capillary fringe)		Wetland Hydrology Present? Yes _____ No <u>✓</u>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: FAC-Neutral Test Results: Negative FACW and OBL: 9 to FACU and UPL: 2		

VEGETATION – Use scientific names of plants.

 Sampling Point: UDP-10

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u><i>Pinus elliottii</i></u>	<u>50.0</u>	<u>yes</u>	<u>FACW</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>6</u> (A) Total Number of Dominant Species Across All Strata: <u>8</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>75%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: <u>25.00</u> 20% of total cover: <u>10.00</u>	<u>50.0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (<u>30 ft radius</u>)				
1. <u><i>Magnolia virginiana</i></u>	<u>5.0</u>	<u>yes</u>	<u>FACW</u>	
2. <u><i>Gordonia lasianthus</i></u>	<u>5.0</u>	<u>yes</u>	<u>FACW</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>5.00</u> 20% of total cover: <u>2.00</u>	<u>10.0</u>	= Total Cover		Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Shrub Stratum (<u>30 ft radius</u>)				
1. <u><i>Serenoa repens</i></u>	<u>30.0</u>	<u>yes</u>	<u>FACU</u>	
2. <u><i>Ilex coriacea</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>	
3. <u><i>Hypericum cistifolium</i></u>	<u>5.0</u>	<u>no</u>	<u>FACW</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>22.50</u> 20% of total cover: <u>9.00</u>	<u>45.0</u>	= Total Cover		Definitions of 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>
Herb Stratum (<u>30 ft radius</u>)				
1. <u><i>Dichanthelium aciculare</i></u>	<u>20.0</u>	<u>yes</u>	<u>FACU</u>	
2. <u><i>Andropogon virginicus</i></u>	<u>20.0</u>	<u>yes</u>	<u>FAC</u>	
3. <u><i>Lachnanthes caroliniana</i></u>	<u>10.0</u>	_____	<u>OBL</u>	
4. <u><i>Xyris jupicai</i></u>	<u>10.0</u>	_____	<u>OBL</u>	
5. <u><i>Woodwardia virginica</i></u>	<u>10.0</u>	_____	<u>OBL</u>	
6. <u><i>Rhexia mariana</i></u>	<u>10.0</u>	_____	<u>FACW</u>	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
50% of total cover: <u>40.00</u> 20% of total cover: <u>16.00</u>	<u>80.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				
1. <u><i>Vitis rotundifolia</i></u>	<u>5.0</u>	<u>yes</u>	<u>FAC</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>5.0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.

SOIL

Sampling Point: UDP-10**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2"	10YR 6/1	70	10YR 4/1	30	MS	M	Sa	
2-18"	10YR 6/1	100					Sa	

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

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ Organic Bodies (A6) **(LRR P, T, U)**
☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
☐ Muck Presence (A8) **(LRR U)**
☐ 1 cm Muck (A9) **(LRR P, T)**
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Coast Prairie Redox (A16) **(MLRA 150A)**
☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
☐ Thin Dark Surface (S9) **(LRR S, T, U)**
☐ Loamy Mucky Mineral (F1) **(LRR O)**
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Marl (F10) **(LRR U)**
☐ Depleted Ochric (F11) **(MLRA 151)**
☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
☐ Umbric Surface (F13) **(LRR P, T, U)**
☐ Delta Ochric (F17) **(MLRA 151)**
☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
☐ 2 cm Muck (A10) **(LRR S)**
☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
☐ Anomalous Bright Loamy Soils (F20)
(MLRA 153B)
☐ Red Parent Material (TF2)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ☒

Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mu=Muck; Pe=Peat; Sa=Sand; Si=Silt

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Keystone Tract City/County: Charlton County Sampling Date: 08/27/2018
 Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: WDP-1
 Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-1%
 Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.51703348300 Long: -82.10177904850 Datum: NAD83
 Soil Map Unit Name: Lynn Haven, Allanton, and Kingsferry soils, ponded, 0-1% slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ☒ (If no, explain in Remarks.)
 Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No _____
 Are Vegetation No, Soil No, or Hydrology No 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 <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____	
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	
Remarks: - Site observations and local hydrological data support moderately wet conditions present during site visit.	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input checked="" type="checkbox"/> Surface Water (A1) _____ Aquatic Fauna (B13) <input checked="" type="checkbox"/> High Water Table (A2) _____ Marl Deposits (B15) (LRR U) <input checked="" type="checkbox"/> Saturation (A3) _____ Hydrogen Sulfide Odor (C1) _____ Water Marks (B1) _____ Oxidized Rhizospheres along Living Roots (C3) _____ Sediment Deposits (B2) _____ Presence of Reduced Iron (C4) _____ Drift Deposits (B3) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Algal Mat or Crust (B4) _____ Thin Muck Surface (C7) _____ Iron Deposits (B5) _____ Other (Explain in Remarks) _____ Inundation Visible on Aerial Imagery (B7) _____ Water-Stained Leaves (B9)		<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Sparsely Vegetated Concave Surface (B8) _____ Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) _____ Saturation Visible on Aerial Imagery (C9) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) _____ Sphagnum moss (D8) (LRR T,U)
Field Observations: Surface Water Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>1"</u> Water Table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>2"</u> Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0"</u> (includes capillary fringe)		Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: FAC-Neutral Test Results: Positive FACW and OBL: 13 to FACU and UPL: 1		

VEGETATION – Use scientific names of plants.

 Sampling Point: WDP-1

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u><i>Taxodium ascendens</i></u>	<u>25.0</u>	<u>yes</u>	<u>OBL</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>8</u> (A) Total Number of Dominant Species Across All Strata: <u>9</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>89%</u> (A/B)
2. <u><i>Taxodium distichum</i></u>	<u>25.0</u>	<u>yes</u>	<u>OBL</u>	
3. <u><i>Gordonia lasianthus</i></u>	<u>15.0</u>	<u>yes</u>	<u>FACW</u>	
4. <u><i>Nyssa biflora</i></u>	<u>10.0</u>	<u>no</u>	<u>OBL</u>	
5. _____	_____	_____	_____	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: <u>37.50</u> 20% of total cover: <u>15.00</u>	<u>75.0</u>	= Total Cover		
Sapling Stratum (<u>30 ft radius</u>)				Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <u> </u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	Definitions of 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.
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____
Shrub Stratum (<u>30 ft radius</u>)				
1. <u><i>Rhus copallinum</i></u>	<u>10.0</u>	<u>yes</u>	<u>UPL</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____
50% of total cover: <u>5.00</u> 20% of total cover: <u>2.00</u>	<u>10.0</u>	= Total Cover		
Herb Stratum (<u>30 ft radius</u>)				
1. <u><i>Woodwardia virginica</i></u>	<u>15.0</u>	<u>yes</u>	<u>OBL</u>	
2. <u><i>Panicum repens</i></u>	<u>15.0</u>	<u>yes</u>	<u>OBL</u>	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____
3. <u><i>Lachnanthes caroliniana</i></u>	<u>10.0</u>	<u>yes</u>	<u>OBL</u>	
4. <u><i>Smilax glauca</i></u>	<u>10.0</u>	<u>yes</u>	<u>FAC</u>	
5. <u><i>Smilax laurifolia</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>	
6. <u><i>Osmunda cinnamomea</i></u>	<u>5.0</u>	<u>no</u>	<u>FACW</u>	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____
7. <u><i>Pluchea foetida</i></u>	<u>5.0</u>	<u>no</u>	<u>OBL</u>	
8. <u><i>Rhexia mariana</i></u>	<u>5.0</u>	<u>no</u>	<u>FACW</u>	
9. <u><i>Scirpus cyperinus</i></u>	<u>5.0</u>	<u>no</u>	<u>OBL</u>	
10. <u><i>Scleria triglomerata</i></u>	<u>5.0</u>	<u>no</u>	<u>FACW</u>	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
50% of total cover: <u>42.50</u> 20% of total cover: <u>17.00</u>	<u>85.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		
Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.				

SOIL

Sampling Point: WDP-1

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6"	10YR 2/1	100					Mu	Mucky mineral
6-18"	10YR 4/1	60	10YR 3/1	40	MS	M	Sa	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☒ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☒ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mu=Muck; Pe= Peat; Sa= Sand; Si=Silt

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Keystone Tract City/County: Charlton County Sampling Date: 08/27/2018
 Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: WDP-2
 Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-1%
 Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.51736651820 Long: -82.12642134890 Datum: NAD83
 Soil Map Unit Name: Lynn Haven, Allanton and Kingsferry soils, ponded, 0-1% slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ☒ (If no, explain in Remarks.)
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No _____
 Are Vegetation No, Soil No, or Hydrology No 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 <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____	
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	
Remarks: - Site observations and local hydrological data support moderately wet conditions present during site visit. - Vegetation historically impacted by silvicultural activities (planted pine).	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)		<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T,U)
Field Observations: Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>6"</u> Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0"</u> (includes capillary fringe)		Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: FAC-Neutral Test Results: Positive FACW and OBL: 10 to FACU and UPL: 0		

VEGETATION – Use scientific names of plants.

 Sampling Point: WDP-2

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u><i>Pinus elliottii</i></u>	<u>70.0</u>	<u>yes</u>	<u>FACW</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>8</u> (A) Total Number of Dominant Species Across All Strata: <u>8</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: <u>35.00</u> 20% of total cover: <u>14.00</u>	<u>70.0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (<u>30 ft radius</u>)				
1. <u><i>Taxodium ascendens</i></u>	<u>5.0</u>	<u>yes</u>	<u>OBL</u>	
2. <u><i>Gordonia lasianthus</i></u>	<u>5.0</u>	<u>yes</u>	<u>FACW</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>5.00</u> 20% of total cover: <u>2.00</u>	<u>10.0</u>	= Total Cover		Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Shrub Stratum (<u>30 ft radius</u>)				
1. <u><i>Ilex glabra</i></u>	<u>15.0</u>	<u>yes</u>	<u>FACW</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>10.00</u> 20% of total cover: <u>4.00</u>	<u>15.0</u>	= Total Cover		Definitions of 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>
Herb Stratum (<u>30 ft radius</u>)				
1. <u><i>Woodwardia virginica</i></u>	<u>20.0</u>	<u>yes</u>	<u>OBL</u>	
2. <u><i>Andropogon glomeratus</i></u>	<u>15.0</u>	<u>yes</u>	<u>FACW</u>	
3. <u><i>Lachnanthes caroliniana</i></u>	<u>15.0</u>	<u>yes</u>	<u>OBL</u>	
4. <u><i>Xyris ambigua</i></u>	<u>5.0</u>	<u>no</u>	<u>OBL</u>	
5. <u><i>Rhynchospora fascicularis</i></u>	<u>5.0</u>	<u>no</u>	<u>FACW</u>	
6. <u><i>Rhexia mariana</i></u>	<u>5.0</u>	<u>no</u>	<u>FACW</u>	
7. <u><i>Rubus argutus</i></u>	<u>5.0</u>	<u>no</u>	<u>FAC</u>	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
50% of total cover: <u>35.00</u> 20% of total cover: <u>14.00</u>	<u>70.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				
1. <u><i>Vitis rotundifolia</i></u>	<u>10.0</u>	<u>yes</u>	<u>FAC</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>10.0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.

SOIL

Sampling Point: WDP-2**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3"	10YR 2/1	100					Sa	
3-18"	10YR 2/1	80	10YR 6/1	20	D	M	Sa	

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

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ Organic Bodies (A6) **(LRR P, T, U)**
☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
☐ Muck Presence (A8) **(LRR U)**
☐ 1 cm Muck (A9) **(LRR P, T)**
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Coast Prairie Redox (A16) **(MLRA 150A)**
☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☒ Polyvalue Below Surface (S8) **(LRR S, T, U)**
☐ Thin Dark Surface (S9) **(LRR S, T, U)**
☐ Loamy Mucky Mineral (F1) **(LRR O)**
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Marl (F10) **(LRR U)**
☐ Depleted Ochric (F11) **(MLRA 151)**
☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
☐ Umbric Surface (F13) **(LRR P, T, U)**
☐ Delta Ochric (F17) **(MLRA 151)**
☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
☐ 2 cm Muck (A10) **(LRR S)**
☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
☐ Anomalous Bright Loamy Soils (F20)
(MLRA 153B)
☐ Red Parent Material (TF2)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mu=Muck; Pe= Peat; Sa= Sand; Si=Silt

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Keystone Tract City/County: Charlton County Sampling Date: 08/27/2018
 Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: WDP-3
 Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
 Landform (hillslope, terrace, etc.): Flatwoods Local relief (concave, convex, none): None Slope (%): 0-1%
 Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.51685402610 Long: -82.11213264830 Datum: NAD83
 Soil Map Unit Name: Leon fine sand, 0-2% slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ☒ (If no, explain in Remarks.)
 Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No _____
 Are Vegetation No, Soil No, or Hydrology No 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 <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____	
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	
Remarks: - Site observations and local hydrological data support moderately wet conditions present during site visit. - Vegetation/hydrology/soils impacted by historical siccultural activities (hipped and benched planted pine).	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input checked="" type="checkbox"/> Surface Water (A1) _____ Aquatic Fauna (B13) <input checked="" type="checkbox"/> High Water Table (A2) _____ Marl Deposits (B15) (LRR U) <input checked="" type="checkbox"/> Saturation (A3) _____ Hydrogen Sulfide Odor (C1) _____ Water Marks (B1) _____ Oxidized Rhizospheres along Living Roots (C3) _____ Sediment Deposits (B2) _____ Presence of Reduced Iron (C4) _____ Drift Deposits (B3) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Algal Mat or Crust (B4) _____ Thin Muck Surface (C7) _____ Iron Deposits (B5) _____ Other (Explain in Remarks) _____ Inundation Visible on Aerial Imagery (B7) _____ Water-Stained Leaves (B9)		<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Sparsely Vegetated Concave Surface (B8) _____ Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) <input checked="" type="checkbox"/> Saturation Visible on Aerial Imagery (C9) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) _____ FAC-Neutral Test (D5) _____ Sphagnum moss (D8) (LRR T,U)
Field Observations: Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>11"</u> Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0"</u> (includes capillary fringe)		Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: FAC-Neutral Test Results: Negative FACW and OBL: 0 to FACU and UPL: 1		

VEGETATION – Use scientific names of plants.

 Sampling Point: WDP-3

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: <u>20.00</u> 20% of total cover: <u>8.00</u>	<u>0.0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Shrub Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>10.00</u> 20% of total cover: <u>4.00</u>	<u>0.0</u>	= Total Cover		Definitions of 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 <input checked="" type="checkbox"/> No _____
Herb Stratum (<u>30 ft radius</u>)				
1. <u>Andropogon virginicus</u>	<u>70.0</u>	<u>yes</u>	<u>FAC</u>	
2. <u>Dichanthelium aciculare</u>	<u>10.0</u>	<u>no</u>	<u>FACU</u>	
3. <u>Eupatorium compositifolium</u>	<u>5.0</u>	<u>no</u>	<u>FAC</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
50% of total cover: <u>42.50</u> 20% of total cover: <u>17.00</u>	<u>85.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.

SOIL

Sampling Point: WDP-3

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4"	10YR 3/1	60	10YR 2/1	40	MS	M	Sa	
4-7"	10YR 2/1	100						
7-11	10YR 5/1	100						
11-18	7.5 YR 2.5/2	100					Lo	Spodic Horizon

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☒ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mu=Muck; Pe= Peat; Sa= Sand; Si=Silt

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Keystone Tract City/County: Charlton County Sampling Date: 08/27/2018
Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: WDP-4
Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-1%
Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.52131030420 Long: -82.10453195700 Datum: NAD83
Soil Map Unit Name: Lynn Haven, Allanton, and Kingsferry soils, ponded, 0-1% slopes NWI classification: PFO6/4C

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ☒ (If no, explain in Remarks.)
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No _____
Are Vegetation No, Soil No, or Hydrology No 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 <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____	
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	
Remarks: - Site observations and local hydrological data support moderately wet conditions present during site visit. - Vegetation historically affected by silvicultural activities (hipping/benching planted pine).	

HYDROLOGY

Wetland Hydrology Indicators:		<u>Secondary Indicators (minimum of two required)</u>
<u>Primary Indicators (minimum of one is required; check all that apply)</u>		<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Marl Deposits (B15) (LRR U)	<input type="checkbox"/> Drainage Patterns (B10)
<input checked="" type="checkbox"/> Saturation (A3)	<input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input checked="" type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> Sphagnum moss (D8) (LRR T,U)
Field Observations:		Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____
Surface Water Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>2"</u>		
Water Table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>6"</u>		
Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0"</u> (includes capillary fringe)		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: FAC-Neutral Test Results: Positive FACW and OBL: 7 to FACU and UPL: 0		

VEGETATION – Use scientific names of plants.

 Sampling Point: WDP-4

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (<u>30 ft radius</u>)				
1. <u><i>Pinus elliotii</i></u>	<u>25.0</u>	<u>yes</u>	<u>FACW</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>12.50</u> 20% of total cover: <u>5.00</u>	<u>25.0</u>	= Total Cover		Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Shrub Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		Definitions of 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>
Herb Stratum (<u>30 ft radius</u>)				
1. <u><i>Lachnanthes caroliniana</i></u>	<u>30.0</u>	<u>yes</u>	<u>OBL</u>	
2. <u><i>Andropogon virginicus</i></u>	<u>25.0</u>	<u>yes</u>	<u>FAC</u>	
3. <u><i>Ludwigia decurrens</i></u>	<u>10.0</u>	<u>yes</u>	<u>OBL</u>	
4. <u><i>Woodwardia virginica</i></u>	<u>10.0</u>	<u>yes</u>	<u>OBL</u>	
5. <u><i>Sagittaria lancifolia</i></u>	<u>5.0</u>	<u>no</u>	<u>OBL</u>	
6. <u><i>Rhynchospora fascicularis</i></u>	<u>5.0</u>	<u>no</u>	<u>FACW</u>	
7. <u><i>Fimbristylis dichotoma</i></u>	<u>5.0</u>	<u>no</u>	<u>OBL</u>	
8. <u><i>Xyris jupicai</i></u>	<u>5.0</u>	<u>no</u>	<u>OBL</u>	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
50% of total cover: <u>47.50</u> 20% of total cover: <u>19.00</u>	<u>95.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.

SOIL

Sampling Point: WDP-4**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6"	10YR 2/1	100					Sa	
6-18"	10YR 6/1	100					Sa	

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

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☒ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ Organic Bodies (A6) **(LRR P, T, U)**
☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
☐ Muck Presence (A8) **(LRR U)**
☐ 1 cm Muck (A9) **(LRR P, T)**
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Coast Prairie Redox (A16) **(MLRA 150A)**
☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☒ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
☐ Thin Dark Surface (S9) **(LRR S, T, U)**
☐ Loamy Mucky Mineral (F1) **(LRR O)**
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Marl (F10) **(LRR U)**
☐ Depleted Ochric (F11) **(MLRA 151)**
☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
☐ Umbric Surface (F13) **(LRR P, T, U)**
☐ Delta Ochric (F17) **(MLRA 151)**
☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
☐ 2 cm Muck (A10) **(LRR S)**
☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
☐ Anomalous Bright Loamy Soils (F20)
(MLRA 153B)
☐ Red Parent Material (TF2)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mu=Muck; Pe= Peat; Sa= Sand; Si=Silt

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Keystone Tract City/County: Charlton County Sampling Date: 08/27/2018
Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: WDP-5
Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2%
Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.53356823370 Long: -82.12260818280 Datum: NAD83
Soil Map Unit Name: Lynn Haven, Allanton and Kingsferry soils, ponded, 0-1% slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ☒ (If no, explain in Remarks.)
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No _____
Are Vegetation No, Soil No, or Hydrology No 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 <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____	
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	
Remarks: - Site observations and local hydrological data support moderately wet conditions present during site visit. - Woody vegetation impacted from recent forest fire.	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input checked="" type="checkbox"/> Surface Water (A1) _____ Aquatic Fauna (B13) <input checked="" type="checkbox"/> High Water Table (A2) _____ Marl Deposits (B15) (LRR U) <input checked="" type="checkbox"/> Saturation (A3) _____ Hydrogen Sulfide Odor (C1) _____ Water Marks (B1) _____ Oxidized Rhizospheres along Living Roots (C3) _____ Sediment Deposits (B2) _____ Presence of Reduced Iron (C4) _____ Drift Deposits (B3) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Algal Mat or Crust (B4) _____ Thin Muck Surface (C7) _____ Iron Deposits (B5) _____ Other (Explain in Remarks) _____ Inundation Visible on Aerial Imagery (B7) _____ Water-Stained Leaves (B9)		<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Sparsely Vegetated Concave Surface (B8) _____ Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) <input checked="" type="checkbox"/> Saturation Visible on Aerial Imagery (C9) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) _____ Sphagnum moss (D8) (LRR T,U)
Field Observations: Surface Water Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>3"</u> Water Table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0"</u> Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0"</u> (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: FAC-Neutral Test Results: Positive FACW and OBL: 7 to FACU and UPL: 0		

VEGETATION – Use scientific names of plants.

 Sampling Point: WDP-5

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (<u>30 ft radius</u>)				
1. <u>Taxodium ascendens</u>	<u>10.0</u>	<u>yes</u>	<u>OBL</u>	
2. <u>Nyssa biflora</u>	<u>5.0</u>	<u>yes</u>	<u>OBL</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>7.50</u> 20% of total cover: <u>3.00</u>	<u>15.0</u>	= Total Cover		Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Shrub Stratum (<u>30 ft radius</u>)				
1. <u>Ilex cassine</u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>15.00</u> 20% of total cover: <u>6.00</u>	<u>10.0</u>	= Total Cover		Definitions of 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 <input checked="" type="checkbox"/> No _____
Herb Stratum (<u>30 ft radius</u>)				
1. <u>Panicum hemitomon</u>	<u>70.0</u>	<u>yes</u>	<u>OBL</u>	
2. <u>Lachnanthes caroliniana</u>	<u>10.0</u>	<u>no</u>	<u>OBL</u>	
3. <u>Ludwigia decurrens</u>	<u>5.0</u>	<u>no</u>	<u>OBL</u>	
4. <u>Rhynchospora corniculata</u>	<u>5.0</u>	<u>no</u>	<u>OBL</u>	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
50% of total cover: <u>45.00</u> 20% of total cover: <u>18.00</u>	<u>90.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.

SOIL

Sampling Point: WDP-5**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2"	10YR 2/1	100					Sa	
2-5"	10YR 5/1	100					Sa	
5-7"	10YR 3/1	100					Sa	
7-18"	10YR 6/1	100					Sa	

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

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☒ Stratified Layers (A5)
☐ Organic Bodies (A6) **(LRR P, T, U)**
☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
☐ Muck Presence (A8) **(LRR U)**
☐ 1 cm Muck (A9) **(LRR P, T)**
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Coast Prairie Redox (A16) **(MLRA 150A)**
☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
☐ Thin Dark Surface (S9) **(LRR S, T, U)**
☐ Loamy Mucky Mineral (F1) **(LRR O)**
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Marl (F10) **(LRR U)**
☐ Depleted Ochric (F11) **(MLRA 151)**
☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
☐ Umbric Surface (F13) **(LRR P, T, U)**
☐ Delta Ochric (F17) **(MLRA 151)**
☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
☐ 2 cm Muck (A10) **(LRR S)**
☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
☐ Anomalous Bright Loamy Soils (F20)
(MLRA 153B)
☐ Red Parent Material (TF2)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mu=Muck; Pe= Peat; Sa= Sand; Si=Silt

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Keystone Tract City/County: Charlton County Sampling Date: 08/28/2018
 Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: WDP-6
 Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2%
 Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.56861580650 Long: -82.13525025140 Datum: NAD83
 Soil Map Unit Name: Leon fine sand, frequently ponded, 0-2% slopes NWI classification: PFO6/4C

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ☒ (If no, explain in Remarks.)
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No _____
 Are Vegetation No, Soil No, or Hydrology No 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 <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____	
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	
Remarks:	
- Site observations and local hydrological data support moderately wet conditions present during site visit. - Vegetation historically affected by silvicultural activities (hipping/benching planted pine) and recently affected by forest fire during drought conditions resulting in high mortality in canopy species.	

HYDROLOGY

Wetland Hydrology Indicators:		<u>Secondary Indicators (minimum of two required)</u>	
<u>Primary Indicators (minimum of one is required; check all that apply)</u>			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Marl Deposits (B15) (LRR U)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Water-Stained Leaves (B9)		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
		<input type="checkbox"/> Sphagnum moss (D8) (LRR T,U)	
Field Observations:			
Surface Water Present? Yes _____ No <input checked="" type="checkbox"/>	Depth (inches): _____	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	
Water Table Present? Yes <input checked="" type="checkbox"/> No _____	Depth (inches): <u>2"</u>		
Saturation Present? Yes <input checked="" type="checkbox"/> No _____	Depth (inches): <u>0"</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: FAC-Neutral Test Results: Positive FACW and OBL: 11 to FACU and UPL: 1			

VEGETATION – Use scientific names of plants.

 Sampling Point: WDP-6

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u><i>Pinus elliottii</i></u>	<u>60.0</u>	<u>yes</u>	<u>FACW</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>10</u> (A) Total Number of Dominant Species Across All Strata: <u>10</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: <u>30.00</u> 20% of total cover: <u>12.00</u>	<u>60.0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (<u>30 ft radius</u>)				
1. <u><i>Magnolia virginiana</i></u>	<u>5.0</u>	<u>yes</u>	<u>FACW</u>	
2. <u><i>Nyssa biflora</i></u>	<u>5.0</u>	<u>yes</u>	<u>OBL</u>	
3. <u><i>Acer rubrum</i></u>	<u>5.0</u>	<u>yes</u>	<u>FAC</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>7.50</u> 20% of total cover: <u>3.00</u>	<u>15.0</u>	= Total Cover		Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Shrub Stratum (<u>30 ft radius</u>)				
1. <u><i>Hypericum cistifolium</i></u>	<u>15.0</u>	<u>yes</u>	<u>FACW</u>	
2. <u><i>Ilex glabra</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>	
3. <u><i>Rhus copallinum</i></u>	<u>5.0</u>	<u>no</u>	<u>UPL</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>15.00</u> 20% of total cover: <u>6.00</u>	<u>30.0</u>	= Total Cover		Definitions of 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 <input checked="" type="checkbox"/> No _____
Herb Stratum (<u>30 ft radius</u>)				
1. <u><i>Scleria triglomerata</i></u>	<u>25.0</u>	<u>yes</u>	<u>FACW</u>	
2. <u><i>Woodwardia virginica</i></u>	<u>20.0</u>	<u>yes</u>	<u>OBL</u>	
3. <u><i>Lachnanthes caroliniana</i></u>	<u>20.0</u>	<u>yes</u>	<u>OBL</u>	
4. <u><i>Carex glaucescens</i></u>	<u>10.0</u>	<u>no</u>	<u>OBL</u>	
5. <u><i>Smilax laurifolia</i></u>	<u>10.0</u>	<u>no</u>	<u>FACW</u>	
6. <u><i>Rhexia mariana</i></u>	<u>5.0</u>	<u>no</u>	<u>FACW</u>	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
50% of total cover: <u>45.00</u> 20% of total cover: <u>18.00</u>	<u>90.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				
1. <u><i>Vitis rotundifolia</i></u>	<u>10.0</u>	<u>yes</u>	<u>FAC</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>10.0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.

SOIL

Sampling Point: WDP-6**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-16"	10YR 2/1	100					Sa	
16-18"	7.5YR 2.5/2	100					Lo	Spodic Horizon

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

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ Organic Bodies (A6) **(LRR P, T, U)**
☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
☐ Muck Presence (A8) **(LRR U)**
☐ 1 cm Muck (A9) **(LRR P, T)**
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Coast Prairie Redox (A16) **(MLRA 150A)**
☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☒ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
☐ Thin Dark Surface (S9) **(LRR S, T, U)**
☐ Loamy Mucky Mineral (F1) **(LRR O)**
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Marl (F10) **(LRR U)**
☐ Depleted Ochric (F11) **(MLRA 151)**
☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
☐ Umbric Surface (F13) **(LRR P, T, U)**
☐ Delta Ochric (F17) **(MLRA 151)**
☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
☐ 2 cm Muck (A10) **(LRR S)**
☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
☐ Anomalous Bright Loamy Soils (F20)
(MLRA 153B)
☐ Red Parent Material (TF2)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

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

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mu=Muck; Pe= Peat; Sa= Sand; Si=Silt

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Keystone Tract City/County: Charlton County Sampling Date: 08/28/2018
 Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: WDP-7
 Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2%
 Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.52804336850 Long: -82.12257029810 Datum: NAD83
 Soil Map Unit Name: Lynn Haven, Allanton and Kingsferry soils, ponded, 0-1% slopes NWI classification: PFO4C

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ☒ (If no, explain in Remarks.)
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No _____
 Are Vegetation No, Soil No, or Hydrology No 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 <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____	
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	
Remarks: - Site observations and local hydrological data support moderately wet conditions present during site visit. - Vegetation historically affected by silvicultural activities (planted pine) .	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)		<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input checked="" type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T,U)
Field Observations: Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>2"</u> Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0"</u> (includes capillary fringe)		Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: FAC-Neutral Test Results: Positive FACW and OBL: 10 to FACU and UPL: 0		

VEGETATION – Use scientific names of plants.

 Sampling Point: WDP-7

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		
Sapling Stratum (<u>30 ft radius</u>)				
1. <u>Taxodium ascendens</u>	<u>10.0</u>	<u>yes</u>	<u>OBL</u>	
2. <u>Magnolia virginiana</u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: <u>10.00</u> 20% of total cover: <u>4.00</u>	<u>20.0</u>	= Total Cover		
Shrub Stratum (<u>30 ft radius</u>)				
1. <u>Ilex cassine</u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: <u>5.00</u> 20% of total cover: <u>2.00</u>	<u>10.0</u>	= Total Cover		
Herb Stratum (<u>30 ft radius</u>)				
1. <u>Lachnanthes caroliniana</u>	<u>60.0</u>	<u>yes</u>	<u>OBL</u>	
2. <u>Andropogon glomeratus</u>	<u>10.0</u>	<u>no</u>	<u>FACW</u>	
3. <u>Woodwardia virginica</u>	<u>5.0</u>	<u>no</u>	<u>OBL</u>	
4. <u>Juncus effusus</u>	<u>5.0</u>	<u>no</u>	<u>OBL</u>	
5. <u>Xyris jupicai</u>	<u>5.0</u>	<u>no</u>	<u>OBL</u>	
6. <u>Panicum virgatum</u>	<u>5.0</u>	<u>no</u>	<u>FACW</u>	
7. <u>Smilax laurifolia</u>	<u>5.0</u>	<u>no</u>	<u>FACW</u>	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
50% of total cover: <u>47.50</u> 20% of total cover: <u>19.00</u>	<u>95.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of: _____ Multiply by: _____

OBL species _____ x 1 = _____

FACW species _____ x 2 = _____

FAC species _____ x 3 = _____

FACU species _____ x 4 = _____

UPL species _____ x 5 = _____

Column Totals: _____ (A) _____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

☒ 1 - Rapid Test for Hydrophytic Vegetation

☒ 2 - Dominance Test is >50%

☐ 3 - Prevalence Index is ≤3.0¹

☐ Problematic Hydrophytic Vegetation¹ (Explain)

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

Definitions of 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 ☐

Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.

SOIL

Sampling Point: WDP-7**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6"	10YR 2/1	100					Sa	
6-18"	10YR 5/1	100						

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

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ Organic Bodies (A6) **(LRR P, T, U)**
☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
☐ Muck Presence (A8) **(LRR U)**
☐ 1 cm Muck (A9) **(LRR P, T)**
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Coast Prairie Redox (A16) **(MLRA 150A)**
☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☒ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
☐ Thin Dark Surface (S9) **(LRR S, T, U)**
☐ Loamy Mucky Mineral (F1) **(LRR O)**
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Marl (F10) **(LRR U)**
☐ Depleted Ochric (F11) **(MLRA 151)**
☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
☐ Umbric Surface (F13) **(LRR P, T, U)**
☐ Delta Ochric (F17) **(MLRA 151)**
☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
☐ 2 cm Muck (A10) **(LRR S)**
☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
☐ Anomalous Bright Loamy Soils (F20)
(MLRA 153B)
☐ Red Parent Material (TF2)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mu=Muck; Pe= Peat; Sa= Sand; Si=Silt

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Keystone Tract City/County: Charlton County Sampling Date: 08/28/2018
 Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: WDP-8
 Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-1%
 Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.53837030210 Long: -82.11975018870 Datum: NAD83
 Soil Map Unit Name: Lynn Haven, Allanton and Kingsferry soils, ponded, 0-1% slopes NWI classification: PFO6/4C

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ☒ (If no, explain in Remarks.)
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No _____
 Are Vegetation No, Soil No, or Hydrology No 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 <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____	
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	
Remarks: - Site observations and local hydrological data support abnormally dry conditions present during site visit. - Vegetation recently affected by forest fire during drought conditions that resulted in high mortality of canopy species.	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input checked="" type="checkbox"/> Surface Water (A1) _____ Aquatic Fauna (B13) <input checked="" type="checkbox"/> High Water Table (A2) _____ Marl Deposits (B15) (LRR U) <input checked="" type="checkbox"/> Saturation (A3) <input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1) _____ Water Marks (B1) _____ Oxidized Rhizospheres along Living Roots (C3) _____ Sediment Deposits (B2) _____ Presence of Reduced Iron (C4) _____ Drift Deposits (B3) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Algal Mat or Crust (B4) _____ Thin Muck Surface (C7) _____ Iron Deposits (B5) _____ Other (Explain in Remarks) _____ Inundation Visible on Aerial Imagery (B7) _____ Water-Stained Leaves (B9)		<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Sparsely Vegetated Concave Surface (B8) _____ Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) <input checked="" type="checkbox"/> Saturation Visible on Aerial Imagery (C9) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) _____ Sphagnum moss (D8) (LRR T,U)
Field Observations: Surface Water Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>2"</u> Water Table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>3"</u> Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0"</u> (includes capillary fringe)		Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: FAC-Neutral Test Results: Positive FACW and OBL: 8 to FACU and UPL: 0		

VEGETATION – Use scientific names of plants.

 Sampling Point: WDP-8

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u><i>Pinus elliottii</i></u>	<u>60.0</u>	<u>yes</u>	<u>FACW</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: <u>30.00</u> 20% of total cover: <u>12.00</u>	<u>60.0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		
Shrub Stratum (<u>30 ft radius</u>)				Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u><i>Ilex glabra</i></u>	<u>20.0</u>	<u>yes</u>	<u>FACW</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
50% of total cover: <u>10.00</u> 20% of total cover: <u>4.00</u>	<u>20.0</u>	= Total Cover		
Herb Stratum (<u>30 ft radius</u>)				Definitions of 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>
1. <u><i>Woodwardia virginica</i></u>	<u>20.0</u>	<u>yes</u>	<u>OBL</u>	
2. <u><i>Typha latifolia</i></u>	<u>20.0</u>	<u>yes</u>	<u>OBL</u>	
3. <u><i>Lachnanthes caroliniana</i></u>	<u>20.0</u>	<u>yes</u>	<u>OBL</u>	
4. <u><i>Xyris jupicai</i></u>	<u>10.0</u>	<u>no</u>	<u>OBL</u>	
5. <u><i>Ludwigia decurrens</i></u>	<u>10.0</u>	<u>no</u>	<u>OBL</u>	
6. <u><i>Smilax laurifolia</i></u>	<u>10.0</u>	<u>no</u>	<u>FACW</u>	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
50% of total cover: <u>45.00</u> 20% of total cover: <u>18.00</u>	<u>90.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.

SOIL

Sampling Point: WDP-8**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-11"	10YR 2/1	100					Sa	
11-18"	10YR 6/1	100					Sa	

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

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ Organic Bodies (A6) **(LRR P, T, U)**
☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
☐ Muck Presence (A8) **(LRR U)**
☐ 1 cm Muck (A9) **(LRR P, T)**
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Coast Prairie Redox (A16) **(MLRA 150A)**
☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☒ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
☐ Thin Dark Surface (S9) **(LRR S, T, U)**
☐ Loamy Mucky Mineral (F1) **(LRR O)**
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Marl (F10) **(LRR U)**
☐ Depleted Ochric (F11) **(MLRA 151)**
☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
☐ Umbric Surface (F13) **(LRR P, T, U)**
☐ Delta Ochric (F17) **(MLRA 151)**
☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
☐ 2 cm Muck (A10) **(LRR S)**
☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
☐ Anomalous Bright Loamy Soils (F20)
(MLRA 153B)
☐ Red Parent Material (TF2)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mu=Muck; Pe= Peat; Sa= Sand; Si=Silt

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Keystone Tract City/County: Charlton County Sampling Date: 08/28/2018
 Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: WDP-9
 Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2%
 Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.52945612790 Long: -82.10996337620 Datum: NAD83
 Soil Map Unit Name: Lynn Haven fine sand, 0-2% slopes NWI classification: PFO6/4C

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ☒ (If no, explain in Remarks.)
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No _____
 Are Vegetation No, Soil No, or Hydrology No 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 <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____	
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	
Remarks: - Site observations and local hydrological data support moderately wet conditions present during site visit. - Vegetation recently impacted by forest fire resulting in high mortality of canopy species.	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input checked="" type="checkbox"/> Surface Water (A1) _____ Aquatic Fauna (B13) <input checked="" type="checkbox"/> High Water Table (A2) _____ Marl Deposits (B15) (LRR U) <input checked="" type="checkbox"/> Saturation (A3) _____ Hydrogen Sulfide Odor (C1) _____ Water Marks (B1) _____ Oxidized Rhizospheres along Living Roots (C3) _____ Sediment Deposits (B2) _____ Presence of Reduced Iron (C4) _____ Drift Deposits (B3) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Algal Mat or Crust (B4) _____ Thin Muck Surface (C7) _____ Iron Deposits (B5) _____ Other (Explain in Remarks) _____ Inundation Visible on Aerial Imagery (B7) _____ Water-Stained Leaves (B9)		<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Sparsely Vegetated Concave Surface (B8) _____ Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) <input checked="" type="checkbox"/> Saturation Visible on Aerial Imagery (C9) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) _____ Sphagnum moss (D8) (LRR T,U)
Field Observations: Surface Water Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>2"</u> Water Table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0"</u> Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0"</u> (includes capillary fringe)		Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: FAC-Neutral Test Results: Positive FACW and OBL: 12 to FACU and UPL: 0		

VEGETATION – Use scientific names of plants.

 Sampling Point: WDP-9

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u><i>Pinus elliottii</i></u>	<u>20.0</u>	<u>yes</u>	<u>FACW</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>7</u> (A) Total Number of Dominant Species Across All Strata: <u>7</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: <u>10.00</u> 20% of total cover: <u>4.00</u>	<u>20.0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (<u>30 ft radius</u>)				
1. <u><i>Taxodium ascendens</i></u>	<u>10.0</u>	<u>yes</u>	<u>OBL</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>5.00</u> 20% of total cover: <u>2.00</u>	<u>10.0</u>	= Total Cover		Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Shrub Stratum (<u>30 ft radius</u>)				
1. <u><i>Ilex cassine</i></u>	<u>5.0</u>	<u>yes</u>	<u>FACW</u>	
2. <u><i>Ilex coriacea</i></u>	<u>5.0</u>	<u>yes</u>	<u>FACW</u>	
3. <u><i>Lyonia lucida</i></u>	<u>5.0</u>	<u>yes</u>	<u>FACW</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>7.50</u> 20% of total cover: <u>3.00</u>	<u>15.0</u>	= Total Cover		Definitions of 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>
Herb Stratum (<u>30 ft radius</u>)				
1. <u><i>Lachnanthes caroliniana</i></u>	<u>30.0</u>	<u>yes</u>	<u>OBL</u>	
2. <u><i>Rhynchospora fascicularis</i></u>	<u>20.0</u>	<u>yes</u>	<u>FACW</u>	
3. <u><i>Xyris jupicai</i></u>	<u>10.0</u>	<u>no</u>	<u>OBL</u>	
4. <u><i>Scleria triglomerata</i></u>	<u>10.0</u>	<u>no</u>	<u>FACW</u>	
5. <u><i>Scirpus cyperinus</i></u>	<u>10.0</u>	<u>no</u>	<u>OBL</u>	
6. <u><i>Rhexia mariana</i></u>	<u>5.0</u>	<u>no</u>	<u>FACW</u>	
7. <u><i>Woodwardia virginica</i></u>	<u>5.0</u>	<u>no</u>	<u>OBL</u>	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
50% of total cover: <u>45.00</u> 20% of total cover: <u>18.00</u>	<u>90.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.

SOIL

Sampling Point: WDP-9

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-18"	10YR 2/1	100					Sa	
¹ Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.						² Location: PL=Pore Lining, M=Matrix.		
Hydric Soil Indicators:						Indicators for Problematic Hydric Soils³:		
___ Histosol (A1)						___ Polyvalue Below Surface (S8) (LRR S, T, U)		
___ Histic Epipedon (A2)						___ Thin Dark Surface (S9) (LRR S, T, U)		
___ Black Histic (A3)						___ Loamy Mucky Mineral (F1) (LRR O)		
___ Hydrogen Sulfide (A4)						___ Loamy Gleyed Matrix (F2)		
___ Stratified Layers (A5)						___ Depleted Matrix (F3)		
___ Organic Bodies (A6) (LRR P, T, U)						___ Redox Dark Surface (F6)		
___ 5 cm Mucky Mineral (A7) (LRR P, T, U)						___ Depleted Dark Surface (F7)		
___ Muck Presence (A8) (LRR U)						___ Redox Depressions (F8)		
___ 1 cm Muck (A9) (LRR P, T)						___ Marl (F10) (LRR U)		
___ Depleted Below Dark Surface (A11)						___ Depleted Ochric (F11) (MLRA 151)		
___ Thick Dark Surface (A12)						___ Iron-Manganese Masses (F12) (LRR O, P, T)		
___ Coast Prairie Redox (A16) (MLRA 150A)						___ Umbric Surface (F13) (LRR P, T, U)		
___ Sandy Mucky Mineral (S1) (LRR O, S)						___ Delta Ochric (F17) (MLRA 151)		
___ Sandy Gleyed Matrix (S4)						___ Reduced Vertic (F18) (MLRA 150A, 150B)		
___ Sandy Redox (S5)						___ Piedmont Floodplain Soils (F19) (MLRA 149A)		
___ Stripped Matrix (S6)						___ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)		
✓ ___ Dark Surface (S7) (LRR P, S, T, U)								
Restrictive Layer (if observed):								
Type: _____								
Depth (inches): _____						Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mu=Muck; Pe=Peat; Sa=Sand; Si=Silt								

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Keystone Tract City/County: Charlton County Sampling Date: 08/28/2018
 Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: WDP-10
 Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2%
 Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.51841558740 Long: -82.12215701960 Datum: NAD83
 Soil Map Unit Name: Lynn Haven fine sand, 0-2% slopes NWI classification: PFO3/4B

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ☒ (If no, explain in Remarks.)
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No _____
 Are Vegetation No, Soil No, or Hydrology No 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 <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____	
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	
Remarks: - Site observations and local hydrological data support moderately wet conditions present during site visit. -Vegetation impacted by recent forest fire resulting in high mortality in canopy species.	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input checked="" type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)		<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input checked="" type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input checked="" type="checkbox"/> Sphagnum moss (D8) (LRR T,U)
Field Observations: Surface Water Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>2"</u> Water Table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0"</u> Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0"</u> (includes capillary fringe)		Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: FAC-Neutral Test Results: Positive FACW and OBL: 10 to FACU and UPL: 0		

VEGETATION – Use scientific names of plants.

 Sampling Point: WDP-10

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u><i>Taxodium distichum</i></u>	<u>20.0</u>	<u>yes</u>	<u>OBL</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>10</u> (A) Total Number of Dominant Species Across All Strata: <u>10</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: <u>10.00</u> 20% of total cover: <u>4.00</u>	<u>20.0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (<u>30 ft radius</u>)				
1. <u><i>Pinus elliotii</i></u>	<u>20.0</u>	<u>yes</u>	<u>FACW</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>10.00</u> 20% of total cover: <u>4.00</u>	<u>20.0</u>	= Total Cover		Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Shrub Stratum (<u>30 ft radius</u>)				
1. <u><i>Hypericum cistifolium</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>	
2. <u><i>Toxicodendron vernix</i></u>	<u>5.0</u>	<u>yes</u>	<u>FACW</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>7.50</u> 20% of total cover: <u>3.00</u>	<u>15.0</u>	= Total Cover		Definitions of 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>
Herb Stratum (<u>30 ft radius</u>)				
1. <u><i>Lachnanthes caroliniana</i></u>	<u>30.0</u>	<u>yes</u>	<u>OBL</u>	
2. <u><i>Xyris jupicai</i></u>	<u>10.0</u>	<u>yes</u>	<u>OBL</u>	
3. <u><i>Rhynchospora fascicularis</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>	
4. <u><i>Andropogon glomeratus</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>	
5. <u><i>Ludwigia decurrens</i></u>	<u>10.0</u>	<u>yes</u>	<u>OBL</u>	
6. <u><i>Smilax laurifolia</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. <u>3</u>				
12. _____	_____	_____	_____	
50% of total cover: <u>40.00</u> 20% of total cover: <u>16.00</u>	<u>80.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.

SOIL

Sampling Point: WDP-10

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3"	10YR 2/1	100					Sa	
3-18"	10YR 4/1	100					Sa	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☒ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mu=Muck; Pe= Peat; Sa= Sand; Si=Silt

APPENDIX D

North Carolina (NC) Division of Water Quality (DWQ) Stream Identification Forms

**NC Division of Water Quality –Methodology for Identification of Intermittent and
Perennial Streams and Their Origins v. 4.11**

NC DWQ Stream Identification Form Version 4.11

Stream ID: S1

Date:	08/27/2018	Project/Site:	Keystone Tract	Latitude:	30.529731
Evaluator:	TTL, Inc./C. Terrell	County:	Charlton	Longitude:	-82.109174
Total Points: <i>Stream is at least intermittent if ≥ 19 or perennial if ≥ 30*</i>	24.00	Stream Determination:	Intermittent	e.g. Quad Name: 7.5 Minute: Moniac, GA & Saint George, GA	

A. Geomorphology (Subtotal = <u>8.50</u>)	Absent	Weak	Moderate	Strong
1 ^a Continuity of channel bed and bank	0	1 ✓	2	3
2. Sinuosity of channel along thalweg	0	1	2 ✓	3
3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0	1 ✓	2	3
4. Particle size of stream substrate	0	1 ✓	2	3
5. Active/relict floodplain	0	1 ✓	2	3
6. Depositional bars or benches	0	1 ✓	2	3
7. Recent alluvial deposits	0	1 ✓	2	3
8. Headcuts	0 ✓	1	2	3
9. Grade control	0 ✓	0.5	1	1.5
10. Natural valley	0	0.5 ✓	1	1.5
11. Second or greater order channel	No = 0 ✓		Yes = 3	

^a artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = <u>7.00</u>)	Absent	Weak	Moderate	Strong
12. Presence of Baseflow	0	1 ✓	2	3
13. Iron oxidizing bacteria	0	1 ✓	2	3
14. Leaf litter	1.5	1 ✓	0.5	0
15. Sediment on plants or debris	0	0.5 ✓	1	1.5
16. Organic debris lines or piles	0	0.5 ✓	1	1.5
17. Soil-based evidence of high water table?	No = 0		Yes = 3 ✓	

C. Biology (Subtotal = <u>8.50</u>)	Absent	Weak	Moderate	Strong
18. Fibrous roots in streambed	3	2 ✓	1	0
19. Rooted upland plants in streambed	3 ✓	2	1	0
20. Macroinvertebrates (note diversity and abundance)	0	1 ✓	2	3
21. Aquatic Mollusks	0 ✓	1	2	3
22. Fish	0 ✓	0.5	1	1.5
23. Crayfish	0	0.5 ✓	1	1.5
24. Amphibians	0	0.5 ✓	1	1.5
25. Algae	0 ✓	0.5	1	1.5
26. Wetland plants in streambed	FACW = 0.75 ✓ OBL = 1.5 Other = 0			

*perennial streams may also be identified using other methods. See p. 35 of manual.

Notes:
Sketch:

**NC Division of Water Quality –Methodology for Identification of Intermittent and
Perennial Streams and Their Origins v. 4.11**

NC DWQ Stream Identification Form Version 4.11

Stream ID: S2

Date: 08/27/2018	Project/Site: Keystone Tract	Latitude: 30.533054
Evaluator: TTL, Inc./C. Terrell	County: Charlton	Longitude: -82.113925
Total Points: <i>Stream is at least intermittent if ≥ 19 or perennial if ≥ 30*</i>	Stream Determination: Intermittent	e.g. Quad Name: 7.5 Minute: Moniac, GA & Saint George, GA

A. Geomorphology (Subtotal = <u>5.50</u>)				
	Absent	Weak	Moderate	Strong
1 ^a Continuity of channel bed and bank	0	1	2 ✓	3
2. Sinuosity of channel along thalweg	0 ✓	1	2	3
3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0 ✓	1	2	3
4. Particle size of stream substrate	0	1 ✓	2	3
5. Active/relict floodplain	0	1 ✓	2	3
6. Depositional bars or benches	0 ✓	1	2	3
7. Recent alluvial deposits	0	1 ✓	2	3
8. Headcuts	0 ✓	1	2	3
9. Grade control	0 ✓	0.5	1	1.5
10. Natural valley	0	0.5 ✓	1	1.5
11. Second or greater order channel	No = 0 ✓		Yes = 3	

^a artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = <u>9.00</u>)				
12. Presence of Baseflow	0	1	2 ✓	3
13. Iron oxidizing bacteria	0	1	2 ✓	3
14. Leaf litter	1.5	1 ✓	0.5	0
15. Sediment on plants or debris	0	0.5 ✓	1	1.5
16. Organic debris lines or piles	0	0.5 ✓	1	1.5
17. Soil-based evidence of high water table?	No = 0		Yes = 3 ✓	

C. Biology (Subtotal = <u>9.00</u>)				
18. Fibrous roots in streambed	3	2 ✓	1	0
19. Rooted upland plants in streambed	3 ✓	2	1	0
20. Macroinvertebrates (note diversity and abundance)	0	1 ✓	2	3
21. Aquatic Mollusks	0 ✓	1	2	3
22. Fish	0	0.5 ✓	1	1.5
23. Crayfish	0	0.5 ✓	1	1.5
24. Amphibians	0	0.5 ✓	1	1.5
25. Algae	0 ✓	0.5	1	1.5
26. Wetland plants in streambed	FACW = 0.75 ✓ OBL = 1.5 Other = 0			

*perennial streams may also be identified using other methods. See p. 35 of manual.

Notes:

Sketch:

**NC Division of Water Quality –Methodology for Identification of Intermittent and
Perennial Streams and Their Origins v. 4.11**

NC DWQ Stream Identification Form Version 4.11

Stream ID: S3

Date:	08/27/2018	Project/Site:	Keystone Tract	Latitude:	30.517363
Evaluator:	TTL, Inc./C. Terrell	County:	Charlton	Longitude:	-82.121289
Total Points: <i>Stream is at least intermittent if ≥ 19 or perennial if ≥ 30*</i>	20.00	Stream Determination:	Intermittent	e.g. Quad Name: 7.5 Minute: Moniac, GA & Saint George, GA	

A. Geomorphology (Subtotal = <u>5.50</u>)		Absent	Weak	Moderate	Strong
1 ^a . Continuity of channel bed and bank		0	1	2 ✓	3
2. Sinuosity of channel along thalweg		0 ✓	1	2	3
3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence		0 ✓	1	2	3
4. Particle size of stream substrate		0	1 ✓	2	3
5. Active/relict floodplain		0	1 ✓	2	3
6. Depositional bars or benches		0 ✓	1	2	3
7. Recent alluvial deposits		0	1 ✓	2	3
8. Headcuts		0 ✓	1	2	3
9. Grade control		0 ✓	0.5	1	1.5
10. Natural valley		0	0.5 ✓	1	1.5
11. Second or greater order channel		No = 0 ✓		Yes = 3	

^a artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = <u>6.00</u>)		Absent	Weak	Moderate	Strong
12. Presence of Baseflow		0 ✓	1	2	3
13. Iron oxidizing bacteria		0	1 ✓	2	3
14. Leaf litter		1.5	1 ✓	0.5	0
15. Sediment on plants or debris		0	0.5 ✓	1	1.5
16. Organic debris lines or piles		0	0.5 ✓	1	1.5
17. Soil-based evidence of high water table?		No = 0		Yes = 3 ✓	

C. Biology (Subtotal = <u>8.50</u>)		Absent	Weak	Moderate	Strong
18. Fibrous roots in streambed		3	2 ✓	1	0
19. Rooted upland plants in streambed		3 ✓	2	1	0
20. Macroinvertebrates (note diversity and abundance)		0	1 ✓	2	3
21. Aquatic Mollusks		0 ✓	1	2	3
22. Fish		0 ✓	0.5	1	1.5
23. Crayfish		0	0.5 ✓	1	1.5
24. Amphibians		0	0.5 ✓	1	1.5
25. Algae		0 ✓	0.5	1	1.5
26. Wetland plants in streambed		FACW = 0.75 ✓ OBL = 1.5 Other = 0			

*perennial streams may also be identified using other methods. See p. 35 of manual.

Notes:
Sketch:

**NC Division of Water Quality –Methodology for Identification of Intermittent and
Perennial Streams and Their Origins v. 4.11**

NC DWQ Stream Identification Form Version 4.11

Stream ID: S4

Date: 08/28/2018	Project/Site: Keystone Tract	Latitude: 30.516697
Evaluator: TTL, Inc./C. Terrell	County: Charlton	Longitude: -82.110267
Total Points: <i>Stream is at least intermittent if ≥ 19 or perennial if ≥ 30*</i>	Stream Determination: Perennial	e.g. Quad Name: 7.5 Minute: Moniac, GA & Saint George, GA

A. Geomorphology (Subtotal = <u>8.00</u>)				
	Absent	Weak	Moderate	Strong
1 ^a Continuity of channel bed and bank	0	1	2	3 ✓
2. Sinuosity of channel along thalweg	0	1 ✓	2	3
3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0 ✓	1	2	3
4. Particle size of stream substrate	0	1 ✓	2	3
5. Active/relict floodplain	0	1 ✓	2	3
6. Depositional bars or benches	0 ✓	1	2	3
7. Recent alluvial deposits	0	1 ✓	2	3
8. Headcuts	0 ✓	1	2	3
9. Grade control	0	0.5 ✓	1	1.5
10. Natural valley	0	0.5 ✓	1	1.5
11. Second or greater order channel	No = 0 ✓		Yes = 3	

^a artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = <u>10.00</u>)				
12. Presence of Baseflow	0	1	2	3 ✓
13. Iron oxidizing bacteria	0	1	2 ✓	3
14. Leaf litter	1.5	1 ✓	0.5	0
15. Sediment on plants or debris	0	0.5 ✓	1	1.5
16. Organic debris lines or piles	0	0.5 ✓	1	1.5
17. Soil-based evidence of high water table?	No = 0		Yes = 3 ✓	

C. Biology (Subtotal = <u>12.50</u>)				
18. Fibrous roots in streambed	3	2 ✓	1	0
19. Rooted upland plants in streambed	3 ✓	2	1	0
20. Macroinvertebrates (note diversity and abundance)	0	1	2 ✓	3
21. Aquatic Mollusks	0	1 ✓	2	3
22. Fish	0	0.5 ✓	1	1.5
23. Crayfish	0	0.5	1 ✓	1.5
24. Amphibians	0	0.5	1 ✓	1.5
25. Algae	0	0.5 ✓	1	1.5
26. Wetland plants in streambed	FACW = 0.75 ✓ OBL = 1.5 Other = 0			

*perennial streams may also be identified using other methods. See p. 35 of manual.

Notes:

Sketch:

APPENDIX E

USACE Savannah District Request for Corps of Engineers Jurisdictional
Determination (JD) and/or Delineation Review Form



US Army Corps
of Engineers
Savannah District

SAS APPENDIX 1: Request for Corps of Engineers Jurisdictional Determination (JD) and/or Delineation Review

I. Reason for request: (check as many as applicable)

- ☐ I intend to construct/develop a project or perform activities on this parcel which would be designed to avoid all aquatic resources.
- ☐ I intend to construct/develop a project or perform activities on this parcel which would be designed to avoid all jurisdictional aquatic resources under Corps authority.
- ☒ I intend to construct/develop a project or perform activities on this parcel which may require authorization from the Corps, and the JD would be used to avoid and minimize impacts to jurisdictional aquatic resources and as an initial step in a future permitting process.
- ☐ I intend to construct/develop a project or perform activities on this parcel which may require authorization from the Corps; this request is accompanied by my permit application and the JD is to be used in the permitting process.
- ☐ I intend to construct/develop a project or perform activities in a navigable water of the U.S. which is included on the district Section 10 list and/or is subject to the ebb and flow of the tide.
- ☐ A Corps JD is required in order to obtain my local/state authorization.
- ☐ I intend to contest jurisdiction over a particular aquatic resource and request the Corps confirm that jurisdiction does/does not exist over the aquatic resource on the parcel.
- ☐ I believe that the site may be comprised entirely of dry land.
- ☐ Other: _____

II. I am requesting that the U.S. Army Corps of Engineers, Savannah District, provide me with the following:

- ☒ **Delineation Review of Aquatic Resources** - Concurrence with an aquatic resource delineation is a written notification from the Corps concurring, not concurring, or commenting on the aquatic resource boundaries, or limits, delineated on a property.
- ☐ **Preliminary Jurisdictional Determination** - (PJD). A PJD is defined in Corps regulations at 33 CFR 331.2, as "written indications that there may be waters of the United States on a parcel". When the Corps provides a PJD, the Corps is making no legally binding determination of any type regarding whether jurisdiction exists over the particular aquatic resource in question.
- ☐ **Approved Jurisdictional Determination** - (AJD) An AJD is defined in Corps regulations at 33 CFR 331.2. A definitive, official determination that there are, or that there are not, jurisdictional aquatic resources on a parcel.
- ☐ I am unclear as to what I would like to request and require additional information to inform my decision.

III. Property/Owner Information. Please complete ALL of the following information for the property under review:

SECTION 1

Parcel Number of Property: 0059 001002

Lat. 30.526662 Long. - 82.115773 (in decimal degrees)

Parcel Address:

Parcel City : Saint George Parcel County: Charlton Zip:

Size of Review Area: 1034.41 Acre(s) Variable Linear feet

SECTION 2

LANDOWNER NAME		AUTHORIZED AGENT'S NAME	
First: Steve		First: Cindy	
Last: Ingle		Last: House-Pearson	
Company: Twin Pines Minerals, LLC		Company: TTL, Inc.	
Email Address: single@greenfuelsenergy.com		Email Address: chpearson@ttlusa.com	
Address: 2100 Southbridge Parkway, Ste. 540		Address: 3516 Greensboro Avenue	
City: Birmingham		City: Tuscaloosa	
State: AL	Zip: 35209	State: AL	Zip: 35401
Phone: 205-545-8759		Phone: 251-327-6153	

PROPERTY ACCESS PERMISSION, ACKNOWLEDGEMENT OF 18 U.S.C. SECTION 10001 AND STATEMENT OF AGENT AUTHORIZATION

Initial ONLY One:

SI By signing below, I certify that I am the owner of record of the property referenced in III, Section 1 above, and I hereby authorize representatives of the U.S. Army Corps of Engineers, Savannah District, to enter the property for purposes of conducting on-site inspections, and issuing an aquatic resource delineation concurrence and/or a jurisdictional determination. My signature shall also be an affirmation that I possess the requisite property rights to request a delineation review and/or a jurisdictional determination on the property referenced in III - Section 1. Further, I authorize the agent in III - Section 2, to act on my behalf in the processing of this request and to furnish supplemental information in support of this request.

"/A By signing below, I certify that I am acting as the duly authorized agent of the owner of record of the property referenced in III, Section 1 above, and have been given the authority to: 1) request a delineation review and/or a jurisdictional determination (JD) on the property referenced in III - Section 1, and 2) authorize representatives of the U.S. Army Corps of Engineers, Savannah District, to enter the property for purposes of conducting on-site inspections, and issuing an aquatic resource delineation concurrence and/or a jurisdictional determination. I understand that I may be required to provide documentary evidence of my authority to request a delineation review and/or JD, and/or to grant Corps of Engineers personnel access to the property.

Please Print Name Legibly: Steve Ingle

Signature

Date: 9/28/2018

* Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103,

33 USC 1413; Regulatory Program of the U.S. Army Corps of Engineers; Final Rule for 33 CFR Parts 320-332.

Principal Purpose: The information that you provide will be used in evaluating your request to determine whether there are any aquatic resources within the project area subject to federal jurisdiction under the regulatory authorities referenced above.

Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public, and may be made available as part of a public notice as required by federal law. Your name and property location where federal jurisdiction is to be determined will be included in the approval jurisdictional determination (AJD), which will be made available to the public on the District's website and on the Headquarters USACE website.

Disclosure: Submission of requested information is voluntary; however, if information is not provided, the request for an AJD cannot be evaluated nor can an AJD be issued.

**US Army Corps of Engineers
Savannah District, Regulatory Division
Global Positioning Systems (GPS) Datasheet
Delineation of Wetlands, Streams and Other Waters
Within the State of Georgia**

USACE File Number SAS-2018-00554 Date of Delineation 08/20/2018-08/31/2018

Name of Delineator Present Chris Terrell & Chris Stanford

Make and Model of GPS Device Used (must be capable of sub-meter accuracy)

Trimble Geo7x GPS (model 88161)

Geographic Coordinate System Used US State Plane GA East - NAD 1983 (Conus)

Name of Continually Operated Reference Station Used for Post-processing

CORS, JACKSONVILLE 1 (ZJX1), FLORIDA (ITRF00 (1997)-Derived from IGS08 (NEW))

Date Post-processing Performed 9/13/2018

Percent Dilution of Position (PDOP) (6 or less is required) see attached table

Name and Coordinates of Known Property Corner and/or Monument

no known monument/benchmark located

GPS Reading of Known Property Corner and/or Monument

no known monument/benchmark located

Frequency of Waypoints Taken During Survey as needed per field observations

Note: GPS data must be provided, if requested. If GPS data and/or a GPS delineation is determined unacceptable by the Savannah District, a survey sealed by a surveyor licensed in Georgia will be required.

Twin Pines Minerals - WOTUS Delineation and Burrow Survey
GPS Percent Dilution of Position (PDOP)

GPS Unit	Date	PDOP AM	PDOP PM
Tuscaloosa	8/21/2018	1.48	NA
Rental	8/21/2018	1.74	1.33
Montgomery	8/21/2018	1.11	2.16
Tuscaloosa	8/22/2018	2.33	1.14
Rental	8/22/2018	1.43	2.05
Montgomery	8/22/2018	NA	NA
Tuscaloosa	8/23/2018	1.58	2.20
Rental	8/23/2018	1.50	1.48
Montgomery	8/23/2018	NA	NA
Tuscaloosa	8/24/2018	1.58	1.18
Rental	8/24/2018	1.56	1.7
Montgomery	8/24/2018	NA	NA
Tuscaloosa	8/25/2018	1.83	1.89
Rental	8/25/2018	1.27	1.77
Montgomery	8/25/2018	NA	NA
Tuscaloosa	8/26/2018	1.35	1.85
Rental	8/26/2018	NA	NA
Montgomery	8/26/2018	NA	NA
Tuscaloosa	8/27/2018	1.38	1.26
Rental	8/27/2018	1.00	1.53
Montgomery	8/27/2018	NA	NA
Tuscaloosa	8/28/2018	1.46	NA
Rental	8/28/2018	1.06	1.87
Montgomery	8/28/2018	NA	NA
Tuscaloosa	8/29/2018	1.38	2.06
Rental	8/29/2018	NA	NA
Montgomery	8/29/2018	NA	NA
Tuscaloosa	8/30/2018	1.46	NA
Rental	8/30/2018	1.06	NA
Montgomery	8/30/2018	NA	1.35

NA: not applicable, GPS unit not in use



2743-B Gunter Park Drive West
Montgomery, AL 36109
334.244.0766
www.TTLUSA.com

December 7, 2018

Mr. Jared M. Lopes, Project Manager
Savannah District, OP-FC
U.S. Army Corps of Engineers
100 West Oglethorpe Avenue
Savannah, Georgia 31401-3640

Subject: Waters of the U.S. Delineation Field Verification – Revisions Submittal
Approximately 1,034-Acre Keystone Tract
Twin Pines, LLC
Saint George, Charlton County, Georgia
USACE Project No.: SAS-2018-00554
TTL Project No.: 000180200804.00

Dear Mr. Lopes,

In response to the field verification conducted by the United States Army Corps of Engineers (USACE) and TTL on November 27-28, 2018, TTL provides the following summary of revisions:

- a. Attachment A provides the revised Waters of the U.S. Delineation Map per the USACE field verification.
- b. Wetland A (WA) was revised from 580.475 acres to 504.304 acres. Wetland E (WE) is now a portion of WA, which has now been separated into nine (9) polygons.
- c. Wetland B (WB) was revised from 2.041 acres to 2.194 acres.
- d. Wetland G (WG) was revised from 5.957 acres to 5.970 acres.
- e. Wetland H (WH) was revised from 14.562 acres to 14.141 acres.
- f. Stream 2 (S2) was revised to a wetland swale that is part of WA.
- g. Stream 3 (S3) was revised to be a non-jurisdictional ditch and therefore removed.
- h. Stream 4 (S4) was revised to be a wetland swale

Please let TTL representatives know if additional information or revisions are needed for the project.

Sincerely,

TTL, Inc.

Christopher Terrell
Project Professional

Cindy House-Pearson
Senior Natural Resources
Client Manager

ATTACHMENT A

REVISED WATERS OF THE US DELINEATION MAP

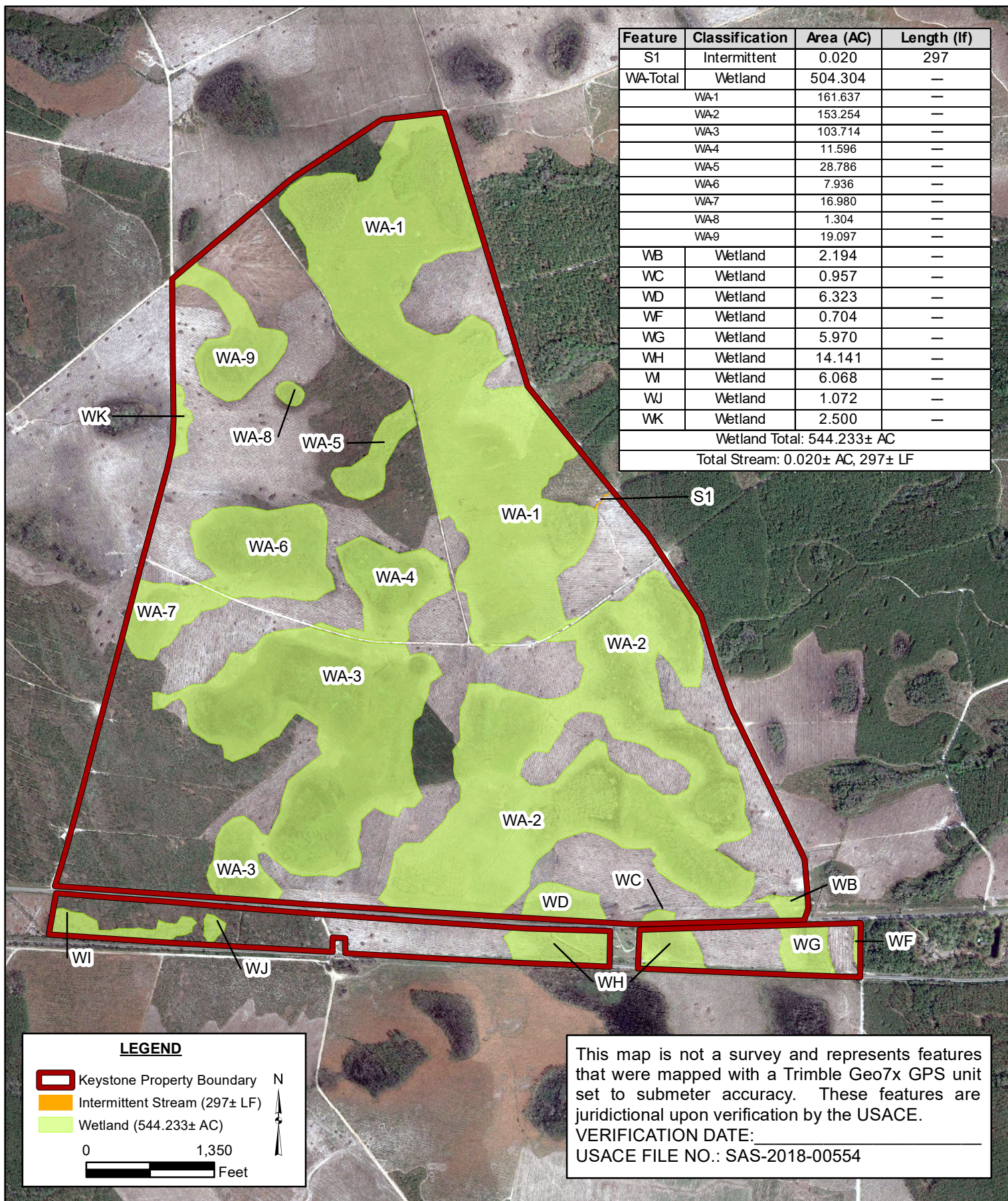


FIGURE 6: WATERS OF THE US DELINEATION MAP
TWIN PINES MINERALS - KEYSTONE PROPERTIES
WATERS OF THE U.S. DELINEATION

BASEMAP: Google Earth, Europa Technologies (C) 2018. Image Date: 3/6/2018

DRAWN BY: CMS
CHECKED BY: CGT
DRAWING DATE: 09/18/2018
REVISION DATE: 12/06/2018
TTL JOB NO. 000180200804.00
APPROX. SCALE: 1" = 2,000'

WATERS OF THE UNITED STATES DELINEATION REPORT

APPROXIMATELY 1,012-ACRE LONCALA TRACT
SAINT GEORGE, CHARLTON COUNTY, GEORGIA

Submitted to:

Twin Pines Minerals, LLC
Attn: Mr. Steve Ingle, P.E.
2100 Southbridge Parkway
Birmingham, Alabama 35209

Prepared by:

TTL, Inc.
2743-B Gunter Park Drive West
Montgomery, Alabama 36109


Project No. 000180200804.00

August 3, 2018



SIGNATURE OF ENVIRONMENTAL PROFESSIONALS

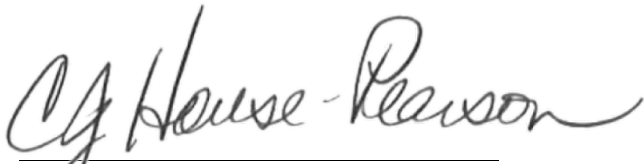
TTL, Inc. has performed a waters of the United States (U.S.) delineation in general conformance with the scope and limitations of the *U. S. Army Corps of Engineers Wetland Delineation Manual, 1987 Edition*, and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region Version 2.0* (2010). Identification of ephemeral, intermittent and perennial streams has been performed in general conformance with methodology outlined in *Methodology for Identification of Intermittent and Perennial Streams and their Origins, Version 4.11* (2010).



Christopher Terrell
Environmental Professional

August 3, 2018

Date



Cindy House-Pearson
Senior Natural Resources
Client Manager

August 3, 2018

Date

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APPENDICES

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1.0 INTRODUCTION

TTL, Inc. (TTL) was contracted by Twin Pines Minerals, LLC (Twin Pines) to perform a delineation of the waters of the United States (WOTUS) associated with a proposed development of a heavy mineral mining operation in Saint George, Charlton County, Georgia (Figure 1). TTL conducted the field activities for this project from April 3, 2018 to May 3, 2018.

Activities within jurisdictional waters of the U.S. are regulated by the U.S. Army Corps of Engineers (USACE). Authority to permit discharges (fill) within jurisdictional wetlands or non-navigable waters of the U.S. is granted under Section 404 of the Clean Water Act (CWA) of 1972. Authority to permit work and placement of structures in navigable waters of the U.S. is granted under Sections 9 and 10 of the Rivers and Harbors Act of 1899. For regulatory purposes under the CWA, wetlands are defined by the USACE as:

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

2.0 SITE DESCRIPTION

The site is an approximately 1,012-acre area depicted on the U.S. Geological Survey (USGS) 7.5-minute Topographic Maps of Moniac, Georgia and Saint George, Georgia (Figure 1). The center of the site is located near latitude 30.576162 and longitude -82.128950. According to the USGS Topographic Map, the elevation at the site ranges from approximately 120 to 175 feet above mean sea level.

The delineation area is located near the eastern limits of the Okefenokee National Wildlife Refuge. The western delineation area boundary follows a portion of Swamp Perimeter Road. The historic Trail Ridge is located along the eastern portion of the delineation area. The delineation area has historically been used for silvicultural activities. The primary sources of hydrology for the delineation area are onsite rainfall and surface water flow.

Driving directions to the site are as follows: from the intersection of GA-23 and GA-94 (in St. George, GA), travel west along GA-94 for approximately 6.93 miles to the intersection of GA-94 and Boggy Break (dirt road). Turn north (right) onto Boggy Break and travel north for 3.4 miles to the

intersection of Boggy Break/Swamp Perimeter Road and an unnamed dirt road to the east. This location is the southwest corner of the delineation area.

3.0 LITERATURE AND RECORDS REVIEW

Prior to conducting the field effort, TTL performed a literature and records review to develop an understanding of the potential for the presence of waters of the U.S. on the subject site or surrounding properties. These data sources and the review findings are described below.

3.1 Hydric Soils

The Natural Resources Conservation Service (NRCS) maintains a database of soil types (map units) for most areas of the U.S. (NRCS, 2017). The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit which represents a large area dominated by one or more major types of soil. Map units are further classified with a rating of hydric, partially hydric or non-hydric. Map units are useful for planning purposes to provide an overall understanding of the soils that occur in a general area. However, due to the natural variability of the landscape, direct observation of the soils profile is necessary to identify hydric soil indicators.

A classification of hydric means that the soil components listed for a given map unit are rated as being hydric. "Predominantly hydric" means that more than 66 percent to less than 100 percent of soil components are hydric. "Partially hydric" means that more than 33 percent to less than 65 percent of soil components are hydric. "Predominantly non-hydric" means that more than 0 percent and less than 32 percent of soil components are hydric. "Not hydric" means that all soil components are rated as not hydric. "Unknown hydric" indicates that at least one component is not rated so a definitive rating for the map unit cannot be made. A NRCS map of the soils located on the site with the associated hydric rating is presented in Figure 3 and summarized in Table 1 below.

Table 1: Soil Map Units Classifications

Map Unit Symbol	Description	Hydric Rating
LeA	Leon fine sand, 0-2% slopes	Predominantly Hydric
LoA	Leon fine sand, frequently ponded, 0-2% slopes	Hydric
LvA	Lynn Haven fine sand, 0-2% slopes	Predominantly Hydric
LYA	Lynn Haven, Allanton and Kingsferry soils, ponded, 0-1% slopes	Predominantly Hydric
MaA	Mandarin fine sand, 0-2% slopes	Predominantly Nonhydric
SuA	Surrency mucky fine sand, frequently ponded, 0-1% slopes	Hydric

3.2 National Wetland Inventory

The U.S. Fish and Wildlife Service (USFWS) created and maintains the National Wetland Inventory (NWI) database of information on the characteristics, extent, and status of the wetlands and deepwater habitats within the U.S. This information is useful for planning purposes and provides an overall understanding of the habitats that may be present in or around the site. The NWI classifies habitat types as marine, estuarine, riverine, lacustrine or palustrine with additional modifiers as appropriate to identify the water regime, water chemistry, soil or other characteristics based on *Classification of Wetlands and Deepwater Habitats of the U.S.* (Cowardin, 1979).

TTL reviewed the NWI data for the site using the USFWS NWI Wetlands Mapper web-based tool to determine the potential for wetlands to exist on the site. The USFWS NWI Mapper identified numerous wetland, stream, and open water features within the delineation area boundary. Figure 4 depicts the NWI Map, and Table 2 summarizes the habitat below.

Table 2: NWI Classifications

Map Unit Symbol	Description of Habitat
PEM1C	Palustrine; Emergent; Persistent; Seasonally Flooded
PEM1F	Palustrine; Emergent; Persistent; Semipermanently Flooded
PF03/4B	Palustrine; Forested; Broad-Leaved Evergreen/Needle-Leaved Evergreen; Seasonally Saturated
PF03/4C	Palustrine; Forested; Broad-Leaved Evergreen/Needle-Leaved Evergreen; Seasonally Flooded
PF03/6C	Palustrine; Forested; Broad-Leaved Evergreen/Deciduous; Seasonally Flooded
PF03B	Palustrine; Forested; Broad-Leaved Evergreen; Seasonally Saturated
PF06/3C	Palustrine; Forested; Deciduous/Broad-Leaved Evergreen; Seasonally Flooded
PF06C	Palustrine; Forested; Deciduous; Seasonally Flooded
PF06F	Palustrine; Forested; Deciduous; Semipermanently Flooded
PSS3/1B	Palustrine; Scrub-Shrub; Broad-Leaved Evergreen/Broad-Leaved Deciduous; Seasonally Saturated
R5UBH	Riverine; Unknown Perennial; Unconsolidated Bottom; Permanently Flooded

3.3 Hydrologic Unit Code

The U.S. is divided and sub-divided into successively smaller hydrologic units which are classified into six levels: regions, sub-regions, accounting units, watershed, sub-watershed, and cataloging units. The hydrologic units are arranged within each other, from the smallest (cataloging unit) to the largest (regions). Each hydrologic unit is identified by a unique hydrologic unit code (HUC) consisting of two to 12 digits based on the six levels of classification in the hydrologic system (Seaber, Kapinos, Knapp, 1987). The majority of the site is located within the Soldiers Camp Island watershed, cataloging unit 12-Digit HUC 030702040301. Three other cataloging unit 12-Digit HUCs occur along the northwestern (Cornhouse Creek – 030702040703), northeastern (Harris Creek – St. Marys River – 030702040603), and the eastern (Boone Creek – 030702040602) portions of the delineation area. All four cataloging units are located within the St Marys watershed, cataloging unit 8-Digit HUC 03070204 (Figure 5).

3.4 Normal Weather Conditions

TTL calculates a subject site's normal weather conditions before performing site work to understand whether aquatic features in the landscape may exhibit certain characteristics related to current and near past hydrologic regime. TTL calculates data obtained from an on-line NRCS climactic database, Agricultural Applied Climate Information System (AgACIS), and derives its calculation method from the Tennessee Department of Environment and Conservation's guide for making hydrologic

determinations (TDEC, 2011). An evaluation of weather conditions was performed for the three-month period prior to the field activities. Calculations for the site indicate that the weather conditions were drier than normal for the time of year that field work was performed.

The Palmer Drought Severity Index provided by National Oceanic and Atmospheric Administration (NOAA) is accessed at <http://www.ncdc.noaa.gov/oa/climate/research/prelim/drought/palmer.html> and was used to cross-reference the results calculated. The Palmer Drought Severity Index indicates that the region of the site experienced “moderate drought” conditions during the weeks prior to the site visit.

As an additional cross-reference, the U.S. Drought Monitor was accessed and evaluated. The U.S. Drought Monitor is produced through a partnership between the National Drought Mitigation Center at the University of Nebraska-Lincoln, the United States Department of Agriculture (USDA), and NOAA. The most recent update of the U.S. Drought Monitor (April 3, 2018) Map of Alabama exhibited moderate drought conditions in the vicinity of the review area.

The Normal Weather Conditions Table, AgACIS data, Palmer Drought Severity Index Map, and U.S. Drought Monitor Map of Alabama and are included in Appendix A.

4.0 WETLAND AND WATERS DELINEATION

4.1 Wetland Identification Methodology

TTL utilizes the *U.S. Army Corps of Engineers Wetland Delineation Manual* (USACE, 1987) and *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region* (USACE, 2010) technical guidelines for determining the presence of wetlands. This determination requires that a positive wetland indicator be present for each of the three parameters (hydrology, soil, and vegetation), with the exception of areas altered by recent human activities or natural events. During field activities, TTL assessed the project area for the presence of hydrophytic vegetation and used a Dutch hand-auger to evaluate the project area for the presence of hydric soils. TTL examined the soil for hydric soil indicators as identified in the *Field Indicators of Hydric Soils in the United States*, V. 8.1 (NRCS, 2017). Additionally, TTL observed the project area for indications of inundated or saturated soils, water marks, drift lines, crayfish burrows, sediment deposits and other wetland hydrology indicators. TTL used *Wetland Determination Data Forms – Atlantic and Gulf Coastal Plain Region* (2010) to record field conditions for the soil, vegetation and hydrology for wetlands and uplands located on the site. At least one data point was established in each habitat type observed within the review area.

TTL traversed the project area on foot and placed orange flagging labeled with Upland Data Point (UDP) or Wetland Data Point (WDP) point identification at the data point location. The location of the data point flagging was mapped with a Trimble Geo7x Global Positioning System (GPS) unit, which was set to sub-meter tolerances. Field data was post-processed using Trimble PathfinderOffice V 5.3 and exported to ESRI's ArcMap 10.2. Area features were manually digitized in ArcGIS using the flag locations; geographic coordinates and area quantities were calculated using ArcGIS "area" function.

4.2 Wetland Findings

The project area contains five wetland areas (WA-WE) consisting of approximately 416.03 acres. The boundaries of the wetland areas and data point locations are depicted on Figure 6. Selected photographs of our field observations are provided in Appendix B. Wetland Determination Data Forms are included in Appendix C. Table 3 summarizes the wetland findings below.

Table 3: Wetland Summary

Wetland ID	Cowardin Habitat Description	Area (acres)
WA	Palustrine; Forested, Broad-Leaved Deciduous/Needle-Leaved Evergreen; Saturated	333.88
WB	Palustrine; Forested, Broad-Leaved Deciduous/Needle-Leaved Evergreen; Saturated	11.96
WC	Palustrine; Forested, Broad-Leaved Deciduous/Needle-Leaved Evergreen; Saturated	3.80
WD	Palustrine; Forested, Broad-Leaved Deciduous/Needle-Leaved Evergreen; Saturated	62.67
WE	Palustrine; Forested, Broad-Leaved Deciduous/Needle-Leaved Evergreen; Saturated	3.72

Wetlands WA and WD are located west of the historic trail ridge. Wetland A is located along the southern, western, and central portions of the delineation area. Wetland D is located along the northwestern portion of the delineation area. Wetlands WB, WC, and WE are located east of the historic trail ridge. Wetland B is located along the central portion of the eastern portion of the delineation area. Wetlands C and E are both located along the northeastern portion of the delineation area. The soils textures within the wetland areas are comprised of a sand content that meets hydric soil indicators S7 – Dark Surface or S8 – Polyvalue Below Surface, as well as a peat/mucky mineral content that meets hydric soil indicators A3 – Black Histic, A4 – Hydrogen Sulfide, and/or A7 – 5cm Mucky Mineral. The hydrology for this area is supported by localized stormwater and a shallow water table. The wetland vegetation communities within the delineation area vary from large areas of hipped and benched, planted pine habitat [dominated by slash pine

(*Pinus elliottii*), inkberry (*Ilex glabra*), Carolina redroot (*Lachnanthes caroliniana*), and Virginia chain fern (*Woodwardia virginica*)], to smaller areas of hippled and benched, planted pine habitat that exhibited acidic bog characteristics [dominated by Carolina redroot, southern umbrella sedge (*Fuirena scirpoidea*), pipewort species (*Eriocaulon* sp.), blue-flower butterwort (*Pinguicula caerulea*), yellow colicroot (*Aletris lutea*), hooded pitcherplant (*Sarracenia minor*), snake-mouth orchid (*Pogonia ophioglossoides*), rosebud orchid (*Cleistesiopsis divaricata*), green-vein ladies'-tresses (*Spiranthes praecox*), and spoon-leaf sundew (*Drosera intermedia*)], to forested pocosin habitat that exhibited no signs of silvicultural activities [dominated by pond pine (*Pinus serotina*), pond cypress (*Taxodium ascendens*), loblolly bay (*Gordonia lasianthus*), swamp tupelo (*Nyssa biflora*), large gallberry (*Ilex coriacea*), and Virginia chain fern.

4.3 Streams Identification and Methodology

TTL used the *North Carolina Division of Water Quality – Methodology for Identification of Intermittent and Perennial Streams and Their Origins v. 4.11, September 1, 2010 (NC Method)* technical guideline to determine the most appropriate classification of each subject stream. This technical guideline for stream identification is the preferred methodology for distinguishing between intermittent and perennial streams in the southeast United States and requires evaluation of 26 attributes of the stream and assigning a numeric score to each on the *NC DWQ Stream Identification Form Version 4.11*. A four-tiered, weighted scale is utilized for evaluating and scoring the features categorized in sets of geomorphic, hydrologic, and biological attributes. Additionally, TTL utilized the *Regulatory Guidance Letter No. 05-05: Ordinary High Water Mark Identification* (USACE, 2005) as the basis for the delineation, mapping, and linear footage/areal estimations of on-site streams.

Identified streams were mapped using the method described in Section 4.1. Stream Identification Forms (v. 4.11) were used to classify streams that were not clearly perennial (i.e. flowing water at greater than 48 hours since rainfall, strong morphology and obvious biological presence). TTL traversed the stream channels on foot and placed blue flagging labeled with stream data point identifications near the observed ordinary high water mark (OHWM). The locations of the boundary flags were mapped with a Trimble Geo7x Global Positioning System (GPS) unit, which was set to sub-meter tolerances. Field data was post-processed using Trimble Pathfinder Office V 5.3 and exported to ESRI's ArcMap 10.2. Area features were manually digitized in ArcGIS using the flag locations; geographic coordinates and area quantities were calculated using ArcGIS "area" function.

4.4 Streams Findings

TTL identified two tributaries within the delineation area consisting of approximately 3,020 linear feet of intermittent stream (S1-S2). These streams are located within the northwestern portion of the delineation area. Stream S2 flows into Stream S1, which flows offsite westward into the Okefenokee Wildlife Refuge. Table 4 summarizes the stream findings below.

Table 4: Stream Summary

Wetland ID	Cowardin Habitat Description	Length (linear feet)/ Area (acres)
S1	Riverine; Intermittent; Streambed; Mud	2,210/ 0.33
S2	Riverine; Intermittent; Streambed; Mud	810/ 0.07

4.5 Open Waters

TTL identified one open water (OW1) totaling 0.34 acres within the delineation area. The observed open water appears to be an excavated feature that is adjacent to Wetland D.

4.6 Jurisdictional Determination Request

The USACE has the sole authority to determine whether wetlands or water features are “jurisdictional.” Under certain circumstances, wetland areas are considered non-jurisdictional because they lack a significant nexus with other wetlands or waters of the U.S. TTL utilized the *USACE Jurisdictional Determination Form Instructional Guidebook* (USACE and EPA, 2007) to complete a *SAS APPENDIX 1: Request for Corps of Engineers Jurisdictional Determination (JD) and/or Delineation Review Form* (Appendix E).

It is TTL’s opinion that all observed tributaries, wetlands, and open waters within the delineation area are jurisdictional features due to their significant nexus to nearby relatively permanent waters. Copies of tables of the aquatic features details as well as flag locations are also included in Appendix E.

TTL recommends that a delineation review of aquatic resources of the potentially jurisdictional site features be requested from the USACE Savannah District. If the USACE is not engaged regarding a jurisdictional determination or delineation review of aquatic resources, TTL is neither responsible for the final determination of jurisdictional features within the review corridor, nor responsible for violations associated with unauthorized activities that may occur within areas deemed jurisdictional by the USACE at a later time.

5.0 CONCLUSIONS

- Approximately 416.03 acres of forested wetland were identified within the delineation area.
- Approximately 0.34 acres of open water were identified within the delineation area.
- Approximately 3,020 linear feet (0.40 acres) of intermittent stream were identified within the delineation area.
- Upon approval by the client, TTL will submit a request for an approved jurisdictional determination (AJD) from the USACE of all aquatic features within the site.

6.0 REFERENCES

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FIGURES

Figure 1	Project Location and Topographic Map
Figure 2	Site Location & Aerial Photograph
Figure 3	Natural Resources Conservation Service (NRCS) Soil Map w/Hydric Rating
Figure 4	National Wetland Inventory (NWI) Classification Map
Figure 5	Hydrologic Unit Code (HUC) Map
Figure 6	Waters of the U.S. Delineation Map

A map of the state of Georgia with its county boundaries outlined in black. A white callout box with a black border points to the southeastern corner of the state. Inside the callout box, the text "CHARLTON CO." is written in bold black capital letters. Below it, the word "SITE" is written in bold black capital letters. A small yellow marker with a black dot is located at the bottom right of the callout box, indicating the specific location of the site within Charlton County.

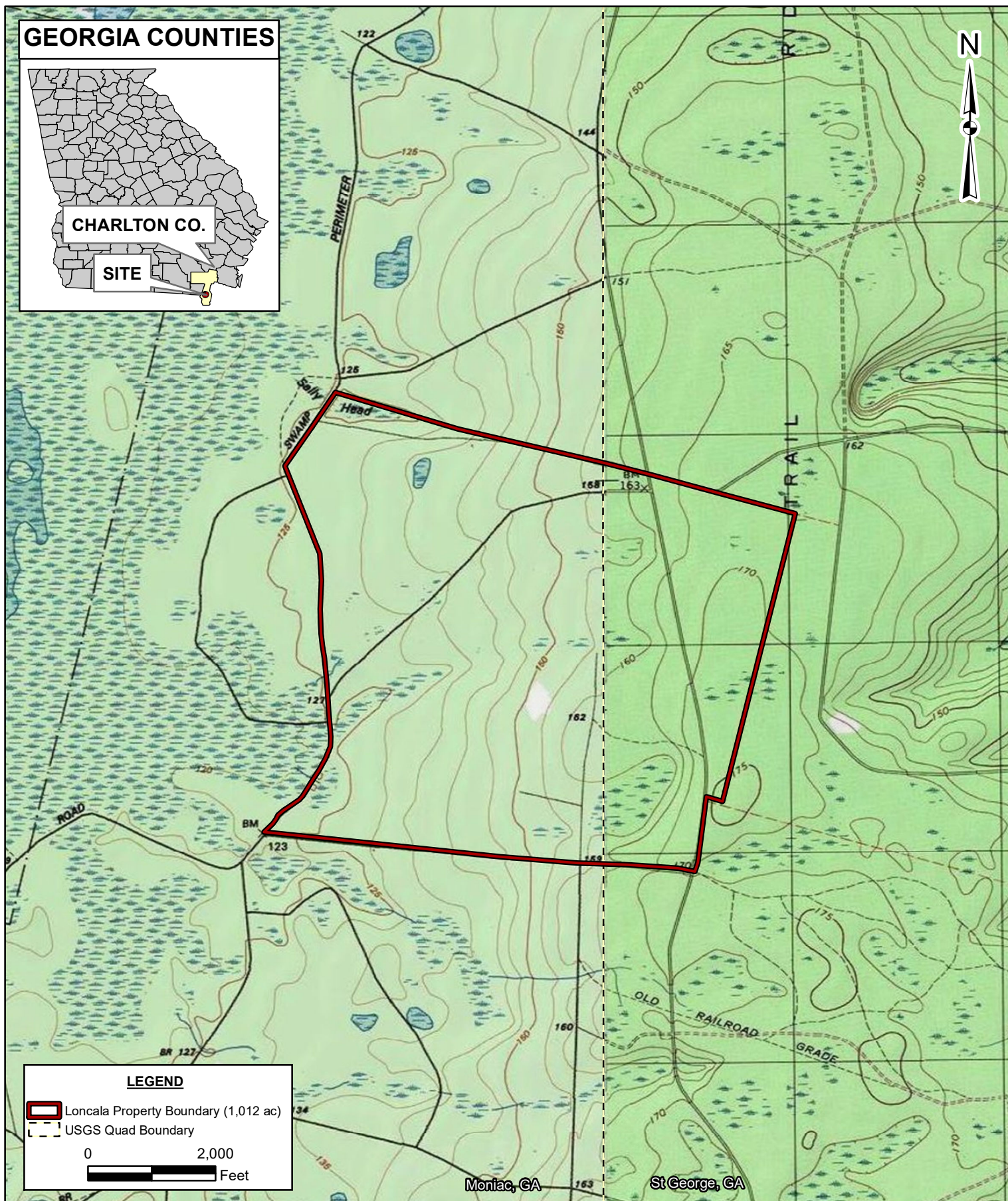


FIGURE 1: SITE LOCATION & TOPOGRAPHIC MAP
TWIN PINES MINERALS
LONCALA TRACT
CHARLTON COUNTY, GEORGIA

BASEMAP: USGS 7.5-minute Topographic Maps of Moniac, GA (1994) & Saint George, GA (1994)

DRAWN BY: CMS
CHECKED BY: CGT
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REVISION DATE: N/A
TTL JOB NO. 000180200804.00
APPROX SCALE: 1" = 2,000'

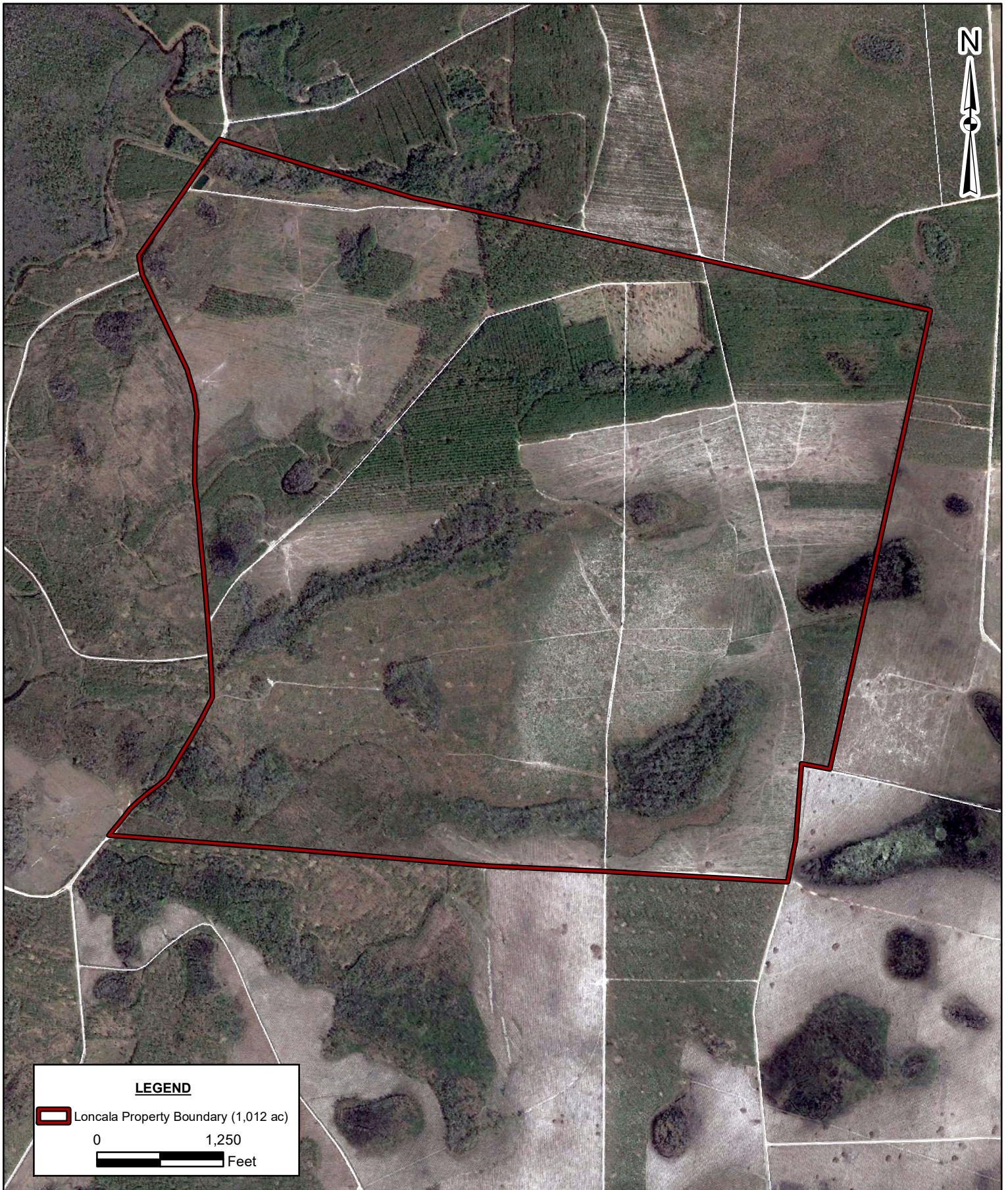
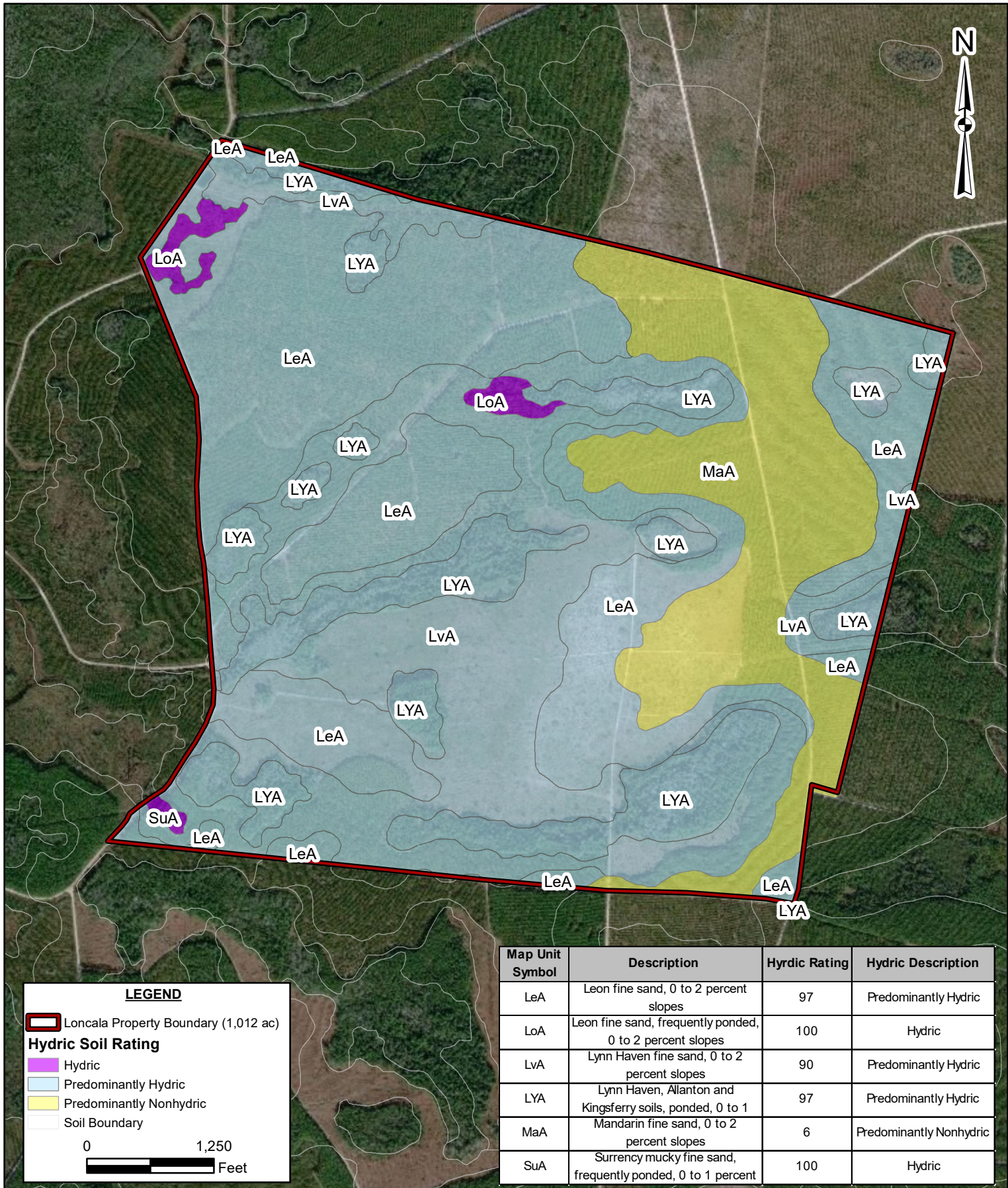


FIGURE 2: SITE LOCATION & AERIAL PHOTOGRAPH
TWIN PINES MINERALS
LONCALA TRACT
CHARLTON COUNTY, GEORGIA

BASEMAP: Google Earth & Eurpoa Technologies (3/6/2018)

DRAWN BY: CMS
CHECKED BY: CGT
DRAWING DATE: 07/30/2018
REVISION DATE: N/A
TTL JOB NO. 000180200804.00
APPROX SCALE: 1" = 2,000'



LEGEND

Loncala Property Boundary (1,012 ac)

Hydric Soil Rating

Hydric

Predominantly Hydric

Predominantly Nonhydryc

Soil Boundary

0 1,250
 Feet

Map Unit Symbol	Description	Hydric Rating	Hydric Description
LeA	Leon fine sand, 0 to 2 percent slopes	97	Predominantly Hydric
LoA	Leon fine sand, frequently ponded, 0 to 2 percent slopes	100	Hydric
LvA	Lynn Haven fine sand, 0 to 2 percent slopes	90	Predominantly Hydric
LYA	Lynn Haven, Allanton and Kingsferry soils, ponded, 0 to 1	97	Predominantly Hydric
MaA	Mandarin fine sand, 0 to 2 percent slopes	6	Predominantly Nonhydryc
SuA	Surrency mucky fine sand, frequently ponded, 0 to 1 percent	100	Hydric

FIGURE 3: NATURAL RESOURCES CONSERVATION SERVICE (NRCS) SOIL MAP WITH HYDRIC RATING
 TWIN PINES MINERALS - LONCALA TRACT
 CHARLTON COUNTY, GEORGIA

BASEMAP: DigitalGlobe - Vivid (1/24/2016)

DRAWN BY: CMS
CHECKED BY: CGT
DRAWING DATE: 07/30/2018
REVISION DATE: N/A
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APPROX SCALE: 1" = 2,000'



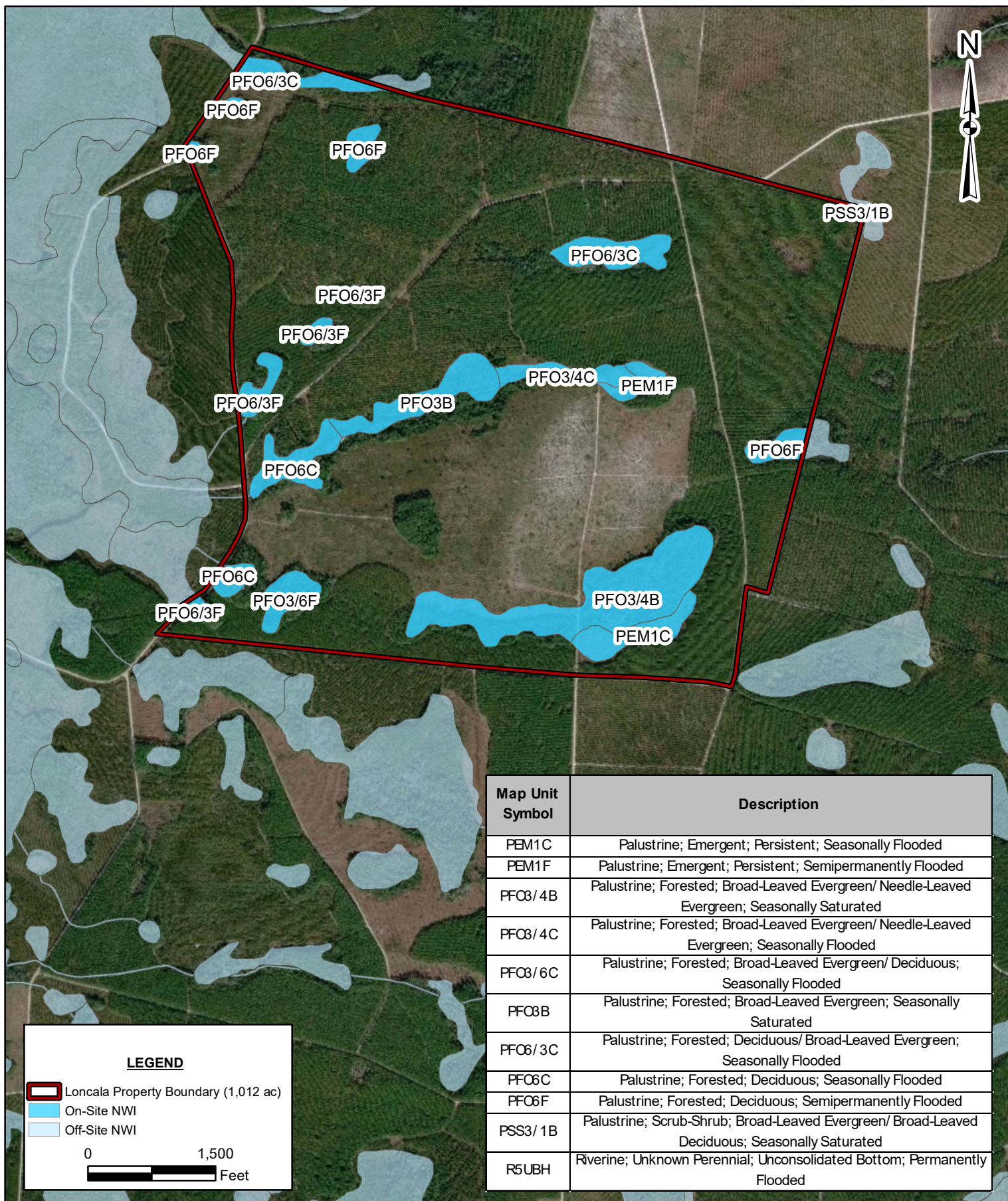


FIGURE 4: NATIONAL WETLAND INVENTORY (NWI) CLASSIFICATION MAP
TWIN PINES MINERALS - LONCALA TRACT
CHARLTON COUNTY, GEORGIA

BASEMAP: DigitalGlobe-Vivid (1/24/2016)

DRAWN BY: CMS
 CHECKED BY: CGT
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 REVISION DATE: N/A
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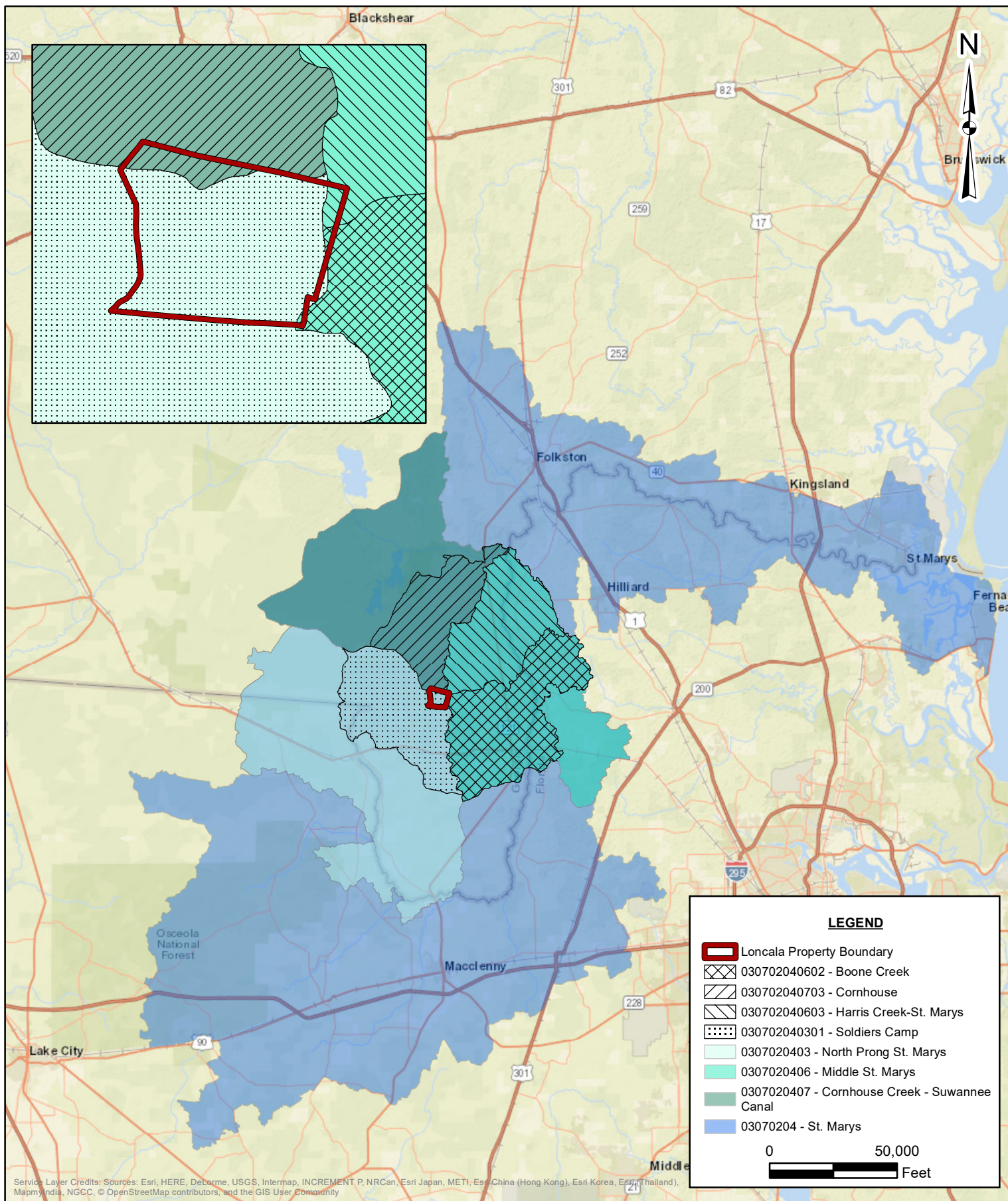


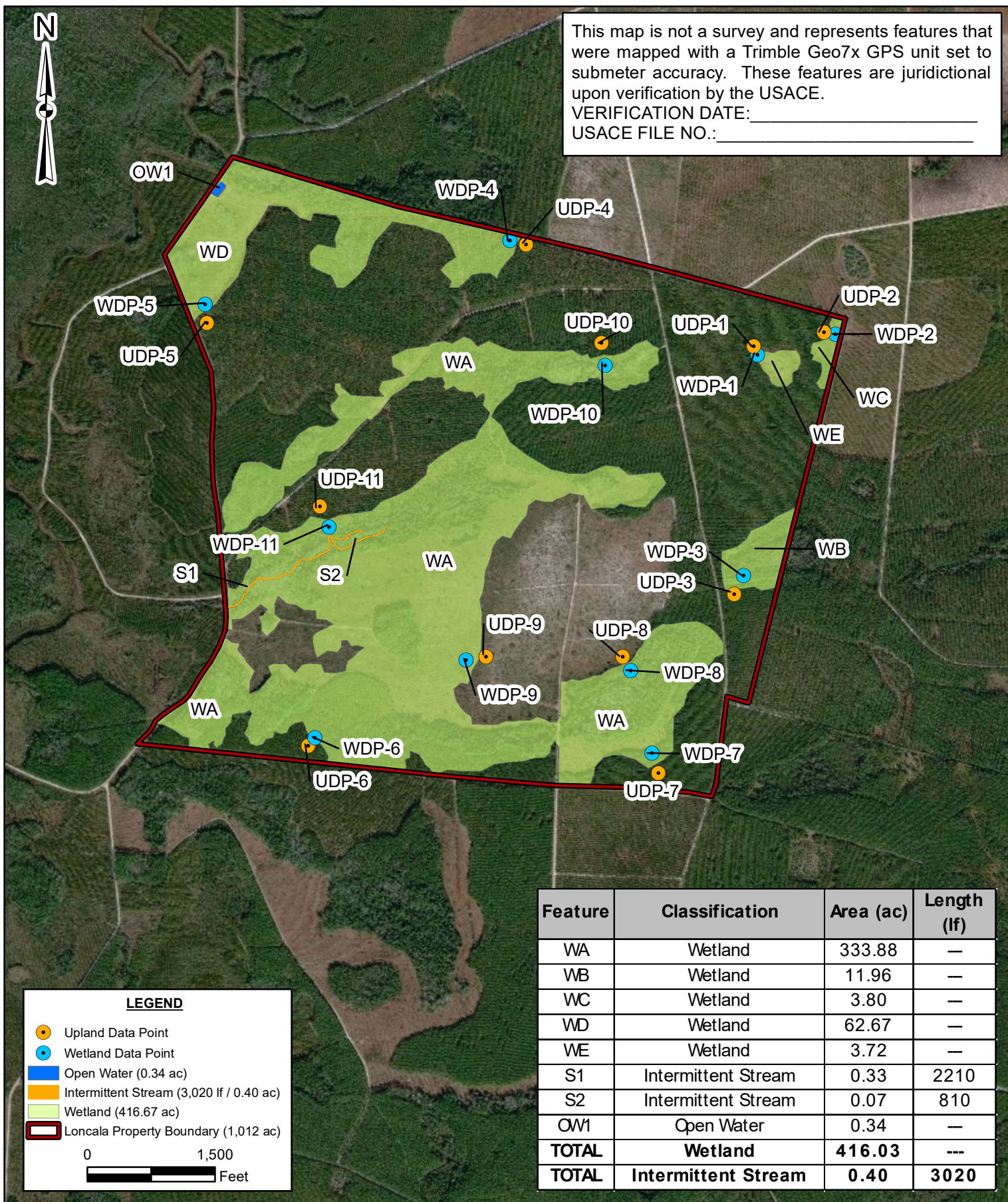
FIGURE 5: HYDROLOGIC UNIT CODE (HUC) MAP

TWIN PINES MINERALS - LONCALA TRACT

WATERS OF THE U.S. DELINEATION



DRAWN BY: CMS
CHECKED BY: CGT
DRAWING DATE: 07/26/2018
REVISION DATE: N/A
TTL JOB NO. 000180200804.00
APPROX SCALE: 1" = 50,000'



APPENDIX A

Normal Weather Conditions Table
AgACIS Data
U.S. Drought Monitor – Alabama
Palmer Drought Index

Calculation of Normal Weather Conditions
General Project Location: Folkston, Georgia
Analysis for April 2018 Site Visits

		Long-Term Rainfall Records								
	Month	Standard Deviation*	Minus One Standard Deviation (Dry)	Normal* (Mean Inches)	Plus One Standard Deviation (Wet)	Actual Rainfall**	Condition (wet, normal, dry)	Condition Value***	Month Weight Value	Weighted Value
1st prior month	Mar-18	2.52	1.53	4.05	6.57	1.31	dry	1	3	3
2nd prior month	Feb-18	2.14	1.36	3.50	5.64	1.56	normal	2	2	4
3rd prior month	Jan-18	2.31	1.08	3.39	5.70	2.16	normal	2	1	2
									Sum:	9

Sum:	Conclusion:
6-9	prior period has been drier than normal
10-14	prior period has been normal
15-18	prior period has been wetter than normal

* Standard Deviation and Mean Values can be found through the National Oceanic and Atmospheric Associations Earth System Research Laboratory:
<http://www.esrl.noaa.gov/psd/data/usstation/>

** Rainfall data can be found through Weather Source Consultants: www.weathersource.com

*** Condition Values: 1 = dry, 2 = normal, 3 = wet

Climatological Data for FOLKSTON 9 SW, GA - January 2018

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2018-01-01	55	32	43.5	4	0	0.16	M	M
2018-01-02	39	24	31.5	0	0	0.00	M	M
2018-01-03	41	29	35.0	0	0	0.46	M	M
2018-01-04	41	23	32.0	0	0	0.06	M	M
2018-01-05	46	23	34.5	0	0	0.00	M	M
2018-01-06	48	26	37.0	0	0	0.00	M	M
2018-01-07	52	28	40.0	0	0	0.00	M	M
2018-01-08	65	34	49.5	10	0	0.00	M	M
2018-01-09	66	55	60.5	21	11	0.00	M	M
2018-01-10	70	57	63.5	24	14	0.01	M	M
2018-01-11	74	62	68.0	28	18	0.09	M	M
2018-01-12	72	62	67.0	27	17	0.23	M	M
2018-01-13	67	39	53.0	13	3	0.03	M	M
2018-01-14	53	28	40.5	1	0	0.00	M	M
2018-01-15	54	31	42.5	3	0	0.00	M	M
2018-01-16	62	32	47.0	7	0	0.00	M	M
2018-01-17	65	37	51.0	11	1	0.00	M	M
2018-01-18	47	22	34.5	0	0	0.00	M	M
2018-01-19	57	27	42.0	2	0	0.00	M	M
2018-01-20	60	33	46.5	7	0	0.00	M	M
2018-01-21	71	41	56.0	16	6	0.00	M	M
2018-01-22	78	47	62.5	23	13	0.00	M	M
2018-01-23	78	64	71.0	31	21	0.01	M	M
2018-01-24	73	39	56.0	16	6	0.00	M	M
2018-01-25	60	37	48.5	9	0	0.00	M	M
2018-01-26	67	37	52.0	12	2	0.00	M	M
2018-01-27	70	51	60.5	21	11	0.00	M	M
2018-01-28	75	56	65.5	26	16	0.01	M	M
2018-01-29	75	58	66.5	27	17	1.10	M	M
2018-01-30	68	40	54.0	14	4	0.00	M	M
2018-01-31	61	33	47.0	7	0	0.00	M	M
Average Sum	61.6	38.9	50.3	360	160	2.16	M	M

Climatological Data for FOLKSTON 9 SW, GA - February 2018

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2018-02-01	69	40	54.5	15	5	0.00	M	M
2018-02-02	69	50	59.5	20	10	0.00	M	M
2018-02-03	64	35	49.5	10	0	0.00	M	M
2018-02-04	69	48	58.5	19	9	0.35	M	M
2018-02-05	65	46	55.5	16	6	0.69	M	M
2018-02-06	74	42	58.0	18	8	0.00	M	M
2018-02-07	75	57	66.0	26	16	0.00	M	M
2018-02-08	76	59	67.5	28	18	0.12	M	M
2018-02-09	70	50	60.0	20	10	0.00	M	M
2018-02-10	79	61	70.0	30	20	0.04	M	M
2018-02-11	80	65	72.5	33	23	0.00	M	M
2018-02-12	82	62	72.0	32	22	0.10	M	M
2018-02-13	75	58	66.5	27	17	0.00	M	M
2018-02-14	64	51	57.5	18	8	0.02	M	M
2018-02-15	80	53	66.5	27	17	0.00	M	M
2018-02-16	80	58	69.0	29	19	0.00	M	M
2018-02-17	80	63	71.5	32	22	0.00	M	M
2018-02-18	79	61	70.0	30	20	0.00	M	M
2018-02-19	83	62	72.5	33	23	0.00	M	M
2018-02-20	81	62	71.5	32	22	0.00	M	M
2018-02-21	85	66	75.5	36	26	0.00	M	M
2018-02-22	84	61	72.5	33	23	0.00	M	M
2018-02-23	83	60	71.5	32	22	0.00	M	M
2018-02-24	84	61	72.5	33	23	0.00	M	M
2018-02-25	87	62	74.5	35	25	0.00	M	M
2018-02-26	87	58	72.5	33	23	0.02	M	M
2018-02-27	74	57	65.5	26	16	0.22	M	M
2018-02-28	79	52	65.5	26	16	0.00	M	M
Average Sum	77.0	55.7	66.4	749	469	1.56	M	M

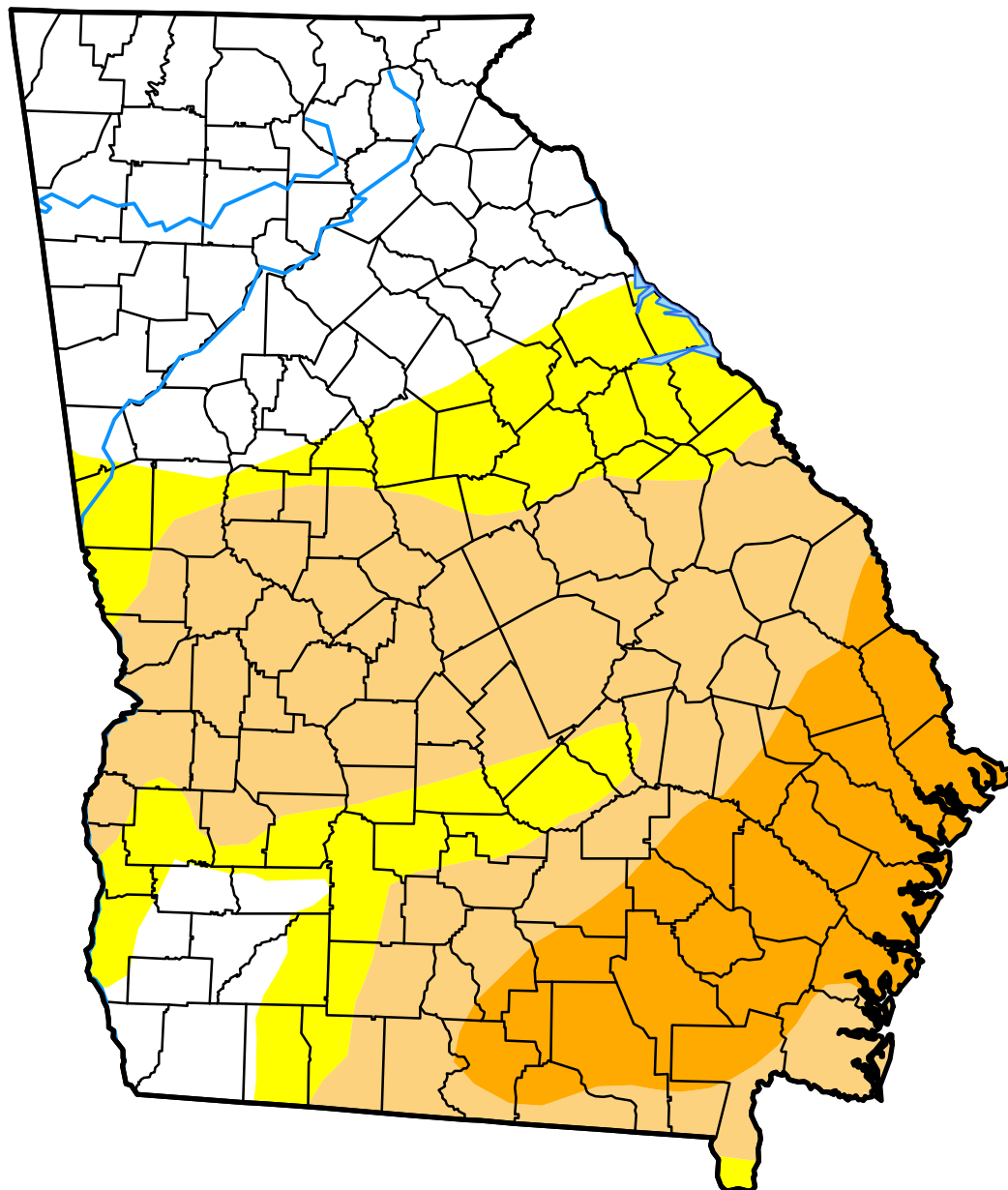
Climatological Data for FOLKSTON 9 SW, GA - March 2018

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2018-03-01	85	63	74.0	34	24	0.00	M	M
2018-03-02	85	55	70.0	30	20	0.02	M	M
2018-03-03	75	40	57.5	18	8	0.00	M	M
2018-03-04	70	41	55.5	16	6	0.00	M	M
2018-03-05	70	38	54.0	14	4	0.00	M	M
2018-03-06	73	45	59.0	19	9	0.00	M	M
2018-03-07	74	50	62.0	22	12	0.00	M	M
2018-03-08	66	35	50.5	11	1	0.00	M	M
2018-03-09	63	33	48.0	8	0	0.00	M	M
2018-03-10	72	38	55.0	15	5	0.00	M	M
2018-03-11	75	45	60.0	20	10	0.00	M	M
2018-03-12	76	57	66.5	27	17	0.27	M	M
2018-03-13	60	35	47.5	8	0	0.00	M	M
2018-03-14	64	41	52.5	13	3	0.00	M	M
2018-03-15	66	33	49.5	10	0	0.00	M	M
2018-03-16	73	41	57.0	17	7	0.00	M	M
2018-03-17	79	49	64.0	24	14	0.00	M	M
2018-03-18	83	60	71.5	32	22	0.00	M	M
2018-03-19	85	65	75.0	35	25	0.26	M	M
2018-03-20	81	64	72.5	33	23	0.05	M	M
2018-03-21	80	51	65.5	26	16	0.00	M	M
2018-03-22	64	39	51.5	12	2	0.00	M	M
2018-03-23	67	38	52.5	13	3	0.00	M	M
2018-03-24	79	46	62.5	23	13	0.00	M	M
2018-03-25	81	55	68.0	28	18	0.00	M	M
2018-03-26	79	51	65.0	25	15	0.44	M	M
2018-03-27	73	52	62.5	23	13	0.00	M	M
2018-03-28	82	52	67.0	27	17	0.00	M	M
2018-03-29	84	56	70.0	30	20	0.00	M	M
2018-03-30	83	61	72.0	32	22	0.27	M	M
2018-03-31	69	53	61.0	21	11	0.00	M	M
Average Sum	74.7	47.8	61.3	666	360	1.31	M	M

U.S. Drought Monitor

Georgia

April 3, 2018
 (Released Thursday, Apr. 5, 2018)
 Valid 8 a.m. EDT



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	31.27	68.73	51.19	16.00	0.00	0.00
Last Week <i>03-27-2018</i>	31.15	68.85	50.54	10.42	0.00	0.00
3 Months Ago <i>01-02-2018</i>	12.14	87.86	40.66	0.00	0.00	0.00
Start of Calendar Year <i>01-02-2018</i>	12.14	87.86	40.66	0.00	0.00	0.00
Start of Water Year <i>09-26-2017</i>	100.00	0.00	0.00	0.00	0.00	0.00
One Year Ago <i>04-04-2017</i>	1.09	98.91	29.94	15.05	4.16	0.00

Intensity:



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:

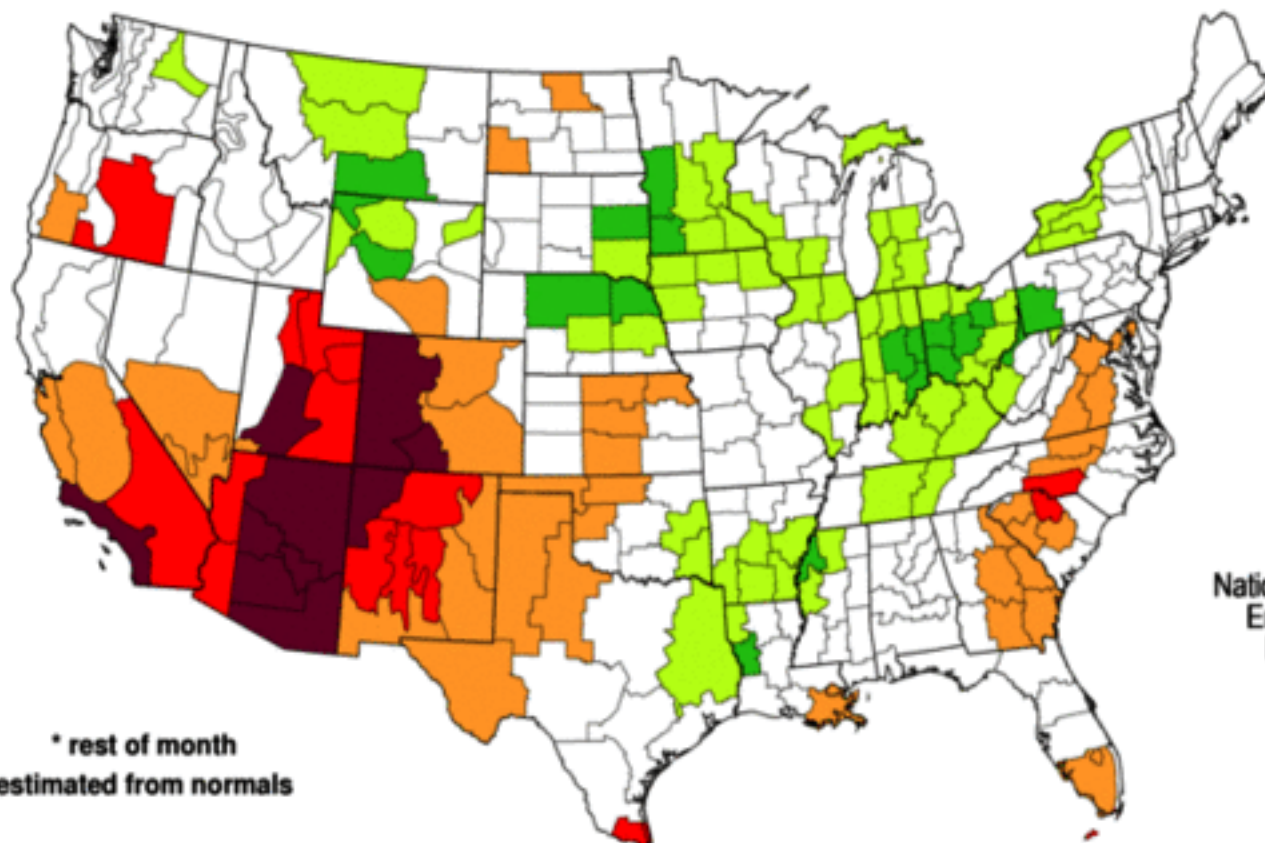
David Miskus
 NOAA/NWS/NCEP/CPC



<http://droughtmonitor.unl.edu/>

Palmer Hydrological Drought Index Long-Term (Hydrological) Conditions

April 2018: through April 7 2018*



National Centers for
Environmental
Information

* rest of month
estimated from normals

extreme
drought



-4.00
and
below

severe
drought



-3.00
to
-3.99

moderate
drought



-2.00
to
-2.99

mid-
range



-1.99
to
+1.99

moderately
moist



+2.00
to
+2.99

very
moist



+3.00
to
+3.99

extremely
moist



+4.00
and
above

APPENDIX B

Site Photographs

Site Photographs

Waters of the U.S. Delineation – TTL Project No. 000180200804.00

Twin Pines Minerals • Charlton County, Georgia

Photos taken April 3, 2018 – May 3, 2018



Photograph 1: View of the Wetland Data Point 1 (WDP-1) location within Wetland E (WE).



Photograph 2: View of the Upland Data Point 1 (UDP-1) location.

TTL

Site Photographs

Waters of the U.S. Delineation – TTL Project No. 000180200804.00

Twin Pines Minerals • Charlton County, Georgia

Photos taken April 3, 2018 – May 3, 2018



Photograph 3: View of the Wetland Data Point 2 (WDP-2) location within Wetland C (WC).



Photograph 4: View of the Upland Data Point 2 (UDP-2) location.

TTL

Site Photographs

Waters of the U.S. Delineation – TTL Project No. 000180200804.00

Twin Pines Minerals • Charlton County, Georgia

Photos taken April 3, 2018 – May 3, 2018



Photograph 5: View of the Wetland Data Point 3 (WDP-3) location within Wetland B (WB).



Photograph 6: View of the Upland Data Point 3 (UDP-3) location.

TTL

Site Photographs

Waters of the U.S. Delineation – TTL Project No. 000180200804.00

Twin Pines Minerals • Charlton County, Georgia

Photos taken April 3, 2018 – May 3, 2018



Photograph 7: View of the Wetland Data Point 4 (WDP-4) location within a forested (planted pine) portion of Wetland D (WD).



Photograph 8: View of the Upland Data Point 4 (UDP-4) location.

TTL

Site Photographs

Waters of the U.S. Delineation – TTL Project No. 000180200804.00

Twin Pines Minerals • Charlton County, Georgia

Photos taken April 3, 2018 – May 3, 2018



Photograph 9: View of the Wetland Data Point 5 (WDP-5) location within Wetland D (WD).



Photograph 10: View of the Upland Data Point 5 (UDP-5) location.

TTL

Site Photographs

Waters of the U.S. Delineation – TTL Project No. 000180200804.00

Twin Pines Minerals • Charlton County, Georgia

Photos taken April 3, 2018 – May 3, 2018



Photograph 11: View of the Wetland Data Point 6 (WDP-6) location within Wetland A (WA).



Photograph 12: View of the Upland Data Point 6 (UDP-6) location.

TTL

Site Photographs

Waters of the U.S. Delineation – TTL Project No. 000180200804.00

Twin Pines Minerals • Charlton County, Georgia

Photos taken April 3, 2018 – May 3, 2018



Photograph 13: View of the Wetland Data Point 7 (WDP-7) location within Wetland A (WA).



Photograph 14: View of the Upland Data Point 7 (UDP-7) location.

TTL

Site Photographs

Waters of the U.S. Delineation – TTL Project No. 000180200804.00

Twin Pines Minerals • Charlton County, Georgia

Photos taken April 3, 2018 – May 3, 2018



Photograph 15: View of the Wetland Data Point 8 (WDP-8) location within Wetland A (WA).



Photograph 16: View of the Upland Data Point 8 (UDP-8) location.

TTL

Site Photographs

Waters of the U.S. Delineation – TTL Project No. 000180200804.00

Twin Pines Minerals • Charlton County, Georgia

Photos taken April 3, 2018 – May 3, 2018



Photograph 17: View of the Wetland Data Point 9 (WDP-9) location within Wetland A (WA).



Photograph 18: View of the Upland Data Point 9 (UDP-9) location.

TTL

Site Photographs

Waters of the U.S. Delineation – TTL Project No. 000180200804.00

Twin Pines Minerals • Charlton County, Georgia

Photos taken April 3, 2018 – May 3, 2018



Photograph 19: View of the Wetland Data Point 10 (WDP-10) location within Wetland A (WA).



Photograph 20: View of the Upland Data Point 10 (UDP-10) location.

TTL

Site Photographs

Waters of the U.S. Delineation – TTL Project No. 000180200804.00

Twin Pines Minerals • Charlton County, Georgia

Photos taken April 3, 2018 – May 3, 2018



Photograph 21: View of the Wetland Data Point 11 (WDP-11) location within Wetland A (WA).



Photograph 22: View of the Upland Data Point 11 (UDP-11) location.

TTL

Site Photographs

Waters of the U.S. Delineation – TTL Project No. 000180200804.00

Twin Pines Minerals • Charlton County, Georgia

Photos taken April 3, 2018 – May 3, 2018



Photograph 23: View of intermittent Stream 1 (S1) within WA .



Photograph 24: View of intermittent Stream 2 (S2) within WA.

TTL

APPENDIX C

U.S. Army Corps of Engineers Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Loncala Tract City/County: Charlton County Sampling Date: 04/25/2018
 Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: UDP-1
 Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
 Landform (hillslope, terrace, etc.): Flatwoods Local relief (concave, convex, none): None Slope (%): 0-2%
 Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.58126659260 Long: -82.11885912140 Datum: NAD83
 Soil Map Unit Name: Leon fine sand, 0-2% slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)
 Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____
 Are Vegetation No, Soil No, or Hydrology No 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>✓</u> No _____	Is the Sampled Area within a Wetland? Yes _____ No <u>✓</u>
Hydric Soil Present? Yes _____ No <u>✓</u>	
Wetland Hydrology Present? Yes _____ No <u>✓</u>	
Remarks:	
- Site observations and local hydrological data support abnormally dry conditions present during site visit. - Vegetation historically impacted by silvicultural activities (planted pine). - Soils/Hydrology historically impacted by silvicultural activities (hipping/benching for planted pine).	

HYDROLOGY

Wetland Hydrology Indicators:		<u>Secondary Indicators (minimum of two required)</u>
<u>Primary Indicators (minimum of one is required; check all that apply)</u>		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Marl Deposits (B15) (LRR U)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> FAC-Neutral Test (D5)
		<input type="checkbox"/> Sphagnum moss (D8) (LRR T,U)
Field Observations:		
Surface Water Present? Yes _____ No <u>✓</u>	Depth (inches): _____	Wetland Hydrology Present? Yes _____ No <u>✓</u>
Water Table Present? Yes _____ No <u>✓</u>	Depth (inches): _____	
Saturation Present? Yes _____ No <u>✓</u> (includes capillary fringe)	Depth (inches): _____	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: FAC-Neutral Test Results: Negative FACW and OBL: 1 to FACU and UPL: 2		

VEGETATION – Use scientific names of plants.

 Sampling Point: UDP-1

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u><i>Pinus elliotii</i></u>	<u>70.0</u>	<u>yes</u>	<u>FACW</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: <u>35.00</u> 20% of total cover: <u>14.00</u>	<u>70.0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species <u>70</u> x 2 = <u>140</u> FAC species <u>15</u> x 3 = <u>45</u> FACU species <u>50</u> x 4 = <u>200</u> UPL species _____ x 5 = _____ Column Totals: <u>135</u> (A) <u>385</u> (B) Prevalence Index = B/A = <u>2.85</u>
<u>Sapling Stratum (30 ft radius)</u>				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		
<u>Shrub Stratum (30 ft radius)</u>				
1. <u><i>Serenoa repens</i></u>	<u>40.0</u>	<u>yes</u>	<u>FACU</u>	Hydrophytic Vegetation Indicators: ___ 1 - Rapid Test for Hydrophytic Vegetation ___ 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u><i>Gaylussacia dumosa</i></u>	<u>5.0</u>	<u>no</u>	<u>FAC</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: <u>22.50</u> 20% of total cover: <u>9.00</u>	<u>45.0</u>	= Total Cover		
<u>Herb Stratum (30 ft radius)</u>				
1. <u><i>Andropogon virginicus</i></u>	<u>10.0</u>	<u>yes</u>	<u>FAC</u>	Definitions of 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 <input checked="" type="checkbox"/> No _____
2. <u><i>Smilax auriculata</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACU</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
50% of total cover: <u>10.00</u> 20% of total cover: <u>4.00</u>	<u>20.0</u>	= Total Cover		
<u>Woody Vine Stratum (30 ft radius)</u>				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.

 Indicators of hydrology and hydric soils were not observed although the prevalence index was less than 3.

SOIL

Sampling Point: UDP-1**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2"	10YR 6/1	100					Sa	
2-7"	10YR 4/2	100					Sa	
7-18"	10YR 6/2	100					Sa	

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

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ Organic Bodies (A6) **(LRR P, T, U)**
☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
☐ Muck Presence (A8) **(LRR U)**
☐ 1 cm Muck (A9) **(LRR P, T)**
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Coast Prairie Redox (A16) **(MLRA 150A)**
☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
☐ Thin Dark Surface (S9) **(LRR S, T, U)**
☐ Loamy Mucky Mineral (F1) **(LRR O)**
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Marl (F10) **(LRR U)**
☐ Depleted Ochric (F11) **(MLRA 151)**
☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
☐ Umbric Surface (F13) **(LRR P, T, U)**
☐ Delta Ochric (F17) **(MLRA 151)**
☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
☐ 2 cm Muck (A10) **(LRR S)**
☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
☐ Anomalous Bright Loamy Soils (F20)
(MLRA 153B)
☐ Red Parent Material (TF2)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ☒

Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mu=Muck; Pe= Peat; Sa= Sand; Si=Silt

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Loncala Tract City/County: Charlton County Sampling Date: 04/25/2018
 Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: UDP-2
 Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
 Landform (hillslope, terrace, etc.): Flatwoods Local relief (concave, convex, none): None Slope (%): 0-2%
 Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.58171900820 Long: -82.11624372070 Datum: NAD83
 Soil Map Unit Name: Leon fine sand, 0-2% slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ☒ (If no, explain in Remarks.)
 Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No _____
 Are Vegetation No, Soil No, or Hydrology No 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 <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/>	
Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	
Remarks:	
- Site observations and local hydrological data support abnormally dry conditions present during site visit. - Vegetation historically impacted by silvicultural activities (planted pine). - Soils/Hydrology historically impacted by silvicultural activities (hipping/benching for planted pine).	

HYDROLOGY

Wetland Hydrology Indicators:		<u>Secondary Indicators (minimum of two required)</u>
<u>Primary Indicators (minimum of one is required; check all that apply)</u>		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Marl Deposits (B15) (LRR U)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
		<input type="checkbox"/> Sphagnum moss (D8) (LRR T,U)
Field Observations:		
Surface Water Present? Yes _____ No <input checked="" type="checkbox"/>	Depth (inches): _____	Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>
Water Table Present? Yes _____ No <input checked="" type="checkbox"/>	Depth (inches): _____	
Saturation Present? Yes _____ No <input checked="" type="checkbox"/> (includes capillary fringe)	Depth (inches): _____	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: FAC-Neutral Test Results: Positive FACW and OBL: 4 to FACU and UPL: 1		

VEGETATION – Use scientific names of plants.

 Sampling Point: UDP-2

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u><i>Pinus elliotii</i></u>	<u>70.0</u>	<u>yes</u>	<u>FACW</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>80%</u> (A/B)
2. <u><i>Gordonia lasianthus</i></u>	<u>10.0</u>	<u>no</u>	<u>FACW</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: <u>40.00</u> 20% of total cover: <u>16.00</u>	<u>80.0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		
Shrub Stratum (<u>30 ft radius</u>)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u><i>Ilex glabra</i></u>	<u>25.0</u>	<u>yes</u>	<u>FACW</u>	
2. <u><i>Serenoa repens</i></u>	<u>15.0</u>	<u>yes</u>	<u>FACU</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
50% of total cover: <u>20.00</u> 20% of total cover: <u>8.00</u>	<u>40.0</u>	= Total Cover		
Herb Stratum (<u>30 ft radius</u>)				Definitions of 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>
1. <u><i>Scleria triglomerata</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
50% of total cover: <u>5.00</u> 20% of total cover: <u>2.00</u>	<u>10.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				
1. <u><i>Vitis rotundifolia</i></u>	<u>10.0</u>	<u>yes</u>	<u>FAC</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>5.00</u> 20% of total cover: <u>2.00</u>	<u>10.0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.

SOIL

Sampling Point: UDP-2

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-7.5"	10YR 8/1	50	10YR 3/1	50	MS	M	Sa	
7.5-18"	10YR 6/2	70	10YR 5/3	30	MS	M	Sa	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes _____ No ☒

Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mu=Muck; Pe= Peat; Sa= Sand; Si=Silt

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Loncala Tract City/County: Charlton County Sampling Date: 04/25/2018
 Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: UDP-3
 Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
 Landform (hillslope, terrace, etc.): Flatwoods Local relief (concave, convex, none): None Slope (%): 0-2%
 Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.57324533580 Long: -82.11959626020 Datum: NAD83
 Soil Map Unit Name: Leon fine sand, 0-2% slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ☒ (If no, explain in Remarks.)
 Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No _____
 Are Vegetation No, Soil No, or Hydrology No 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 <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/>	
Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	
Remarks: - Site observations and local hydrological data support abnormally dry conditions present during site visit. - Vegetation historically impacted by silvicultural activities and recently impacted by forest fire during drought conditions, which resulted in a high mortality of canopy species. -Soils/Hydrology historically impacted by silvicultural activities (hipping/benching for planted pine).	

HYDROLOGY

Wetland Hydrology Indicators:		<u>Secondary Indicators (minimum of two required)</u>
<u>Primary Indicators (minimum of one is required; check all that apply)</u>		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Marl Deposits (B15) (LRR U)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input checked="" type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
		<input type="checkbox"/> Sphagnum moss (D8) (LRR T,U)
Field Observations:		
Surface Water Present? Yes _____ No <input checked="" type="checkbox"/>	Depth (inches): _____	Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>
Water Table Present? Yes <input checked="" type="checkbox"/> No _____	Depth (inches): <u>12.5</u>	
Saturation Present? Yes _____ No <input checked="" type="checkbox"/>	Depth (inches): _____	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: FAC-Neutral Test Results: Positive FACW and OBL: 4 to FACU and UPL: 3		

VEGETATION – Use scientific names of plants.

 Sampling Point: UDP-3

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u><i>Pinus elliottii</i></u>	<u>40.0</u>	<u>yes</u>	<u>FACW</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>6</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>67%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: <u>20.00</u> 20% of total cover: <u>8.00</u>	<u>40.0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		
Shrub Stratum (<u>30 ft radius</u>)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u><i>Ilex glabra</i></u>	<u>30.0</u>	<u>yes</u>	<u>FACW</u>	
2. <u><i>Serenoa repens</i></u>	<u>15.0</u>	<u>yes</u>	<u>FACU</u>	
3. <u><i>Vaccinium arboreum</i></u>	<u>10.0</u>	<u>no</u>	<u>FACU</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
50% of total cover: <u>27.50</u> 20% of total cover: <u>11.00</u>	<u>55.0</u>	= Total Cover		
Herb Stratum (<u>30 ft radius</u>)				Definitions of 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>
1. <u><i>Dichanthelium acuminatum</i></u>	<u>20.0</u>	<u>yes</u>	<u>FAC</u>	
2. <u><i>Smilax aciculare</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACU</u>	
3. <u><i>Scleria triglomerata</i></u>	<u>5.0</u>	<u>no</u>	<u>FACW</u>	
4. <u><i>Woodwardia virginica</i></u>	<u>5.0</u>	<u>no</u>	<u>OBL</u>	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
50% of total cover: <u>20.00</u> 20% of total cover: <u>8.00</u>	<u>40.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				
1. <u><i>Vitis rotundifolia</i></u>	<u>10.0</u>	<u>yes</u>	<u>FAC</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>5.00</u> 20% of total cover: <u>2.00</u>	<u>10.0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.

SOIL

Sampling Point: UDP-3

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4"	10YR 5/1	100					Sa	
4-10"	10YR 6/1	100					Sa	
10-16"	10YR 5/2	100					Sa	
16-18"	10YR 2/1	100					Sa	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ☒

Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mu=Muck; Pe= Peat; Sa= Sand; Si=Silt

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Loncala Tract City/County: Charlton County Sampling Date: 04/25/2018
 Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: UDP-4
 Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): None Slope (%): 0-2%
 Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.58455125570 Long: -82.12735964530 Datum: NAD83
 Soil Map Unit Name: Leon fine sand, 0-2% slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)
 Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____
 Are Vegetation No, Soil No, or Hydrology No 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>✓</u> No _____	Is the Sampled Area within a Wetland? Yes _____ No <u>✓</u>
Hydric Soil Present? Yes _____ No <u>✓</u>	
Wetland Hydrology Present? Yes _____ No <u>✓</u>	
Remarks:	
- Site observations and local hydrological data support abnormally dry conditions present during site visit. - Vegetation historically impacted by silvicultural activities (hipped/benched planted pine) . - Soils/Hydrology historically impacted by silvicultural activities (hipping/benching for planted pine).	

HYDROLOGY

Wetland Hydrology Indicators:		<u>Secondary Indicators (minimum of two required)</u>
<u>Primary Indicators (minimum of one is required; check all that apply)</u>		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Marl Deposits (B15) (LRR U)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> FAC-Neutral Test (D5)
		<input type="checkbox"/> Sphagnum moss (D8) (LRR T,U)
Field Observations:		Wetland Hydrology Present? Yes _____ No <u>✓</u>
Surface Water Present? Yes _____ No <u>✓</u> Depth (inches): _____	Water Table Present? Yes _____ No <u>✓</u> Depth (inches): _____	
Saturation Present? Yes _____ No <u>✓</u> Depth (inches): _____	(includes capillary fringe)	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: FAC-Neutral Test Results: Negative FACW and OBL: 4 to FACU and UPL: 4		

VEGETATION – Use scientific names of plants.

 Sampling Point: UDP-4

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u><i>Pinus elliotii</i></u>	<u>50.0</u>	<u>yes</u>	<u>FACW</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>6</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50%</u> (A/B)
2. <u><i>Quercus pumila</i></u>	<u>5.0</u>	<u>no</u>	<u>UPL</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: <u>40.00</u> 20% of total cover: <u>16.00</u>	<u>55.0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species <u>45</u> x 2 = <u>90</u> FAC species <u>20</u> x 3 = <u>60</u> FACU species <u>35</u> x 4 = <u>140</u> UPL species <u>5</u> x 5 = <u>25</u> Column Totals: <u>105</u> (A) <u>315</u> (B) Prevalence Index = B/A = <u>3.0</u>
Sapling Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		
Shrub Stratum (<u>30 ft radius</u>)				
1. <u><i>Ilex coriacea</i></u>	<u>30.0</u>	<u>yes</u>	<u>FACW</u>	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input type="checkbox"/> 2 - Dominance Test is >50% <input checked="" type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u><i>Serenoa repens</i></u>	<u>15.0</u>	<u>yes</u>	<u>FACU</u>	
3. <u><i>Cyrilla racemiflora</i></u>	<u>10.0</u>	<u>no</u>	<u>FACW</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: <u>27.50</u> 20% of total cover: <u>11.00</u>	<u>55.0</u>	= Total Cover		
Herb Stratum (<u>30 ft radius</u>)				
1. <u><i>Dichanthelium acuminatum</i></u>	<u>20.0</u>	<u>yes</u>	<u>FAC</u>	Definitions of 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>
2. <u><i>Smilax aciculare</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACU</u>	
3. <u><i>Pteridium aquilinum</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACU</u>	
4. <u><i>Syngonanthus flavidulus</i></u>	<u>5.0</u>	<u>no</u>	<u>FACW</u>	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
50% of total cover: <u>22.50</u> 20% of total cover: <u>9.00</u>	<u>45.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.

 Indicators of hydrology and hydric soils are not present.

SOIL

Sampling Point: UDP-4

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-7"	10YR 8/1	45	10YR 3/1	55	MS	M	Sa	
7-18"	10YR 5/2	100					Sa	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes _____ No ☒

Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mu=Muck; Pe= Peat; Sa= Sand; Si=Silt

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Loncala Tract City/County: Charlton County Sampling Date: 04/25/2018
 Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: UDP-5
 Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
 Landform (hillslope, terrace, etc.): Flatwoods Local relief (concave, convex, none): None Slope (%): 0-2%
 Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.58202238470 Long: -82.13927810580 Datum: NAD83
 Soil Map Unit Name: Leon fine sand, 0-2% slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ☒ (If no, explain in Remarks.)
 Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No _____
 Are Vegetation No, Soil No, or Hydrology No 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 <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/>	
Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	
Remarks:	
- Site observations and local hydrological data support abnormally dry conditions present during site visit. - Vegetation historically impacted by silvicultural activities (hipped/benched planted pine) . - Soils/Hydrology historically impacted by silvicultural activities (hipping/benching for planted pine).	

HYDROLOGY

Wetland Hydrology Indicators:		<u>Secondary Indicators (minimum of two required)</u>
<u>Primary Indicators (minimum of one is required; check all that apply)</u>		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Marl Deposits (B15) (LRR U)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
		<input type="checkbox"/> Sphagnum moss (D8) (LRR T,U)
Field Observations:		
Surface Water Present? Yes _____ No <input checked="" type="checkbox"/>	Depth (inches): _____	Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>
Water Table Present? Yes <input checked="" type="checkbox"/> No _____	Depth (inches): <u>14.5</u>	
Saturation Present? Yes _____ No <input checked="" type="checkbox"/>	Depth (inches): _____	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: FAC-Neutral Test Results: Positive FACW and OBL: 4 to FACU and UPL: 2		

VEGETATION – Use scientific names of plants.

 Sampling Point: UDP-5

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>60%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		
Shrub Stratum (<u>30 ft radius</u>)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Ilex glabra</u>	<u>20.0</u>	<u>yes</u>	<u>FACW</u>	
2. <u>Serenoa repens</u>	<u>5.0</u>	<u>yes</u>	<u>FACU</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
50% of total cover: <u>12.50</u> 20% of total cover: <u>5.00</u>	<u>25.0</u>	= Total Cover		
Herb Stratum (<u>30 ft radius</u>)				Definitions of 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>
1. <u>Kyllinga pumila</u>	<u>20.0</u>	<u>yes</u>	<u>FACW</u>	
2. <u>Dichanthelium acuminatum</u>	<u>10.0</u>	<u>yes</u>	<u>FAC</u>	
3. <u>Pteridium aquilinum</u>	<u>10.0</u>	<u>yes</u>	<u>FACU</u>	
4. <u>Andropogon virginicus</u>	<u>5.0</u>	<u>no</u>	<u>FAC</u>	
5. <u>Scleria triglomerata</u>	<u>5.0</u>	<u>no</u>	<u>FACW</u>	
6. <u>Woodwardia virginica</u>	<u>5.0</u>	<u>no</u>	<u>OBL</u>	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
50% of total cover: <u>27.50</u> 20% of total cover: <u>11.00</u>	<u>55.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.

SOIL

Sampling Point: UDP-5**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-9.5"	10YR 6/1	30	10YR 4/1	70	MS	M	Sa	
9.5-18"	10YR 6/1	10	10YR 4/1	90	MS	M	Sa	

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

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ Organic Bodies (A6) **(LRR P, T, U)**
☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
☐ Muck Presence (A8) **(LRR U)**
☐ 1 cm Muck (A9) **(LRR P, T)**
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Coast Prairie Redox (A16) **(MLRA 150A)**
☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
☐ Thin Dark Surface (S9) **(LRR S, T, U)**
☐ Loamy Mucky Mineral (F1) **(LRR O)**
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Marl (F10) **(LRR U)**
☐ Depleted Ochric (F11) **(MLRA 151)**
☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
☐ Umbric Surface (F13) **(LRR P, T, U)**
☐ Delta Ochric (F17) **(MLRA 151)**
☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
☐ 2 cm Muck (A10) **(LRR S)**
☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
☐ Anomalous Bright Loamy Soils (F20)
(MLRA 153B)
☐ Red Parent Material (TF2)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ☒

Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mu=Muck; Pe= Peat; Sa= Sand; Si=Silt

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Loncala Tract City/County: Charlton County Sampling Date: 04/26/2018
 Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: UDP-6
 Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
 Landform (hillslope, terrace, etc.): Flatwoods Local relief (concave, convex, none): None Slope (%): 0-2%
 Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.56834107180 Long: -82.13549675250 Datum: NAD83
 Soil Map Unit Name: Leon fine sand, 0-2% slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ☒ (If no, explain in Remarks.)
 Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No _____
 Are Vegetation No, Soil No, or Hydrology No 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 <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/>	
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	
Remarks: - Site observations and local hydrological data support abnormally dry conditions present during site visit. - Vegetation historically impacted by silvicultural activities (hipped/benched planted pine) and recently impacted by forest fire during drought conditions resulting in high mortality of canopy species. - Soils/Hydrology historically impacted by silvicultural activities (hipping/benching for planted pine).	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)		<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T,U)
Field Observations: Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>12.5</u> Saturation Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)		Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: FAC-Neutral Test Results: Positive FACW and OBL: 6 to FACU and UPL: 2		

VEGETATION – Use scientific names of plants.

 Sampling Point: UDP-6

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u><i>Pinus elliottii</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>9</u> (A) Total Number of Dominant Species Across All Strata: <u>11</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>82%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: <u>5.00</u> 20% of total cover: <u>2.00</u>	<u>10.0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (<u>30 ft radius</u>)				
1. <u><i>Gordonia lasianthus</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>	
2. <u><i>Acer rubrum</i></u>	<u>5.0</u>	<u>yes</u>	<u>FAC</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>7.50</u> 20% of total cover: <u>3.00</u>	<u>15.0</u>	= Total Cover		Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Shrub Stratum (<u>30 ft radius</u>)				
1. <u><i>Serenoa repens</i></u>	<u>20.0</u>	<u>yes</u>	<u>FACU</u>	
2. <u><i>Ilex coriacea</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>	
3. <u><i>Ilex glabra</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>20.00</u> 20% of total cover: <u>8.00</u>	<u>40.0</u>	= Total Cover		Definitions of 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.
Herb Stratum (<u>30 ft radius</u>)				
1. <u><i>Dichanthelium acuminatum</i></u>	<u>30.0</u>	<u>yes</u>	<u>FAC</u>	
2. <u><i>Scleria triglomerata</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>	
3. <u><i>Pteridium aquilinum</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACU</u>	
4. <u><i>Woodwardia virginica</i></u>	<u>10.0</u>	<u>yes</u>	<u>OBL</u>	
5. _____	_____	_____	_____	
50% of total cover: <u>30.00</u> 20% of total cover: <u>12.00</u>	<u>60.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
1. <u><i>Vitis rotundifolia</i></u>	<u>10.0</u>	<u>yes</u>	<u>FAC</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>5.00</u> 20% of total cover: <u>2.00</u>	<u>10.0</u>	= Total Cover		
Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.				

SOIL

Sampling Point: UDP-6

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-18"	10YR 8/1	10	10YR 2/1	90	MS	M	Sa	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes _____ No ☒

Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mu=Muck; Pe= Peat; Sa= Sand; Si=Silt

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Loncala Tract City/County: Charlton County Sampling Date: 04/26/2018
Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: UDP-7
Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): None Slope (%): 0-2%
Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.56746105640 Long: -82.12243101840 Datum: NAD83
Soil Map Unit Name: Leon fine sand, 0-2% slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ☒ (If no, explain in Remarks.)
Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No _____
Are Vegetation No, Soil No, or Hydrology No 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 <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/>	
Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	
Remarks: - Site observations and local hydrological data support abnormally dry conditions present during site visit. - Vegetation historically impacted by silvicultural activities (hipped/benched planted pine) and recently impacted by clear-cutting activities. - Soils/Hydrology historically impacted by silvicultural activities (hipping/benching for planted pine).	

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)	_____ Aquatic Fauna (B13)	_____ Sparsely Vegetated Concave Surface (B8)
_____ High Water Table (A2)	_____ Marl Deposits (B15) (LRR U)	_____ Drainage Patterns (B10)
_____ Saturation (A3)	_____ Hydrogen Sulfide Odor (C1)	_____ Moss Trim Lines (B16)
_____ Water Marks (B1)	_____ Oxidized Rhizospheres along Living Roots (C3)	_____ Dry-Season Water Table (C2)
_____ Sediment Deposits (B2)	_____ Presence of Reduced Iron (C4)	_____ Crayfish Burrows (C8)
_____ Drift Deposits (B3)	_____ Recent Iron Reduction in Tilled Soils (C6)	_____ Saturation Visible on Aerial Imagery (C9)
_____ Algal Mat or Crust (B4)	_____ Thin Muck Surface (C7)	_____ Geomorphic Position (D2)
_____ Iron Deposits (B5)	_____ Other (Explain in Remarks)	_____ Shallow Aquitard (D3)
_____ Inundation Visible on Aerial Imagery (B7)		_____ FAC-Neutral Test (D5)
_____ Water-Stained Leaves (B9)		_____ Sphagnum moss (D8) (LRR T,U)
Field Observations:		Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>
Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____		
Water Table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>24"</u>		
Saturation Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: FAC-Neutral Test Results: Negative FACW and OBL: 2 to FACU and UPL: 2		

VEGETATION – Use scientific names of plants.

 Sampling Point: UDP-7

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>75%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Shrub Stratum (<u>30 ft radius</u>)				
1. <u>Ilex glabra</u>	<u>20.0</u>	<u>yes</u>	<u>FACW</u>	
2. <u>Serenoa repens</u>	<u>10.0</u>	<u>yes</u>	<u>FACU</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>15.00</u> 20% of total cover: <u>6.00</u>	<u>30.0</u>	= Total Cover		Definitions of 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>
Herb Stratum (<u>30 ft radius</u>)				
1. <u>Dichanthelium acuminatum</u>	<u>50.0</u>	<u>yes</u>	<u>FAC</u>	
2. <u>Scleria triglomerata</u>	<u>5.0</u>	<u>no</u>	<u>FACW</u>	
3. <u>Smilax auriculata</u>	<u>5.0</u>	<u>no</u>	<u>FACU</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
50% of total cover: <u>30.00</u> 20% of total cover: <u>12.00</u>	<u>60.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				
1. <u>Vitis rotundifolia</u>	<u>5.0</u>	<u>yes</u>	<u>FAC</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>2.50</u> 20% of total cover: <u>1.00</u>	<u>5.0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.

SOIL

Sampling Point: UDP-7

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2.5"	10YR 5/1	100					Sa	
2.5-18"	10YR 8/1	100					Sa	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes _____ No ☒

Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mu=Muck; Pe= Peat; Sa= Sand; Si=Silt

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Loncala Tract City/County: Charlton County Sampling Date: 04/26/2018
 Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: UDP-8
 Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
 Landform (hillslope, terrace, etc.): Flatwoods Local relief (concave, convex, none): None Slope (%): 0-2%
 Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.57121973760 Long: -82.12376588410 Datum: NAD83
 Soil Map Unit Name: Leon fine sand, 0-2% slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ☒ (If no, explain in Remarks.)
 Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No _____
 Are Vegetation No, Soil No, or Hydrology No 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 <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/>	
Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	
Remarks:	
- Site observations and local hydrological data support abnormally dry conditions present during site visit. - Vegetation historically impacted by silvicultural activities (hipped/benched planted pine). - Soils/Hydrology historically impacted by silvicultural activities (hipping/benching for planted pine).	

HYDROLOGY

Wetland Hydrology Indicators:		<u>Secondary Indicators (minimum of two required)</u>
<u>Primary Indicators (minimum of one is required; check all that apply)</u>		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Marl Deposits (B15) (LRR U)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
		<input type="checkbox"/> Sphagnum moss (D8) (LRR T,U)
Field Observations:		
Surface Water Present? Yes _____ No <input checked="" type="checkbox"/>	Depth (inches): _____	Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>
Water Table Present? Yes _____ No <input checked="" type="checkbox"/>	Depth (inches): _____	
Saturation Present? Yes _____ No <input checked="" type="checkbox"/> (includes capillary fringe)	Depth (inches): _____	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: FAC-Neutral Test Results: Positive FACW and OBL: 6 to FACU and UPL: 2		

VEGETATION – Use scientific names of plants.

 Sampling Point: UDP-8

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>6</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>67%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (<u>30 ft radius</u>)				
1. <u><i>Pinus palustris</i></u>	<u>20.0</u>	<u>yes</u>	<u>FACU</u>	
2. <u><i>Gordonia lasianthus</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>15.00</u> 20% of total cover: <u>6.00</u>	<u>30.0</u>	= Total Cover		Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Shrub Stratum (<u>30 ft radius</u>)				
1. <u><i>Serenoa repens</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACU</u>	
2. <u><i>Ilex coriacea</i></u>	<u>5.0</u>	<u>yes</u>	<u>FACW</u>	
3. <u><i>Ilex glabra</i></u>	<u>5.0</u>	<u>yes</u>	<u>FACW</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>10.00</u> 20% of total cover: <u>4.00</u>	<u>20.0</u>	= Total Cover		Definitions of 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>
Herb Stratum (<u>30 ft radius</u>)				
1. <u><i>Andropogon virginicus</i></u>	<u>30.0</u>	<u>yes</u>	<u>FAC</u>	
2. <u><i>Scleria triglomerata</i></u>	<u>5.0</u>	<u>no</u>	<u>FACW</u>	
3. <u><i>Xyris jupicai</i></u>	<u>5.0</u>	<u>no</u>	<u>OBL</u>	
4. <u><i>Woodwardia virginica</i></u>	<u>5.0</u>	<u>no</u>	<u>OBL</u>	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
50% of total cover: <u>22.50</u> 20% of total cover: <u>9.00</u>	<u>45.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.

SOIL

Sampling Point: UDP-8

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6"	10YR 6/1	30	10YR 2/1	70	MS	M	Sa	
6-18"	10YR 6/1	100					Sa	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes _____ No ☒

Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mu=Muck; Pe= Peat; Sa= Sand; Si=Silt

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Loncala Tract City/County: Charlton County Sampling Date: 04/26/2018
 Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: UDP-9
 Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
 Landform (hillslope, terrace, etc.): Flatwoods Local relief (concave, convex, none): None Slope (%): 0-2%
 Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.57122945130 Long: -82.12885483280 Datum: NAD83
 Soil Map Unit Name: Lynn Haven fine sand, 0-2% slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ☒ (If no, explain in Remarks.)
 Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No _____
 Are Vegetation No, Soil No, or Hydrology No 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 <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/>	
Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	
Remarks:	
- Site observations and local hydrological data support abnormally dry conditions present during site visit. - Vegetation historically impacted by silvicultural activities (hipped/benched planted pine). - Soils/Hydrology historically impacted by silvicultural activities (hipping/benching for planted pine).	

HYDROLOGY

Wetland Hydrology Indicators:		<u>Secondary Indicators (minimum of two required)</u>
<u>Primary Indicators (minimum of one is required; check all that apply)</u>		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Marl Deposits (B15) (LRR U)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> FAC-Neutral Test (D5)
		<input type="checkbox"/> Sphagnum moss (D8) (LRR T,U)
Field Observations:		
Surface Water Present? Yes _____ No <input checked="" type="checkbox"/>	Depth (inches): _____	Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>
Water Table Present? Yes _____ No <input checked="" type="checkbox"/>	Depth (inches): _____	
Saturation Present? Yes _____ No <input checked="" type="checkbox"/> (includes capillary fringe)	Depth (inches): _____	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: FAC-Neutral Test Results: Negative FACW and OBL: 4 to FACU and UPL: 4		

VEGETATION – Use scientific names of plants.

 Sampling Point: UDP-9

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>25%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species <u>20</u> x 2 = <u>40</u> FAC species <u>20</u> x 3 = <u>60</u> FACU species <u>55</u> x 4 = <u>220</u> UPL species _____ x 5 = _____ Column Totals: <u>95</u> (A) <u>320</u> (B) Prevalence Index = B/A = <u>3.4</u>
Sapling Stratum (<u>30 ft radius</u>)				
1. <u><i>Pinus palustris</i></u>	<u>20.0</u>	<u>yes</u>	<u>FACU</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>15.00</u> 20% of total cover: <u>6.00</u>	<u>20.0</u>	= Total Cover		Hydrophytic Vegetation Indicators: ___ 1 - Rapid Test for Hydrophytic Vegetation ___ 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤3.0 ¹ ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Shrub Stratum (<u>30 ft radius</u>)				
1. <u><i>Serenoa repens</i></u>	<u>20.0</u>	<u>yes</u>	<u>FACU</u>	
2. <u><i>Ilex glabra</i></u>	<u>5.0</u>	<u>no</u>	<u>FACW</u>	
3. <u><i>Persea borbonia</i></u>	<u>5.0</u>	<u>no</u>	<u>FACW</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>15.00</u> 20% of total cover: <u>6.00</u>	<u>30.0</u>	= Total Cover		Definitions of 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 <u>✓</u>
Herb Stratum (<u>30 ft radius</u>)				
1. <u><i>Andropogon virginicus</i></u>	<u>20.0</u>	<u>yes</u>	<u>FAC</u>	
2. <u><i>Pteridium aquilinum</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACU</u>	
3. <u><i>Polygala nana</i></u>	<u>5.0</u>	<u>no</u>	<u>FACW</u>	
4. <u><i>Smilax auriculata</i></u>	<u>5.0</u>	<u>no</u>	<u>FACU</u>	
5. <u><i>Scleria triglomerata</i></u>	<u>5.0</u>	<u>no</u>	<u>FACW</u>	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
50% of total cover: <u>22.50</u> 20% of total cover: <u>9.00</u>	<u>45.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.

SOIL

Sampling Point: UDP-9**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3.5"	10YR 6/1	60	10YR 5/2	40	MS	M	Sa	
3.5-7"	10YR 7/1	40	10YR5/2	60	MS	M	Sa	
7-18"	10YR 7/1	100					Sa	

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

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ Organic Bodies (A6) **(LRR P, T, U)**
☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
☐ Muck Presence (A8) **(LRR U)**
☐ 1 cm Muck (A9) **(LRR P, T)**
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Coast Prairie Redox (A16) **(MLRA 150A)**
☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
☐ Thin Dark Surface (S9) **(LRR S, T, U)**
☐ Loamy Mucky Mineral (F1) **(LRR O)**
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Marl (F10) **(LRR U)**
☐ Depleted Ochric (F11) **(MLRA 151)**
☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
☐ Umbric Surface (F13) **(LRR P, T, U)**
☐ Delta Ochric (F17) **(MLRA 151)**
☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
☐ 2 cm Muck (A10) **(LRR S)**
☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
☐ Anomalous Bright Loamy Soils (F20)
(MLRA 153B)
☐ Red Parent Material (TF2)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ☒

Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mu=Muck; Pe= Peat; Sa= Sand; Si=Silt

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Loncala Tract City/County: Charlton County Sampling Date: 04/27/2018
 Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: UDP-10
 Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
 Landform (hillslope, terrace, etc.): Flatwoods Local relief (concave, convex, none): None Slope (%): 0-2%
 Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.58137619890 Long: -82.12455243660 Datum: NAD83
 Soil Map Unit Name: Lynn Haven fine sand, 0-2% slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ☒ (If no, explain in Remarks.)
 Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No _____
 Are Vegetation No, Soil No, or Hydrology No 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 <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/>	
Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	
Remarks: - Site observations and local hydrological data support abnormally dry conditions present during site visit. - Vegetation historically impacted by silvicultural activities (hipped/benched planted pine) and recent clear-cutting activities. - Soils/Hydrology historically impacted by silvicultural activities (hipping/benching for planted pine).	

HYDROLOGY

Wetland Hydrology Indicators:		<u>Secondary Indicators (minimum of two required)</u>
<u>Primary Indicators (minimum of one is required; check all that apply)</u>		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Marl Deposits (B15) (LRR U)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> FAC-Neutral Test (D5)
		<input type="checkbox"/> Sphagnum moss (D8) (LRR T,U)
Field Observations:		
Surface Water Present? Yes _____ No <input checked="" type="checkbox"/>	Depth (inches): _____	Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>
Water Table Present? Yes _____ No <input checked="" type="checkbox"/>	Depth (inches): _____	
Saturation Present? Yes _____ No <input checked="" type="checkbox"/> (includes capillary fringe)	Depth (inches): _____	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: FAC-Neutral Test Results: Negative FACW and OBL: 1 to FACU and UPL: 3		

VEGETATION – Use scientific names of plants.

 Sampling Point: UDP-10

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>40%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species <u>10</u> x 2 = <u>20</u> FAC species <u>5</u> x 3 = <u>15</u> FACU species <u>25</u> x 4 = <u>100</u> UPL species _____ x 5 = _____ Column Totals: <u>40</u> (A) <u>135</u> (B) Prevalence Index = B/A = <u>3.4</u>
Sapling Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		
Shrub Stratum (<u>30 ft radius</u>)				Hydrophytic Vegetation Indicators: ___ 1 - Rapid Test for Hydrophytic Vegetation ___ 2 - Dominance Test is >50% ___ 3 - Prevalence Index is ≤3.0 ¹ ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Serenoa repens</u>	<u>10.0</u>	<u>yes</u>	<u>FACU</u>	
2. <u>Ilex glabra</u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
50% of total cover: <u>10.00</u> 20% of total cover: <u>4.00</u>	<u>20.0</u>	= Total Cover		
Herb Stratum (<u>30 ft radius</u>)				Definitions of 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 <u>✓</u>
1. <u>Pteridium aquilinum</u>	<u>10.0</u>	<u>yes</u>	<u>FACU</u>	
2. <u>Smilax auriculata</u>	<u>5.0</u>	<u>yes</u>	<u>FACU</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
50% of total cover: <u>7.50</u> 20% of total cover: <u>3.00</u>	<u>15.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				
1. <u>Vitis rotundifolia</u>	<u>5.0</u>	<u>yes</u>	<u>FAC</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>5.0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.

SOIL

Sampling Point: UDP-10

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6"	10YR 6/1	40	10YR 3/1	60	MS	M	Sa	
6-18"	10YR 5/2	100					Sa	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ☒

Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mu=Muck; Pe= Peat; Sa= Sand; Si=Silt

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Loncala Tract City/County: Charlton County Sampling Date: 04/27/2018
 Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: UDP-11
 Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Applicable
 Landform (hillslope, terrace, etc.): Flatwoods Local relief (concave, convex, none): None Slope (%): 0-2%
 Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.57608738330 Long: -82.13506248630 Datum: NAD83
 Soil Map Unit Name: Leon fine sand, 0-2% slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ☒ (If no, explain in Remarks.)
 Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No _____
 Are Vegetation No, Soil No, or Hydrology No 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 <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/>	
Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	
Remarks: - Site observations and local hydrological data support abnormally dry conditions present during site visit. - Vegetation historically impacted by silvicultural activities (hipped/benched planted pine) and recent clear-cutting activities. - Soils/Hydrology historically impacted by silvicultural activities (hipping/benching for planted pine).	

HYDROLOGY

Wetland Hydrology Indicators:		<u>Secondary Indicators (minimum of two required)</u>
<u>Primary Indicators (minimum of one is required; check all that apply)</u>		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Marl Deposits (B15) (LRR U)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
		<input type="checkbox"/> Sphagnum moss (D8) (LRR T,U)
Field Observations:		
Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____	Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	
Water Table Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____		
Saturation Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: FAC-Neutral Test Results: Positive FACW and OBL: 6 to FACU and UPL: 1		

VEGETATION – Use scientific names of plants.

 Sampling Point: UDP-11

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>75%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		
Shrub Stratum (<u>30 ft radius</u>)				
1. <u>Serenoa repens</u>	<u>10.0</u>	<u>yes</u>	<u>FACU</u>	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u>Ilex glabra</u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: <u>10.00</u> 20% of total cover: <u>4.00</u>	<u>20.0</u>	= Total Cover		
Herb Stratum (<u>30 ft radius</u>)				
1. <u>Dichanthelium accuminatum</u>	<u>25.0</u>	<u>yes</u>	<u>FAC</u>	Definitions of 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>
2. <u>Kyllinga pumila</u>	<u>20.0</u>	<u>yes</u>	<u>FACW</u>	
3. <u>Scleria triglomerata</u>	<u>10.0</u>	<u>no</u>	<u>FACW</u>	
4. <u>Xyris jupicai</u>	<u>10.0</u>	<u>no</u>	<u>OBL</u>	
5. <u>Andropogon virginicus</u>	<u>5.0</u>	<u>no</u>	<u>FAC</u>	
6. <u>Woodwardia virginica</u>	<u>5.0</u>	<u>no</u>	<u>OBL</u>	
7. <u>Lachnanthes caroliniana</u>	<u>5.0</u>	<u>no</u>	<u>OBL</u>	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
50% of total cover: <u>40.00</u> 20% of total cover: <u>16.00</u>	<u>80.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.

SOIL

Sampling Point: UDP-11

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8"	10YR 6/1	40	10YR 2/1	60	MS	M	Sa	
8-18"	10YR 6/1	20	10YR 4/1	80	MS	M	Sa	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes _____ No ☒

Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mu=Muck; Pe= Peat; Sa= Sand; Si=Silt

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Loncala Tract City/County: Charlton County Sampling Date: 04/25/2018
Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: WDP-1
Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-1%
Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.58098502470 Long: -82.11871292890 Datum: NAD83
Soil Map Unit Name: Lynn Haven, Allanton and Kingsferry soils, ponded, 0-1% slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ☒ (If no, explain in Remarks.)
Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No _____
Are Vegetation No, Soil No, or Hydrology No 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 <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____	
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	
Remarks: - Site observations and local hydrological data support abnormally dry conditions present during site visit. - Vegetation historically impacted by silvicultural activities (planted pine) which are stunted due to hydric conditions.	

HYDROLOGY

Wetland Hydrology Indicators:		<u>Secondary Indicators (minimum of two required)</u>	
<u>Primary Indicators (minimum of one is required; check all that apply)</u>			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Marl Deposits (B15) (LRR U)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input checked="" type="checkbox"/> Water-Stained Leaves (B9)		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
		<input type="checkbox"/> Sphagnum moss (D8) (LRR T,U)	
Field Observations:			
Surface Water Present? Yes _____ No <input checked="" type="checkbox"/>	Depth (inches): _____	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	
Water Table Present? Yes <input checked="" type="checkbox"/> No _____	Depth (inches): <u>4"</u>		
Saturation Present? Yes <input checked="" type="checkbox"/> No _____	Depth (inches): <u>0"</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: FAC-Neutral Test Results: Positive FACW and OBL: 3 to FACU and UPL: 0			

VEGETATION – Use scientific names of plants.

 Sampling Point: WDP-1

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. <u><i>Pinus elliottii</i></u>	<u>25.0</u>	<u>yes</u>	<u>FACW</u>	Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata: <u>3</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
4. _____	_____	_____	_____	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: <u>12.50</u> 20% of total cover: <u>5.00</u>	<u>25.0</u>	= Total Cover		
Sapling Stratum (<u>30 ft radius</u>)				Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	Definitions of 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		
Shrub Stratum (<u>30 ft radius</u>)				
1. <u><i>Ilex myrtifolia</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>	Herb Stratum (<u>30 ft radius</u>)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	Woody Vine Stratum (<u>30 ft radius</u>)
7. _____	_____	_____	_____	
50% of total cover: <u>5.00</u> 20% of total cover: <u>2.00</u>	<u>10.0</u>	= Total Cover		
Herb Stratum (<u>30 ft radius</u>)				
1. <u><i>Lachnanthes caroliniana</i></u>	<u>70.0</u>	<u>yes</u>	<u>OBL</u>	
2. <u><i>Carex glaucescens</i></u>	<u>5.0</u>	<u>no</u>	<u>OBL</u>	Woody Vine Stratum (<u>30 ft radius</u>)
3. <u><i>Woodwardia virginica</i></u>	<u>5.0</u>	<u>no</u>	<u>OBL</u>	
4. <u><i>Sagittaria graminea</i></u>	<u>5.0</u>	<u>no</u>	<u>OBL</u>	
5. <u><i>Limnobia spongia</i></u>	<u>5.0</u>	<u>no</u>	<u>OBL</u>	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	Woody Vine Stratum (<u>30 ft radius</u>)
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	Woody Vine Stratum (<u>30 ft radius</u>)
50% of total cover: <u>45.00</u> 20% of total cover: <u>18.00</u>	<u>90.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	Woody Vine Stratum (<u>30 ft radius</u>)
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				
Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.				

SOIL

Sampling Point: WDP-1**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-9.5"	10YR 2/1	100					Sa	
9.5-18"	10YR 4/1	100					Sa	

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

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ Organic Bodies (A6) **(LRR P, T, U)**
☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
☐ Muck Presence (A8) **(LRR U)**
☐ 1 cm Muck (A9) **(LRR P, T)**
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Coast Prairie Redox (A16) **(MLRA 150A)**
☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☒ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
☐ Thin Dark Surface (S9) **(LRR S, T, U)**
☐ Loamy Mucky Mineral (F1) **(LRR O)**
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Marl (F10) **(LRR U)**
☐ Depleted Ochric (F11) **(MLRA 151)**
☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
☐ Umbric Surface (F13) **(LRR P, T, U)**
☐ Delta Ochric (F17) **(MLRA 151)**
☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
☐ 2 cm Muck (A10) **(LRR S)**
☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
☐ Anomalous Bright Loamy Soils (F20)
(MLRA 153B)
☐ Red Parent Material (TF2)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mu=Muck; Pe= Peat; Sa= Sand; Si=Silt

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Loncala Tract City/County: Charlton County Sampling Date: 04/25/2018
 Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: WDP-2
 Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-1%
 Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.58164837890 Long: -82.11581799910 Datum: NAD83
 Soil Map Unit Name: Lynn Haven, Allanton and Kingsferry soils, ponded, 0-1% slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ☒ (If no, explain in Remarks.)
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No _____
 Are Vegetation No, Soil No, or Hydrology No 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 <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____	
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	
Remarks:	
- Site observations and local hydrological data support abnormally dry conditions present during site visit. - Vegetation historically impacted by silvicultural activities (planted pine) which are stunted due to hydric conditions.	

HYDROLOGY

Wetland Hydrology Indicators:		<u>Secondary Indicators (minimum of two required)</u>
<u>Primary Indicators (minimum of one is required; check all that apply)</u>		
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Marl Deposits (B15) (LRR U)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input checked="" type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Thin Muck Surface (C7)	<input checked="" type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Shallow Aquitard (D3)
<input checked="" type="checkbox"/> Water-Stained Leaves (B9)		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
		<input checked="" type="checkbox"/> Sphagnum moss (D8) (LRR T,U)
Field Observations:		
Surface Water Present? Yes <input checked="" type="checkbox"/> No _____	Depth (inches): <u>2"</u>	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____
Water Table Present? Yes <input checked="" type="checkbox"/> No _____	Depth (inches): <u>2"</u>	
Saturation Present? (includes capillary fringe) Yes <input checked="" type="checkbox"/> No _____	Depth (inches): <u>0"</u>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: FAC-Neutral Test Results: Positive FACW and OBL: 12 to FACU and UPL: 0		

VEGETATION – Use scientific names of plants.

 Sampling Point: WDP-2

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u><i>Pinus elliotii</i></u>	<u>40.0</u>	<u>yes</u>	<u>FACW</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>7</u> (A) Total Number of Dominant Species Across All Strata: <u>7</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
2. <u><i>Taxodium ascendens</i></u>	<u>10.0</u>	<u>no</u>	<u>OBL</u>	
3. <u><i>Gordonia lasianthus</i></u>	<u>5.0</u>	<u>no</u>	<u>FACW</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: <u>27.50</u> 20% of total cover: <u>11.00</u>	<u>55.0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (<u>30 ft radius</u>)				
1. <u><i>Taxodium ascendens</i></u>	<u>10.0</u>	<u>yes</u>	<u>OBL</u>	
2. <u><i>Pinus elliotii</i></u>	<u>5.0</u>	<u>yes</u>	<u>FACW</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>7.50</u> 20% of total cover: <u>3.00</u>	<u>15.0</u>	= Total Cover		
Shrub Stratum (<u>30 ft radius</u>)				Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ _____ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u><i>Ilex myrtifolia</i></u>	<u>15.0</u>	<u>yes</u>	<u>FACW</u>	
2. <u><i>Sabal minor</i></u>	<u>5.0</u>	<u>yes</u>	<u>FACW</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
50% of total cover: <u>10.00</u> 20% of total cover: <u>4.00</u>	<u>20.0</u>	= Total Cover		
Herb Stratum (<u>30 ft radius</u>)				Definitions of 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 <input checked="" type="checkbox"/> No _____
1. <u><i>Carex striata</i></u>	<u>20.0</u>	<u>yes</u>	<u>OBL</u>	
2. <u><i>Lachnanthes caroliniana</i></u>	<u>10.0</u>	<u>yes</u>	<u>OBL</u>	
3. <u><i>Carex glaucescens</i></u>	<u>5.0</u>	<u>no</u>	<u>OBL</u>	
4. <u><i>Woodwardia virginica</i></u>	<u>5.0</u>	<u>no</u>	<u>OBL</u>	
5. <u><i>Andropogon glomeratus</i></u>	<u>5.0</u>	<u>no</u>	<u>FACW</u>	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
50% of total cover: <u>22.50</u> 20% of total cover: <u>9.00</u>	<u>45.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.

SOIL

Sampling Point: WDP-2**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-11"	10YR 2/1	100					Sa	
11-18"	10YR 3/1	100					Sa	

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

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ Organic Bodies (A6) **(LRR P, T, U)**
☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
☐ Muck Presence (A8) **(LRR U)**
☐ 1 cm Muck (A9) **(LRR P, T)**
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Coast Prairie Redox (A16) **(MLRA 150A)**
☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☒ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
☐ Thin Dark Surface (S9) **(LRR S, T, U)**
☐ Loamy Mucky Mineral (F1) **(LRR O)**
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Marl (F10) **(LRR U)**
☐ Depleted Ochric (F11) **(MLRA 151)**
☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
☐ Umbric Surface (F13) **(LRR P, T, U)**
☐ Delta Ochric (F17) **(MLRA 151)**
☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
☐ 2 cm Muck (A10) **(LRR S)**
☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
☐ Anomalous Bright Loamy Soils (F20)
(MLRA 153B)
☐ Red Parent Material (TF2)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mu=Muck; Pe= Peat; Sa= Sand; Si=Silt

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Loncala Tract City/County: Charlton County Sampling Date: 04/25/2018
 Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: WDP-3
 Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-1%
 Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.57385245060 Long: -82.11923996880 Datum: NAD83
 Soil Map Unit Name: Lynn Haven, Allanton and Kingsferry soils, ponded, 0-1% slopes NWI classification: PFO6F

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ☒ (If no, explain in Remarks.)
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No _____
 Are Vegetation No, Soil No, or Hydrology No 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 <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____	
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	
Remarks: - Site observations and local hydrological data support abnormally dry conditions present during site visit. - Vegetation recently affected by forest fire during drought conditions resulting in high mortality of canopy species.	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input checked="" type="checkbox"/> Surface Water (A1) _____ Aquatic Fauna (B13) <input checked="" type="checkbox"/> High Water Table (A2) _____ Marl Deposits (B15) (LRR U) <input checked="" type="checkbox"/> Saturation (A3) _____ Hydrogen Sulfide Odor (C1) _____ Water Marks (B1) _____ Oxidized Rhizospheres along Living Roots (C3) _____ Sediment Deposits (B2) _____ Presence of Reduced Iron (C4) _____ Drift Deposits (B3) _____ Recent Iron Reduction in Tilled Soils (C6) _____ Algal Mat or Crust (B4) _____ Thin Muck Surface (C7) _____ Iron Deposits (B5) _____ Other (Explain in Remarks) _____ Inundation Visible on Aerial Imagery (B7) <input checked="" type="checkbox"/> Water-Stained Leaves (B9)		<u>Secondary Indicators (minimum of two required)</u> _____ Surface Soil Cracks (B6) _____ Sparsely Vegetated Concave Surface (B8) _____ Drainage Patterns (B10) _____ Moss Trim Lines (B16) _____ Dry-Season Water Table (C2) _____ Crayfish Burrows (C8) <input checked="" type="checkbox"/> Saturation Visible on Aerial Imagery (C9) _____ Geomorphic Position (D2) _____ Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) _____ Sphagnum moss (D8) (LRR T,U)
Field Observations: Surface Water Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>3"</u> Water Table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>1"</u> Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0"</u> (includes capillary fringe)		Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: FAC-Neutral Test Results: Positive FACW and OBL: 10 to FACU and UPL: 0		

VEGETATION – Use scientific names of plants.

 Sampling Point: WDP-3

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u><i>Pinus serotina</i></u>	<u>20.0</u>	<u>yes</u>	<u>FACW</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>7</u> (A) Total Number of Dominant Species Across All Strata: <u>7</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
2. <u><i>Taxodium ascendens</i></u>	<u>10.0</u>	<u>yes</u>	<u>OBL</u>	
3. <u><i>Gordonia lasianthus</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: <u>20.00</u> 20% of total cover: <u>8.00</u>	<u>40.0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		
Shrub Stratum (<u>30 ft radius</u>)				Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u><i>Ilex glabra</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>	
2. <u><i>Sabal minor</i></u>	<u>5.0</u>	<u>yes</u>	<u>FACW</u>	
3. <u><i>Vaccinium elliotii</i></u>	<u>5.0</u>	<u>yes</u>	<u>FACW</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
50% of total cover: <u>10.00</u> 20% of total cover: <u>4.00</u>	<u>20.0</u>	= Total Cover		
Herb Stratum (<u>30 ft radius</u>)				Definitions of 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 <input checked="" type="checkbox"/> No _____
1. <u><i>Lachnanthes caroliniana</i></u>	<u>70.0</u>	<u>yes</u>	<u>OBL</u>	
2. <u><i>Rhynchospora fascicularis</i></u>	<u>10.0</u>	<u>no</u>	<u>FACW</u>	
3. <u><i>Woodwardia virginica</i></u>	<u>10.0</u>	<u>no</u>	<u>OBL</u>	
4. <u><i>Smilax laurifolia</i></u>	<u>5.0</u>	<u>no</u>	<u>FACW</u>	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
50% of total cover: <u>47.50</u> 20% of total cover: <u>19.00</u>	<u>95.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.

SOIL

Sampling Point: WDP-3**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-18"	10YR 2/1	100					Sa	

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

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ Organic Bodies (A6) **(LRR P, T, U)**
☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
☐ Muck Presence (A8) **(LRR U)**
☐ 1 cm Muck (A9) **(LRR P, T)**
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Coast Prairie Redox (A16) **(MLRA 150A)**
☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☒ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
☐ Thin Dark Surface (S9) **(LRR S, T, U)**
☐ Loamy Mucky Mineral (F1) **(LRR O)**
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Marl (F10) **(LRR U)**
☐ Depleted Ochric (F11) **(MLRA 151)**
☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
☐ Umbric Surface (F13) **(LRR P, T, U)**
☐ Delta Ochric (F17) **(MLRA 151)**
☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
☐ 2 cm Muck (A10) **(LRR S)**
☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
☐ Anomalous Bright Loamy Soils (F20)
(MLRA 153B)
☐ Red Parent Material (TF2)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mu=Muck; Pe= Peat; Sa= Sand; Si=Silt

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Loncala Tract City/County: Charlton County Sampling Date: 04/25/2018
 Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: WDP-4
 Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2%
 Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.58467875010 Long: -82.12795774940 Datum: NAD83
 Soil Map Unit Name: Leon fine sand, 0-2% slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ☒ (If no, explain in Remarks.)
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No _____
 Are Vegetation No, Soil No, or Hydrology No 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 <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____	
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	
Remarks: - Site observations and local hydrological data support abnormally dry conditions present during site visit. - Vegetation historically affected by silvicultural activities (hipping/benching planted pine).	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)		<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T,U)
Field Observations: Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>9.5"</u> Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0"</u> (includes capillary fringe)		Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: FAC-Neutral Test Results: Positive FACW and OBL: 12 to FACU and UPL: 0		

VEGETATION – Use scientific names of plants.

 Sampling Point: WDP-4

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u><i>Pinus elliotii</i></u>	<u>60.0</u>	<u>yes</u>	<u>FACW</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>6</u> (A) Total Number of Dominant Species Across All Strata: <u>6</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
2. <u><i>Magnolia virginiana</i></u>	<u>5.0</u>	<u>no</u>	<u>FACW</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: <u>32.50</u> 20% of total cover: <u>13.00</u>	<u>65.0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		
Shrub Stratum (<u>30 ft radius</u>)				Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ _____ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u><i>Ilex glabra</i></u>	<u>25.0</u>	<u>yes</u>	<u>FACW</u>	
2. <u><i>Vaccinium elliotii</i></u>	<u>25.0</u>	<u>yes</u>	<u>FACW</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
50% of total cover: <u>25.00</u> 20% of total cover: <u>10.00</u>	<u>50.0</u>	= Total Cover		
Herb Stratum (<u>30 ft radius</u>)				Definitions of 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 <input checked="" type="checkbox"/> No _____
1. <u><i>Lachnanthes caroliniana</i></u>	<u>25.0</u>	<u>yes</u>	<u>OBL</u>	
2. <u><i>Syngonanthus flavidulus</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>	
3. <u><i>Utricularia subulata</i></u>	<u>10.0</u>	<u>yes</u>	<u>OBL</u>	
4. <u><i>Woodwardia virginica</i></u>	<u>5.0</u>	<u>no</u>	<u>OBL</u>	
5. <u><i>Polygala lutea</i></u>	<u>5.0</u>	<u>no</u>	<u>FACW</u>	
6. <u><i>Osmunda cinnamomea</i></u>	<u>5.0</u>	<u>no</u>	<u>FACW</u>	
7. <u><i>Smilax laurifolia</i></u>	<u>5.0</u>	<u>no</u>	<u>FACW</u>	
8. <u><i>Xyris jupicai</i></u>	<u>5.0</u>	<u>no</u>	<u>OBL</u>	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
50% of total cover: <u>35.00</u> 20% of total cover: <u>14.00</u>	<u>70.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		
Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.				

SOIL

Sampling Point: WDP-4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-18"	10YR 2/1	100					Sa	
¹ Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.							² Location: PL=Pore Lining, M=Matrix.	
Hydric Soil Indicators:							Indicators for Problematic Hydric Soils³:	
<input type="checkbox"/> Histosol (A1)			<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U)			<input type="checkbox"/> 1 cm Muck (A9) (LRR O)		
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U)			<input type="checkbox"/> 2 cm Muck (A10) (LRR S)		
<input type="checkbox"/> Black Histic (A3)			<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O)			<input type="checkbox"/> Reduced Vertic (F18) (outside MLRA 150A,B)		
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Loamy Gleyed Matrix (F2)			<input type="checkbox"/> Piedmont Floodplain Soils (F19) (LRR P, S, T)		
<input type="checkbox"/> Stratified Layers (A5)			<input type="checkbox"/> Depleted Matrix (F3)			<input type="checkbox"/> Anomalous Bright Loamy Soils (F20)		
<input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U)			<input type="checkbox"/> Redox Dark Surface (F6)			(MLRA 153B)		
<input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U)			<input type="checkbox"/> Depleted Dark Surface (F7)			<input type="checkbox"/> Red Parent Material (TF2)		
<input type="checkbox"/> Muck Presence (A8) (LRR U)			<input type="checkbox"/> Redox Depressions (F8)			<input type="checkbox"/> Very Shallow Dark Surface (TF12)		
<input type="checkbox"/> 1 cm Muck (A9) (LRR P, T)			<input type="checkbox"/> Marl (F10) (LRR U)			<input type="checkbox"/> Other (Explain in Remarks)		
<input type="checkbox"/> Depleted Below Dark Surface (A11)			<input type="checkbox"/> Depleted Ochric (F11) (MLRA 151)			³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.		
<input type="checkbox"/> Thick Dark Surface (A12)			<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T)					
<input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A)			<input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U)					
<input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S)			<input type="checkbox"/> Delta Ochric (F17) (MLRA 151)					
<input type="checkbox"/> Sandy Gleyed Matrix (S4)			<input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B)					
<input type="checkbox"/> Sandy Redox (S5)			<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A)					
<input type="checkbox"/> Stripped Matrix (S6)			<input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)					
<input checked="" type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U)								
Restrictive Layer (if observed):								
Type: _____							Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____	
Depth (inches): _____								
Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mu=Muck; Pe= Peat; Sa= Sand; Si=Silt								

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Loncala Tract City/County: Charlton County Sampling Date: 04/25/2018
 Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: WDP-5
 Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2%
 Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.58261531050 Long: -82.13934872160 Datum: NAD83
 Soil Map Unit Name: Leon fine sand, 0-2% slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ☒ (If no, explain in Remarks.)
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No _____
 Are Vegetation No, Soil No, or Hydrology No 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 <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____	
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	
Remarks: - Site observations and local hydrological data support abnormally dry conditions present during site visit. - Vegetation historically affected by silvicultural activities (hipping/benching planted pine).	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)		<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input checked="" type="checkbox"/> Sphagnum moss (D8) (LRR T,U)
Field Observations: Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>8"</u> Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0"</u> (includes capillary fringe)		Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: FAC-Neutral Test Results: Positive FACW and OBL: 11 to FACU and UPL: 1		

VEGETATION – Use scientific names of plants.

 Sampling Point: WDP-5

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>8</u> (A) Total Number of Dominant Species Across All Strata: <u>9</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>89%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (<u>30 ft radius</u>)				
1. <u><i>Pinus palustris</i></u>	<u>25.0</u>	<u>yes</u>	<u>FACU</u>	
2. <u><i>Acer rubrum</i></u>	<u>5.0</u>	<u>no</u>	<u>FAC</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>15.00</u> 20% of total cover: <u>6.00</u>	<u>30.0</u>	= Total Cover		Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Shrub Stratum (<u>30 ft radius</u>)				
1. <u><i>Ilex glabra</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>	
2. <u><i>Ilex coriacea</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>	
3. <u><i>Hypericum galioides</i></u>	<u>10.0</u>	<u>yes</u>	<u>OBL</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>15.00</u> 20% of total cover: <u>6.00</u>	<u>30.0</u>	= Total Cover		Definitions of 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>
Herb Stratum (<u>30 ft radius</u>)				
1. <u><i>Rhynchospora fascicularis</i></u>	<u>25.0</u>	<u>yes</u>	<u>FACW</u>	
2. <u><i>Woodwardia virginica</i></u>	<u>10.0</u>	<u>yes</u>	<u>OBL</u>	
3. <u><i>Lachnanthes caroliniana</i></u>	<u>10.0</u>	<u>yes</u>	<u>OBL</u>	
4. <u><i>Syngonanthus flavidulus</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>	
5. <u><i>Rubus argutus</i></u>	<u>10.0</u>	<u>yes</u>	<u>FAC</u>	
6. <u><i>Lycopodiella alopecuroides</i></u>	<u>5.0</u>	<u>no</u>	<u>OBL</u>	
7. <u><i>Drosera intermedia</i></u>	<u>5.0</u>	<u>no</u>	<u>OBL</u>	
8. <u><i>Xyris jupicai</i></u>	<u>5.0</u>	<u>no</u>	<u>OBL</u>	
9. _____	_____	_____	_____	
50% of total cover: <u>40.00</u> 20% of total cover: <u>16.00</u>	<u>80.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				1. _____ 2. _____ 3. _____ 4. _____ 5. _____ 50% of total cover: _____ 20% of total cover: _____ <u>0.0</u> = Total Cover
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	

Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.

SOIL

Sampling Point: WDP-5**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6"	10YR 2/1	100					Sa	
6-18"	10YR 3/1	100					Sa	

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

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ Organic Bodies (A6) **(LRR P, T, U)**
☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
☐ Muck Presence (A8) **(LRR U)**
☐ 1 cm Muck (A9) **(LRR P, T)**
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Coast Prairie Redox (A16) **(MLRA 150A)**
☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☒ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
☐ Thin Dark Surface (S9) **(LRR S, T, U)**
☐ Loamy Mucky Mineral (F1) **(LRR O)**
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Marl (F10) **(LRR U)**
☐ Depleted Ochric (F11) **(MLRA 151)**
☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
☐ Umbric Surface (F13) **(LRR P, T, U)**
☐ Delta Ochric (F17) **(MLRA 151)**
☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
☐ 2 cm Muck (A10) **(LRR S)**
☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
☐ Anomalous Bright Loamy Soils (F20)
(MLRA 153B)
☐ Red Parent Material (TF2)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mu=Muck; Pe= Peat; Sa= Sand; Si=Silt

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Loncala Tract City/County: Charlton County Sampling Date: 04/26/2018
 Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: WDP-6
 Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2%
 Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.56861580650 Long: -82.13525025140 Datum: NAD83
 Soil Map Unit Name: Leon fine sand, 0-2% slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ☒ (If no, explain in Remarks.)
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No _____
 Are Vegetation No, Soil No, or Hydrology No 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 <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____	
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	
Remarks:	
- Site observations and local hydrological data support abnormally dry conditions present during site visit. - Vegetation historically affected by silvicultural activities (hipping/benching planted pine) and recently affected by forest fire during drought conditions resulting in high mortality in canopy species.	

HYDROLOGY

Wetland Hydrology Indicators:		<u>Secondary Indicators (minimum of two required)</u>	
<u>Primary Indicators (minimum of one is required; check all that apply)</u>			
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Marl Deposits (B15) (LRR U)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input checked="" type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Water-Stained Leaves (B9)		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
		<input type="checkbox"/> Sphagnum moss (D8) (LRR T,U)	
Field Observations:			
Surface Water Present? Yes <input checked="" type="checkbox"/> No _____	Depth (inches): <u>0.5"</u>	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	
Water Table Present? Yes <input checked="" type="checkbox"/> No _____	Depth (inches): <u>6"</u>		
Saturation Present? Yes <input checked="" type="checkbox"/> No _____	Depth (inches): <u>0"</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: FAC-Neutral Test Results: Positive FACW and OBL: 8 to FACU and UPL: 0			

VEGETATION – Use scientific names of plants.

 Sampling Point: WDP-6

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u><i>Pinus elliottii</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>6</u> (A) Total Number of Dominant Species Across All Strata: <u>6</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: <u>5.00</u> 20% of total cover: <u>2.00</u>	<u>10.0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (<u>30 ft radius</u>)				
1. <u><i>Gordonia lasianthus</i></u>	<u>15.0</u>	<u>yes</u>	<u>FACW</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>7.50</u> 20% of total cover: <u>3.00</u>	<u>15.0</u>	= Total Cover		Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Shrub Stratum (<u>30 ft radius</u>)				
1. <u><i>Ilex glabra</i></u>	<u>30.0</u>	<u>yes</u>	<u>FACW</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>15.00</u> 20% of total cover: <u>6.00</u>	<u>30.0</u>	= Total Cover		Definitions of 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>
Herb Stratum (<u>30 ft radius</u>)				
1. <u><i>Scleria triglomerata</i></u>	<u>25.0</u>	<u>yes</u>	<u>FACW</u>	
2. <u><i>Woodwardia virginica</i></u>	<u>20.0</u>	<u>yes</u>	<u>OBL</u>	
3. <u><i>Lachnanthes caroliniana</i></u>	<u>20.0</u>	<u>yes</u>	<u>OBL</u>	
4. <u><i>Dichanthelium acuminatum</i></u>	<u>10.0</u>	<u>no</u>	<u>FAC</u>	
5. <u><i>Xyris jupicai</i></u>	<u>10.0</u>	<u>no</u>	<u>OBL</u>	
6. <u><i>Hypericum tetrapetalum</i></u>	<u>5.0</u>	<u>no</u>	<u>OBL</u>	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
50% of total cover: <u>45.00</u> 20% of total cover: <u>18.00</u>	<u>90.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.

SOIL

Sampling Point: WDP-6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-18"	10YR 2/1	100					Sa	
¹ Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.						² Location: PL=Pore Lining, M=Matrix.		
Hydric Soil Indicators:			Indicators for Problematic Hydric Soils³:					
<input type="checkbox"/> Histosol (A1)			<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U)			<input type="checkbox"/> 1 cm Muck (A9) (LRR O)		
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U)			<input type="checkbox"/> 2 cm Muck (A10) (LRR S)		
<input type="checkbox"/> Black Histic (A3)			<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O)			<input type="checkbox"/> Reduced Vertic (F18) (outside MLRA 150A,B)		
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Loamy Gleyed Matrix (F2)			<input type="checkbox"/> Piedmont Floodplain Soils (F19) (LRR P, S, T)		
<input type="checkbox"/> Stratified Layers (A5)			<input type="checkbox"/> Depleted Matrix (F3)			<input type="checkbox"/> Anomalous Bright Loamy Soils (F20)		
<input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U)			<input type="checkbox"/> Redox Dark Surface (F6)			<input type="checkbox"/> (MLRA 153B)		
<input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U)			<input type="checkbox"/> Depleted Dark Surface (F7)			<input type="checkbox"/> Red Parent Material (TF2)		
<input type="checkbox"/> Muck Presence (A8) (LRR U)			<input type="checkbox"/> Redox Depressions (F8)			<input type="checkbox"/> Very Shallow Dark Surface (TF12)		
<input type="checkbox"/> 1 cm Muck (A9) (LRR P, T)			<input type="checkbox"/> Marl (F10) (LRR U)			<input type="checkbox"/> Other (Explain in Remarks)		
<input type="checkbox"/> Depleted Below Dark Surface (A11)			<input type="checkbox"/> Depleted Ochric (F11) (MLRA 151)			³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.		
<input type="checkbox"/> Thick Dark Surface (A12)			<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T)					
<input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A)			<input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U)					
<input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S)			<input type="checkbox"/> Delta Ochric (F17) (MLRA 151)					
<input type="checkbox"/> Sandy Gleyed Matrix (S4)			<input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B)					
<input type="checkbox"/> Sandy Redox (S5)			<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A)					
<input type="checkbox"/> Stripped Matrix (S6)			<input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)					
<input checked="" type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U)								
Restrictive Layer (if observed):								
Type: _____							Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Depth (inches): _____								
Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mu=Muck; Pe=Peat; Sa=Sand; Si=Silt								

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Loncala Tract City/County: Charlton County Sampling Date: 04/26/2018
 Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: WDP-7
 Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2%
 Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.56811688050 Long: -82.12266502460 Datum: NAD83
 Soil Map Unit Name: Lynn Haven fine sand, 0-2% slopes NWI classification: PEM1C

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ☒ (If no, explain in Remarks.)
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No _____
 Are Vegetation No, Soil No, or Hydrology No 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 <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____	
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	
Remarks:	
- Site observations and local hydrological data support abnormally dry conditions present during site visit. - Vegetation historically affected by silvicultural activities (hipping/benching planted pine) and recently affected clear-cutting activities.	

HYDROLOGY

Wetland Hydrology Indicators:		<u>Secondary Indicators (minimum of two required)</u>	
<u>Primary Indicators (minimum of one is required; check all that apply)</u>			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Marl Deposits (B15) (LRR U)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input checked="" type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Water-Stained Leaves (B9)		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)	
		<input type="checkbox"/> Sphagnum moss (D8) (LRR T,U)	
Field Observations:			
Surface Water Present? Yes _____ No <input checked="" type="checkbox"/>	Depth (inches): _____	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	
Water Table Present? Yes <input checked="" type="checkbox"/> No _____	Depth (inches): <u>9.5"</u>		
Saturation Present? Yes <input checked="" type="checkbox"/> No _____	Depth (inches): <u>0"</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: FAC-Neutral Test Results: Positive FACW and OBL: 9 to FACU and UPL: 0			

VEGETATION – Use scientific names of plants.

 Sampling Point: WDP-7

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (<u>30 ft radius</u>)				
1. <u>Gordonia lasianthus</u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>5.00</u> 20% of total cover: <u>2.00</u>	<u>10.0</u>	= Total Cover		Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Shrub Stratum (<u>30 ft radius</u>)				
1. <u>Ilex coriacea</u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>	
2. <u>Sabal minor</u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>10.00</u> 20% of total cover: <u>4.00</u>	<u>20.0</u>	= Total Cover		Definitions of 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 <input checked="" type="checkbox"/> No _____
Herb Stratum (<u>30 ft radius</u>)				
1. <u>Rhynchospora fascicularis</u>	<u>30.0</u>	<u>yes</u>	<u>FACW</u>	
2. <u>Dichanthelium acuminatum</u>	<u>10.0</u>	<u>yes</u>	<u>OBL</u>	
3. <u>Woodwardia virginica</u>	<u>5.0</u>	<u>no</u>	<u>OBL</u>	
4. <u>Utricularia subulata</u>	<u>5.0</u>	<u>no</u>	<u>OBL</u>	
5. <u>Xyris jupicai</u>	<u>5.0</u>	<u>no</u>	<u>OBL</u>	
6. <u>Syngonanthus flavidulus</u>	<u>5.0</u>	<u>no</u>	<u>FACW</u>	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
50% of total cover: <u>30.00</u> 20% of total cover: <u>12.00</u>	<u>60.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.

SOIL

Sampling Point: WDP-7

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-5"	10YR 2/1	100					Sa	
5-10.5"	10YR 5/1	50	10YR 2/1	50	MS	M	Sa	
10.5-18	10YR 5/1	100					Sa	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☒ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mu=Muck; Pe= Peat; Sa= Sand; Si=Silt

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Loncala Tract City/County: Charlton County Sampling Date: 04/26/2018
 Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: WDP-8
 Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-1%
 Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.57078373580 Long: -82.12346477470 Datum: NAD83
 Soil Map Unit Name: Lynn Haven, Allanton and Kingsferry soils, ponded, 0-1% slopes NWI classification: PFO3/4B

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ☒ (If no, explain in Remarks.)
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No _____
 Are Vegetation No, Soil No, or Hydrology No 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 <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____	
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	
Remarks:	
- Site observations and local hydrological data support abnormally dry conditions present during site visit. - Vegetation recently affected by forest fire during drought conditions that resulted in high mortality of canopy species.	

HYDROLOGY

Wetland Hydrology Indicators:		<u>Secondary Indicators (minimum of two required)</u>
<u>Primary Indicators (minimum of one is required; check all that apply)</u>		
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Marl Deposits (B15) (LRR U)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input checked="" type="checkbox"/> Saturation (A3)	<input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
		<input type="checkbox"/> Sphagnum moss (D8) (LRR T,U)
Field Observations:		Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____
Surface Water Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>2"</u>		
Water Table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0"</u>		
Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0"</u> (includes capillary fringe)		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: FAC-Neutral Test Results: Positive FACW and OBL: 5 to FACU and UPL: 0		

VEGETATION – Use scientific names of plants.

 Sampling Point: WDP-8

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u><i>Gordonia lasianthus</i></u>	<u>40.0</u>	<u>yes</u>	<u>FACW</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
2. <u><i>Pinus serotina</i></u>	<u>30.0</u>	<u>yes</u>	<u>FACW</u>	
3. <u><i>Nyssa biflora</i></u>	<u>10.0</u>	<u>no</u>	<u>OBL</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: <u>40.00</u> 20% of total cover: <u>16.00</u>	<u>80.0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		
Shrub Stratum (<u>30 ft radius</u>)				
1. <u><i>Ilex coriacea</i></u>	<u>40.0</u>	<u>yes</u>	<u>FACW</u>	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: <u>20.00</u> 20% of total cover: <u>8.00</u>	<u>40.0</u>	= Total Cover		
Herb Stratum (<u>30 ft radius</u>)				
1. <u><i>Woodwardia virginica</i></u>	<u>30.0</u>	<u>yes</u>	<u>OBL</u>	Definitions of 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 <input checked="" type="checkbox"/> No _____
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
50% of total cover: <u>15.00</u> 20% of total cover: <u>6.00</u>	<u>30.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.

SOIL

Sampling Point: WDP-8

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4"							Pe	
4-18"	10YR 2/1	100					Mu	Mucky Mineral

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☒ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mu=Muck; Pe= Peat; Sa= Sand; Si=Silt

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Loncala Tract City/County: Charlton County Sampling Date: 04/26/2018
 Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: WDP-9
 Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
 Landform (hillslope, terrace, etc.): Flatwoods Local relief (concave, convex, none): None Slope (%): 0-2%
 Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.57111589630 Long: -82.12960389450 Datum: NAD83
 Soil Map Unit Name: Lynn Haven fine sand, 0-2% slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ☒ (If no, explain in Remarks.)
 Are Vegetation Yes, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No _____
 Are Vegetation No, Soil No, or Hydrology No 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 <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____	
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	
Remarks:	
- Site observations and local hydrological data support abnormally dry conditions present during site visit. - Vegetation historically impacted by silvicultural activities (hipping/benching planted pine), but trees stunted due to hydric conditions.	

HYDROLOGY

Wetland Hydrology Indicators:		<u>Secondary Indicators (minimum of two required)</u>
<u>Primary Indicators (minimum of one is required; check all that apply)</u>		
<input checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Marl Deposits (B15) (LRR U)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input checked="" type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
		<input checked="" type="checkbox"/> Sphagnum moss (D8) (LRR T,U)
Field Observations:		
Surface Water Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>2"</u>	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	
Water Table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>2"</u>		
Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0"</u> (includes capillary fringe)		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: FAC-Neutral Test Results: Positive FACW and OBL: 14 to FACU and UPL: 1		

VEGETATION – Use scientific names of plants.

 Sampling Point: WDP-9

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>15</u> (A) Total Number of Dominant Species Across All Strata: <u>16</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>94%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (<u>30 ft radius</u>)				
1. <u>Pinus palustris</u>	<u>10.0</u>	<u>yes</u>	<u>FACU</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>5.00</u> 20% of total cover: <u>2.00</u>	<u>10.0</u>	= Total Cover		Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Shrub Stratum (<u>30 ft radius</u>)				
1. <u>Ilex glabra</u>	<u>5.0</u>	<u>yes</u>	<u>FACW</u>	
2. <u>Persea borbonia</u>	<u>5.0</u>	<u>yes</u>	<u>FACW</u>	
3. <u>Hypericum galioides</u>	<u>5.0</u>	<u>yes</u>	<u>OBL</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>7.50</u> 20% of total cover: <u>3.00</u>	<u>15.0</u>	= Total Cover		Definitions of 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>
Herb Stratum (<u>30 ft radius</u>)				
1. <u>Lachnanthes caroliniana</u>	<u>40.0</u>	<u>yes</u>	<u>OBL</u>	
2. <u>Fuirena scirpoidea</u>	<u>5.0</u>	<u>yes</u>	<u>OBL</u>	
3. <u>Eriocaulon decangulare</u>	<u>5.0</u>	<u>yes</u>	<u>OBL</u>	
4. <u>Pinguicula caerulea</u>	<u>5.0</u>	<u>yes</u>	<u>OBL</u>	
5. <u>Aletris lutea</u>	<u>5.0</u>	<u>yes</u>	<u>FACW</u>	
6. <u>Sarracenia minor</u>	<u>5.0</u>	<u>yes</u>	<u>OBL</u>	
7. <u>Pogonia ophioglossoides</u>	<u>5.0</u>	<u>yes</u>	<u>OBL</u>	
8. <u>Cleistesiosis divaricata</u>	<u>5.0</u>	<u>yes</u>	<u>FAC</u>	
9. <u>Spiranthes praecox</u>	<u>5.0</u>	<u>yes</u>	<u>FACW</u>	
10. <u>Drosera intermedia</u>	<u>5.0</u>	<u>yes</u>	<u>OBL</u>	
11. <u>Smilax laurifolia</u>	<u>5.0</u>	<u>yes</u>	<u>FACW</u>	
12. <u>Woodwardia virginica</u>	<u>5.0</u>	<u>yes</u>	<u>OBL</u>	
50% of total cover: <u>47.50</u> 20% of total cover: <u>19.00</u>	<u>95.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.

 Typical bog habitat observed within planted pine area. Multiple similar areas observed in the nearby vicinity of the site.

SOIL

Sampling Point: WDP-9**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-2"	10YR 2/1	100					Sa	
2-18"	10YR 5/1	60	10YR 3/1	40	MS	M	Sa	

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

- ☐ Histosol (A1) ☒ Polyvalue Below Surface (S8) (**LRR S, T, U**)
☐ Histic Epipedon (A2) ☐ Thin Dark Surface (S9) (**LRR S, T, U**)
☐ Black Histic (A3) ☐ Loamy Mucky Mineral (F1) (**LRR O**)
☐ Hydrogen Sulfide (A4) ☐ Loamy Gleyed Matrix (F2)
☐ Stratified Layers (A5) ☐ Depleted Matrix (F3)
☐ Organic Bodies (A6) (**LRR P, T, U**) ☐ Redox Dark Surface (F6)
☐ 5 cm Mucky Mineral (A7) (**LRR P, T, U**) ☐ Depleted Dark Surface (F7)
☐ Muck Presence (A8) (**LRR U**) ☐ Redox Depressions (F8)
☐ 1 cm Muck (A9) (**LRR P, T**) ☐ Marl (F10) (**LRR U**)
☐ Depleted Below Dark Surface (A11) ☐ Depleted Ochric (F11) (**MLRA 151**)
☐ Thick Dark Surface (A12) ☐ Iron-Manganese Masses (F12) (**LRR O, P, T**)
☐ Coast Prairie Redox (A16) (**MLRA 150A**) ☐ Umbric Surface (F13) (**LRR P, T, U**)
☐ Sandy Mucky Mineral (S1) (**LRR O, S**) ☐ Delta Ochric (F17) (**MLRA 151**)
☐ Sandy Gleyed Matrix (S4) ☐ Reduced Vertic (F18) (**MLRA 150A, 150B**)
☐ Sandy Redox (S5) ☐ Piedmont Floodplain Soils (F19) (**MLRA 149A**)
☐ Stripped Matrix (S6) ☐ Anomalous Bright Loamy Soils (F20) (**MLRA 149A, 153C, 153D**)
☐ Dark Surface (S7) (**LRR P, S, T, U**)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (**LRR O**)
☐ 2 cm Muck (A10) (**LRR S**)
☐ Reduced Vertic (F18) (**outside MLRA 150A,B**)
☐ Piedmont Floodplain Soils (F19) (**LRR P, S, T**)
☐ Anomalous Bright Loamy Soils (F20)
(MLRA 153B)
☐ Red Parent Material (TF2)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mu=Muck; Pe=Peat; Sa=Sand; Si=Silt

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Loncala Tract City/County: Charlton County Sampling Date: 04/27/2018
 Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: WDP-10
 Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-1%
 Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.58064112260 Long: -82.12440825140 Datum: NAD83
 Soil Map Unit Name: Lynn Haven, Allanton and Kingsferry soils, ponded, 0-1% slopes NWI classification: PFO6/3C

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ☒ (If no, explain in Remarks.)
 Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No _____
 Are Vegetation No, Soil No, or Hydrology No 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 <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____	
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	
Remarks: - Site observations and local hydrological data support abnormally dry conditions present during site visit.	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input checked="" type="checkbox"/> Saturation (A3) <input checked="" type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)		<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T,U)
Field Observations: Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0"</u> Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0"</u> (includes capillary fringe)		Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: FAC-Neutral Test Results: Positive FACW and OBL: 7 to FACU and UPL: 0		

VEGETATION – Use scientific names of plants.

 Sampling Point: WDP-10

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Gordonia lasianthus</u>	<u>35.0</u>	<u>yes</u>	<u>FACW</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>9</u> (A) Total Number of Dominant Species Across All Strata: <u>9</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
2. <u>Taxodium ascendens</u>	<u>25.0</u>	<u>yes</u>	<u>OBL</u>	
3. <u>Pinus serotina</u>	<u>20.0</u>	<u>yes</u>	<u>FACW</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: <u>40.00</u> 20% of total cover: <u>16.00</u>	<u>80.0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (<u>30 ft radius</u>)				
1. <u>Gordonia lasianthus</u>	<u>20.0</u>	<u>yes</u>	<u>FACW</u>	
2. <u>Magnolia virginiana</u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>15.00</u> 20% of total cover: <u>6.00</u>	<u>30.0</u>	= Total Cover		
Shrub Stratum (<u>30 ft radius</u>)				Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Ilex coriacea</u>	<u>40.0</u>	<u>yes</u>	<u>FACW</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
50% of total cover: <u>20.00</u> 20% of total cover: <u>8.00</u>	<u>40.0</u>	= Total Cover		
Herb Stratum (<u>30 ft radius</u>)				Definitions of 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>
1. <u>Toxicodendron radicans</u>	<u>10.0</u>	<u>yes</u>	<u>FAC</u>	
2. <u>Smilax laurifolia</u>	<u>5.0</u>	<u>yes</u>	<u>FACW</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. <u>3</u>	_____	_____	_____	
50% of total cover: <u>7.50</u> 20% of total cover: <u>19.00</u>	<u>15.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				
1. <u>Vitis rotundifolia</u>	<u>10.0</u>	<u>yes</u>	<u>FAC</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>5.00</u> 20% of total cover: <u>2.00</u>	<u>10.0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.

 Typical bog habitat observed within planted pine area. Multiple similar areas observed in the nearby vicinity of the data point.

SOIL

Sampling Point: WDP-10

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-18"	10YR 2/1	100					Mu	Mucky Mineral

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☒ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☒ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mu=Muck; Pe= Peat; Sa= Sand; Si=Silt

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Loncala Tract City/County: Charlton County Sampling Date: 04/27/2018
 Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: WDP-11
 Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2%
 Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.57540847230 Long: -82.13472294090 Datum: NAD83
 Soil Map Unit Name: Lynn Haven fine sand, 0-2% slopes NWI classification: PFO6C

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ☒ (If no, explain in Remarks.)
 Are Vegetation No, Soil No, or Hydrology No significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No _____
 Are Vegetation No, Soil No, or Hydrology No 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 <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____	
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	
Remarks: - Site observations and local hydrological data support abnormally dry conditions present during site visit. -The observed portion of the wetland has recently experienced clear-cutting activities	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)		<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input checked="" type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input checked="" type="checkbox"/> Sphagnum moss (D8) (LRR T,U)
Field Observations: Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>8.5"</u> Saturation Present? Yes <input checked="" type="checkbox"/> No _____ Depth (inches): <u>0"</u> (includes capillary fringe)		Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: FAC-Neutral Test Results: Positive FACW and OBL: 13 to FACU and UPL: 0		

VEGETATION – Use scientific names of plants.

 Sampling Point: WDP-11

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>8</u> (A) Total Number of Dominant Species Across All Strata: <u>8</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (<u>30 ft radius</u>)				
1. <u>Acer rubrum</u>	<u>5.0</u>	<u>yes</u>	<u>FAC</u>	
2. <u>Gordonia lasianthus</u>	<u>5.0</u>	<u>yes</u>	<u>FACW</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>10.0</u>	= Total Cover		Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Shrub Stratum (<u>30 ft radius</u>)				
1. <u>Lyonia lucida</u>	<u>5.0</u>	<u>yes</u>	<u>FACW</u>	
2. <u>Ilex glabra</u>	<u>5.0</u>	<u>yes</u>	<u>FACW</u>	
3. <u>Ilex coriacea</u>	<u>5.0</u>	<u>yes</u>	<u>FACW</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>7.50</u> 20% of total cover: <u>3.00</u>	<u>15.0</u>	= Total Cover		Definitions of 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 <input checked="" type="checkbox"/> No _____
Herb Stratum (<u>30 ft radius</u>)				
1. <u>Woodwardia virginica</u>	<u>20.0</u>	<u>yes</u>	<u>OBL</u>	
2. <u>Andropogon glomeratus</u>	<u>20.0</u>	<u>yes</u>	<u>FACW</u>	
3. <u>Lachnanthes caroliniana</u>	<u>20.0</u>	<u>yes</u>	<u>OBL</u>	
4. <u>Polygala lutea</u>	<u>5.0</u>	<u>no</u>	<u>FACW</u>	
5. <u>Xyris jupicai</u>	<u>5.0</u>	<u>no</u>	<u>OBL</u>	
6. <u>Syngonanthus flavidulus</u>	<u>5.0</u>	<u>no</u>	<u>FACW</u>	
7. <u>Lycopodiella alopecuroides</u>	<u>5.0</u>	<u>no</u>	<u>OBL</u>	
8. <u>Osmunda cinnamomea</u>	<u>5.0</u>	<u>no</u>	<u>FACW</u>	
9. <u>Utricularia subulata</u>	<u>5.0</u>	<u>no</u>	<u>OBL</u>	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
50% of total cover: <u>45.00</u> 20% of total cover: <u>18.00</u>	<u>90.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.

SOIL

Sampling Point: WDP-11

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-18"	10YR 2/1	100					Sa	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☒ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mu=Muck; Pe= Peat; Sa= Sand; Si=Silt

APPENDIX D

North Carolina (NC) Division of Water Quality (DWQ) Stream Identification Forms

**NC Division of Water Quality –Methodology for Identification of Intermittent and
Perennial Streams and Their Origins v. 4.11**

NC DWQ Stream Identification Form Version 4.11

Stream ID: S1

Date: 04/27/2018	Project/Site: Loncala Tract	Latitude: 30.57402072080
Evaluator: TTL, Inc./C. Terrell	County: Charlton	Longitude: -82.13631505050
Total Points: <i>Stream is at least intermittent if ≥ 19 or perennial if ≥ 30*</i>	Stream Determination: Intermittent	7.5 Minute: Moniac, GA & Saint George, GA <i>e.g. Quad Name:</i>

A. Geomorphology (Subtotal = <u>9.00</u>)				
	Absent	Weak	Moderate	Strong
1 ^a Continuity of channel bed and bank	0	1 ✓	2	3
2. Sinuosity of channel along thalweg	0	1	2 ✓	3
3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0	1 ✓	2	3
4. Particle size of stream substrate	0	1 ✓	2	3
5. Active/relict floodplain	0	1	2 ✓	3
6. Depositional bars or benches	0 ✓	1	2	3
7. Recent alluvial deposits	0	1 ✓	2	3
8. Headcuts	0 ✓	1	2	3
9. Grade control	0	0.5 ✓	1	1.5
10. Natural valley	0	0.5 ✓	1	1.5
11. Second or greater order channel	No = 0 ✓		Yes = 3	

^a artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = <u>9.00</u>)				
12. Presence of Baseflow	0	1	2 ✓	3
13. Iron oxidizing bacteria	0	1	2 ✓	3
14. Leaf litter	1.5	1 ✓	0.5	0
15. Sediment on plants or debris	0	0.5 ✓	1	1.5
16. Organic debris lines or piles	0	0.5 ✓	1	1.5
17. Soil-based evidence of high water table?	No = 0		Yes = 3 ✓	

C. Biology (Subtotal = <u>9.00</u>)				
18. Fibrous roots in streambed	3	2 ✓	1	0
19. Rooted upland plants in streambed	3 ✓	2	1	0
20. Macroinvertebrates (note diversity and abundance)	0	1 ✓	2	3
21. Aquatic Mollusks	0 ✓	1	2	3
22. Fish	0	0.5 ✓	1	1.5
23. Crayfish	0	0.5 ✓	1	1.5
24. Amphibians	0	0.5 ✓	1	1.5
25. Algae	0 ✓	0.5	1	1.5
26. Wetland plants in streambed	FACW = 0.75 ✓ OBL = 1.5 Other = 0			

*perennial streams may also be identified using other methods. See p. 35 of manual.

Notes:

Sketch:

**NC Division of Water Quality –Methodology for Identification of Intermittent and
Perennial Streams and Their Origins v. 4.11**

NC DWQ Stream Identification Form Version 4.11

Stream ID: S2

Date: 04/27/2018	Project/Site: Loncala Tract	Latitude: 30.57499822120
Evaluator: TTL, Inc./C. Terrell	County: Charlton	Longitude: -82.13366262730
Total Points: <i>Stream is at least intermittent if ≥ 19 or perennial if ≥ 30*</i>	Stream Determination: Intermittent	7.5 Minute: Moniac, GA & Saint George, GA <i>e.g. Quad Name:</i>

A. Geomorphology (Subtotal = <u>8.00</u>)				
	Absent	Weak	Moderate	Strong
1 ^a . Continuity of channel bed and bank	0	1 ✓	2	3
2. Sinuosity of channel along thalweg	0	1 ✓	2	3
3. In-channel structure: ex. riffle-pool, step-pool, ripple-pool sequence	0	1 ✓	2	3
4. Particle size of stream substrate	0	1 ✓	2	3
5. Active/relict floodplain	0	1	2 ✓	3
6. Depositional bars or benches	0 ✓	1	2	3
7. Recent alluvial deposits	0	1 ✓	2	3
8. Headcuts	0 ✓	1	2	3
9. Grade control	0	0.5 ✓	1	1.5
10. Natural valley	0	0.5 ✓	1	1.5
11. Second or greater order channel	No = 0 ✓		Yes = 3	

^a artificial ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = <u>8.00</u>)				
12. Presence of Baseflow	0	1 ✓	2	3
13. Iron oxidizing bacteria	0	1	2 ✓	3
14. Leaf litter	1.5	1 ✓	0.5	0
15. Sediment on plants or debris	0	0.5 ✓	1	1.5
16. Organic debris lines or piles	0	0.5 ✓	1	1.5
17. Soil-based evidence of high water table?	No = 0		Yes = 3 ✓	

C. Biology (Subtotal = <u>9.00</u>)				
18. Fibrous roots in streambed	3	2 ✓	1	0
19. Rooted upland plants in streambed	3 ✓	2	1	0
20. Macroinvertebrates (note diversity and abundance)	0	1 ✓	2	3
21. Aquatic Mollusks	0 ✓	1	2	3
22. Fish	0	0.5 ✓	1	1.5
23. Crayfish	0	0.5 ✓	1	1.5
24. Amphibians	0	0.5 ✓	1	1.5
25. Algae	0 ✓	0.5	1	1.5
26. Wetland plants in streambed	FACW = 0.75 ✓ OBL = 1.5 Other = 0			

*perennial streams may also be identified using other methods. See p. 35 of manual.

Notes: Sketch:

APPENDIX E

USACE Savannah District Request for Corps of Engineers Jurisdictional
Determination (JD) and/or Delineation Review Form



US Army Corps
of Engineers
Savannah District

SAS APPENDIX 1: Request for Corps of Engineers Jurisdictional Determination (JD) and/or Delineation Review

I. Reason for request: (check as many as applicable)

- ☐ I intend to construct/develop a project or perform activities on this parcel which would be designed to avoid all aquatic resources.
- ☐ I intend to construct/develop a project or perform activities on this parcel which would be designed to avoid all jurisdictional aquatic resources under Corps authority.
- ☒ I intend to construct/develop a project or perform activities on this parcel which may require authorization from the Corps, and the JD would be used to avoid and minimize impacts to jurisdictional aquatic resources and as an initial step in a future permitting process.
- ☐ I intend to construct/develop a project or perform activities on this parcel which may require authorization from the Corps; this request is accompanied by my permit application and the JD is to be used in the permitting process.
- ☐ I intend to construct/develop a project or perform activities in a navigable water of the U.S. which is included on the district Section 10 list and/or is subject to the ebb and flow of the tide.
- ☐ A Corps JD is required in order to obtain my local/state authorization.
- ☐ I intend to contest jurisdiction over a particular aquatic resource and request the Corps confirm that jurisdiction does/does not exist over the aquatic resource on the parcel.
- ☐ I believe that the site may be comprised entirely of dry land.
- ☐ Other: _____

II. I am requesting that the U.S. Army Corps of Engineers, Savannah District, provide me with the following:

- ☒ **Delineation Review of Aquatic Resources** - Concurrence with an aquatic resource delineation is a written notification from the Corps concurring, not concurring, or commenting on the aquatic resource boundaries, or limits, delineated on a property.
- ☐ **Preliminary Jurisdictional Determination** - (PJD). A PJD is defined in Corps regulations at 33 CFR 331.2, as "written indications that there may be waters of the United States on a parcel". When the Corps provides a PJD, the Corps is making no legally binding determination of any type regarding whether jurisdiction exists over the particular aquatic resource in question.
- ☐ **Approved Jurisdictional Determination** - (AJD) An AJD is defined in Corps regulations at 33 CFR 331.2. A definitive, official determination that there are, or that there are not, jurisdictional aquatic resources on a parcel.
- ☐ I am unclear as to what I would like to request and require additional information to inform my decision.

III. Property/Owner Information. Please complete **ALL** of the following information for the property under review:

SECTION 1

Parcel Number of Property: 0036 001001

Lat. 30.576162 Long. - 82.128950 (in decimal degrees)

Parcel Address:

Parcel City : Saint George Parcel County: Charlton Zip:

Size of Review Area: 1,012 Acre(s) Variable Linear feet

SECTION 2

LANDOWNER NAME

AUTHORIZED AGENT'S NAME

First: Steve

First: Cindy

Last: Ingle

Last: House-Pearson

Company: Twin Pines Minerals, LLC

Company: TTL, Inc.

Email Address: single@greenfuelsenergy.com

Email Address: chpearson@ttlusa.com

Address: 2100 Southbridge Parkway, Ste. 540

Address: 3516 Greensboro Avenue

City: Birmingham

City: Tuscaloosa

State: AL Zip: 35209

State: AL Zip: 35401

Phone: 205-545-8759

Phone: 251-327-6153

PROPERTY ACCESS PERMISSION, AKNOWLEDGEMENT OF 18 U.S.C. SECTION 1001 AND STATEMENT OF AGENT AUTHORIZATION

Initial ONLY One:

SI By signing below, I certify that I am the owner of record of the property referenced in III, Section 1 above, and I hereby authorize representatives of the U.S. Army Corps of Engineers, Savannah District, to enter the property for purposes of conducting on-site inspections, and issuing an aquatic resource delineation concurrence and/or a jurisdictional determination. My signature shall also be an affirmation that I possess the requisite property rights to request a delineation review and/or a jurisdictional determination on the property referenced in III - Section 1. Further, I authorize the agent in III - Section 2, to act on my behalf in the processing of this request and to furnish supplemental information in support of this request.

N/A By signing below, I certify that I am acting as the duly authorized agent of the owner of record of the property referenced in III, Section 1 above, and have been given the authority to: 1) request a delineation review and/or a jurisdictional determination (JD) on the property referenced in III - Section 1, and 2) authorize representatives of the U.S. Army Corps of Engineers, Savannah District, to enter the property for purposes of conducting on-site inspections, and issuing an aquatic resource delineation concurrence and/or a jurisdictional determination. I understand that I may be required to provide documentary evidence of my authority to request a delineation review and/or JD, and/or to grant Corps of Engineers personnel access to the property.

Please Print Name Legibly: Steve Ingle

Signature _____

Date: 8/3/2018

* Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Program of the U.S. Army Corps of Engineers; Final Rule for 33 CFR Parts 320-332.

Principal Purpose: The information that you provide will be used in evaluating your request to determine whether there are any aquatic resources within the project area subject to federal jurisdiction under the regulatory authorities referenced above.

Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public, and may be made available as part of a public notice as required by federal law. Your name and property location where federal jurisdiction is to be determined will be included in the approved jurisdictional determination (AJD), which will be made available to the public on the District's website and on the Headquarters USACE website.

Disclosure: Submission of requested information is voluntary; however, if information is not provided, the request for an AJD cannot be evaluated nor can an AJD be issued.

**US Army Corps of Engineers
Savannah District, Regulatory Division
Global Positioning Systems (GPS) Datasheet
Delineation of Wetlands, Streams and Other Waters
Within the State of Georgia**

USACE File Number _____ Date of Delineation 04/03/2018-05/03/2018

Name of Delineator Present Chris Terrell & Chris Stanford

Make and Model of GPS Device Used (must be capable of sub-meter accuracy)

Trimble Geo7x GPS (model 88161)

Geographic Coordinate System Used US State Plane GA East - NAD 1983 (Conus)

Name of Continually Operated Reference Station Used for Post-processing

Florida Department of Environmental Protection & CORS Gainesville (GNVL)

Date Post-processing Performed 05/07/2018

Percent Dilution of Position (PDOP) (6 or less is required) NA (use Trimble Smart Settings)

Name and Coordinates of Known Property Corner and/or Monument

Southwest Property Corner: 30.5684236, -82.1418926

GPS Reading of Known Property Corner and/or Monument

Frequency of Waypoints Taken During Survey as needed per field observations

Note: GPS data must be provided, if requested. If GPS data and/or a GPS delineation is determined unacceptable by the Savannah District, a survey sealed by a surveyor licensed in Georgia will be required.

Flag ID	Longitude (Decimal Degrees, NAD 83)	Latitude (Decimal Degrees, NAD 83)
s1-10 7' fn	-82.137679609	30.573554640
s1-11 10' fn	-82.137540852	30.573632078
s1-12 10' fs	-82.137406971	30.573706324
s1-13 10' fs	-82.137302937	30.573800483
s1-14 10' fs	-82.137127367	30.573702539
s1-15 8'	-82.136969713	30.573751603
s1-16 8' fs	-82.136800582	30.573762084
s1-17 8'	-82.136675389	30.573742898
s1-18 10' fs	-82.136607696	30.573764294
s1-19 10' fs	-82.136499104	30.573838842
s1-1i 8' from south	-82.138596785	30.572818136
s1-2 8' fs	-82.138334836	30.572848112
s1-20 5' fs	-82.136398647	30.573867243
s1-21 5' fs	-82.136281329	30.573901522
s1-22 6' fs	-82.136158337	30.573955881
s1-23 7' fs	-82.136031509	30.574054322
s1-24 10' fs	-82.135990394	30.574161829
s1-25 10' fs	-82.135869375	30.574201590
s1-26 8' fs	-82.135799500	30.574312179
s1-27 5' fs	-82.135674636	30.574402079
s1-28 6' fn	-82.135598663	30.574366774
s1-29 6' fn	-82.135448094	30.574369941
s1-3 7' fs	-82.138175258	30.572888318
s1-30 7' fn	-82.135296649	30.574432474
s1-31 8' fn	-82.135209163	30.574463139
s1-32 5' fn	-82.135048989	30.574538846
s1-33 6' fn	-82.134899589	30.574591532
s1-34 5' fn	-82.134739623	30.574680931
s1-35 5' fs	-82.134684376	30.574751529
s1-36 8' fs	-82.134691711	30.574880303
s1-37 5' fs	-82.134734255	30.575058311
s1-38 4' fn	-82.134753194	30.575106662
s1-39 5' fn	-82.134334124	30.575020412
s1-4 7' fs	-82.138092002	30.572939857
s1-40 4' fs	-82.134146423	30.575062173
s1-41 5' fs	-82.133983121	30.575040464
s1-42 5' fn	-82.134079803	30.575142861
s1-43 4' fs	-82.133948936	30.575181772
s1-44 4' fs	-82.133781183	30.575257667
s1-45 4' fn	-82.133650420	30.575307711
s1-46 end 6' fs	-82.133497344	30.575281571
s1-5 9' fs	-82.137961198	30.573093815

Flag ID	Longitude (Decimal Degrees, NAD 83)	Latitude (Decimal Degrees, NAD 83)
s1-6 10' fs	-82.137900565	30.573139925
s1-7 10 from north	-82.137941610	30.573194625
s1-8 9' fs	-82.137781316	30.573272067
s1-9 7' fs	-82.137735105	30.573390126
s2-10 5' fs	-82.133401832	30.575047669
S2-11 2' fn	-82.133254908	30.575129930
s2-12 3' fn	-82.133103312	30.575137614
s2-13 4' fn	-82.132930806	30.575175577
s2-14 5' fs	-82.132678850	30.575273358
s2-15 4'fn	-82.132658503	30.575423731
s2-1i 4'fn at s1	-82.134657332	30.575105014
s2-2 5' fw	-82.134608192	30.574994288
s2-3 4' fw	-82.134531614	30.574882854
s2-4 2' fs	-82.134390179	30.574724081
s2-5 4' fs	-82.134229030	30.574683015
s2-6 4'fn	-82.134096516	30.574747241
s2-7 3' fn	-82.133909141	30.574834748
s2-8 6' fn	-82.133684637	30.574955185
s2-9 8' fn	-82.133586661	30.575000811
UDP-1	-82.118859121	30.581266593
UDP-2	-82.116243721	30.581719008
UDP-3	-82.119596260	30.573245336
UDP-4	-82.127359645	30.584551256
UDP-5	-82.139278106	30.582022385
UDP-6	-82.135496753	30.568341072
UDP-7	-82.122431018	30.567461056
UDP-8	-82.123765884	30.571219738
UDP-9	-82.128854833	30.571229451
UDP-10	-82.124552437	30.581376199
UDP-11	-82.135062486	30.576087383
wa-1 at pl	-82.141095716	30.569069289
wa-10	-82.139212792	30.568428568
wa-100	-82.122336982	30.572296136
wa-101	-82.122783104	30.572021739
wa-102	-82.122938540	30.571829663
wa-103	-82.123064593	30.571595370
wa-104	-82.123211222	30.571488237
wa-105	-82.123321639	30.571293721
wa-106	-82.123478713	30.571120677
wa-107	-82.123698575	30.571030785
wa-108	-82.123943789	30.570919616
wa-109	-82.124201225	30.570867821

Flag ID	Longitude (Decimal Degrees, NAD 83)	Latitude (Decimal Degrees, NAD 83)
wa-11	-82.139008853	30.568519777
wa-110	-82.124407613	30.570760845
wa-111	-82.124584743	30.570649342
wa-112	-82.124839152	30.570615085
wa-113	-82.125089631	30.570535360
wa-114	-82.125381981	30.570469641
wa-115	-82.125661324	30.570506335
wa-116	-82.125870336	30.570425265
wa-117	-82.126077232	30.570441425
wa-118	-82.126103026	30.569883897
wa-119	-82.126093257	30.569342994
wa-12	-82.139052181	30.568427783
wa-120	-82.126240027	30.569127534
wa-121	-82.126480553	30.569121117
wa-122	-82.126701998	30.569234967
wa-123	-82.126969128	30.569297802
wa-124	-82.127240463	30.569183424
wa-125	-82.127589211	30.569186417
wa-126	-82.127886740	30.569156425
wa-127	-82.128148441	30.569158278
wa-128	-82.128432893	30.569060579
wa-129	-82.128697544	30.569038856
wa-13	-82.138933428	30.568296523
wa-130	-82.129057824	30.569056309
wa-131	-82.129371670	30.569061638
wa-132	-82.129419398	30.569307363
wa-133	-82.129652970	30.569452043
wa-134	-82.129826253	30.569622903
wa-135	-82.129995591	30.569832577
wa-136	-82.130066009	30.570179157
wa-137	-82.129821023	30.570372892
wa-138	-82.129546635	30.570328981
wa-139	-82.129455502	30.570531037
wa-14	-82.138705963	30.568423471
wa-140	-82.129397415	30.570756427
wa-141	-82.129237326	30.570993584
wa-142	-82.129121001	30.571194674
wa-143	-82.129039037	30.571560398
wa-144	-82.129041411	30.571808896
wa-145	-82.128998392	30.572141006
wa-146	-82.129026385	30.572434792
wa-147	-82.129002772	30.572630679

Flag ID	Longitude (Decimal Degrees, NAD 83)	Latitude (Decimal Degrees, NAD 83)
wa-148	-82.129053107	30.572843584
wa-149	-82.129092982	30.573083809
wa-15	-82.138678544	30.568554724
wa-150	-82.128983983	30.573324687
wa-151	-82.128918455	30.573598986
wa-152	-82.128912409	30.573851593
wa-153	-82.128866758	30.574061726
wa-154	-82.128763980	30.574265373
wa-155	-82.128685681	30.574485857
wa-156	-82.128621615	30.574745041
wa-157	-82.128477694	30.574968645
wa-158	-82.128251059	30.575128355
wa-159	-82.127948796	30.575045825
wa-16	-82.138583659	30.568703717
wa-160	-82.127764574	30.575331386
wa-161	-82.127569786	30.575566445
wa-162	-82.127356445	30.575795776
wa-163	-82.127284014	30.576112934
wa-164	-82.127016459	30.576283181
wa-165	-82.126716786	30.576235281
wa-166	-82.126393031	30.576219151
wa-167	-82.126199719	30.576328407
wa-168	-82.125963692	30.576376449
wa-169	-82.125765342	30.576509662
wa-17	-82.138567466	30.568933611
wa-170	-82.125228114	30.576416817
wa-171	-82.125125444	30.576249517
wa-172	-82.124931680	30.575984885
wa-173	-82.124715615	30.576029761
wa-174	-82.124339425	30.576033924
wa-175	-82.124089138	30.576009919
wa-176	-82.123849645	30.576166430
wa-177	-82.123372844	30.576063570
wa-178	-82.122923514	30.576049876
wa-179	-82.122557837	30.576384231
wa-18	-82.138375107	30.569108099
wa-180	-82.122136783	30.576825057
wa-181	-82.122392260	30.577217950
wa-182	-82.123012883	30.577159044
wa-183	-82.123529078	30.577129504
wa-184	-82.123898047	30.577384045
wa-185	-82.124416330	30.577445743

Flag ID	Longitude (Decimal Degrees, NAD 83)	Latitude (Decimal Degrees, NAD 83)
wa-186	-82.125142228	30.577182478
wa-187	-82.125723274	30.577159566
wa-188	-82.126097672	30.577242463
wa-189	-82.126430357	30.577307465
wa-19	-82.138332751	30.569353649
wa-190	-82.126883186	30.577537203
wa-191	-82.127414601	30.577805718
wa-192	-82.127972206	30.578180040
wa-193	-82.128298050	30.578732959
wa-194	-82.128669363	30.579005417
wa-195	-82.128454266	30.579304455
wa-196	-82.128245919	30.579489767
wa-197	-82.127851867	30.579815991
wa-198	-82.127718527	30.580046121
wa-199	-82.127496051	30.580130839
wa-2	-82.140884136	30.569034095
wa-20	-82.138108971	30.569406895
wa-200	-82.127215971	30.580181121
wa-201	-82.127028962	30.580245249
wa-202	-82.126804502	30.580300334
wa-203	-82.126596302	30.580236021
wa-204	-82.126382366	30.580063444
wa-205	-82.126076101	30.580057228
wa-206	-82.125679131	30.579986245
wa-207	-82.125512992	30.580102168
wa-208	-82.125251342	30.580113722
wa-209	-82.125077289	30.580161276
wa-21	-82.137887866	30.569416149
wa-210	-82.125025187	30.580249447
wa-211	-82.124864861	30.580240663
wa-212	-82.124706952	30.580257829
wa-213	-82.124575837	30.580190074
wa-214	-82.124570434	30.580064412
wa-215	-82.124458507	30.580014445
wa-216	-82.124348464	30.579944427
wa-217	-82.124149920	30.579841224
wa-218	-82.123919695	30.579821261
wa-219	-82.123785136	30.579897766
wa-22	-82.137683838	30.569507451
wa-220	-82.123626545	30.579898166
wa-221	-82.123503226	30.580019675
wa-222	-82.123311684	30.580000690

Flag ID	Longitude (Decimal Degrees, NAD 83)	Latitude (Decimal Degrees, NAD 83)
wa-223	-82.123106582	30.580060695
wa-224	-82.122915778	30.580089673
wa-225	-82.122775411	30.580187071
wa-226	-82.122778250	30.580346607
wa-227	-82.122797251	30.580457567
wa-228	-82.122595633	30.580634495
wa-229	-82.122407053	30.580710270
wa-23	-82.137622225	30.569400510
wa-230	-82.122425294	30.580867273
wa-231	-82.122459959	30.581070883
wa-232	-82.122387188	30.581197742
wa-233	-82.122138839	30.581244299
wa-234	-82.122161095	30.581341081
wa-235	-82.122399932	30.581224353
wa-236	-82.122604072	30.581287407
wa-237	-82.122863566	30.581476034
wa-238	-82.123303083	30.581344612
wa-239	-82.123661136	30.581099040
wa-24	-82.137732759	30.569187478
wa-240	-82.124140030	30.580982204
wa-241	-82.124469916	30.581016294
wa-242	-82.124960524	30.580894422
wa-243	-82.125092041	30.581042109
wa-244	-82.125303782	30.580974284
wa-245	-82.125646899	30.581185483
wa-246	-82.126017916	30.581114541
wa-247	-82.126310234	30.581139104
wa-248	-82.126640161	30.581128029
wa-249	-82.127249522	30.581131491
wa-25	-82.137770103	30.568979051
wa-250	-82.127775154	30.581124310
wa-251	-82.128205297	30.581241043
wa-252	-82.128753963	30.581450626
wa-253	-82.129177372	30.581273263
wa-254	-82.129428129	30.581512792
wa-255	-82.129705454	30.581586730
wa-256	-82.130126498	30.581373514
wa-257	-82.130450350	30.581458269
wa-258	-82.130895440	30.581371585
wa-259	-82.131023031	30.581289243
wa-26	-82.137893706	30.568753103
wa-260	-82.131307649	30.581264885

Flag ID	Longitude (Decimal Degrees, NAD 83)	Latitude (Decimal Degrees, NAD 83)
wa-261	-82.131825334	30.581195422
wa-262	-82.132401660	30.580956859
wa-263	-82.132358442	30.580617849
wa-264	-82.132050927	30.580474570
wa-265	-82.131915074	30.580345250
wa-266	-82.132186322	30.580279716
wa-267	-82.132434431	30.580224952
wa-268	-82.132744257	30.580162524
wa-269	-82.132876944	30.579847635
wa-27	-82.137742616	30.568611364
wa-270	-82.132673022	30.579640161
wa-271	-82.133081666	30.579650530
wa-272	-82.133510045	30.579670790
wa-273	-82.133889368	30.579697731
wa-274	-82.134262212	30.579951016
wa-275	-82.134287174	30.580070870
wa-276	-82.134497355	30.580086529
wa-277	-82.134527606	30.579867926
wa-278	-82.134365201	30.579659029
wa-279	-82.134481166	30.579518648
wa-28	-82.137682853	30.568440634
wa-280	-82.134677387	30.579375248
wa-281	-82.134647841	30.579189981
wa-282	-82.134354223	30.578910982
wa-283	-82.134527850	30.578741346
wa-284	-82.134856496	30.578671641
wa-285	-82.135174687	30.578727593
wa-286	-82.135456419	30.578666967
wa-287	-82.135824624	30.578471405
wa-288	-82.135988326	30.578302091
wa-289	-82.136300983	30.577974241
wa-29	-82.137445618	30.568351356
wa-290	-82.136428160	30.577663977
wa-291	-82.136535565	30.577302117
wa-292	-82.136800053	30.577346110
wa-293	-82.137215005	30.577535747
wa-294	-82.137680739	30.577572829
wa-295	-82.137999203	30.577515867
wa-296	-82.138200467	30.577153853
wa-297	-82.138326732	30.576872965
wa-298	-82.138391737	30.576606912
wa-299	-82.138649491	30.576289627

Flag ID	Longitude (Decimal Degrees, NAD 83)	Latitude (Decimal Degrees, NAD 83)
wa-3	-82.140604106	30.568909036
wa-30	-82.137197719	30.568407265
wa-300	-82.138729514	30.576047599
wa-301	-82.138695937	30.575740072
wa-302	-82.138604933	30.575508635
wa-303	-82.138689148	30.575251591
wa-304	-82.138236104	30.575245003
wa-305	-82.137971187	30.575312001
wa-306	-82.137752385	30.575403964
wa-307	-82.137583303	30.575626198
wa-308	-82.137344519	30.575779425
wa-309	-82.137209990	30.575771065
wa-31	-82.137080802	30.568572689
wa-310	-82.137029887	30.575865106
wa-311	-82.136730756	30.576156817
wa-312	-82.136476770	30.576311149
wa-313	-82.136379068	30.576549039
wa-314	-82.136394411	30.576728231
wa-315	-82.136117289	30.576743635
wa-316	-82.135943822	30.576887905
wa-317	-82.135758635	30.577020593
wa-318	-82.135518039	30.577213583
wa-319	-82.135213814	30.577412471
wa-32	-82.136800405	30.568637380
wa-320	-82.135121186	30.577728220
wa-321	-82.134861602	30.577877695
wa-322	-82.134607183	30.577874813
wa-323	-82.134395960	30.577945812
wa-324	-82.134103685	30.578170597
wa-325	-82.133871263	30.578425781
wa-326	-82.133639748	30.578657902
wa-327	-82.133301048	30.578932541
wa-328	-82.133159933	30.578873854
wa-329	-82.132836522	30.579144729
wa-33	-82.136754613	30.568812698
wa-330	-82.132550550	30.579458533
wa-331	-82.132376307	30.579653324
wa-332	-82.131829220	30.579954783
wa-333	-82.131607841	30.580158721
wa-334	-82.131260230	30.580168450
wa-335	-82.131036651	30.580306652
wa-336	-82.130825109	30.580262164

Flag ID	Longitude (Decimal Degrees, NAD 83)	Latitude (Decimal Degrees, NAD 83)
wa-337	-82.130516412	30.580285752
wa-338	-82.130404088	30.580091515
wa-339	-82.130458182	30.579959385
wa-34	-82.136515051	30.568745310
wa-340	-82.130358410	30.579848201
wa-341	-82.130066975	30.579975293
wa-342	-82.129856734	30.579817803
wa-343	-82.129609965	30.579778857
wa-344	-82.129372545	30.579789595
wa-345	-82.129219712	30.579585809
wa-346	-82.129058470	30.579698256
wa-347	-82.128949083	30.579733005
wa-348	-82.128917912	30.579572683
wa-349	-82.128992754	30.579365177
wa-35	-82.136303508	30.568787157
wa-350	-82.128725160	30.579133222
wa-351	-82.128789070	30.578947605
wa-352	-82.129103293	30.578610072
wa-353	-82.129274017	30.578313973
wa-354	-82.129772018	30.578181764
wa-355	-82.130432899	30.577847245
wa-356	-82.131043629	30.577421675
wa-357	-82.131116576	30.577118307
wa-358	-82.131376992	30.576887529
wa-359	-82.131686160	30.576666974
wa-36	-82.136187723	30.568970357
wa-360	-82.132202104	30.576450847
wa-361	-82.132771413	30.576254091
wa-362	-82.133118164	30.575956051
wa-363	-82.133640522	30.575885730
wa-364	-82.134319200	30.575819034
wa-365	-82.134776493	30.575667279
wa-366	-82.135414193	30.575780490
wa-367	-82.135777409	30.575457822
wa-368	-82.136307228	30.575253703
wa-369	-82.136752366	30.575285525
wa-37	-82.135999451	30.569085495
wa-370	-82.137163626	30.575469963
wa-371	-82.137671838	30.575221732
wa-372	-82.137841986	30.574950912
wa-373	-82.138082095	30.574719712
wa-374	-82.138194384	30.574372703

Flag ID	Longitude (Decimal Degrees, NAD 83)	Latitude (Decimal Degrees, NAD 83)
wa-375	-82.137988433	30.574403134
wa-376	-82.137749839	30.574477919
wa-377	-82.137613282	30.574435791
wa-378	-82.137664143	30.574152057
wa-379	-82.137847608	30.573917320
wa-38	-82.135716228	30.569136943
wa-380	-82.137953870	30.573657299
wa-381	-82.138213152	30.573423129
wa-382	-82.138511961	30.573496932
wa-383	-82.138487968	30.572791353
wa-384	-82.138483084	30.572131657
wa-385	-82.138308945	30.572096538
wa-386	-82.138339584	30.572439363
wa-387	-82.137987077	30.572471813
wa-388	-82.137788352	30.572577142
wa-389	-82.137507954	30.572753416
wa-39	-82.135622420	30.569001079
wa-390	-82.137279583	30.572928904
wa-391	-82.137025677	30.572773696
wa-392	-82.137190377	30.572607083
wa-393	-82.137338218	30.572539503
wa-394	-82.137244571	30.572304405
wa-395	-82.137255628	30.572095139
wa-396	-82.137051169	30.571906658
wa-397	-82.136779461	30.572117893
wa-398	-82.136500354	30.572454314
wa-399	-82.136734989	30.572623917
wa-4	-82.140413462	30.568807286
wa-40	-82.135561981	30.568838136
wa-400	-82.136748330	30.572925192
wa-401	-82.136633021	30.573199967
wa-402	-82.136312550	30.572956884
wa-402	-82.136310996	30.572956799
wa-403	-82.135961113	30.572902884
wa-404	-82.135671997	30.572753252
wa-405	-82.135223738	30.572730586
wa-406	-82.135193258	30.572471573
wa-407	-82.134820470	30.572426320
wa-408	-82.134585470	30.572298380
wa-409	-82.134934591	30.572152520
wa-41 to wa-47 delt 42-46	-82.135438999	30.568617219
wa-410	-82.135191761	30.572042884

Flag ID	Longitude (Decimal Degrees, NAD 83)	Latitude (Decimal Degrees, NAD 83)
wa-411	-82.135343717	30.571918560
wa-412	-82.135323437	30.571679870
wa-413	-82.135270633	30.571422760
wa-414	-82.135167420	30.571221144
wa-415	-82.134769626	30.571428127
wa-416	-82.134397913	30.571386828
wa-417	-82.134242346	30.571583188
wa-418	-82.134244879	30.571765889
wa-419	-82.134038795	30.571760200
wa-420	-82.133894208	30.571592547
wa-421	-82.133656280	30.571610903
wa-422	-82.133421485	30.571538094
wa-423	-82.133623956	30.571441316
wa-424	-82.133815363	30.571250302
wa-425	-82.134044729	30.571113534
wa-426	-82.134126544	30.570771910
wa-427	-82.134497816	30.570706249
wa-428	-82.134902092	30.570738684
wa-429	-82.135006788	30.570980570
wa-430	-82.135458853	30.571055738
wa-431	-82.135740708	30.570970500
wa-432	-82.135996251	30.570723681
wa-433	-82.136320488	30.571001214
wa-434	-82.136758067	30.571040683
wa-435	-82.137010479	30.570933283
wa-436	-82.136882210	30.570644341
wa-437	-82.137155078	30.570345191
wa-438	-82.137353664	30.570153977
wa-439	-82.137689260	30.570043482
wa-440	-82.137666909	30.570461573
wa-441	-82.137489160	30.570762199
wa-442	-82.137724179	30.570995550
wa-443	-82.137915246	30.571254208
wa-444	-82.138144708	30.571486975
wa-445	-82.138058497	30.571625722
wa-446	-82.138103437	30.571692319
wa-447	-82.138361189	30.571726897
wa-448	-82.138519880	30.571844764
wa-47	-82.135018412	30.568402956
wa-48	-82.134883118	30.568233203
wa-49	-82.134753333	30.568000319
wa-5	-82.140200892	30.568673601

Flag ID	Longitude (Decimal Degrees, NAD 83)	Latitude (Decimal Degrees, NAD 83)
wa-50	-82.134860983	30.567775725
wa-51	-82.131998178	30.567511252
wa-52	-82.131833259	30.567664024
wa-53	-82.131883326	30.567913313
wa-54	-82.131705064	30.567987440
wa-55	-82.131682447	30.568186140
wa-56	-82.131366649	30.568084663
wa-57	-82.131137344	30.567744446
wa-58	-82.130959895	30.567606875
wa-59	-82.130808422	30.567423652
wa-6	-82.139943690	30.568605175
wa-60	-82.130289625	30.567584026
wa-61	-82.129776516	30.567529850
wa-62	-82.129072560	30.567525385
wa-63	-82.128551163	30.567759080
wa-64	-82.128083160	30.567810674
wa-65	-82.127471379	30.567853561
wa-66	-82.127022945	30.567963009
wa-67	-82.126683247	30.567968734
wa-68	-82.126470732	30.568138959
wa-69	-82.126436877	30.568371921
wa-7	-82.139948417	30.568431069
wa-70	-82.126309768	30.568499363
wa-71	-82.126148309	30.568314327
wa-72	-82.126157960	30.567944122
wa-73	-82.126175980	30.567419096
wa-74	-82.126155646	30.567132232
wa-75	-82.125003858	30.567058647
wa-76	-82.124856517	30.567385064
wa-77	-82.124790866	30.567684524
wa-78	-82.124484037	30.567974768
wa-79	-82.124157322	30.568047915
wa-8 at pl	-82.139980021	30.568286254
wa-80	-82.123853228	30.568068275
wa-81	-82.123337710	30.567930793
wa-82	-82.122802668	30.567623836
wa-83	-82.122251597	30.567896421
wa-84	-82.121884092	30.568198495
wa-85	-82.121876507	30.568518517
wa-86	-82.121866126	30.568854335
wa-87	-82.121852404	30.569304613
wa-88	-82.121496009	30.569644997

Flag ID	Longitude (Decimal Degrees, NAD 83)	Latitude (Decimal Degrees, NAD 83)
wa-89	-82.121367598	30.570041011
wa-9 at pl	-82.139145971	30.568213888
wa-90	-82.120950795	30.570451804
wa-91	-82.120567949	30.570933207
wa-92	-82.120291073	30.571233223
wa-93	-82.119993911	30.571333268
wa-94	-82.120005271	30.571697848
wa-95	-82.120270115	30.572008119
wa-96	-82.120588268	30.572235733
wa-97	-82.120980663	30.572388259
wa-98	-82.121509862	30.572365537
wa-99	-82.121937538	30.572306436
wb-1 at pl	-82.117905098	30.573483307
wb-10	-82.120064060	30.574648449
wb-11	-82.119499136	30.574802189
wb-12	-82.119148072	30.575049384
wb-13	-82.118970383	30.575323029
wb-14	-82.118449613	30.575506173
wb-15	-82.118000795	30.575769042
wb-16 at pl	-82.117144409	30.576128474
wb-2	-82.118267936	30.573426138
wb-3	-82.118581346	30.573373462
wb-4	-82.118878493	30.573486583
wb-5	-82.119244574	30.573438016
wb-6	-82.119664325	30.573409033
wb-7	-82.119958606	30.573389483
wb-8	-82.120042114	30.573686229
wb-9	-82.120109860	30.574140725
wc-1 at pl	-82.115945378	30.582197311
wc-10	-82.116657059	30.580990255
wc-11	-82.116709918	30.580835977
wc-12	-82.116476872	30.580775909
wc-13	-82.116359094	30.580722408
wc-14	-82.116333241	30.580531374
wc-15	-82.116377720	30.580321103
wc-16	-82.116558099	30.580084168
wc-17	-82.116391898	30.579871337
wc-18 at pl	-82.116020059	30.579872719
wc-2	-82.116064010	30.581973096
wc-3	-82.115989718	30.581822186
wc-4	-82.116094919	30.581703608
wc-5	-82.116167077	30.581584121

Flag ID	Longitude (Decimal Degrees, NAD 83)	Latitude (Decimal Degrees, NAD 83)
wc-6	-82.116353578	30.581449401
wc-7	-82.116659725	30.581392262
wc-8	-82.116726643	30.581261981
wc-9	-82.116759085	30.581051593
wd-1 to pl	-82.127607328	30.584699204
wd-10	-82.129583820	30.583392945
wd-11	-82.129909421	30.583158187
wd-12	-82.130244574	30.583169269
wd-13	-82.130155900	30.583383847
wd-14	-82.130570404	30.583732740
wd-15	-82.130355596	30.583952515
wd-16	-82.129992745	30.584145358
wd-17	-82.130153079	30.584506129
wd-18	-82.130498686	30.584883611
wd-19	-82.131511977	30.585171163
wd-2	-82.127729794	30.584580035
wd-20	-82.131897533	30.585208200
wd-21	-82.132334298	30.585286422
wd-22	-82.132670325	30.584972964
wd-23	-82.133003242	30.584656278
wd-24	-82.133179882	30.584312613
wd-25	-82.133334191	30.583883442
wd-26	-82.133580929	30.583617585
wd-27	-82.133885256	30.583358025
wd-28	-82.134159749	30.583167296
wd-29	-82.134423491	30.583164662
wd-3	-82.127825256	30.584248540
wd-30	-82.134660820	30.583558209
wd-31	-82.135171773	30.583759337
wd-32	-82.135414141	30.583893363
wd-33	-82.135446488	30.584299782
wd-34	-82.135146446	30.584572540
wd-35	-82.134466331	30.584459460
wd-36	-82.134517950	30.584788424
wd-37	-82.134287974	30.585267698
wd-38	-82.134455134	30.585486156
wd-39	-82.135294211	30.585570233
wd-4	-82.128110990	30.583986699
wd-40	-82.135395415	30.585310445
wd-41	-82.135822040	30.585417813
wd-42	-82.136289919	30.585757657
wd-43	-82.136965227	30.585822540

Flag ID	Longitude (Decimal Degrees, NAD 83)	Latitude (Decimal Degrees, NAD 83)
wd-44	-82.137235245	30.585421096
wd-45	-82.137453458	30.585112540
wd-46	-82.137796967	30.584756962
wd-47	-82.137817428	30.584359226
wd-48	-82.137921598	30.583961107
wd-49	-82.138111836	30.583515210
wd-5	-82.128335555	30.583718680
wd-50	-82.138582702	30.583071372
wd-51	-82.138942560	30.582620588
wd-53	-82.139556854	30.582282091
wd-54 at pl	-82.139781409	30.582052900
wd-6	-82.128452912	30.583456398
wd-7	-82.128691834	30.583626948
wd-8	-82.129050873	30.583647211
wd-9	-82.129388416	30.583575670
WDP-1	-82.118712929	30.580985025
WDP-2	-82.115817999	30.581648379
WDP-3	-82.119239969	30.573852451
WDP-4	-82.127957749	30.584678750
WDP-5	-82.139348722	30.582615311
WDP-6	-82.135250251	30.568615807
WDP-7	-82.122665025	30.568116881
WDP-8	-82.123464775	30.570783736
WDP-9	-82.129603895	30.571115896
WDP-10	-82.124408251	30.580641123
WDP-11	-82.134722941	30.575408472
we-1	-82.118862606	30.580998937
we-10	-82.117421066	30.580136000
we-11	-82.117598844	30.579968249
we-12	-82.117975654	30.579946371
we-13	-82.118217503	30.580050049
we-14	-82.118316012	30.580330928
we-15	-82.118532375	30.580502245
we-16 to we-1	-82.118671878	30.580737630
we-2	-82.118629430	30.581149220
we-3	-82.118169950	30.581061931
we-4	-82.117908562	30.581159842
we-5	-82.117269492	30.581131758
we-6	-82.117151346	30.580960272
we-7	-82.117108933	30.580780092
we-8	-82.117227381	30.580533612
we-9	-82.117421970	30.580422401

Waters_Name	Cowardin_Code	HGM_Code	Area (acres)	Linear (ft)	Waters Types	Latitude (dd nad83)	Longitude (dd nad83)	Local_Waterway
S1	R4SB5	DEPRESS	0.33	2210	RPW	30.57402072080	-82.13631505050	UT of River Styx
S2	R4SB5	DEPRESS	0.07	810	RPW	30.57499822120	-82.13366262730	UT of River Styx
WA	PFO1/4B	DEPRESS	333.88		RPWWD	30.57327199400	-82.13080374390	UT of River Styx
WB	PFO1/4B	DEPRESS	11.96		NRPWW	30.57449544570	-82.11866701960	UT of Boone Creek
WC	PFO1/4B	DEPRESS	3.8		NRPWW	30.58110727390	-82.11609483860	UT of Boone Creek
WD	PFO1/4B	DEPRESS	62.67		NRPWW	30.58492704710	-82.13548705850	UT of River Styx
WE	PFO1/4B	DEPRESS	3.72		NRPWW	30.58064047680	-82.11791326950	UT of Boone Creek

December 7, 2018

Mr. Jared M. Lopes, Project Manager
Savannah District, OP-FC
U.S. Army Corps of Engineers
100 West Oglethorpe Avenue
Savannah, Georgia 31401-3640



2743-B Gunter Park Drive West
Montgomery, AL 36109
334.244.0766
www.TTLUSA.com

Subject: Waters of the U.S. Delineation Field Verification – Revisions Submittal
Approximately 1,012-Acre Loncala Tract
Twin Pines, LLC
Saint George, Charlton County, Georgia
USACE Project No.: SAS-2018-00554
TTL Project No.: 000180200804.00

Dear Mr. Lopes,

In response to the field verification conducted by the United States Army Corps of Engineers (USACE) and TTL on November 27-28, 2018, TTL provides the following summary of revisions:

- a. Attachment A provides the revised Waters of the U.S. Delineation Map per the USACE field verification.
- b. Wetland A (WA) was revised from 333.88 acres to 306.80 acres.
- c. Wetlands C and E (WC and WE) were combined with an additional aquatic feature, Wetland F (WF), which now total 19.51 acres of wetland that is collectively called WC. WC was originally 3.80 acres and WE was originally 3.72 acres.
- d. Wetland D (WD) was revised from 62.67 acres to 66.84 acres.
- e. Overall, the total wetland acreage was revised from 416.03 acres to 405.11 acres.

Please let TTL representatives know if additional information or revisions are needed for the project.

Sincerely,

TTL, Inc.

A handwritten signature in black ink, appearing to read "Christopher Terrell".

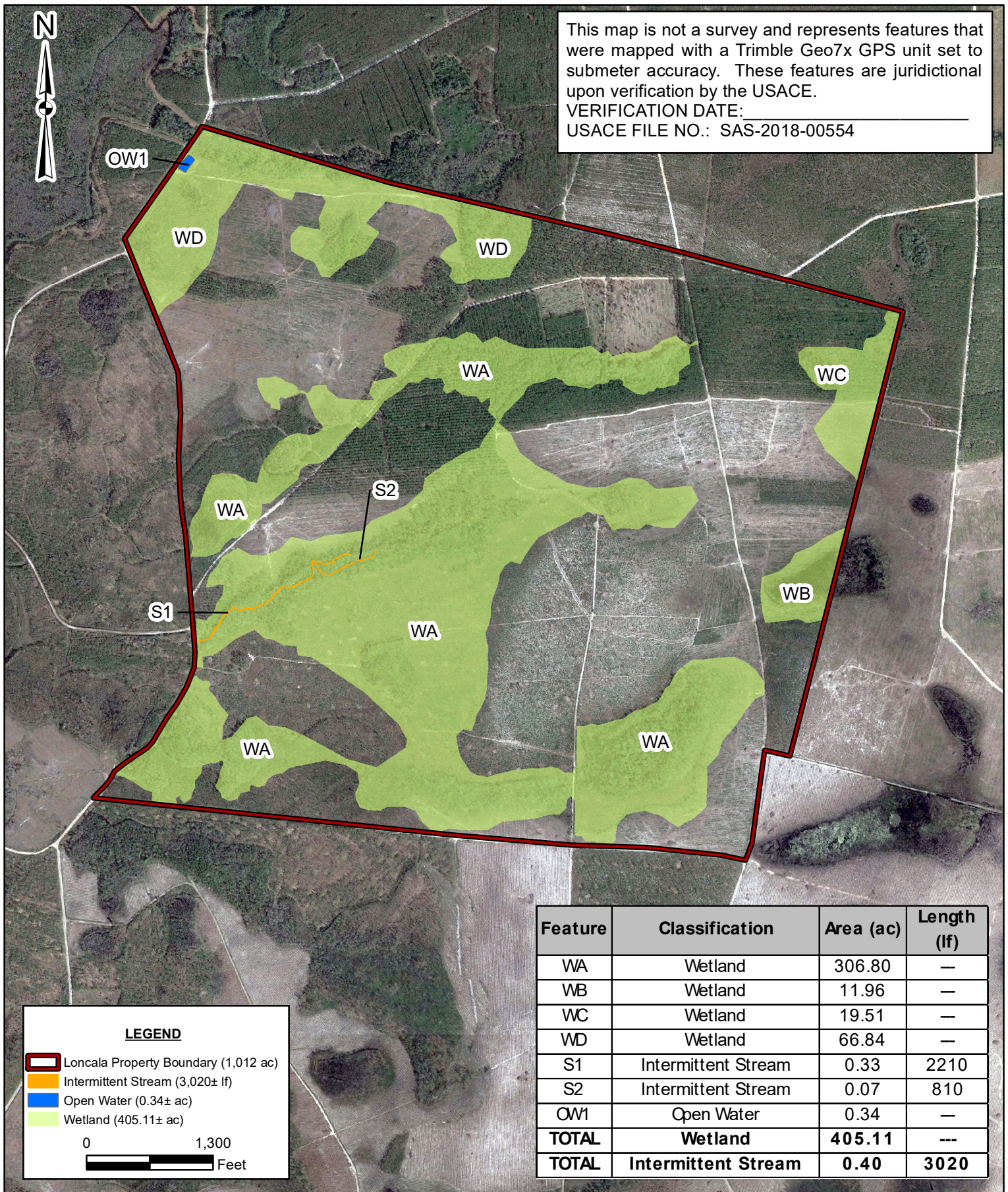
Christopher Terrell
Project Professional

A handwritten signature in black ink, appearing to read "Cindy House-Pearson".

Cindy House-Pearson
Senior Natural Resources
Client Manager

ATTACHMENT A

REVISED WATERS OF THE US DELINEATION MAP



**FIGURE 6: WATERS OF THE US
 DELINEATION MAP**
 TWIN PINES MINERALS - LONCALA TRACT
 CHARLTON COUNTY, GEORGIA

BASEMAP: Google Earth & Eurpoa Technologies (3/6/2018)

DRAWN BY: CMS
CHECKED BY: CGT
DRAWING DATE: 07/30/2018
REVISION DATE: 12/06/2018
TTL JOB NO. 000180200804.00
APPROX SCALE: 1" = 1,300'

WATERS OF THE UNITED STATES DELINEATION REPORT

APPROXIMATELY 1,143-ACRE TIAA TRACT
SAINT GEORGE, CHARLTON COUNTY, GEORGIA

Submitted to:

Twin Pines Minerals, LLC
Attn: Mr. Steve Ingle, P.E.
2100 Southbridge Parkway
Birmingham, Alabama 35209

Prepared by:

TTL, Inc.
2743-B Gunter Park Drive West
Montgomery, Alabama 36109

Project No. 000180200804.00

July 3, 2019



SIGNATURE OF ENVIRONMENTAL PROFESSIONALS

TTL, Inc. has performed a waters of the United States (U.S.) delineation in general conformance with the scope and limitations of the *U. S. Army Corps of Engineers Wetland Delineation Manual, 1987 Edition*, and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region Version 2.0* (2010). Identification of ephemeral, intermittent and perennial streams has been performed in general conformance with methodology outlined in *Methodology for Identification of Intermittent and Perennial Streams and their Origins, Version 4.11* (2010).

Christopher Terrell
Environmental Professional

July 3, 2019

Date

Cindy House-Pearson
Senior Natural Resources
Client Manager

July 3, 2019

Date

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APPENDICES

Appendix A	Normal Weather Conditions Table Agricultural Applied Climate Information System (AgACIS) Data U.S. Drought Monitor – Georgia Palmer Drought Index
Appendix B	Selected Site Photographs
Appendix C	U.S. Army Corps of Engineers Wetland Determination Data Forms
Appendix D	USACE Savannah District Request for Corps of Engineers Jurisdictional Determination (JD) and/or Delineation Review Form

1.0 INTRODUCTION

TTL, Inc. (TTL) was contracted by Twin Pines Minerals, LLC (Twin Pines) to perform a delineation of the waters of the United States (WOTUS) associated with a proposed development of a heavy mineral mining operation in Saint George, Charlton County, Georgia (Figure 1). TTL conducted the field activities for this project from March 23- April 10, 2019.

Activities within jurisdictional waters of the U.S. are regulated by the U.S. Army Corps of Engineers (USACE). Authority to permit discharges (fill) within jurisdictional wetlands or non-navigable waters of the U.S. is granted under Section 404 of the Clean Water Act (CWA) of 1972. Authority to permit work and placement of structures in navigable waters of the U.S. is granted under Sections 9 and 10 of the Rivers and Harbors Act of 1899. For regulatory purposes under the CWA, wetlands are defined by the USACE as:

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

2.0 SITE DESCRIPTION

The site is an approximately 1,143-acre area depicted on the U.S. Geological Survey (USGS) 7.5-minute Topographic Maps of Moniac, Georgia and Saint George, Georgia (Figure 1). The center of the site is located near latitude 30.526268 and longitude -82.14322. According to the USGS Topographic Map, the elevation at the site ranges from approximately 120 to 165 feet above mean sea level.

The delineation area is located just north of GA-94. The eastern delineation area boundary follows a portion of T-Model Road. Although not well-defined, the historic Trail Ridge is located to the east of the delineation area. The delineation area has historically been used for silvicultural activities. The primary sources of hydrology for the delineation area are onsite rainfall and surface water flow.

Driving directions to the site are as follows: from the intersection of GA-23 and GA-94 (in St. George, GA), travel west along GA-94 for approximately 3.9 miles to the intersection of GA-94 and Boggy Break Road (dirt road). This location is near the southeast corner of the delineation area.

3.0 LITERATURE AND RECORDS REVIEW

Prior to conducting the field effort, TTL performed a literature and records review to develop an understanding of the potential for the presence of waters of the U.S. on the subject site or surrounding properties. These data sources and the review findings are described below.

3.1 Hydric Soils

The Natural Resources Conservation Service (NRCS) maintains a database of soil types (map units) for most areas of the U.S. (NRCS, 2017). The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit which represents a large area dominated by one or more major types of soil. Map units are further classified with a rating of hydric, partially hydric or non-hydric. Map units are useful for planning purposes to provide an overall understanding of the soils that occur in a general area. However, due to the natural variability of the landscape, direct observation of the soils profile is necessary to identify hydric soil indicators.

A classification of hydric means that the soil components listed for a given map unit are rated as being hydric. "Predominantly hydric" means that more than 66 percent to less than 100 percent of soil components are hydric. "Partially hydric" means that more than 33 percent to less than 65 percent of soil components are hydric. "Predominantly non-hydric" means that more than 0 percent and less than 32 percent of soil components are hydric. "Not hydric" means that all soil components are rated as not hydric. "Unknown hydric" indicates that at least one component is not rated so a definitive rating for the map unit cannot be made. A NRCS map of the soils located on the site with the associated hydric rating is presented in Figure 3 and summarized in Table 1 below.

Table 1: Soil Map Units Classifications

Map Unit Symbol	Description	Hydric Rating
LeA	Leon fine sand, 0 to 2 percent slopes	Predominantly Hydric
LoA	Leon fine sand, frequently ponded, 0 to 2 percent slopes	Hydric
LvA	Lynn Haven fine sand, 0 to 2 percent slopes	Predominantly Hydric
LYA	Lynn Haven, Allanton and Kingsferry soils, ponded, 0 to 1 percent slopes	Predominantly Hydric
MaA	Mandarin fine sand, 0 to 2 percent slopes	Predominantly Nonhydric
McA	Mascotte fine sand, 0 to 2 percent slopes	Predominantly Hydric
PhA	Pelham fine sand, ponded, 0 to 2 percent slopes	Predominantly Hydric
PmB	Pelham loamy fine sand, 0 to 5 percent slopes	Predominantly Hydric
SuA	Surrency mucky fine sand, frequently ponded, 0 to 1 percent slopes	Hydric

3.2 National Wetland Inventory

The U.S. Fish and Wildlife Service (USFWS) created and maintains the National Wetland Inventory (NWI) database of information on the characteristics, extent, and status of the wetlands and deepwater habitats within the U.S. This information is useful for planning purposes and provides an overall understanding of the habitats that may be present in or around the site. The NWI classifies habitat types as marine, estuarine, riverine, lacustrine or palustrine with additional modifiers as appropriate to identify the water regime, water chemistry, soil or other characteristics based on *Classification of Wetlands and Deepwater Habitats of the U.S.* (Cowardin, 1979).

TTL reviewed the NWI data for the site using the USFWS NWI Wetlands Mapper web-based tool to determine the potential for wetlands to exist on the site. The USFWS NWI Mapper identified numerous wetland, stream, and open water features within the delineation area boundary. Figure 4 depicts the NWI Map, and Table 2 summarizes the habitat below.

Table 2: NWI Classifications

Map Unit Symbol	Description of Habitat
PEM1A	Palustrine, Emergent, Persistent, Temporarily Flooded
PEM1C	Palustrine, Emergent, Persistent, Seasonally Flooded
PEM1F	Palustrine, Emergent, Persistent, Semipermanently Flooded
PF03/4C	Palustrine, Forested, Broad-Leaved Evergreen/Needle-Leaved Evergreen, Seasonally Flooded
PF03C	Palustrine, Forested, Broad-Leaved Evergreen, Seasonally Flooded
PF04/6C	Palustrine, Forested, Needle-Leaved Evergreen/Deciduous, Seasonally Flooded
PF04B	Palustrine, Forested, Needle-Leaved Evergreen, Seasonally Saturated
PF06/3C	Palustrine, Forested, Deciduous/Needle-Leaved Evergreen, Seasonally Flooded
PF06/4C	Palustrine, Forested, Deciduous/Broad-Leaved Evergreen, Seasonally Flooded
PF06C	Palustrine, Forested, Deciduous, Seasonally Flooded
PF06F	Palustrine, Forested, Deciduous, Semipermanently Flooded
PSS6F	Palustrine, Scrub-Shrub, Deciduous, Semipermanently Flooded
PSS7/EM1C	Palustrine, Scrub-Shrub, Evergreen/Emergent, Persistent, Seasonally Flooded
PUBHx	Palustrine, Unconsolidated Bottom, Permanently Flooded, Excavated
R4SBC	Riverine, Intermittent, Streambed, Seasonally Flooded
R5UBH	Riverine, Unconsolidated Bottom, Permanently Flooded

3.3 Hydrologic Unit Code

The U.S. is divided and sub-divided into successively smaller hydrologic units which are classified into six levels: regions, sub-regions, accounting units, watershed, sub-watershed, and cataloging units. The hydrologic units are arranged within each other, from the smallest (cataloging unit) to the largest (regions). Each hydrologic unit is identified by a unique hydrologic unit code (HUC) consisting of two to 12 digits based on the six levels of classification in the hydrologic system (Seaber, Kapinos, Knapp, 1987). The delineation area is located within the Soldiers Camp Island cataloging unit 12-Digit HUC 030702040303. This cataloging unit is within the North Prong St. Mary's River sub-watershed, 10-Digit HUC 0307020403. This is located within the St Mary's watershed, 8-Digit HUC 03070204 (Figure 5).

3.4 Normal Weather Conditions

TTL calculates a subject site's normal weather conditions before performing site work to understand whether aquatic features in the landscape may exhibit certain characteristics related to current and near past hydrologic regime. TTL calculates data obtained from an on-line NRCS climactic database, Agricultural Applied Climate Information System (AgACIS), and derives its calculation method from

the Tennessee Department of Environment and Conservation's guide for making hydrologic determinations (TDEC, 2011). An evaluation of weather conditions was performed for the three-month period prior to the field activities. Calculations for the site indicate that the weather conditions were normal for the time of year that field work was performed.

The Palmer Drought Severity Index provided by National Oceanic and Atmospheric Administration (NOAA) is accessed at <http://www.ncdc.noaa.gov/oa/climate/research/prelim/drought/palmer.html> and was used to cross-reference the results calculated. The Palmer Drought Severity Index indicates that the region of the site experienced "mid-range" conditions during the weeks prior to the site visit.

As an additional cross-reference, the U.S. Drought Monitor was accessed and evaluated. The U.S. Drought Monitor is produced through a partnership between the National Drought Mitigation Center at the University of Nebraska-Lincoln, the United States Department of Agriculture (USDA), and NOAA. The most recent update of the U.S. Drought Monitor (March 26, 2019) Map of Georgia exhibited no drought conditions in the vicinity of the review area.

The Normal Weather Conditions Table, AgACIS data, Palmer Drought Severity Index Map, and U.S. Drought Monitor Map of Georgia and are included in Appendix A.

4.0 WETLAND AND WATERS DELINEATION

4.1 Wetland Identification Methodology

TTL utilizes the *U.S. Army Corps of Engineers Wetland Delineation Manual* (USACE, 1987) and *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region* (USACE, 2010) technical guidelines for determining the presence of wetlands. This determination requires that a positive wetland indicator be present for each of the three parameters (hydrology, soil, and vegetation), with the exception of areas altered by recent human activities or natural events. During field activities, TTL assessed the project area for the presence of hydrophytic vegetation and used a Dutch hand-auger to evaluate the project area for the presence of hydric soils. TTL examined the soil for hydric soil indicators as identified in the *Field Indicators of Hydric Soils in the United States*, V. 8.1 (NRCS, 2017). Additionally, TTL observed the project area for indications of inundated or saturated soils, water marks, drift lines, crayfish burrows, sediment deposits and other wetland hydrology indicators. TTL used *Wetland Determination Data Forms – Atlantic and Gulf Coastal Plain Region* (2010) to record field conditions for the soil, vegetation and hydrology for wetlands and uplands located on the site. At least one data point was established in each habitat type observed within the review area.

TTL traversed the project area on foot and placed orange flagging labeled with Upland Data Point (UDP) or Wetland Data Point (WDP) identification at the data point location. The location of the data point flagging was mapped with a Trimble Geo7x Global Positioning System (GPS) unit, which was set to sub-meter tolerances. Field data was post-processed using Trimble PathfinderOffice V 5.3 and exported to ESRI's ArcMap 10.2. Area features were manually digitized in ArcGIS using the flag locations; geographic coordinates and area quantities were calculated using ArcGIS "area" function.

4.2 Wetland Findings

The project area contains three wetland areas (WA-WC) consisting of approximately 662.712 acres. The boundaries of the wetland areas and data point locations are depicted on Figure 6. Selected photographs of our field observations are provided in Appendix B. Wetland Determination Data Forms are included in Appendix C. Table 3 summarizes the wetland findings below.

Table 3: Wetland Summary

Wetland ID	Cowardin Habitat Description	Area (acres)
WA	Palustrine; Emergent, Persistent; Seasonally Flooded	1.254
WB	Palustrine; Emergent, Persistent; Seasonally Flooded	2.051
WC	Palustrine; Forested, Scrub-Shrub, Emergent, Broad-Leaved Evergreen/Needle-Leaved Evergreen; Seasonally Flooded	659.407

Wetland C is the largest wetland and is located throughout the delineation area. Wetlands A and B are located in the northern portion of the delineation area. The soils textures within the wetland areas are comprised of a sand content that meets hydric soil indicators S6 - Stripped Matrix, and/or A7 - 5cm Mucky Mineral. The hydrology for this area is supported by localized stormwater and a shallow water table. The wetland vegetation communities within the delineation area vary from large areas of hipped and benched, planted pine habitat [dominated by slash pine (*Pinus elliottii*), inkberry (*Ilex glabra*), Carolina redroot (*Lachnanthes caroliniana*), and Virginia chain fern (*Woodwardia virginica*)] to forested pocosin habitat that exhibited no signs of silvicultural activities [dominated by pond pine (*Pinus serotina*), pond cypress (*Taxodium ascendens*), loblolly bay (*Gordonia lasianthus*), swamp tupelo (*Nyssa biflora*), large gallberry (*Ilex coriacea*), and Virginia chain fern.

4.3 Streams Identification and Methodology

TTL used the *North Carolina Division of Water Quality – Methodology for Identification of Intermittent and Perennial Streams and Their Origins v. 4.11, September 1, 2010 (NC Method)* technical

guideline to determine the most appropriate classification of each subject stream. This technical guideline for stream identification is the preferred methodology for distinguishing between intermittent and perennial streams in the southeast United States and requires evaluation of 26 attributes of the stream and assigning a numeric score to each on the *NC DWQ Stream Identification Form Version 4.11*. A four-tiered, weighted scale is utilized for evaluating and scoring the features categorized in sets of geomorphic, hydrologic, and biological attributes. Additionally, TTL utilized the *Regulatory Guidance Letter No. 05-05: Ordinary High Water Mark Identification* (USACE, 2005) as the basis for the delineation, mapping, and linear footage/areal estimations of on-site streams.

Identified streams were mapped using the method described in Section 4.1. Stream Identification Forms (v. 4.11) were used to classify streams that were not clearly perennial (i.e. flowing water at greater than 48 hours since rainfall, strong morphology and obvious biological presence). TTL traversed the stream channels on foot and placed blue flagging labeled with stream data point identifications near the observed ordinary high water mark (OHWM). The locations of the boundary flags were mapped with a Trimble Geo7x Global Positioning System (GPS) unit, which was set to sub-meter tolerances. Field data was post-processed using Trimble Pathfinder Office V 5.3 and exported to ESRI's ArcMap 10.2. Area features were manually digitized in ArcGIS using the flag locations; geographic coordinates and area quantities were calculated using ArcGIS "area" function.

4.4 Streams and Ditches Findings

TTL identified ten ditches within the delineation area consisting of approximately 7,807 linear feet of ditches (D1-D10). These ditches are jurisdictional where they are located within wetlands. In these areas, their acreage has been included within the wetland acreage. No jurisdictional streams were identified within the delineation area. The River Styx is shown in the western portion of the delineation area on aerial photographs for the site (Figure 2) but the channel of this stream was not identified within the delineation area. Table 4 summarizes the ditch findings below.

Table 4: Ditch Summary

Wetland ID	Cowardin Habitat Description	Length (linear feet)/ Area (acres)
D1	Ditch	0.028
D2	Ditch	0.022
D3	Ditch	0.122
D4	Ditch	0.012
D5	Ditch	0.011
D6	Ditch	0.091
D7	Ditch	0.072
D8	Ditch	0.120
D9	Ditch	0.064
D10	Ditch	0.722

4.5 Jurisdictional Determination Request

The USACE has the sole authority to determine whether wetlands or water features are “jurisdictional.” Under certain circumstances, wetland areas are considered non-jurisdictional because they lack a significant nexus with other wetlands or waters of the U.S. TTL utilized the *USACE Jurisdictional Determination Form Instructional Guidebook* (USACE and EPA, 2007) to complete a *SAS APPENDIX 1: Request for Corps of Engineers Jurisdictional Determination (JD) and/or Delineation Review Form* (Appendix E).

It is TTL’s opinion that all observed wetlands, and ditches within the wetlands are jurisdictional features due to their significant nexus to nearby relatively permanent waters. The ditches that occur within wetlands have been included and calculated as part of the wetland total acreage.

TTL recommends that a delineation review of aquatic resources of the potentially jurisdictional site features be requested from the USACE Savannah District. If the USACE is not engaged regarding a jurisdictional determination or delineation review of aquatic resources, TTL is neither responsible for the final determination of jurisdictional features within the review corridor, nor responsible for violations associated with unauthorized activities that may occur within areas deemed jurisdictional by the USACE at a later time.

5.0 CONCLUSIONS

- Approximately 659.407 acres of forested wetland were identified within the delineation area.
- Approximately 3.305 acres of emergent wetland were identified within the delineation area.
- No jurisdictional streams were identified within the delineation area.
- Approximately 7,807 linear feet of ditches were identified within the delineation area. These ditches are jurisdictional where they are located within wetlands and have been included in the wetland total acreage.
- Upon approval by the client, TTL will submit a request for a delineation review of aquatic resources from the USACE of all aquatic features within the site.

6.0 REFERENCES

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FIGURES

Figure 1	Project Location and Topographic Map
Figure 2	Site Location & Aerial Photograph
Figure 3	Natural Resources Conservation Service (NRCS) Soil Map w/Hydric Rating
Figure 4	National Wetland Inventory (NWI) Classification Map
Figure 5	Hydrologic Unit Code (HUC) Map
Figure 6	Waters of the U.S. Delineation Map

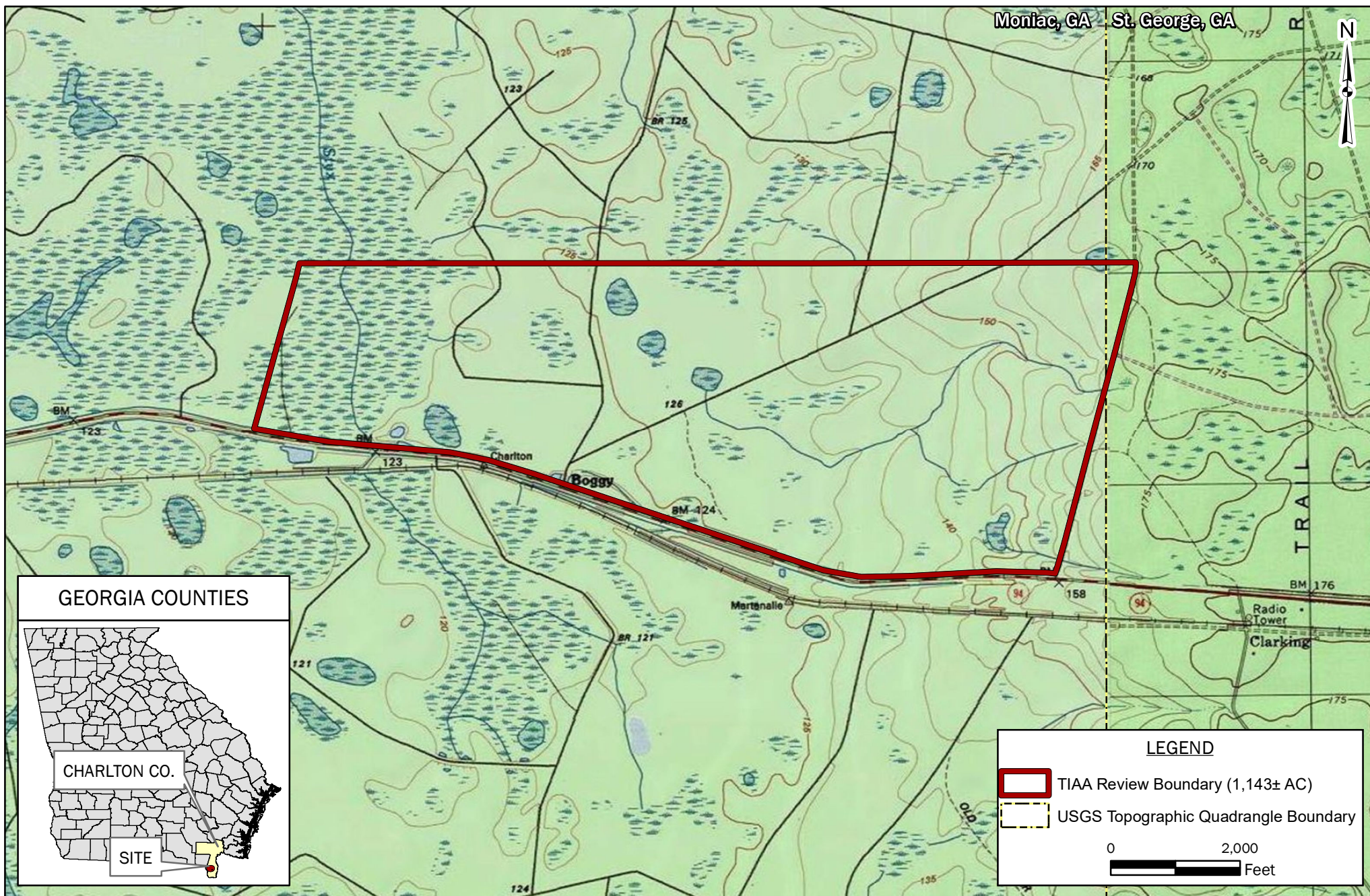


FIGURE 1: SITE LOCATION & TOPOGRAPHIC MAP
TWIN PINES MINERALS - TIAA TRACT
WATERS OF THE U.S. DELINEATION

BASEMAP: Moniac, Georgia and Saint George, Georgia USGS 7.5 Minute Quadrangle Maps, 1994.

DRAWN BY: CMS

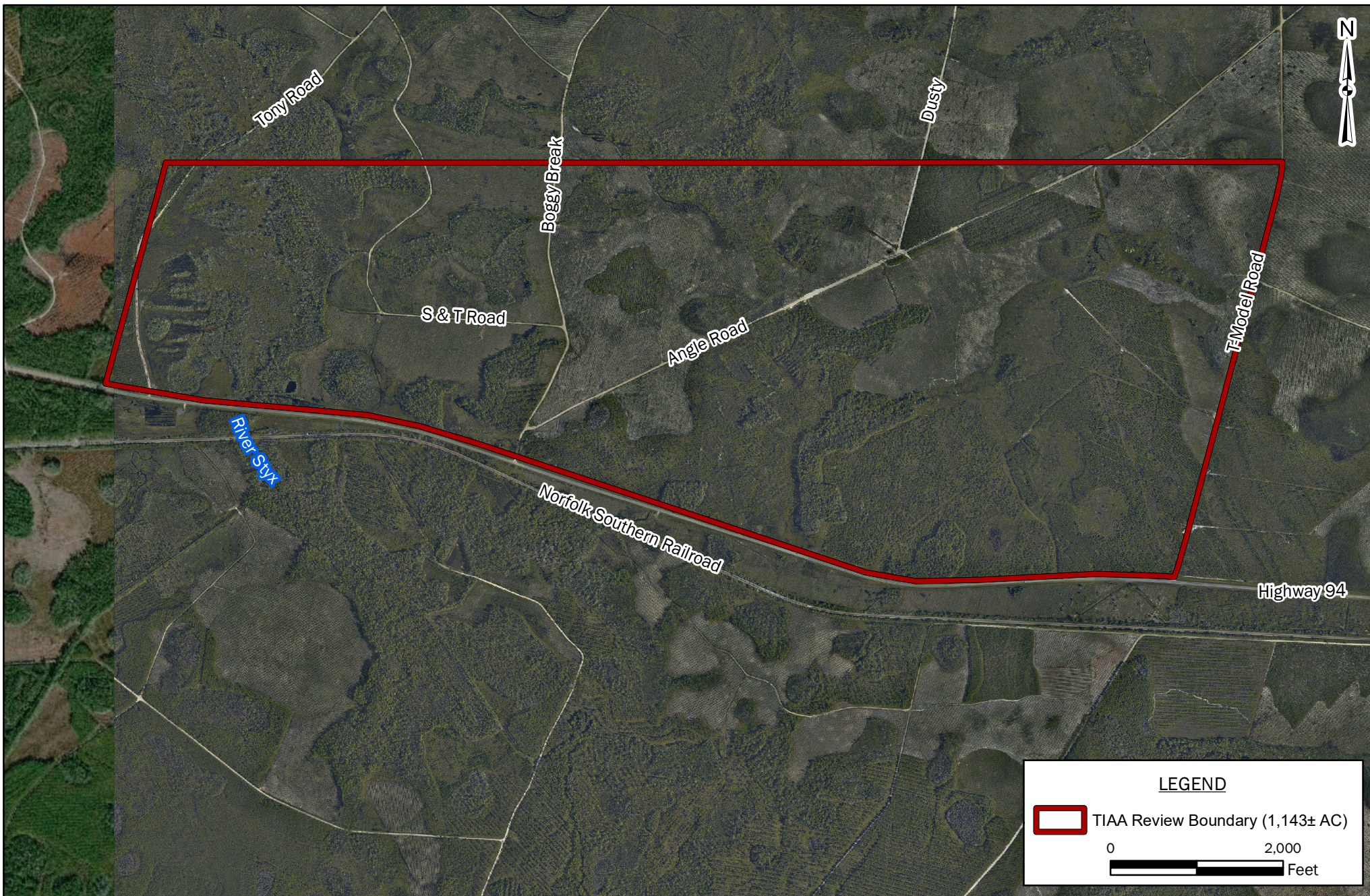
CHECKED BY: AGW

DRAWING DATE: 6/5/2019

REVISION DATE: N/A

TTL JOB NO.: 000180200804.00

APPROXIMATE SCALE: 1" = 2,000'



LEGEND

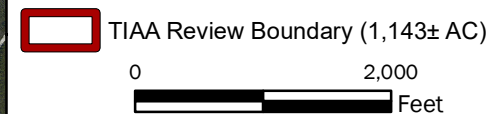


FIGURE 2: SITE LOCATION & AERIAL PHOTOGRAPH
TWIN PINES MINERALS - TIAA TRACT
WATERS OF THE U.S. DELINEATION

BASEMAP: DigitalGlobe, 1/24/2016 & Twin Pines Ortholmagery, 09/2018

DRAWN BY: CMS

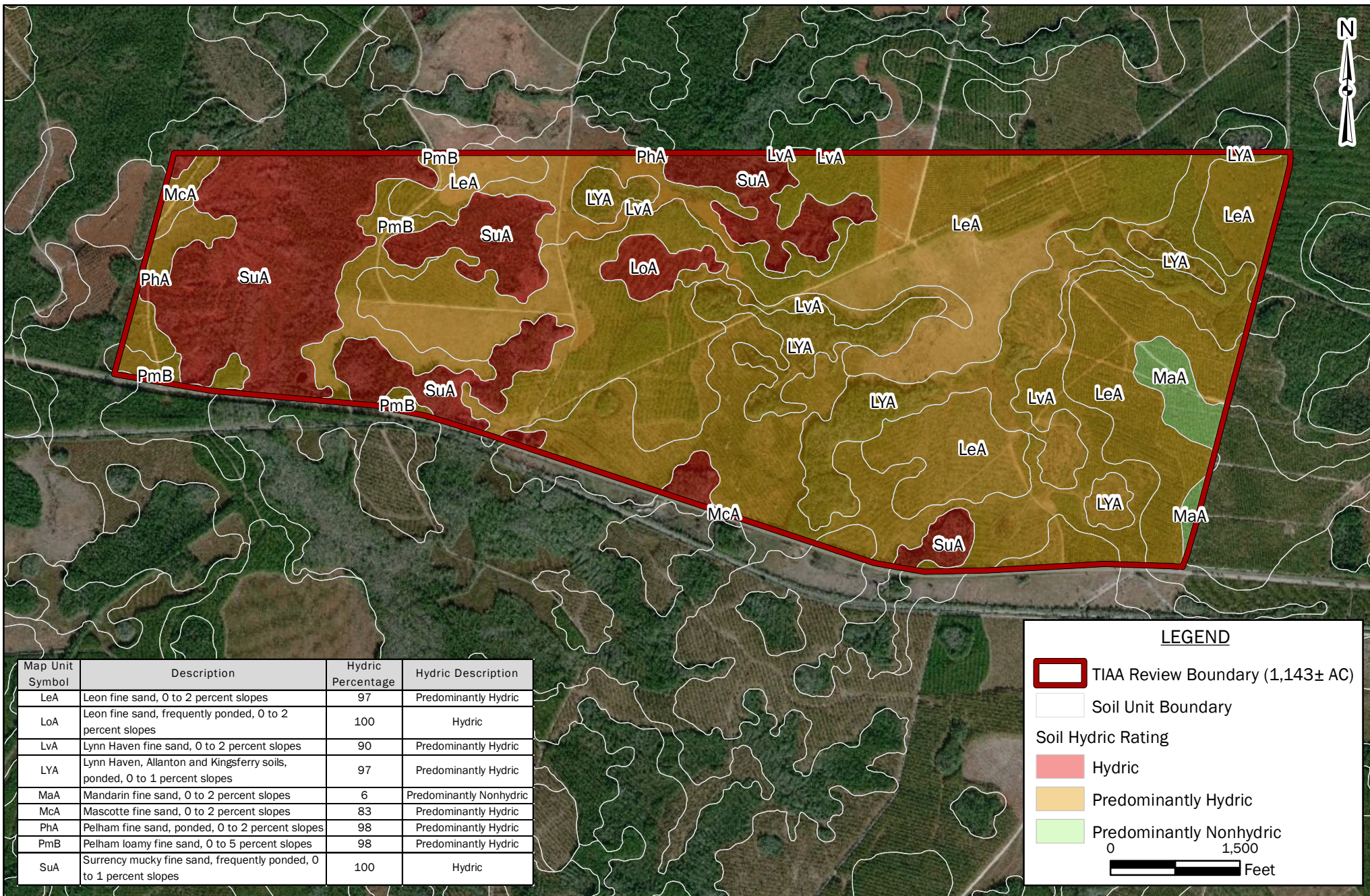
CHECKED BY: AGW

DRAWING DATE: 6/5/2019

REVISION DATE: N/A

TTL JOB NO.: 000180200804.00

APPROXIMATE SCALE: 1" = 2,000'



**FIGURE 3: NATURAL RESOURCES CONSERVATION SERVICE (NRCS)
SOIL MAP WITH HYDRIC RATING
TWIN PINES MINERALS - TIAA TRACT
WATERS OF THE U.S. DELINEATION**

BASEMAP: DigitalGlobe, 1/24/2017

DRAWN BY: CMS

CHECKED BY: AGW

DRAWING DATE: 6/5/2019

REVISION DATE: N/A

TTL JOB NO.: 000180200804.00

APPROXIMATE SCALE: 1" = 1,500'

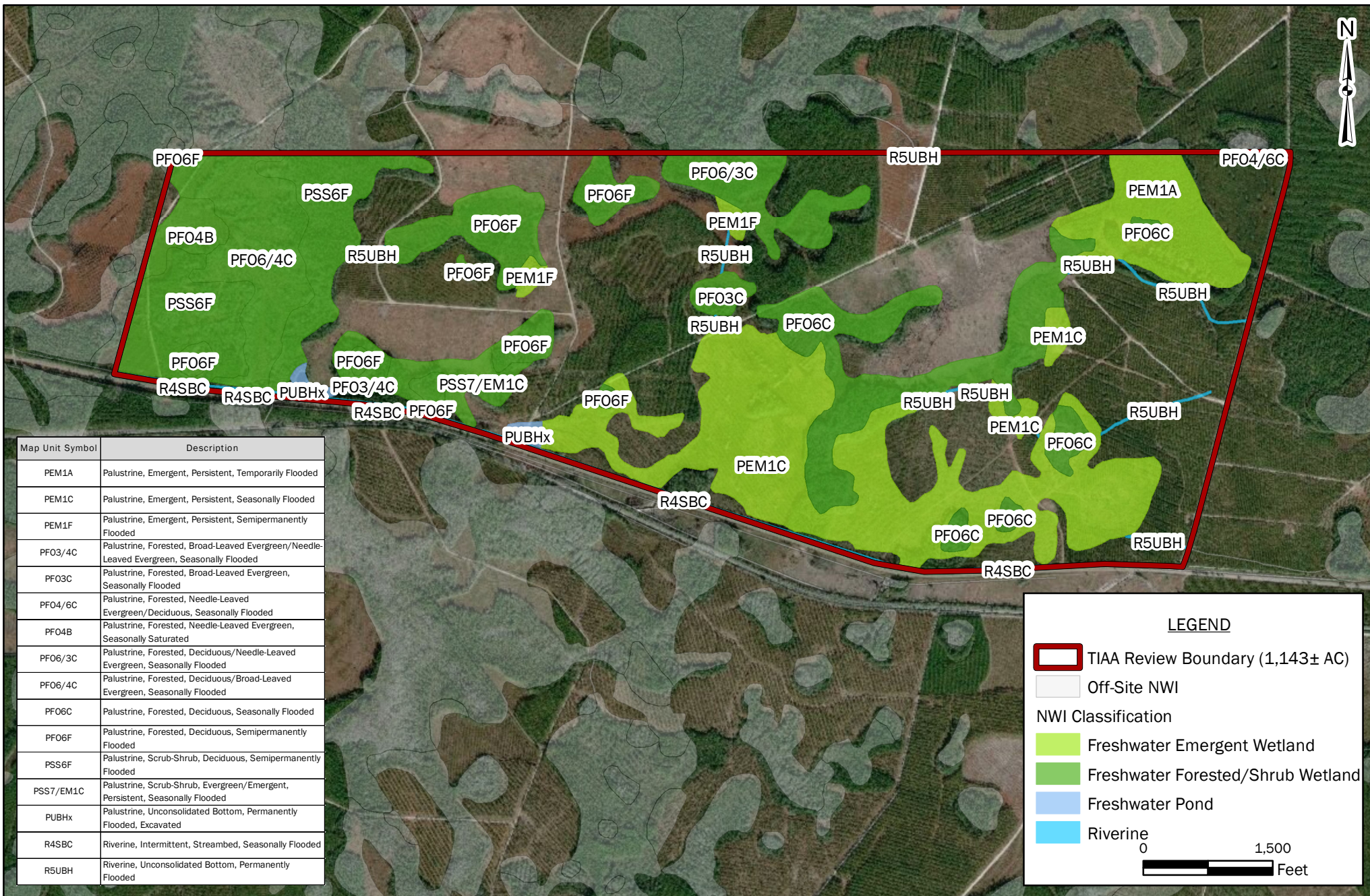


FIGURE 4: NATIONAL WETLAND INVENTORY (NWI) MAP
TWIN PINES MINERALS - TIAA TRACT
WATERS OF THE U.S. DELINEATION

BASEMAP: DigitalGlobe, 1/24/2017

DRAWN BY: CMS

CHECKED BY: AGW

DRAWING DATE: 6/5/2019

REVISION DATE: N/A

TTL JOB NO.: 000180200804.00

APPROXIMATE SCALE: 1" = 1,500'

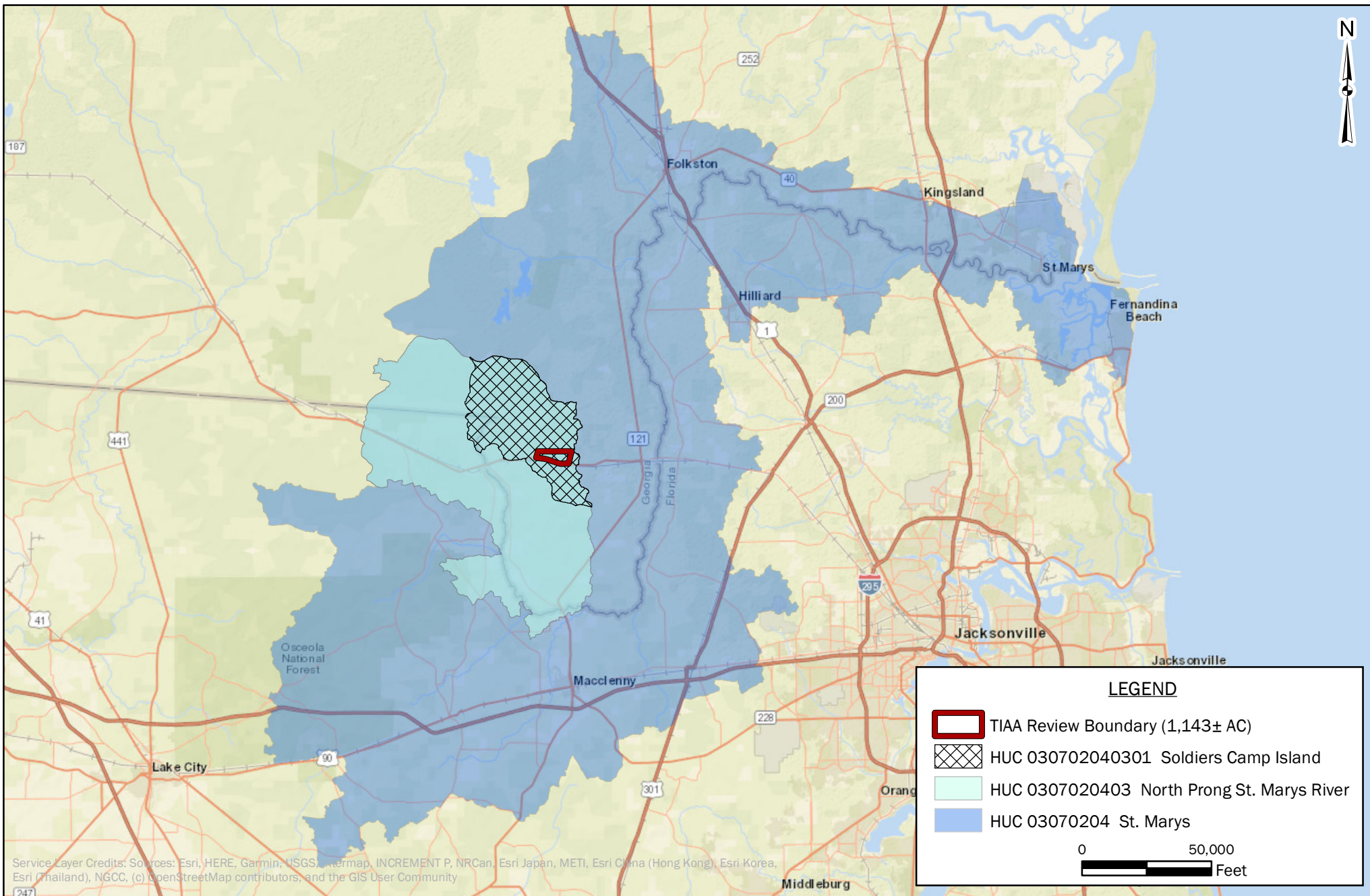


FIGURE 5: HYDRDOLGIC UNIT CODE (HUC) MAP
TWIN PINES MINERALS - TIAA TRACT
WATERS OF THE U.S. DELINEATION

DRAWN BY: CMS
CHECKED BY: AGW
DRAWING DATE: 6/5/2019
REVISION DATE: N/A
TTL JOB NO.: 000180200804.00
APPROXIMATE SCALE: 1" = 50,000'

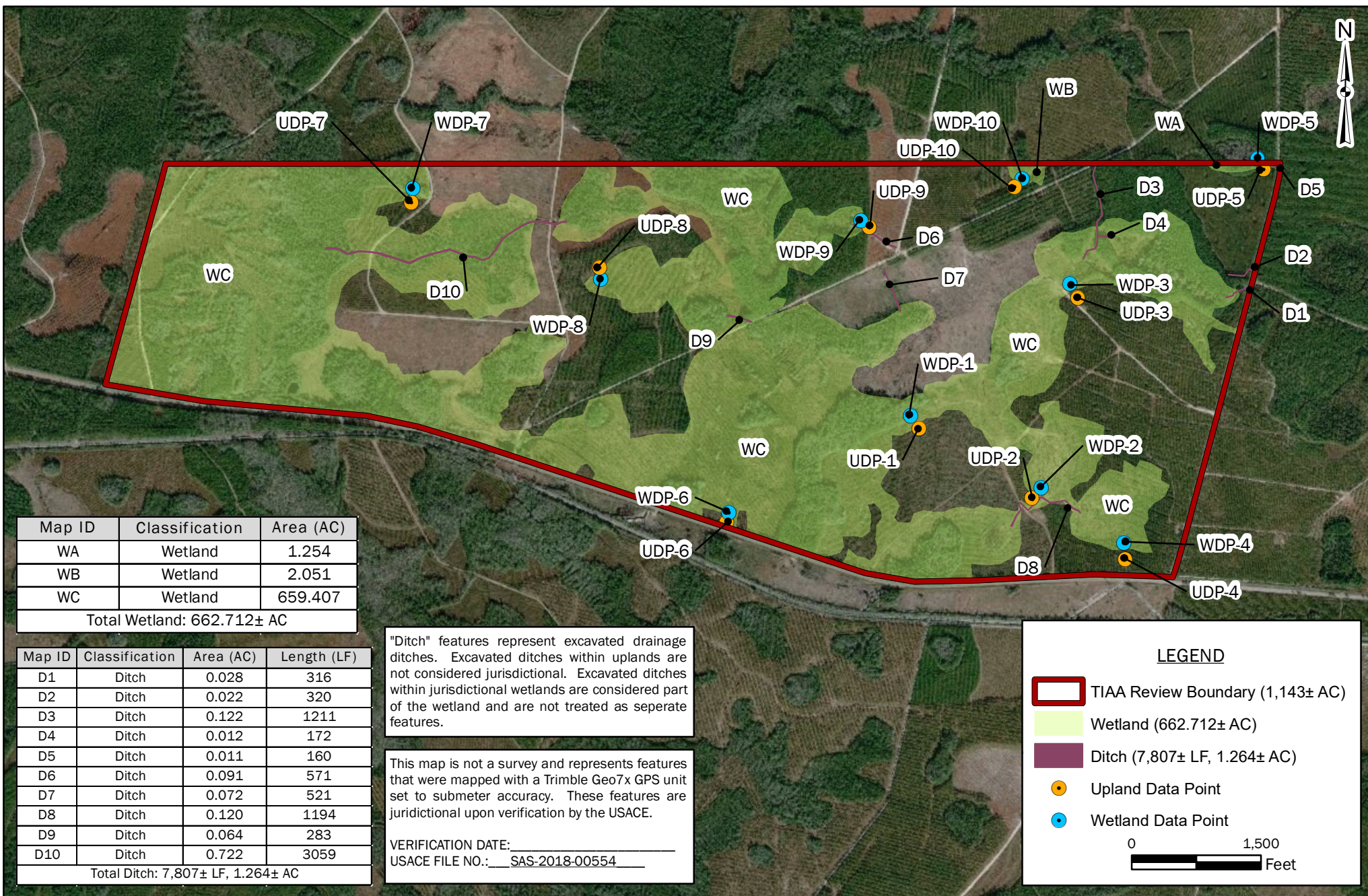


FIGURE 6: WATERS OF THE U.S. DELINEATION MAP
 TWIN PINES MINERALS - TIAA TRACT
 WATERS OF THE U.S. DELINEATION

BASEMAP: DigitalGlobe, 1/24/2016

DRAWN BY: CMS
CHECKED BY: AGW
DRAWING DATE: 6/7/2019
REVISION DATE: N/A
TTL JOB NO.: 000180200804.00
APPROXIMATE SCALE: 1" = 1,500'

APPENDIX A

Normal Weather Conditions Table
AgACIS Data
U.S. Drought Monitor – Georgia
Palmer Drought Index

Calculation of Normal Weather Conditions
General Project Location: Folkston, Georgia
Analysis for March 2019 Site Visits

		Long-Term Rainfall Records								
	Month	Standard Deviation*	Minus One Standard Deviation (Dry)	Normal* (Mean Inches)	Plus One Standard Deviation (Wet)	Actual Rainfall**	Condition (wet, normal, dry)	Condition Value***	Month Weight Value	Weighted Value
1st prior month	3/23/2019 - 2/23/2019	2.62	1.29	3.91	6.53	1.38	Normal	2	3	6
2nd prior month	2/22/2019 - 1/22/2019	2.14	1.56	3.70	5.84	2.27	Normal	2	2	4
3rd prior month	1/21/2019 - 12/21/2018	2.18	1.24	3.42	5.60	0.31	dry	1	1	1
									Sum:	11

Sum:	Conclusion:
6-9	prior period has been drier than normal
10-14	prior period has been normal
15-18	prior period has been wetter than normal

* Standard Deviation and Mean Values can be found through the National Oceanic and Atmospheric Associations Earth System Research Laboratory:
<http://www.esrl.noaa.gov/psd/data/usstation/>

** Rainfall data can be found through Weather Source Consultants: www.weathersource.com

*** Condition Values: 1 = dry, 2 = normal, 3 = wet

Climatological Data for FARGO 17 NE, GA - December 2018

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2018-12-01	72	46	59.0	19	9	0.12	M	M
2018-12-02	M	M	M	M	M	M	M	M
2018-12-03	M	M	M	M	M	M	M	M
2018-12-04	M	M	M	M	M	M	M	M
2018-12-05	64	42	53.0	13	3	0.00	M	M
2018-12-06	56	38	47.0	7	0	0.00	M	M
2018-12-07	M	M	M	M	M	M	M	M
2018-12-08	M	M	M	M	M	M	M	M
2018-12-09	66	54	60.0	20	10	0.91	M	M
2018-12-10	73	43	58.0	18	8	0.02	M	M
2018-12-11	M	M	M	M	M	M	M	M
2018-12-12	55	39	47.0	7	0	0.00	M	M
2018-12-13	61	45	53.0	13	3	0.00	M	M
2018-12-14	67	45	56.0	16	6	0.86	M	M
2018-12-15	M	M	M	M	M	M	M	M
2018-12-16	68	51	59.5	20	10	0.06	M	M
2018-12-17	M	M	M	M	M	M	M	M
2018-12-18	M	M	M	M	M	M	M	M
2018-12-19	65	44	54.5	15	5	0.00	M	M
2018-12-20	64	52	58.0	18	8	<u>0.02</u>	M	M
2018-12-21	64	56	60.0	20	10	0.15	M	M
2018-12-22	M	M	M	M	M	M	M	M
2018-12-23	M	M	M	M	M	M	M	M
2018-12-24	64	47	55.5	16	6	0.00	M	M
2018-12-25	M	M	M	M	M	M	M	M
2018-12-26	64	44	54.0	14	4	0.00	M	M
2018-12-27	66	52	59.0	19	9	0.00	M	M
2018-12-28	M	M	M	M	M	M	M	M
2018-12-29	M	M	M	M	M	M	M	M
2018-12-30	79	61	70.0	30	20	0.01	M	M
2018-12-31	M	M	M	M	M	M	M	M
Average Sum	65.5	47.4	56.5	265	111	2.15	M	M

Climatological Data for FARGO 17 NE, GA - January 2019

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2019-01-01	M	M	M	M	M	M	M	M
2019-01-02	M	M	M	M	M	M	M	M
2019-01-03	77	62	69.5	30	20	0.00	M	M
2019-01-04	76	63	69.5	30	20	0.15	M	M
2019-01-05	M	M	M	M	M	M	M	M
2019-01-06	M	M	M	M	M	M	M	M
2019-01-07	M	M	M	M	M	M	M	M
2019-01-08	75	52	63.5	24	14	0.00	M	M
2019-01-09	M	M	M	M	M	M	M	M
2019-01-10	61	42	51.5	12	2	0.00	M	M
2019-01-11	M	M	M	M	M	M	M	M
2019-01-12	62	35	48.5	9	0	T	M	M
2019-01-13	M	M	M	M	M	M	M	M
2019-01-14	M	M	M	M	M	M	M	M
2019-01-15	52	47	49.5	10	0	0.00	M	M
2019-01-16	M	M	M	M	M	M	M	M
2019-01-17	M	M	M	M	M	M	M	M
2019-01-18	67	48	57.5	18	8	0.00	M	M
2019-01-19	M	M	M	M	M	M	M	M
2019-01-20	M	M	M	M	M	M	M	M
2019-01-21	M	M	M	M	M	M	M	M
2019-01-22	M	M	M	M	M	M	M	M
2019-01-23	66	48	57.0	17	7	0.01	M	M
2019-01-24	78	58	68.0	28	18	1.60	M	M
2019-01-25	M	M	M	M	M	M	M	M
2019-01-26	M	M	M	M	M	M	M	M
2019-01-27	57	44	50.5	11	1	0.00	M	M
2019-01-28	M	M	M	M	M	M	M	M
2019-01-29	M	M	M	M	M	M	M	M
2019-01-30	M	M	M	M	M	0.03	M	M
2019-01-31	47	34	40.5	1	0	0.00	M	M
Average Sum	65.3	48.5	56.9	190	90	1.79	M	M

Climatological Data for FARGO 17 NE, GA - February 2019

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2019-02-01	M	M	M	M	M	M	M	M
2019-02-02	61	52	56.5	17	7	0.19	M	M
2019-02-03	M	M	M	M	M	M	M	M
2019-02-04	64	55	59.5	20	10	0.24	M	M
2019-02-05	70	50	60.0	20	10	0.00	M	M
2019-02-06	M	M	M	M	M	M	M	M
2019-02-07	M	M	M	M	M	M	M	M
2019-02-08	M	M	M	M	M	M	M	M
2019-02-09	M	M	M	M	M	M	M	M
2019-02-10	M	M	M	M	M	M	M	M
2019-02-11	M	M	M	M	M	M	M	M
2019-02-12	M	M	M	M	M	0.00	M	M
2019-02-13	82	50	66.0	26	16	0.13	M	M
2019-02-14	M	M	M	M	M	M	M	M
2019-02-15	M	M	M	M	M	M	M	M
2019-02-16	73	41	57.0	17	7	0.00	M	M
2019-02-17	M	M	M	M	M	M	M	M
2019-02-18	M	M	M	M	M	M	M	M
2019-02-19	M	M	M	M	M	M	M	M
2019-02-20	79	51	65.0	25	15	0.07	M	M
2019-02-21	M	M	M	M	M	M	M	M
2019-02-22	M	M	M	M	M	M	M	M
2019-02-23	M	M	M	M	M	M	M	M
2019-02-24	M	M	M	M	M	M	M	M
2019-02-25	M	M	M	M	M	M	M	M
2019-02-26	M	M	M	M	M	M	M	M
2019-02-27	M	M	M	M	M	M	M	M
2019-02-28	74	57	65.5	26	16	0.13	M	M
Average Sum	71.9	50.9	61.4	151	81	0.76	M	M

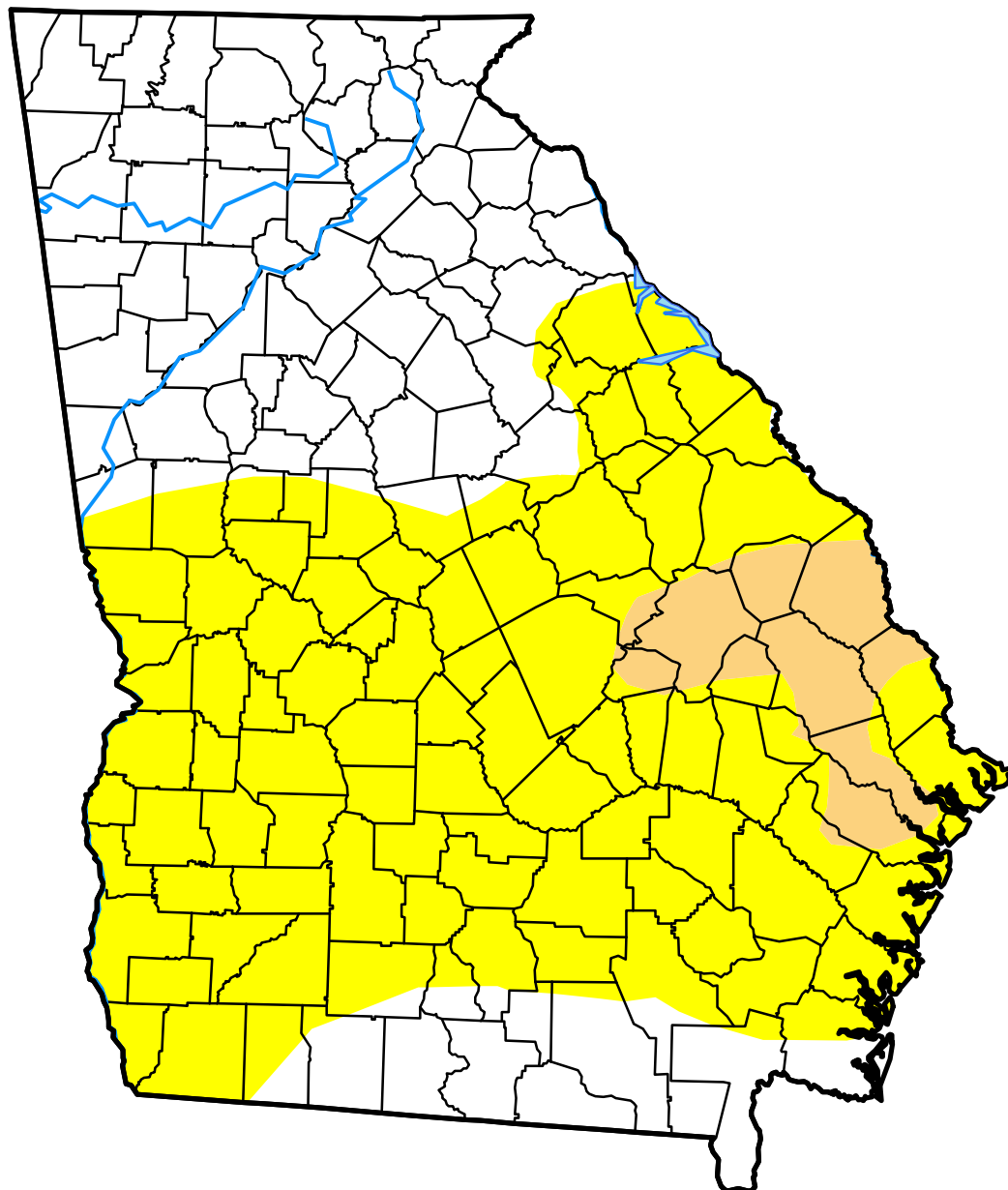
Climatological Data for FARGO 17 NE, GA - March 2019

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2019-03-01	M	M	M	M	M	M	M	M
2019-03-02	76	59	67.5	28	18	0.96	M	M
2019-03-03	M	M	M	M	M	M	M	M
2019-03-04	81	53	67.0	27	17	0.29	M	M
2019-03-05	M	M	M	M	M	M	M	M
2019-03-06	M	M	M	M	M	M	M	M
2019-03-07	M	M	M	M	M	M	M	M
2019-03-08	M	M	M	M	M	M	M	M
2019-03-09	78	52	65.0	25	15	0.00	M	M
2019-03-10	83	61	72.0	32	22	0.00	M	M
2019-03-11	M	M	M	M	M	M	M	M
2019-03-12	M	M	M	M	M	M	M	M
2019-03-13	86	54	70.0	30	20	0.00	M	M
2019-03-14	M	M	M	M	M	M	M	M
2019-03-15	M	M	M	M	M	M	M	M
2019-03-16	M	M	M	M	M	M	M	M
2019-03-17	M	M	M	M	M	M	M	M
2019-03-18	M	M	M	M	M	M	M	M
2019-03-19	M	M	M	M	M	M	M	M
2019-03-20	M	M	M	M	M	M	M	M
2019-03-21	M	M	M	M	M	M	M	M
2019-03-22	M	M	M	M	M	M	M	M
2019-03-23	M	M	M	M	M	M	M	M
2019-03-24	M	M	M	M	M	M	M	M
2019-03-25	M	M	M	M	M	M	M	M
2019-03-26	M	M	M	M	M	M	M	M
2019-03-27	M	M	M	M	M	M	M	M
2019-03-28	M	M	M	M	M	M	M	M
2019-03-29	M	M	M	M	M	M	M	M
2019-03-30	M	M	M	M	M	M	M	M
2019-03-31	M	M	M	M	M	M	M	M
Average Sum	80.8	55.8	68.3	142	92	1.25	M	M

U.S. Drought Monitor

Georgia

March 26, 2019
(Released Thursday, Mar. 28, 2019)
 Valid 8 a.m. EDT



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	39.33	60.67	6.01	0.00	0.00	0.00
Last Week <i>03-19-2019</i>	66.71	33.29	1.27	0.00	0.00	0.00
3 Months Ago <i>12-25-2018</i>	100.00	0.00	0.00	0.00	0.00	0.00
Start of Calendar Year <i>01-01-2019</i>	100.00	0.00	0.00	0.00	0.00	0.00
Start of Water Year <i>09-25-2018</i>	70.95	29.05	6.72	0.00	0.00	0.00
One Year Ago <i>03-27-2018</i>	31.15	68.85	50.54	10.42	0.00	0.00

Intensity:

D0 Abnormally Dry	D3 Extreme Drought
D1 Moderate Drought	D4 Exceptional Drought
D2 Severe Drought	

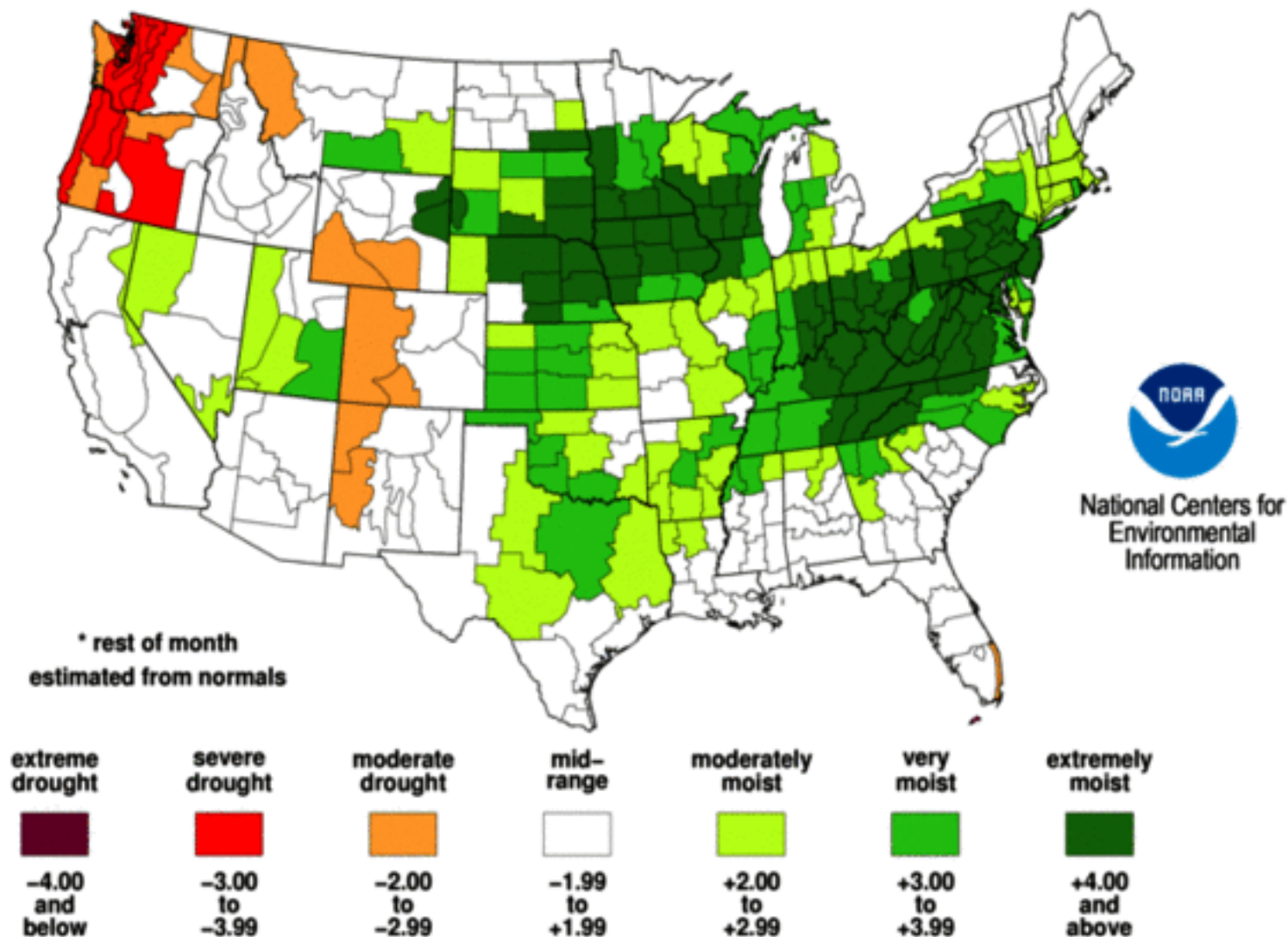
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:

Eric Luebehusen
 U.S. Department of Agriculture



<http://droughtmonitor.unl.edu/>

March 2019: through March 23 2019*

APPENDIX B

Site Photographs

Site Photographs

Waters of the U.S. Delineation: TIAA Tract — TTL Project No. 000180200804.00

Twin Pines Minerals • Charlton County, Georgia

Photos taken March 23, 2019 – April 10, 2019



Photograph 1: View of Ditch 1 (D1).



Photograph 2: View of Ditch 2 (D2).

TTL

Site Photographs

Waters of the U.S. Delineation: TIAA Tract — TTL Project No. 000180200804.00

Twin Pines Minerals • Charlton County, Georgia

Photos taken March 23, 2019 – April 10, 2019



Photograph 3: View of Ditch 3 (D3).



Photograph 4: View of Ditch 4 (D4).

TTL

Site Photographs

Waters of the U.S. Delineation: TIAA Tract – TTL Project No. 000180200804.00

Twin Pines Minerals • Charlton County, Georgia

Photos taken March 23, 2019 – April 10, 2019



Photograph 5: View of Ditch 5 (D5).



Photograph 6: View of Ditch 9 (D9).

TTL

Site Photographs

Waters of the U.S. Delineation: TIAA Tract – TTL Project No. 000180200804.00

Twin Pines Minerals • Charlton County, Georgia

Photos taken March 23, 2019 – April 10, 2019



Photograph 7: View Ditch 10 (D10).



Photograph 8: View of the Wetland Data Point 1 (WDP-1) location.

TTL

Site Photographs

Waters of the U.S. Delineation: TIAA Tract – TTL Project No. 000180200804.00

Twin Pines Minerals • Charlton County, Georgia

Photos taken March 23, 2019 – April 10, 2019



Photograph 9: View of the Upland Data Point 1 (UDP-1) location.



Photograph 10: View of the Wetland Data Point 2 (WDP-2) location.

TTL

Site Photographs

Waters of the U.S. Delineation: TIAA Tract — TTL Project No. 000180200804.00

Twin Pines Minerals • Charlton County, Georgia

Photos taken March 23, 2019 – April 10, 2019



Photograph 11: View of View of the Upland Data Point 2 (UDP-2) location.



Photograph 12: View of the Wetland Data Point 3 (WDP-3) location.

TTL

Site Photographs

Waters of the U.S. Delineation: TIAA Tract — TTL Project No. 000180200804.00

Twin Pines Minerals • Charlton County, Georgia

Photos taken March 23, 2019 – April 10, 2019



Photograph 13: View of the Upland Data Point 3 (UDP-3) location.



Photograph 14: View of the Wetland Data Point 4 (WDP-4) location.

TTL

Site Photographs

Waters of the U.S. Delineation: TIAA Tract – TTL Project No. 000180200804.00

Twin Pines Minerals • Charlton County, Georgia

Photos taken March 23, 2019 – April 10, 2019



Photograph 15: View of the Upland Data Point 4 (UDP-4) location.



Photograph 16: View of the Wetland Data Point 5 (WDP-5) location.

TTL

Site Photographs

Waters of the U.S. Delineation: TIAA Tract – TTL Project No. 000180200804.00

Twin Pines Minerals • Charlton County, Georgia

Photos taken March 23, 2019 – April 10, 2019



Photograph 17: View of the Upland Data Point 5 (UDP-5) location.



Photograph 18: View of the Wetland Data Point 6 (WDP-6) location.

TTL

Site Photographs

Waters of the U.S. Delineation: TIAA Tract – TTL Project No. 000180200804.00

Twin Pines Minerals • Charlton County, Georgia

Photos taken March 23, 2019 – April 10, 2019



Photograph 19: View of the Upland Data Point 6 (UDP-6) location.



Photograph 20: View of the Wetland Data Point 7 (WDP-7) location.

TTL

Site Photographs

Waters of the U.S. Delineation: TIAA Tract – TTL Project No. 000180200804.00

Twin Pines Minerals • Charlton County, Georgia

Photos taken March 23, 2019 – April 10, 2019



Photograph 21: View of the Upland Data Point 7 (UDP-7) location.



Photograph 22: View of the Wetland Data Point 8 (WDP-8) location.

TTL

Site Photographs

Waters of the U.S. Delineation: TIAA Tract – TTL Project No. 000180200804.00

Twin Pines Minerals • Charlton County, Georgia

Photos taken March 23, 2019 – April 10, 2019



Photograph 23: View of the Upland Data Point 8 (UDP-8) location.



Photograph 24: View of the Wetland Data Point 9 (WDP-9) location.

TTL

Site Photographs

Waters of the U.S. Delineation: TIAA Tract – TTL Project No. 000180200804.00

Twin Pines Minerals • Charlton County, Georgia

Photos taken March 23, 2019 – April 10, 2019



Photograph 25: View of the Upland Data Point 9 (UDP-9) location.



Photograph 26: View of the Wetland Data Point 10 (WDP-10) location.

TTL

Site Photographs

Waters of the U.S. Delineation: TIAA Tract – TTL Project No. 000180200804.00

Twin Pines Minerals • Charlton County, Georgia

Photos taken March 23, 2019 – April 10, 2019



Photograph 27: View of the Upland Data Point 10 (UDP-10) location.

TTL

APPENDIX C

U.S. Army Corps of Engineers Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: TIAA Tract City/County: Charlton County Sampling Date: 04/09/2019
 Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: UDP-1
 Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
 Landform (hillslope, terrace, etc.): Flatwoods Local relief (concave, convex, none): None Slope (%): 0-2%
 Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.523331 Long: -82.136851 Datum: NAD83
 Soil Map Unit Name: Leon fine sand, 0-2% slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation No, Soil No, or Hydrology No 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Remarks: - Vegetation historically impacted by silvicultural activities (planted pine). - Soils/Hydrology historically impacted by silvicultural activities (bedding for planted pine).	

HYDROLOGY

Wetland Hydrology Indicators:		<u>Secondary Indicators (minimum of two required)</u>
<u>Primary Indicators (minimum of one is required; check all that apply)</u>		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Marl Deposits (B15) (LRR U)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input checked="" type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
		<input type="checkbox"/> Sphagnum moss (D8) (LRR T,U)
Field Observations:		
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): <u> </u>	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): <u>30</u>	
Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> (includes capillary fringe)	Depth (inches): <u>24</u>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: FAC-Neutral Test Results: Positive FACW and OBL: 6 to FACU and UPL: 1		

VEGETATION – Use scientific names of plants.

 Sampling Point: UDP-1

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u><i>Pinus elliotii</i></u>	<u>40.0</u>	<u>yes</u>	<u>FACW</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>8</u> (A) Total Number of Dominant Species Across All Strata: <u>9</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>89%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: <u>20.00</u> 20% of total cover: <u>8.00</u>	<u>40.0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (<u>30 ft radius</u>)				
1. <u><i>Pinus elliotii</i></u>	<u>30.0</u>	<u>yes</u>	<u>FACW</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>15.00</u> 20% of total cover: <u>6.00</u>	<u>30.0</u>	= Total Cover		Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Shrub Stratum (<u>30 ft radius</u>)				
1. <u><i>Ilex glabra</i></u>	<u>15.0</u>	<u>yes</u>	<u>FACW</u>	
2. <u><i>Ilex coriacea</i></u>	<u>15.0</u>	<u>yes</u>	<u>FACW</u>	
3. <u><i>Serenoa repens</i></u>	<u>15.0</u>	<u>yes</u>	<u>FACU</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>22.50</u> 20% of total cover: <u>9.00</u>	<u>45.0</u>	= Total Cover		Definitions of 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>
Herb Stratum (<u>30 ft radius</u>)				
1. <u><i>Andropogon virginicus</i></u>	<u>20.0</u>	<u>yes</u>	<u>FAC</u>	
2. <u><i>Anchistea virginica</i></u>	<u>10.0</u>	<u>yes</u>	<u>OBL</u>	
3. <u><i>Scleria triglomerata</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
50% of total cover: <u>22.50</u> 20% of total cover: <u>9.00</u>	<u>40.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				
1. <u><i>Vitis rotundifolia</i></u>	<u>10.0</u>	<u>yes</u>	<u>FAC</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
50% of total cover: <u>5.00</u> 20% of total cover: <u>2.00</u>	<u>10.0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.

SOIL

Sampling Point: UDP-1

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4"	10YR 3/1	50					Sa	masked sand grains
	10YR 7/1	50					Sa	unmasked sand grains
4-18"	10YR 4/1	70					Sa	masked sand grains
	10YR 6/1	30					Sa	unmasked sand grains

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes _____ No ☒

Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mu=Muck; Pe= Peat; Sa= Sand; Si=Silt

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: TIAA Tract City/County: Charlton County Sampling Date: 04/09/2019
 Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: WDP-1
 Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-1%
 Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.523742 Long: -82.137174 Datum: NAD83
 Soil Map Unit Name: Lynn Haven, Allanton and Kingsferry soils, ponded, 0-1% slopes NWI classification: PFO6C

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

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input checked="" type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)		<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T,U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>2"</u> Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0"</u> (includes capillary fringe)		Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: FAC-Neutral Test Results: Positive FACW and OBL: 12 to FACU and UPL: 0 Buttressed bases and multiply-trunkated bases of numerous canopy trees.		

VEGETATION – Use scientific names of plants.

 Sampling Point: WDP-1

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Taxodium ascendens</u>	<u>25.0</u>	<u>yes</u>	<u>OBL</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>10</u> (A) Total Number of Dominant Species Across All Strata: <u>10</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
2. <u>Nyssa biflora</u>	<u>25.0</u>	<u>yes</u>	<u>OBL</u>	
3. <u>Acer rubrum</u>	<u>20.0</u>	<u>yes</u>	<u>FAC</u>	
4. <u>Magnolia virginiana</u>	<u>10.0</u>	<u>no</u>	<u>FACW</u>	
5. <u>Pinus elliotii</u>	<u>10.0</u>	<u>no</u>	<u>FACW</u>	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: <u>12.50</u> 20% of total cover: <u>18.00</u>	<u>90.0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (<u>30 ft radius</u>)				
1. <u>Magnolia virginiana</u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>	
2. <u>Acer rubrum</u>	<u>10.0</u>	<u>yes</u>	<u>FAC</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>10.00</u> 20% of total cover: <u>4.00</u>	<u>20.0</u>	= Total Cover		
Shrub Stratum (<u>30 ft radius</u>)				Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Itea virginica</u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>	
2. <u>Lyonia lucida</u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>	
3. <u>Baccharis halimifolia</u>	<u>5.0</u>	<u>yes</u>	<u>FAC</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
50% of total cover: <u>12.50</u> 20% of total cover: <u>5.00</u>	<u>25.0</u>	= Total Cover		
Herb Stratum (<u>30 ft radius</u>)				Definitions of 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>
1. <u>Carex intumescens</u>	<u>25.0</u>	<u>yes</u>	<u>FACW</u>	
2. <u>Carex louisianica</u>	<u>15.0</u>	<u>yes</u>	<u>OBL</u>	
3. <u>Anchistea virginica</u>	<u>10.0</u>	<u>no</u>	<u>OBL</u>	
4. <u>Carex glaucescens</u>	<u>10.0</u>	<u>no</u>	<u>OBL</u>	
5. <u>Bidens mitis</u>	<u>10.0</u>	<u>no</u>	<u>OBL</u>	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
50% of total cover: <u>35.00</u> 20% of total cover: <u>14.00</u>	<u>70.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				
1. <u>Vitis rotundifolia</u>	<u>10.0</u>	<u>yes</u>	<u>FAC</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>5.00</u> 20% of total cover: <u>2.00</u>	<u>10.0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.

SOIL

Sampling Point: WDP-1

[illegible]

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: TIAA Tract City/County: Charlton County Sampling Date: 04/09/2019
 Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: UDP-2
 Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
 Landform (hillslope, terrace, etc.): Flatwoods Local relief (concave, convex, none): None Slope (%): 0-2%
 Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.521102 Long: -82.132706 Datum: NAD83
 Soil Map Unit Name: Leon fine sand, 0-2% slopes NWI classification: PEM1C

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation No, Soil No, or Hydrology No 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Remarks: - Vegetation historically impacted by silvicultural activities (planted pine). - Soils/Hydrology historically impacted by silvicultural activities (bedding for planted pine).	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)		<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T,U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>40</u> Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>36</u> (includes capillary fringe)		Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: FAC-Neutral Test Results: Positive FACW and OBL: 4 to FACU and UPL: 2		

VEGETATION – Use scientific names of plants.

 Sampling Point: UDP-2

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u><i>Pinus elliotii</i></u>	<u>60.0</u>	<u>yes</u>	<u>FACW</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>8</u> (A) Total Number of Dominant Species Across All Strata: <u>9</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>89%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: <u>20.00</u> 20% of total cover: <u>8.00</u>	<u>60.0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		
Shrub Stratum (<u>30 ft radius</u>)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u><i>Ilex glabra</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>	
2. <u><i>Kalmia hirsuta</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>	
3. <u><i>Serenoa repens</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACU</u>	
4. <u><i>Asimina pygmea</i></u>	<u>5.0</u>	<u>no</u>	<u>FACU</u>	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
50% of total cover: <u>17.50</u> 20% of total cover: <u>7.00</u>	<u>35.0</u>	= Total Cover		
Herb Stratum (<u>30 ft radius</u>)				Definitions of 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>
1. <u><i>Andropogon virginicus</i></u>	<u>20.0</u>	<u>yes</u>	<u>FAC</u>	
2. <u><i>Anchistea virginica</i></u>	<u>10.0</u>	<u>yes</u>	<u>OBL</u>	
3. <u><i>Xyris sp.</i></u>	<u>10.0</u>	_____	<u>NI</u>	
4. <u><i>Smilax bona-nox</i></u>	<u>5.0</u>	<u>no</u>	<u>FAC</u>	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
50% of total cover: <u>22.50</u> 20% of total cover: <u>9.00</u>	<u>45.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				
1. <u><i>Vitis rotundifolia</i></u>	<u>10.0</u>	<u>yes</u>	<u>FAC</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>5.00</u> 20% of total cover: <u>2.00</u>	<u>10.0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.

SOIL

Sampling Point: UDP-2

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4"	10YR 4/1	20					Sa	masked sand grains
	10YR 8/1	80					Sa	unmasked sand grains
4-7"	10YR 4/1	50					Sa	masked sand grains
	10YR 8/1	50					Sa	unmasked sand grains
7-18"	10YR 7/1	100					Sa	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes _____ No ☒

Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mu=Muck; Pe= Peat; Sa= Sand; Si=Silt

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: TIAA Tract City/County: Charlton County Sampling Date: 04/09/2019
 Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: WDP-2
 Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-1%
 Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.521442 Long: -82.132359 Datum: NAD83
 Soil Map Unit Name: Lynn Haven, Allanton and Kingsferry soils, ponded, 0-1% slopes NWI classification: PEM1C

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

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input checked="" type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)		<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T,U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0"</u> Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0"</u> (includes capillary fringe)		Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: FAC-Neutral Test Results: Positive FACW and OBL: 11 to FACU and UPL: 0 Organic bodies		

VEGETATION – Use scientific names of plants.

 Sampling Point: WDP-2

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Taxodium ascendens</u>	<u>10.0</u>	<u>yes</u>	<u>OBL</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>7</u> (A) Total Number of Dominant Species Across All Strata: <u>7</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: <u>5.00</u> 20% of total cover: <u>2.00</u>	<u>10.0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		
Shrub Stratum (<u>30 ft radius</u>)				Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Vaccinium elliotii</u>	<u>20.0</u>	<u>yes</u>	<u>FACW</u>	
2. <u>Styrax americanus</u>	<u>20.0</u>	<u>yes</u>	<u>FACW</u>	
3. <u>Ilex myrtifolia</u>	<u>20.0</u>	<u>yes</u>	<u>FACW</u>	
4. <u>Hypericum fasciculatum</u>	<u>15.0</u>	<u>yes</u>	<u>FACW</u>	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
50% of total cover: <u>37.50</u> 20% of total cover: <u>15.00</u>	<u>75.0</u>	= Total Cover		
Herb Stratum (<u>30 ft radius</u>)				Definitions of 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>
1. <u>Dichanthelium scabriusculum</u>	<u>35.0</u>	<u>yes</u>	<u>FACW</u>	
2. <u>Rubus argutus</u>	<u>25.0</u>	<u>yes</u>	<u>FAC</u>	
3. <u>Anchistea virginica</u>	<u>10.0</u>	<u>no</u>	<u>OBL</u>	
4. <u>Lorinseria areolata</u>	<u>10.0</u>	<u>no</u>	<u>OBL</u>	
5. <u>Scirpus cyperinus</u>	<u>10.0</u>	<u>no</u>	<u>OBL</u>	
6. <u>Rhynchospora fascicularis</u>	<u>10.0</u>	<u>no</u>	<u>FACW</u>	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
50% of total cover: <u>50.00</u> 20% of total cover: <u>20.00</u>	<u>100.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.

SOIL

Sampling Point: WDP-2

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-18"	10YR 2/1	100					Mu Mi	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☒ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20)
- ☐ **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mi=Mineral; Mu=Muck; Pe= Peat; Sa= Sand; Si=Silt

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: TIAA Tract City/County: Charlton County Sampling Date: 04/09/2019
 Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: UDP-3
 Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
 Landform (hillslope, terrace, etc.): Flatwoods Local relief (concave, convex, none): None Slope (%): 0-2%
 Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.527498 Long: -82.131007 Datum: NAD83
 Soil Map Unit Name: Leon fine sand, 0-2% slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation No, Soil No, or Hydrology No 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Remarks: - Vegetation historically impacted by silvicultural activities (planted pine). - Soils/Hydrology historically impacted by silvicultural activities (bedding for planted pine).	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)		<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T,U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>20</u> Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>18</u> (includes capillary fringe)		Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: FAC-Neutral Test Results: Positive FACW and OBL: 7 to FACU and UPL: 2		

VEGETATION – Use scientific names of plants.

 Sampling Point: UDP-3

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u><i>Pinus elliottii</i></u>	<u>60.0</u>	<u>yes</u>	<u>FACW</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>6</u> (A) Total Number of Dominant Species Across All Strata: <u>7</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>86%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: <u>30.00</u> 20% of total cover: <u>12.00</u>	<u>60.0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Shrub Stratum (<u>30 ft radius</u>)				
1. <u><i>Serenoa repens</i></u>	<u>25.0</u>	<u>yes</u>	<u>FACU</u>	
2. <u><i>Rhus copallinum</i></u>	<u>10.0</u>	<u>no</u>	<u>UPL</u>	
3. <u><i>Ilex coriacea</i></u>	<u>10.0</u>	<u>no</u>	<u>FACW</u>	
4. <u><i>Lyonia lucida</i></u>	<u>5.0</u>	<u>no</u>	<u>FACW</u>	
5. <u><i>Hypericum tetrapetulum</i></u>	<u>5.0</u>	<u>no</u>	<u>OBL</u>	
50% of total cover: <u>22.50</u> 20% of total cover: <u>11.00</u>	<u>55.0</u>	= Total Cover		Definitions of 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>
Herb Stratum (<u>30 ft radius</u>)				
1. <u><i>Andropogon virginicus</i></u>	<u>10.0</u>	<u>yes</u>	<u>FAC</u>	
2. <u><i>Anchistea virginica</i></u>	<u>10.0</u>	<u>yes</u>	<u>OBL</u>	
3. <u><i>Xyris sp.</i></u>	<u>5.0</u>	<u>yes</u>	<u>NI</u>	
4. <u><i>Smilax bona-nox</i></u>	<u>5.0</u>	<u>yes</u>	<u>FAC</u>	
5. <u><i>Rhynchospora fascicularis</i></u>	<u>5.0</u>	<u>yes</u>	<u>FACW</u>	
6. <u><i>Scleria triglomerata</i></u>	<u>5.0</u>	<u>yes</u>	<u>FACW</u>	
7. <u><i>Eupatorium compositifolium</i></u>	<u>5.0</u>	<u>yes</u>	<u>FAC</u>	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
50% of total cover: <u>22.50</u> 20% of total cover: <u>9.00</u>	<u>45.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		
Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.				

SOIL

 Sampling Point: UDP-3
Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8"	10YR 3/1	50					Sa	masked sand grains
	10YR 6/1	50					Sa	unmasked sand grains
3-8"	10YR 3/1	50					Sa	masked sand grains
8-18"	10YR 3/1	80					Sa	unmasked sand grains
	10YR 6/1	20					Sa	stripped areas

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☒ Stripped Matrix (S6)
- ☒ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

 Hydric Soil Present? Yes ☒ No ☐

Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mu=Muck; Pe= Peat; Sa= Sand; Si=Silt

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: TIAA Tract City/County: Charlton County Sampling Date: 04/09/2019
 Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: WDP-3
 Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-1%
 Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.527953 Long: -82.131286 Datum: NAD83
 Soil Map Unit Name: Lynn Haven fine sand, 0-2% slopes NWI classification: PFO6C

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

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input checked="" type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)		<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input checked="" type="checkbox"/> Sphagnum moss (D8) (LRR T,U)
Field Observations: Surface Water Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>2"</u> Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0"</u> Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0"</u> (includes capillary fringe)		Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: FAC-Neutral Test Results: Positive FACW and OBL: 10 to FACU and UPL: 0		

VEGETATION – Use scientific names of plants.

 Sampling Point: WDP-3

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u><i>Pinus elliottii</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>9</u> (A) Total Number of Dominant Species Across All Strata: <u>9</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: <u>5.00</u> 20% of total cover: <u>2.00</u>	<u>10.0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		
Shrub Stratum (<u>30 ft radius</u>)				Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u><i>Ilex glabra</i></u>	<u>15.0</u>	<u>yes</u>	<u>FACW</u>	
2. <u><i>Ilex coriacea</i></u>	<u>15.0</u>	<u>yes</u>	<u>FACW</u>	
3. <u><i>Aronia arbutifolia</i></u>	<u>15.0</u>	<u>yes</u>	<u>FACW</u>	
4. <u><i>Hypericum brachyphyllum</i></u>	<u>15.0</u>	<u>yes</u>	<u>FACW</u>	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
50% of total cover: <u>37.50</u> 20% of total cover: <u>15.00</u>	<u>60.0</u>	= Total Cover		
Herb Stratum (<u>30 ft radius</u>)				Definitions of 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>
1. <u><i>Anchistea virginica</i></u>	<u>20.0</u>	<u>yes</u>	<u>OBL</u>	
2. <u><i>Lorinseria areolata</i></u>	<u>20.0</u>	<u>yes</u>	<u>OBL</u>	
3. <u><i>Eriocaulon compressum</i></u>	<u>15.0</u>	<u>yes</u>	<u>OBL</u>	
4. <u><i>Smilax laurifolia</i></u>	<u>15.0</u>	<u>yes</u>	<u>FACW</u>	
5. <u><i>Andropogon virginicus</i></u>	<u>10.0</u>	<u>no</u>	<u>FAC</u>	
6. <u><i>Bidens mitis</i></u>	<u>10.0</u>	<u>no</u>	<u>OBL</u>	
7. <u><i>Xyris sp.</i></u>	_____	_____	<u>NI</u>	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
50% of total cover: <u>45.00</u> 20% of total cover: <u>18.00</u>	<u>90.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				
1. <u><i>Vitis rotundifolia</i></u>	<u>10.0</u>	<u>yes</u>	<u>FAC</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>5.00</u> 20% of total cover: <u>2.00</u>	<u>10.0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.

SOIL

Sampling Point: WDP-3**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-18"	10YR 2/1	60					Sa	Masked Sand Grains
	10YR 5/1	40					Sa	Stripped Areas

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

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ Organic Bodies (A6) **(LRR P, T, U)**
☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
☐ Muck Presence (A8) **(LRR U)**
☐ 1 cm Muck (A9) **(LRR P, T)**
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Coast Prairie Redox (A16) **(MLRA 150A)**
☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☒ Stripped Matrix (S6)
☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
☐ Thin Dark Surface (S9) **(LRR S, T, U)**
☐ Loamy Mucky Mineral (F1) **(LRR O)**
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Marl (F10) **(LRR U)**
☐ Depleted Ochric (F11) **(MLRA 151)**
☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
☐ Umbric Surface (F13) **(LRR P, T, U)**
☐ Delta Ochric (F17) **(MLRA 151)**
☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
☐ 2 cm Muck (A10) **(LRR S)**
☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
☐ Anomalous Bright Loamy Soils (F20)
(MLRA 153B)
☐ Red Parent Material (TF2)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mi=Mineral; Mu=Muck; Pe=Peat; Sa=Sand; Si=Silt

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: TIAA Tract City/County: Charlton County Sampling Date: 04/09/2019
 Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: UDP-4
 Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
 Landform (hillslope, terrace, etc.): Flatwoods Local relief (concave, convex, none): None Slope (%): 0-2%
 Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.519159 Long: -82.129260 Datum: NAD83
 Soil Map Unit Name: Lynn Haven fine sand, 0-2% slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation No, Soil No, or Hydrology No 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Remarks: - Vegetation historically impacted by silvicultural activities (planted pine). - Soils/Hydrology historically impacted by silvicultural activities (bedding for planted pine).	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)		<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T,U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>24</u> Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>20</u> (includes capillary fringe)		Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: FAC-Neutral Test Results: Positive FACW and OBL: 7 to FACU and UPL: 2		

VEGETATION – Use scientific names of plants.

 Sampling Point: UDP-4

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u><i>Pinus elliottii</i></u>	<u>60.0</u>	<u>yes</u>	<u>FACW</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>6</u> (A) Total Number of Dominant Species Across All Strata: <u>7</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>86%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: <u>30.00</u> 20% of total cover: <u>12.00</u>	<u>60.0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Shrub Stratum (<u>30 ft radius</u>)				
1. <u><i>Ilex coriacea</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>	
2. <u><i>Rhus copallinum</i></u>	<u>5.0</u>	<u>yes</u>	<u>UPL</u>	
3. <u><i>Morella cerifera</i></u>	<u>5.0</u>	<u>yes</u>	<u>FAC</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>10.00</u> 20% of total cover: <u>4.00</u>	<u>20.0</u>	= Total Cover		Definitions of 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>
Herb Stratum (<u>30 ft radius</u>)				
1. <u><i>Anchistea virginica</i></u>	<u>10.0</u>	<u>yes</u>	<u>OBL</u>	
2. <u><i>Pteridium aquilinum</i></u>	<u>10.0</u>	<u>yes</u>	<u>OBL</u>	
3. <u><i>Xyris sp.</i></u>	<u>5.0</u>	<u>yes</u>	<u>NI</u>	
4. <u><i>Polygala lutea</i></u>	<u>5.0</u>	<u>yes</u>	<u>FACW</u>	
5. <u><i>Rhynchospora fascicularis</i></u>	<u>5.0</u>	<u>yes</u>	<u>FACW</u>	
6. <u><i>Scleria triglomerata</i></u>	<u>5.0</u>	<u>yes</u>	<u>FACW</u>	
7. <u><i>Lachnacaulon anceps</i></u>	<u>5.0</u>	<u>yes</u>	<u>FACW</u>	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
50% of total cover: <u>22.50</u> 20% of total cover: <u>9.00</u>	<u>45.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.

SOIL

Sampling Point: UDP-4

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-18"	10YR 2/1	50					Sa	masked sand grains
	10YR 6/1	50					Sa	unmasked sand grains

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)

- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mu=Muck; Pe= Peat; Sa= Sand; Si=Silt

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: TIAA Tract City/County: Charlton County Sampling Date: 04/09/2019
 Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: WDP-4
 Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-1%
 Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.519681 Long: -82.129304 Datum: NAD83
 Soil Map Unit Name: Lynn Haven fine sand, 0-2% slopes NWI classification: PEM1C

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation No, Soil No, or Hydrology No 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Remarks: - Vegetation historically impacted by silvicultural activities (planted pine). - Soils/Hydrology historically impacted by silvicultural activities (bedding for planted pine).	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)		<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T,U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>6"</u> Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0"</u> (includes capillary fringe)		Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: FAC-Neutral Test Results: Positive FACW and OBL: 11 to FACU and UPL: 0		

VEGETATION – Use scientific names of plants.

 Sampling Point: WDP-4

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u><i>Pinus elliottii</i></u>	<u>70.0</u>	<u>yes</u>	<u>FACW</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>10</u> (A) Total Number of Dominant Species Across All Strata: <u>10</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: <u>35.00</u> 20% of total cover: <u>14.00</u>	<u>70.0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (<u>30 ft radius</u>)				
1. <u><i>Magnolia virginiana</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>	
2. <u><i>Acer rubrum</i></u>	<u>10.0</u>	<u>yes</u>	<u>FAC</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>10.00</u> 20% of total cover: <u>4.00</u>	<u>20.0</u>	= Total Cover		Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Shrub Stratum (<u>30 ft radius</u>)				
1. <u><i>Ilex glabra</i></u>	<u>15.0</u>	<u>yes</u>	<u>FACW</u>	
2. <u><i>Morella caroliniana</i></u>	<u>15.0</u>	<u>yes</u>	<u>FACW</u>	
3. <u><i>Hypericum brachyphyllum</i></u>	<u>15.0</u>	<u>yes</u>	<u>FACW</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>22.50</u> 20% of total cover: <u>9.00</u>	<u>45.0</u>	= Total Cover		Definitions of 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>
Herb Stratum (<u>30 ft radius</u>)				
1. <u><i>Anchistea virginica</i></u>	<u>20.0</u>	<u>yes</u>	<u>OBL</u>	
2. <u><i>Lorinseria areolata</i></u>	<u>20.0</u>	<u>yes</u>	<u>OBL</u>	
3. <u><i>Eriocaulon compressum</i></u>	<u>15.0</u>	<u>yes</u>	<u>OBL</u>	
4. <u><i>Juncus effusus</i></u>	<u>15.0</u>	<u>yes</u>	<u>OBL</u>	
5. <u><i>Scleria triglomerata</i></u>	<u>10.0</u>	<u>no</u>	<u>FACW</u>	
6. <u><i>Rhynchospora fascicularis</i></u>	<u>10.0</u>	<u>no</u>	<u>FACW</u>	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
50% of total cover: <u>45.00</u> 20% of total cover: <u>18.00</u>	<u>90.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.

SOIL

Sampling Point: WDP-4**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-18"	10YR 3/1	70					Sa	Masked Sand Grains
	10YR 6/1	40					Sa	Stripped Areas

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

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ Organic Bodies (A6) **(LRR P, T, U)**
☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
☐ Muck Presence (A8) **(LRR U)**
☐ 1 cm Muck (A9) **(LRR P, T)**
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Coast Prairie Redox (A16) **(MLRA 150A)**
☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☒ Stripped Matrix (S6)
☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
☐ Thin Dark Surface (S9) **(LRR S, T, U)**
☐ Loamy Mucky Mineral (F1) **(LRR O)**
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Marl (F10) **(LRR U)**
☐ Depleted Ochric (F11) **(MLRA 151)**
☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
☐ Umbric Surface (F13) **(LRR P, T, U)**
☐ Delta Ochric (F17) **(MLRA 151)**
☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
☐ 2 cm Muck (A10) **(LRR S)**
☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
☐ Anomalous Bright Loamy Soils (F20)
(MLRA 153B)
☐ Red Parent Material (TF2)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mi=Mineral; Mu=Muck; Pe=Peat; Sa=Sand; Si=Silt

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: TIAA Tract City/County: Charlton County Sampling Date: 04/09/2019
 Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: UDP-5
 Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
 Landform (hillslope, terrace, etc.): Flatwoods Local relief (concave, convex, none): None Slope (%): 0-2%
 Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.531590 Long: -82.124166 Datum: NAD83
 Soil Map Unit Name: Leon fine sand, 0-2% slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation No, Soil No, or Hydrology No 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Remarks:	
- Vegetation historically impacted by silvicultural activities (planted pine). - Soils/Hydrology historically impacted by silvicultural activities (bedding for planted pine).	

HYDROLOGY

Wetland Hydrology Indicators:		<u>Secondary Indicators (minimum of two required)</u>
<u>Primary Indicators (minimum of one is required; check all that apply)</u>		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Marl Deposits (B15) (LRR U)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
		<input type="checkbox"/> Sphagnum moss (D8) (LRR T,U)
Field Observations:		
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u> </u>	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>20</u>		
Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>16</u> (includes capillary fringe)		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: FAC-Neutral Test Results: Positive FACW and OBL: 3 to FACU and UPL: 1		

VEGETATION – Use scientific names of plants.

 Sampling Point: UDP-5

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>80%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: <u>30.00</u> 20% of total cover: <u>12.00</u>	<u>0.0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (<u>30 ft radius</u>)				
1. <u><i>Pinus elliotii</i></u>	<u>25.0</u>	<u>yes</u>	<u>FACW</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>12.50</u> 20% of total cover: <u>5.00</u>	<u>25.0</u>	= Total Cover		Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Shrub Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		Definitions of 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>
Herb Stratum (<u>30 ft radius</u>)				
1. <u><i>Eupatorium capillifolium</i></u>	<u>15.0</u>	<u>yes</u>	<u>FACU</u>	
2. <u><i>Cyperus flavescens</i></u>	<u>10.0</u>	<u>yes</u>	<u>OBL</u>	
3. <u><i>Andropogon virginicus</i></u>	<u>10.0</u>	<u>yes</u>	<u>FAC</u>	
4. <u><i>Pluchea odorata</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
50% of total cover: <u>22.50</u> 20% of total cover: <u>9.00</u>	<u>45.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.

SOIL

Sampling Point: UDP-5

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-18"	10YR 2/1	70					Sa	masked sand grains
	10YR 6/1	30					Sa	unmasked sand grains

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

☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ Organic Bodies (A6) **(LRR P, T, U)**
☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
☐ Muck Presence (A8) **(LRR U)**
☐ 1 cm Muck (A9) **(LRR P, T)**
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Coast Prairie Redox (A16) **(MLRA 150A)**
☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Dark Surface (S7) **(LRR P, S, T, U)**

☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
☐ Thin Dark Surface (S9) **(LRR S, T, U)**
☐ Loamy Mucky Mineral (F1) **(LRR O)**
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Marl (F10) **(LRR U)**
☐ Depleted Ochric (F11) **(MLRA 151)**
☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
☐ Umbric Surface (F13) **(LRR P, T, U)**
☐ Delta Ochric (F17) **(MLRA 151)**
☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

☐ 1 cm Muck (A9) **(LRR O)**
☐ 2 cm Muck (A10) **(LRR S)**
☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
☐ Anomalous Bright Loamy Soils (F20)
(MLRA 153B)
☐ Red Parent Material (TF2)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mu=Muck; Pe= Peat; Sa= Sand; Si=Silt

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: TIAA Tract City/County: Charlton County Sampling Date: 04/09/2019
 Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: WDP-5
 Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-1%
 Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.531937 Long: -82.124384 Datum: NAD83
 Soil Map Unit Name: Lynn Haven fine sand, 0-2% slopes NWI classification: PFO4/6C

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation No, Soil No, or Hydrology No 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Remarks: - Vegetation historically impacted by silvicultural activities (planted pine). - Soils/Hydrology historically impacted by silvicultural activities (bedding for planted pine).	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)		<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T,U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0"</u> Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0"</u> (includes capillary fringe)		Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: FAC-Neutral Test Results: Positive FACW and OBL: 8 to FACU and UPL: 0		

VEGETATION – Use scientific names of plants.

 Sampling Point: WDP-5

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>8</u> (A) Total Number of Dominant Species Across All Strata: <u>8</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (<u>30 ft radius</u>)				
1. <u>Magnolia virginiana</u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>	
2. <u>Acer rubrum</u>	<u>10.0</u>	<u>yes</u>	<u>FAC</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>10.00</u> 20% of total cover: <u>4.00</u>	<u>20.0</u>	= Total Cover		
Shrub Stratum (<u>30 ft radius</u>)				
1. <u>Morella caroliniana</u>	<u>15.0</u>	<u>yes</u>	<u>FACW</u>	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: <u>7.50</u> 20% of total cover: <u>3.00</u>	<u>15.0</u>	= Total Cover		
Herb Stratum (<u>30 ft radius</u>)				
1. <u>Anchistea virginica</u>	<u>20.0</u>	<u>yes</u>	<u>OBL</u>	Definitions of 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>
2. <u>Pluchea odorata</u>	<u>15.0</u>	<u>yes</u>	<u>FACW</u>	
3. <u>Mikania scandens</u>	<u>15.0</u>	<u>yes</u>	<u>FACW</u>	
4. <u>Juncus polycephalos</u>	<u>15.0</u>	<u>yes</u>	<u>OBL</u>	
5. <u>Typha latifolia</u>	<u>15.0</u>	<u>yes</u>	<u>OBL</u>	
6. <u>Carex louisianica</u>	<u>10.0</u>	<u>no</u>	<u>OBL</u>	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
50% of total cover: <u>45.00</u> 20% of total cover: <u>18.00</u>	<u>90.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				
1. <u>Vitis rotundifolia</u>	<u>10.0</u>	<u>yes</u>	<u>FAC</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>10.0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.

SOIL

Sampling Point: WDP-5

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-5"	10YR 2/1	100					Mu Mi	
5-18"	10YR 3/1	80					Sa	Masked sand grains
	10YR 6/1	20					Sa	Stripped Areas

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☒ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☒ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mi=Mineral; Mu=Muck; Pe= Peat; Sa= Sand; Si=Silt

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: TIAA Tract City/County: Charlton County Sampling Date: 04/09/2019
 Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: UDP-6
 Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
 Landform (hillslope, terrace, etc.): Flatwoods Local relief (concave, convex, none): None Slope (%): 0-2%
 Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.520355 Long: -82.143949 Datum: NAD83
 Soil Map Unit Name: Mascotte fine sand, 0-2% slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation No, Soil No, or Hydrology No 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Remarks:	
- Vegetation historically impacted by silvicultural activities (planted pine). - Soils/Hydrology historically impacted by silvicultural activities (bedding for planted pine).	

HYDROLOGY

Wetland Hydrology Indicators:		<u>Secondary Indicators (minimum of two required)</u>
<u>Primary Indicators (minimum of one is required; check all that apply)</u>		<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Marl Deposits (B15) (LRR U)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> Sphagnum moss (D8) (LRR T,U)
Field Observations:		Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u> </u> Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>28</u> Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>24</u> (includes capillary fringe)		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: FAC-Neutral Test Results: Positive FACW and OBL: 6 to FACU and UPL: 2		

VEGETATION – Use scientific names of plants.

 Sampling Point: UDP-6

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u><i>Pinus elliottii</i></u>	<u>25.0</u>	<u>yes</u>	<u>FACW</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>6</u> (A) Total Number of Dominant Species Across All Strata: <u>8</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>75%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: <u>12.50</u> 20% of total cover: <u>5.00</u>	<u>25.0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (<u>30 ft radius</u>)				
1. _____	<u>25.0</u>	<u>yes</u>	<u>FACW</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>12.50</u> 20% of total cover: <u>5.00</u>	<u>25.0</u>	= Total Cover		
Shrub Stratum (<u>30 ft radius</u>)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u><i>Serenoa repens</i></u>	<u>15.0</u>	<u>yes</u>	<u>FACU</u>	
2. <u><i>Morella cerifera</i></u>	<u>15.0</u>	<u>yes</u>	<u>FAC</u>	
3. <u><i>Ilex glabra</i></u>	<u>15.0</u>	<u>yes</u>	<u>FACW</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
50% of total cover: <u>22.50</u> 20% of total cover: <u>9.00</u>	<u>45.0</u>	= Total Cover		
Herb Stratum (<u>30 ft radius</u>)				Definitions of 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>
1. <u><i>Anchistea virginica</i></u>	<u>35.0</u>	<u>yes</u>	<u>OBL</u>	
2. <u><i>Pteridium aquilinum</i></u>	<u>15.0</u>	<u>yes</u>	<u>FACU</u>	
3. <u><i>Andropogon virginicus</i></u>	<u>15.0</u>	<u>yes</u>	<u>FAC</u>	
4. <u><i>Lachnanthes caroliniana</i></u>	<u>10.0</u>	<u>no</u>	<u>OBL</u>	
5. <u><i>Polygala nana</i></u>	<u>10.0</u>	<u>no</u>	<u>FACW</u>	
6. <u><i>Dichantheium aciculare</i></u>	<u>10.0</u>	<u>no</u>	<u>FACU</u>	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
50% of total cover: <u>47.50</u> 20% of total cover: <u>19.00</u>	<u>95.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.

SOIL

Sampling Point: UDP-6

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-18"	10YR 3/1	65					Sa	masked sand grains
	10YR 6/1	35					Sa	unmasked sand grains

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

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ Organic Bodies (A6) **(LRR P, T, U)**
☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
☐ Muck Presence (A8) **(LRR U)**
☐ 1 cm Muck (A9) **(LRR P, T)**
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Coast Prairie Redox (A16) **(MLRA 150A)**
☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
☐ Thin Dark Surface (S9) **(LRR S, T, U)**
☐ Loamy Mucky Mineral (F1) **(LRR O)**
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Marl (F10) **(LRR U)**
☐ Depleted Ochric (F11) **(MLRA 151)**
☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
☐ Umbric Surface (F13) **(LRR P, T, U)**
☐ Delta Ochric (F17) **(MLRA 151)**
☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
☐ 2 cm Muck (A10) **(LRR S)**
☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
☐ Anomalous Bright Loamy Soils (F20)
(MLRA 153B)
☐ Red Parent Material (TF2)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mu=Muck; Pe= Peat; Sa= Sand; Si=Silt

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: TIAA Tract City/County: Charlton County Sampling Date: 04/09/2019
 Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: WDP-6
 Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-1%
 Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.520660 Long: -82.143875 Datum: NAD83
 Soil Map Unit Name: Leon fine sand, 0-2% slopes NWI classification: PEM1C

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation No, Soil No, or Hydrology No 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Remarks: - Vegetation historically impacted by silvicultural activities (planted pine). - Soils/Hydrology historically impacted by silvicultural activities (bedding for planted pine).	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input checked="" type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input checked="" type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)		<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T,U)
Field Observations: Surface Water Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>2"</u> Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>12"</u> Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>8"</u> (includes capillary fringe)		Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: FAC-Neutral Test Results: Positive FACW and OBL: 8 to FACU and UPL: 0		

VEGETATION – Use scientific names of plants.

 Sampling Point: WDP-6

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u><i>Pinus elliotii</i></u>	<u>30.0</u>	<u>yes</u>	<u>FACW</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>8</u> (A) Total Number of Dominant Species Across All Strata: <u>8</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: <u>15.00</u> 20% of total cover: <u>6.00</u>	<u>30.0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		
Shrub Stratum (<u>30 ft radius</u>)				Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u><i>Styrax americanus</i></u>	<u>15.0</u>	<u>yes</u>	<u>FACW</u>	
2. <u><i>Itea virginica</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>	
3. <u><i>Ilex glabra</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>	
4. <u><i>Hypericum brachyphyllum</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
50% of total cover: <u>22.50</u> 20% of total cover: <u>9.00</u>	<u>45.0</u>	= Total Cover		
Herb Stratum (<u>30 ft radius</u>)				Definitions of 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 <input checked="" type="checkbox"/> No _____
1. <u><i>Anchistea virginica</i></u>	<u>25.0</u>	<u>yes</u>	<u>OBL</u>	
2. <u><i>Rhynchospora fascicularis</i></u>	<u>15.0</u>	<u>yes</u>	<u>FACW</u>	
3. <u><i>Rubus argutus</i></u>	<u>15.0</u>	<u>yes</u>	<u>FACW</u>	
4. <u><i>Andropogon virginicus</i></u>	<u>15.0</u>	<u>yes</u>	<u>OBL</u>	
5. <u><i>Xyris elliotii</i></u>	<u>10.0</u>	<u>no</u>	<u>OBL</u>	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
50% of total cover: <u>40.00</u> 20% of total cover: <u>16.00</u>	<u>80.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.

SOIL

Sampling Point: WDP-6**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4"	10YR 2/1	100					Sa	
4-18"	10YR 3/1	50					Sa	Masked sand grains
	10YR 5/1	50					Sa	Stripped Areas

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

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ Organic Bodies (A6) **(LRR P, T, U)**
☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
☐ Muck Presence (A8) **(LRR U)**
☐ 1 cm Muck (A9) **(LRR P, T)**
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Coast Prairie Redox (A16) **(MLRA 150A)**
☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☒ Stripped Matrix (S6)
☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
☐ Thin Dark Surface (S9) **(LRR S, T, U)**
☐ Loamy Mucky Mineral (F1) **(LRR O)**
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Marl (F10) **(LRR U)**
☐ Depleted Ochric (F11) **(MLRA 151)**
☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
☐ Umbric Surface (F13) **(LRR P, T, U)**
☐ Delta Ochric (F17) **(MLRA 151)**
☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
☐ 2 cm Muck (A10) **(LRR S)**
☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
☐ Anomalous Bright Loamy Soils (F20)
(MLRA 153B)
☐ Red Parent Material (TF2)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mi=Mineral; Mu=Muck; Pe= Peat; Sa= Sand; Si=Silt

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: TIAA Tract City/County: Charlton County Sampling Date: 04/09/2019
 Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: UDP-7
 Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
 Landform (hillslope, terrace, etc.): Flatwoods Local relief (concave, convex, none): None Slope (%): 0-2%
 Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.530547 Long: -82.155568 Datum: NAD83
 Soil Map Unit Name: Leon fine sand, 0-2% slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation No, Soil No, or Hydrology No 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Remarks: - Vegetation historically impacted by silvicultural activities (planted pine). - Soils/Hydrology historically impacted by silvicultural activities (bedding for planted pine).	

HYDROLOGY

Wetland Hydrology Indicators:		<u>Secondary Indicators (minimum of two required)</u>	
<u>Primary Indicators (minimum of one is required; check all that apply)</u>			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Marl Deposits (B15) (LRR U)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Water-Stained Leaves (B9)		<input type="checkbox"/> FAC-Neutral Test (D5)	
		<input type="checkbox"/> Sphagnum moss (D8) (LRR T,U)	
Field Observations:			
Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): <u> </u>	Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): <u>28</u>		
Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> (includes capillary fringe)	Depth (inches): <u>24</u>		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: FAC-Neutral Test Results: Negative FACW and OBL: 2 to FACU and UPL: 5			

VEGETATION – Use scientific names of plants.

 Sampling Point: UDP-7

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>7</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>57%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>12.50</u> 20% of total cover: <u>5.00</u>	<u>0.0</u>	= Total Cover		
Shrub Stratum (<u>30 ft radius</u>)				
1. <u>Ilex glabra</u>	<u>25.0</u>	<u>yes</u>	<u>FACW</u>	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u>Vaccinium myrsinites</u>	<u>15.0</u>	<u>yes</u>	<u>FACU</u>	
3. <u>Serenoa repens</u>	<u>15.0</u>	<u>yes</u>	<u>FACU</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: <u>27.50</u> 20% of total cover: <u>11.00</u>	<u>55.0</u>	= Total Cover		
Herb Stratum (<u>30 ft radius</u>)				
1. <u>Andropogon virginicus</u>	<u>25.0</u>	<u>yes</u>	<u>FAC</u>	Definitions of 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>
2. <u>Pteridium aquilinum</u>	<u>15.0</u>	<u>yes</u>	<u>FACU</u>	
3. <u>Anchistea virginica</u>	<u>15.0</u>	<u>yes</u>	<u>OBL</u>	
4. <u>Dichanthelium aciculare</u>	<u>10.0</u>	<u>no</u>	<u>FACU</u>	
5. <u>Rubus argutus</u>	<u>10.0</u>	<u>no</u>	<u>FAC</u>	
6. <u>Toxicodendron radicans</u>	<u>10.0</u>	<u>no</u>	<u>FACU</u>	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
50% of total cover: <u>42.50</u> 20% of total cover: <u>17.00</u>	<u>85.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				
1. <u>Vitis rotundifolia</u>	<u>10.0</u>	<u>yes</u>	<u>FAC</u>	50% of total cover: <u>5.00</u> 20% of total cover: <u>2.00</u> <u>10.0</u> = Total Cover
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	

Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.

SOIL

Sampling Point: UDP-7

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-8"	10YR 3/1	50					Sa	masked sand grains
	10YR 7/1	50					Sa	unmasked sand grains
8-18"	10YR 5/1	70					Sa	masked sand grains
	10YR 6/1	30					Sa	unmasked sand grains

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) (LRR P, T, U)
- ☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
- ☐ Muck Presence (A8) (LRR U)
- ☐ 1 cm Muck (A9) (LRR P, T)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) (MLRA 150A)
- ☐ Sandy Mucky Mineral (S1) (LRR O, S)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (LRR P, S, T, U)

- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
- ☐ Thin Dark Surface (S9) (LRR S, T, U)
- ☐ Loamy Mucky Mineral (F1) (LRR O)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) (LRR U)
- ☐ Depleted Ochric (F11) (MLRA 151)
- ☐ Iron-Manganese Masses (F12) (LRR O, P, T)
- ☐ Umbric Surface (F13) (LRR P, T, U)
- ☐ Delta Ochric (F17) (MLRA 151)
- ☐ Reduced Vertic (F18) (MLRA 150A, 150B)
- ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR O)
- ☐ 2 cm Muck (A10) (LRR S)
- ☐ Reduced Vertic (F18) (outside MLRA 150A,B)
- ☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
- ☐ Anomalous Bright Loamy Soils (F20) (MLRA 153B)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mu=Muck; Pe= Peat; Sa= Sand; Si=Silt

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: TIAA Tract City/County: Charlton County Sampling Date: 04/09/2019
 Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: WDP-7
 Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-1%
 Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.530989 Long: -82.155516 Datum: NAD83
 Soil Map Unit Name: Surrency mucky fine sand, frequently ponded, 0-1% slopes NWI classification: PSS6F

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

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input checked="" type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)		<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T,U)
Field Observations: Surface Water Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>3"</u> Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0"</u> Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0"</u> (includes capillary fringe)		Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: FAC-Neutral Test Results: Positive FACW and OBL: 12 to FACU and UPL: 0		

VEGETATION – Use scientific names of plants.

 Sampling Point: WDP-7

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u><i>Acer rubrum</i></u>	<u>30.0</u>	<u>yes</u>	<u>FAC</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>12</u> (A) Total Number of Dominant Species Across All Strata: <u>12</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
2. <u><i>Nyssa biflora</i></u>	<u>20.0</u>	<u>yes</u>	<u>OBL</u>	
3. <u><i>Taxodium ascendens</i></u>	<u>20.0</u>	<u>yes</u>	<u>OBL</u>	
4. <u><i>Pinus elliotii</i></u>	<u>15.0</u>	<u>no</u>	<u>FACW</u>	
5. _____	_____	_____	_____	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: <u>42.50</u> 20% of total cover: <u>17.00</u>	<u>85.0</u>	= Total Cover		
Sapling Stratum (<u>30 ft radius</u>)				
1. <u><i>Acer rubrum</i></u>	<u>10.0</u>	<u>yes</u>	<u>FAC</u>	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u><i>Nyssa biflora</i></u>	<u>5.0</u>	<u>yes</u>	<u>OBL</u>	
3. <u><i>Liquidambar styraciflua</i></u>	<u>5.0</u>	<u>yes</u>	<u>FAC</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	Definitions of 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.
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: <u>10.00</u> 20% of total cover: <u>4.00</u>	<u>20.0</u>	= Total Cover		
Shrub Stratum (<u>30 ft radius</u>)				
1. <u><i>Morella caroliniana</i></u>	<u>15.0</u>	<u>yes</u>	<u>FACW</u>	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____
2. <u><i>Itea virginica</i></u>	<u>15.0</u>	<u>yes</u>	<u>FACW</u>	
3. <u><i>Ilex myrtifolia</i></u>	<u>15.0</u>	<u>yes</u>	<u>FACW</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: <u>22.50</u> 20% of total cover: <u>9.00</u>	<u>45.0</u>	= Total Cover		
Herb Stratum (<u>30 ft radius</u>)				
1. <u><i>Carex louisianica</i></u>	<u>25.0</u>	<u>yes</u>	<u>OBL</u>	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____
2. <u><i>Dichanthelium scabriusculum</i></u>	<u>25.0</u>	<u>yes</u>	<u>OBL</u>	
3. <u><i>Osmunda regalis var. spectabilis</i></u>	<u>20.0</u>	<u>yes</u>	<u>OBL</u>	
4. <u><i>Anchistea virginica</i></u>	<u>15.0</u>	<u>no</u>	<u>OBL</u>	
5. <u><i>Lorinseria areolata</i></u>	<u>10.0</u>	<u>no</u>	<u>OBL</u>	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: <u>47.50</u> 20% of total cover: <u>19.00</u>	<u>95.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		
Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.				

SOIL

Sampling Point: WDP-7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-18"	10YR 2/1	100					Mu Mi	
¹ Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.						² Location: PL=Pore Lining, M=Matrix.		
Hydric Soil Indicators:							Indicators for Problematic Hydric Soils³:	
<input type="checkbox"/> Histosol (A1)			<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U)			<input type="checkbox"/> 1 cm Muck (A9) (LRR O)		
<input type="checkbox"/> Histic Epipedon (A2)			<input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U)			<input type="checkbox"/> 2 cm Muck (A10) (LRR S)		
<input type="checkbox"/> Black Histic (A3)			<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O)			<input type="checkbox"/> Reduced Vertic (F18) (outside MLRA 150A,B)		
<input type="checkbox"/> Hydrogen Sulfide (A4)			<input type="checkbox"/> Loamy Gleyed Matrix (F2)			<input type="checkbox"/> Piedmont Floodplain Soils (F19) (LRR P, S, T)		
<input type="checkbox"/> Stratified Layers (A5)			<input type="checkbox"/> Depleted Matrix (F3)			<input type="checkbox"/> Anomalous Bright Loamy Soils (F20)		
<input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U)			<input type="checkbox"/> Redox Dark Surface (F6)			<input type="checkbox"/> (MLRA 153B)		
<input checked="" type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U)			<input type="checkbox"/> Depleted Dark Surface (F7)			<input type="checkbox"/> Red Parent Material (TF2)		
<input type="checkbox"/> Muck Presence (A8) (LRR U)			<input type="checkbox"/> Redox Depressions (F8)			<input type="checkbox"/> Very Shallow Dark Surface (TF12)		
<input type="checkbox"/> 1 cm Muck (A9) (LRR P, T)			<input type="checkbox"/> Marl (F10) (LRR U)			<input type="checkbox"/> Other (Explain in Remarks)		
<input type="checkbox"/> Depleted Below Dark Surface (A11)			<input type="checkbox"/> Depleted Ochric (F11) (MLRA 151)					
<input type="checkbox"/> Thick Dark Surface (A12)			<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T)					
<input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A)			<input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U)					
<input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S)			<input type="checkbox"/> Delta Ochric (F17) (MLRA 151)					
<input type="checkbox"/> Sandy Gleyed Matrix (S4)			<input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B)					
<input type="checkbox"/> Sandy Redox (S5)			<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A)					
<input type="checkbox"/> Stripped Matrix (S6)			<input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)					
<input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U)								
Restrictive Layer (if observed):								
Type: _____								
Depth (inches): _____						Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____		
Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mi=Mineral; Mu=Muck; Pe=Peat; Sa=Sand; Si=Silt								

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: TIAA Tract City/County: Charlton County Sampling Date: 04/10/2019
 Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: UDP-8
 Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
 Landform (hillslope, terrace, etc.): Flatwoods Local relief (concave, convex, none): None Slope (%): 0-2%
 Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.528467 Long: -82.148634 Datum: NAD83
 Soil Map Unit Name: Leon fine sand, 0-2% slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation No, Soil No, or Hydrology No 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Remarks: - Vegetation historically impacted by silvicultural activities (planted pine). - Soils/Hydrology historically impacted by silvicultural activities (bedding for planted pine).	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)		<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T,U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>24</u> Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>18</u> (includes capillary fringe)		Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: FAC-Neutral Test Results: Positive FACW and OBL: 6 to FACU and UPL: 0		

VEGETATION – Use scientific names of plants.

 Sampling Point: UDP-8

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (<u>30 ft radius</u>)				
1. <u><i>Pinus elliotii</i></u>	<u>15.0</u>	<u>yes</u>	<u>FACW</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>7.50</u> 20% of total cover: <u>3.00</u>	<u>15.0</u>	= Total Cover		Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Shrub Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		Definitions of 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>
Herb Stratum (<u>30 ft radius</u>)				
1. <u><i>Andropogon virginicus</i></u>	<u>35.0</u>	<u>yes</u>	<u>FAC</u>	
2. <u><i>Lachnanthes caroliniana</i></u>	<u>15.0</u>	<u>yes</u>	<u>OBL</u>	
3. <u><i>Anchistea virginica</i></u>	<u>10.0</u>	<u>no</u>	<u>OBL</u>	
4. <u><i>Polygala lutea</i></u>	<u>5.0</u>	<u>no</u>	<u>FACW</u>	
5. <u><i>Lachnocaulon anceps</i></u>	<u>5.0</u>	<u>no</u>	<u>FACW</u>	
6. <u><i>Osmunda cinnamomea</i></u>	<u>5.0</u>	<u>no</u>	<u>FACW</u>	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
50% of total cover: <u>37.50</u> 20% of total cover: <u>15.00</u>	<u>75.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.

SOIL

Sampling Point: UDP-8

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-18"	10YR 3/1	50					Sa	masked sand grains
	10YR 7/1	50					Sa	unmasked sand grains

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Organic Bodies (A6) **(LRR P, T, U)**
- ☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ☐ Muck Presence (A8) **(LRR U)**
- ☐ 1 cm Muck (A9) **(LRR P, T)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Coast Prairie Redox (A16) **(MLRA 150A)**
- ☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ☐ Thin Dark Surface (S9) **(LRR S, T, U)**
- ☐ Loamy Mucky Mineral (F1) **(LRR O)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Marl (F10) **(LRR U)**
- ☐ Depleted Ochric (F11) **(MLRA 151)**
- ☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ☐ Umbric Surface (F13) **(LRR P, T, U)**
- ☐ Delta Ochric (F17) **(MLRA 151)**
- ☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes _____ No ☒

Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mu=Muck; Pe= Peat; Sa= Sand; Si=Silt

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: TIAA Tract City/County: Charlton County Sampling Date: 04/10/2019
 Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: WDP-8
 Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-1%
 Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.528096 Long: -82.148594 Datum: NAD83
 Soil Map Unit Name: Leon fine sand, 0-2% slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation No, Soil No, or Hydrology No 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Remarks:	
- Vegetation historically impacted by silvicultural activities (planted pine). - Soils/Hydrology historically impacted by silvicultural activities (bedding for planted pine).	

HYDROLOGY

Wetland Hydrology Indicators:		<u>Secondary Indicators (minimum of two required)</u>
<u>Primary Indicators (minimum of one is required; check all that apply)</u>		
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Marl Deposits (B15) (LRR U)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)		<input type="checkbox"/> Shallow Aquitard (D3)
<input checked="" type="checkbox"/> Water-Stained Leaves (B9)		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
		<input type="checkbox"/> Sphagnum moss (D8) (LRR T,U)
Field Observations:		
Surface Water Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>15"</u>		
Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>11"</u> (includes capillary fringe)		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: FAC-Neutral Test Results: Positive FACW and OBL: 8 to FACU and UPL: 0		

VEGETATION – Use scientific names of plants.

 Sampling Point: WDP-8

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u><i>Pinus elliottii</i></u>	<u>40.0</u>	<u>yes</u>	<u>FAC</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>8</u> (A) Total Number of Dominant Species Across All Strata: <u>8</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: <u>20.00</u> 20% of total cover: <u>8.00</u>	<u>40.0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		
Shrub Stratum (<u>30 ft radius</u>)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u><i>Ilex glabra</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>	
2. <u><i>Persea palustris</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>	
3. <u><i>Ilex myrtifolia</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
50% of total cover: <u>15.00</u> 20% of total cover: <u>6.00</u>	<u>30.0</u>	= Total Cover		
Herb Stratum (<u>30 ft radius</u>)				Definitions of 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>
1. <u><i>Andropogon virginicus</i></u>	<u>25.0</u>	<u>yes</u>	<u>FAC</u>	
2. <u><i>Rhynchospora fascicularis</i></u>	<u>15.0</u>	<u>yes</u>	<u>FACW</u>	
3. <u><i>Lycopodiella appressa</i></u>	<u>15.0</u>	<u>yes</u>	<u>OBL</u>	
4. <u><i>Anchistea virginica</i></u>	<u>15.0</u>	<u>yes</u>	<u>OBL</u>	
5. <u><i>Lachnanthes caroliniana</i></u>	<u>10.0</u>	<u>no</u>	<u>OBL</u>	
6. <u><i>Rhexia alifanus</i></u>	<u>5.0</u>	<u>no</u>	<u>FACW</u>	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
50% of total cover: <u>42.50</u> 20% of total cover: <u>17.00</u>	<u>85.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.

SOIL

Sampling Point: WDP-8**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-18"	10YR 2/1	70					Sa	masked sand grains
	10YR 5/1	30					Sa	stripped areas

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

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ Organic Bodies (A6) **(LRR P, T, U)**
☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
☐ Muck Presence (A8) **(LRR U)**
☐ 1 cm Muck (A9) **(LRR P, T)**
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Coast Prairie Redox (A16) **(MLRA 150A)**
☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☒ Stripped Matrix (S6)
☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
☐ Thin Dark Surface (S9) **(LRR S, T, U)**
☐ Loamy Mucky Mineral (F1) **(LRR O)**
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Marl (F10) **(LRR U)**
☐ Depleted Ochric (F11) **(MLRA 151)**
☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
☐ Umbric Surface (F13) **(LRR P, T, U)**
☐ Delta Ochric (F17) **(MLRA 151)**
☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
☐ 2 cm Muck (A10) **(LRR S)**
☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
☐ Anomalous Bright Loamy Soils (F20)
(MLRA 153B)
☐ Red Parent Material (TF2)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mi=Mineral; Mu=Muck; Pe=Peat; Sa=Sand; Si=Silt

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: TIAA Tract City/County: Charlton County Sampling Date: 04/10/2019
 Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: WDP-9
 Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-1%
 Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.529958 Long: -82.138997 Datum: NAD83
 Soil Map Unit Name: Surrency mucky fine sand, frequently ponded, 0-1% slopes NWI classification: PFO6/3C

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

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)		<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T,U)
Field Observations: Surface Water Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>8"</u> Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0"</u> (includes capillary fringe)		Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: FAC-Neutral Test Results: Positive FACW and OBL: 6 to FACU and UPL: 0		

VEGETATION – Use scientific names of plants.

 Sampling Point: WDP-9

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u><i>Taxodium ascendens</i></u>	<u>30.0</u>	<u>yes</u>	<u>FAC</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>9</u> (A) Total Number of Dominant Species Across All Strata: <u>9</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: <u>15.00</u> 20% of total cover: <u>6.00</u>	<u>30.0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (<u>30 ft radius</u>)				
1. <u><i>Magnolia virginiana</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>	
2. <u><i>Taxodium ascendens</i></u>	<u>10.0</u>	<u>yes</u>	<u>OBL</u>	
3. <u><i>Acer rubrum</i></u>	<u>10.0</u>	<u>yes</u>	<u>FAC</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>15.00</u> 20% of total cover: <u>6.00</u>	<u>30.0</u>	= Total Cover		Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Shrub Stratum (<u>30 ft radius</u>)				
1. <u><i>Ilex glabra</i></u>	<u>40.0</u>	<u>yes</u>	<u>FACW</u>	
2. <u><i>Ilex coriacea</i></u>	<u>30.0</u>	<u>yes</u>	<u>FACW</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>15.00</u> 20% of total cover: <u>6.00</u>	<u>70.0</u>	= Total Cover		Definitions of 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>
Herb Stratum (<u>30 ft radius</u>)				
1. <u><i>Anchistea virginica</i></u>	<u>10.0</u>	<u>yes</u>	<u>OBL</u>	
2. <u><i>Rhynchospora fascicularis</i></u>	<u>5.0</u>	<u>yes</u>	<u>FACW</u>	
3. <u><i>Andropogon virginicus</i></u>	<u>5.0</u>	<u>yes</u>	<u>FAC</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
50% of total cover: <u>10.00</u> 20% of total cover: <u>4.00</u>	<u>20.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.

 Majority of the historic canopy strata killed during forest fire in the last 10 years (West Mims Fire).

SOIL

Sampling Point: WDP-9**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-18"	10YR 3/1	80					Sa	masked sand grains
	10YR 5/1	20					Sa	stripped areas

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

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ Organic Bodies (A6) **(LRR P, T, U)**
☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
☐ Muck Presence (A8) **(LRR U)**
☐ 1 cm Muck (A9) **(LRR P, T)**
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Coast Prairie Redox (A16) **(MLRA 150A)**
☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☒ Stripped Matrix (S6)
☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
☐ Thin Dark Surface (S9) **(LRR S, T, U)**
☐ Loamy Mucky Mineral (F1) **(LRR O)**
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Marl (F10) **(LRR U)**
☐ Depleted Ochric (F11) **(MLRA 151)**
☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
☐ Umbric Surface (F13) **(LRR P, T, U)**
☐ Delta Ochric (F17) **(MLRA 151)**
☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
☐ 2 cm Muck (A10) **(LRR S)**
☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
☐ Anomalous Bright Loamy Soils (F20)
(MLRA 153B)
☐ Red Parent Material (TF2)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mi=Mineral; Mu=Muck; Pe=Peat; Sa=Sand; Si=Silt

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: TIAA Tract City/County: Charlton County Sampling Date: 04/10/2019
 Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: UDP-10
 Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
 Landform (hillslope, terrace, etc.): Flatwoods Local relief (concave, convex, none): None Slope (%): 0-2%
 Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.531032 Long: -82.133336 Datum: NAD83
 Soil Map Unit Name: Leon fine sand, 0-2% slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation No, Soil No, or Hydrology No 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Remarks: - Vegetation historically impacted by silvicultural activities (planted pine). - Soils/Hydrology historically impacted by silvicultural activities (bedding for planted pine).	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)		<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T,U)
Field Observations: Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>18"</u> Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>14"</u> (includes capillary fringe)		Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: FAC-Neutral Test Results: Positive FACW and OBL: 7 to FACU and UPL: 0		

VEGETATION – Use scientific names of plants.

 Sampling Point: UDP-10

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u><i>Pinus elliotii</i></u>	<u>40.0</u>	<u>yes</u>	<u>FACW</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>6</u> (A) Total Number of Dominant Species Across All Strata: <u>6</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: <u>20.00</u> 20% of total cover: <u>8.00</u>	<u>40.0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (<u>30 ft radius</u>)				
1. <u><i>Pinus elliotii</i></u>	<u>20.0</u>	<u>yes</u>	<u>FACW</u>	
2. <u><i>Acer rubrum</i></u>	<u>5.0</u>	<u>no</u>	<u>FAC</u>	
3. <u><i>Quercus nigra</i></u>	<u>5.0</u>	<u>no</u>	<u>FAC</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>15.00</u> 20% of total cover: <u>6.00</u>	<u>30.0</u>	= Total Cover		Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
Shrub Stratum (<u>30 ft radius</u>)				
1. <u><i>Ilex glabra</i></u>	<u>25.0</u>	<u>yes</u>	<u>FACW</u>	
2. <u><i>Vaccinium elliotii</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>	
3. <u><i>Lyonia lucida</i></u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: <u>22.50</u> 20% of total cover: <u>9.00</u>	<u>45.0</u>	= Total Cover		Definitions of 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>
Herb Stratum (<u>30 ft radius</u>)				
1. <u><i>Andropogon virginicus</i></u>	<u>35.0</u>	<u>yes</u>	<u>FAC</u>	
2. <u><i>Lachnocaulon anceps</i></u>	<u>10.0</u>	<u>no</u>	<u>FACW</u>	
3. <u><i>Rhynchospora fascicularis</i></u>	<u>10.0</u>	<u>no</u>	<u>FACW</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
50% of total cover: <u>27.50</u> 20% of total cover: <u>11.00</u>	<u>55.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		
Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.				

SOIL

Sampling Point: UDP-10**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-18"	10YR 3/1	90					Sa	masked sand grains
	10YR 5/1	10					Sa	unmasked sand grains

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

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ Organic Bodies (A6) **(LRR P, T, U)**
☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
☐ Muck Presence (A8) **(LRR U)**
☐ 1 cm Muck (A9) **(LRR P, T)**
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Coast Prairie Redox (A16) **(MLRA 150A)**
☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
☐ Thin Dark Surface (S9) **(LRR S, T, U)**
☐ Loamy Mucky Mineral (F1) **(LRR O)**
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Marl (F10) **(LRR U)**
☐ Depleted Ochric (F11) **(MLRA 151)**
☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
☐ Umbric Surface (F13) **(LRR P, T, U)**
☐ Delta Ochric (F17) **(MLRA 151)**
☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
☐ 2 cm Muck (A10) **(LRR S)**
☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
☐ Anomalous Bright Loamy Soils (F20)
(MLRA 153B)
☐ Red Parent Material (TF2)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ☒

Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mu=Muck; Pe= Peat; Sa= Sand; Si=Silt

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: TIAA Tract City/County: Charlton County Sampling Date: 04/10/2019
 Applicant/Owner: Twin Pines Minerals, LLC State: GA Sampling Point: WDP-10
 Investigator(s): C. Terrell / C. Stanford (TTL) Section, Township, Range: Not Available
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-1%
 Subregion (LRR or MLRA): LRR T / MLRA 153A Lat: 30.531296 Long: -82.133047 Datum: NAD83
 Soil Map Unit Name: Leon fine sand, 0-2% slopes NWI classification: PFO6C

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation Yes, Soil Yes, or Hydrology Yes significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation No, Soil No, or Hydrology No 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 <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Remarks: - Vegetation historically impacted by silvicultural activities (planted pine). - Soils/Hydrology historically impacted by silvicultural activities (bedding for planted pine).	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)		<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input checked="" type="checkbox"/> FAC-Neutral Test (D5) <input type="checkbox"/> Sphagnum moss (D8) (LRR T,U)
Field Observations: Surface Water Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): _____ Water Table Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>12"</u> Saturation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>6"</u> (includes capillary fringe)		Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: FAC-Neutral Test Results: Positive FACW and OBL: 11 to FACU and UPL: 0		

VEGETATION – Use scientific names of plants.

 Sampling Point: WDP-10

Tree Stratum (Plot sizes: <u>30 ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC: <u>7</u> (A) Total Number of Dominant Species Across All Strata: <u>7</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling Stratum (<u>30 ft radius</u>)				
1. <u>Magnolia virginiana</u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>	
2. <u>Persea borbonia</u>	<u>5.0</u>	<u>yes</u>	<u>FACW</u>	
3. <u>Acer rubrum</u>	<u>5.0</u>	<u>yes</u>	<u>FAC</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: <u>10.00</u> 20% of total cover: <u>4.00</u>	<u>20.0</u>	= Total Cover		
Shrub Stratum (<u>30 ft radius</u>)				
1. <u>Hypericum brachyphyllum</u>	<u>25.0</u>	<u>yes</u>	<u>FACW</u>	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u>Vaccinium elliotii</u>	<u>10.0</u>	<u>yes</u>	<u>FACW</u>	
3. <u>Hypericum tetrapetalum</u>	<u>10.0</u>	<u>yes</u>	<u>OBL</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
50% of total cover: <u>22.50</u> 20% of total cover: <u>9.00</u>	<u>45.0</u>	= Total Cover		
Herb Stratum (<u>30 ft radius</u>)				
1. <u>Rhynchospora fascicularis</u>	<u>50.0</u>	<u>yes</u>	<u>FACW</u>	
2. <u>Ludwigia alternifolia</u>	<u>10.0</u>	<u>no</u>	<u>OBL</u>	
3. <u>Scirpus cyperinus</u>	<u>10.0</u>	<u>no</u>	<u>OBL</u>	
4. <u>Scleria triglomerata</u>	<u>10.0</u>	<u>no</u>	<u>FACW</u>	
5. <u>Diodia virginiana</u>	<u>10.0</u>	<u>no</u>	<u>FACW</u>	
6. <u>Xyris ambigua</u>	<u>5.0</u>	<u>no</u>	<u>OBL</u>	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
50% of total cover: <u>47.50</u> 20% of total cover: <u>19.00</u>	<u>95.0</u>	= Total Cover		
Woody Vine Stratum (<u>30 ft radius</u>)				
1. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
50% of total cover: _____ 20% of total cover: _____	<u>0.0</u>	= Total Cover		

Remarks: (If observed, list morphological adaptations below). *Plants not identified to species are not used in dominance calculations.

 Majority of the historic canopy strata killed during forest fire in the last 10 years (West Mims Fire).

SOIL

Sampling Point: WDP-10**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-18"	10YR 2/1	70					Sa	masked sand grains
	10YR 5/1	30					Sa	stripped areas

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

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ Organic Bodies (A6) **(LRR P, T, U)**
☐ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
☐ Muck Presence (A8) **(LRR U)**
☐ 1 cm Muck (A9) **(LRR P, T)**
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Coast Prairie Redox (A16) **(MLRA 150A)**
☐ Sandy Mucky Mineral (S1) **(LRR O, S)**
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☒ Stripped Matrix (S6)
☐ Dark Surface (S7) **(LRR P, S, T, U)**

- ☐ Polyvalue Below Surface (S8) **(LRR S, T, U)**
☐ Thin Dark Surface (S9) **(LRR S, T, U)**
☐ Loamy Mucky Mineral (F1) **(LRR O)**
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Marl (F10) **(LRR U)**
☐ Depleted Ochric (F11) **(MLRA 151)**
☐ Iron-Manganese Masses (F12) **(LRR O, P, T)**
☐ Umbric Surface (F13) **(LRR P, T, U)**
☐ Delta Ochric (F17) **(MLRA 151)**
☐ Reduced Vertic (F18) **(MLRA 150A, 150B)**
☐ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
☐ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) **(LRR O)**
☐ 2 cm Muck (A10) **(LRR S)**
☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
☐ Anomalous Bright Loamy Soils (F20)
(MLRA 153B)
☐ Red Parent Material (TF2)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks: *Soil abbreviations: Cl=Clay; Lo=Loam; Mi=Mineral; Mu=Muck; Pe=Peat; Sa=Sand; Si=Silt

APPENDIX D

USACE Savannah District Request for Corps of Engineers Jurisdictional
Determination (JD) and/or Delineation Review Form



US Army Corps
of Engineers
Savannah District

SAS APPENDIX 1: Request for Corps of Engineers Jurisdictional Determination (JD) and/or Delineation Review

I. Reason for request: (check as many as applicable)

- ☐ I intend to construct/develop a project or perform activities on this parcel which would be designed to avoid all aquatic resources.
- ☐ I intend to construct/develop a project or perform activities on this parcel which would be designed to avoid all jurisdictional aquatic resources under Corps authority.
- ☒ I intend to construct/develop a project or perform activities on this parcel which may require authorization from the Corps, and the JD would be used to avoid and minimize impacts to jurisdictional aquatic resources and as an initial step in a future permitting process.
- ☐ I intend to construct/develop a project or perform activities on this parcel which may require authorization from the Corps; this request is accompanied by my permit application and the JD is to be used in the permitting process.
- ☐ I intend to construct/develop a project or perform activities in a navigable water of the U.S. which is included on the district Section 10 list and/or is subject to the ebb and flow of the tide.
- ☐ A Corps JD is required in order to obtain my local/state authorization.
- ☐ I intend to contest jurisdiction over a particular aquatic resource and request the Corps confirm that jurisdiction does/does not exist over the aquatic resource on the parcel.
- ☐ I believe that the site may be comprised entirely of dry land.
- ☐ Other: _____

II. I am requesting that the U.S. Army Corps of Engineers, Savannah District, provide me with the following:

- ☒ **Delineation Review of Aquatic Resources** - Concurrence with an aquatic resource delineation is a written notification from the Corps concurring, not concurring, or commenting on the aquatic resource boundaries, or limits, delineated on a property.
- ☐ **Preliminary Jurisdictional Determination** - (PJD). A PJD is defined in Corps regulations at 33 CFR 331.2, as "written indications that there may be waters of the United States on a parcel". When the Corps provides a PJD, the Corps is making no legally binding determination of any type regarding whether jurisdiction exists over the particular aquatic resource in question.
- ☐ **Approved Jurisdictional Determination** - (AJD) An AJD is defined in Corps regulations at 33 CFR 331.2. A definitive, official determination that there are, or that there are not, jurisdictional aquatic resources on a parcel.
- ☐ I am unclear as to what I would like to request and require additional information to inform my decision.

SECTION 1

Parcel Number of Property:

Lat. 30.526268

Long. - -82.143220

(in decimal degrees)

Parcel Address:

Parcel City : Saint George

Parcel County: Charlton

Zip:

Size of Review Area: 1143

Acre(s) Variable

Linear feet

SECTION 2

LANDOWNER NAME

First: Steven

Last: Ingle

Company: Twin Pines Minerals, LLC

Email Address: single@greenfuelsenergy.com

Address: 2100 Southbridge Parkway, Ste. 540

City: Birmingham

State: AL

Zip: 35209

Phone: 205-545-8759

AUTHORIZED AGENT'S NAME

First: Cindy

Last: House-Pearson

Company: TTL, Inc.

Email Address: chpearson@ttlusa.com

Address: 3516 Greensboro Avenue

City: Tuscaloosa

State: AL

Zip: 35401

Phone: 251-327-6153

PROPERTY ACCESS PERMISSION, AKNOWLEDGEMENT OF 18 U.S.C. SECTION 1001 AND STATEMENT OF AGENT AUTHORIZATION

Initial ONLY One:

SI By signing below, I certify that I am the owner of record of the property referenced in III, Section 1 above, and I hereby authorize representatives of the U.S. Army Corps of Engineers, Savannah District, to enter the property for purposes of conducting on-site inspections, and issuing an aquatic resource delineation concurrence and/or a jurisdictional determination. My signature shall also be an affirmation that I possess the requisite property rights to request a delineation review and/or a jurisdictional determination on the property referenced in III - Section 1. Further, I authorize the agent in III - Section 2, to act on my behalf in the processing of this request and to furnish supplemental information in support of this request.

N/A By signing below, I certify that I am acting as the duly authorized agent of the owner of record of the property referenced in III, Section 1 above, and have been given the authority to: 1) request a delineation review and/or a jurisdictional determination (JD) on the property referenced in III - Section 1, and 2) authorize representatives of the U.S. Army Corps of Engineers, Savannah District, to enter the property for purposes of conducting on-site inspections, and issuing an aquatic resource delineation concurrence and/or a jurisdictional determination. I understand that I may be required to provide documentary evidence of my authority to request a delineation review and/or JD, and/or to grant Corps of Engineers personnel access to the property.

Please Print Name Legibly: Steven R. Ingle

Signature

Date: 07/03/2019

Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103,

33 USC 1413; Regulatory Program of the U.S. Army Corps of Engineers; Final Rule for 33 CFR Parts 320-332.

Principal Purpose: The information that you provide will be used in evaluating your request to determine whether there are any aquatic resources within the project area subject to federal jurisdiction under the regulatory authorities referenced above.

Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public, and may be made

**US Army Corps of Engineers
Savannah District, Regulatory Division
Global Positioning Systems (GPS) Datasheet
Delineation of Wetlands, Streams and Other Waters
Within the State of Georgia**

USACE File Number SAS-2018-00554 Date of Delineation Mar 23-Apr 10, 2019

Name of Delineator Present Chris Terrell & Chris Stanford

Make and Model of GPS Device Used (must be capable of sub-meter accuracy)

Trimble Geo7x GPS (model 88161)

Geographic Coordinate System Used US State Plane GA East - NAD 1983 (Conus)

Name of Continually Operated Reference Station Used for Post-processing

CORS, Jacksonville, 1 (ZJX1), Florida

Date Post-processing Performed 6-6-2019

Percent Dilution of Position (PDOP) (6 or less is required) NA (use Trimble Smart Settings)

Name and Coordinates of Known Property Corner and/or Monument

GPS Reading of Known Property Corner and/or Monument

Frequency of Waypoints Taken During Survey as needed per field observations

Note: GPS data must be provided, if requested. If GPS data and/or a GPS delineation is determined unacceptable by the Savannah District, a survey sealed by a surveyor licensed in Georgia will be required.



2743-B Gunter Park Drive West
Montgomery, AL 36109
334.244.0766
www.TTLUSA.com

November 1, 2019

Transmitted Via: Email (Holly.A.Ross@usace.army.mil)

Ms. Holly Ross, Sr. Project Manager
U.S. Army Corps of Engineers
Savannah District - Regulatory Division
1104 N. Westover Blvd. Unit 9
Albany, Georgia 31707

Subject: Waters of the U.S. Delineation Field Verification – Revisions Submittal
Approximately 1,143-Acre TIAA Tract
Twin Pines, LLC
Saint George, Charlton County, Georgia
USACE Project No.: SAS-2018-00554
TTL Project No.: 000180200804.00

Dear Ms. Ross,

In response to the field verification conducted by the United States Army Corps of Engineers (USACE) and TTL on October 21-25, 2019, TTL provides the following summary of revisions:

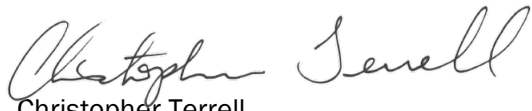
- a. Attachment A provides the revised Waters of the U.S. Delineation Map per the USACE field verification.
- b. Wetland A (WA) acreage was not changed.
- c. All 10 ditches (D1 through D10) were removed from the delineation. Any ditches that were located within wetlands were included in the wetland acreage for that wetland.
- d. The acreage of Wetland B (WB) was revised from 2.051 acres to 1.436 acres.
- e. The acreage of Wetland C (WC) was revised from 659.407 acres to 659.512 acres.
- f. Overall, the total wetland acreage was revised from 662.712 acres to 662.202 acres.

A separate letter for the other delineated property that was field verified (Adirondack) at the same time has been prepared and sent separately.

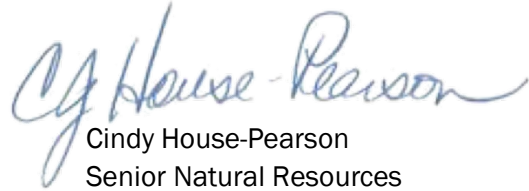
Please let TTL representatives know if additional information or revisions are needed for the project.

Sincerely,

TTL, Inc.

A handwritten signature in blue ink that reads "Christopher Terrell". The signature is fluid and cursive, with the first name and last name clearly distinguishable.

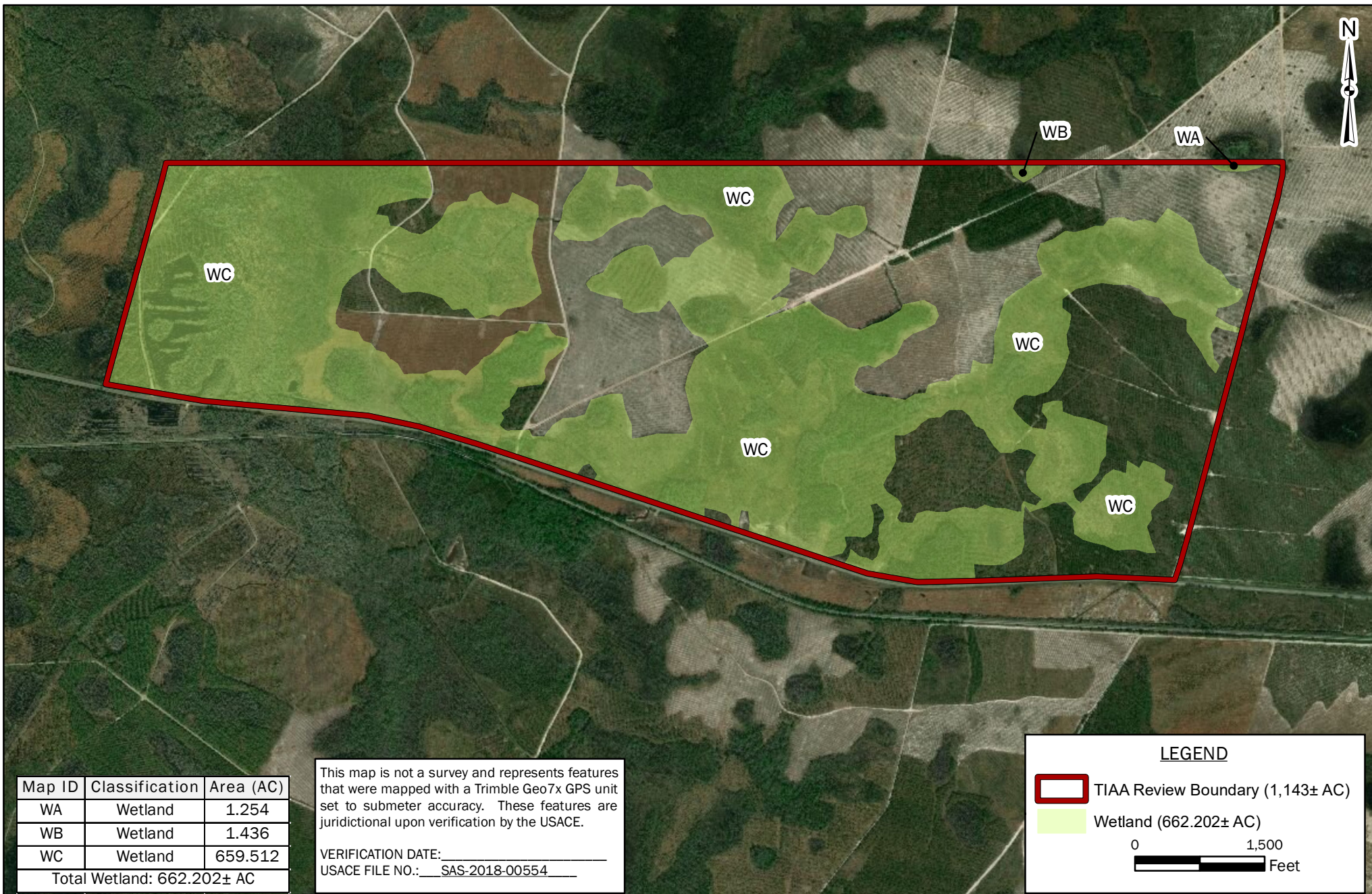
Christopher Terrell
Project Professional

A handwritten signature in blue ink that reads "Cindy House-Pearson". The signature is fluid and cursive, with the first name and last name clearly distinguishable.

Cindy House-Pearson
Senior Natural Resources
Client Manager

ATTACHMENT A

REVISED WATERS OF THE US DELINEATION MAP



WATERS OF THE U.S. DELINEATION MAP (VERIFIED)
 HYDROGEOLOGY OF THE TWIN PINES PROJECT AREA
 TWIN PINES MINERALS - TIAA TRACT
 ST. GEORGE, CHARLTON COUNTY, GEORGIA

BASEMAP: DigitalGlobe, 3/24/2018 (0.46 m Resolution)

DRAWN BY: DEK

CHECKED BY: CMS

DRAWING DATE: 6/7/2019

REVISION DATE: 10/25/2019

TTL JOB NO.: 000180200804.00

APPROXIMATE SCALE: 1" = 1,500'