IN THE TENNESSEE PUBLIC UTILITY COMMISSION
AT NASHVILLE, TENNESSEE

IN RE:	)	
	)	
PETITION OF TENNESSEE	)	
WASTEWATER SYSTEMS, INC., TO	)	**DOCKET NO.** 17-00145
AMEND ITS CERTIFICATE OF	)	
CONVENIENCE AND NECESSITY	)	

PETITION TO AMEND CERTIFICATE OF CONVENIENCE AND NECESSITY

Tennessee Wastewater Systems, Inc. ("TWSI" or "Company") petitions the Tennessee Public Utility Commission ("TPUC" or "Commission") to amend its Certificate of Convenience and Necessity to expand its service area to include a development in Williamson County known as Sweet Apple Hill. As demonstrated in the application and attached exhibits, there is a public need for service and TWSI has the requisite management experience, technical expertise, and financial capability to provide such service pursuant to the rules and regulations of the Commission. In support of its Petition, TWSI states as follows:

1. TWSI is a leader in decentralized wastewater systems and technology in the Southeastern United States. TWSI has been a regulated provider of wastewater services in Tennessee since receiving its initial CCN from this Commission in 1994; currently holding over 100 certificates for territories in Middle and East Tennessee and providing service to over 3000 customers across the State.

2. The proposed service area for this amendment encompasses a proposed residential subdivision known as Sweet Apple Hill, a development containing 120 home sites. The proposed development is located at 3538-42 Bear Creek Rd. and 4009-33 Carter's Creek Pike in Williamson County, Tennessee identified on Williamson County tax maps at Map 103, Parcel 00900. The subdivision will be developed in a single phase. A map of the location for the development is attached as Exhibit "A". The Sweet Apple Hill community is located approximately 6 miles from the existing CCN TWSI holds for Goose Creek Area (Docket #02-00172).

3. The proposed wastewater treatment facility will be known as the Bear Creek-Miles Treatment Facility and will be a septic tank effluent ("STEP") system consisting of septic tanks and pumps at each residence, a watertight effluent collection system, recirculating media filter treatment, and subsurface drip dispersal. This type of system is in the majority of those owned and operated by TWSI. A State Operating Permit from the Tennessee Department of Environment and Conservation has been applied for and is pending approval (see attached Exhibit "B"). The land for the treatment facility will be deeded to TWSI at the time the final plat is signed just prior to recording.

4. TWSI has the management and technical experience to operate the proposed system as evidenced in part by the over 100 certificates it has been issued by this Commission to operate wastewater systems across Middle and East Tennessee. The Company will handle system operations, inspection, maintenance, and repair services through its Certified Operators. The system will be monitored continuously through remote telemetry and the HAWKMS system. HAWKMS gives operators the ability to remotely monitor and control their plants by means of status and override values. The technology is also able to generate performance reports that can be delivered to utility management to highlight key performance indicators. HAWKMS is the most advanced system of its type in the country and can sense and adapt to certain aspects of plant operation to optimize energy consumption and plant conditions. There are currently over 300 wastewater facilities utilizing this technology.

5. TWSI has the financial capabilities to provide wastewater service to the proposed development. TWSI currently has filed with the Commission a bond in the amount of $300,000 which the Commission has determined to be sufficient and in the public interest. The cost of construction for the system is being paid by the developer through a contribution in aid of construction. Lastly the developer or lot owners will pay annual access fees in accordance with the TWSI's tariff to help cover the operations and maintenance costs of the system until homes are built and monthly sewer customers are established.

6. TWSI has received letters from HB&TS Utility District, the area water provider, and the Williamson County Mayor stating neither will provide sewer to this subdivision (see attached Exhibit

"C and D") as well as a letter from the developer of Sweet Apple Hill requesting that TWSI provide sewer service to the subdivision (see attached Exhibit "E").

7. Residential Customers at Sweet Apple Hill will be charged according to Rate Class 1 of TWSI's tariff. That rate is currently set at $44.42 as of the date of this filing (see attached Exhibit "F").

THEREFORE, having shown that TWSI has the requisite managerial experience, technical experience, and financial capabilities – as well as establishing that a need exists for the Company to provide service to the Sweet Apple Hill subdivision – TWSI respectfully requests the Commission to approve TWSI's request to amend its CCN to include the Sweet Apple Hill subdivision.

RESPECTFULLY SUBMITTED,

Jeff Risden (BPR No. 32769)
General Counsel
Tennessee Wastewater Systems, Inc.
851 Aviation Parkway
Smyrna, TN 37167
(615) 220-7171
jeff.risden@adenus.com

EXHIBIT A

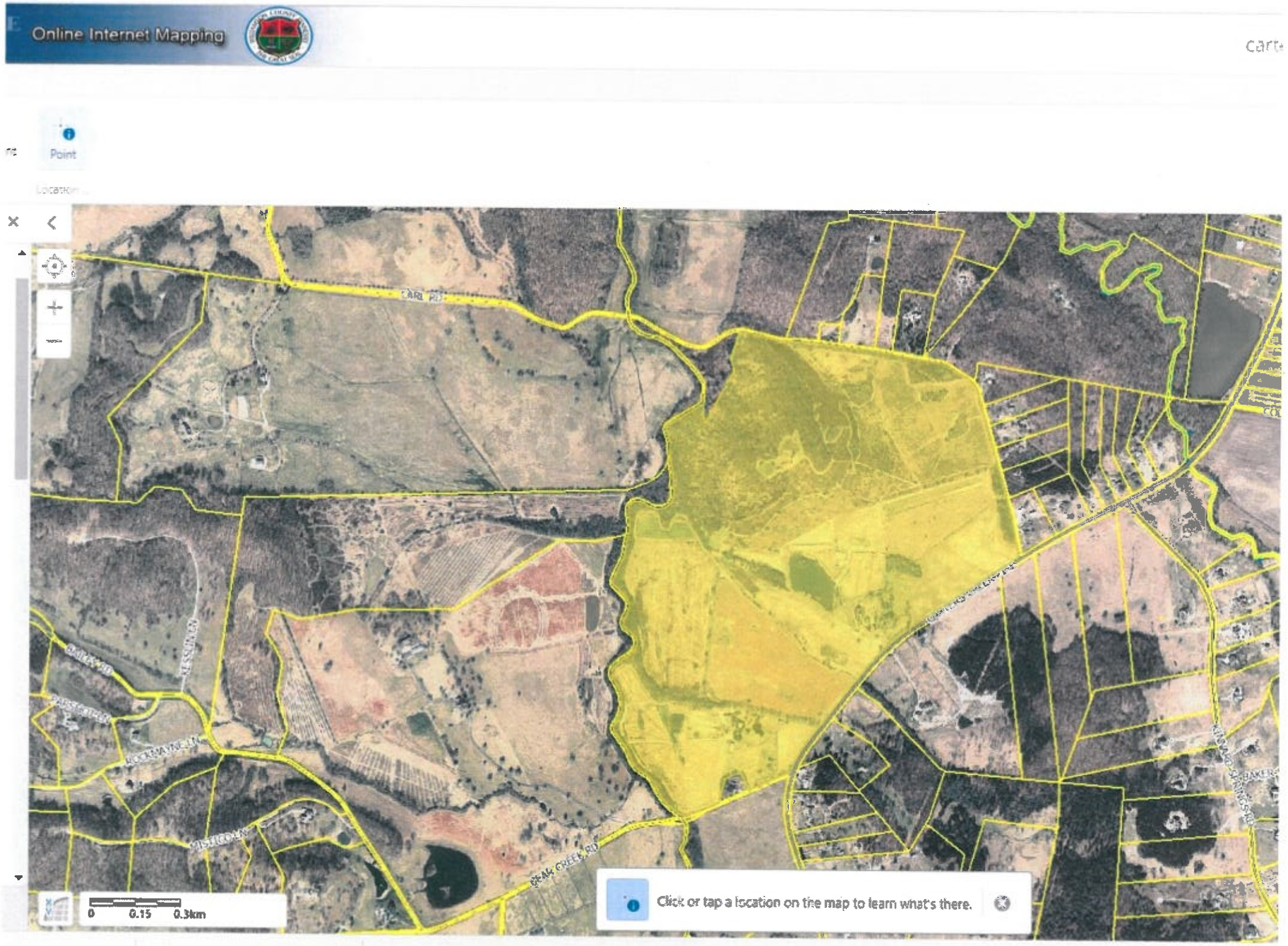

EXHIBIT B

Tennessee Department of Environment and Conservation
Division of Water Resources
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Avenue, 11th Floor
Nashville, Tennessee 37243
(615) 532-0625

APPLICATION FOR A STATE OPERATION PERMIT (SOP)

Type of application: ☒ New Permit ☐ Permit Reissuance ☐ Permit Modification

Permittee Identification: (Name of city, town, industry, corporation, individual, etc., applying, according to the provisions of Tennessee Code Annotated Section 69-3-108 and Regulations of the Tennessee Water Quality Control Board.)	
Permittee Name (applicant):	**Tennessee Wastewater Systems, Inc.**
Permittee Address:	**851 Aviation Parkway Smyrna, TN 37167**

Official Contact: **Charles Hyatt**	Title or Position: **President**		
Mailing Address: **849 Aviation Parkway**	City: **Smyrna**	State: **TN**	Zip: **37167**
Phone number(s): **(615) 220-7200**	E-mail: **Charles.hyatt@adenus.com**		

Optional Contact: Jessee Hutcherson	Title or Position:		
Address: 851 Aviation PKWY	City: **Smyrna**	State: **TN**	Zip: **37167**
Phone number(s): **615-220-7200**	E-mail: **Jessee.hutcherson@adenus.com**		

Application Certification (must be signed in accordance with the requirements of Rule 1200-4-5-.05)

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name and title; print or type	Signature	Date
Charles Hyatt, President		

TN DEPT. OF ENV. & CONSERVATION

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DIVISION OF WATER RESOURCES

Permit Number: SOP-_____

Facility Identification:		Existing Permit No.	
Facility Name:	**Bear Creek – Miles Treatment Facility**	County:	**Williamson**
Facility Address or Location:	**3538 -42 Bear Creek Road, Franklin TN 37604**	Latitude:	35.867752
		Longitude:	-86.965392

Name and distance to nearest receiving waters: **84 feet to Murfrees Fork Creek**

If any other State or Federal Water/Wastewater Permits have been obtained for this site, list their permit numbers:
N/A

Name of company or governmental entity that will operate the permitted system:

Operator address: **851 Aviation Parkway, Smyrna, TN 37167**

Has the owner/operator filed for a Certificate of Convenience & Necessity (CCN), or an amended CCN, with the Tennessee Public Utility Commission (TPUC) (may be required for collection systems and land application treatment systems)? ☒ Yes ☐ No ☐ N/A

If the applicant listed above does not yet own the facility/site or if the applicant will not be the operator, explain how and when the ownership will be transferred or describe the contractual arrangement and renewal terms of the contract for operations.
Tennessee Wastewater Systems Inc. will be deeded the property when the subdivision plat is recorded.

Complete the following information explaining the entity type, number of design units, and daily design wastewater flow:

Entity Type	Number of Design Units		Flow (gpd)
☐ City, town or county	No. of connections:		
☒ Subdivision	No. of homes: **120**	Avg. No. bedrooms per home: **3**	**36,000**
☐ School	No. of students:	Size of cafeteria(s): No. of showers:	
☐ Apartment	No. of units:	No. units with Washer/Dryer hookups: No. units without W/D hookups:	
☐ Commercial Business	No. of employees:	Type of business:	
☐ Industry	No. of employees:	Product(s) manufactured:	
☐ Resort	No. of units:		
☐ Camp	No. of hookups:		
☐ RV Park	No. of hookups:	No. of dump stations:	
☐ Car Wash	No. of bays:		
☐ Other			

Describe the type and frequency of activities that result in wastewater generation.
Typical Domestic Waste

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DIVISION OF WATER RESOURCES

Permit Number: SOP-_____

Engineering Report (required for collection systems and/or land application treatment systems):	☐ N/A
☐ Prepared in accordance with Rule 1200-4-2-.03 and Section 1.2 of the Tennessee Design Criteria (see website for more information) ☒ Attached, or ☐ Previously submitted and entitled: Approved? ☐ Yes. Date: ☐ No	

Wastewater Collection System:	☐ N/A
System type (i.e., gravity, low pressure, vacuum, combination, etc.): Watertight effluent collection	
System Description: Septic tank effluent with 3", and 4" diameter SDR 21 PVC pipe and required fittings	
Describe methods to prevent and respond to any bypass of treatment or discharges (i.e., power failures, equipment failures, heavy rains, etc.): Tanks have a minimum of 24-36 hours storage in the STEP tank. Heavy rains have a minimal impact on a watertight collection system. Small generators can be connected to the pump stations and treatment system as necessary during an extended power outage.	
In the event of a system failure describe means of operator notification: All pumps have redundancy & alarms.	
List the **emergency** contact(s) (name/phone): Cecil Brown 865-776-1455	
For low-pressure systems, who is responsible for maintenance of STEP/STEG tanks and pumps or grinder pumps (list all contact information)? **STEP and STEG Tanks -Adenus Operations, 849 Aviation Pkwy. Smyrna, TN 37167** (615)-220-7200	
Approximate length of sewer (excluding private service lateral): Approx. 14,000 LF	
Number/hp of lift stations: 0 / Number/hp of lift pumps 0/0	
Number/volume of low pressure and or grinder pump tanks 0/0 Number/volume septic tanks 120/1,500 gallon	
Attach a schematic of the collection system. ☒ Attached	
If this is a satellite sewer and you are tying in to another sewer system complete the following section, listing tie-in points to the sewer system and their location (attach additional sheets as necessary):	

Tie-in Point	Latitude (xx.xxxx°)	Longitude (xx.xxxx°)
N/A		

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Permit Number: SOP-_____

Land Application Treatment System:	☐ N/A
Type of Land Application Treatment System: ☒ Drip ☐ Spray ☐ Other, explain:	
Type of treatment facility preceding land application (recirculating media filters, lagoons, other, etc.): Recirculating Media Filter	
Attach a treatment schematic. ☒ Attached	
Describe methods to prevent and respond to any bypass of treatment or discharges (i.e., power failures, equipment failures, heavy rains, etc.): Same as above	
For New or Modified Projects: Name of Developer for the project: Old Hillsboro Building Company, LLC.	
Developer address and phone number: Old Hillsboro Building Company, LLC 237 2nd AVE South Franklin, TN 37064 eddie@oldhillsborobuildingcompany.com 615.500.6291	
For land application, list: Proposed acreage involved: 8.26 (4.13 for primary/4.13 for secondary) Inches/week gpd/sq.ft loading rate to be applied: 2.25 inches/week, 0.2 gpd/sf	
Is wastewater disinfection proposed?	
☐ Yes Describe land application area access:	
☒ No Describe how access to the land application area will be restricted: Fenced	

Attach required additional Engineering Report Information (see website for more information)

☒ Topographic map (1:24,000 scale presented at a six inch by six inch minimum size) showing the location of the project including quadrangle(s) name(s) GPS coordinates, and latitude and longitude in decimal degrees should also be included.

☒ Scaled layout of facility showing the following: lots, buildings, etc. being served, the wastewater collection system routes, the pretreatment system location, the proposed land application area(s), roads, property boundaries, and sensitive areas such as streams, lakes, springs, wells, wellhead protection areas, sinkholes and wetlands.

☒ Soils information for the proposed land disposal area in the form of a Water Pollution Control (WPC) Soils Map per Chapter 16 and 17 State of Tennessee Design Criteria for Sewage Work. The soils information should include soil depth (borings to a minimum of 4 feet or refusal) and soil profile description for each soil mapped.

☒ Topographic map of the area where the wastewater is to be land applied with no greater than ten foot contours presented at a minimum size of 24 inches by 24 inches.

☒ Describe alternative application methods based on the following priority rating: (1) connection to a municipal/public sewer system, (2) connection to a conventional subsurface disposal system as regulated by the Division of Groundwater Protection, and/or (3) land application.

Permit Number: SOP-_____

For Drip Dispersal Systems Only: Unless otherwise determined by the Department, sewage treatment effluent wells, i.e, large capacity treatment/drip dispersal systems after approval of the SOP Application, will be issued an UIC tracking number and will be authorized as Permit by Rule per UIC Rule 1200-4-6-.14(2) and upon issue of a State Operating Permit and Sewage System Construction Approval by the Department. Describe the following:	☒ N/A
The area of review (AOR) for each Drip Dispersal System shall, unless otherwise specified by the Department, consist of the area lying within a one mile radius or an area defined by using calculations under 1200-4-6-.09 of the Drip Dispersal System site or facility, and shall include, but not be limited to general surface geographic features, general subsurface geology, and general demographic and cultural features within the area. Attach to this part of the application a general characterization of the AOR, including the following: (This can be in narrative form) See 2.0	
☒ A general description of all past and present groundwater uses as well as the general groundwater flow direction and general water quality. See 3.0	
☒ A general description of the population and cultural development within the AOR (i.e. agricultural, commercial, residential or mixed) See 4.0	
☒ Nature of injected fluid to include physical, chemical, biological or radiological characteristics. See 5.0	
☒ If groundwater is used for drinking water within the area of review, then identify and locate on a topographic map all groundwater withdrawal points within the AOR, which supply public or private drinking water systems. Or supply map showing general location of publicly supplied water for the area (this can be obtained from the water provider) See 6.0	
☐ If the proposed system is located within a wellhead protection area or source water protection area designated by Rule 1200-5-1-.34, show the boundary of the protection area on the facility site plan.	
☒ Description of system, Volume of injected fluid in gallons per day based upon design flow, including any monitoring wells See 7.0	
☒ Nature and type of system, including installed dimensions of wells and construction materials See 8.0	

Pump and Haul:	☒ N/A
Reason system cannot be served by public sewer:	
Distance to the nearest manhole where public sewer service is available:	
When sewer service will be available:	
Volume of holding tank: gal.	
Tennessee licensed septage hauler (attach copy of agreement):	
Facility accepting the septage (attach copy of acceptance letter):	
Latitude and Longitude (in decimal degrees) of approved manhole for discharge of septage:	
Describe methods to prevent and respond to any bypass of treatment or discharges (i.e., power failures, equipment failures, heavy rains, etc.):	

Holding Ponds (for non-domestic wastewater only):	☒ N/A
Pond use: ☐ Recirculation ☐ Sedimentation ☐ Cooling ☐ Other (describe):	
Describe pond use and operation:	
If the pond(s) are existing pond(s), what was the previous use?	
Have you prepared a plan to dispose of rainfall in excess of evaporation? ☐ Yes ☐ No	
If so, describe disposal plan:	
Is the pond ever dewatered? ☐ Yes ☐ No	
If so, describe the purpose for dewatering and procedures for disposal of wastewater and/or sludge:	
Is(are) the pond(s) aerated? ☐ Yes ☐ No	
Volume of pond(s): gal. Dimensions:	
Is the pond lined (Note if this is a new pond system it must be lined for SOP coverage. Otherwise, you must apply for an Underground Injection Control permit.)? ☐ Yes ☐ No	
Describe the liner material (if soil liner is used give the compaction specifications):	
Is there an emergency overflow structure? ☐ Yes ☐ No	
If so, provide a design drawing of structure.	
Are monitoring wells or lysimeters installed near or around the pond(s)? ☐ Yes ☐ No	
If so, provide location information and describe monitoring protocols (attach additional sheets as necessary).	

Permit Number: SOP-_____

Mobile Wash Operations: ☒ N/A

☐ Individual Operator ☐ Fleet Operation Operator

Indicate the type of equipment, vehicle, or structure to be washed during normal operations (check all that apply):

☐ Cars
☐ Trucks
☐ Trailers (Interior washing of dump-trailers, or tanks, is prohibited.)
☐ Other (describe):
☐ Parking Lot(s): sq. ft.
☐ Windows: sq. ft.
☐ Structures (describe):

Wash operations take place at (check all that apply):

☐ Car sales lot(s)
☐ Private industry lot(s)
☐ County(ies), list:
☐ Public parking lot(s)
☐ Private property(ies)
☐ Statewide

Wash equipment description:

☐ Truck mounted
☐ Rinse tank size(s) (gal.):
☐ Collection tank size(s) (gal.):
☐ Trailer mounted
☐ Mixed tanks size(s) (gal.):
Number of tanks per vehicle:

Pressure washer: psi (rated) gpm (rated)
☐ gas powered ☐ electric

Vacuum system manufacturer/model: Vacuum system capacity: inches Hg

Describe any other method or system used to contain and collect wastewater:

List the public sewer system where you are permitted or have written permission to discharge waste wash water (include a copy of the permit or permission letter):

Are chemicals pre-mixed, prior to arriving at wash location? ☐ Yes ☐ No

Describe all soaps, detergents, or other chemicals used in the wash operation (attach additional sheets as necessary):

Chemical name:	Manufacturer:	Primary CAS No. or Product No.

Old Hillsboro Building Company, LLC
237 2nd Ave. South
Franklin, TN 37064

Fifth Third Operating 3350

2130
Date: 12/13/2017

Pay Seven Hundred Fifty Dollars

$750.00

Memo: Inv #12.12.2017

Pay to the Order of TN State Treasurer
TN State Capitol, 1st Floor
600 Charlotte Avenue
Nashville, TN 37243
United States

[redacted]

Old Hillsboro Building Company, LLC
V475–TN State Treasurer
Print As: TN State Treasurer

TN State Capitol, 1st Floor
600 Charlotte Avenue
Nashville, TN 37243

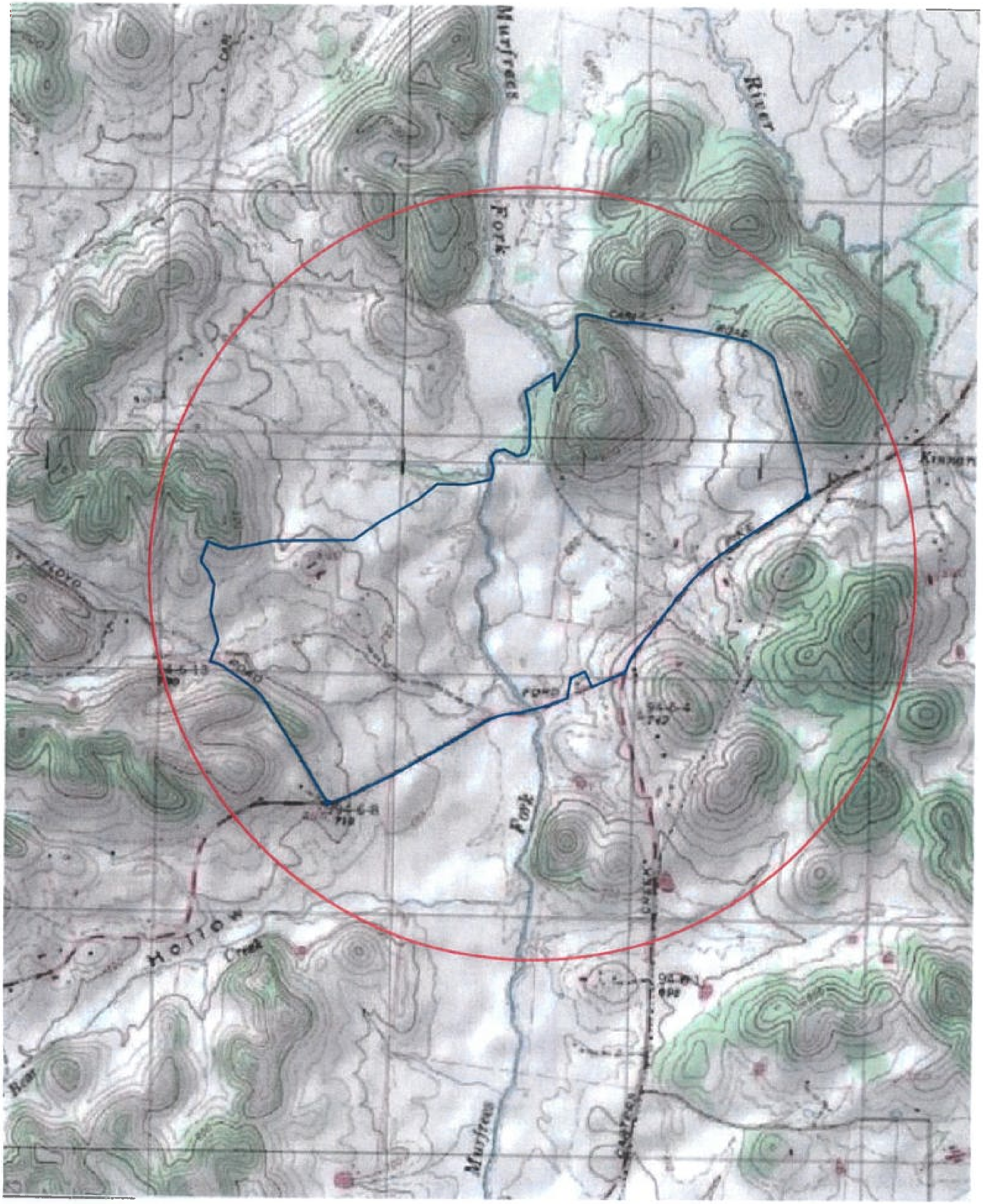
2130
Fifth Third Operating 3350
Operating FifthThird 3350
Date: 12/13/2017

12/13/2017	12.12.2017	$750.00	$750.00

TN DEPT. OF ENV. & CONSERVATION

DEC 1 3 2017

DIVISION OF WATER RESOURCES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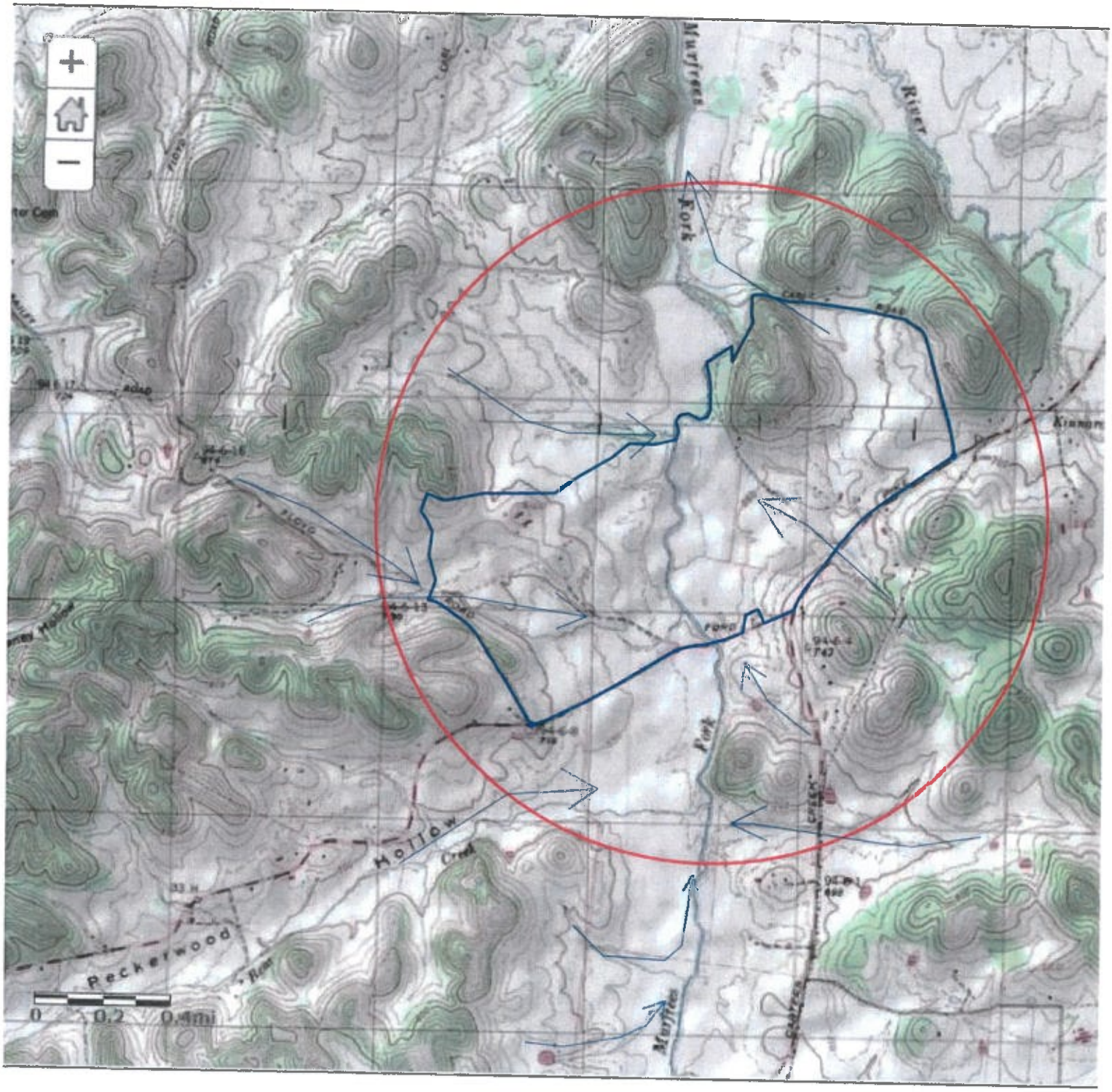
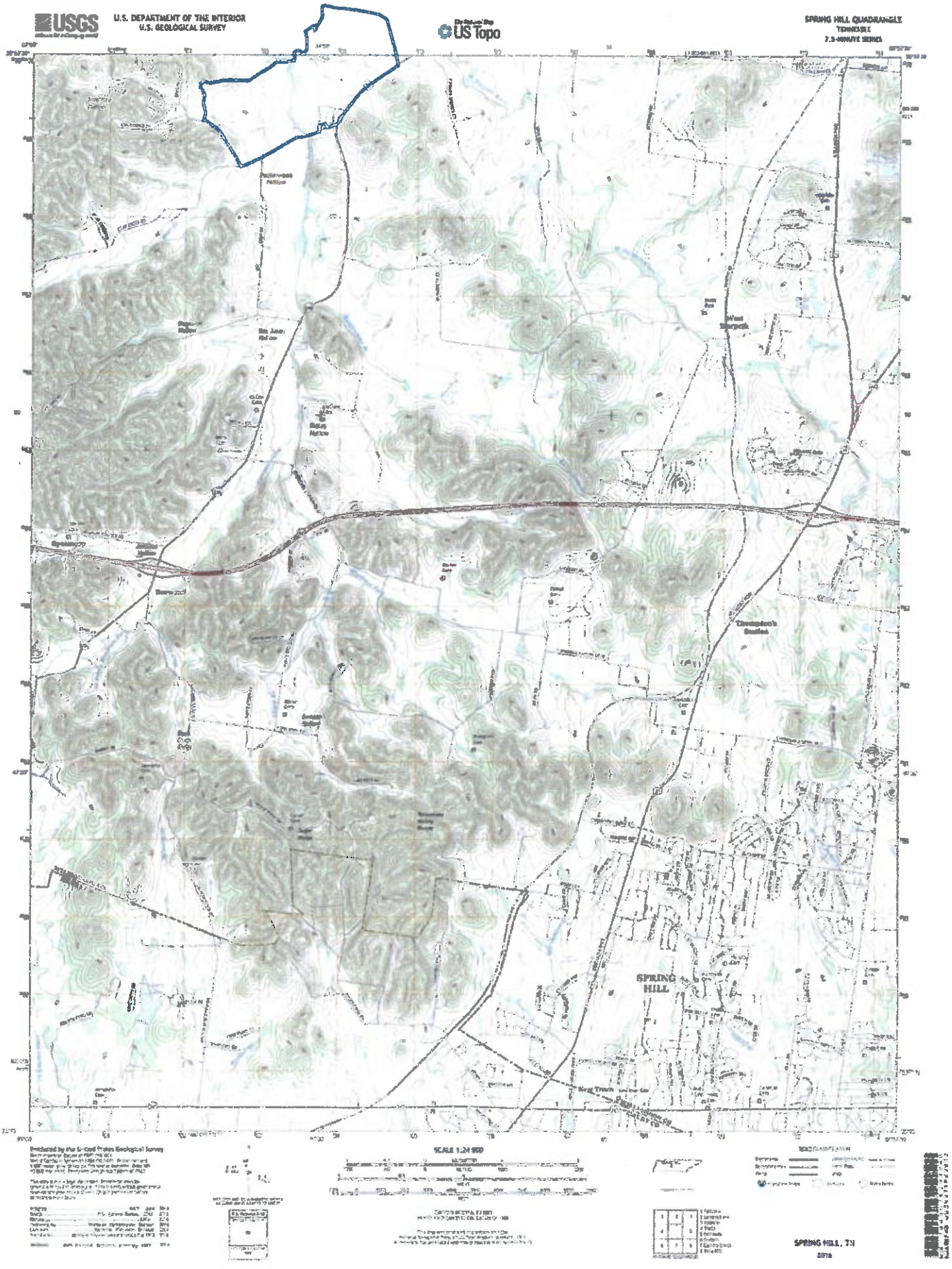
Fork
River
Fork
Hollow
Creek
Murfrees

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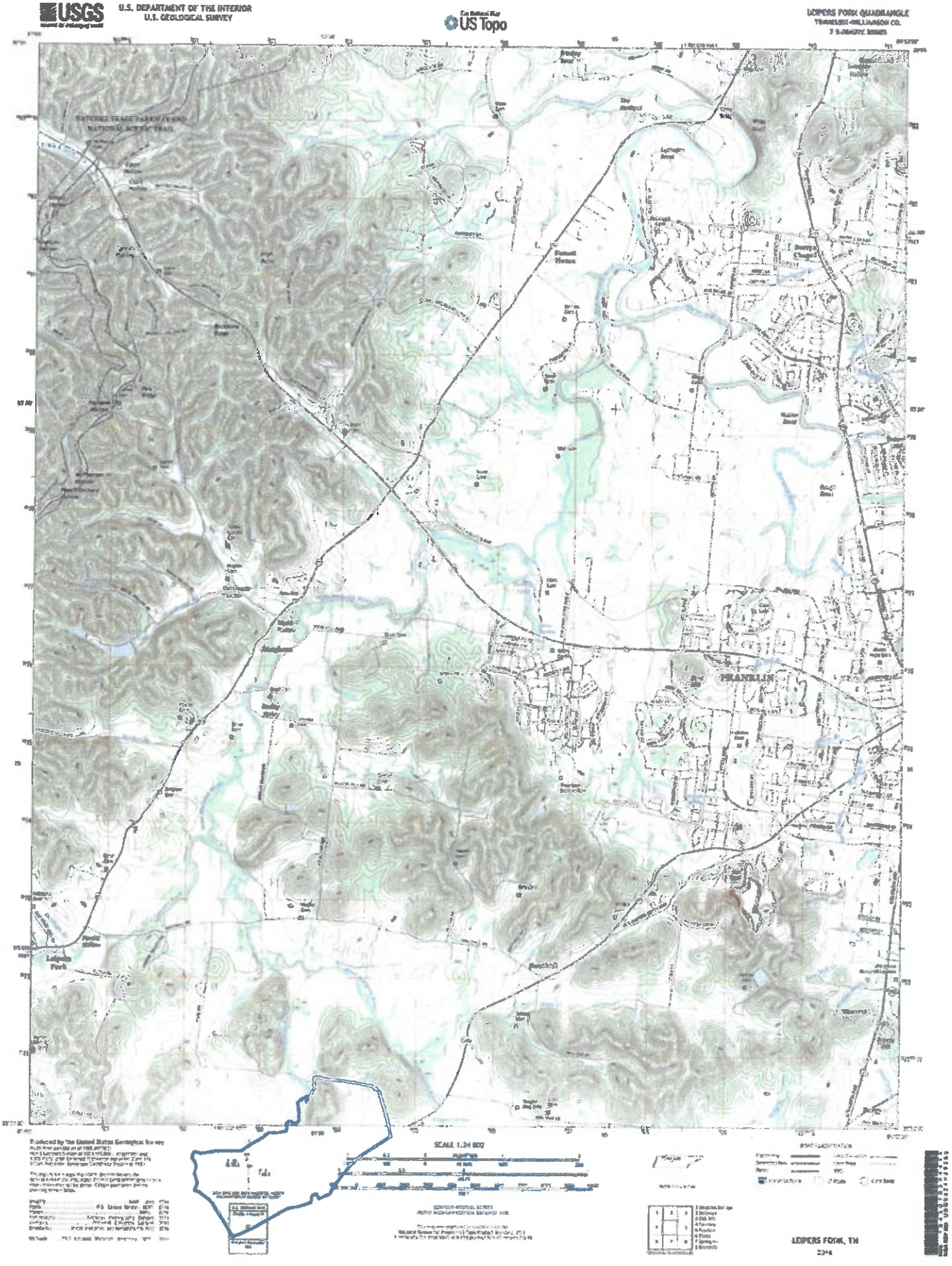
U.S. GEOLOGICAL SURVEY
US Topo
SPRING HILL QUADRANGLE
TENNESSEE
7.5-MINUTE SERIES
SPRING HILL
SCALE 1:24 000
SPRING HILL, TN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U.S. GEOLOGICAL SURVEY
USGS
US Topo
LEIPERS FORK QUADRANGLE
TENNESSEE-WILLIAMSON CO.
7.5-MINUTE SERIES
NATCHEZ TRACE PARKWAY AND NATIONAL SCENIC TRAIL
FRANKLIN
Leipers Fork
SCALE 1:24 000
LEIPERS FORK, TN
2016

PRELIMINARY ENGINEERING REPORT

FOR

BEAR CREEK – MILES FACILITY
WILLIAMSON COUNTY, TN

NOVEMBER 29, 2017

T-SQUARE ENGINEERING

701 WEST MAIN ST
FRANKLIN, TN 37064
615-678-8212

AREA OF REVIEW (AOR)

Groundwater uses within the AOR (past & present): Past and present groundwater uses within the AOR include residential and agricultural supply from private wells.

Groundwater General Description: The proposed site has steep hills, gently sloping hills, and pasture lands. The attached maps indicate the proposed Bear Creek-Miles TF wastewater treatment area drainage flow path originates from the surrounding hill from several directions and generally moves north towards the West Harpeth River.

Population and Cultural Development: The majority of the Area of Review is agricultural land used primarily for pasture and large-lot residential. Sparse residential subdivisions have been developed, but remain spread out due to the lack of wastewater service.

Nature of Fluid: Bear Creek-Miles TF will have an approximate peak design flow of 36,000 GPD of typical residential sanitary wastewater.

Public Water Supply: H.B. & T.S. Utility District supplies public drinking water within the AOR.

H.B. & T.S. Utility District
505 Downs Boulevard
Franklin, Tennessee 37064
Contact: (615) 794-7796

Description of System: Approximately 36,000 GPD of treated wastewater will be pumped and then distributed to HDPE drip lines with pressure compensating emitters. The drip lines are to be installed on 5-foot centers along the contours with the emitters spaced at 2-foot centers along the drip lines. Drip lines are plowed into the soils that have been approved by a certified soil scientist and placed at an approximate depth of 7-8 inches below the ground surface. Distribution of the treated wastewater is managed through solenoid valves and controlled by a programmable PLC.

Nature and Type of System: Treated wastewater from the proposed Subdivision will first be pumped from numerous 1,500 gal water tight septic tanks. Filtered Septic Tank Effluent exits from the septic tanks via a small diameter gravity/pressure collection line along the roadways and lot lines to a media filter. The wastewater will then cycle through the RMF ~4 times before discharging from the RMF to the drip fields.

BEAR CREEK – MILES TREATMENT FACILITY
WILLIAMSON COUNTY, TENNESSEE

GENERAL

The Bear Creek-Miles Treatment Facility will consist of a Recirculating Media Filter (RMF), a watertight effluent collection system, and drip irrigation as the disposal system. The initial proposed capacity is 36,000 GPD. This number assumes 120 homes being developed at design flow rate of 300 GPD per home. Treated water will be discharged to a subsurface drip irrigation disposal system. The collection system feeding this facility will be watertight effluent collection (STEP/STEG).

This facility will be owned by Tennessee Wastewater Systems, Inc., and will be managed and operated by Tennessee Wastewater Systems, Inc. in Williamson County, Tennessee.

RECIRCULATING MEDIA FILTER

The RMF is sized at 36,000 GPD total, and a designed 4:1 recirculation ratio. Wastewater entering the RMF will be supplied by a watertight effluent collection system serving the proposed homes of the development.

Effluent from the RMF is expected to be <10 mg/l BOD and <10 mg/l TSS. The soils located on this site are easily capable of disseminating the highly treated effluent produced by the RMF.

ALTERNATIVE SYSTEM ANALYSIS

- No public sewer system is currently available for this property.
- Subsurface disposal systems (SSDS) are not capable of servicing the proposed density of the development. Unmanaged SSDS should only be used when it is impossible to have a managed sewer system to protect the homeowners and the environment. This option was eliminated for obvious reasons.
- Onsite treatment and disposal were chosen due to the need for an environmentally friendly treatment and disposal system that would protect the homeowners.

Collection Systems: The necessity to minimize inflow and infiltration mandate a watertight collection system. Since no stream discharge is permitted in the area, and no bypassing of sewage is allowable, watertight effluent collection is the only viable option. The addition of septic tanks at the source of every flow should lower the waste strength entering the plant by approximately 75%. This will also eliminate the normal odor problems caused by floatables and high strength sewer wastes. No further detail analysis was conducted, since watertight collection is the only method compatible with

the treatment process chosen.

Primary Treatment System: Primary treatment will occur at the source in the septic (interceptor) tank. Average influent into the RMF is expected to have a BOD of 125 mg/l and a TSS of 30 mg/l.

Secondary Treatment System: A Recirculating Media Filter was selected due to the low operating costs and high quality effluent. The small footprint of the actual treatment facility also will have a very minimal impact on the development. Due to the need for high quality effluent and limited area to construct the facility, no further options were explored.

Tertiary Treatment: The soils on the property will act as the final filter for this project prior to the water recharging the water table.

Final Disposal: A possible point discharge into a stream is not an option at this site. The only other viable alternative is land application. Drip irrigation was chosen as the method for disposal of the water, due to the relatively low operating cost, and that most soils in the State of Tennessee are capable of accepting the highly treated effluent. As with any properly designed Bioline drip irrigation system, Arkal spin filters, 180 micron, will be used. Due to the reuse quality of the water, pedestrian traffic is not a concern on the drip irrigation fields. Vehicular traffic should be restricted to prevent damage to the drip irrigation field components.

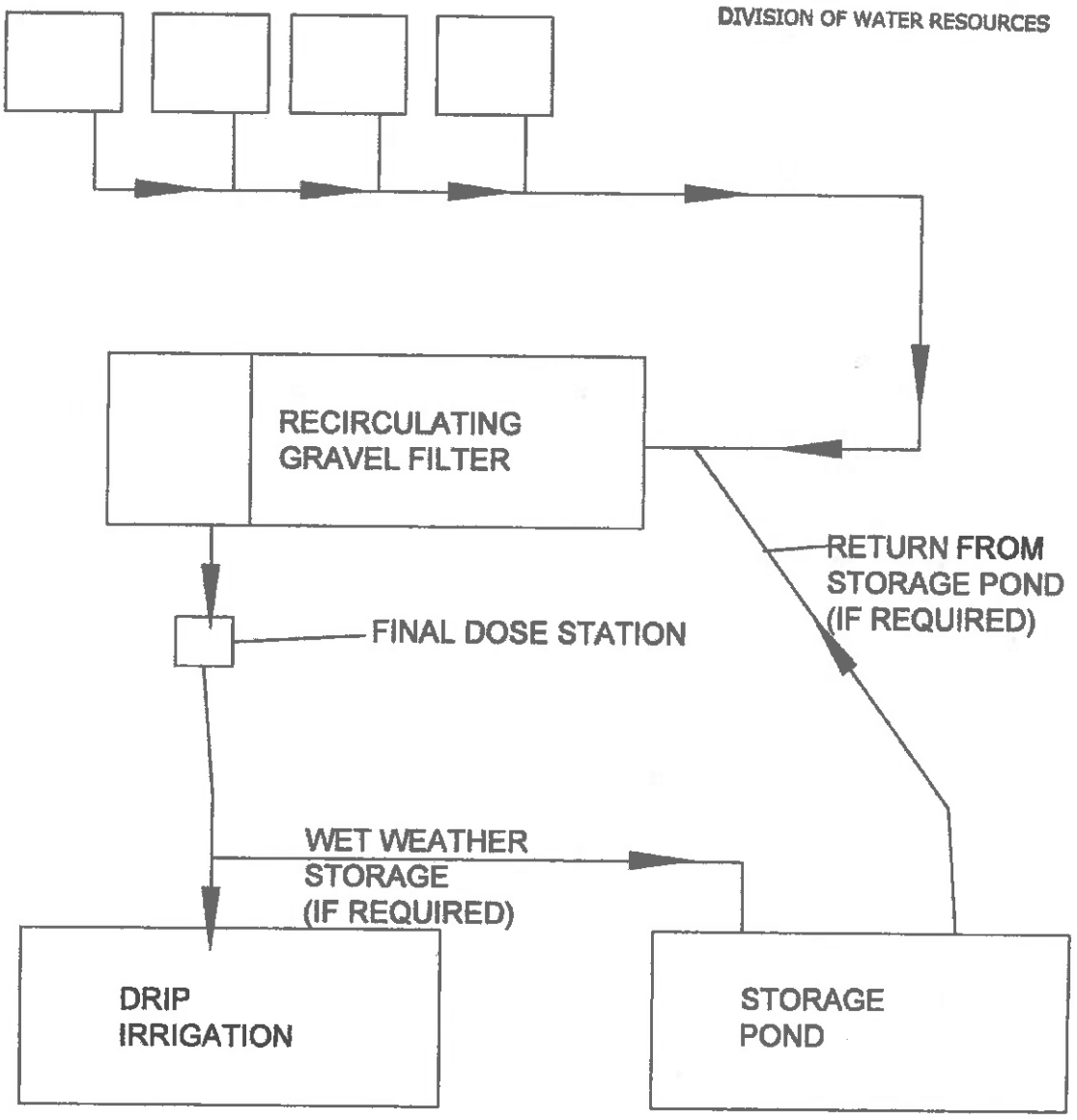
Hydraulic analysis submitted with this permit application.

A map has been included with this submittal showing the proposed location of the RMF, the Drip irrigation disposal areas, and the STEP/STEG sewer collection system.

An extra high intensity soil map is being provided with this submittal.

WASTEWATER PROCESS SCHEMATIC

RSF TREATMENT



SOIL PEDON DESCRIPTION:

DESCRIBED BY: Terry Henry and Lonnie Norrod

DATE: 9/14/2017

SITE LOCATION: Carter's Creek/Bear Creek (McGraw Property)

GEOMORPHIC DESCRIPTION: terrace

PIT #: 1

PHYSIOGRAPHIC LOCATION: Nashville Basin

SOIL SERIES: Captina

DRAINAGE CLASS: moderately well

CLASSIFICATION: fine-silty

GROUND WATER: none

PARENT MATERIAL: alluvium

LAND COVER: mixed grasses

CLIMATE: thermic

SLOPE OF PIT: 2%

SLOPE OF MAP UNIT: 0-10%

EROSION: none to slight

ADDITIONAL NOTES:

Horizon	Depth (inches)	Matrix Color	Depletions/Concentrations/Redox	Depth to low chroma mottles	Soil Texture	Soil Structure			Soil Horizon Notes:
						Grade	Size	Type	
Ap1	0-3				silt loam	weak	fine	granular	
Ap2	3-17				silt loam	moderate	medium	subangular blocky	
AB	17-21				silt loam	moderate	medium	subangular blocky	
Bt1	21-24				silty clay loam	moderate	medium	subangular blocky	
Btx2	24-28			24"	silty clay loam	weak	very coarse	prismatic	
Btx3	28-44				silty clay loam	strong	very coarse	prismatic	

SOIL PEDON DESCRIPTION:

DESCRIBED BY: Terry Henry and Lonnie Norrod

DATE: 9/14/2017

SITE LOCATION: Carter's Creek/Bear Creek (McGraw Property)

GEOMORPHIC DESCRIPTION: terrace

PIT #: 2

PHYSIOGRAPHIC LOCATION: Nashville Basin

SOIL SERIES: Captina (mollic)

DRAINAGE CLASS: moderately well

CLASSIFICATION: fine-silty

GROUND WATER: none

PARENT MATERIAL: alluvium

LAND COVER: mixed grasses

CLIMATE: thermic

SLOPE OF PIT: 2%

SLOPE OF MAP UNIT: 0-10%

EROSION: none to slight

ADDITIONAL NOTES:

Horizon	Depth (inches)	Matrix Color	Depletions/Concentrations/Redox	Depth to low chroma mottles	Soil Texture	Soil Structure			Soil Horizon Notes:
						Grade	Size	Type	
Ap1	0-5				silt loam	weak	fine	granular	
Ap2	5-16				silt loam	weak	medium	subangular blocky	
BA	16-22				silty clay loam	moderate	medium	subangular blocky	
Bt1	22-27				silty clay loam	moderate	medium	subangular blocky	
Bt2	27-32				silty clay loam	moderate	medium	subangular blocky	
Btx3	32-48			32"	silty clay loam	strong	very coarse	prismatic	

SOIL PEDON DESCRIPTION:

DESCRIBED BY: Terry Henry and Lonnie Norrod

SITE LOCATION: Carter's Creek/Bear Creek (McGraw Property)

PIT #: 3

SOIL SERIES: Captina

CLASSIFICATION: fine-silty

PARENT MATERIAL: alluvium

CLIMATE: thermic

SLOPE OF MAP UNIT: 0-10%

DATE: 9/14/2017

GEOMORPHIC DESCRIPTION: terrace

PHYSIOGRAPHIC LOCATION: Nashville Basin

DRAINAGE CLASS: moderately well

GROUND WATER: none

LAND COVER: mixed grasses

SLOPE OF PIT: 2%

EROSION: none to slight

ADDITIONAL NOTES:

Horizon	Depth (inches)	Matrix Color	Depletions/Concentrations/Redox	Depth to low chroma mottles	Soil Texture	Soil Structure			Soil Horizon Notes:
						Grade	Size	Type	
Ap1	0-3				silt loam	weak	fine	granular	
Ap2	3-9				silt loam	moderate	medium	subangular blocky	
A	9-14				silt loam	weak	medium	subangular blocky	
BA	14-17				silty clay loam	moderate	medium	subangular blocky	
Bt1	17-20				silty clay loam	moderate	medium	subangular blocky	
Bt2	20-24				silty clay loam	moderate	medium	subangular blocky	
Btx3	24-49			24"	silty clay loam	strong	very coarse	prismatic	

SOIL PEDON DESCRIPTION:

DESCRIBED BY: Terry Henry and Lonnie Norrod

SITE LOCATION: Carter's Creek/Bear Creek (McGraw Property)

PIT #: 4

SOIL SERIES: Capshaw

CLASSIFICATION: fine

PARENT MATERIAL: alluvium over residuum

CLIMATE: thermic

SLOPE OF MAP UNIT: 0-10%

DATE: 9/14/2017

GEOMORPHIC DESCRIPTION: terrace

PHYSIOGRAPHIC LOCATION: Nashville Basin

DRAINAGE CLASS: moderately well

GROUND WATER: none

LAND COVER: mixed grasses

SLOPE OF PIT: 1%

EROSION: none to slight

ADDITIONAL NOTES:

Horizon	Depth (inches)	Matrix Color	Depletions/Concentrations/Redox	Depth to low chroma mottles	Soil Texture	Soil Structure			Soil Horizon Notes:
						Grade	Size	Type	
Ap1	0-5				silt loam	weak	fine	granular	
Ap2	5-10				silt loam	moderate	medium	subangular blocky	
A	10-14				silt loam	moderate	medium	subangular blocky	
BA	14-18				silty clay loam	moderate	medium	subangular blocky	
Bt1	18-23				silty clay	moderate	medium	subangular blocky	
2Bt2	23-26				clay	moderate	medium	subangular blocky	
2Bt3	26-39			26"	clay	moderate	medium	angular blocky	
2C	39-49				clay	structureless		massive	

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SOIL PEDON DESCRIPTION:

DESCRIBED BY: Terry Henry and Lonnie Norrod

SITE LOCATION: Carter's Creek/Bear Creek (McGraw Property)

PIT #: 5

SOIL SERIES: Captina

CLASSIFICATION: fine-silty

PARENT MATERIAL: alluvium

CLIMATE: thermic

SLOPE OF MAP UNIT: 0-10%

DATE: 9/14/2017

GEOMORPHIC DESCRIPTION: terrace

PHYSIOGRAPHIC LOCATION: Nashville Basin

DRAINAGE CLASS: moderately well

GROUND WATER: none

LAND COVER: mixed grasses

SLOPE OF PIT: 1%

EROSION: none to slight

ADDITIONAL NOTES: Similar to pit #3, Btx @ 22", Low Chroma @22"

Horizon	Depth (Inches)	Matrix Color	Depletions/Concentrations/Redox	Depth to low chroma mottles	Soil Texture	Soil Structure			Soil Horizon Notes:
						Grade	Size	Type	

SOIL PEDON DESCRIPTION:

DESCRIBED BY: Terry Henry and Lonnie Norrod

SITE LOCATION: Carter's Creek/Bear Creek (McGraw Property)

PIT #: 6

SOIL SERIES: Trace

CLASSIFICATION: fine-silty

PARENT MATERIAL: alluvium

CLIMATE: thermic

SLOPE OF MAP UNIT: 0-10%

DATE: 9/14/2017

GEOMORPHIC DESCRIPTION: terrace

PHYSIOGRAPHIC LOCATION: Nashville Basin

DRAINAGE CLASS: well drained

GROUND WATER: none

LAND COVER: mixed grasses

SLOPE OF PIT: 1%

EROSION: none to slight

ADDITIONAL NOTES:

Horizon	Depth (inches)	Matrix Color	Depletions/Concentrations/Redox	Depth to low chroma mottles	Soil Texture	Soil Structure			Soil Horizon Notes:
						Grade	Size	Type	
Ap1	0-3				silt loam	weak	fine	granular	
Ap2	3-9				silt loam	moderate	medium	subangular blocky	
A1	9-14				silt loam	moderate	medium	subangular blocky	
A2	14-19				silt loam	weak	medium	subangular blocky	
BA	19-23				silty clay loam	moderate	medium	subangular blocky	
Bt1	23-30				gravelly silty clay loam	moderate	medium	subangular blocky	
Bt2	30-34				gravelly silty clay loam	weak	medium	subangular blocky	
Bt3	34-37				gravelly silty clay loam	weak	medium	subangular blocky	
Bt4	37-46				gravelly silty clay loam	weak	medium	subangular blocky	

SOIL PEDON DESCRIPTION:

DESCRIBED BY: Terry Henry and Lonnie Norrod

DATE: 9/14/2017

SITE LOCATION: Carter's Creek/Bear Creek (McGraw Property)

GEOMORPHIC DESCRIPTION: terrace

PIT #: 7

PHYSIOGRAPHIC LOCATION: Nashville Basin

SOIL SERIES: Armour?

DRAINAGE CLASS: well drained

CLASSIFICATION: fine-silty

GROUND WATER: none

PARENT MATERIAL: alluvium

LAND COVER: mixed grasses

CLIMATE: thermic

SLOPE OF PIT: 1%

SLOPE OF MAP UNIT: 0-10%

EROSION: none to slight

ADDITIONAL NOTES:

Horizon	Depth (inches)	Matrix Color	Depletions/Concentrations/Redox	Depth to low chroma mottles	Soil Texture	Soil Structure			Soil Horizon Notes:
						Grade	Size	Type	
Ap	0-5				silt loam	weak and moderate	fine and medium	granular and subangular blocky	
A	5-16				silt loam	weak	medium	subangular blocky	
BA	16-19				silty clay loam	moderate	medium	subangular blocky	
Bt1	19-23				silty clay loam	weak	medium	subangular blocky	
Bt2	23-28				silty clay loam	weak	medium	subangular blocky	
Bt3	28-35				silty clay loam	weak	medium	subangular blocky	
Bt4	35-48				silty clay loam	weak	medium	subangular blocky	

SOIL PEDON DESCRIPTION:

DESCRIBED BY: Terry Henry and Lonnie Norrod

DATE: 9/14/2017

SITE LOCATION: Carter's Creek/Bear Creek (McGraw Property)

GEOMORPHIC DESCRIPTION: terrace

PIT #: 8

PHYSIOGRAPHIC LOCATION: Nashville Basin

SOIL SERIES: Trace

DRAINAGE CLASS: well drained

CLASSIFICATION: fine

GROUND WATER: none

PARENT MATERIAL: alluvium

LAND COVER: mixed grasses

CLIMATE: thermic

SLOPE OF PIT: 1%

SLOPE OF MAP UNIT: 0-10%

EROSION: none to slight

ADDITIONAL NOTES: clayey version of Trace

Horizon	Depth (inches)	Matrix Color	Depletions/Concentrations/Redox	Depth to low chroma mottles	Soil Texture	Soil Structure			Soil Horizon Notes:
						Grade	Size	Type	
Ap1	0-2				silt loam	weak	fine	granular	
Ap2	2-16				silt loam	weak	medium	subangular blocky	
BA	16-20				silty clay loam	moderate	medium	subangular blocky	
Bt1	20-26				silty clay	moderate	medium	subangular blocky	
BC	26-48				gravelly silty clay loam	weak	medium	subangular blocky	

SOIL PEDON DESCRIPTION:

DESCRIBED BY: Terry Henry and Lonnie Norrod

SITE LOCATION: Carter's Creek/Bear Creek (McGraw Property)

PIT #: 9

SOIL SERIES: Series Not Defined

CLASSIFICATION: fine / fine-silty

PARENT MATERIAL: alluvium

CLIMATE: thermic

SLOPE OF MAP UNIT: 0-10%

DATE: 9/14/2017

GEOMORPHIC DESCRIPTION: flood plain

PHYSIOGRAPHIC LOCATION: Nashville Basin

DRAINAGE CLASS: moderately well drained

GROUND WATER: none

LAND COVER: mixed grasses

SLOPE OF PIT: 2%

EROSION: none to slight

ADDITIONAL NOTES:

Horizon	Depth (inches)	Matrix Color	Depletions/Concentrations/Redox	Depth to low chroma mottles	Soil Texture	Soil Structure			Soil Horizon Notes:
						Grade	Size	Type	
Ap	0-9				silt loam	weak	fine	granular	
A	9-20				gravelly silt loam	weak	medium	subangular blocky	
Bt1	20-28				gravelly silty clay loam	weak	medium	subangular blocky	
Bt2	28-35				gravelly silty clay loam	weak	medium	subangular blocky	
2BC	35-42			35"	gravelly clay	weak	medium	subangular blocky	
2C	42-49				gravelly clay	structureless		massive	

SOIL PEDON DESCRIPTION:

DESCRIBED BY: Terry Henry and Lonnie Norrod

DATE: 9/14/2017

SITE LOCATION: Carter's Creek/Bear Creek (McGraw Property)

GEOMORPHIC DESCRIPTION: terrace

PIT #: 10

PHYSIOGRAPHIC LOCATION: Nashville Basin

SOIL SERIES: Byler

DRAINAGE CLASS: moderately well drained

CLASSIFICATION: fine-silty

GROUND WATER: none

PARENT MATERIAL: alluvium

LAND COVER: mixed grasses

CLIMATE: thermic

SLOPE OF PIT: 2%

SLOPE OF MAP UNIT: 0-10%

EROSION: none to slight

ADDITIONAL NOTES:

Horizon	Depth (inches)	Matrix Color	Depletions/Concentrations/Redox	Depth to low chroma mottles	Soil Texture	Soil Structure			Soil Horizon Notes:
						Grade	Size	Type	
Ap1	0-5				silt loam	weak	fine	granular	
Ap2	5-17				silt loam	weak	medium	subangular blocky	
Bt1	17-23				silty clay loam	moderate	medium	subangular blocky	
Bt2	23-28				silty clay loam	moderate	medium	subangular blocky	
Btx3	28-42			28"	gravelly silty clay loam	weak	medium	subangular blocky	
2C	42-53				clay	structureless		massive	
R	53								

SOIL PEDON DESCRIPTION:

DESCRIBED BY: Terry Henry and Lonnie Norrod

DATE: 9/14/2017

SITE LOCATION: Carter's Creek/Bear Creek (McGraw Property)

GEOMORPHIC DESCRIPTION: terrace

PIT #: 11

PHYSIOGRAPHIC LOCATION: Nashville Basin

SOIL SERIES: Captina

DRAINAGE CLASS: moderately well

CLASSIFICATION: fine-silty

GROUND WATER: none

PARENT MATERIAL: alluvium

LAND COVER: mixed grasses

CLIMATE: thermic

SLOPE OF PIT: 4%

SLOPE OF MAP UNIT: 0-10%

EROSION: none to slight

ADDITIONAL NOTES: Similar to pit #3, Btx @ 26", Low Chroma @26"

Horizon	Depth (inches)	Matrix Color	Depletions/Concentrations/Redox	Depth to low chroma mottles	Soil Texture	Soil Structure			Soil Horizon Notes:
						Grade	Size	Type	

SOIL PEDON DESCRIPTION:

DESCRIBED BY: Terry Henry and Lonnie Norrod

DATE: 9/14/2017

SITE LOCATION: Carter's Creek/Bear Creek (McGraw Property)

GEOMORPHIC DESCRIPTION: high terrace

PIT #: 12

PHYSIOGRAPHIC LOCATION: Nashville Basin

SOIL SERIES: Harpeth

DRAINAGE CLASS: well drained

CLASSIFICATION: fine-silty

GROUND WATER: none

PARENT MATERIAL: alluvium

LAND COVER: mixed grasses

CLIMATE: thermic

SLOPE OF PIT: 2%

SLOPE OF MAP UNIT: 0-10%

EROSION: none to slight

ADDITIONAL NOTES:

Horizon	Depth (inches)	Matrix Color	Depletions/Concentrations/Redox	Depth to low chroma mottles	Soil Texture	Soil Structure			Soil Horizon Notes:
						Grade	Size	Type	
Ap1	0-7				silt loam	weak	fine	granular	
Ap2	7-19				silt loam	moderate	medium	subangular blocky	
BA	19-22				silty clay loam	moderate	medium	subangular blocky	
Bt1	22-30				silty clay loam	moderate	medium	subangular blocky	
Bt2	30-46				silty clay loam	moderate	medium	subangular blocky	few iron masses

SOIL PEDON DESCRIPTION:

DESCRIBED BY: Terry Henry and Lonnie Norrod

DATE: 9/14/2017

SITE LOCATION: Carter's Creek/Bear Creek (McGraw Property)

GEOMORPHIC DESCRIPTION: upland

PIT #: 13

PHYSIOGRAPHIC LOCATION: Nashville Basin

SOIL SERIES: Maury

DRAINAGE CLASS: well drained

CLASSIFICATION: fine

GROUND WATER: none

PARENT MATERIAL: alluvium over residuum

LAND COVER: mixed grasses

CLIMATE: thermic

SLOPE OF PIT: 8%

SLOPE OF MAP UNIT: 5-15%

EROSION: none to slight

ADDITIONAL NOTES:

Horizon	Depth (inches)	Matrix Color	Depletions/Concentrations/Redox	Depth to low chroma mottles	Soil Texture	Soil Structure			Soil Horizon Notes:
						Grade	Size	Type	
Ap1	0-5				silt loam	weak	fine	granular	
Ap2	5-11				silt loam	moderate	medium	subangular blocky	
AB	11-14				silty clay loam	moderate	medium	subangular blocky	
BA	14-16				silty clay	moderate	medium	subangular blocky	
Bt1	16-25				silty clay	moderate	medium	subangular blocky	
Bt2	25-30				clay	weak	medium	subangular blocky	
Bt3	30-36				clay	weak	medium	subangular blocky	
Bt4	36-42				clay	weak	medium	subangular blocky	

SOIL PEDON DESCRIPTION:

DESCRIBED BY: Terry Henry and Lonnie Norrod

SITE LOCATION: Carter's Creek/Bear Creek (McGraw Property)

PIT #: 14

SOIL SERIES: Mimosa

CLASSIFICATION: fine

PARENT MATERIAL: residuum

CLIMATE: thermic

SLOPE OF MAP UNIT: 0-10%

DATE: 9/14/2017

GEOMORPHIC DESCRIPTION: upland

PHYSIOGRAPHIC LOCATION: Nashville Basin

DRAINAGE CLASS: well drained

GROUND WATER: none

LAND COVER: mixed grasses

SLOPE OF PIT: 3%

EROSION: none to slight

ADDITIONAL NOTES:

Horizon	Depth (inches)	Matrix Color	Depletions/Concentrations/Redox	Depth to low chroma mottles	Soil Texture	Soil Structure			Soil Horizon Notes:
						Grade	Size	Type	
Ap1	0-6				silt loam	weak	fine	granular	
Ap2	6-12				silt loam	moderate	medium	subangular blocky	
A	12-19				silt loam	moderate	medium	subangular blocky	
BA	19-22				silty clay	moderate	medium	subangular blocky	
Bt1	22-26				clay	moderate	medium	subangular blocky	
Bt2	26-32				clay	moderate	medium	subangular blocky	
BC	32-36				clay	weak	medium	subangular blocky	
C	36-43				clay	structureless		massive	

SOIL PEDON DESCRIPTION:

DESCRIBED BY: Terry Henry and Lonnie Norrod

DATE: 9/14/2017

SITE LOCATION: Carter's Creek/Bear Creek (McGraw Property)

GEOMORPHIC DESCRIPTION: high terrace

PIT #: 15

PHYSIOGRAPHIC LOCATION: Nashville Basin

SOIL SERIES: Sykes

DRAINAGE CLASS: well drained

CLASSIFICATION: fine

GROUND WATER: none

PARENT MATERIAL: residuum

LAND COVER: mixed grasses

CLIMATE: thermic

SLOPE OF PIT: 8%

SLOPE OF MAP UNIT: 0-10%

EROSION: none to slight

ADDITIONAL NOTES: Fine version of Sykes

Horizon	Depth (Inches)	Matrix Color	Depletions/Concentrations/Redox	Depth to low chroma mottles	Soil Texture	Soil Structure			Soil Horizon Notes:
						Grade	Size	Type	
Ap1	0-5				silt loam	weak	fine	granular	
Ap2	5-16				gravelly silt loam	moderate	medium	subangular blocky	
AB	16-20				silty clay loam	moderate	medium	subangular blocky	
BA	20-27				gravelly silty clay loam	moderate	medium	subangular blocky	
2Bt1	27-35				gravelley clay	weak	medium	subangular blocky	
2Bt2	35-46				gravelley clay	weak	medium	subangular blocky	

SOIL PEDON DESCRIPTION:

DESCRIBED BY: Terry Henry and Lonnie Norrod

SITE LOCATION: Carter's Creek/Bear Creek (McGraw Property)

PIT #: 16

SOIL SERIES: Sykes

CLASSIFICATION: fine-silty

PARENT MATERIAL: alluvium over residuum

CLIMATE: thermic

SLOPE OF MAP UNIT: 0-10%

DATE: 9/14/2017

GEOMORPHIC DESCRIPTION: high terrace

PHYSIOGRAPHIC LOCATION: Nashville Basin

DRAINAGE CLASS: well drained

GROUND WATER: none

LAND COVER: mixed grasses

SLOPE OF PIT: 3%

EROSION: none to slight

ADDITIONAL NOTES: Fine version of Sykes

Horizon	Depth (inches)	Matrix Color	Depletions/Concentrations/Redox	Depth to low chroma mottles	Soil Texture	Soil Structure			Soil Horizon Notes:
						Grade	Size	Type	
Ap1	0-3				silt loam	weak	fine	granular	
Ap2	3-12				silt loam	moderate	medium	subangular blocky	
A	12-18				silt loam	moderate	medium	subangular blocky	
BA	18-21				silty clay loam	moderate	medium	subangular blocky	
Bt1	21-25				silty clay loam	moderate	medium	subangular blocky	
Bt2	25-34				silty clay loam	moderate	medium	subangular blocky	
2Bt3	34-46				clay	weak	medium	subangular blocky	

SOIL PEDON DESCRIPTION:

DESCRIBED BY: Terry Henry and Lonnie Norrod

DATE: 9/14/2017

SITE LOCATION: Carter's Creek/Bear Creek (McGraw Property)

GEOMORPHIC DESCRIPTION: terrace

PIT #: 17

PHYSIOGRAPHIC LOCATION: Nashville Basin

SOIL SERIES: Captina

DRAINAGE CLASS: moderately well

CLASSIFICATION: fine-silty

GROUND WATER: none

PARENT MATERIAL: alluvium

LAND COVER: mixed grasses

CLIMATE: thermic

SLOPE OF PIT: 1%

SLOPE OF MAP UNIT: 0-10%

EROSION: none to slight

ADDITIONAL NOTES: Similar to pit #3, Btx @ 24", Low Chroma @27"

Horizon	Depth (inches)	Matrix Color	Depletions/Concentrations/Redox	Depth to low chroma mottles	Soil Texture	Soil Structure			Soil Horizon Notes:
						Grade	Size	Type	

SOIL PEDON DESCRIPTION:

DESCRIBED BY: Terry Henry and Lonnie Norrod

DATE: 9/14/2017

SITE LOCATION: Carter's Creek/Bear Creek (McGraw Property)

GEOMORPHIC DESCRIPTION: terrace

PIT #: 1B

PHYSIOGRAPHIC LOCATION: Nashville Basin

SOIL SERIES: Captina

DRAINAGE CLASS: moderately well

CLASSIFICATION: fine-silty

GROUND WATER: none

PARENT MATERIAL: alluvium

LAND COVER: mixed grasses

CLIMATE: thermic

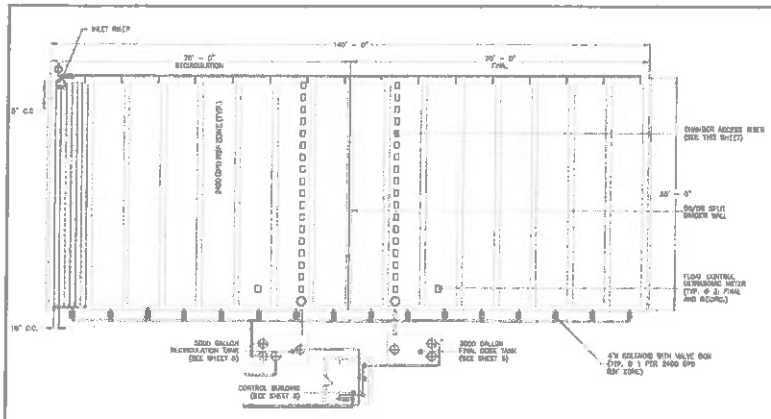
SLOPE OF PIT: 2%

SLOPE OF MAP UNIT: 0-10%

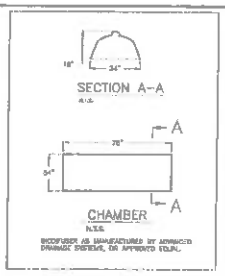
EROSION: none to slight

ADDITIONAL NOTES: Similar to pit #3, Btx @ 25", Low Chroma @25"

Horizon	Depth (inches)	Matrix Color	Depletions/Concentrations/Redox	Depth to low chroma mottles	Soil Texture	Soil Structure			Soil Horizon Notes:
						Grade	Size	Type	

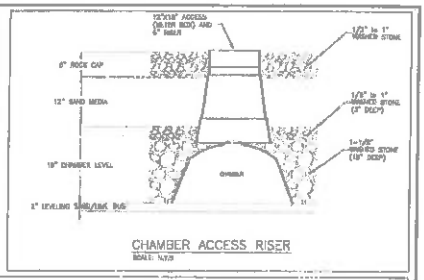


RECIRCULATING SAND FILTER – PLAN

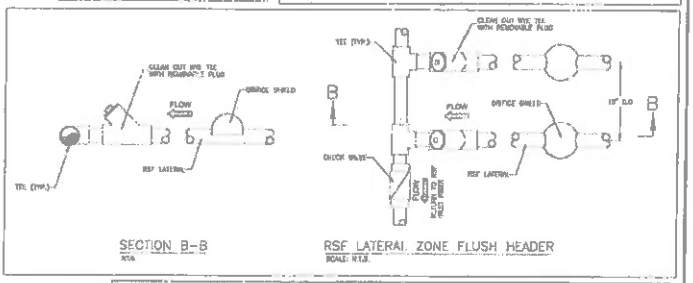


SECTION A–A

CHAMBER

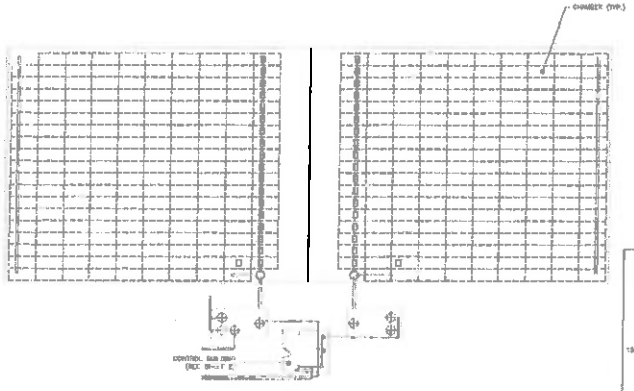


CHAMBER ACCESS RISER



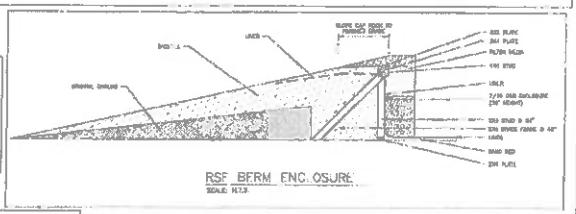
SECTION B–B

RSF LATERAL ZONE FLUSH HEADER

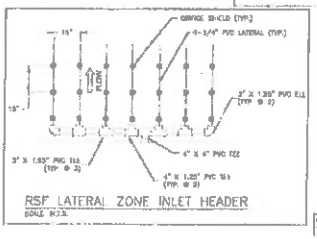


RECIRCULATING SAND FILTER
CHAMBER LEVEL – PLAN

ORIFICE SHIELD DETAIL



RSF BERM ENCLOSURE



RSF LATERAL ZONE INLET HEADER

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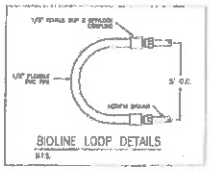
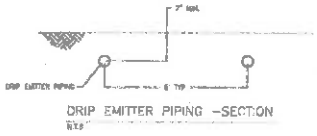
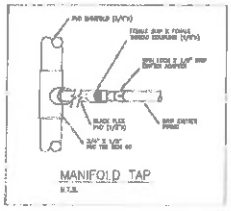
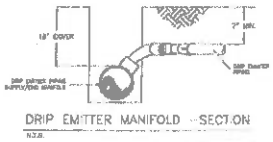
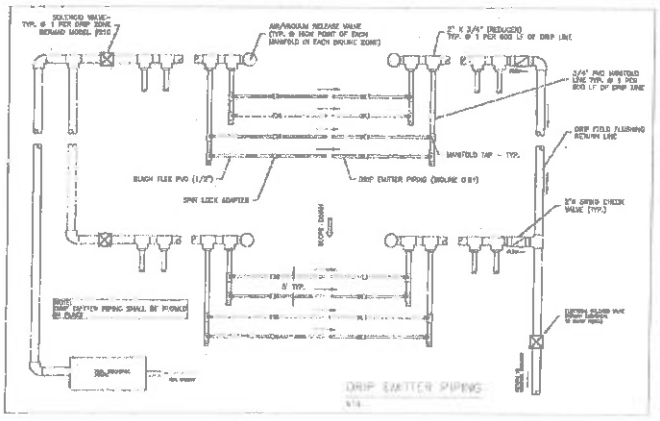
DRIP DISPERSAL DETAILS











TN DEPT. OF ENV. & CONSERVATION

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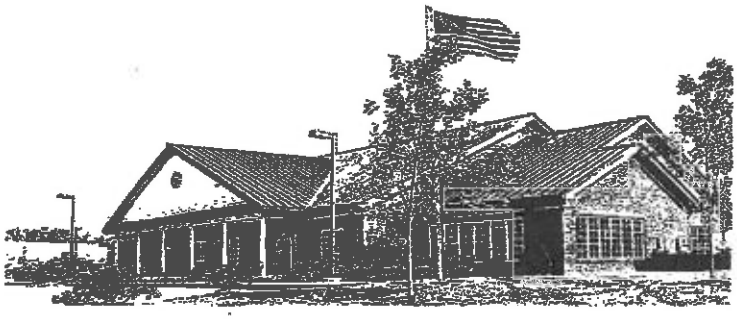
DIVISION OF WATER RESOURCES

Checked by:	Drawn by:	Date:
Scale: AS NOTED	PLANS PREPARED BY: Adenus	
Elevation		
SHEET 2 OF 12		

EXHIBIT C

HB&TS Utility District
505 Downs Blvd., Franklin, TN 37064 •Office: 615-794-7796 • Fax: 615-591-9094



December 13, 2017

RE: Bear Creek Road Development

Mr. Miles,

A request for wastewater utility service was made for a potential development on Bear Creek Road to HB&TS Utility District. While HB&TS does serve as the area's water provider, the Utility does not service wastewater. Due to this fact, HB&TS is unable to serve the development's wastewater services.

If you have any questions, do not hesitate to call.

Sincerely,

Cody F. Lovett
Assistant Operations Manager
HB&TS Utility District

EXHIBIT D

Rogers C. Anderson
Williamson County Mayor

WILLIAMSON COUNTY GOVERNMENT

December 14, 2017

VIA UNITED STATES MAIL

Mr. Eddie Miles
Old Hillsboro Building Company, LLC
237 2nd Avenue South
Franklin, TN 37064

Re: Sewer Request for Properties at:
3538-42 Bear Creek Road, Franklin, TN
Tax Map 103, Parcel 14.00
And
4009-33 Carters Creek Pike, Franklin, TN
Tax Map 103, Parcel 9.00

Dear Mr. Miles:

On December 13, 2017, Williamson County received your request that sewer service be provided to the above-named property. In response to your inquiry, this correspondence confirms that Williamson County Government does not currently provide public sanitary sewer service to these properties and has no plans in the foreseeable future to provide said service.

I hope this information is helpful. Should you need anything further, please do not hesitate to contact me.

Sincerely,

Rogers Anderson
County Mayor

EXHIBIT E

December 15, 2017

Tennessee Wastewater Systems, Inc
Attention: Charles Hyatt, President
851 Aviation Parkway
Smyrna, TN 37167

RE: Sewer Service Request for Properties at:
3538-42 Bear Creek Road, Franklin TN 37604
GIS # 103----01400
&
4009-33 Carters Creek Pike, Franklin TN 37604
GIS # 103----00900

Mr. Hyatt,

I am writing to request sewer services from Tennessee Wastewater Services, Inc for the development of adjacent parcels containing approximately 600 acres. A proposed concept plan to create a 120-lot subdivision on the subject properties would necessitate a waste water treatment facility.
The subject properties are located at 3538-42 Bear Creek Rd and 4009-33 Carters Creek Pk. in Williamson County, TN. Neither of the properties fall within any urban growth boundaries.

Sincerely,
Eddie Miles

Eddie Miles

Old Hillsboro Building Company, LLC 237 2nd AVE South
Franklin, TN 37064
eddie@oldhillsborobuildingcompany.com 615.500.6291

EXHIBIT F

SECTION 4 – RESIDENTIAL RATES SHEET

	Total	Escrow**
RATE CLASS 1		
Fixed Film Treatment, Drip Dispersal, Bonding Rate #1	**$44.42 (R)**	**$10.13**
RATE CLASS 2		
Fixed Film Treatment, Drip Dispersal, Franchise Rate #1, Bonding Rate #1	**$45.74 (R)**	**$10.13**
RATE CLASS 3		
Fixed Film Treatment, Drip Dispersal, Bonding Rate #1, Bonding Rate #3	**$44.42 (R)**	**$10.13**
RATE CLASS 4		
Fixed Film Treatment, Drip Dispersal, Bonding Rate #1, Bonding Rate #4	**$44.42 (R)**	**$10.13**
RATE CLASS 5		
Deep Cell Pond Treatment, Drip Dispersal, Bonding Rate #1	**$39.41 (R)**	**$8.43**
RATE CLASS 6		
Deep Cell Pond Treatment, Drip Dispersal, Bonding Rate #1, Franchise Rate #2	**$40.58 (R)**	**$8.43**
RATE CLASS 7		
Deep Cell Pond Treatment, Point Discharge Dispersal, Bonding Rate #1	**$39.41 (R)**	**$8.43**
RATE CLASS 8		
Deep Cell Pond Treatment, Drip Dispersal, Bonding Rate #1, Bonding Rate #4	**$39.41 (R)**	**$8.43**
RATE CLASS 9		
Standard base Collection, Pass-through treatment costs	**$24.21 (R)** + Treatment Costs	**$6.35**
RATE CLASS 10		
DCP Treatment, Drip Dispersal, Loan Costs, Lease Costs, Bonding Rate #1	**$55.25* (R)**	**$8.43**

*Applies to Southridge once the new treatment facility is placed in service
**Escrow amount is included in the Total

RESIDENTIAL RATE SHEET EXPLANATION

FFR.D:	Standard Base RSF/Fixed Film Reactor Treatment Rate	**$34.02**
DCP.D:	Standard Base Deep Cell Pont Treatment/Drip Dispersal Rate	**$30.71**
DCP2.D:	Original Standard Base Deep Cell Pont Treatment/Drip Dispersal Rate	**$22.55**
DCP.P:	Standard Base Deep Cell Pont Treatment/Point Discharge Rate	**$30.71**
E1:	RSF Escrow Rate	**$10.13**
E2:	DCP Escrow Rate	**$8.43**
E3:	Southridge Escrow Rate	**$6.35**
B1:	Statewide bonding charge of $1.21	**$0.27(R)**
B3:	Milcrofton Service Territory Bonding charge	**$0.00**
B4:	Goose Creek Service Territory Bonding charge	**$0.00**
F1:	3% City of Coopertown Franchise Fee on the Rate Class 1	**$1.32**
F2:	3% City of Coopertown Franchise Fee on the Rate Class 5	**$1.17**
LC:	Loan amortization costs for the Southridge treatment facility	**$21.33**
LL:	Land Lease costs for the Southridge treatment facility	**$2.67**
SOU:	Standard base Collection Rate for Southridge Subdivision	**$17.59**
TC:	Treatment costs passed through from the city of Clarksville	**pass-through amt.**

FFR.D.E1.B1	= **$44.42**	= **RATE CLASS 1 (34.02 + 10.13 + 0.27)**	**(R)**
FFR.D.E1.B1.F1	= **$45.74**	= **RATE CLASS 2 (34.02 + 10.13 + 0.27 + 1.32)**	**(R)**
FFR.D.E1.B1.B3	= **$44.42**	= **RATE CLASS 3 (34.02 + 10.13 + 0.27 + 0.00)**	**(R)**
FFR.D.E1.B1.B4	= **$44.42**	= **RATE CLASS 4 (34.02 + 10.13 + 0.27 + 0.00)**	**(R)**
DCP.D.E2.B1	= **$39.41**	= **RATE CLASS 5 (30.71 + 8.43 + 0.27)**	**(R)**
DCP.D.E2.B1.F2	= **$40.58**	= **RATE CLASS 6 (30.71 + 8.43 + 0.27 + 1.17)**	**(R)**
DCP.P.E2.B1	= **$39.41**	= **RATE CLASS 7 (30.71 + 8.43 + 0.27)**	**(R)**
DCP.D.E2.B1.B4	= **$39.41**	= **RATE CLASS 8 (30.71 + 8.43 + 0.27+ 0.00)**	**(R)**
SOU.E3.TC.B1	= **$24.21 + tc**	= **RATE CLASS 9 (17.59 + 6.35 + 0.27) + tc**	**(R)**
DCP2.D.E2.LC.LL.B1	= **$55.25**	= **RATE CLASS 10 (22.55 + 8.43 + 21.33 + 2.67 + 0.27)**	**(R)**

Fees: Non-Payment – 5% of total bill amount
Disconnection – $40
Reconnection – $50
Returned Check (NSF Fee) – $25
Access Fee – $120/yr (See Rules and Regulations for Explanation)
Tap Fee : E. Montgomery Fac. - $3,000 Pre-Construction, $3,500 Post-Construction

EXHIBIT G

IN THE TENNESSEE PUBLIC UTILITY COMMISSION
AT NASHVILLE, TENNESSEE

IN RE:	)	
	)	
PETITION OF TENNESSEE	)	
WASTEWATER SYSTEMS, INC., TO	)	**DOCKET NO.**
AMEND ITS CERTIFICATE OF	)	
CONVENIENCE AND NECESSITY	)	

DIRECT TESTIMONY OF FRED PICKNEY

Q1. What is your name and business address?
A. I am Fred Pickney. My business address is 849 Aviation Parkway, Smyrna TN, 37167.

Q2. By whom are you employed and in what capacity?
A. I am employed by Tennessee Wastewater, Inc. as Vice President of Business Development.

Q3: What are your responsibilities in that position?
A: I work with people who are interested in obtaining sewer service, either for individual homes or for entire subdivisions. I work closely with land developers and engineers to provide wastewater solutions for their projects.

Q4. Please describe your educational background?
A. I earned a Bachelor's degree in Business Administration with a major in Logistics from the University of Tennessee in 2010 and a Juris Doctorate from the University of Tennessee College of Law in 2013.

Q5. Please describe TWSI's service territory.
A. In 1994 the Public Service Commission (predecessor to the TPUC) granted TWSI (then called On-Site Systems, Inc.) its initial CCN. Since that time, TWSI has been granted over 100 CCNs and provides wastewater service to over 3000 customers in 23 Tennessee counties.

Q6. What is the purpose of your testimony in this proceeding?
A. The purpose of my testimony is to describe the proposed development and the ability of TWSI to properly operate and maintain the wastewater treatment and collection system for Sweet Apple Hill.

Q7. Please describe the proposed Sweet Apple Hill development.

A. Sweet Apple Hill development is proposed to consist of 120 homes on approximately 122 acres in Williamson County. The development will be developed as one phase. It is located southwest of Franklin and just northeast from Leiper's Fork on Bear Creek Road and Carter's Creek Pike. The location is shown on Exhibit A and is approximately 6 miles from the territory for which TWSI holds a CCN called Goose Creek Area. TWSI serves two subdivisions within this area, Belle Vista and McLemore Farms.

Q8. What type of wastewater collection and treatment system is proposed for Sweet Apple Hill?

A. The collection system will be a septic tank effluent pump (STEP) system, with septic tanks and pumps at each home. The tanks discharge to collection lines that will convey the wastewater to the central treatment system which will be a Recirculating Media Filter type system. The treated effluent will be disinfected, and land applied through drip irrigation. This type of system is in the majority of systems owned and operated by TWSI.

Q9. What is the current status of the Sweet Apple Hill development?

A. Engineering and design work of the development, including the wastewater system, has begun. The developer has met with the county regarding the concept plan for the subdivision and things remain on track. The county and state approval process will continue into 2018 with site and initial home construction planned for later next year.

Q10. What is the status of permitting and approvals with the Tennessee Department of Environment and Conservation?

A. The application for the State Operating Permit (SOP) was received by TDEC on December 13, 2017. A copy of which is attached to the Petition as Exhibit B.

Q11. Does TWSI have the managerial and technical ability to operate and maintain the treatment system for Sweet Apple Hill?

A. Yes. The treatment and collection system proposed for use at Sweet Apple Hill is similar to the majority of systems already owned and operated by TWSI. TWSI has several full-time system operators and maintenance personnel dedicated to the Williamson County area to oversee the operations and maintenance of the systems in that territory. TWSI owns and operates two systems in relative close proximity to this new proposed area.

In addition to the operations and maintenance personnel, TWSI will continually monitor the system through remote telemetry and the HAWKMS system. HAWKMS gives the operators the ability to remotely monitor and control their plants. Utilizing this technology not only allows TWSI to operate and maintain sites more efficiently, but also less expensively as it cuts down on the need for additional personnel, equipment, and allows

the utility to optimize energy consumption based on plant conditions. Including TWSI owned systems, there are over 300 wastewater facilities using this technology.

Q12. How will the construction of the proposed collection and treatment system for Sweet Apple Hill be managed and funded?

A. The collection system will be the responsibility of the developer to fund and construct. The treatment system will be funded by the developer through contribution in aid of construction to the utility. TWSI will be deeded ownership of the system once construction is complete and the system is approved and accepted by the utility.

Q13. What rates and charges will be used for Sweet Apple Hill?

A. TWSI will apply the Tier 1 Residential Rate to this development. Currently that rate is $44.42. The tariff sheet is Exhibit F of the Petition.

Q14. Does TWSI have the financial resources to provide service to Sweet Apple Hill?

A. Yes. TWSI currently has in place a $300,000 bond approved by the Commission. Further the utility has over 3000 customers in Tennessee which makes adding a new territory less of a financial burden to the company. The Company is also able to offset operations and maintenance costs through the annual access fees paid to TWSI by owners of empty lots.

Q15. Will TWSI abide by the orders and rules of the Commission?

A. Yes.

Q16. Does this complete your testimony?

A. Yes.

AFFIDAVIT

My name is Fred Pickney and the attached direct testimony is true and correct to the best of my knowledge.

Fred Pickney

Fred Pickney

County of Rutherford)
State of Tennessee)

On this 18th day of December 2017, personally appeared before me, Suzanne Christmas, a notary public, the above-named Fred Pickney known to me personally who was duly sworn and on oath executed the above Affidavit.

SUZANNE M. CHRISTMAN
STATE OF TENNESSEE NOTARY PUBLIC
RUTHERFORD COUNTY

Suzanne M. Christman
Notary

My commission expires: 12/1/2020