Adenus
Solutions Group

849 Aviation Parkway
Smyrna, TN 37167

January 18, 2018

Allen Rather
Department of Environment and Conservation
Division of Water Resources
312 Rosa L. Parks Ave, 11th Floor
Nashville, Tennessee 37243

17-00146

Dear Allen:

Please find enclosed one check in the amount of $500 for review fee(s) of enclosed Lighthouse Pointe SOP application and UIC application.

If you have any questions, please contact me at this office.

Sincerely,

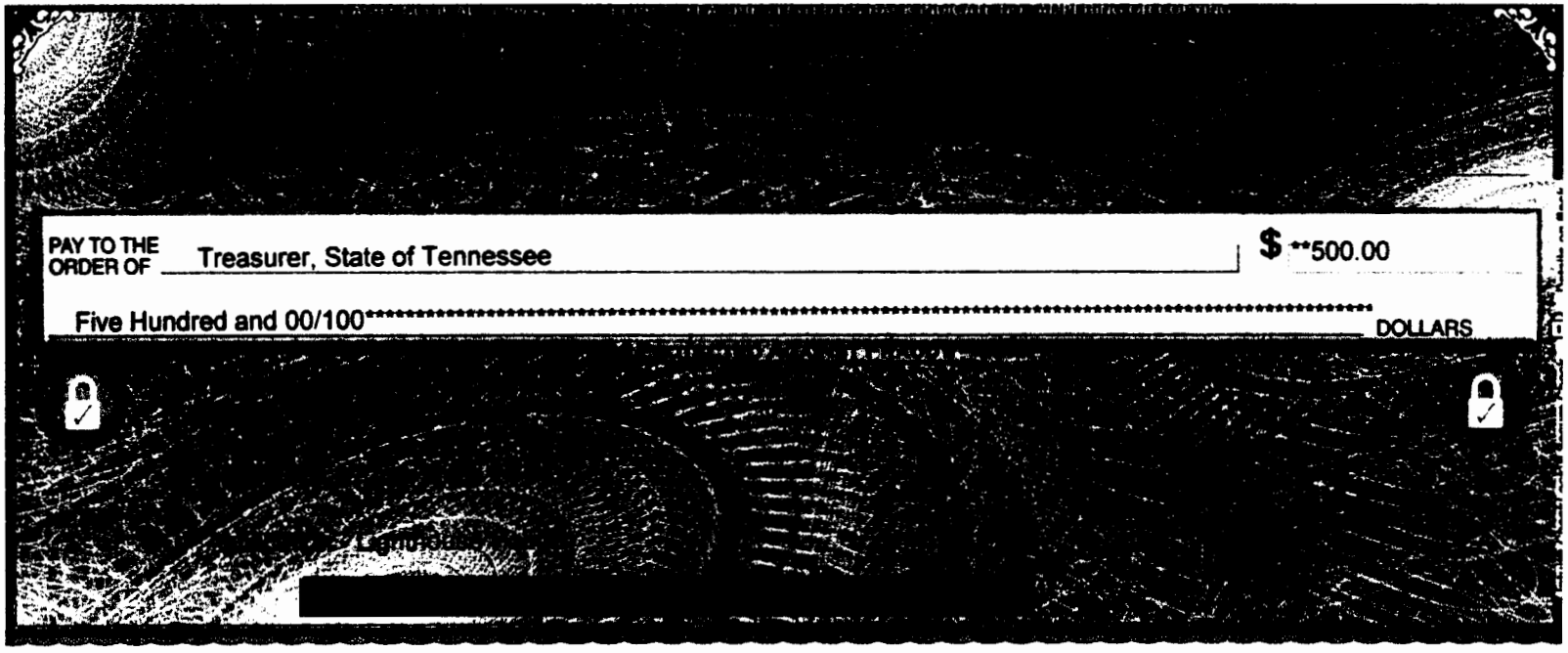
Marshall Fall P.E.
Adenus Solutions Group

TN DEPT. OF ENV. & CONSERVATION

JAN 25 2018

DIVISION OF WATER RESOURCES

615.220.7200 www.adenus.com Fax: 615.220.7207



Tennessee Wastewater Systems, Inc. 8017

Treasurer, State of Tennessee		1/18/2018	
401 · Operating Expenses:775 · Miscella	SOP Application - Lighthouse Pointe		500.00

TN DEPT. OF ENV. & CONSERVATION

JAN 25 2018

DIVISION OF WATER RESOURCES

Pinnacle Checking	SOP Application - Lighthouse Pointe	500.00

TENNESSEE DEPARTMENT OF ENVIRONMENT & CONSERVATION
DIVISION OF WATER SUPPLY 6th Floor, 401 Church Street Nashville, Tennessee 37243

APPLICATION FOR AUTHORIZATION TO OPERATE A CLASS V UNDERGROUND INJECTION WELL OR STORM WATER DISCHARGE TO THE SUBSURFACE OR MODIFICATION OF A KARST FEATURE

In accordance with the provisions of Tennessee Code Annotated Section 69-3-105 and Regulations of the Tennessee Water Quality Control Board, application is hereby made to operate:

☐ **Class V Underground Injection Well** ☐ **Discharge of Storm Water into the Subsurface** ☐ **Modification of Existing Karst Feature**

Part A - General Information

Name and Address and of Facility/Well	Name and Address of Operator/Owner/Contractor
Lighthouse Point 691 Baye Road, Grainger County, TN	Tennessee Wastewater Systems 849 Aviation Parkway, Smyrna, TN

State	County	Telephone Number
TN	Rutherford	615.220.7200

Location (decimal degrees) for additional points attach on separate sheet

Latitude	36.232208
Longitude	-83.433569

Quadrangle Name	Ground elevation at well location
Talbott	1107

Describe the activities conducted by the applicant which require it to obtain a Class V permit authorization
Wastewater treatment and collection system for typical residential subdivision

Type of Business
☐ Federal ☐ Public ☐ Government
☐ State ☒ Private ☐ Other

Nature of Business:
Sudivision

List up to four North American Industry Classification System (NAICS) codes which best reflect the principal products or services provided by the facility
5399
_____
_____
_____

Name, address, telephone number of legal contact or person responsible for the operation of the Class V injection well or facility:
Robert J. Pickney, PE
849 Aviation Parkway, Smyrna, TN 37167
615.220.7200

Is the facility located on Indian Lands?
☐ Yes ☒ No

Mode of operation
☐ continuous ☒ intermittent ☐ repair

Permit Status:
_X_ a. new well or facility
_____ b. modification of existing well or facility
_____ c. reapplication for previously permitted well or facility

List all other permits or construction approvals received or applied for under any of the following programs

		Type	Date Issued	Permit Number
a	☐	Hazardous waste management program under federal or state law		
b	☐	UIC program under federal or state law		
c	☐	NPDES program under federal or state law		
d	☐	Prevention of Significant Deterioration (PSD) program under federal or state law		
e	☐	Nonattainment area program under federal or state law		
f	☐	National Emission Standards for Hazardous Pollutants (NESHAPS) preconstruction approval under federal or state law		
g	☐	Ocean dumping permits under the Marine Protection Research and Sanctuaries Act		
h	☐	Dredge and fill permits under Section 404 of the Clean Water Act, 33 U.S.C. 1344		
i	☐	Comprehensive Environmental Response, Compensation and Liability Act (Federal Superfund) or Tennessee Hazardous Waste Management Act (Tennessee Superfund)		
j	☐	UST program under federal or state law		
k	☒	Groundwater Protection permits from Tennessee Division of Ground Water Protection		
l	☐	Other relevant environmental permits		

Part B - Facility Description

Nature, type or purpose of injection well: 1,800 GPD Typical Domestic Waste Septic System	Description of injection well or facility, including monitoring wells and other associated structures (attach additional information or diagrams, if necessary) 22-24" deep conventional SSDS trenches 3,000 gal EQ Tank 1,500 gal final dose tank 10-12" deep dripper line BioClere Membrane
Depth of injection zone: 5 (avg) feet below ground level	Operating status of well or facility ☒ proposed ☐ active ☐ inactive ☐ abandoned
Date injection began (if not in operation, projected date of beginning)_____ If inactive or abandoned well, approximate date injection ceased N/A	Operating parameters of injection well a. fluid flow — 10 gpm b. fluid pressure — ____ psig c. fluid temperature — 15.5° Celsius d. other significant operating information (attach additional information or diagrams, if necessary): -------
For previously active facilities, give history of injection or operation N/A	Nature of injected fluid, including physical, chemical, biological and/or radiological propertiesSanitary Waste
Volume of injected fluid/amount of fill material per well or feature 1,800 gallons _____ cubic yards _X_ per day _____ per month _____ per year	Type of injection ☒ pump ☐ gravity ☐ fill only Description of pump(s): ____
Origin of injected fluid or fill material Residential Homes	Description of treatment of fluid or fill prior to injection BioClere Membrane

Part C - Description of Area of Review

The area of review (AOR) for each authorized or permitted Class V injection well shall, unless otherwise specified by the Department, consist of the area lying within and below a one mile radius of the injection well pump site or facility, and shall include, but not be limited to surface geographic features, subsurface geology, and demographic and cultural features within the area. Attach to this part of the application a complete characterization of the AOR, including the following:

1. Description of all past and present uses of groundwater within the AOR, as documented by public record.
☐ Commercial ☒ Residential ☐ Agriculture ☐ Industrial

2. Description of general direction of groundwater movement in the AOR. Attached Report

3. Description of the population and cultural development within the AOR, including the number of persons living within one mile of the well or facility, land uses within the AOR, and the existence of any community, state, regional or national parks, wildlife refuges, natural or wilderness areas, recreational or other public-use areas, or any other environmentally sensitive features within the area of review. ☐ Commercial ☒ Residential ☐ Agriculture ☐ Industrial ☐ Mixed

4. Identify all sources of publicly-supplied drinking water for persons living or working within the AOR. Attached Report

5. Identify any single or multi-family residences, churches, schools, businesses or other inhabited structures within the AOR which do not have access to a public drinking water supply system locate on Attachment 1.

6. If groundwater is used for drinking water within the area of review, then identify and locate on Attachment 1, all groundwater withdrawal points within the AOR which supply public or private drinking water systems.

7. Identify any surface water bodies or features within the area of review which may be impacted by groundwater discharge to surface waters locate on Attachment 1.

8. Identify any surface water intake which supplies a public water distribution system and is located within the AOR or within three miles topographically down gradient from the well or facility. If any such intake(s) exist, then locate on Attachment 1.

Attachments

1. USGS topographic quadrangle map showing the location of the Class V injection well or facility and a one-mile radius area surrounding the well or facility.

2. Schematic diagram of the injection well showing construction details and materials of the injection well.

3. Chemical analysis data of injection fluid, if required.

4. Process description of the treatment or other process which is the source of the injection fluid, if required.

5. Procedure for operation and maintenance of the injection well or facility, if required.

6. Geologic/hydrogeologic information collected during the planning, construction and design phases of the facility and injection well.

7. Blueprints from the facility showing the injection well and portions of the facility which will or may contribute injectate to the injection well, including storm runoff waters.

8. Construction diagrams depicting erosion and sediment controls.

Part D - Signature and Certification

This application should be signed by a person having responsibility for the operation of the injection well or facility as follows:

1. For a corporation, by a responsible corporate officer (i.e., president, secretary, treasurer, vice-president, or equivalent person) who performs policy or decision making functions; or

2. The manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25 million if authority to sign documents has been assigned or delegated to the manager in accordance with operating procedures; or

3. For a partnership, by a general partner or the proprietor; or

4. By a duly authorized representative (a duly authorized representative may be either a named individual or any individual occupying a named position) only if:

   a. The authorization is made in writing by a person described in (1), (2), or (3) above;

   b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or well field, superintendent, or position of equivalent responsibility, or

   c. For municipality, state, federal, or other public agency by either a principal executive officer or ranking elected official.

5. The owner of the property or facility on which the injection well is located.

I certify under penalty of law I have personally examined and am familiar with the information submitted in the attached document; and based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine or imprisonment.

Charles R. Hunt - President _____

Name & Title (print or type) License No.

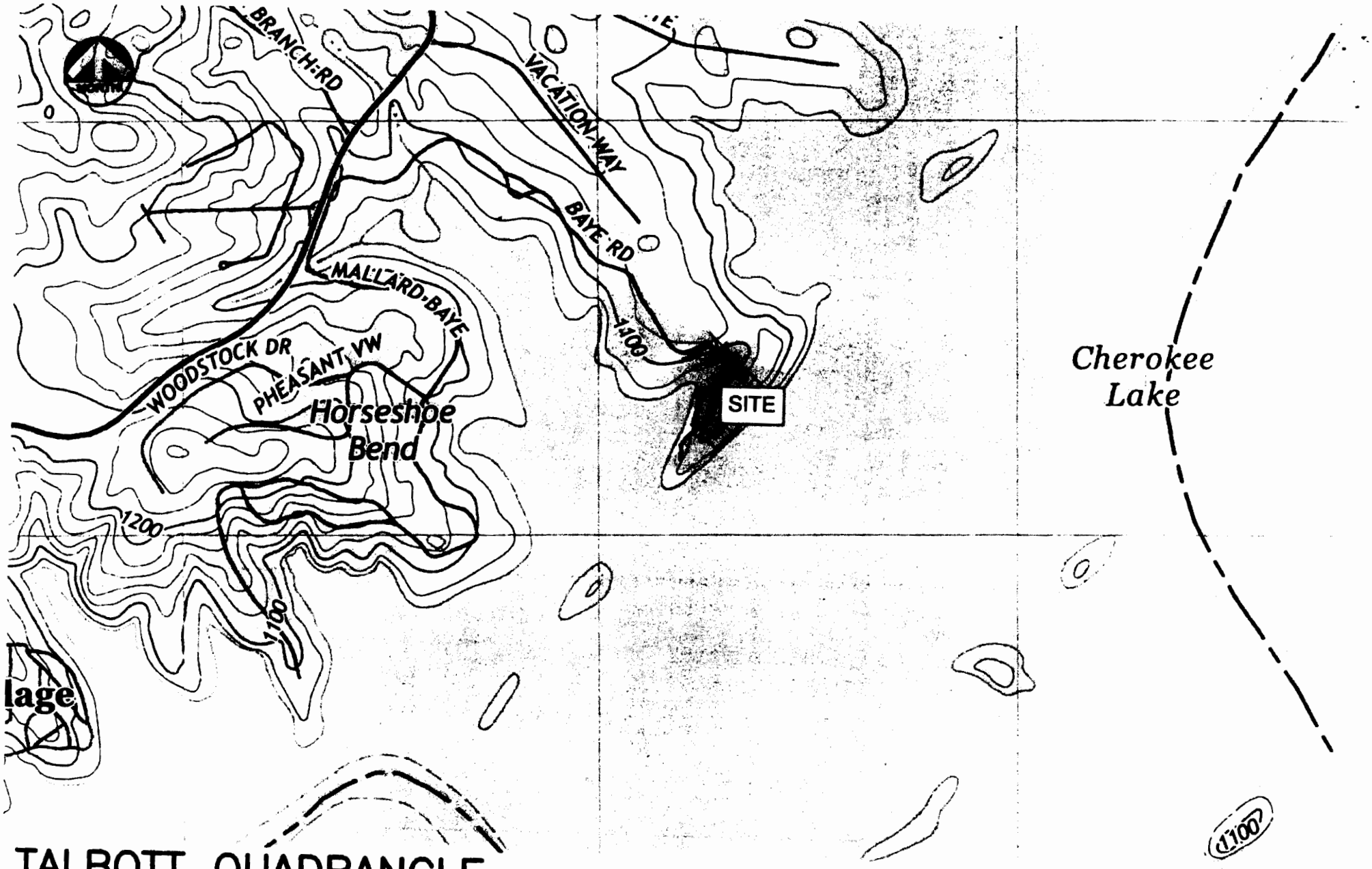
_____ _____

Signature Date

_____ _____

Name & Title (print or type) License No.

_____ _____



TALBOTT QUADRANGLE

0' 500' 1000' 2000' 4000'

SCALE: 1" = 1000'

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Adenus SOLUTIONS GROUP ®

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 is a mix of sloping Montevallo and gently sloping Dewey silt loam type soil. The attached maps indicate the proposed Lighthouse Pointe wastewater treatment area drainage flow path is capable of moving in the any direction away from the property. Generally, groundwater should move southerly towards Cherokee Lake.

Population and Cultural Development: The majority of the Area of Review is primarily lake-front residential or commercial campsite. Typically, small residential subdivisions have been developed.

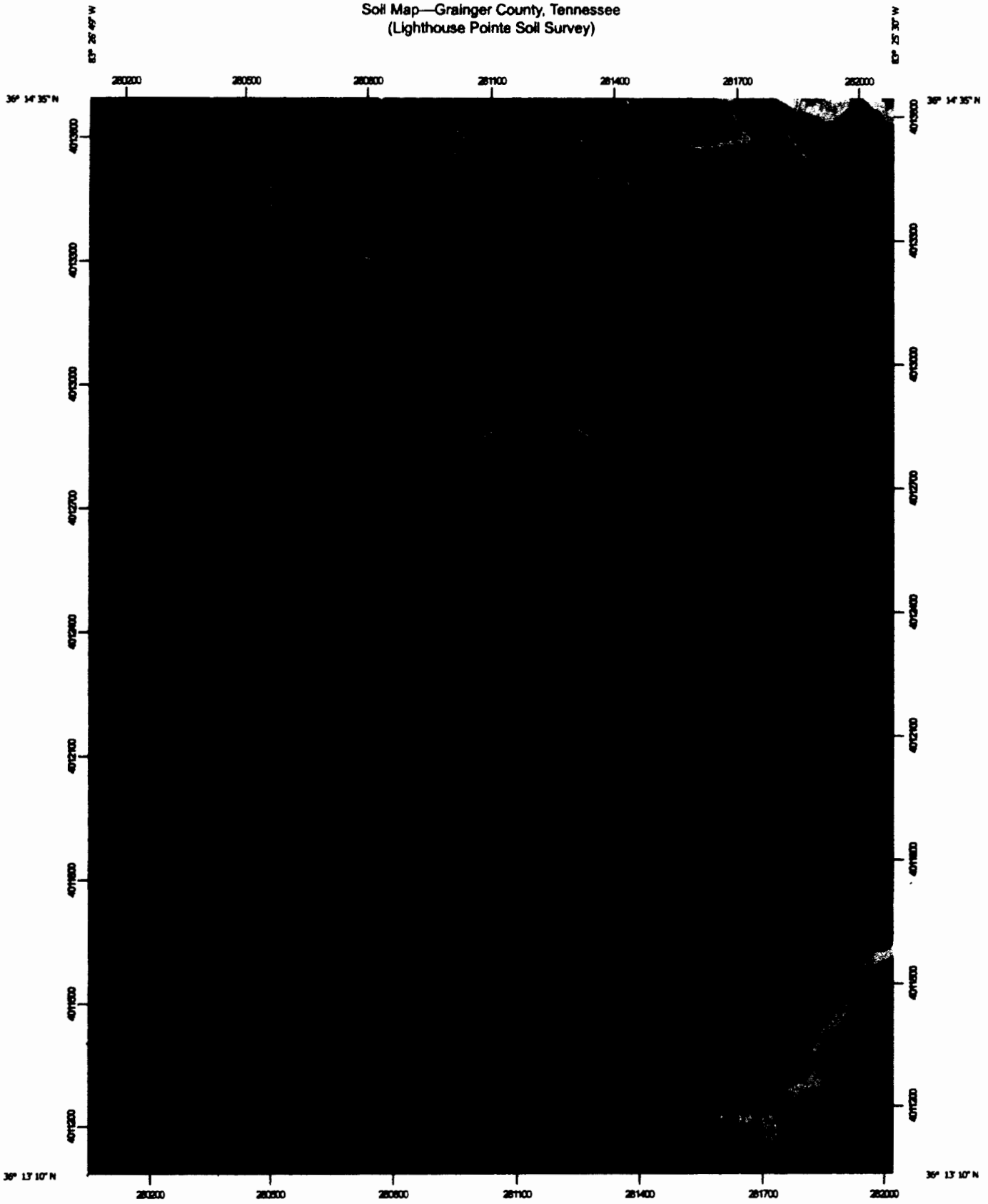
Nature of Fluid: Lighthouse Pointe Drip Dispersal will have an approximate peak design flow of 1,800 GPD of typical residential sanitary wastewater.

Public Water Supply: Bean Station Utility supplies public drinking water within the AOR.

Bean Station Utility
581 Broadway Drive
P.O. Box 520
Bean Station, Tennessee 37708
LUD Information (865) 993-2326

Description of System: Wastewater from 6 Equivalent Dwelling Units (EDUs) 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 solid separation tank. An equalization tank is utilized to further separate fluid wastewater from solid effluent. Wastewater is then gravity fed to the equalization chamber and treated using a Bioclere water treatment unit. Treated wastewater exiting the Bioclere unit will be kept in a 1,500-gallon storage tank before final filtration and reuse. Approximately 1,800 GPD of treated wastewater will be pumped from the storage tank, filtered through Arkal disc filters, 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.

Soil Map—Grainger County, Tennessee
(Lighthouse Pointe Soil Survey)



Map Scale: 1:12,700 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 150 300 600 900

Feet: 0 500 1000 2000 3000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

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MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Grainger County, Tennessee
Survey Area Data: Version 11, Oct 4, 2017

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 27, 2012—Mar 23, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
DeC2	Dewey silt loam, 6 to 15 percent slopes, eroded	15.3	3.4%
DtD	Dewey-Etowah complex, 12 to 20 percent slopes	185.8	41.3%
MnD	Minvale loam, 12 to 20 percent slopes	28.6	6.4%
MoC	Montevallo channery silt loam, 5 to 12 percent slopes	0.3	0.1%
MoD	Montevallo channery silt loam, 12 to 20 percent slopes	2.4	0.5%
TmE	Townley-Montevallo complex, 20 to 35 percent slopes	20.1	4.5%
W	Water	197.1	43.8%
Totals for Area of Interest		449.7	100.0%

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Tennessee 811

GENERAL NOTES

1) WASTEWATER EFFLUENT FROM ALL LOTS WILL CONNECT VIA PRESSURE COLLECTION MAINS TO THE ON SITE TREATMENT FACILITY

2) EACH RESIDENTIAL LOT WILL REQUIRE A STEP (PUMP) TANK TO CONNECT TO THE SEWER SYSTEM

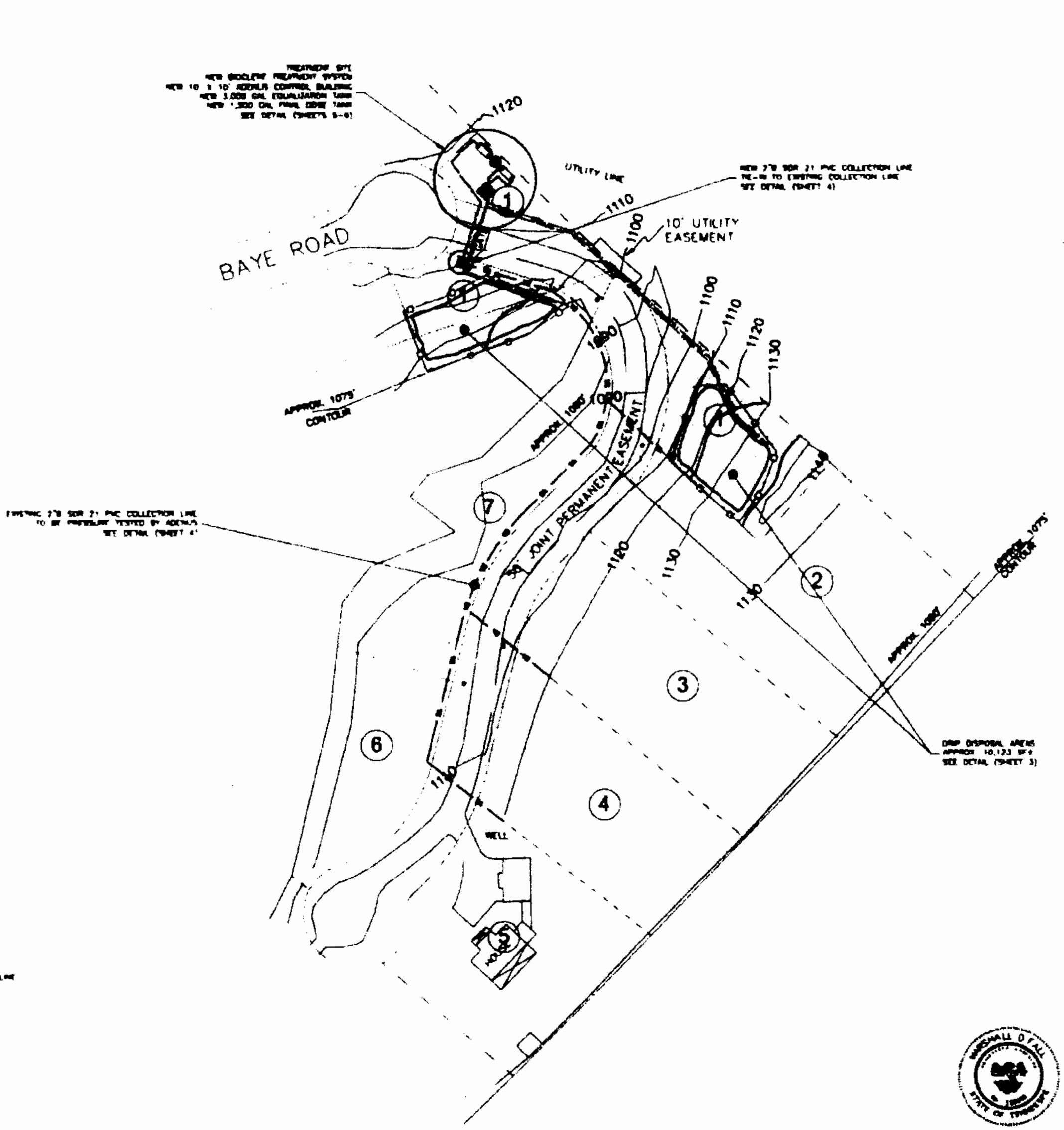
3) ALL SITE INFORMATION WAS SUPPLIED BY THE OWNER, OR OWNERS AGENT. THE CONTRACTOR MUST VERIFY ACTUAL LOCATIONS IN THE FIELD

4) CONTRACTOR SHALL VERIFY LOCATIONS OF EXISTING UTILITIES PRIOR TO COMMENCING ANY EXCAVATION WORK. ANY DAMAGED UTILITIES SHALL BE REPAIRED IMMEDIATELY TO THEIR ORIGINAL OR BETTER CONDITION BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER

5) THE LOCATION OF WASTEWATER COLLECTION AND REUSE SYSTEM COMPONENTS ARE GENERAL IN NATURE. MINOR FIELD ADJUSTMENTS MAY BE NECESSARY. THE CONTRACTOR MAY REQUEST TO MODIFY THE LOCATION OF THE COMPONENTS THROUGH THE OWNER AND THE UTILITY

6) THE CONTRACTOR IS TO PROVIDE AS-BUILT DRAWINGS TO ADENUS OPERATIONS LLC (AO) PRIOR TO AO ACCEPTING THEIR WORK

7) ALL COLLECTION LINES SHALL HAVE A MINIMUM 10' PUE OR DEDICATED EASEMENT UNLESS OTHERWISE NOTED



NORTH

SITE LAYOUT

NEW 2"Ø SDR 21 PVC COLLECTION LINE
NEW DRIP FENCE
EXISTING 2"Ø COLLECTION LINE
NEW 2"Ø DRIP SUPPLY LINE
NEW 2"Ø FLUSH RETURN LINE
BOUNDARY LINE

LIGHTHOUSE POINTE
TREATMENT AND DRIP DISPOSAL

LOCATED OFF BAYE ROAD
GRAINGER COUNTY, TENNESSEE

Checked by	Drawn by	Date
Scale AS NOTED	Plans prepared by	

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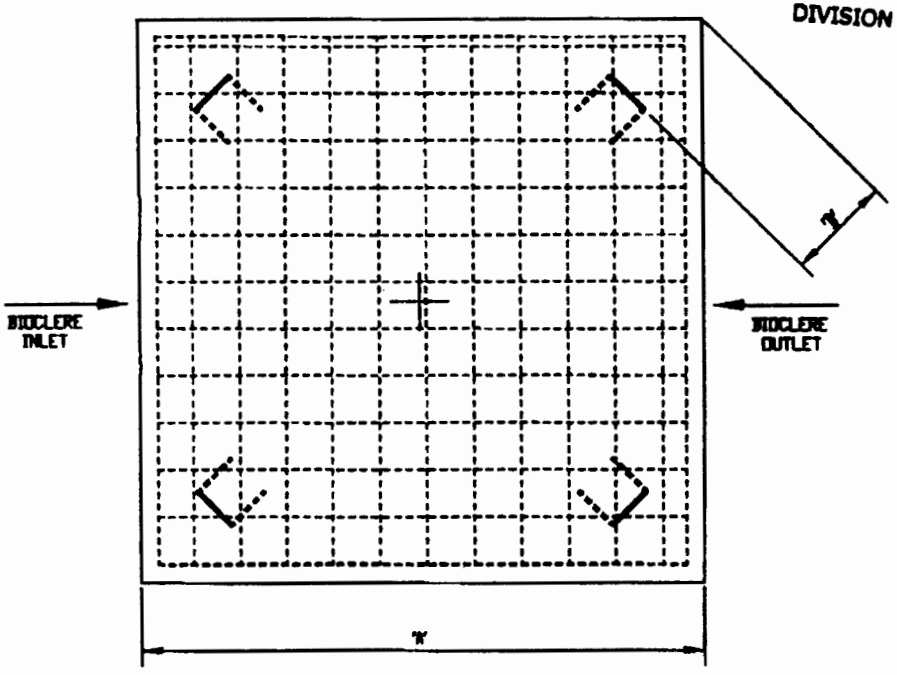
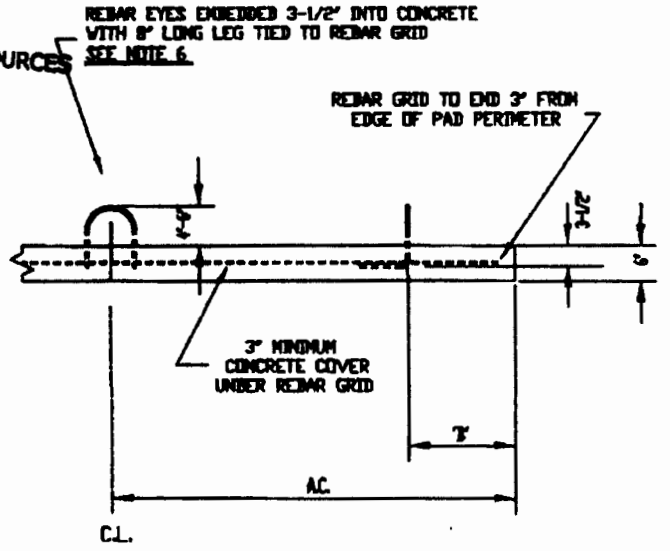
PLAN ON SQUARE PAD
(SEE NOTE 5)



PAD ELEVATION
(ACROSS CORNERS)



BIOCLERE MODEL	'A'	'B'	STEEL REINFORCEMENT GRID	APPROX PAD WEIGHT
16/22 16/25	6'	9'	#3 REBAR @ 8" O.C.	3,600 lbs

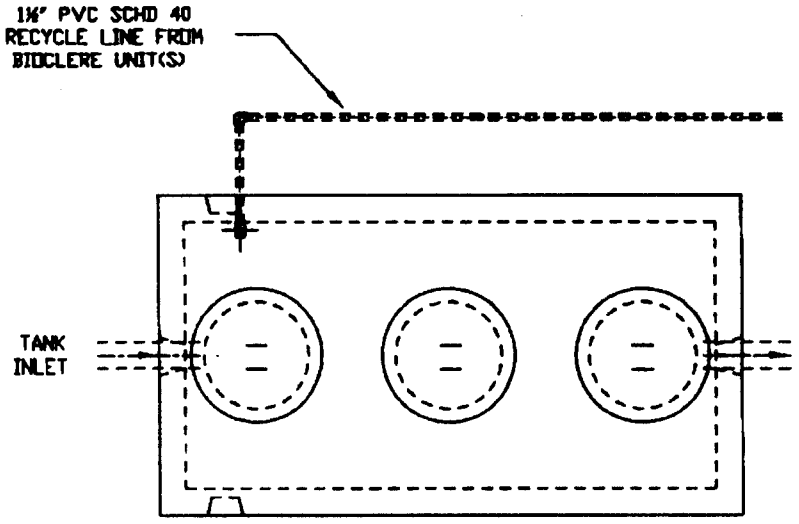
NOTES: UNLESS OTHERWISE SPECIFIED

1. CONCRETE MINIMUM STRENGTH: 4,000PSI @ 28 DAYS.
2. DEFORMED REINFORCING BARS TO BE 60,000 PSI YIELD STRENGTH.
3. EYES (4): 1/2" DIAMETER REBAR CAST IN PLACE AS SHOWN.
4. PAD TO BE SUPPLIED AND INSTALLED BY CONTRACTOR.
5. CIRCULAR PADS WITH 'A' = DIAMETER, CAN BE SUBSTITUTED FOR SQUARE PADS. CIRCULAR PAD REBAR EYES INSTALLED 6" FROM PAD PERIMETER.
6. REBAR EYES ARE NOT DESIGNED FOR LIFTING THE CONCRETE PAD.

AQUAPOINT
39 TARKILN PLACE
NEW BEDFORD, MA 02745
(508) 985-9050 FAX (508) 985-9072

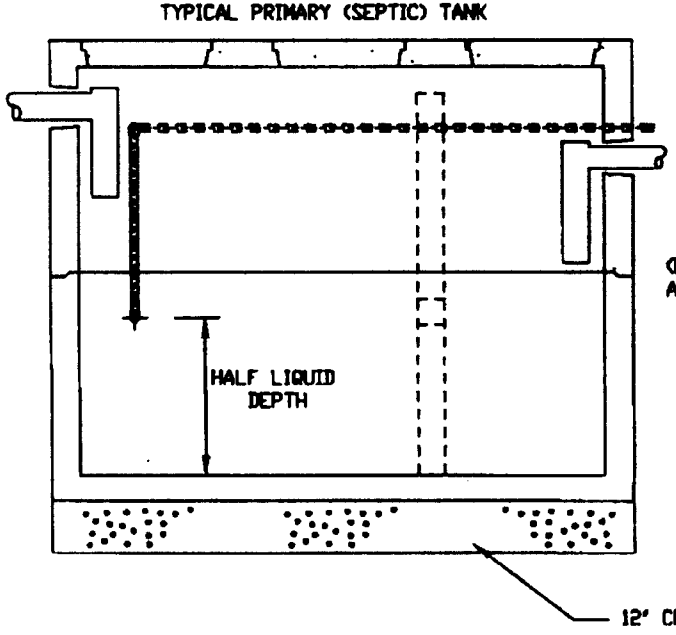
TITLE:	PRECAST MOUNTING PAD FOR 16 SERIES BIOCLERES
DRAWING NO:	AWT3015-1
REVISION:	A
DATE:	JUNE 18, 2013
DRAWN BY:	JBL
SCALE:	(1 : 20) SIZE: B (A3)
SHEET #:	

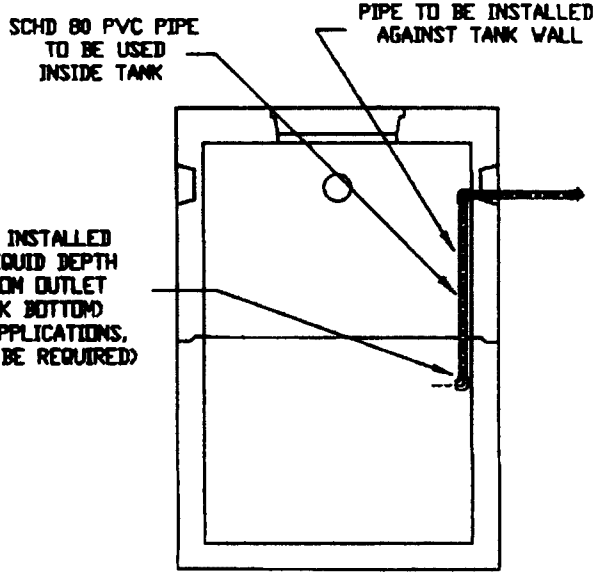
1½" Biofilter Recycle Line Installation at Primary Tank.



NOTES FOR CONTRACTOR:

1. SLOPE PIPE BACK TO SEPTIC TANK WITH NO LOW POINTS.
2. USE PRESSURE FITTINGS ONLY.





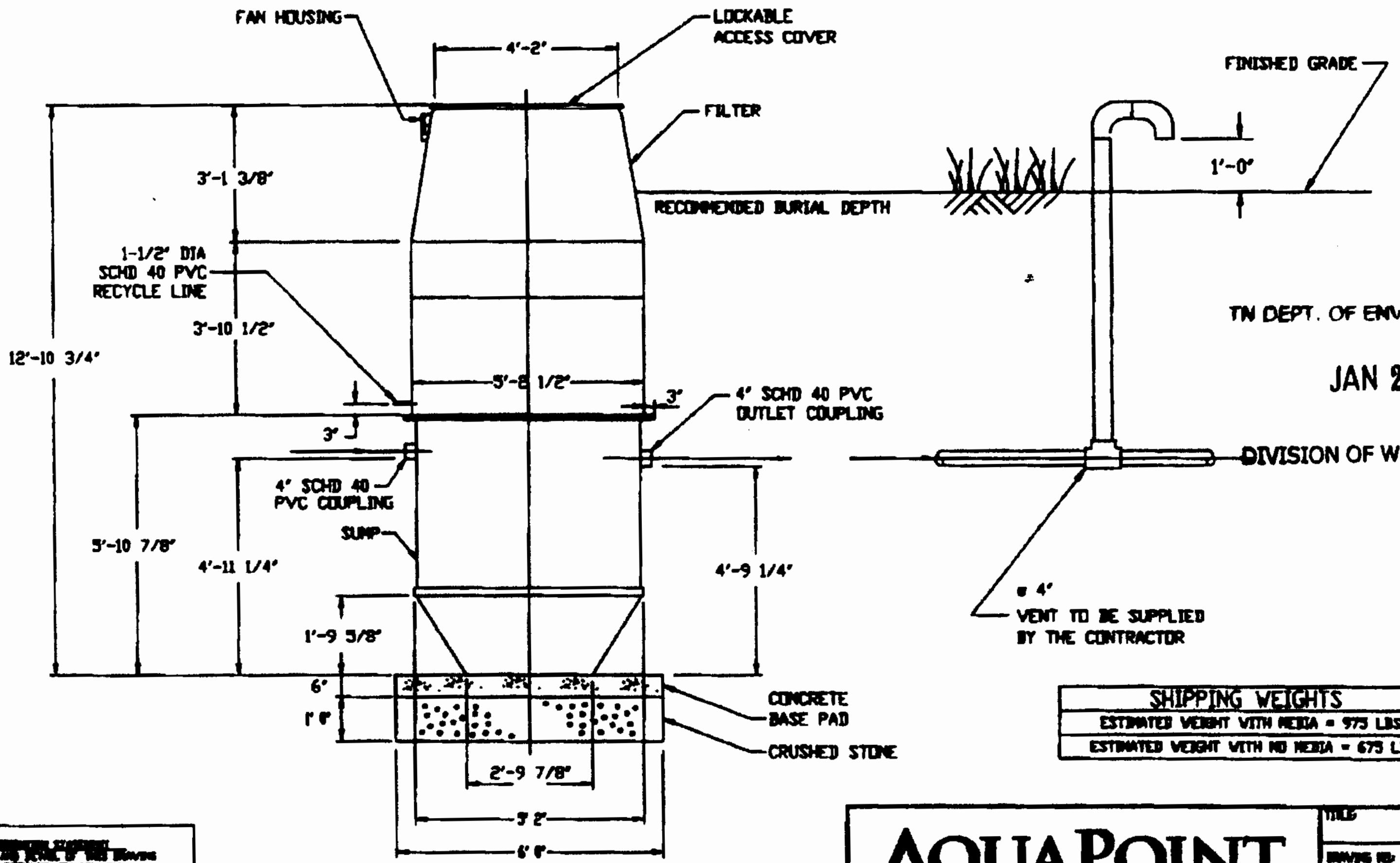
1.5BioRecycle.dwg

AQUAPOINT

39 TARKILN PLACE
NEW BEDFORD, MA 02745
(508) 985-9050 FAX (508) 985-9072

TITLE	1½" Recycle Line Installation. (Primary Tank)
DRAWING NO.	PMV/1256-1
REVISION	B
DATE	9 Feb 09
DRAWN BY	P.VELLEY
SCALE	1 : 40
SIZE	A / A4
SHEET	1 of 1

NOTES:
1. VENT MAY BE RUN UP THE SIDE OF BUILDING.
2. SEE DRAWING PWV/AVT3015-1 FOR MOUNTING PAD CONSTRUCTION DETAILS.



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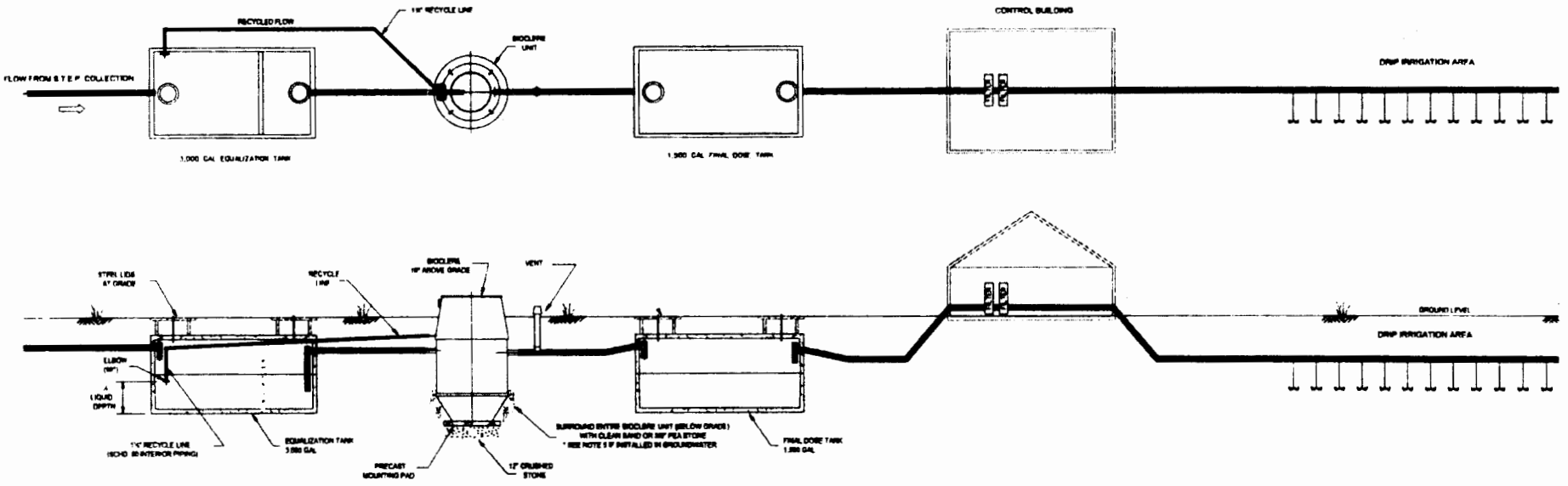
SHIPPING WEIGHTS
ESTIMATED WEIGHT WITH MEDIA = 975 LBS.
ESTIMATED WEIGHT WITH NO MEDIA = 675 LBS.

BIOCLERE MODEL 16/22

AQUAPOINT
39 TARKILN PLACE
NEW BEDFORD, MA 02745
(508) 985-9050 FAX (508) 985-9072

TITLE	BIOCLERE 16/22 GENERAL ARRANGEMENT
DRAWING NO.	UK1259-5
REVISION	9
DATE	1/3/12
DWN BY	P.Villey
SCALE	1 : 30 SIZE B
SHEET #	1 of 1



GENERAL TREATMENT SCHEMATIC

SCALE: N.T.S.

GENERAL NOTES:

1) THIS INSTALLATION REPRESENTS BIOCLERE MODEL 16 SERIES

2) IF VENTING IS ACCOMPLISHED THROUGH BUILDING, VENT IS TO BE BROUGHT TO GRADE AND CAPPED

3) IF INSTALLED IN GROUND WATER CONTACT SITE ENGINEER FOR ANCHORING REQUIREMENTS

4) CONTRACTOR IS TO SUPPLY ALL CONCRETE STRUCTURES AND PERFORM INSTALLATION

DETAILS TAKEN FROM AQUAPOINT 16 GENERAL FLOW SCHEMATIC dwg. MODIFIED TO INCLUDE 1,500 GAL FINAL DOSE TANK BEFORE DRIP DISPERSAL

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MARSHALL D'ALL — STATE OF TENNESSEE

LIGHTHOUSE POINTE
TREATMENT AND DRIP DISPOSAL

LOCATED OFF BAYE ROAD
GRAINGER COUNTY, TENNESSEE

Checked by: MDP	Drawn by: DLF	Date: JANUARY 15, 2018
Scale: AS NOTED	PLANS PREPARED BY: Adenus SOLUTIONS GROUP®	
Filename: LIGHTHOUSE POINTE		
SHEET 1 OF 1		

TENNESSEE DEPARTMENT OF ENVIRONMENT & CONSERVATION
DIVISION OF WATER Resources 11th Floor, 312 Rosa L. Parks Avenue Nashville, Tennessee 37243
Class V Injection Well Fee Worksheet

Complete and submit this worksheet with each project to the address above. Make checks or Money Orders Payable to Treasurer, State of Tennessee.

ACTIVITY		FEE PAID	FEE DUE For Office Use Only
1.	Innovative technology wells at $1,000.00 per project		
2.	Stormwater drainage wells (sinkhole modifications, or drilled)		
	(i) Subdivisions at $500.00 per project		
	(ii) Commercial/Industrial facilities $750.00 per project		
3.	Commercial/Industrial open loop geothermal wells $750.00 per facility		
4.	Commercial/Industrial SFDS and infiltration cells $500.00 per facility (contract counties only)		
5.	Large capacity septic systems (contract counties only)		
	(i) Non commercial or industrial $250.00 per facility		
	(ii) Religious facilities $100.00 per facility		
6.	Remediation wells/systems:		
	(i) Oversight under this rule $1,000.00 per project		
	(ii) Oversight by the Department not under this rule $0.00		
7.	Modification of recharge point $350.00 per project		
8.	Renewal of stormwater drainage wells commercial/industrial facilities $350.00 per facility		
9.	Renewal of open loop geothermal commercial/industrial facilities $350.00 per facility		
10.	Renewal of commercial/industrial SFDS and infiltration cells $250.00 per facility		
11.	Renewal of large capacity septic systems		
	(i) Non commercial or industrial $250.00 per facility		
	(ii) Religious facilities $50.00 per facility		
12.	Change of Ownership $75.00		
TOTAL PLANS REVIEW FEE = $0			

Name of Project: Lighthouse Park
County: Grainger
Engineer/Owner: Adams Operations
Payment by: _____ Engineer _____ Other
Address: 641 Baye Road, 37708

STATE USE ONLY
Project #: _____
UIC #: _____
Comments:

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FOR OFFICE USE ONLY
Postmark Date: _____
Date Received: _____
Check #: _____
Check Amount: _____
Receipt #: _____
Cash Deposit _____

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

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DIVISION OF WATER RESOURCES

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 – Lighthouse Pointe**
Permittee Address:	**849 Aviation Pkwy, Smyrna, TN 37167**

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

Optional Contact: **Brian Carter**	Title or Position: **Operator**		
Address: **849 Aviation Parkway**	City: **Smyrna**	State: **TN**	Zip: **37167**
Phone number(s): **615-220-7200**	E-mail:		

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	C R. H	1-19-18

Permit Number: SOP-_____

Facility Identification:		**Existing Permit No.**	**N/A**
Facility Name:	**Lighthouse Pointe**	County:	**Grainger**
Facility Address or Location:	**691 Baye Road, Grainger County, Tennessee**	Latitude:	**36.232208**
		Longitude:	**-83.433569**

Name and distance to nearest receiving waters: **Cherokee Reservoir – 370'**

If any other State or Federal Water/Wastewater Permits have been obtained for this site, list their permit numbers:
SOP-10047, SOP-16011

Name of company or governmental entity that will operate the permitted system: **Tennessee Wastewater Systems**

Operator address: **849 Aviation Parkway, Smyrna, TN 37167**

Has the owner/operator filed for a Certificate of Convenience & Necessity (CCN), or an amended CCN, with the Tennessee Regulatory Authority (TRA) (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.
Owner of property for the proposed treatment and drip irrigation site has committed to transfer the land to Tennessee Wastewater Systems in the event a State Operating Permit is issued for the proposed facility. The land will be transferred by warranty deed, or recorded plat.

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: 6	Avg. No. bedrooms per home: 3	1,800
☐ School	No. of students:	Size of cafeteria(s): No. of showers: 0	
☐ 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.
Residential Subdivision

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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.): STEP/STEG small diameter sewer system	
System Description: STEP/STEG small diameter sewer system	
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. 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: **Cellular telemetry notification**	
List the emergency contact(s) (name/phone): **Brian Carter – 615-220-7200**	
For low-pressure systems, who is responsible for maintenance of STEP/STEG tanks and pumps or grinder pumps (list all contact information)? **There are no grinder pumps. All notifications come to TWSI at 615-220-7200**	
Approximate length of sewer (excluding private service lateral):	
Number/hp of lift stations: 0 /0 Number/hp of lift pumps 0/0	
Number/volume of low pressure and or grinder pump tanks 0/0 Number/volume septic tanks 6 / 1,500 gal	
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.): Aquapoint Bioclere Unit	
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: Lighthouse Pointe Homeowners Association / John Hromco	
Developer address and phone number: 648 Tom Treece Rd, Morristown, TN 37814 (423) 839-1317	
For land application, list: Proposed acreage involved: 0.23 +/- acres Inches/week gpd/sq.ft loading rate to be applied: 2.25 inches/week	
Is wastewater disinfection proposed?	
☐ Yes Describe land application area access:	
☒ No Describe how access to the land application area will be restricted: Fence	

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.

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)	
☒ A general description of all past and present groundwater uses as well as the general groundwater flow direction and general water quality.	
☒ A general description of the population and cultural development within the AOR (i.e. agricultural, commercial, residential or mixed)	
☒ Nature of injected fluid to include physical, chemical, biological or radiological characteristics.	
☐ 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)	
☐ 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	
☒ Nature and type of system, including installed dimensions of wells and construction materials	

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.):	

Permit Number: SOP-

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.

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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 is a mix of sloping Montevallo and gently sloping Dewey silt loam type soil. The attached maps indicate the proposed Lighthouse Pointe wastewater treatment area drainage flow path is capable of moving in the any direction away from the property. Generally, groundwater should move southerly towards Cherokee Lake.

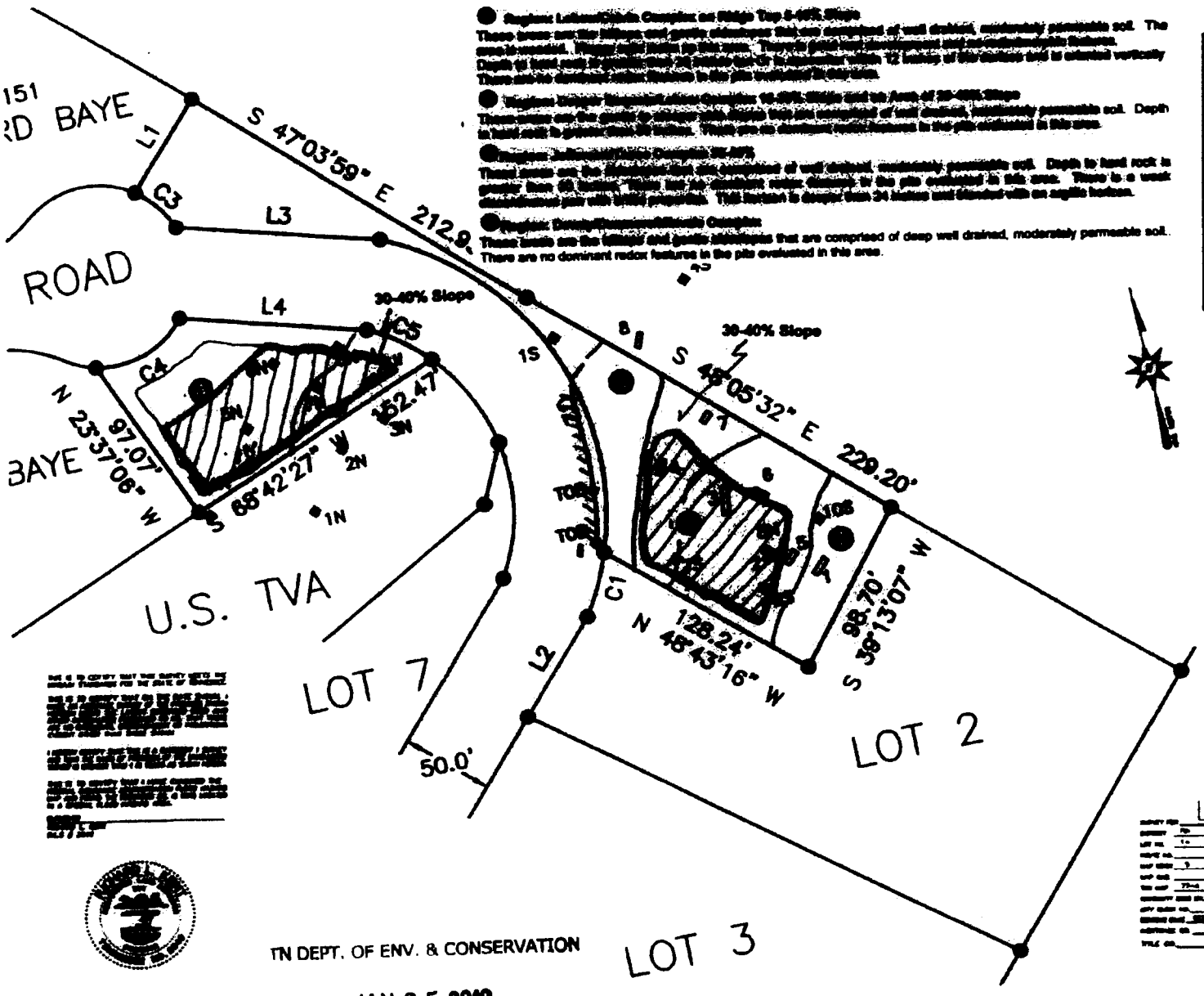
Population and Cultural Development: The majority of the Area of Review is primarily lake-front residential or commercial campsite. Typically, small residential subdivisions have been developed.

Nature of Fluid: Lighthouse Pointe Drip Dispersal will have an approximate peak design flow of 1,800 GPD of typical residential sanitary wastewater.

Public Water Supply: Bean Station Utility supplies public drinking water within the AOR.

Bean Station Utility
581 Broadway Drive
P.O. Box 520
Bean Station, Tennessee 37708
LUD Information (865) 993-2326

Description of System: Wastewater from 6 Equivalent Dwelling Units (EDUs) 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 solid separation tank. An equalization tank is utilized to further separate fluid wastewater from solid effluent. Wastewater is then gravity fed to the equalization chamber and treated using a Bioclere water treatment unit. Treated wastewater exiting the Bioclere unit will be kept in a 1,500-gallon storage tank before final filtration and reuse. Approximately 1,800 GPD of treated wastewater will be pumped from the storage tank, filtered through Arkal disc filters, 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.



Water Pollution Control Soil Map

Lighthouse Pointe
Grainger County

1"= 50'

October 16, 2016

Notes

- Slopes are 2-15% unless otherwise noted.
- Any cutting, filling or compaction will VOID this soil map.
- This map is for the use with subsurface drip irrigation systems. It is not for review for subsurface sewage disposal systems nor is it to be used to quantitatively size a rating from the Appendix in the Regulations Governing Subsurface Sewage Disposal for design of drip disposal area. The areas assigned are only estimated and qualitative.
- Permeability studies were NOT performed.
- Control point locations and soil pit locations were supplied by Surveyor.

Water Pollution Control Soil Map completed by:

Jeffrey W. Cox, Sr., Registered Professional Soil Scientist

I, Jeffrey W. Cox, Sr. affirm that this Water Pollution Control Soils Map has been prepared in accordance with acceptable standards and methodologies established in the NRCS Soil Survey Manual and USDA Soil Taxonomy. No other warranties are made or implied

LOT 1 & RESERVE AREA
LIGHTHOUSE POINTE

A.M. SURVEYING
RICHARD L. KENT R.L.S. # 2040

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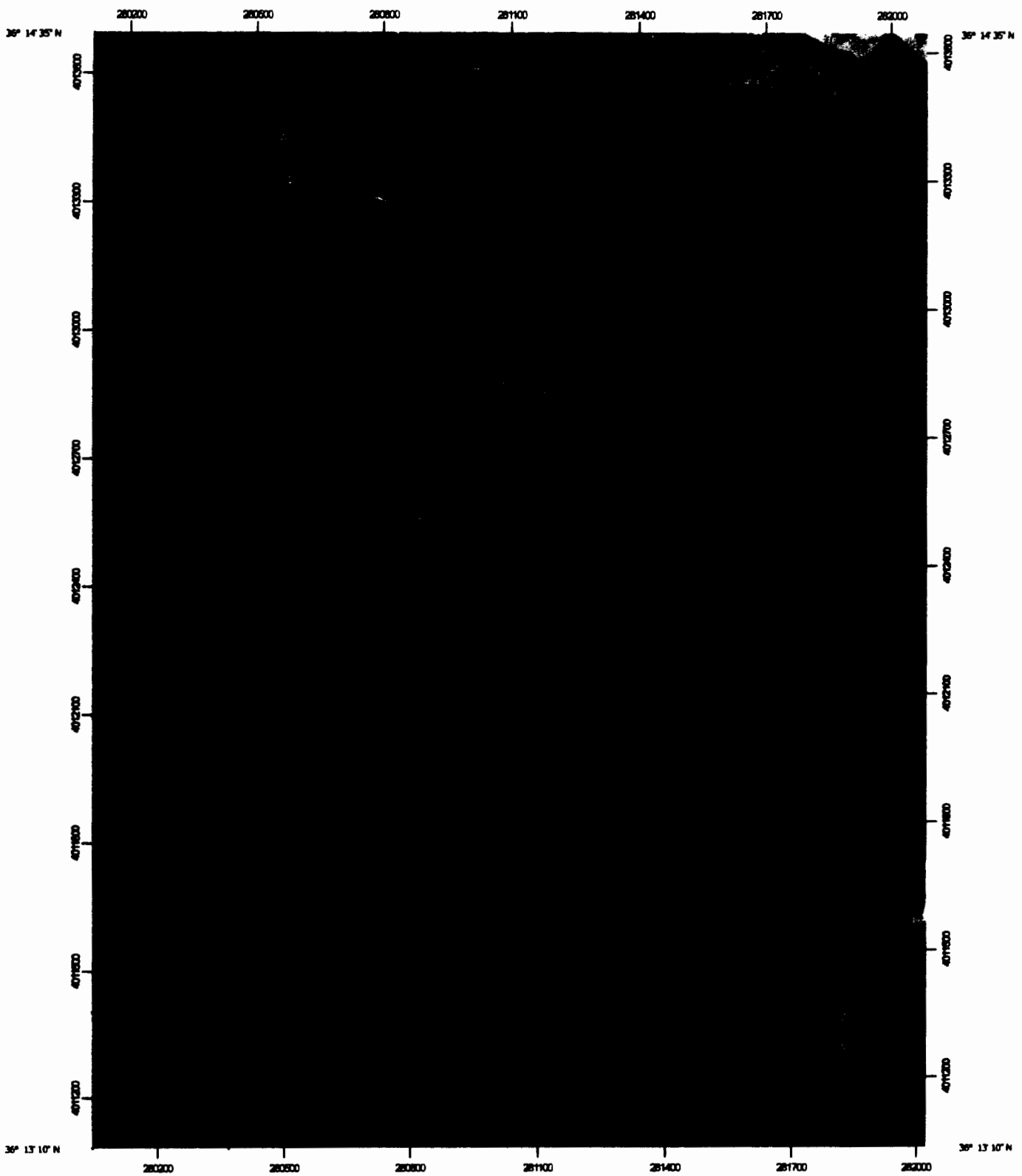
Soil Map—Grainger County, Tennessee
(Lighthouse Pointe Soil Survey)



Map Scale: 1:12,700 if printed on A portrait (8.5" x 11") sheet.

Meters: 0 150 300 600 900

Feet: 0 500 1000 2000 3000

N

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other

Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Grainger County, Tennessee
Survey Area Data: Version 11, Oct 4, 2017

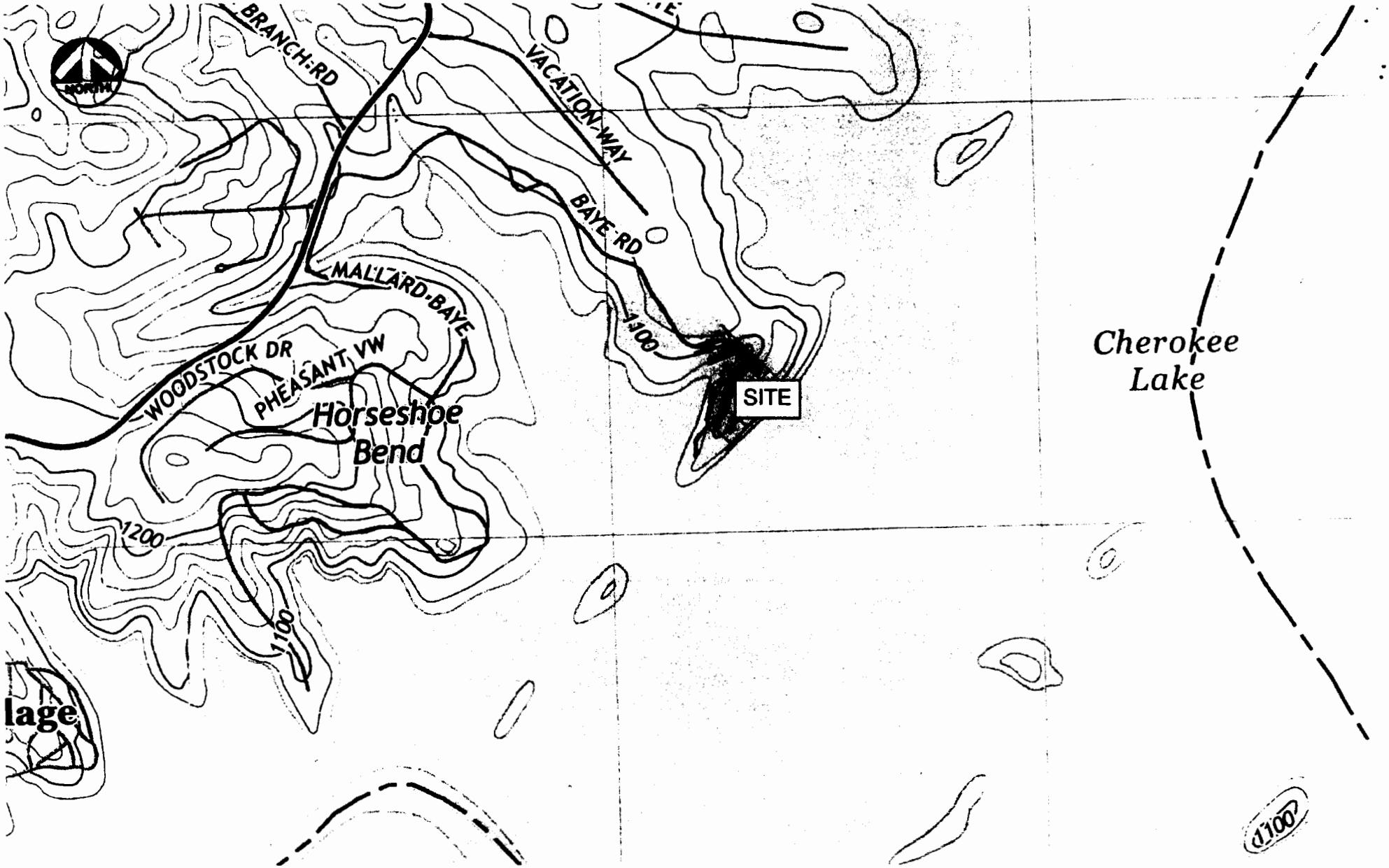
Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 27, 2012—Mar 23, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
DeC2	Dewey silt loam, 8 to 15 percent slopes, eroded	15.3	3.4%
DtD	Dewey-Etowah complex, 12 to 20 percent slopes	185.8	41.3%
MnD	Minvale loam, 12 to 20 percent slopes	28.6	6.4%
MoC	Montevallo channery silt loam, 5 to 12 percent slopes	0.3	0.1%
MoD	Montevallo channery silt loam, 12 to 20 percent slopes	2.4	0.5%
TmE	Townley-Montevallo complex, 20 to 35 percent slopes	20.1	4.5%
W	Water	197.1	43.8%
Totals for Area of Interest		449.7	100.0%



TALBOTT QUADRANGLE

0' 500' 1000' 2000' 4000'

SCALE: 1" = 1000'

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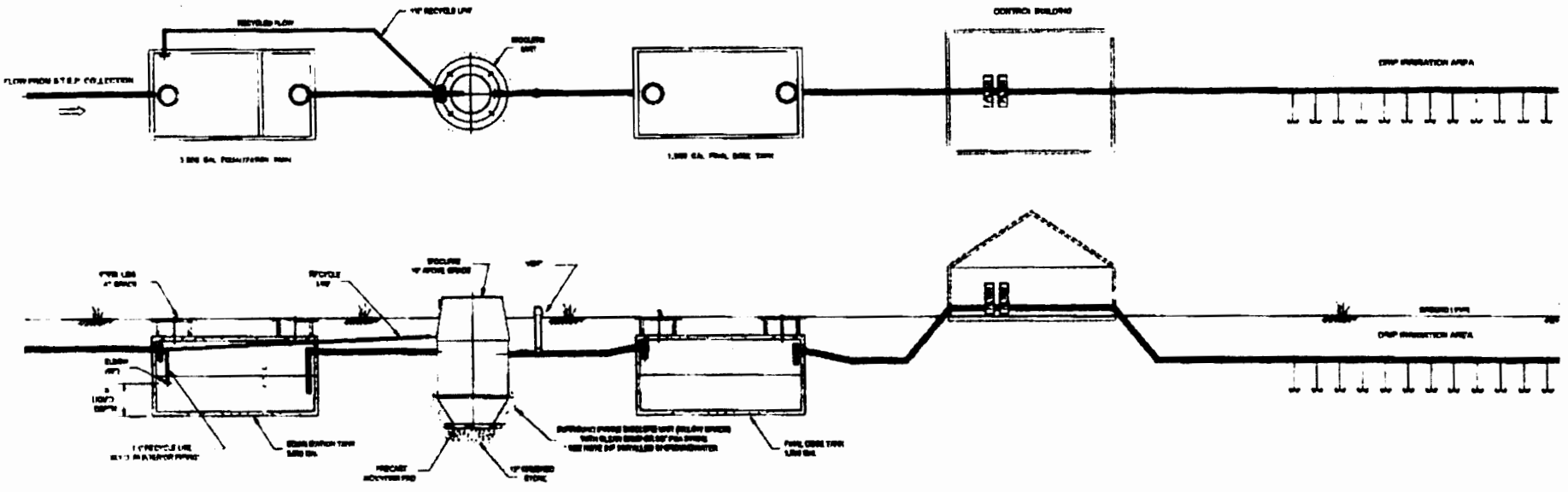
Adenus SOLUTIONS GROUP®



GENERAL TREATMENT SCHEMATIC

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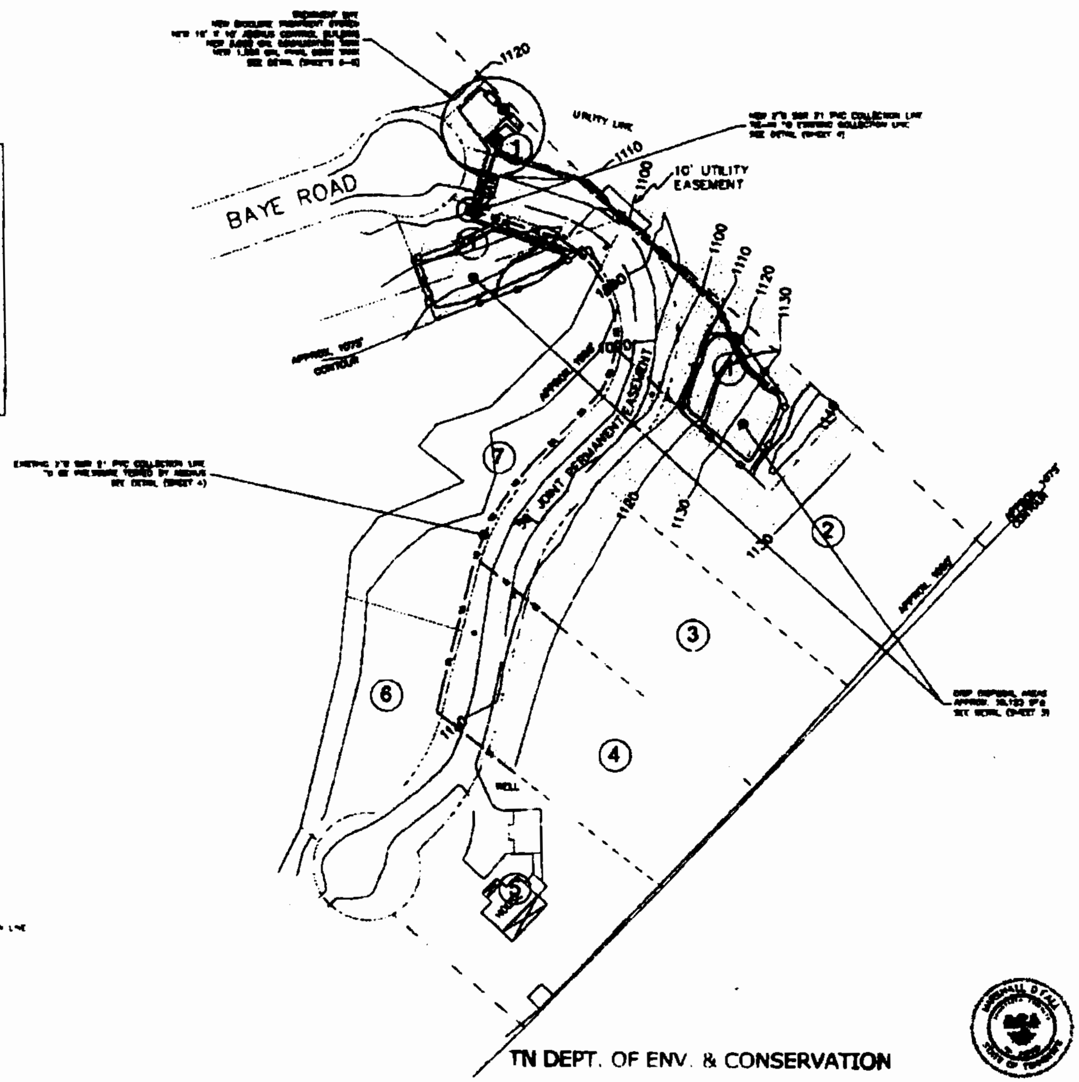
LIGHTHOUSE POINTE
TREATMENT AND DRIP DISPOSAL



SITE LAYOUT

LIGHTHOUSE POINTE
TREATMENT AND DRIP DISPOSAL

LOCATED OFF BAYE ROAD
GRAINGER COUNTY, TENNESSEE

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