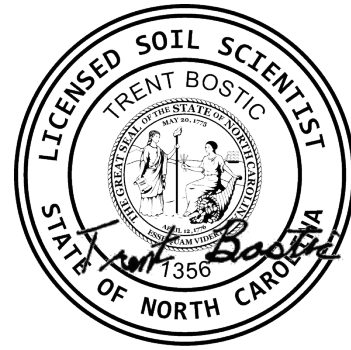




Agri-Waste Technology, Inc.
501 N Salem Street, Suite 203, Apex, NC 27502
agriwaste.com | 919.859.0669



**Soil Suitability for Domestic Sewage Treatment and Disposal Systems
3981 Baileys XRDS Rd, Benson, NC 27504
(PIN: 1610-58-7651; Harnett County)**

PREPARED FOR: RiverWILD Homes, c/o Brittany Radziszewski

PREPARED BY: Trent Bostic, Senior Soil Scientist
Heath Clapp, Senior Soil Scientist

DATE: July 9, 2024

Soil suitability for domestic sewage treatment and disposal systems was evaluated on May 24, 2024, for the property located at 3981 Baileys XRDS Rd in Benson, NC. A layout was performed on May 24, 2024. Trent Bostic and Heath Clapp of Agri-Waste Technology, Inc. (AWT) conducted the soil evaluation. This evaluation was done to facilitate permitting for a septic system. This report and attached documents were prepared to meet the requirements for an Authorized On-Site Wastewater Evaluator to meet G.S. 130A-336.2

A drawing of the site plan, septic layout, and boring locations is included in Attachment 1. Profile descriptions for each boring are included in Attachment 2. Additional documentation about the property is included in Attachment 3.

Site Conditions

The total property area is approximately 1.07 acres. The property is an open field. The drawing in Attachment 1 details the property boundaries, house location, boring locations, and layout of drain field trenches (Completed by AWT).

Soil Suitability for Domestic Sewage Treatment and Disposal Systems

Multiple soil borings/pits were assessed on the property. Soil borings/pits were examined to determine soil suitability for on-site sewage disposal systems in accordance with 15A NCAC 18E: Wastewater Treatment and Dispersal Systems. These borings/pits were advanced with a hand auger and excavator. All soil borings/pits shown are provisionally suitable for a conventional style trench. The proposed LTAR (Long Term Acceptance Rate) by AWT is 0.4 GPD/ft². The soils on this property are group III soils within the distribution and treatment zone as used to define the LTAR. The maximum trench bottom should not exceed 18”.

Field Layout & System Design

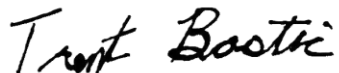
A septic layout was performed to demonstrate available space (.0508). The layout in the included design packet indicates there is available space for a four-bedroom system utilizing a 25% reduction product (primary) and a 50% reduction product (repair). With an LTAR of 0.4 GPD/ft², 300 linear feet of trench is necessary to support a four-bedroom home initial and 200 linear feet of trench is required for the repair system. The attached drawing proves that 500 linear feet of trench can be installed with the proposed home location on the property.

Any disturbances or grading done in the usable soils area may change the potential of using the area designated for a drain field and can result in a revoked permit.

We appreciate the opportunity to assist you in this matter. Please contact us with any questions, concerns, or comments.

Sincerely,

Trent Bostic

A handwritten signature in black ink that reads "Trent Bostic". The signature is written in a cursive, slightly slanted style.



**North Carolina Onsite Wastewater Contractor Inspector Certification Board
Authorized Onsite Wastewater Evaluator Permit Option for Non-Engineered Systems
Notice of Intent (NOI) to Construct**

New Expansion Repair Relocation Relocation of Repair Area

Owner or Legal Representative Information:
 Name: RiverWILD Homes
 Mailing address: 114 W Main St City: Clayton State: NC Zip: 27520
 Phone: 919-766-8782 Email: brittany@staywild.com

Authorized Onsite Wastewater Evaluator Information:
 Name: Trent Bostic Certification #: 10056E
 Mailing address: 501 N Salem St, Ste 203 City: Apex State: NC Zip: 27502
 Phone: 919-367-6322 Email: tbostic@agriwaste.com

Site Location Information:
 Site address: 3981 Baileys XRDS Rd, Benson, NC
 Tax parcel identification number or subdivision lot, block number of property: 1610-58-7651
Stewart Farms - Lot 4 County: Harnett

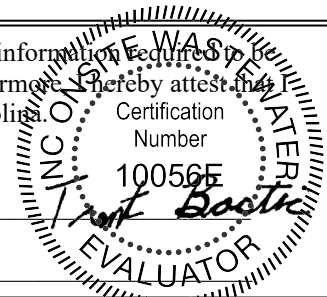
System Information:
 Wastewater System Type: IIIb
 Daily Design Flow: 480
 Saprolite System: Yes No Subsurface Operator Required: Yes No
 Water Supply Type: Private Well Public Water Supply Spring Other: _____

Facility Type:
 Residential 4 # Bedrooms 8 Maximum # of Occupants _____
 Business Type of Business and Basis for Flow: _____
 Public Assembly Type of Public Assembly and Basis for Flow: _____

Required Attachments:
 Plat or Site Plan
 Evaluation of Soil and Site Features by Licensed Soil Scientist

Attest: On this the 9 day of JUL, 2024 by signature below I hereby attest that the information required to be included with this NOI to Construct is accurate and complete to the best of my knowledge. Furthermore, I hereby attest that I have adhered to the laws and rules governing onsite wastewater systems in the state of North Carolina.
 This NOI shall expire on 9 day of JUL, 2024.

Signature of Authorized Onsite Wastewater Evaluator: _____
 Signature of Owner or Legal Representative: [Signature]



Disclosure: The owner may apply for a building permit for the project upon submitting a complete NOI to Construct and the fee required (if any) to the local health department. An onsite wastewater system authorized by an authorized onsite wastewater evaluator shall be transferable to a new owner with the consent of the authorized onsite wastewater evaluator.

Local Health Department Receipt Acknowledgement:
 Signature of Local Health Department Representative: _____ Date: _____



Agri-Waste Technology, Inc.
501 N Salem Street, Suite 203, Apex, NC 27502
agriwaste.com | 919.859.0669

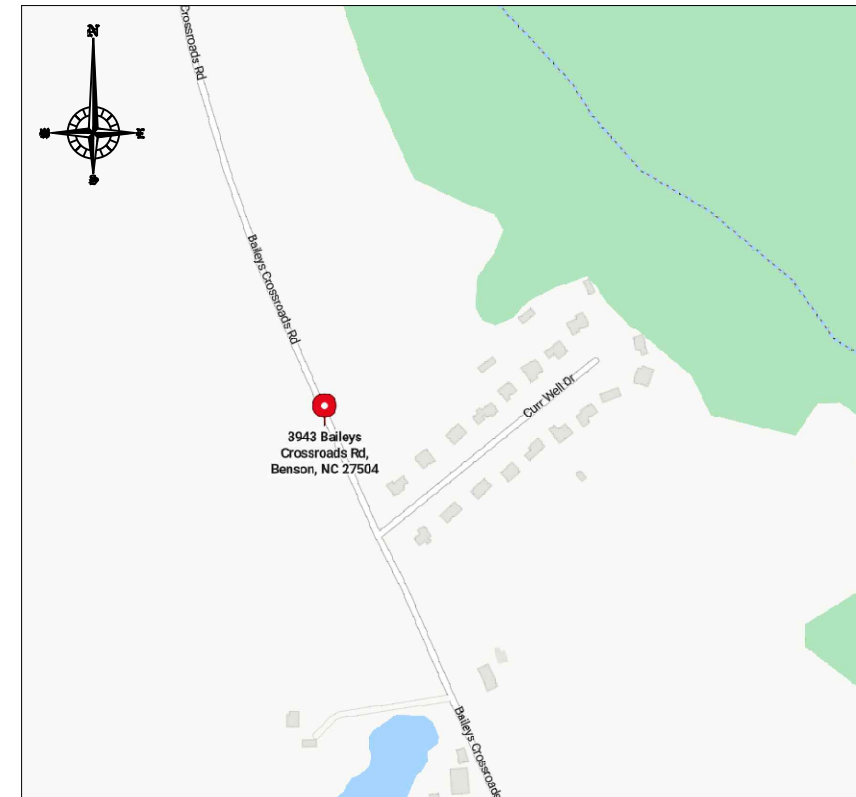
SOIL & SITE EVALUATION for ON-SITE WASTEWATER SYSTEMS

Evaluation Date	6/24/2024	Site Location	3943 Baileys XRDS Rd, Benson, NC	County	Harnett
PIN/Parcel	1610-58-7651	Property Size	1.07	Property Recorded	Yes
Proposed Facility	SFR	Bedrooms	4	Wastewater Strength	Domestic
Water Supply	Municipal	Design Flow (.0400)	480	Evaluation Method	Auger

Profile #	.0502 Landscape Position Slope %	Horizon Depth (in)	Soil Morphology			Other Factors				.0502(d) Slope Correction
			.0503 Struct ure Textur e	.0503 Consistence Mineralogy	.0504 Soil Wetness Color	.0505 Soil Depth (in)	.0506 Saprolite	.0507 Restrictive Horizon	.0509 Profile Class LTAR	
1	3%	Ap 0-13	SL	NS, NP, VFr	10YR 4/3	36	S	S	0.4	1.2
		Bt1 13-22	SCL	SS, SP, Fr	10YR 5/8					
		Bt2 22-36+	SCL	SS, SP, Fr	7.5YR 5/8					
									System Type	Conventional
2	3%	Ap 0-13	SL	NS, NP, VFr	10YR 4/3	36	S	S	0.4	1.2
		Bt1 13-22	SCL	SS, SP, Fr	10YR 5/8					
		Bt2 22-36+	SCL	SS, SP, Fr	7.5YR 5/8					
									System Type	Conventional
3	3%	Ap 0-13	SL	NS, NP, VFr	10YR 4/3	32	S	S	0.4	1.2
		Bt1 13-22	SCL	SS, SP, Fr	10YR 5/8					
		Bt2 22-36+	SCL	SS, SP, Fr	7.5YR 5/8					
									System Type	Conventional

STEWART FARMS LOT 2

Project Location	3981 Baileys XRDS Rd, Benson, NC 27504 Harnett County PIN: 1610-58-7651
Project Owner	RiverWILD Homes 114 W Main St Clayton, NC 27520 919-766-8782 brittany@staywild.com
Project Consultant	Trent Bostic, AOWE, LSS (919) 367-6322 Heath Clapp, AOWE, LSS (919) 629-6404 Agri-Waste Technology, Inc. 501 N. Salem Street, Suite 203 Apex, NC 27502 (919) 859-0669 (919) 233-1970 Fax
System Overview	Single Family Residence Four (4) Bedroom, 480 gpd Pressure Manifold Accepted/Innovative Trench Product



VICINITY MAP

Sheet Index

Sheet 1	Cover Sheet
Sheet 2	Property Layout
Sheet 3	Primary Drainfield
Sheet 4	Repair Drainfield
Sheet 5	Tank Sheet
Sheet 6	Detail Sheet

AWT
Engineers and Soil Scientists
Agri-Waste Technology, Inc.
501 N. Salem Street, Suite 203
Apex, North Carolina 27502
919-859-0669
www.agriwaste.com

RiverWILD Homes
Stewart Farms Lot 2

Project Location:
3981 Baileys XRDS Rd,
Benson, NC 27504
Harnett County
PIN: 1610-58-7651

Project Owner:
RiverWILD Homes
114 W Main St
Clayton, NC 27520
919-766-8782
brittany@staywild.com

NC ONSITE WASTEWATER
EVALUATOR SEAL



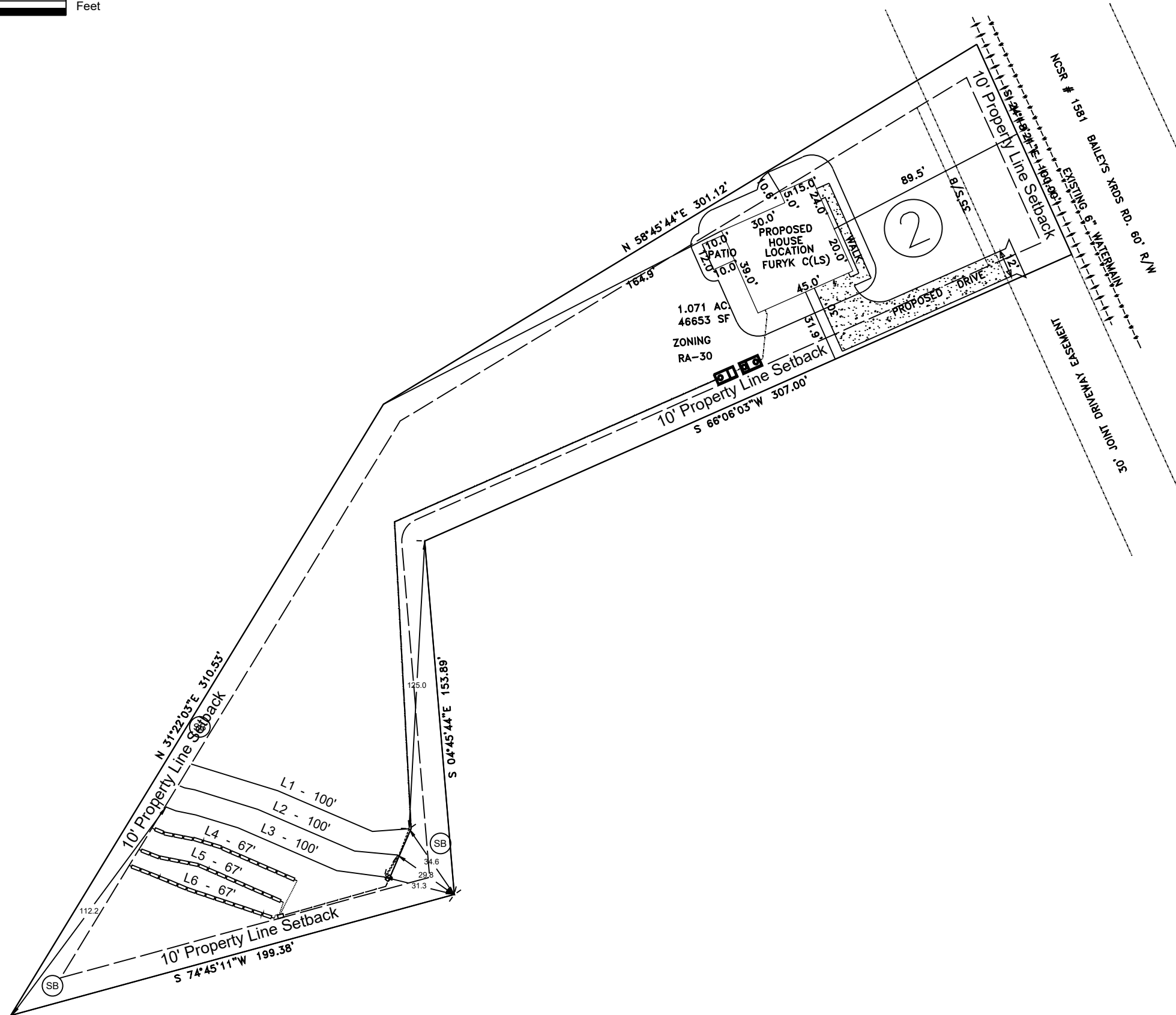
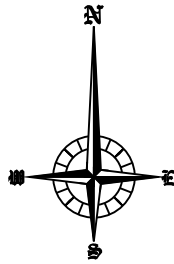
REV.	ISSUED DATE	DESCRIPTION

SHEET TITLE
Cover Sheet

DRAWN BY: H. Clapp	CREATED ON: 7/9/2024
REVISED BY: ####	REVISED ON: ####
RELEASED BY: ####	RELEASED ON: ####

DRAWING NUMBER
WW-1





RiverWILD Homes
Stewart Farms Lot 2

Project Location:
3943 Baileys XRDS Rd,
Benson, NC 27504
Harnett County
PIN: 1610-58-7651

Project Owner:
RiverWILD Homes
114 W Main St
Clayton, NC 27520
919-766-8782
brittany@staywild.com

NC ONSITE WASTEWATER
EVALUATOR SEAL



REV.	ISSUED DATE	DESCRIPTION

SHEET TITLE
Property Layout

DRAWN BY: H. Clapp	CREATED ON: 7/9/2024
REVISED BY: ####	REVISED ON: ####
RELEASED BY: ####	RELEASED ON: ####

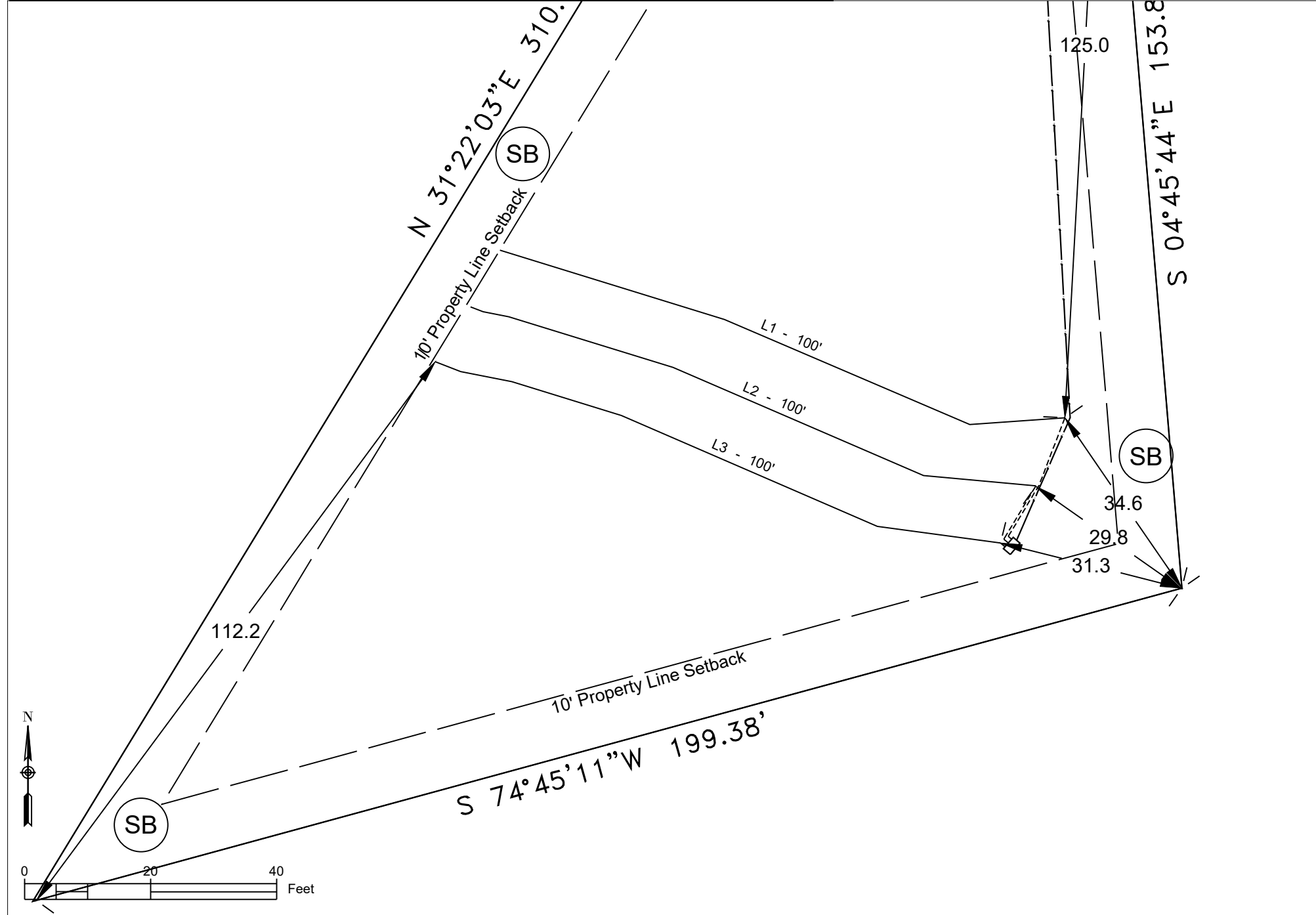
DRAWING NUMBER
WW-2

General Drainfield Notes:

1. Clear all trees less than 8" in diameter (measured at a height 3' from soil surface) from the drainfield.
2. Vegetation that will re-grow from a cut stump shall be stumped or pulled from the ground. Stumps shall not be pushed over.
3. Drainfield area shall be cleared of all leaves, pine straw, debris, etc. The accumulated material shall be removed from the drainfield.
4. In clayey soils, sides of trenches shall be raked and limed per manufacturer's instructions.
5. Supply lines shall be installed with a minimum of 18" cover.
6. The trenches shall be backfilled appropriately so that no low areas are present.
7. Apply lime over the drainfield area as needed. Seed fine fescue over the drainfield at the rate recommended by the seed manufacturer. Hand rake the seed into the soil surface. Straw the seeded area at the rate of 1.5-2 bales per 1000 sq. ft.

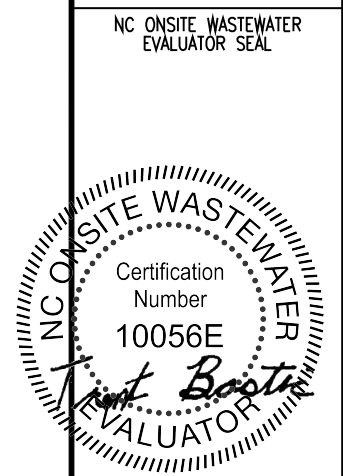
Note:
Primary distribution is pressure manifold utilizing accepted trench product.

DRAINFIELD INFO. - Primary						
Proposed Type of System/Distribution: Pump to Pressure Manifold using EZflow						
Line No.	Flag Color	Line Length (ft)	Tap	Flow (gpm)	Flow/Foot (gpm/ft)	Line L.T.A.R.
1	red	100	1/2in SCH 40	7.11	0.071	0.533
2	white	100	1/2in SCH 40	7.11	0.071	0.533
3	blue	100	1/2in SCH 40	7.11	0.071	0.533
Total		300	Total	21.33	Avg.	0.53



1 Primary Drainfield
SOURCE: Agri-Waste Technology, Inc.

RiverWILD Homes
Stewart Farms Lot 2
Project Location:
3943 Baileys XRDS Rd,
Benson, NC 27504
Harnett County
PIN: 1610-58-7651
Project Owner:
RiverWILD Homes
114 W Main St
Clayton, NC 27520
919-766-8782
brittany@staywild.com



REV.	ISSUED DATE	DESCRIPTION

SHEET TITLE
Primary Drainfield

DRAWN BY: H. Clapp	CREATED ON: 7/9/2024
REVISED BY: ####	REVISED ON: ####
RELEASED BY: ####	RELEASED ON: ####

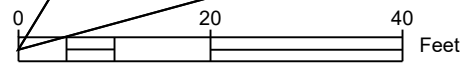
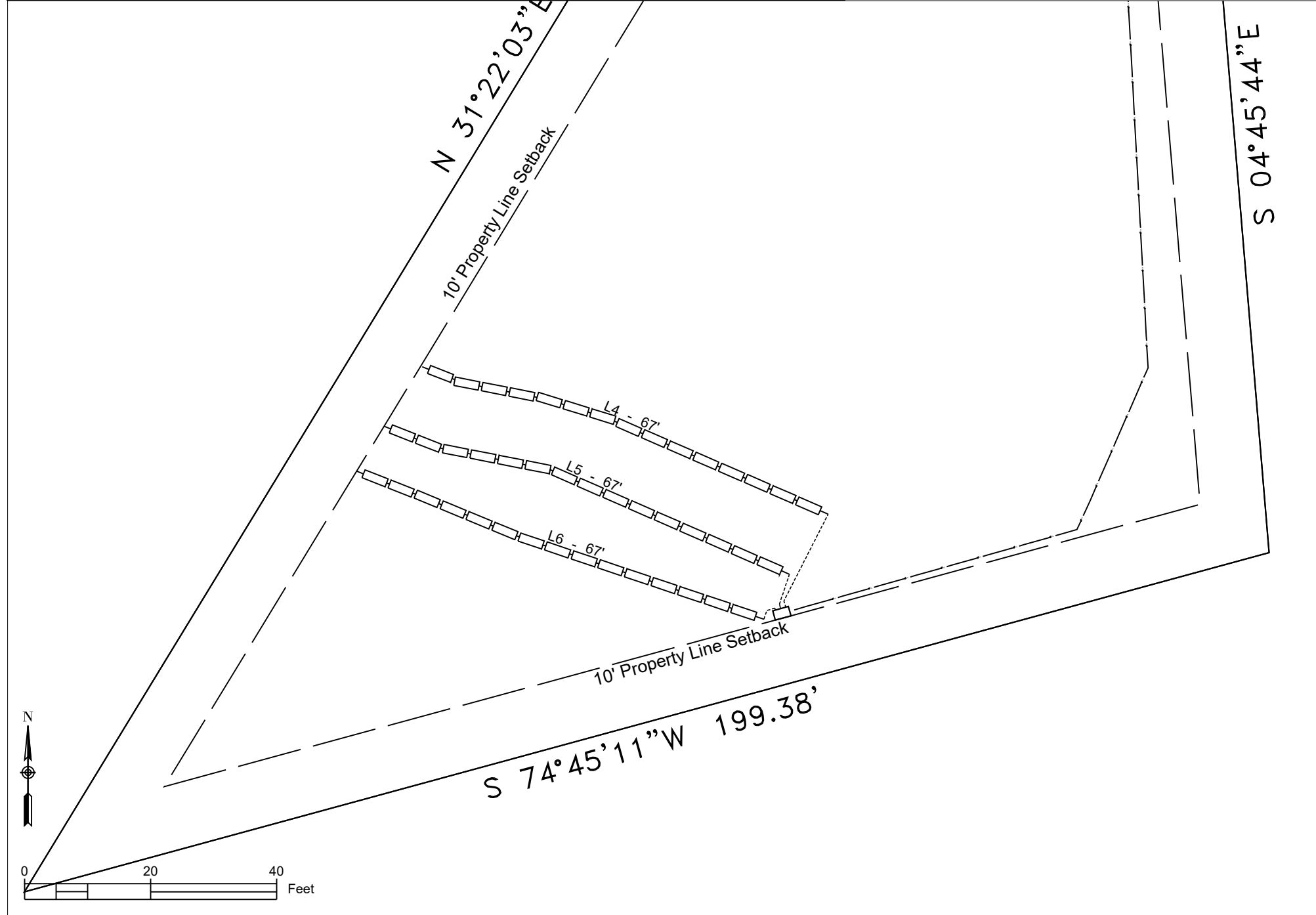
DRAWING NUMBER
WW-3

General Drainfield Notes:

1. Clear all trees less than 8" in diameter (measured at a height 3' from soil surface) from the drainfield.
2. Vegetation that will re-grow from a cut stump shall be stumped or pulled from the ground. Stumps shall not be pushed over.
3. Drainfield area shall be cleared of all leaves, pine straw, debris, etc. The accumulated material shall be removed from the drainfield.
4. In clayey soils, sides of trenches shall be raked and limed per manufacturer's instructions.
5. Supply lines shall be installed with a minimum of 18" cover.
6. The trenches shall be backfilled appropriately so that no low areas are present.
7. Apply lime over the drainfield area as needed. Seed fine fescue over the drainfield at the rate recommended by the seed manufacturer. Hand rake the seed into the soil surface. Straw the seeded area at the rate of 1.5-2 bales per 1000 sq. ft.

Note:
Repair distribution is pressure manifold utilizing PPBPS trench product.

DRAINFIELD INFO. - Repair						
Proposed Type of System/Distribution: Pump to Pressure Manifold using PPBPS, Horizontal						
Line No.	Flag Color	Line Length (ft.)		Flow (gpm)	Flow/Foot (gpm/ft)	Line L.T.A.R.
4	red	67	1/2in SCH 40	7.11	0.106	0.796
5	white	67	1/2in SCH 40	7.11	0.106	0.796
6	blue	67	1/2in SCH 40	7.11	0.106	0.796
Total		201		Total 21.33	Avg. 0.106	0.80



1 Repair Drainfield
SOURCE: Agri-Waste Technology, Inc.

RiverWILD Homes
Stewart Farms Lot 2
Project Location:
3943 Baileys XRDS Rd,
Benson, NC 27504
Harnett County
PIN: 1610-58-7651
Project Owner:
RiverWILD Homes
114 W Main St
Clayton, NC 27520
919-766-8782
brittany@staywild.com

NC ONSITE WASTEWATER
EVALUATOR SEAL

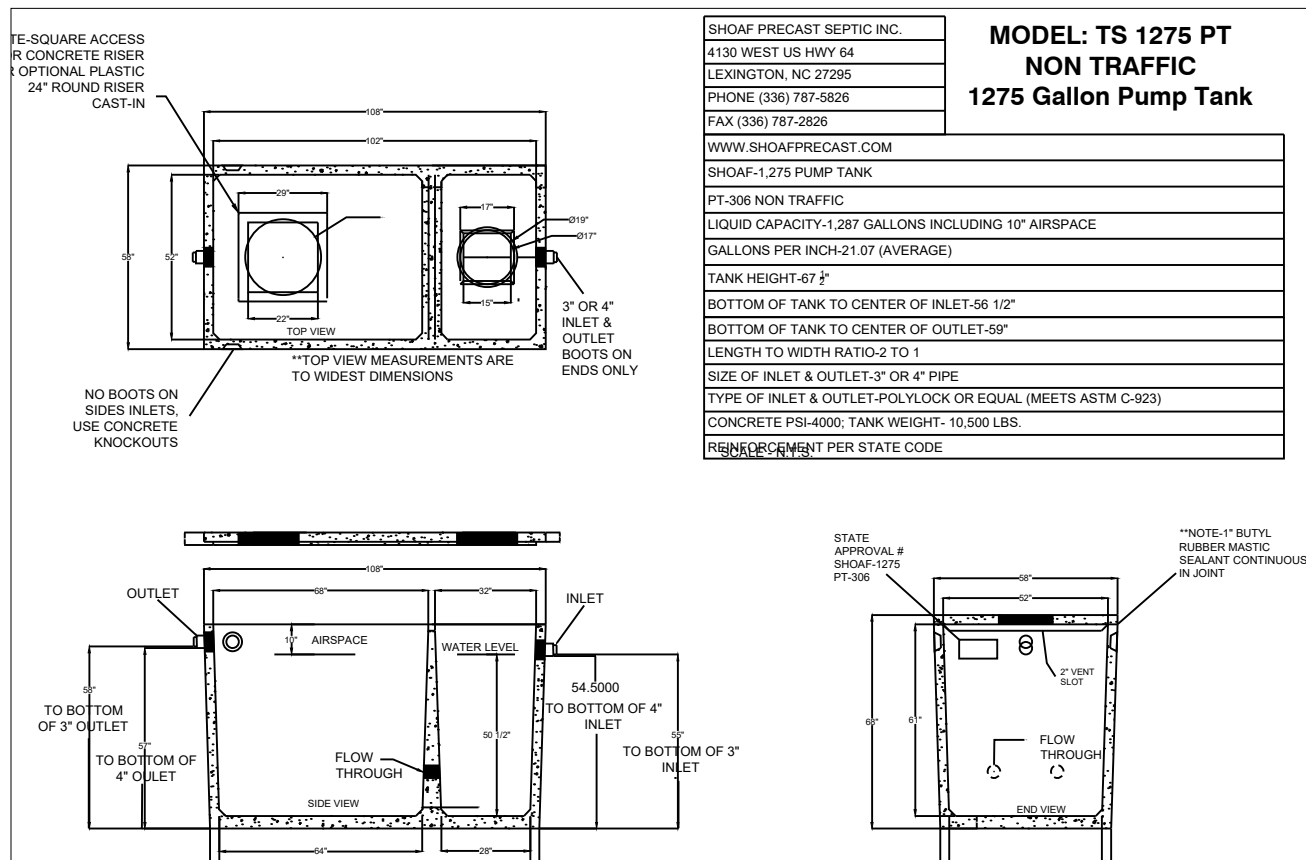


REV.	ISSUED DATE	DESCRIPTION

SHEET TITLE
Repair Drainfield

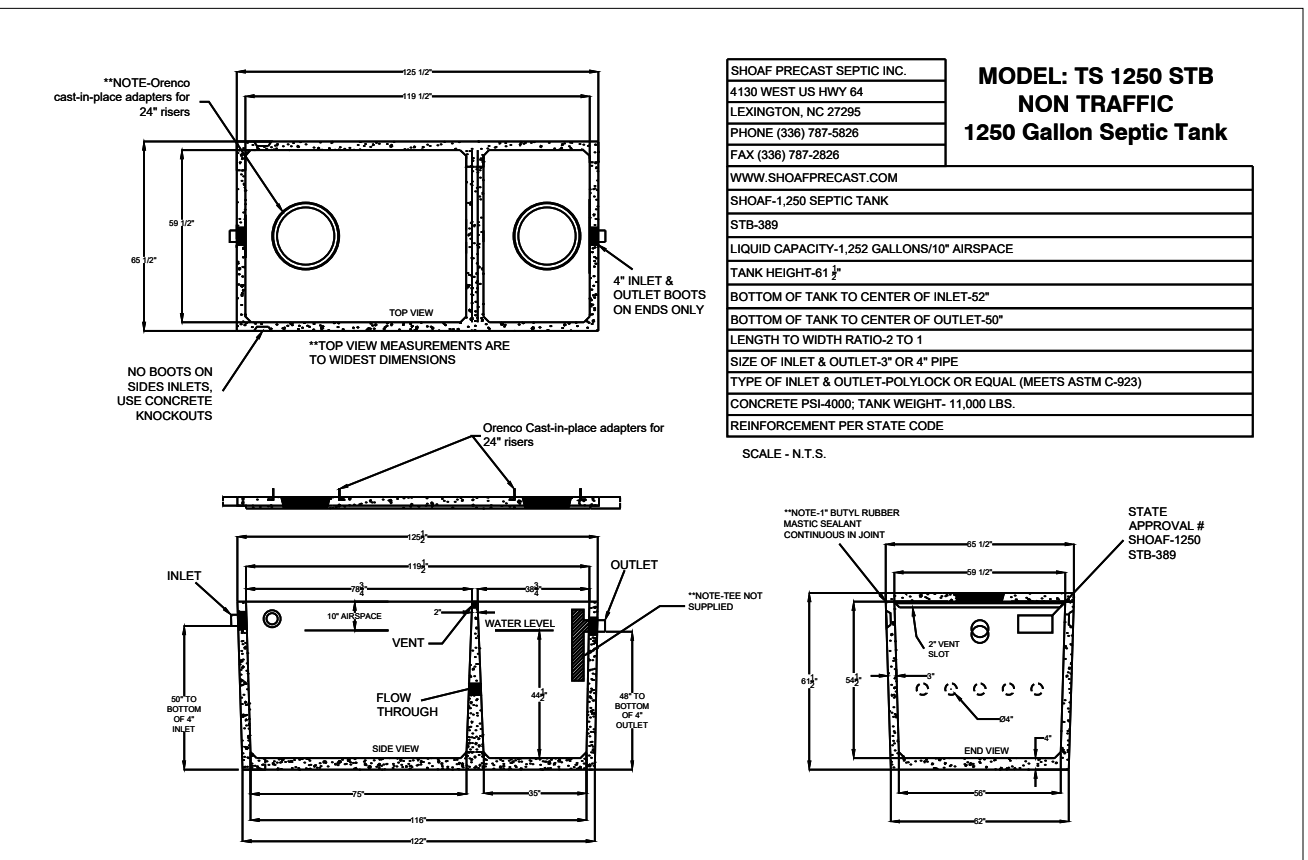
DRAWN BY: H. Clapp	CREATED ON: 7/9/2024
REVISED BY: ####	REVISED ON: ####
RELEASED BY: ####	RELEASED ON: ####

DRAWING NUMBER
WW-4



2 Pump Tank (or equiv. tank with 1-day storage)

SOURCE: Shoaf Precast Septic, Inc.



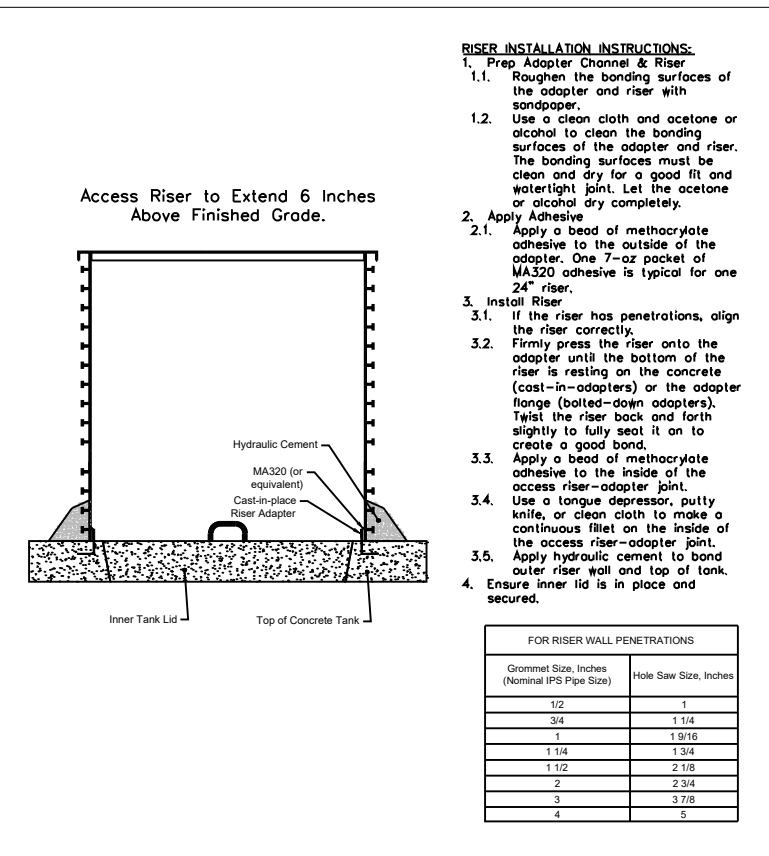
1 Septic Tank

SOURCE: Shoaf Precast Septic, Inc.



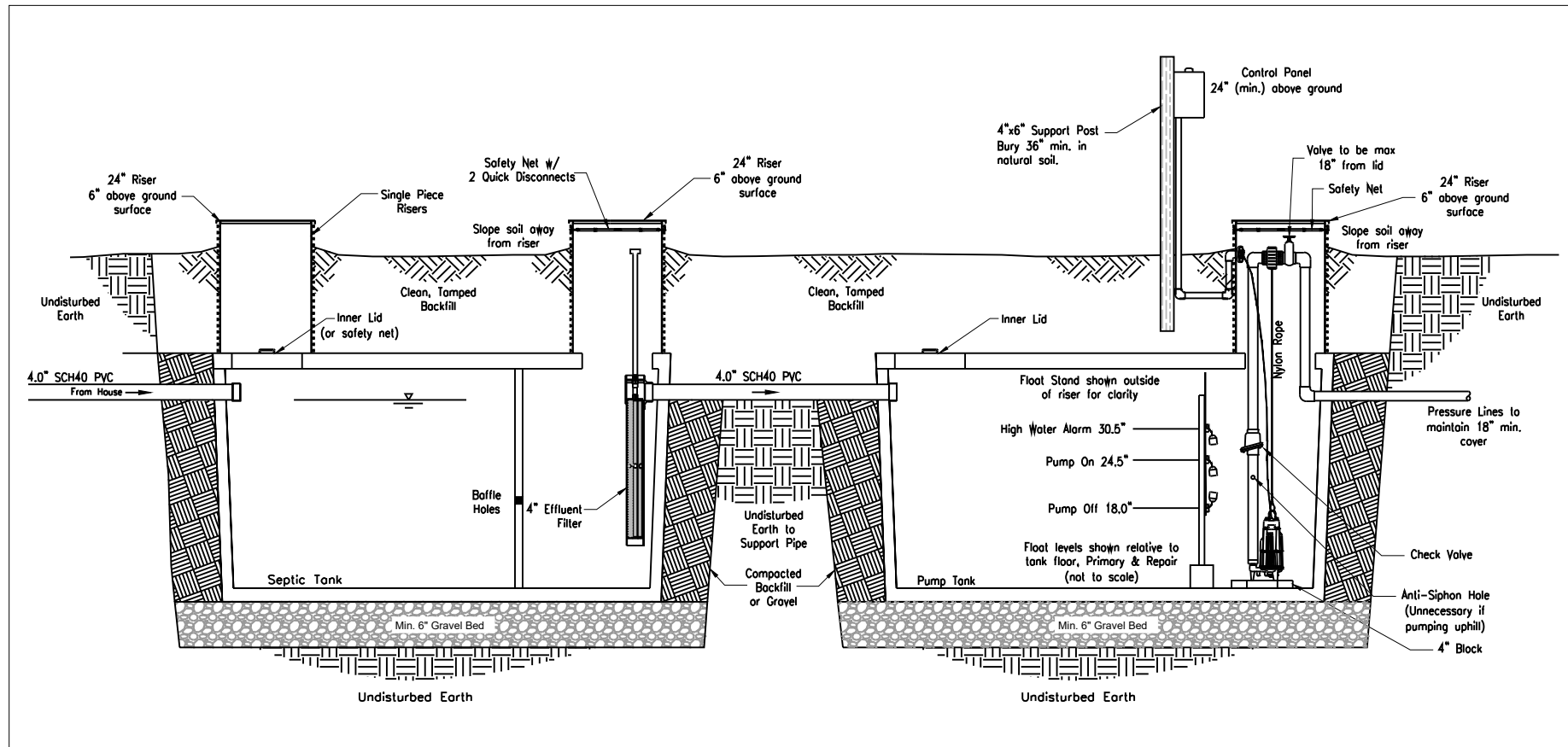
NOTES

- Installation to follow all NC DHHS and Harnett County applicable rules and regulations.
- AWT to perform construction inspections and final system certification.
- Septic Tank to have approved effluent filter.
- Contractor to abide by all safety regulations during system installation.
- Contractor shall backfill around all access areas such that storm water is shed away from potential entry points.
- Invert elevations of all components to be verified in field by contractor to insure proper operation.
- All system piping to be SCH40 PVC (except where noted).
- All gravity elbows to be long radius or long sweeping type elbows.
- Actual installation and placement of treatment system to be overseen by Contractor.
- Tanks to be set on 6" minimum gravel base. Use #5 or #57 stone for base.
- Contractor to seed and/or mulch disturbed areas to coincide with existing landscape. Area shall not be left with uncovered soil.
- Mount Control Panel a minimum of 24" above grade.
- Power to panel to be installed by licensed electrician per code. One 15-amp circuit and one 20-amp circuit with individual neutrals to be run from house to control panel.
- All risers to have cast-in-place tank adapters and be single-piece riser. Risers to extend 6" above soil surface and be designed to prevent surface water inflow.
- Backfill around tank(s) shall be gravel or tank hole shall be over-excavated a minimum of 2' in all directions to allow for mechanical tamping of backfill.
- All penetrations to be sealed.
- All pressure lines to maintain 18" min. cover.
- Contractor to adjust tank placement to meet site constraints.



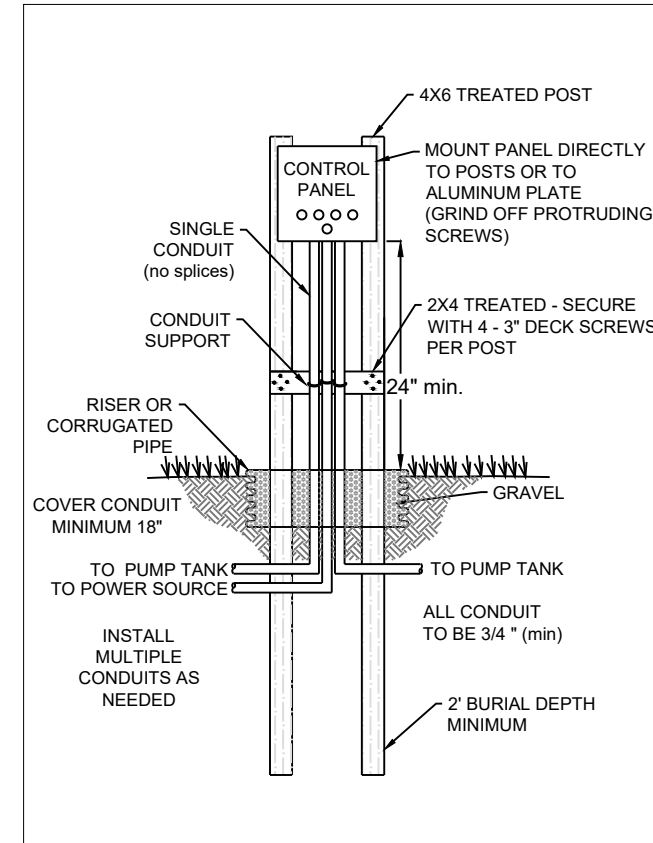
3 Riser Installation





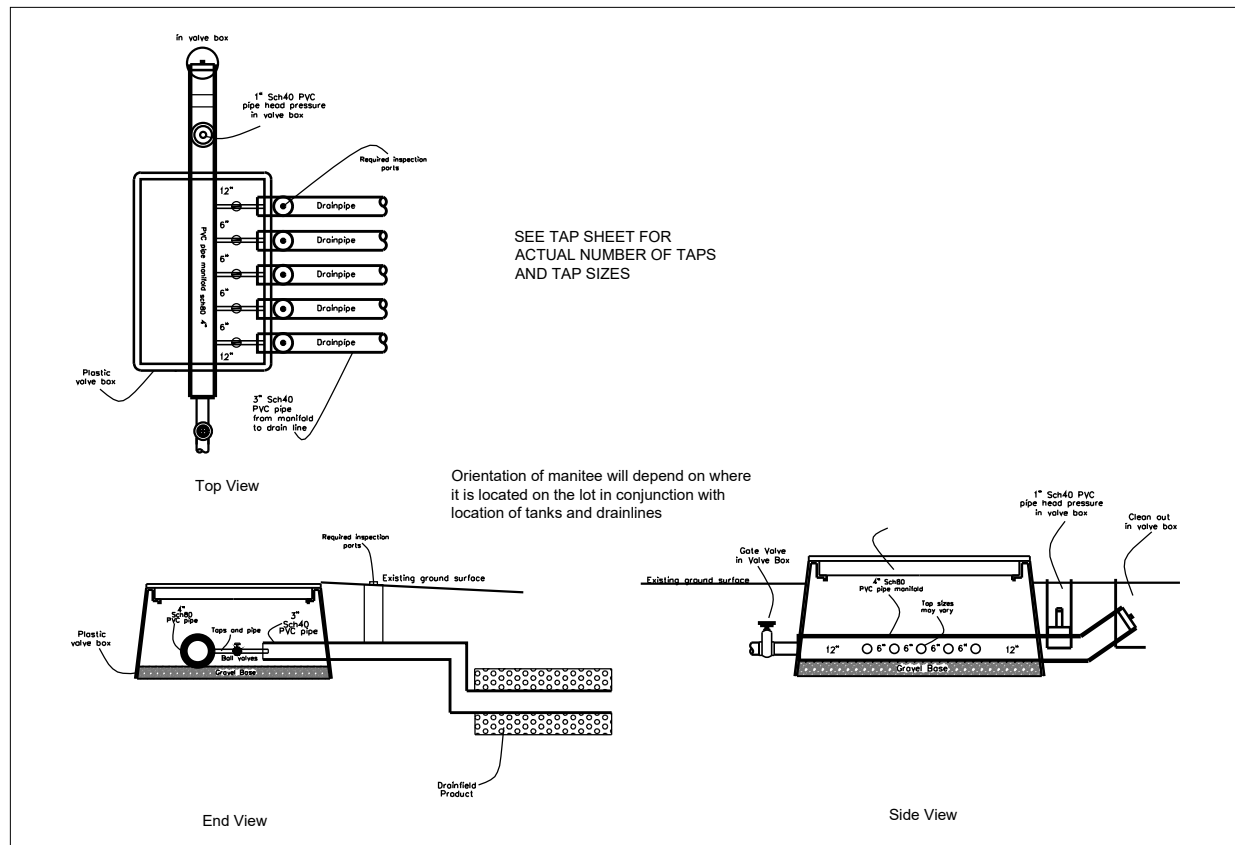
1 SYSTEM PROFILE VIEW

1
WW-6 N.T.S.



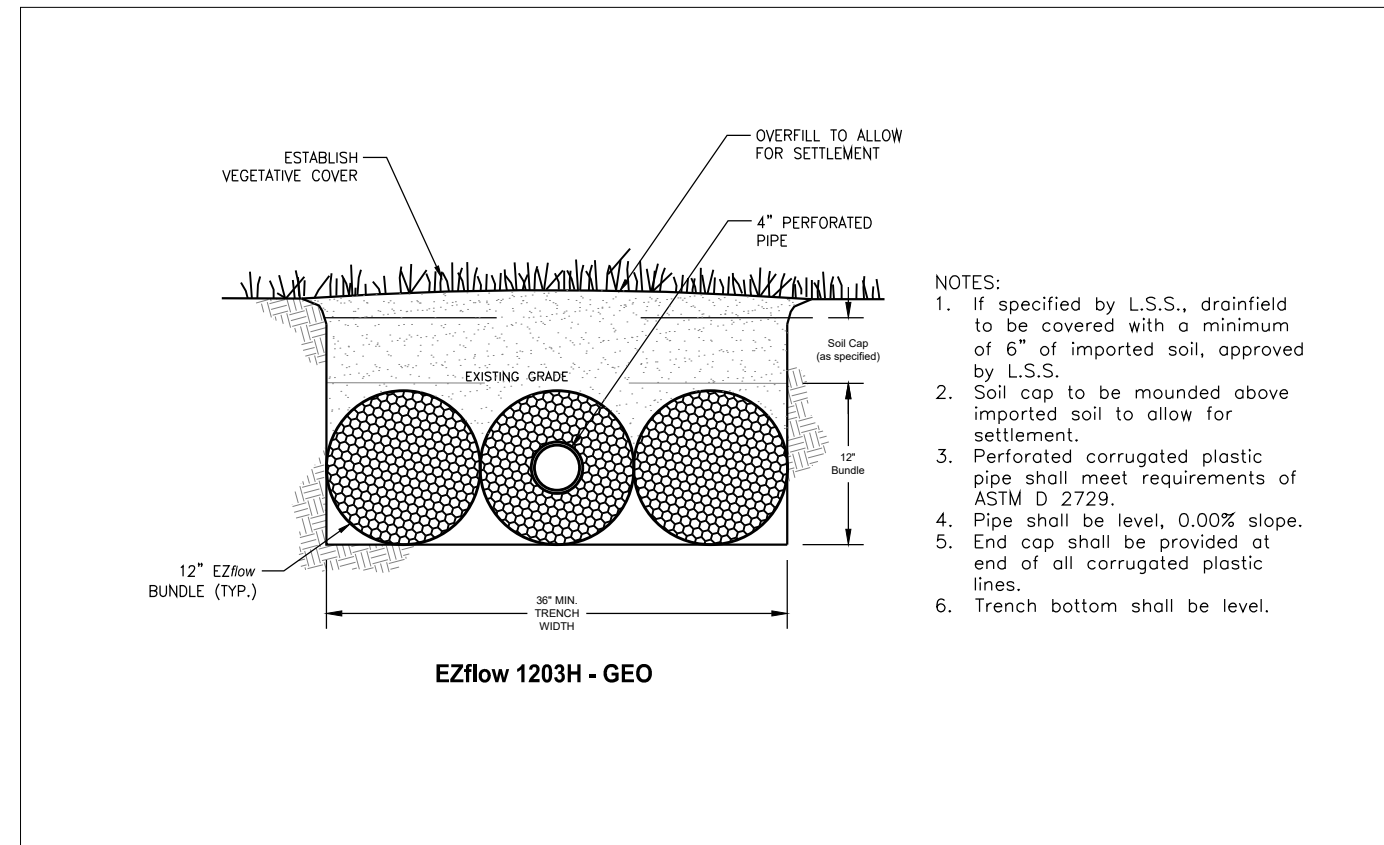
6 CONTROL PANEL SUPPORT

6
WW-6 N.T.S. SOURCE: AWT



4 PRESSURE MANIFOLD INSTALLATION (Manitee) - For Illustration Only

4
WW-6 N.T.S. SOURCE: AWT



2 TRENCH X-SECTION (Typical)

2
WW-6 N.T.S. Source: AWT



REV.	ISSUED DATE	DESCRIPTION

SHEET TITLE

Detail Sheet 2

DRAWN BY: H. Clapp	CREATED ON: 7/9/2024
REVISED BY: ####	REVISED ON: ####
RELEASED BY: ####	RELEASED ON: ####

DRAWING NUMBER

WW-6

Septic System Design - Summary Page



Agri-Waste Technology, Inc.
501 N Salem Street, Suite 203, Apex, NC 27502
agriwaste.com | 919.859.0669

Project Manager:
Trent Bostic, AOWE, LSS
tbostic@agriwaste.com
919-367-6322
Designer:
Heath Clapp, LSS
#N/A

Project: Stewart Farms
Property: 3981 Baileys XRDS Rd,
Benson, NC 27504

Subdiv.: Stewart Farms
Lot #: 2

Owner: RiverWild Homes
Address: 114 W Main Street
Clayton, NC 27520

Phone: 9.198E+09
Email: brittany@staywild.com

EHS:

Date: 7/8/2024

County: Harnett

Permit #:

Type of System: III bg

PIN: 1610-58-7651

Soil Parameters

Soil Evaluation By:
Trent Bostic, AOWE, LSS

Special Conditions/Notes:

LTAR: 0.40 gpd/ft²

Design Parameters

Type of Establishment: Dwelling Units, no more than 2 persons per bedroom

Unit: Bedroom

of Units: 4

Septic Tank Specifications

Min. Tank Capacity:	1,000 gal	Exterior	Interior
Actual Tank Volume:	1,250 gal	Length:	125.5 119.5 in.
Tank Manufacturer:	Shoaf	Width:	65.5 59.5 in.
Tank Model:	TS 1250 STB	Depth:	61.5 54.5 in.

Primary Drainfield Specifications

Type of Distribution:	Parallel Pressure Manifold	Trench Bottom Area:	1200 ft ²
Trench Media:	EZflow	Minimum Drain Line:	300 ft
Trench Width:	3 ft	Actual Drain Line:	300 ft
Trench Depth:	18 in.	Number of Lines:	3
<i>(or as specified on permit)</i>		Minimum Line Spacing:	9 ft O.C.

Wastewater Treatment System Design Calculations

Project: Stewart Farms
Location: 3981 Baileys XRDS Rd,
 Benson, NC 27504
County: Harnett

Septic Tank Sizing

Daily Flow Estimate:

Unit	# of Units	Flow/Unit	Flow/Day
Bedroom	4	120	480

Q= 480 gpd

Septic Tank Minimum Capacity:

Per NCAC T15A:18A .1952(b)(2)(A):

For large residences, multiple dwelling units, or places of business or public assembly with $Q \leq 600$,

Minimum Liquid Capacity (V)= 1,000 gal

Septic Tank Specs:

Manufacturer: Shoaf
 Model: TS 1250 STB
 Volume: 1,250 gal
 Weight: 11,000 lbs

	Exterior	Interior	
Length:	125.5	119.5	in.
Width:	65.5	59.5	in.
Depth:	61.5	54.5	in.

Shape of Risers: Circular

Diameter: 2.00 ft

Pump Tank Storage & Float Settings

Project: Stewart Farms
Location: 3981 Baileys XRDS Rd,
 Benson, NC 27504
County: Harnett

Tank Manufacturer	Shoaf
Tank Model	TS 1275 PT

Interior Height (in.)	60.5 in.
Avg. Storage	21.07 gal/in.
<u>Primary System</u>	
<u>Elevations, measured from bottom towards top (0 = Interior Bottom of Tank):</u>	
Top of pump (including 4" block)	16.1 in. (Pump height = 12 1/16")
Pump Off	18.0 in.
Pump On	24.5 in. (set for dose volume)
Alarm On	30.5 in. (6 in. above On Float)
Emergency Storage Available	
Pump Tank	632 gal
Days of Storage	1.32 days
(determined from "interior top of tank" - "High Water Alarm")	
<u>Repair System</u>	
<u>Elevations, measured from bottom towards top (0 = Interior Bottom of Tank):</u>	
Top of pump (including 4" block)	16.1 in. (Pump height = 12 1/16")
Pump Off	18.0 in.
Pump On	29.0 in. (set for dose volume)
Alarm On	35.0 in. (6 in. above On Float)
Emergency Storage Available	
Pump Tank	537 gal
Days of Storage	1.12 days
(determined from "interior top of tank" - "High Water Alarm")	

ELEVATIONS

Project: Stewart Farms
 Location: 3981 Baileys XRDS Rd,
 Benson, NC 27504
 County: Harnett

Benchmark 0
BM Elev 0 ft

Septic Tank 1,250 gal

Ground Surface		303.03 ft
Depth of Soil Cover	12 in.	1.00 ft
Overall Ht of Tank	61.5 in.	5.13 ft
Elev, Base of Tank		296.91 ft
Ht to 4" Inlet Invert	50 in.	4.17 ft
Elev, 4" Inlet Invert		301.07 ft
Ht to 4" Outlet Invert	48 in.	4.00 ft
Elev, 4" Outlet Invert		300.91 ft
Gravel Base	6 in.	0.50 ft
Elev, Bot of Excavation		296.41 ft

Pump Tank 1287 gal

Ground Surface		302.70 ft
Depth of Soil Cover	12 in.	1.00 ft
Overall Ht of Tank	67.5 in.	5.63 ft
Elev, Base of Tank		296.08 ft
Ht to 4" Inlet Invert	57 in.	4.75 ft
Elev, 4" Inlet Invert		300.83 ft
Ht to 2" Outlet Invert	54.5 in.	4.54 ft
Elev, 2" Outlet Invert		300.62 ft
Gravel Base	6 in.	0.50 ft
Elev, Bot of Excavation		295.58 ft

ST Inlet Pipe

Grade @ Stub-out		303.1 ft
Depth of Stub-out, top		1.5 ft
Elev, Stub-out Invert		301.25 ft
Elev @ ST Inlet Invert		301.07 ft
Length		6.5 ft
Slope		2.7 %

Pipe, ST to PT

ID	4 in.	0.33 ft
OD	4.5 in.	0.38 ft
Elev, ST Outlet Invert		300.91 ft
Elev, PT Inlet Invert		300.83 ft
Length		5 ft
Slope		1.6 %
Cover over inlet pipe		1.60 ft

Pump Reqmt.

Floor Thickness	4 in.	0.33 ft
Elev, Pump Tank Floor		296.41 ft
Pump Block Ht.	4 in.	0.33 ft
Elev, Pump Intake		296.74 ft

Grade @ Primary Manifold		304.40 ft
Grade @ Repair Manifold		305.20 ft
Min. Cover	18 in.	1.50 ft
Max Elev, Primary		302.90 ft
Max Elev, Repair		303.70 ft
Elev Diff, Primary		6.16 ft
Elev Diff, Repair		6.96 ft

Drainfield Design

Project Stewart Farms
Location 3981 Baileys XRDS Rd,
 Benson, NC 27504
County Harnett

Drainfield Sizing

Primary

LTAR	0.4 gpd/ft ²	Type of Drainfield Media	EZflow
Daily Design Flow	480 gpd	Required Drainline	
Req. Drainfield Area	1,200 ft ²	After 25% Reduction	300 ft
Trench Width, Eff.	3 ft	Minimum Line Spacing	9 ft (O.C.)
Required Drainline	400 ft		

Repair

LTAR	0.4 gpd/ft ²	Type of Drainfield Media	PPBPS, Horizontal
Daily Design Flow	480 gpd	Required Drainline	
Req. Drainfield Area	1,200 ft ²	After 50% Reduction	200 ft
Trench Width, Eff.	3 ft	Minimum Line Spacing	8 ft (O.C.)
Required Drainline	400 ft		

Drainfield Layout

Line	Use	Flag Color	Elevation (ft)	Line Length (ft)	Used as Primary (ft)	Used as Repair (ft)
1	Layout Line	red	304.0	100	100.0	
2	Layout Line	white	304.2	100	100.0	
3	Layout Line	blue	304.6	100	100.0	
4	Layout Line	red	304.8	67		67.0
5	Layout Line	white	304.9	67		67.0
6	Layout Line	blue	305.2	67		67.0
Total				501	300	201
Count				6	3	3

Note: Line length totals are shown to the nearest foot.

PRESSURE MANIFOLD DESIGN (Primary)

Site Information

Project: Stewart Farms
Location: 3981 Baileys XRDS Rd,
 Benson, NC 27504
County: Harnett

Design Information

Estimated Daily Flow	480 gal/day
L.T.A.R. (from Harnett Co.)	0.4 gal/day/ft ²
L.T.A.R. + 5%	0.420 gal/day/ft ²
Trench Width	3 ft.
Line Length Required	400 ft.
Length after 25% Reduction	300 ft
L.T.A.R. Reduced	0.533 gal/day/ft ²
L.T.A.R. Reduced + 5%	0.560 gal/day/ft ²

DRAINFIELD INFO. - Primary

Proposed Type of System/Distribution: **Pump to Pressure Manifold using EZflow**

Line No.	Flag Color	Line Length (ft)	Tap	Flow (gpm)	Flow/Foot (gpm/ft)	Line L.T.A.R.
1	red	100	1/2in SCH 40	7.11	0.071	0.533
2	white	100	1/2in SCH 40	7.11	0.071	0.533
3	blue	100	1/2in SCH 40	7.11	0.071	0.533
Total		300	Total	21.33	Avg.	0.53

Note: Line lengths are calculated in 4'4" increments to reflect use of PPBPS product.

Total Run Time	22.50 min.	
Drainfield Capacity	195.9 gal	
% of Drainfield Cap	69.0%	(Req. Range 66-75%)
Dose Volume	135.2 gal/dose	
Run Time/Dose	6.3 minutes	Range 5-7 minutes unless uphill, checked
Volume/depth	21.07 gal/in.	(Per tank manufacturer's specifications)
Estimated Drawdown	6.42 in.	

Manifold Box

Number of Taps: 3 with 0 Split(s)
 Manifold Length: 3.0 ft. (approximate)

PRESSURE MANIFOLD SYSTEM DESIGN (Repair)

Site Information

Project: Stewart Farms
Location: 3981 Baileys XRDS Rd,
 Benson, NC 27504
County: Harnett

Design Information

Estimated Daily Flow	480 gal/day
L.T.A.R. (from Harnett Co.)	0.4 gal/day/ft ²
L.T.A.R. + 5%	0.420 gal/day/ft ²
Trench Width	3 ft.
Line Length Required	400 ft.
Length after 50% Reduction	200 ft
L.T.A.R. Reduced	0.800 gal/day/ft ²
L.T.A.R. Reduced + 5%	0.840 gal/day/ft ²

DRAINFIELD INFO. - Repair

Proposed Type of System/Distribution: **Pump to Pressure Manifold using PPBPS, Horizontal**

Line No.	Flag Color	Line Length (ft.)		Flow (gpm)	Flow/Foot (gpm/ft)	Line L.T.A.R.
4	red	67	1/2in SCH 40	7.11	0.106	0.796
5	white	67	1/2in SCH 40	7.11	0.106	0.796
6	blue	67	1/2in SCH 40	7.11	0.106	0.796
Total		201		Total 21.33	Avg.	0.80

Note: Line lengths are calculated in 4'4" increments to reflect use of PPBPS product.

Total Run Time	22.50 min.	
Drainfield Capacity	338.4 gal	
% of Drainfield Cap	68.5%	(Max. 100.5% to not exceed 7.2 gal/panel)
Dose Volume	231.7 gal/dose	
Run Time/Dose	10.9 minutes	Time to deliver max. 3.6 gal/panel
Volume/depth	21.07 gal/in.	(Per tank manufacturer's specifications)
Estimated Drawdown	11.00 in.	

Manifold Box

Number of Taps: 3 with 0 Split(s)
 Manifold Length: 3.0 ft. (approximate)

PUMP DESIGN

System (initial/repair): **Primary**

Project: Stewart Farms
Location: 3981 Baileys XRDS Rd,
 Benson, NC 27504
County: Harnett

Friction Losses

Suction Head	0 ft	(submersible 0)
Elev. Difference (highest point from pump)	6.16 ft	
Design Pressure At Outlet	2 ft	
Supply Line - 2" Schedule 40 PVC		
Pipe Diameter, Nominal	2 in.	
Pipe Diameter (ID)	2.047 in.	
Pipe Length	308.26 ft	Flow 21.33 gpm Velocity 2.08 ft/sec
Pipe Length for Fittings	30.826 ft	Meets requirement that 2 ft/s < v < 5 ft/s.
Equivalent Length	339.086 ft	
Estimated Friction Loss in Supply Line	2.94 ft	
Friction Loss - Taps/Special Fittings	3.5 ft	
TOTAL	14.60 ft.	

Flow for Anti-Siphon Hole

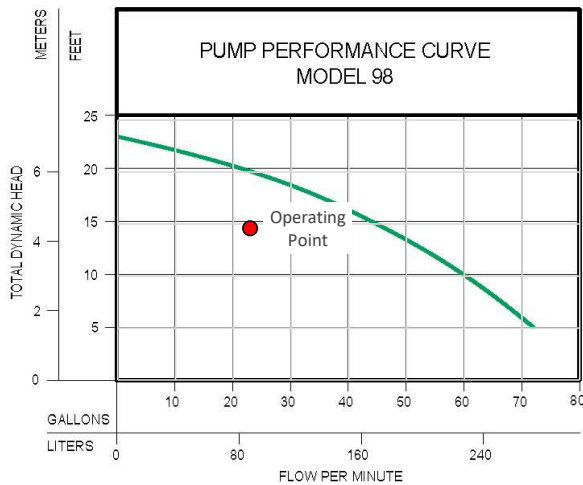
Hole Diameter 3/16 in.
 Hole Flowrate 1.58 gpm

Pump Efficiency 0.7 (assumed, typical)
 Motor Efficiency 0.9 (assumed for electric pumps)
Flow 22.91 gpm

Required Horsepower 0.13 hp
TDH 14.60 ft

Pump Selection

Manufacturer:	Zoeller
Model:	N98
Horsepower:	0.5



PUMP DESIGN

System (initial/repair): **Repair**

Project: Stewart Farms
Location: 3981 Baileys XRDS Rd,
 Benson, NC 27504
County: Harnett

Friction Losses

Suction Head	0 ft	(submersible 0)
Elev. Difference (highest point from pump)	6.96 ft	
Design Pressure At Outlet	2 ft	
Supply Line - 2" Schedule 40 PVC		
Pipe Diameter, Nominal	2 in.	
Pipe Diameter (ID)	2.047 in.	Flow 21.33 gpm
Pipe Length	358.6 ft	Velocity 2.08 ft/s
Pipe Length for Fittings	35.86 ft	Meets requirement that 2 ft/s < v < 5 ft/s.
Equivalent Length	394.46 ft	
Estimated Friction Loss in Supply Line	3.42 ft	
Friction Loss - Taps/Special Fittings	3.5 ft	
TOTAL	15.88 ft.	

Flow for Anti-Siphon Hole

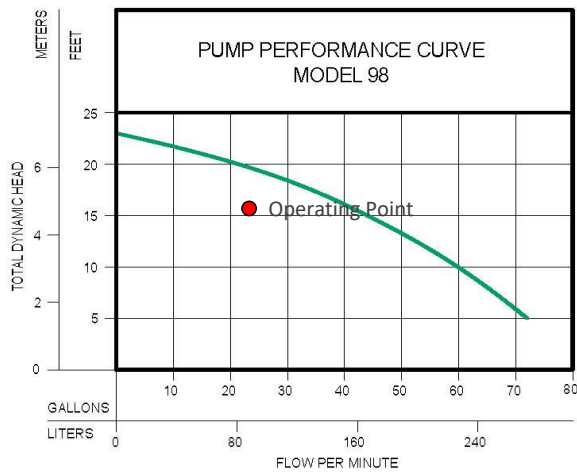
Hole Diameter 3/16 in.
 Hole Flowrate 1.65 gpm

Pump Efficiency 0.7 (assumed, typical)
 Motor Efficiency 0.9 (assumed for electric pumps)
Flow 22.98 gpm

Required Horsepower 0.15 hp
TDH 15.88 ft.

Pump Selection

Manufacturer:	Zoeller
Model:	N98
Horsepower:	0.5



Septic Tank Buoyancy Calculation

Project: Stewart Farms
Location: 3981 Baileys XRDS Rd,
 Benson, NC 27504
County: Harnett

Tank Size (nominal) 1250 gal

Properties/Assumptions:

Min. liquid level to be maintained in tank at all times after initial installation.			
Min. depth to water table	12.0 in.	from ground surface	
Effluent Density	62.4 lb/ft ³	(Specific Weight of Water)	
Concrete Density	142.6 lb/ft ³		
Soil App. Sp. Grav.	1.3	(typical value)	
Soil Cover Over Tank	12 in.	(minimum)	
Additional Cover	0 in.	for pipe grade	
Unsubmerged wt of soil	81.1 lb/ft ³		
Submerged wt of soil	49.9 lb/ft ³	50% Porosity Assumed	

Tank Dimensions (from supplier):

		<u>Exterior</u>		<u>Interior</u>	
		Top	Bottom	Top	Bottom
Tank	Length	125.5	122.0	119.5	116.0 in.
	Width	65.5	62.0	59.5	56.0 in.
	Height	58.5	(w/o lid)	54.5	in.
Lid	Length	125.5 in.			
	Width	65.5 in.			
	Height	3.0 in.			
Area of Riser Openings		6.28 ft ²			
Permanent Liquid Depth in Tank		0.0 in.		0.00 ft	
Tank Weight		11,000 lb		(per manufacturer)	

Buoyancy Force Calculation:

Buoyancy Force Specific Weight of Water x Displaced Volume	
Displaced Volume	281.4 ft ³ *
Buoyancy Force	17,558 lb.

Weight Calculation:

Tank Weight	11000 lb	Volume	0.0 ft ³ *
Water Weight in Tank	0 lb		
Soil Weight Over Tank	4121 lb		
Soil Friction Force	4037 lb		
Total Weight	19,158 lb		

Factor of Safety = 1.09

Note: Total weight must be greater than buoyancy force so that tank will not float during high water table conditions.

* Volume calculated by the prismatic formula.

Pump Tank Buoyancy Calculation

Project: Stewart Farms
Location: 3981 Baileys XRDS Rd,
 Benson, NC 27504
County: Harnett

Tank Size (nominal) 1287 gal

Properties/Assumptions:

Min. liquid level to be maintained in tank at all times after initial installation.		
Min. depth to water table	12 in.	from ground surface
Effluent Density	62.4 lb/ft ³	(Specific Weight of Water)
Concrete Density	142.6 lb/ft ³	
Soil App. Sp. Grav.	1.3	(typical value)
Soil Cover Over Tank	12 in.	(minimum)
Additional Cover	0 in.	for pipe grade
Unsubmerged wt of soil	81.1 lb/ft ³	
Submerged wt of soil	49.9 lb/ft ³	50% porosity assumed

Tank Dimensions (from supplier):

		<i>Exterior</i>		<i>Interior</i>	
		Top	Bottom	Top	Bottom
Tank	Length	108.0	104.0	102.0	98.0 in.
	Width	58.0	54.0	52.0	48.0 in.
	Height	64.5	(w/o lid)	60.5	in.
Lid	Length	108.0 in.			
	Width	58.0 in.			
	Height	3.0 in.			
Area of Riser Openings		3.14 ft ²			
Permanent Liquid Depth in Tank		0.0 in.		0.00 ft	
Tank Weight		10500 lb		(per manufacturer)	

Buoyancy Force Calculation:

Buoyancy Force Specific Weight of Water x Displaced Volume	
Displaced Volume	232.5 ft ³ *
Buoyancy Force	14,508 lb

Weight Calculation:

Tank Weight	10500 lb		
Water Weight in Tank	0 lb	Volume	0.0 ft ³ *
Soil Weight Over Tank	3274 lb		
Soil Friction Force	4227 lb		
Total Weight	18,001 lb		

Factor of Safety = 1.24

Note: Total weight must be greater than buoyancy force so that tank will not float during high water table conditions.

* Volume calculated by the prismatic formula.



CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)
1/12/2024

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Hartsfield & Nash Agency, Inc. 10405 Ligon Mill Rd., Ste H Wake Forest, NC 27587	CONTACT NAME: Connie Garkalns
	PHONE (A/C, No, Ext): (919) 556-3698
	FAX (A/C, No): (919) 556-8758
	E-MAIL ADDRESS: Connie@hartsfield-nash.com
	INSURER(S) AFFORDING COVERAGE
	INSURER A : Selective Insurance Company of the Southeast
	INSURER B : ACCIDENT FUND INSURANCE COMPANY OF AMERICA
	INSURER C : Evanston Insurance Company
	INSURER D :
	INSURER E :
	INSURER F :

INSURED	CERTIFICATE NUMBER:	REVISION NUMBER:
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Agri-Waste Technology Inc
 501 N. Salem St Ste 203
 Apex, NC 27502

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
A	COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input checked="" type="checkbox"/> PROJECT <input type="checkbox"/> LOC OTHER:			S 2253659	1/18/2024	1/18/2025	EACH OCCURRENCE \$ 2,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 300,000 MED EXP (Any one person) \$ 10,000 PERSONAL & ADV INJURY \$ 2,000,000 GENERAL AGGREGATE \$ 4,000,000 PRODUCTS - COMP/OP AGG \$ 4,000,000 \$
A	AUTOMOBILE LIABILITY <input checked="" type="checkbox"/> ANY AUTO OWNED AUTOS ONLY <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> HIRED AUTOS ONLY <input type="checkbox"/> NON-OWNED AUTOS ONLY			S 2253659	1/18/2024	1/18/2025	COMBINED SINGLE LIMIT (Ea accident) \$ 1,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$ \$
A	UMBRELLA LIAB <input checked="" type="checkbox"/> OCCUR EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE DED RETENTION \$			S 2253659	1/18/2024	1/18/2025	EACH OCCURRENCE \$ 2,000,000 AGGREGATE \$ 2,000,000 \$
B	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) <input checked="" type="checkbox"/> Y / N <input type="checkbox"/> N / A If yes, describe under DESCRIPTION OF OPERATIONS below			100003072	1/18/2024	1/18/2025	<input checked="" type="checkbox"/> PER STATUTE <input type="checkbox"/> OTH-ER E.L. EACH ACCIDENT \$ 1,000,000 E.L. DISEASE - EA EMPLOYEE \$ 1,000,000 E.L. DISEASE - POLICY LIMIT \$ 1,000,000
C	Prof & Pollution			MKLV3ENV104078	8/22/2023	8/22/2024	Each Claim \$ 5,000,000
A	Leased / Rented			S 2253659	1/18/2024	1/18/2025	Equipment \$ 25,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

CERTIFICATE HOLDER

CANCELLATION

***This is ONLY For Informational Purposes
Contact Agency for Specific Holder info to be added

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE