AP-313833

NC DEPARTMENT OF HEALTH AND HUMAN SERVICES

ROY COOPER • Governor
KODY H. KINSLEY • Secretary
HELEN WOLSTENHOLME • Interim Deputy Secretary for Health
MARK T. BENTON • Assistant Secretary for Public Health
Division of Public Health

COMMON FORM FOR ENGINEERED OPTION PERMIT
See Instructions for Use in Appendix A

Except for "Date received", this Section to be completed by the Professional Engineer licensed in accordance with G.S. 89C

LHD USE ONLY: Initial submittal of this NOI received: 8-2-2022 (Date) by BB (Initials)

PART 1: Notice of Intent to Construct (NOI) - Please check all that apply

[X] Single System or [ ] Multiple Systems

AND

[ ] New [X] Expansion [ ] Relocation of all or part of the Existing System [ ] Relocation of Repair Area

[X] Repair – LHD Permit Number AP313833 [ ] Repair – EOP/LSS COVID 19/AOWE Permit Number _____

1. Facility Owner's name: (Owner, Company Name, Utility, Partnership, Individual, etc.): Jenny Haley

Mailing address: 1011 Heather Drive City: Kannapolis State: NC Zip: 28081

Telephone number: 704-305-9723 E-mail Address: kylebilafer@hotmail.com

2. Professional Engineer (PE) name: Donald L. Munday License number: 17327

Mailing address: 125 East Plaza Drive, Suite 101 City: Mooresville State: NC Zip: 28115

Telephone number: 704-664-7888 E-mail Address: dmunday@pdapa.com

3. Licensed Soil Scientist (LSS) name: Christopher McGee License number: 1324

Mailing address: 501 N Salem St Suite 201 City: Apex State: NC Zip: 27502

Telephone number: (919) 859-0669 E-mail Address: cmcgee@agriwaste.com

4. Licensed Geologist (LG) (if applicable) name: _____ License number: _____

Mailing address: _____ City: _____ State: _____ Zip: _____

Telephone number: _____ E-mail Address: _____

5. On-Site Wastewater Contractor name: Jarrid Lentz License number: 3360

Mailing address: 436 Lentz Road City: Statesville State: NC Zip: 28625

Telephone number: 980-319-1014 E-mail Address: office@lentzwastewater.com

6. Proof of Errors and Omissions or other appropriate liability insurance for the following persons is attached that includes the name of the insurer, name of the insured and the effective dates of coverage:

[X] PE [X] LSS [ ] LG [X] On-site Wastewater Contractor

7. Property location (physical address, tax parcel identification number or subdivision lot, block number of the property to be permitted): 301 Robinson Road, Mooresville, NC 28117
   County Name: Iredell
8. Type of facility: [X] Place of residence No. Bedrooms: 4 No. Occupants: 8 Max.
   [ ] Place of business Basis for flow calculation: _____
   [ ] Place of public assembly Basis for flow calculation: _____
9. Factors that would affect the wastewater load: No more than 2 persons per bedroom, use of garbage disposal is not recommended. No backwash of water softening system, no condensate discharge, no disposal of cleaning solutions or pharmaceuticals into waste system
10. Type and location of proposed wastewater system: TS-II LP PPBPS (Type Va) tanks and drainfield located between residence and waterbody (Lake Norman)
11. Design wastewater flow: 480 gpd *(For flow > 3,000 gpd and industrial process, duplicate plans shall be sent to the State.)*
    Design wastewater strength: [X] domestic [ ] high strength [ ] industrial process
12. A plat as defined in G.S. 130A-334(7a) is attached: [X] Yes [ ] No
13. Location of proposed or existing wells (drinking water, irrigation, geothermal, groundwater monitoring, sampling, etc.) and any potable and non-potable water conveyance lines is indicated on attached plans and complies with 15A NCAC 18A .1950: [X] Yes [ ] No
    This is a saprolite system. [ ] Yes [X] No
14. Evaluation(s) of soil conditions and site features in accordance with G.S. 130A-335(a1) signed and sealed by a LSS is attached: [X] Yes [ ] No
15. Evaluation of geologic and hydrogeologic conditions signed and sealed by a LG is attached [ ] Yes [X] NA
16. Proposed landscape, site, drainage, or soil modifications are attached: [ ] Yes [X] NA

Attestation by Professional Engineer licensed in North Carolina pursuant to G.S. 89C

I, Donald L. Munday, PE hereby attest that the information required to be included with
Registered Professional Engineer (Print Name)
this Notice of Intent to Construct is accurate and complete to the best of my knowledge and that the proposed system shall meet applicable federal, State, and local laws, regulations, rules, and ordinances in accordance with G.S. 130A-336.1(e)(6).

Donald L. Munday

Signature of Licensed Professional Engineer

07/14/2022
Date

This section is for Owner use to either designate PE as their legal representative or to self-submit the NOI.

Designation of Registered Professional Engineer as legal representative of Owner for this Notice of Intent:

I, Jenny Haley (*Print Name of Owner*) hereby designate Donald L. Munday, PE (*Print Name of Registered Professional Engineer*)

as my legal representative for purposes of this Notice of Intent pursuant to G.S. 130A-336.1.

Jenny Haley Jones (*Signature of Owner*) 7-4-22 (*Date*)

Owner self-submittal of NOI:

I, _____ (*Print Name of Owner*) hereby submit this NOI prepared by _____ (*Print Name of Licensed PE*)

pursuant to G.S. 130A-336.1.

_____ (*Signature of Owner*) _____ (*Date*)

NOTES:

LIABILITY: The Department, the Department's authorized agents, or local health departments shall have no liability for wastewater systems designed, constructed, and installed pursuant to an Engineer Option Permit [G.S. 130A-336.1(f)]

RIGHT OF ENTRY: The submittal of this **Notice of Intent to Construct** *grants right of entry to the Local Health Department and the State to the referenced property.*

ISSUANCE OF BUILDING PERMIT: Once the LHD deems that the Notice of Intent to Construct is complete via signature in the section below, the owner may apply to the local permitting agency for a permit for electrical, plumbing, heating, air conditioning or other construction, location, or relocation activity under any provision of general or special law pursuant to G.S. 130A-338.

This section for Local Health Department use only.

PART 2: *LHD Completeness Review of the Notice of Intent to Construct*

"(c) Completeness Review for Notice of Intent to Construct. – The local health department shall determine whether a notice of intent to construct, as required pursuant subsection (b) of this section, is complete within 15 business days after the local health department receives the notice of intent to construct. A determination of completeness means that the notice of intent to construct includes all of the required components. If the local health department determines that the notice of intent to construct is incomplete, the department shall notify the owner or the professional engineer of the components needed to complete the notice. The owner or professional engineer may submit additional information to the department to cure the deficiencies in the notice. The local health department shall make a final determination as to whether the notice of intent to construct is complete within 10 business days after the department receives the additional information from the owner or professional engineer. If the department fails to act within any time period set out in this subsection, the owner or professional engineer may treat the failure to act as a determination of completeness."

The review for completeness of this Notice of Intent was conducted in accordance with G.S. 130A-336.1(c). This NOI is determined to be:

☐ INCOMPLETE (If box is checked, Information in this section is required.)

Based upon review of information submitted in Part 1, the following items are missing: _____

Copies of this form listing missing items were sent to the design PE and the Owner on _____ (Date)

via _____ (Email, FAX, USPS, hand-delivered) with directions to re-submit missing items using Page 5 of this form.

Print Name of Authorized Agent of the LHD	Signature of Authorized Agent of the LHD	Date

☒ COMPLETE (If box is checked, information in this section is required.)

Based upon review of information submitted in Part 1 of this form, this NOI is deemed COMPLETE.

Copies of this signed form were sent to the design PE and the Owner on 8-2-22 (Date) via Email (Email, FAX, USPS, hand-delivered).

A copy of this NOI and tracking information was sent to the State on 8-2-22 (Date) via Email (Email, FAX, USPS, hand-delivered).

Print Name of Authorized Agent of the LHD	Signature of Authorized Agent of the LHD	Date
Benjamin A. Bottoms	Benjamin A. Bottoms	8/2/2022

#206
-03-7409
r Formerly
ampbell, Jr.
s Campbell
06 PG 329
d & Timber Corp.
an Section 11
4 PG 48
PP
GW
GW
Split Rail Fence
#5 Rebar Found
L6
CP
C1
Concrete Monument Found
35' FS
84.1'
N 14°52'03" E
181.00'
15' SS
Lot #207
0.628 Acres
27,358 SF
95.3'
Gravel Drive
15' SS
Split Rail Fence
S 01°28'56" E
184.26'
14.1'
32.0'
32.0'
14.1'
37.9'
Shared Boat House
14.0'
32.0'
32.0'
14.0'
A/C Pad
70.5'
30.7'
37.2'
Log Cabin
12" RCP
37.8'
7.7'
Covered Porch
7.7'
70.5'
30.7'
Sidewalk
34.6'
46.0'
Sidewalk
Septic Line
50' RS
50' Lake Buffer
Septic Line
Septic Line
Septic Line
Split Rail Fence
Mag Nail Found
L5
Shared Boat Ramp
Concrete Ditch
CP
L4
Sidewalk
CP
L3
CP
L2
CP
L1
#5 Rebar Found
Covered Pier
Pier
Full Pond
Zone X
Zone AE
Full Pond
Edge of Rip Rap
Ramp
Covered Boat Dock
Lake Norman
GRAPHIC SCALE
30
0
15
30
60

PART 3: **Authorization to Operate (ATO)**

LHD USE ONLY: Initial submittal of request for ATO received: 5/6/24 (Date) by DW (Initials)

The following items are included in this Authorization to Operate for an EOP:

1.	Signed and sealed copy of the Engineer's report that includes the information in G.S. 130A-336.1(k)(1) and 15A NCAC 18A .1971(f)	[X] Yes	[ ] No
2.	Operation and management program and ORC contract, if applicable	[X] Yes	[ ] No
3.	Letter documenting Owner's acceptance of the system from the PE	[X] Yes	[ ] No
4.	Owner meets requirements of ownership or control of the system per 15A NCAC 18A .1938(j)	[X] Yes	[ ] No
6.	Easement, right of way, or encroachment agreement required per 15A NCAC 18A .1938(j)	[ ] Yes	[X] No
7.	Multi-party agreements required, as applicable, pursuant to 15A NCAC 18A. .1937(h)	[ ] Yes	[X] No

If yes, agreements filed in _____ County Register of Deeds in Deed Book _____ Page _____

Attestation by the Owner or the PE for Authorization to Operate

I, Donald L. Munday, PE (*Print name of Owner or Professional Engineer*) hereby attest that all items indicated above have been provided and the system meets applicable federal, State, and local laws, regulations, rules, and ordinances in accordance with G.S. 130A-336-.1(e)(6).

Donald L. Munday Digitally signed by Donald L. Munday DN: C=US, E=dmunday@pdapa.com, O="Piedmont Design Associates, PA", CN=Donald L. Munday Date: 2024.04.25 16:07:40-04'00' — 04/25/2024

Signature of Owner or Professional Engineer — *Date*

NORTH CAROLINA PROFESSIONAL SEAL 17327 ENGINEER DONALD L. MUNDAY

NOTES:

LIABILITY: The Department, the Department's authorized agents, or local health departments shall have no liability for wastewater systems designed, constructed, and installed pursuant to an Engineer Option Permit [G.S. 130A-336.1(f)]

PIEDMONT DESIGN ASSOCIATES, P.A.
125 East Plaza Drive | Suite #101
Mooresville, NC 28115
Phone: 704-664-7888 | Fax: 704-664-1778
Email: dmunday@pdapa.com

Engineering
Surveying
Planning

April 24, 2024

Iredell County Environmental Health Department
310 East Center Avenue
Mooresville, NC 28115
Attn: Mr. Ben Botkins, REHS

RE: Jenny Haley Jones3 Bedroom Residence
TS-II Subsurface LP PPBPS Effluent Disposal System Repair
301 Robinson Road, Mooresville, Iredell County, NC

Dear Mr. Ross:

ENGINEERS CERTIFICATION

I, **Donald L. Munday**, as a duly registered Professional Engineer in the State of North Carolina, having been authorized to observe periodically the construction of the system of the referenced project, a TS-II subsurface LP PPBPS effluent disposal system repair; serving a 3 bedroom residence, located at 301 Robinson Road, Mooresville, Iredell County, NC, hereby state that, to the best of my abilities, due care and diligence was used in the observation of the construction such that the construction was observed to be built within substantial compliance and intent of the approved plans and specifications.

Sincerely,

PIEDMONT DESIGN ASSOCIATES, P.A.

Donald L. Munday, P.E.
N.C. Registration No. 17327



04/25/2024

Cc: Mike Barry, AQWA
Jenny Haley Jones (Kyle Bilafer), Owner
Randy Melton, Piedmont Septic Tank, Inc., Installer

April 24, 2024

Iredell County Health Department
610 East Center Avenue
Mooresville, NC 28115
Attn: Ben Botkins, REHS

RE: TS-II LP-PPBPS Effluent Disposal Repair System
301 Robinson Road, Mooresville, Iredell County, North Carolina

Dear Mr. Botkins:

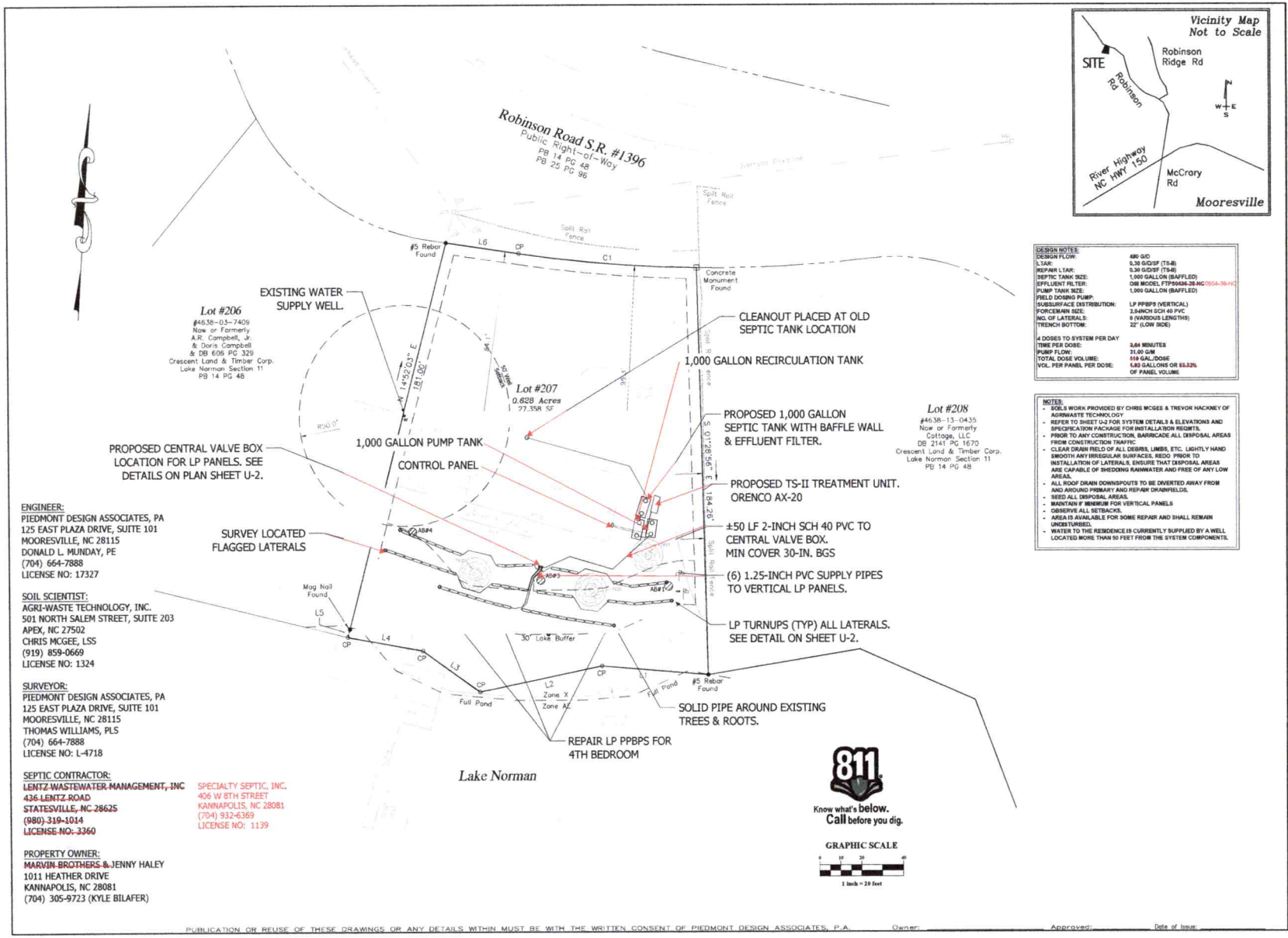
CONTRACTOR'S STATEMENT

I, ***Jamie O'Daniel, Specialty Septic, Inc.,*** having been present during the septic system installation of referenced project, a TS-II Subsurface LP PPBPS Effluent Disposal Repair System; 301 Robinson Road, located in Mooresville, Iredell County, NC, hereby state that, to the best of my abilities, the system has been installed as designed and shown on the engineered plans and specifications and as intended by the manufacturer's and by the State of NC requirements.

Sincerely,

Specialty Septic, Inc.

Jamie O'Daniel, Owner



DESIGN NOTES:	
DESIGN FLOW:	480 G/D
L.TAR:	0.30 G/D/SF (TS-II)
REPAIR L.TAR:	0.30 G/D/SF (TS-II)
SEPTIC TANK SIZE:	1,000 GALLON (BAFFLED)
EFFLUENT FILTER:	OSI MODEL FTP50436-2B-NC (954-36-N2)
PUMP TANK SIZE:	1,000 GALLON (BAFFLED)
FIELD DOSING PUMP:	
SUBSURFACE DISTRIBUTION:	LP PPBPS (VERTICAL)
FORCEMAIN SIZE:	2.5-INCH SCH 40 PVC
NO. OF LATERALS:	6 (VARIOUS LENGTHS)
TRENCH BOTTOM:	22" (LOW SIDE)
4 DOSES TO SYSTEM PER DAY	
TIME PER DOSE:	3.84 MINUTES
PUMP FLOW:	31.00 G/M
TOTAL DOSE VOLUME:	119 GAL./DOSE
VOL. PER PANEL PER DOSE:	5.83 GALLONS OR 83.33% OF PANEL VOLUME

NOTES:
- SOILS WORK PROVIDED BY CHRIS MCGEE & TREVOR HACKNEY OF AGRIWASTE TECHNOLOGY
- REFER TO SHEET U-2 FOR SYSTEM DETAILS & ELEVATIONS AND SPECIFICATION PACKAGE FOR INSTALLATION REQMTS.
- PRIOR TO ANY CONSTRUCTION, BARRICADE ALL DISPOSAL AREAS FROM CONSTRUCTION TRAFFIC
- CLEAR DRAIN FIELD OF ALL DEBRIS, LIMBS, ETC. LIGHTLY HAND SMOOTH ANY IRREGULAR SURFACES. REDO PRIOR TO INSTALLATION OF LATERALS. ENSURE THAT DISPOSAL AREAS ARE CAPABLE OF SHEDDING RAINWATER AND FREE OF ANY LOW AREAS.
- ALL ROOF DRAIN DOWNSPOUTS TO BE DIVERTED AWAY FROM AND AROUND PRIMARY AND REPAIR DRAINFIELDS.
- SEED ALL DISPOSAL AREAS.
- MAINTAIN 6" MINIMUM FOR VERTICAL PANELS
- OBSERVE ALL SETBACKS.
- AREA IS AVAILABLE FOR SOME REPAIR AND SHALL REMAIN UNDISTURBED.
- WATER TO THE RESIDENCE IS CURRENTLY SUPPLIED BY A WELL LOCATED MORE THAN 50 FEET FROM THE SYSTEM COMPONENTS.

ENGINEER:
PIEDMONT DESIGN ASSOCIATES, PA
125 EAST PLAZA DRIVE, SUITE 101
MOORESVILLE, NC 28115
DONALD L. MUNDAY, PE
(704) 664-7888
LICENSE NO: 17327

SOIL SCIENTIST:
AGRI-WASTE TECHNOLOGY, INC.
501 NORTH SALEM STREET, SUITE 203
APEX, NC 27502
CHRIS MCGEE, LSS
(919) 859-0669
LICENSE NO: 1324

SURVEYOR:
PIEDMONT DESIGN ASSOCIATES, PA
125 EAST PLAZA DRIVE, SUITE 101
MOORESVILLE, NC 28115
THOMAS WILLIAMS, PLS
(704) 664-7888
LICENSE NO: L-4718

SEPTIC CONTRACTOR:
~~LENTZ WASTEWATER MANAGEMENT, INC~~
~~436 LENTZ ROAD~~
~~STATESVILLE, NC 28625~~
~~(980) 319-1014~~
~~LICENSE NO: 3360~~

SPECIALTY SEPTIC, INC.
406 W 8TH STREET
KANNAPOLIS, NC 28081
(704) 932-6369
LICENSE NO: 1139

PROPERTY OWNER:
~~MARVIN BROTHERS &~~ JENNY HALEY
1011 HEATHER DRIVE
KANNAPOLIS, NC 28081
(704) 305-9723 (KYLE BILAFER)

811 Know what's below. Call before you dig.

GRAPHIC SCALE
0 10 20 40
1 inch = 20 feet

PUBLICATION OR REUSE OF THESE DRAWINGS OR ANY DETAILS WITHIN MUST BE WITH THE WRITTEN CONSENT OF PIEDMONT DESIGN ASSOCIATES, P.A. Owner: Approved: Date of Issue:

PIEDMONT DESIGN ASSOCIATES, P.A.
ENGINEERING & SURVEYING
State 144 Westfield Center 125 East Plaza Drive
Suite 101 Mooresville, NC 28115
Phone (704) 664-7888 Fax (704) 664-7778 www.pdpa.com
NCBELS Licensed # C-1287

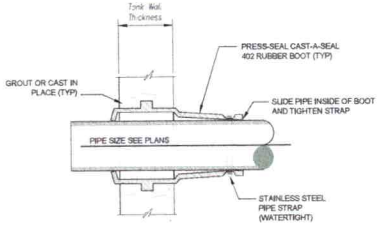
PREPARED FOR
JENNY HALEY
1011 HEATHER DRIVE
KANNAPOLIS, NC 28020
(704) 305-9723

SEPTIC SYSTEM SITE PLAN
4 BEDROOM RESIDENCE
301 ROBINSON ROAD
MOORESVILLE, IREDELL COUNTY, NORTH CAROLINA

REVISIONS	BY
AS BUILTS 4-24-24	DMD

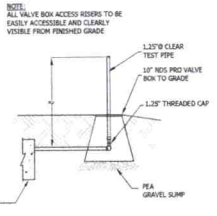
Date: 6/28/22
Scale: 1" = 20 FT, 1' CONTOURS
Drawn: DMD
Checked: DLM
Project: 2022-05-22
Job: 2022-05-22
Sheet: U-1
of 2 Sheets

I:\Engineering\1-Projects\2022\2022 Misc Septic\2022-05-22_Bilafer LP PPBPS\dwg\Bilafer LP PPBPS Basic 5-31-22.dwg, 6/28/2022 2:56:03 PM, ddeerson

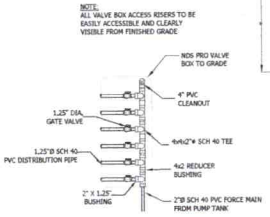


STANDARD PIPE PENETRATIONS

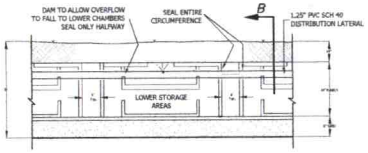
N.T.S.

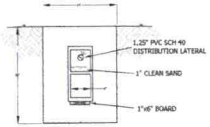


TURN UP DETAIL



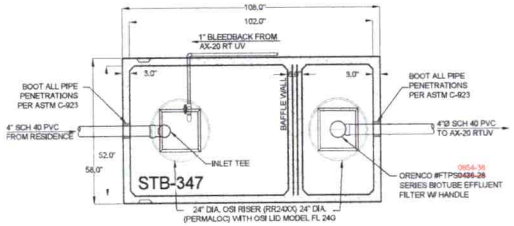
VALVE BOX DETAIL





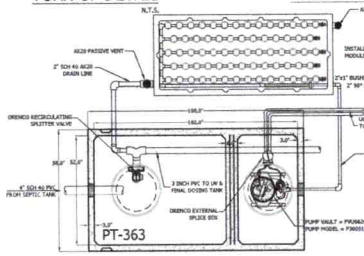
CUTAWAY OF PRESSURE PANEL

N.T.S.



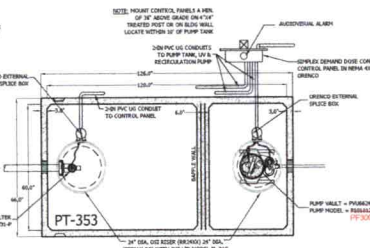
PLAN VIEW - 1,000 GAL SEPTIC TANK

N.T.S. Top Seam Tank Only



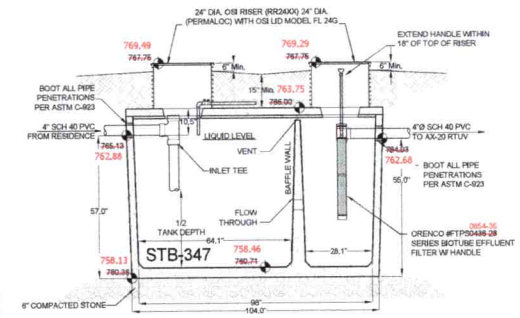
PLAN VIEW - 1,000 GAL RECIRC. TANK

N.T.S. Top Seam Tank Only



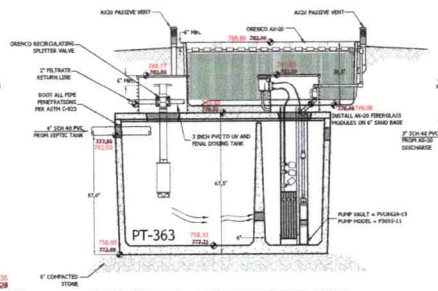
PLAN VIEW - 1,000 GAL PUMP TANK

N.T.S. Top Seam Tank Only



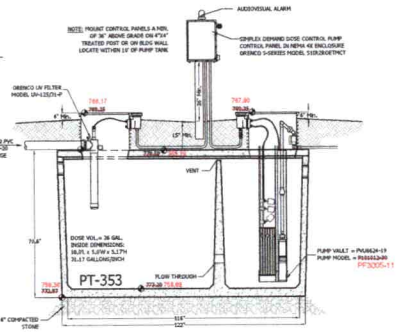
SECTION VIEW - 1,000 GAL SEPTIC TANK

N.T.S. Top Seam Tank Only



SECTION VIEW - 1,000 GAL RECIRC. TANK

N.T.S. Top Seam Tank Only



SECTION VIEW - 1,000 GAL PUMP TANK

N.T.S. Top Seam Tank Only

TANK ELEVATIONS

NOTE TANK DIMENSIONS & ELEVATIONS BASED ON SHOAF PRECAST COMPANY, INC., OTHER STATE APPROVED TANKS MAY BE SUBSTITUTED BUT NOT WITHOUT PRIOR APPROVAL FROM THE ENGINEER. CONTRACTOR SHALL VERIFY DIMENSIONS AND ADJUST GRADES AND FLOAT SETTINGS AS REQUIRED TO CAUSE FLOW AND DOSING AS CALLED FOR. TANKS SHALL NOT BE PUMPED DURING EXTREMELY WET CONDITIONS.

GENERAL NOTES:

1. NOTIFY UNDERGROUND UTILITIES LOCATOR PRIOR TO ANY EXCAVATION. CONTRACTOR IS RESPONSIBLE FOR COORDINATION OF ALL TRADES AND SUBCONTRACTORS. CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFYING ALL DIMENSIONS, ELEVATIONS, AND LOCATION OF ALL EXISTING CONDITIONS AND UTILITIES.
2. ALL PIPING SHALL BE SCH 40 PVC UNLESS OTHERWISE NOTED ON PLANS. ALL PVC PIPES SHALL BE BURIED A MINIMUM OF 3 FEET UNLESS SHOWN OTHERWISE.
3. CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE SOIL EROSION AND SEDIMENTATION CONTROL REQUIREMENTS.
4. CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE OSHA, NCDOT, AND OTHER RELATED SAFETY REQUIREMENTS.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING ALL CONSTRUCTION DAMAGE EXPEDITIOUSLY AND AT NO ADDITIONAL COST TO THE OWNER.
6. SEPTIC TANK SHALL BE CONSTRUCTED WITH A BAFFLE WALL DIVIDING THE TANK INTERIOR 2/3rd TO 1/3rd. THE BAFFLE WALL SHALL BE CONSTRUCTED TO PERMIT PASSAGE OF EFFLUENT THROUGH A SLOT OR HOLES LOCATED BETWEEN 45 & 55 PERCENT OF THE INTERIOR DEPTH.
7. ALL TANKS SHALL HAVE A MINIMUM 28-DAY CONCRETE STRENGTH OF 4,500 PSI.
8. TANK SHALL MEET REINFORCING REQUIREMENTS TO ACCOMMODATE 3,000 POUNDS PER SQ. FT. EITHER STEEL REINFORCING WIRE, REBAR OR APPROVED FIBER MAY BE USED.
9. ALL SERVICE ACCESS OPENINGS SHALL BE A MINIMUM OF 24 INCHES.
10. RISERS TO BE CAST IN PLACE AT TIME OF TANK CONSTRUCTION.
11. ALL TANKS AND EFFLUENT FILTERS SHALL BE APPROVED BY ENGINEER & NCDHHS. EFFLUENT FILTERS SHALL BE SIZED FOR DESIGN FLOW AND EXTEND DOWN TO 50-PERCENT OF LIQUID LEVEL.
12. ALL JOINTS (MID-SEAM, TOP-SEAM) SHALL BE SEALED USING CONCRETE SEALANTS BUTYL SEALANT # CS-102 MEETING ASTM C-990.
13. TANKS SHALL BE LEAK-TESTED PRIOR TO SYSTEM START UP BY APPLYING A VACUUM OF 5-INCHES OF MERCURY WITH RISER ASSEMBLIES IN PLACE OR A 24-HOUR STATIC WATER TEST IN ACCORDANCE WITH ASTM STANDARDS.
14. ALL PIPE PENETRATIONS THROUGH PRECAST CONCRETE TANKS SHALL BE PRESS-SEAL CAST-A-SEAL 402 RUBBER BOOTS AND GROUTED.
15. ALL TANK RISERS AND LIDS SHALL EXTEND A MINIMUM OF 6" ABOVE THE FINISHED GRADE.
16. ALL METAL INSTALLED IN TANKS SHALL BE STAINLESS STEEL.
17. ALL MANHOLES NOT INSTALLED NOT IN TRAFFIC AREAS SHALL HAVE TAMPER RESISTANT BOLTS ON LIDS.
18. CONTROL PANELS SHALL BE INSTALLED A MINIMUM OF 36 INCHES FROM FINISHED GRADE TO BOTTOM OF PANEL BOX. SEAL OFF ALL CONDUITS BETWEEN TANKS AND PANEL.
19. CONTRACTOR TO VERIFY EXISTING SITE POWER SUPPLY (VOLTAGE) BEFORE ORDERING PUMPS, CONTROLS, ETC.

PUBLICATION OR REUSE OF THESE DRAWINGS OR ANY DETAILS WITHIN MUST BE WITH THE WRITTEN CONSENT OF PIEDMONT DESIGN ASSOCIATES, P.A.

Owner: Approved: Date of Issue:

PIEDMONT DESIGN
Associates, P.A.
ENGINEERING SURVEYING PLANNING
Suite 103, Westfield Centre, 125 East Plaza Drive, Mooresville, North Carolina 28115
Phone (704) 664-3080 www.piedmontdesign.com
NC FIRM # C-0149 Licensed # C-0149

PREPARED FOR:
JENNY HALEY
1011 HEATHER DRIVE
KANNAPOLIS, NC 28020
(704) 305-9723

SEPTIC SYSTEM DETAILS
4 BEDROOM RESIDENCE
301 ROBINSON ROAD
MOORESVILLE, IREDELL COUNTY, NORTH CAROLINA

REVISIONS	BY
AS BUILTS 4-24-24	DMD

Date: 6/28/22
Scale: AS SHOWN
Drawn: DMD
Checked: DLM
Project: 2022-05-22
Job: 2022-05-22
Sheet: U-2
of 2 Sheets

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STATE OF NORTH CAROLINA, COUNTY OF IREDELL

This agreement is made and entered into this 1 day of April, 2024 by and between Marvin Brothers and Jenny Haley (hereinafter referred to as the "Owners") and AQWA, Inc. (hereinafter referred to as the "Contractor").

WITNESSETH

WHEREAS, the Owners own or control the property upon which a ground absorption sewage treatment system (hereinafter "system") is installed, such system being designated a Type Va system (Treatment Standard II w/nitrogen reduction) under the Rules for Sanitary Sewage Collection, Treatment and Disposal found at 15A N.C. Administrative Code 18A.1900 et seq.; and,

WHEREAS, 15A N.C. Administrative Code 18A.1961 requires a contract to be executed between the system Owners and a management entity prior to the issuance of an Operation Permit for said system; and,

WHEREAS, 15A N.C. Administrative Code 18A.1961 requires that a condition of the Operation Permit for said system be that a properly executed contract between the system owners and a management entity shall be in effect for as long as the system is in use; and,

WHEREAS, the Contractor is a management entity, of a type authorized by 15A N.C. Administrative Code 18A.1961 to manage a Type Va, TS II system.

NOW THEREFORE, in consideration of the premises and of the mutual covenants and promises contained in this Agreement, it is hereby agreed by and between the Owners and the Contractor as stipulated below.

1. The Contractor's Obligations. The Contractor shall perform the following services on the Owners' system located at 301 Robinson Rd, Mooresville, Iredell County, NC 28117. TMS # 4638038445.000

   a) The Contractor shall inspect the system at least at the frequency, required in Table V (b) of 15A N.C. Admin. Code 18A.1961(b) for a Type Va System and as specified in the State approval document for the equipment.

   b) The Contractor shall monitor the routine operation of the system using the telemetry equipped control panel at least monthly and make such performance data available to the Owners if requested.

   c) The Contractor shall take up to two laboratory samples of effluent per year from the system as prescribed by the Health Department to monitor system performance at no additional expense to the Owners.

   d) The Contractor shall perform the maintenance procedures in accordance with the conditions of the Operation Permit, specifications as set forth by the design engineer, 15A N.C. Administrative Code 18A.1961, specifications of the applicable N. C. Department of Natural Resources system approval document, and the manufacturers Operations and Maintenance Manual. Routine maintenance procedures include: inspect the structural integrity and maintain all of the physical and mechanical components of the system, inspect the performance and condition of the AdvanTex® Treatment System and drip drainfield, check and set pressures in the system, check and adjust pump delivery rate of the system, clean septic tank filter if applicable and accessible, perform any other requirements of the operations permit.

e) The Contractor shall have an Operator on call 24 hours daily. All emergency services will be billed to the Owners.

f) The Contractor shall report the results of its inspections to the local health department at the frequency specified in Table V (b) of 15A N.C. Administrative Code 18A.1961(b) for a Type Va System.

g) If an inspection indicates the need for system repairs, the Contractor shall notify the local health department within 48 hours of the inspection.

h) The Contractor shall notify the Owners of needed repairs, which are outside of the scope of routine scheduled maintenance described in subparagraph (d) above. The Contractor shall perform necessary repairs to the system at the request of the Owners and shall be entitled to payment therefore at the Contractor's normal charge for services and materials.

i) The Contractor shall employ or shall contract with a State certified Operator(s) if required by Table V (b) of 15A N.C. Administrative Code 18A.1961(b) for a Type Va System.

j) The Contractor shall respond to a request for service or maintenance call within forty eight (48) hours upon receipt of request.

2. The Owners' Obligations.

a) The Owners shall pay to the Contractor the sum of $850.00 for periodic inspections, routine maintenance procedures, required sampling and periodic reports. The annual fee will be renewed at the end of each 12 month period. The annual fee may be amended upon sixty (60) days advance notice to the Owners but may not be increased more than six (6) percent per year. The Owners shall pay to the Contractor his normal and customary fees for any work performed on the system as a result of unscheduled service or maintenance calls. Unscheduled service or maintenance calls will be at the Contractor's customary rate with a two hour minimum, plus materials and drive time. All fees are due and payable within thirty (30) days of billing. Payments due to the Contractor and unpaid by the Owners after thirty (30) days shall incur a late fee of $25 per month for each month payment is not received by the Contractor.

b) Within thirty (30) days of receipt of notice of needed repairs pursuant to paragraph 1.h. above, the Owners shall request the Contractor to complete needed repairs.

c) The Owners shall provide the Contractor with such access to the system as is reasonably necessary for the Contractor to comply with the terms of this Agreement and requirements of the local health department.

d) The Owners shall keep the area of the septic system equipment and drain field properly mowed and protected from traffic.

e) The Owners shall provide year-round telephone service to the telemetry control panel, which requires access to the home phone line with "toll free" 800 number access. Or the Owner can provide hard-wired Ethernet equipment directly between the home router and the control panel if the control panel is set up to do so.

f) The Owners shall apply and enforce the "Do's and Don'ts" as prescribed by the manufacturer in the provided publication.

g) The Owner shall provide a hose bib with water service within 75 feet of the system.

3. Term. This Agreement shall remain in effect until terminated.

a) Automatic Termination. This agreement shall automatically terminate if the Operations Permit for the system is revoked and all appeals of revocation are exhausted or time for taking an appeal has passed.

b) Termination by Mutual Consent. The Parties may mutually agree to terminate this Agreement by giving written notice of termination by mutual consent to the local health department thirty (30) days in advance of the date of termination.

c) Termination by the Owners. The Owners may terminate this Agreement by giving notice to the Contractor and to the local health department thirty (30) days in advance of the date of termination.

d) Termination by the Contractor.

1) The Contractor may terminate this Agreement for cause by giving written notice of intent to terminate this Agreement to the Owners and to the local health department thirty (30) days in advance of the date of termination. Cause shall be defined as:

a) failure of the Owners to remit payment for any bill for services performed under and in accordance with this Agreement if said bill is not paid within thirty (30) days of receipt by the Owners of the bill. If said bill is paid after notice of termination of this Agreement, the Agreement shall continue in effect; or,

b) failure of the Owners to provide to the Contractor authorization to complete needed repairs within thirty (30) days of receipt of notice of needed repairs pursuant to paragraph 1.h. above. If said authorization to complete needed repairs or evidence of completion of said repairs is provided after notice of termination is given but prior to the date of termination of this Agreement, this Agreement shall continue in effect; or,

c) failure of the Owners to allow the Contractor such access to the system as is reasonably necessary in order for the Contractor to comply with the terms of this Agreement.

2) The Contractor may not terminate this Agreement without cause, but may assign its rights and duties under this Agreement as provided in paragraph 4, below.

4. Assignment.

a) Assignment by the Owners. The Owners shall notify the Contractor of the name and address of any purchaser of the property on which the system is located. The Owners shall also notify any purchaser of the property on which the system is located, of the existence of this Agreement and shall assign all rights and duties under this Agreement to said purchaser. Prepaid annual service fees are non-refundable and any prorations are to be handled between seller/purchaser at closing.

b) Assignment by the Contractor. The Contractor may assign its rights and duties under this Agreement to another management entity, which is qualified pursuant to 15A N.C. Administrative Code 18A.1961 to manage a Type Va system upon 30 days written notice to the Owners and to the local health department.

5. Use of Subcontractors. The Contractor may subcontract with such manufacturers, suppliers and contractors as it deems desirable to perform any of the Contractor's duties under this Agreement. The Contractor shall at all times remain responsible for the performance of and payment for all work performed by all subcontractors.

6. Representations. The Parties represent to each other that each has the power, authority and legal right to enter into and perform its obligations as set forth in this Agreement.

7. Regulatory Amendments. References in this Agreement to sections of the Administrative Code shall include such rules as they may be amended in the future.

8. No Implied Waiver. The waiver by either Party, of the default or a breach by the other Party of any provision of this Agreement shall not operate or be construed to operate as a waiver of any subsequent default or breach. The failure at any time of either Party to enforce any provision of this Agreement (a) shall not be construed to be a waiver of such provisions, or of any other provision; and (b) shall not in any way affect the validity of this Agreement, or any part of this Agreement, or the right of either Party thereafter to enforce each provision of this Agreement.

9. Notice. Every notice required under this Agreement shall be in writing and shall be deemed sufficiently given if delivered in person or sent by certified or registered mail, return receipt requested, postage prepaid to the Party to be notified and addressed as follows:

To the Owners: Marvin Brothers and Jenny Haley, 1011 Heather Dr, Kannapolis, NC 28081

To the Contractor: AQWA, Inc., 2604 Willis Court, Wilson, NC 27896

To the Local Health Department: 318 Turnersburg Hwy., Statesville, NC 28625

The date of any notice shall be the date of personal delivery or the date shown on the return receipt as the date of delivery or attempted delivery, as the case may be. Changes in the respective addresses to which notice may be directed may be made from time to time by either Party by notice to the other Party.

10. Place of Agreement. This Agreement and any questions concerning its validity, the system construction or performance shall be governed by the laws of the State of North Carolina, notwithstanding the place of execution, or the order in which the signatures of the Parties are affixed.

11. Entire Agreement and Amendment. This Agreement supersedes all prior negotiations, agreements and understandings between the Parties with respect to Inspection and Maintenance of the system and constitutes the entire Inspection and Maintenance Agreement between the Parties. To be effective, any amendment or modification to this Agreement must be in writing and must be signed by the Parties.

12. Severability. In the event that any provision of this Agreement shall, for any reason, be determined to be invalid, illegal or unenforceable in any respect, the Parties shall negotiate in good faith and agree to such amendments, modifications or supplements of or to this Agreement or such other appropriate actions as shall, to the maximum practicable in light of such determination, implement and give effect to the intentions of the Parties as reflected in this Agreement, and the other provisions of this Agreement shall, as so amended, modified, supplemented or otherwise affected by such actions, remain in full force and effect.

IN TESTIMONY WHEREOF, the Parties hereto have executed this Agreement in duplicate originals, one of which is retained by each of the Parties, the day and year first above written.

OWNERS:

Signature

Printed Name

Signature

Printed Name

Contractor
Mike Barry, Vice President
AQWA, Inc.

ENGINEER'S REPORT

FOR

BILAFER TS-II SEPTIC SYSTEM

301 ROBINSON ROAD

MOORESVILLE, IREDELL COUNTY, NC

Report #: 2022-05-22

April 24, 2024

PREPARED FOR:

Jenny Haley
1011 Heather Drive
Kannapolis, NC 28020
(704) 305-9723

PREPARED BY:

Piedmont Design Associates, P.A.
125 East Plaza Drive, Suite 101
Mooresville, NC 28115
Phone: (704) 664-7888
Fax: (704) 664-1778
NCBELS #: C-1007



February 19, 2024
Preconstruction meeting held with Piedmont Design Associates, PA, Installer Jamie O'Daniel.

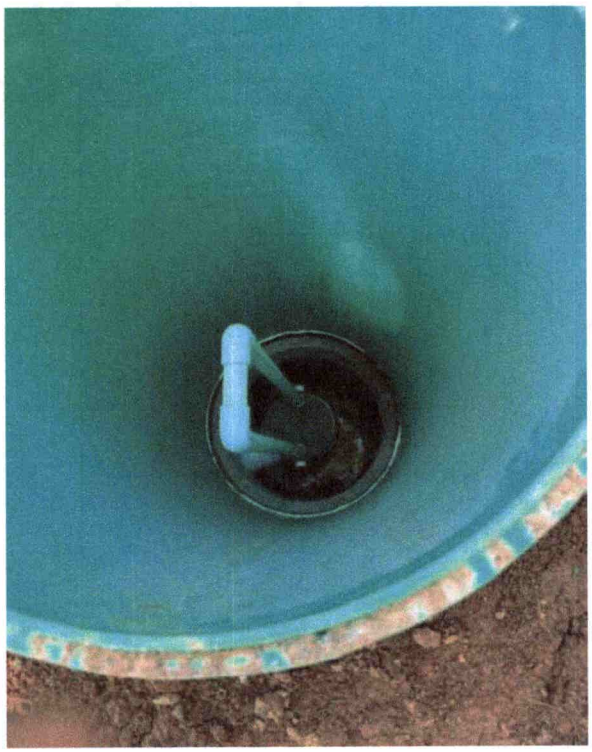
Gave notice to proceed to installer after walking drainfield and site with installer and notified LSS. Noted that fall from house was causing tanks to be too deep so adjusted and told installer to install extra deep tanks (thickened top slabs) and omitted AX-20RTUV and installed separate recirculation tank, pump tank with UV and AX-20.

March 13, 2024
Tanks installed and vacuum tested all three on tank yard with Shoaf.

April 23, 2024
At startup, AQWA representative, Installer, owner and Engineer went through the entire system and verified operation of the treatment and disposal system. Several location in the drainfield were noted to be corrected and were adjusted by the installer at that time.



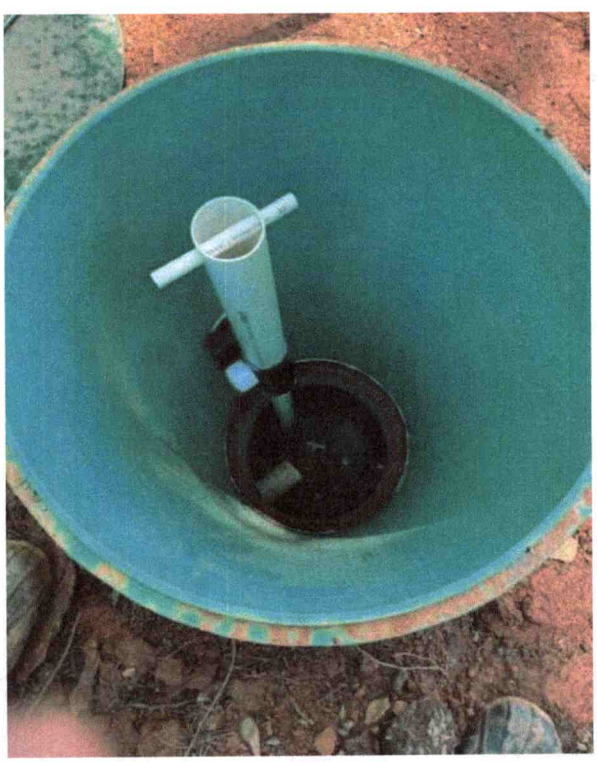
Tank plumbing prior to backfill.



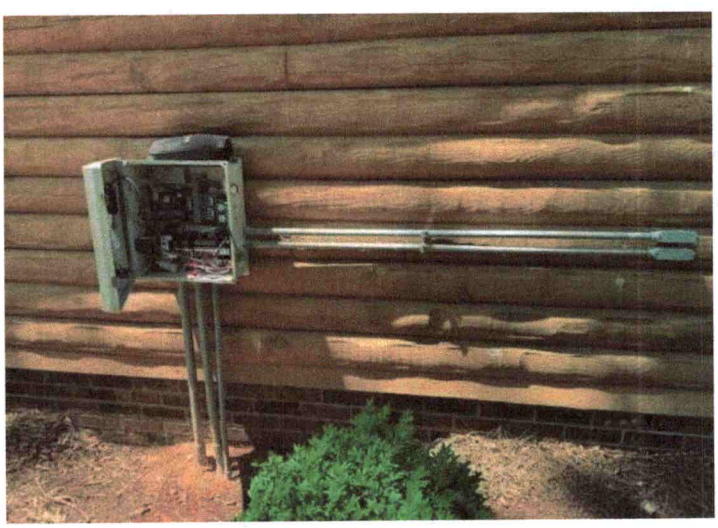
Septic tank filter on outlet end.



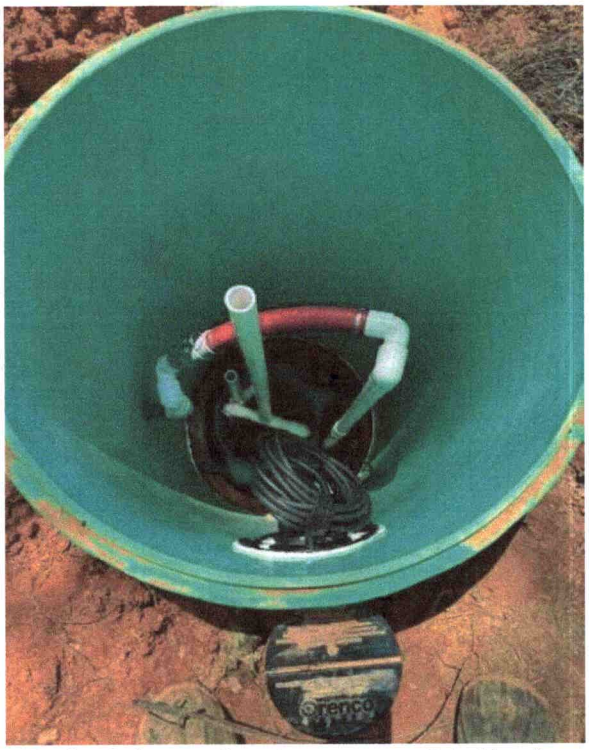
Treatment Area around tanks



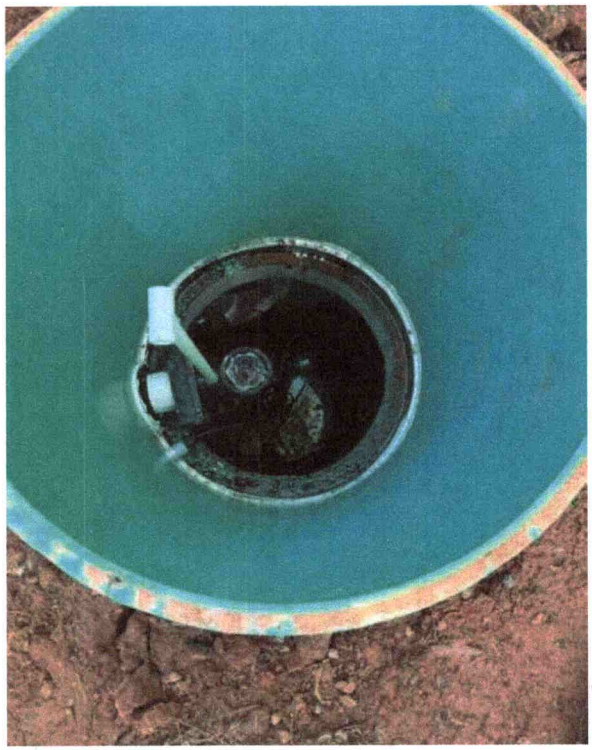
Recirculation splitter valve on inlet side of recirculation tank.



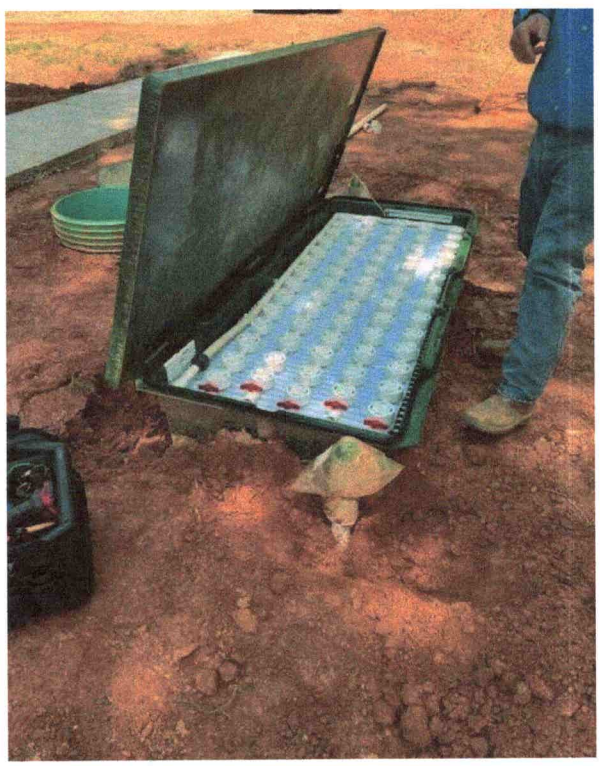
Control panel mounted on side of residence adjacent to treatment units



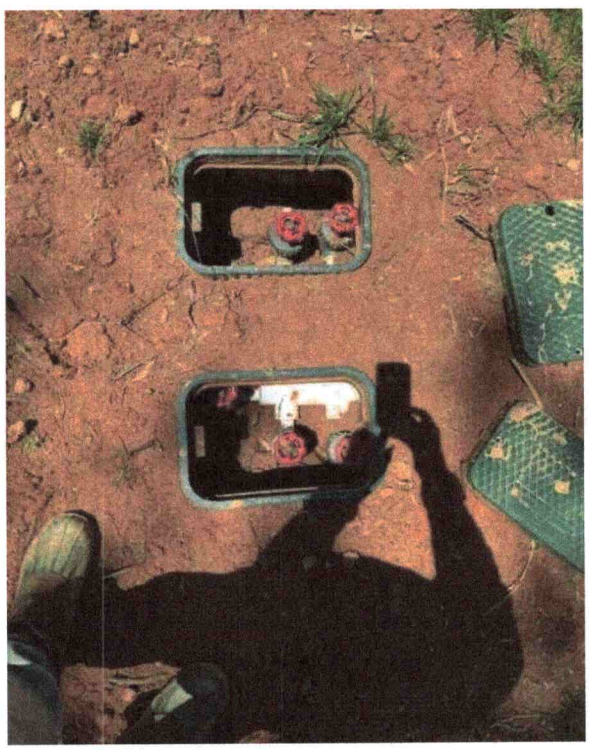
Recirculation vault and pump on outlet side of recirculation tank.



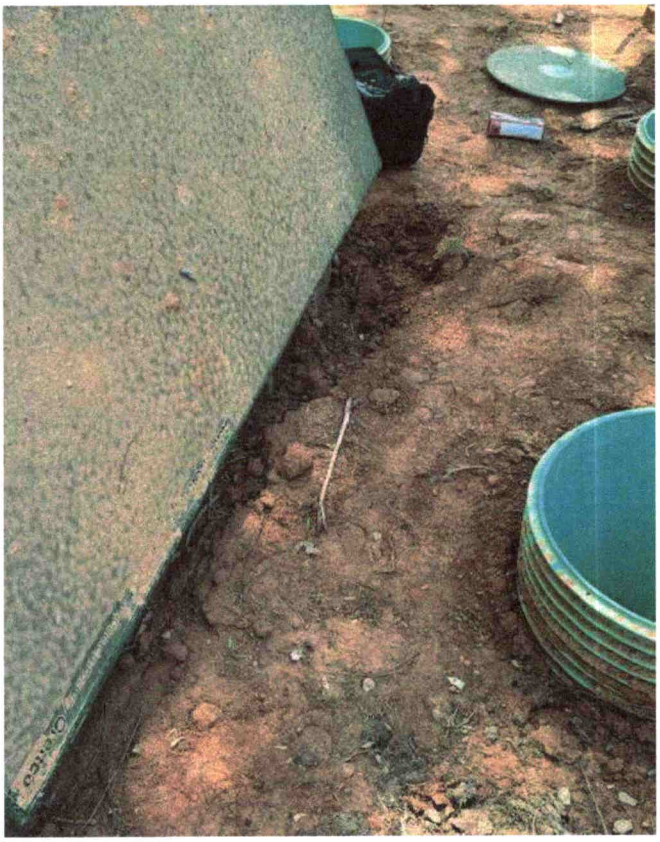
UV Light on inlet side of pump tank.



Advantex AX-20



Central Valve Box for LP Panels. Head Set at 3 Ft.



Settling around treatment pod to be addressed by installer



Downspout drains recommended to owner to divert around drainfield perimeter

Operations and Maintenance
Sanitary Wastewater Treatment
& Disposal System

For

301 Robinson Road
Mooresville,
Iredell County, NC

Prepared for:

Jenny Haley
1011 Heather Drive
Kannapolis, NC 28020

April 24, 2024

OPERATION AND MAINTENANCE

The system is classified as Type IVa. The Regulations requires that the system be operated by a licensed ORC. Visitation is 2 times per year and reporting once per year. The Regulation further requires the system be reviewed by the health department at a frequency of every 3 years.

Procedures shall include but not be limited to the following:

- Minimum inspection/maintenance frequency by ORC shall be 2 times/year.
- Inspect and replace UV light and clean the effluent filter & recirculation filter on an as required basis (a minimum on 1 time per year).
- Septic tank shall be pumped every 5 years or when solids accumulate to 1/3 the volume of the tank.
- All piping and fittings shall be checked annually for damage and/or proper operation and corrections made immediately.
- The property should be inspected to ensure all surface water is diverted away from the fields and tank. Any ponding of surface water should be corrected immediately by placing topsoil in low spot, seeding and mulching immediately.
- Grasses shall be mowed & maintained and any erosion shall be corrected promptly. A healthy stand of grass shall be maintained by periodic liming and seeding.
- The nitrification field area shall be checked for leakages, blowouts or malfunction, indications of damp or mushy areas compared to surrounding area or evidence of noticeable odor of sewage. Repairs shall be made immediately.
- Float switches shall be checked for free operation and proper level set.
- Check septic tank and pump tank for evidence of damage or leakage. Check the quality of effluent including grease and sludge accumulation.
- Check and reset pressure head on each lateral. (See pressure head adjustment).

PRESSURE HEAD ADJUSTMENT: The pressure head must be adjusted to match that specified in the design. The pressure head is measured, as the height liquid will rise above the turn-up elbow when the pump is running. To adjust the head:

(a) Glue a 3' length of pipe (preferably clear) to a threaded adapter that will screw onto the turn-up adapters. (Call this the "test tube".)

(b) Replace the turn-up cap with the "test tube".

(c) Turn the pump on to allow liquid to rise in the "test tube".

(d) Adjust the valve at the head of each lateral in central valve box until the effluent reaches the desired height in the "test tube". Remember to include the distance below the ground surface to the lateral line when measuring the height. The pressure head should be 4' for each line. This is the height above the lateral the liquid should be in the temporary "test tube". Continue to adjust valves until all "test tubes" have an equal amount of liquid.

SPECIFICATIONS, CALCULATIONS, & SUPPORTING MATERIAL

FOR A GROUND ABSORPTION SEWAGE DISPOSAL SYSTEM

USING SEPTIC TANK, TS-II ADVANCED TREATMENT,

AND A LOW-PRESSURE PANEL BLOCK SYSTEM

TO SERVE A 4 BEDROOM RESIDENCE

301 ROBINSON ROAD

MOORESVILLE, IREDELL COUNTY, NORTH CAROLINA

June 28, 2022

Prepared for:
Marvin Brothers & Jenny Haley
1011 Heather Drive
Kannapolis, NC 28020
Phone: (704) 305-9723

Prepared by:
PIEDMONT DESIGN ASSOCIATES, P.A.
125 East Plaza Drive, Suite 101
Mooresville, NC 28115
Phone: 704-664-7888
Fax: 704-664-1778
NCBELS No.: C-1007



Ground Absorption Sewage Disposal System
301 Robinson Road, Mooresville, Iredell County, NC

INTRODUCTION AND DESIGN CONSIDERATIONS

Marvin Brothers & Jenny Haley need to repair an existing septic system serving a 3-bedroom residence. Area is available for a 4th bedroom; therefore, the Engineer is advising the Owner to install the current septic system for an additional bedroom with repair for a 4th bedroom. By adding additional drainfield, this will allow for the system to utilize a lower loading rate due to no increase of flow. The system is currently being used as a summer weekend getaway for the immediately family and is not used full time. The current residence is located at 301 Robinson Road in Mooresville, Iredell County, North Carolina. Chris McGee, LSS evaluated the soils on the site and determined that a Low Pressure PPBPS system be used with a portion of the system located between the 30-foot lake buffer and 50-foot lake buffer. Since of the proposed septic system repair will be installed within buffer for Lake Norman, TS-II advanced treatment will be used to allow for disposal of subsurface effluent within this area.

Directions to the property are as follows: From Highway 150 in Mooresville, travel west toward Highway 150 bridge at Iredell County and Catawba County Line. Before Big Daddy's restaurant, turn right on Robinson Road. Lot is on left side of the road.

The new system, along with proper care and maintenance, should provide many years of quality effluent treatment and disposal.

The Engineer is proposing a new top seam 1,000-gallon septic tank with baffle wall and effluent filter, (1) Orenco AX-20RTUV treatment module with integrated UV disinfection, recirculation tank and pump tank and low pressure PPBPS laterals installed with a 36-inch trench bottom per recommendation by Chris McGee, LSS.

There is an existing well serving this site located on site. The well is located more than 50 feet from any of the septic system components.

The residence's sewer collection system shall comply with the latest Volume II NC Plumbing Code.

The following publications shall be a part of these specifications. Any deviation between them and these specifications shall be brought to the attention of the engineer for clarification.

(1) LAWS AND RULES FOR GROUND ABSORPTION SEWAGE TREATMENT & DISPOSAL SYSTEMS. NC Department of Health and Human Services; On-Site Water Protection Section; Administrative Code Section 15A NCAC 18A.1900, amended effective date: August 2007.
(2) GUIDANCE MATERIAL, Onsite Wastewater Management, March 1996, NC DENR Onsite Wastewater Section.
(3) INNOVATIVE WASTEWATER SYSTEM APPROVAL IWWS-2004-3-R3. (Orenco Systems, Inc. Advantex Systems)
(4) DESIGN AND INSTALLATION (Manual) OF LOW-PRESSURE PIPE WASTEWATER TREATMENT SYSTEMS By: Craig Cogger; Bobby L. Carlisle; Dennis Osborne; Ed Holland Published by: UNC Sea Grant College Pub. UNC-SC-82-03 May 1982.
(5) Design, Installation and Maintenance of the T & J Panel Wastewater Treatment System, Updated 2020.

COMPONENTS OF SYSTEM

Proposed collection system installed according to the NC Plumbing Code, local plumbing, and ASTM D2321 latest revision.

1 – New 1,000 Gallon Septic Tank with Effluent Filter
1 – Advanced Treatment Module (Orenco Advantex AX-20RT) with integrated recirculation and pump tank.
1 – UV Disinfection Unit (with bulb) in Advantex Unit
1 – Central Valve Box
1 - Simplex Control panel with alarm (both audible and visual for advanced treatment).
Low Pressure Panel Block Distribution Network

***Adequate area for 1 bedroom is available for repair utilizing low pressure panels and has been shown on site plan.**

GENERAL REQUIREMENTS: The Contractor shall furnish, install, test, place into service and warrant the complete system. The major system components, septic tank, slotted effluent filter, textile filter (with integrated recirculation and pump tank) UV disinfection unit, pumps, central valve box, controls, and nitrification field. Accessories shall be supplied by a single operating entity and shall be equal to that as specified.

Three sets of submittal documents and shop drawings for all mechanical equipment and major materials including piping, tanks, and all other accessories shall be furnished to the Engineer for approval if deviated from the plans and specifications. No equipment shall be installed prior to approval by the Engineer.

PRECAST STRUCTURES - GENERAL: This section shall apply to all new precast tanks as shown on the Contract Drawings.

APPROVALS: The tank shall be NCDHHS-OSWP Section approved and equal to that manufactured by Shoaf Precast, Inc and shall have the approval number imprinted on the delivered tank. Openings or inserts shall be cast in during manufacture. Concrete shall have a minimum compressive strength of 4,000 PSI @ 28 days. Shop drawings shall be submitted to the Engineer for approval. If tank is to be in traffic area, then tank shall be constructed to meet H-20 highway loadings. The new tank shall be top seam only.

PRECAST TANK INSTALLATION: Installer shall excavate for and install precast concrete tank as per plans. Installer shall ensure that the tank remains level and true to grade after placement and filling with water. Tank shall be installed in the location and to the elevations shown on the plans. A 6" undercut shall be made to allow for washed stone leveling course for the tank to rest on.

SEPTIC TANK: The new septic tank shall be 1,000-gallon capacity, precast concrete with full baffle. The tank shall have approved access risers with lids to allow easy access to each chamber from ground level. The first chamber of the septic tank shall consist of 2/3 to 3/4 of the volume of the total tank and the baffle shall contain a horizontal opening across the tank at about midway its height. Locate the septic tank at such elevation to accept drainage from the residence. Access holes and covers shall be DHHS approved as called for on the plan. Tank shall be a top seam only. The tank shall bear a manufacturer's serial number and be supplied by a manufacturer approved by DEH. The outlet tee of the tank shall have an effluent filter as specified on the plans.

SEPTIC TANK FILTER: An Orenco Model FTP0436-28 micro-filter with 1/16-inch infiltration shall be at the outlet end in the second septic tank. Handle for the filter shall be extended to be within 12 inches of the underside of the riser access lid. The filter shall be manufactured by Orenco Systems, Inc., 814 Airway Avenue, Sutherlin, Oregon 97479. (800) 348-9843. Filter is available through AQWA at (888) 552-2792.

TANK TESTING: The tank shall be tested for water tightness by an approved method such as 24-hour water tightness test with maximum allowable leakage not to exceed ½ inch per 24 hours. Testing shall begin after the water level in the tank has stabilized. Any leaking shall be corrected, and the tanks retested. As an alternate to a watertight test, contractor shall employ the tank manufacturer to run a vacuum test on the tank for 2 minutes. Required vacuum pressure is required to be 5 in/Hg and hold that for 2 minutes.

Once testing of the tank has been completed, the tank shall be backfilled in lifts with well compacted, debris free earth to a level, which directs surface water away from the tanks. Tank access holes shall be installed and epoxied watertight and the earth raked smooth for grassing. Grade over the tank shall be sloped to prevent surface water from entering the tank through the access. Risers shall be installed with lids 6 inches above finished grade.

ADVANTEX TEXTILE FILTER: One textile-containing packed bed media filter module model AX-20RTUV with cover shall be used, one module per 480 gallons per module per day. The module shall be as described in manufacturer's literature attached herein.

The module shall be pressure dosed with effluent filtered from the septic tank. Discharge from the module shall be collected in solid PVC pipe with gravity flow into the lower chamber of the unit. Effluent shall be recirculated over the textiles located above the recirculation chamber. If effluent levels are elevated enough, effluent shall pass through to the UV disinfection located within the unit. In the second chamber of the unit, the effluent shall be dosed to the drain field based on a predetermined demand dose volume set in the final dosing chamber.

The Advantex Textile packed bed media filter module shall be designed installed and operated to meet the following treatment standards (TS-II):

1. Biochemical Oxygen Demand, 5-day (BOD_5) < 10 mg/l
2. Total Suspended Solids (TSS) < 10 mg/l
3. Ammonium-nitrogen (NH_3-N) < 10 mg/l
4. Total Nitrogen (TN) (TKN+Nitrate+Nitrite) <20 mg/l or >60% Removal
5. Fecal coliform bacteria densities < 1,000 colonies/100 mL

   Standards are arithmetic means, except fecal coliforms is a geometric mean.

Advantex Unit and all associated appurtenances are available through AQWA at (888) 552-2792.

UV DISINFECTION: A UV disinfection unit model UV-125/3-P manufactured by Orenco shall be installed per the detail on plan sheet U-2 and in the specifications. The UV bulb, wiring and controls need to be installed at this time. Pipe shall be primed and glued prior to installation. Unit is available through AQWA at (888) 552-2792.

CONTROL PANEL: Control panel for the advanced treatment unit shall be mounted 36" or more above grade and readily accessible. The unit shall be as manufactured by Orenco Systems, Inc. The treatment system control panel shall be designed to control the treatment unit dosing pump. The control panel shall be provided factory pre-wired and tested in a NEMA 4X lockable fiberglass enclosure which shall contain the following components. Motor contactors and circuit breakers for use with 230V AC 1 Ph current using a max 1½ HP motor, programmable logic unit shall include time functions, elapsed pump run clock and pump cycle counter, motor function, valve controls and float input function and fused transformer for valves. An audiovisual alarm condition light and siren shall be mounted on the top of the panel and include a separately fused transformer. The unit shall have a hand-off-auto (H-O-A) switch. Product shall be as supplied by AQWA at (888) 552-2792.

The controller shall be able to perform the following functions: receive input for floats and provide operator set timer-controlled pump operation.

Floats, pump and control circuits, and the control panel shall meet the requirements of Rule .1952(c). Panel and control equipment shall include lightning protection, be protected from unauthorized access, and always remain accessible to the system operator.

The activation of any alarm shall result in the activation of a dry and a 120 V powered alarm contacts. These contacts may be used to activate externally mounted alarm devices and telemetry systems. The alarm contacts will automatically reset when the R/O-N Switch for the activated alarm is placed in the reset / off position.

Panel Operation:

- High Level Alarm Float: When lifted this float will activate the audible alarm and the illuminated pushbutton.
- Pump Enable Float: When lifted this float will activate the normal dose function.
- Redundant Off & Low-Level Alarm Float: When lowered this float will activate the audible alarm and illuminated pushbutton. This float will also deactivate the pump in both auto and manual.
- Pump Operation: The pump dosing cycles will be controlled by the liquid level in the tank.

Components Include:

- Motor contractor & circuit breaker rated for use with 230VAC, 1Ph and 1 Ph max
- Top mounted audiovisual alarm (360 degree flashing red light and 90dB minimum)

FLOAT SWITCHES: Water level float control switches shall be equal to Orenco System, Inc., mercury, or mechanically activated switches, with cable of adequate length to terminate in the pump control panel. No splicing of wire allowed between switches and control box. Use mercury switched on control circuits and properly rated mechanical switches on power circuits. Conduit between the pump tank and he control panel shall be sealed to prevent sewer gas from entering the control panel. The dosing tanks shall have 3 float switches, a low-level "pump off" switch, a "pump enabling" float and at "high water alarm" float. Floats shall be hung from a PVC bracket attached to the riser of the pump flow inducer assembly. Handle shall be within 12 inches of lid of riser. Float clamps or brackets shall be supplied by the manufacturer. The lower-level control or "pump-off" must be positioned above the pump, so that the pump always remains submerged. The upper-level control "pump-enabling" is positioned to pump a specified volume of effluent or assures that a full dose is available for dosing. The "high water alarm" control float is mounted above the "pump enabling" float. (+/-6-inches). (Note: Care must be taken to ensure that floats do not become fouled by other components in the tank such as the electric power cord or the lifting rope.)

PIPING: All piping and fittings shall be Schedule 40 PVC except LPP piping in the panels shall be PR160 PVC. Glue for all PVC pipe joints shall be as recommended by the pipe manufacturer. Supply pipe shall be 1.5-inch PVC to reduce the amount that drains between doses and decrease the amount of time it takes to pressurize the force main. The force main shall be installed where in drops down below the outlet pipe from the discharge side of the Orenco AX 20RTUV. The depth of the supply line to the central valve box shall be installed at a depth where it is 12 to 18 inches below the inlet elevation of the panel block laterals. The purpose of this installation method is to allow for the supply main to maintain as much volume as possible without discharging into the laterals after the pump stops. The discharge from the Orenco AX 20RTUV is 1.5-inch. Contractor shall install an Orenco anti-siphon assembly.

PUMP: The submerged pump shall be Orenco PF Series Model PF300512 1/2HP/1PH/230V manufactured by Orenco capable of pumping 31.0 G/M at 15.94' total dynamic head. Contractor to verify electrical prior to ordering pump.

FITTINGS AND VALVES: All fittings and valves within this piping system shall be PVC ball valves capable of sustaining the working pressure and imposed loads. The fittings and valves shall be compatible with the pipe used. Valves shall be PVC Ball Valves with seats of self-lubricating Teflon and seals of Viton "O" rings with bell and faucet connections or as approved by the engineer.

The Contractor shall be required to provide as many tests and/or certifications as the Engineer may deem necessary for materials, such as concrete, piping, valves, steel reinforcement, all fasteners and anchorage systems, etc.

NITRIFICATION FIELD: Lay out the nitrification field and valve network area with stakes and flagging. As soon as the absorption area and repair areas are designated, they should be identified, barricaded, and protected from construction traffic. This barrier should be maintained until the system is accepted by the Owner. Refer to site plan for the size of absorption area. Maintain 5 feet from any property lines, 30 feet from lake and 15 feet from top of cut slopes greater than 2 feet and all other setbacks.

NITRIFICATION TRENCH: Furnish and install all items required for a complete system in accordance with plans and specifications.

CONSTRUCTION SEQUENCE:

(1) Lay out T & J, 16" high, panel system network area with stakes and flagging to ten feet (minimum) beyond the limits of the network. As soon as the absorption area is designated, it shall be flagged, roped off and isolated from construction traffic. This barrier should be maintained until the system is accepted by the Owner. Refer to site plan for the size of absorption area. See site plan for lateral locations.

(2) Prior to beginning construction of the system, carefully locate, lay out and identify disposal site, manifolds and the lateral panel piping networks, using a tripod mounted engineer's leveling instrument to accurately establish each lateral along a level contour. Note: Lateral panel runs which conflict with cut-off-in-place stumps or trees shall "snake" by with a 12" minimum trench clearance and then continue along its projection run. (The 8' minimum trench separation must be maintained.)

(3) Excavate for and construct curtain drain (if shown on the plan.)

(4) Excavate lateral network trenches 24" W and 36" Deep (see detail). Remove loose soil from bottom of trench.

(5) Install sand in bottom of the lateral trench to the proper depth.

(6) Follow the manufacturer's guidelines for installing the T & J Panel System.

(7) All joints in lateral and the manifold piping shall be watertight connections to ensure that the only source of the water seepage from the system is through the orifices as designed. See layout and details. Carefully install manifold and lateral network according to the attached designed layout. A larger diameter protective sleeve with cap or approved box with lid shall be placed over the turned up lateral and positioned level with the ground surface (so as not to be damaged by mowing machine.)

(8) Carefully backfill manifold trenches to finish grade with clean (debris free earth (no stone).

(9) Leave absorption area with a raked surface, ready for grassing.

(9) The installation contractor shall stabilize the area of construction by planting and seeding with Kentucky 31 tall fescue and shall keep the planted area watered and mulched until such time that a hardy stand of grass is established. (See Seeding Specification.)

UTILITY CROSSING AND LOCATIONS

The contractor is responsible for locating all services before beginning work on the site. The plans are approximate and may not show all utilities.

WATER LINE VERTICAL SEPARATION: Clear separation distance when a water line crosses over a sewer must be at least 18-inches at the closest point. When conditions prevent an 18-inch clear separation from being maintained, or whenever it is necessary for the water line to cross under the sewer, both the water line and sewer shall be constructed of ferrous materials with mechanical joints equivalent to water main standards for a distance of at least 10 feet on each side of the point of crossing, with full sections of pipe centered at the point of crossing.

STORM DRAIN SEPARATION: Horizontal separation between sewer lines and storm drains shall be at least ten feet. Vertical separation between sewer lines and storm drains at crossings shall be at least eighteen inches at the closest point unless the sewer is of cast iron pipe or encased in concrete for at least ten feet on either side of the crossing.

CONSTRUCTION SEQUENCE

The new tank, treatment, pumps, control panel, distribution device and nitrification field shall be installed complete, tested, and accepted before receiving any waste.

1. Installation of the septic system shall be coordinated with the Owner and Engineer of Record. Scheduling shall be as necessary to comply with overall facility operation.
2. Installation of the system shall be performed to the satisfaction of the Owner, Design Engineer and the LSS.
3. The Contractor shall install all components of the system in strict accordance with the plans and specifications. Upon completion of the system construction, the Contractor shall charge the system with water and go through a complete cycle. Any failure or discrepancy shall be corrected immediately. The Manufacturer of the component and the Contractor shall warrant the component and system for one year from the date of acceptance by the Owner.

*Rule of Thumb: "If soil is too wet to plow, it is too wet to disturb for nitrification field for excavation."

After the system is installed, the following should be checked to ensure that the system would not be overloaded with excess rainwater and run off:

- The distribution field is shaped to shed rainwater and is free of low area.
- All tank access lids shall be inspected for watertight construction, diversion of surface water and secured but readily accessible to all the chambers.
- The recirculation pump shall be checked for proper operation and ease of removal for service or replacement.
- All metal installed in tanks shall be stainless steel.
- Effluent filters shall be accessible and easily removed for servicing.

Installation of the system shall be performed under the supervision of the Engineer and LSS.

The system shall not be operated until the Project Engineer certifies in writing that the system has been installed in accordance with the approved plans and specifications.

The Wastewater System Installation Contractor shall agree to provide a minimum of one-year regular service to the Owner for maintenance and upkeep of this system at no additional cost to the Owner, and such one-year period shall begin from the date of final inspection and acceptance of the system construction by the Owner and the Engineer. After the above one-year period has expired, the Installation Contractor shall offer a continuation of maintenance and upkeep service at a reasonable charge as may be negotiated between the installation Contractor and the Owner. Such service shall include checking the entire system at least monthly, offering quick

response servicing in case of a malfunction of the system (maximum of 24 hours after warning is given by the "Owner's Warning Panel") and performing such servicing of components and replacing of worn or defective equipment as may be necessary to keep the system operating in good condition. If the Installation Contractor will not be willing to agree to the above described one-year maintenance period, then any other time must be acceptable to the Owner and the Engineer.

A set of As-Built plans shall be prepared by a Professional Surveyor licensed to practice in the State of North Carolina. The Surveyor shall be hired by the Contractor to perform the work. The Contractor shall provide the "As-Built" plans to the Engineer. The Engineer shall provide the signed and sealed "As-Builts" to the Engineer and Owner which will show actual vertical and horizontal location and design of all system components and contain a complete list of all mechanical equipment installed whenever any deviations were made from the approved plans and specifications. The Contractor shall forward to the Engineer two bound sets of all manufacturer's component data along with the "As Built" data.

OPERATING PERMIT

1. An Operation Permit may be issued by the Local Health Department after all conditions of the improvement permit have been met; the Design Engineer certifies in writing that the system has been installed in accordance with the approved plans and specifications.

2. The operation permit shall include description of facilities served and sewage system components, as-built plans and specifications, legal documents, operation and maintenance manual, monitoring and performance requirements, and other operating conditions deemed appropriate.

OPERATING CHECK AND ADJUSTMENTS

1. After permanent power has been connected and all components of the system have been installed, the contractor shall schedule a time for the checking of the system for proper operation. The check shall be performed in the presence of the Design Engineer, Septic System Contractor, and Owner. Any discrepancies shall be corrected until the system operates as designed.
2. Fill the septic tank and treatment unit with water.
3. Inspect collection system for line, grade, inverts, infiltration, and leakage.
4. With turn ups installed at the end of the laterals, contractor shall turn on the pump. Once all the laterals have been filled with treated effluent, the contractor shall adjust the gate valves at the central valve box so that the head at the end of each of the laterals is 3.0' from top of panel. Once the head has been set, contractor shall remove the test tubes and leave at the site, close valve box, and set drawdown on pump based on tank size.

OPERATING MAINTENANCE

This work shall be performed only by operators knowledgeable of the system. Operation, Maintenance, and Inspection Procedures shall include but not be limited to the following:

- Enter a contract with a licensed septic tank operator to inspect and clean effluent filter in septic tank and recirculation tank.
- Minimum system inspection/maintenance frequency shall be a minimum of every 6 months, however more frequent inspection is recommended. This system is classified as a (Type Va) Reporting required every 6 months and inspection by the Local Health Department once a year.
- Septic system shall be inspected annually and shall be pumped a minimum of every three years or when solids accumulate to 1/3 the volume of the tank.
- The system should be observed by one, three, six and nine months after initial installation, and every 6 months thereafter. An inspection report should be completed and filed each time the system is checked.
- The pump control timer shall be checked to verify that the pump run time is correct to ensure the correct dosing volume in the recirculation tank. Adjustment shall be made as required.
- Pressure head at the advanced treatment unit should be checked and adjusted one month after installation and annually thereafter.
- All piping and fittings shall be checked annually for damage and/or proper operation and corrections made immediately.
- The property should be inspected to ensure all surface water is deflected away from the fields and tank. Any ponding of surface water should be corrected.
- Grasses shall be mowed and maintained, and any erosion shall be corrected promptly.

- The nitrification field area shall be checked for leakages, blowouts or malfunction, indications of damp or mushy areas compared to surrounding area or evidence of noticeable odor of sewage. Repairs shall be made immediately.
- The recirculation pump electrical panel and wiring should be checked to insure tight, clean connections with no corrosion and proper operation.
- Pump switches shall be checked for free operation and proper level set.
- Check septic tank and treatment unit for evidence of damage or leakage. Check the quality of effluent including grease and sludge accumulation.

The current system owner(s) (**Marvin Brothers & Jenny Haley** and subsequent owners) shall establish an operation and maintenance program and procedure based on experience obtained from similar installations.

The current system owner(s) (**Marvin Brothers & Jenny Haley** and subsequent owners) shall be responsible to comply with all above operating and maintenance procedures in addition to any so specified on the operation permit issued by the Iredell County Health Department or may be necessary in the future for the operation of the system to meet all public health laws, rules and regulation regarding the wastewater system.

Failure to comply with these operating and maintenance procedures will necessitate immediate legal action by the Iredell County Health Department to suspend or revoke the operation permit.

OWNERSHIP RESPONSIBILITY FOR THE SYSTEM:

It must be kept in mind that this system is designed to accept a moderate amount of wastewater at domestic waste strength (which is call the EFFLUENT), in a minimal water absorbing soil.

Conservation measures must be undertaken by all members of the operation to minimize the volume and strength of wastewater entering the disposal system, including, but not limited to, the following:

(a) Provide water conserving plumbing fixtures within the facility. Installing water closets that require no more than 1.6 gallons per flush.
(b) Develop conservative water use habits.
(c) Monitor and maintain the system as necessary for proper operation. Establish a procedure to read and record water meter readings monthly. Retain records.
(d) Check and pump the grease trap and septic tank sludge on a regular basis as will be specified in the operating permit or as may be required.
(e) Make rapid repairs to leaking plumbing fixtures and faucets.

DESIGN SPECIFICATIONS
4 Bedroom Residence
301 Robinson Road
Mooresville, Iredell County, North Carolina

Design Flow:	Existing 360 G/D | Proposed 480 G/D
LTAR:	0.30 G/D/SF (Primary) & 0.30 G/D/SF (Repair)

SYSTEM TREATMENT

Septic Tank:	(1) 1,000 Gallon Precast Concrete with Baffled Wall (Top seam)
Septic Tank Effluent Filter:	(1) Orenco Model FTP0436-28
Advanced Treatment Technology:	(1) OSI Advantex AX-20RTUV Textile Filter (TS-II)
Control Panel:	(1) Orenco VCOM-AX20B2/PTHTUVSA
UV Disinfection:	(1) Orenco UV-125/31-P

NITRIFICATION FIELD

Trench Type:	LP PPBPS (Low Pressure Panels)
Supply Force Main Length:	+/-50 LF 2" SCH 40 PVC
Total Linear Feet of New Laterals:	(6) Laterals at Various LF Each (36-Inch Trench Bottom) (1) 10 Panels (2) 11 Panels (3) 11 Panels (4) 12 Panels (5) 9 Panels (6) 9 Panels
Number of Panels:	62 Panels
Flow per Panel:	0.50 G/M with 5/32" Dia. Orifices (1 per Panel)
Total Network Flow:	31.0 G/M
Pressure Head:	3.0 Ft.
Static Head:	8.0 Ft.
Friction Head:	4.85 Ft.
Total Dynamic Head:	15.85 Ft.
Recirculation Pump Required:	Use Orenco Model PF3005-12
Drainfield Pump Required:	Use Orenco Model PF3005-12
Total Dose Volume:	119.00 Gallons (53.32% Panel Volume/Dose)
Pump Run Time:	3.84 Minutes
Check Valves:	(1) 2-Inch Swing Check Valve
Anti-Siphon:	Yes (Orenco Assembly)

SEEDING SPECIFICATIONS

SLOPES 3:1 or FLATTER

1. Apply agricultural lime at the rate of 90 lb/1000 sf.
2. Apply 10-10-10 commercial fertilizers at the rate of 20 lb/1000 sf.
3. Seed in accordance with the following schedule and application rate:

DATE	TYPE	PLANTING RATE
Aug 15 - Nov 1	Tall Fescue	200 lb/ac or 7 lb/1000 sf
Nov 1 - Mar 1*	Tall Fescue and	200 lb/ac or 7 lb/1000 sf
	Abruzzi Rye	25 lb/ac or 2 lb/1000 sf
Mar 1 - Apr 15	Tall Fescue	200 lb/ac or 7 lb/1000 sf
Apr 15 - Jul 30	Hulled Common or Bermuda	30 lb/ac or 1 lb/1000 sf
Jul 15 - Aug 15	Tall Fescue and	200 lb/ac or 7 lb/1000 sf
	Brown Millet or	35 lb/ac or f lb/1000 sf
	Sorghum-Sudan Hybrids	30 lb./ac or: lb./1000 sf

4. Mulch with straw applied at the rate of 75-100 lb/1000 sf.

* Heavily mulched during January - March period.

SLOPES GREATER THAN 3:1 TO 2:1

1. Apply agricultural lime at the rate of 90 lb/1000 sf.
2. Apply 10-10-10 commercial fertilizers at the rate of 20 lb/1000 sf.
3. Seed in accordance with the following schedule and application rate.

DATE	TYPE	PLANTING RATE
Mar 1 - Jun 1	Sericea Lespedeza (scarified) &	50 lb/ac or 11 lb/1000 sf
Mar - Apr	Add Tall Fescue or	150 lb/ac or 32 lb/1000 sf
Mar - Jun	Add Weeping Lovegrass	5 lb/ac or c lb/1000 sf
Jun - Sep 1**	Tall Fescue and	60 lb/ac or 12 lb/1000 sf
	Brown Top Millet	35 lb/ac or f lb/1000 sf
	Sorghum Sudan Hybrids	30 lb/ac or: lb/1000 sf
Sep - Mar 1	Sericea Lespedeza (Unhulled-unscarified)	70 lb/ac or 1: lb/1000 sf
	Tall Fescue	150 lb/ac or 32 lb/1000 sf
	Millet or Sudan	20 lb/ac or 2 lb/1000 sf

** Temporary - Reseed September 1 at recommended rates.

4. Mulch with 3" straw applied at the rate of 50-90 lb/1000 sf and anchor with asphalt emulsion tack coat applied at the rate of 3-5 gal/1000 sf or 200-300 gal/ac.+

	4	Bedrooms
per Bedroom	120	Gal./Day/Bedroom
Flow (DDF)	480	Gal./Day

Laterals for 50% Reduction in Drainfield Size

R	0.30	G/D/SF	Per Chris McGee, LSS
ch Bottom	1,600	Sq. Ft.	DDF x LTAR
	3		
	533	LF Conventional Lines	(SF Trench Bottom/3)
ng	267	LF 50% Reduction System	(LF Conv. Line x 0.5)

	Flagged LF of Repair	No of Panels	Daily Flow per Lateral		Flow per Lateral	
Orange (R)	61.00	10.00	77.99	G/D	5.00	G/M
Orange (L)	65.00	11.00	85.79	G/D	5.50	G/M
Yellow (R)	65.00	11.00	85.79	G/D	5.50	G/M
Yellow (L)	70.00	12.00	93.59	G/D	6.00	G/M
Purple (R)	40.00	9.00	70.19	G/D	4.50	G/M
Purple (L)	40.00	9.00	70.19	G/D	4.50	G/M
Purple (Repair)	*20.00*	*4.00*	*31.20*	*G/D*	*2.00*	*G/M*
Orange (Repair)	*61.00*	*14.00*	*109.19*	*G/D*	*7.00*	*G/M*
	341.00 LF Primary Total				483.56	Primary Flow
					140.39	*Repair Flow*

ne

s	62	Panels	(Per Panel Design Manual)
e (Max)	3.60	Gal./Panel	(Per Panel Design Manual)
	119.00	Gal./Dose	2 Doses per Day
me	3.84	Minutes	Actual Volume to Panel/Dose
ead	3.00	Feet	(Orifice Flow Rate x # of Panels)
)ose	1.92	Gallons	
e	53.32%		
se 5/32" Diameter Hole			(Per Panel Design Manual)
er Panel	0.50	G/M	(Per Panel Design Manual)
ate	31.00	G/M	(No. of Panels x Orifice Flow Rate)
tatic Head	8.00	Feet	640.00-621.75

for 2.0" Force Main and 1.25" Supply Laterals

	Friction Loss (Feet)	Pipe Length (Feet)	Q (GPM)	Pipe I.D. (Inches)
	0.42	76.00	5.00	1.380
	0.50	76.00	5.50	1.380
	0.64	96.00	5.50	1.380
	0.75	96.00	6.00	1.380
	0.30	66.00	4.50	1.380
	0.30	66.00	4.50	1.380
orce Main	1.13	50.00	31.00	2.067
n & Minor Loss	4.85	Feet		
c Head	15.85	Feet	(Static HD + Friction HD + Oper. HD)	
ed	**31.00**	G/M at	**15.85**	TDH

Use Orenco P3005-12

230 V / 1/2 HP / 1 Phase

Contractor to Verify Power Requirements before Ordering Pump

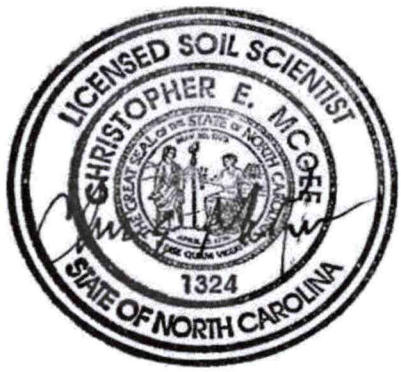
Outer Width	4.83	Ft.		
Inner Width	4.33	Ft.		
Outer Height	5.63	Ft.		
Inner Height	4.96	Ft.		
Water Displaced	15,268.50	Lbs.		Outer Length x Outer Width x Outer Length x 62.4 Lb/CF (Wt of Water)
Wt of Tank	4,306.50	Lbs.	Top & Bottom	Outer Length x Outer Width x 150 Lb/CF x 2 (Top & Bottom) x Slab Thickness
	1,797.40	Lbs.	Ends	Inner Width x Inner Height x 150 Lb/CF x 2 (Ends) x Wall Thickness
	3,160.94	Lbs.	Sides	Outer Height x Outer Length x 150 Lb/CF x 2 (Sides) x Wall Thickness
	1,027.74	Lbs.	Baffle	Inner Width x (Inner Height-3 Inches) x 150 Lb/CF x x Wall Thickness
	10,292.57	Lbs.	Total Tank Wt.	Sum Above four
of Overburden	6,525.00	Lbs.	15" Cover	Outer Length x Outer Width x 120 Lb/CF (Saturated Soil Wt) x Soil Thickness
Total	16,817.57	Lbs.		Sum of Total Tank Wt. & Soil Overburden

Water	**15,268.50**	**<**	**16,817.57**	Tank

ılations Account for Fluid in Tank, Do Not Pump When
ıted or During Extremely Wet Conditions.

Engineers and Soil Scientists

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



Soil & Site Evaluation for Domestic Sewage Treatment and Disposal Systems
301 Robinson Road, Mooresville, NC. 28117
Iredell Co. PIN – 4638-03-8445

PREPARED FOR: Kyle Bilafer, Client

PREPARED BY: Christopher McGee, LSS, Senior Soil Scientist
Trevor Hackney, Environmental Scientist

DATE: June 17, 2022

Soil suitability for domestic sewage treatment and disposal systems was evaluated on February 10, 2022, and June 6, 2022 for the property located at 301 Robinson Road, Mooresville, NC. Chris McGee and Trevor Hackney of Agri-Waste Technology, Inc. (AWT) conducted the evaluation. This evaluation and summary report were completed to fulfill the requirements of an Engineered Option Permit (EOP).

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.

The total property area is approximately 0.64 acres. A home is already on this property. This proposal is for a new system installation for the existing three-bedroom home. The existing system is under the house's foundation and does not meet the setback rules. This property is repair area exempt due to the original deeded date. A surface water drainage ditch runs along the east side of the property which must be filled prior to the new septic system installation at this property. This home will be served by an existing well. The property is adjacent to Lake Norman and therefore subject to the 760' contour buffer.

Soil Suitability for Domestic Sewage Treatment and Disposal Systems

The drawing in Attachment 1 details the property boundaries, soil boring locations, and layout of drain field trenches (completed by AWT). Five soil borings were assessed in and around the proposed drain field area. Soil borings were examined to determine soil suitability for on-site sewage disposal systems in accordance with 15A 18A .1900 Rules

for Sewage Treatment and Disposal Systems. These borings were advanced with a hand auger. All the borings are provisionally suitable for a panel block trench system with vertical placement.

A septic layout was performed to demonstrate available space (.1945). The layout in Attachment 1 indicates there is available space for a four-bedroom (480 GPD) panel block septic system utilizing the 50% reduction of panel block drain field material. TS-II pretreatment will be required to reduce the 760' contour setback to 30'.

The proposed LTAR (Long Term Acceptance Rate) by AWT is 0.3 GPD/ft^2. The soils on this property are group IV soils within the distribution and treatment zone as used to define the LTAR. The usable slope corrected soil depth is 48"; therefore, the maximum trench bottom depth should not exceed 36". With an LTAR of 0.3 GPD/ft^2, 267 linear feet of panel block trench is necessary to support a four-bedroom system. The attached drawing proves that 341' of panel block trenches can be installed at this property for the primary septic system. There is additional drain field area that should be reserved for future repair area if necessary.

Any disturbances or grading which takes place in the usable area or within the proposed setbacks will change the potential of using the area designated for a drain field.

Conclusions

Based on the site findings, AWT is recommending this site for on-site wastewater disposal utilizing the parameters described above. Our evaluation was made in accordance with the "Laws and Rules for Sewage Treatment, and Disposal Systems" 15A NCAC 18A .1900. An engineered design of the system will be required, along with final site approval by a NC LSS in order to meet the requirements of the Engineered Option Permit (EOP).

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

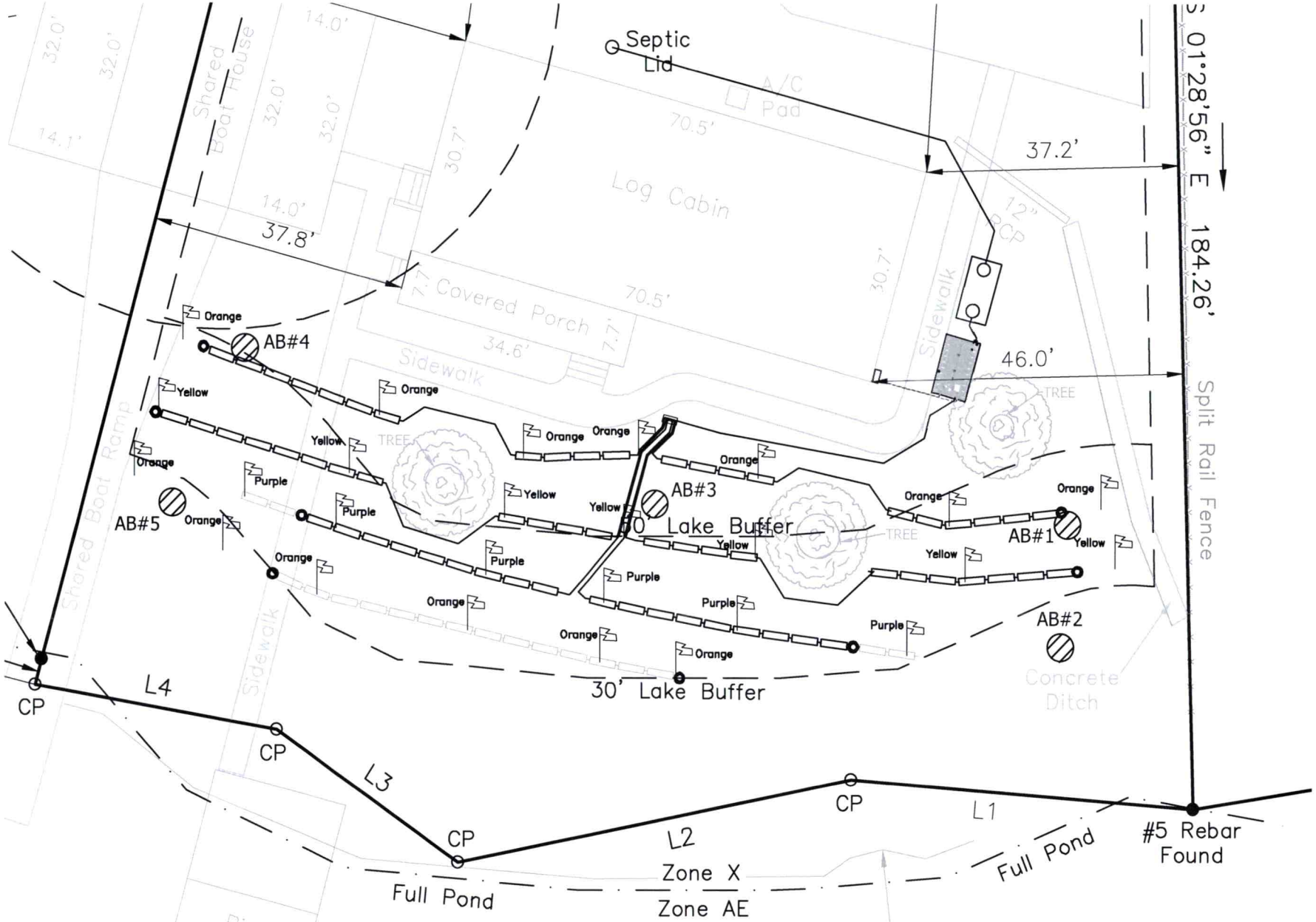
Sincerely,

Christopher McGee, LSS

Trevor Hackney

Trevor Hackney

Attachment 1: Site Map



	Flagged LF of Repair	No of Panels	Daily Flow per Lateral		Flow per Lateral	
Orange (R)	61.00	10.00	77.99	G/D	5.00	G/M
Orange (L)	65.00	11.00	85.79	G/D	5.50	G/M
Yellow (R)	65.00	11.00	85.79	G/D	5.50	G/M
Yellow (L)	70.00	12.00	93.59	G/D	6.00	G/M
Purple (R)	40.00	9.00	70.19	G/D	4.50	G/M
Purple (L)	40.00	9.00	70.19	G/D	4.50	G/M
Purple (Repair)	*20.00*	*4.00*	*31.20*	*G/D*	*2.00*	*G/M*
Orange (Repair)	*61.00*	*14.00*	*109.19*	*G/D*	*7.00*	*G/M*
	341.00 LF Primary Total				483.56	Primary Flow
					140.39	*Repair Flow*

Attachment 2: Soil Profile Descriptions

PROPERTY ID #: _4638-03-8445__
COUNTY: Iredell Co.__

SOIL/SITE EVALUATION
***for* ON-SITE WASTEWATER SYSTEM**
(Complete all fields in full)

CLIENT: _____Kyle Bilafer_(on behalf of owner)_____ _ APPLICATION DATE_____
ADDRESS:____ _____301 Robinson Road, Mooresville, NC. 28117 DATE EVALUATED: __2/10/2022 & 6/6/2022 _
PROPOSED FACILITY: _Single Family Residence___PROPOSED DESIGN FLOW (.1949): ___480 GPD____ PROPERTY SIZE: ___0.64 ac.____
LOCATION OF SITE: 301 Robinson Road, Mooresville, NC. 28117 PROPERTY RECORDED: ____1976_____
WATER SUPPLY: ☐ Private ☐ Public ☒ Well ☐ Spring ☐ Other _____ _____
EVALUATION METHOD: ☒ Auger Boring ☐ Pit ☐ Cut TYPE OF WASTEWATER: ☒ Sewage ☐ Industrial Process ☐ Mixed

PROFILE #	.1940 LANDSCAPE POSITION/ SLOPE %	HORIZON DEPTH (IN.)	SOIL MORPHOLOGY (.1941)		OTHER PROFILE FACTORS				PROFILE CLASS & LTAR
			.1941 STRUCTURE/ TEXTURE	.1941 CONSISTENCE/ MINERALOGY	.1942 SOIL WETNESS/ COLOR	.1943 SOIL DEPTH	.1956 SAPRO CLASS	.1944 RESTR HORIZ	
AB 1	4%	0-6"	SCL; Gr	SS; SP; Fr	-	50"	-	-	Provisionally Suitable 0.3
		6-40"	C; SBK	SS; SP; FI					
		40-50"	CL; WSBK	SS; SP; Fr					
AB 2	6%	0-14"	SCL; Gr	SS; SP; Fr	-	50"	-	-	Provisionally Suitable 0.3
		14-50"	C; SBK	SS; SP; FI					
AB 3	4%	0-10"	SCL; Gr	SS; SP; Fr	-	50"	-	-	Provisionally Suitable 0.3
		10-50"	C; SBK	SS; SP; FI					
AB 4	4%	0-20"	SCL; Gr	SS; SP; Fr	-	50"	-	-	Provisionally Suitable 0.3
		20-50"	C; SBK	SS; SP; FI					

DESCRIPTION	INITIAL SYSTEM	REPAIR SYSTEM
Available Space (.1945)	Provisionally Suitable	Provisionally Suitable
System Type(s)	Gravity Panel Block 50% Reduction (TSII)	LPP Panel Block 50% (1 Bedroom Repiar)
Site LTAR	0.3 GPD/Ft^2	0.3 GPD/Ft^2

OTHER FACTORS (.1946): _____
SITE CLASSIFICATION (.1948): _____

EVALUATED BY: ___Chris McGee_____
OTHER(S) PRESENT: _____Trevor Hackney_____

LEGEND

use the following standard abbreviations

LANDSCAPE POSITION	GROUP	SOIL TEXTURE	CONVENTIONAL .1955 LTAR*	LPP .1957 LTAR*	MINERALOGY/ CONSISTENCE	STRUCTURE
CC (Concave Slope)	I	S (Sand)	1.2 - 0.8	0.6 - 0.4	SEXP (Slightly Expansive)	G (Single Grain)
CV (Convex Slope)		LS (Loamy Sand)			EXP (Expansive)	M (Massive)
D (Drainage Way)						CR (Crumb)
DS (Debris Slump)	II	SL (Sandy Loam)	0.8 - 0.6	0.4 - 0.3		GR (Granular)
FP (Flood Plain)		L (Loam)				SBK (Subangular Blocky)
FS (Foot Slope)						ABK (Angular Blocky)
H (Head Slope)	III	Si (Silt)	0.6 - 0.3	0.3 - 0.15		PL (Platy)
L (Linear Slope)		SiCL (Silty Clay Loam)				PR (Prismatic)
N (Nose Slope)		CL (Clay Loam)				
R (Ridge)		SCL (Sandy Clay Loam)			**MOIST**	**WET**
S (Shoulder Slope)		SiL (Silt Loam)				
T (Terrace)					VFR (Very Friable)	NS (Non-sticky)
	IV	SC (Sandy Clay)	0.4 - 0.1	0.2 - 0.05	FR (Friable)	SS (Slightly Sticky)
		SiC (Silty Clay)			FI (Firm)	S (Sticky)
		C (Clay)			VFI (Very Firm v. Very Sticky)	VS (Very Sticky)
		O (Organic)	None	None	EFI (Extremely Firm)	NP (Non-plastic)
						SP (Slightly Plastic)
						P (Plastic)
						VP (Very Plastic)

*Adjust LTAR due to depth, consistence, structure, soil wetness, landscape, position, wastewater flow and quality.

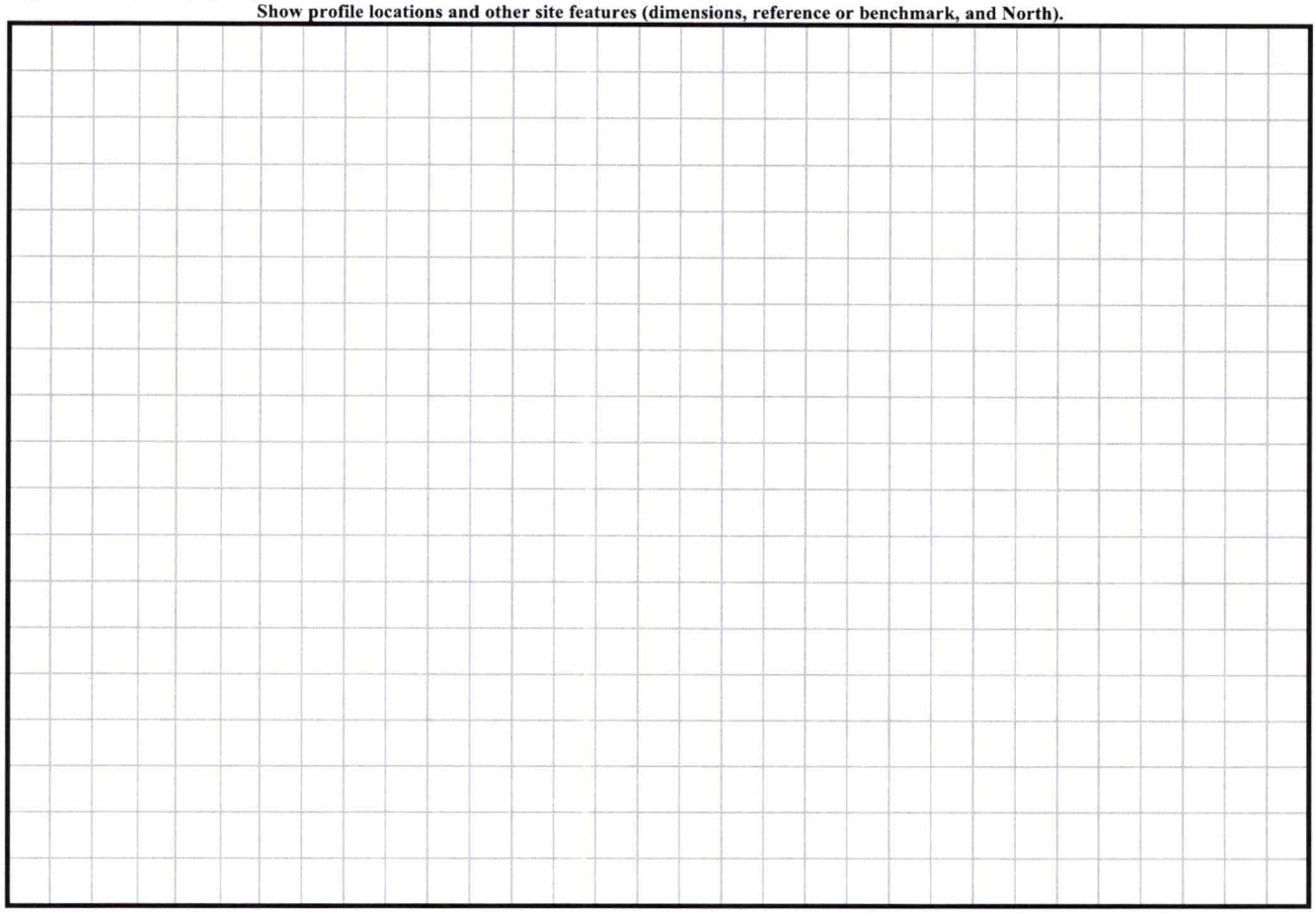
NOTES

HORIZON DEPTH	In inches below natural soil surface
DEPTH OF FILL	In inches from land surface
RESTRICTIVE HORIZON	Thickness and depth from land surface
SAPROLITE	S(suitable) or U(unsuitable)
SOIL WETNESS	Inches from land surface to free water or inches from land surface to soil colors with chroma 2 or less - record Munsell color chip designation
CLASSIFICATION	S (Suitable), PS (Provisionally Suitable), or U (Unsuitable)

Evaluation of saprolite shall be by pits.

Long-term Acceptance Rate (LTAR): gal/day/ft^2

Show profile locations and other site features (dimensions, reference or benchmark, and North).



SOIL/SITE EVALUATION

(Continuation Sheet-Complete all field in full)

PROPERTY ID #: _4638-03-8445_

DATE OF EVALUATION: ___2/10/2022 & 6/6/2022__

COUNTY: _ Iredell Co.__

PROFILE #	.1940 LANDSCAPE POSITION/ SLOPE %	HORIZON DEPTH (IN.)	SOIL MORPHOLOGY (.1941)		OTHER PROFILE FACTORS				PROFILE CLASS & LTAR
			.1941 STRUCTURE/ TEXTURE	.1941 CONSISTENCE/ MINERALOGY	.1942 SOIL WETNESS/ COLOR	.1943 SOIL DEPTH	.1956 SAPRO CLASS	.1944 RESTR HORIZ	
AB 5	6%	0-15"	SCL; Gr	SS; SP; Fr	-	50"	-	-	Provisionally Suitable 0.3
		15-50"	C; SBK	SS; SP; FI					

AGRITEC-01 CGARKALNS

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY) 5/20/2022

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	CONTACT NAME: Connie Garkalns	
Hartsfield & Nash Agency, Inc. 10405 Ligon Mill Rd., Ste H Wake Forest, NC 27587	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	NAIC #
	INSURER A : SELECTIVE INSURANCE COMPANY	39926
INSURED	INSURER B : Accident Fund National Insurance Company	12305
Agri-Waste Technology Inc 501 N. Salem St Ste 203 Apex, NC 27502	INSURER C : Evanston Insurance Company	
	INSURER D :	
	INSURER E :	
	INSURER F :	

COVERAGES **CERTIFICATE NUMBER:** **REVISION NUMBER:**

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	X COMMERCIAL GENERAL LIABILITY						EACH OCCURRENCE	$ 2,000,000
	CLAIMS-MADE X OCCUR			S 2253659	1/18/2022	1/18/2023	DAMAGE TO RENTED PREMISES (Ea occurrence)	$ 300,000
							MED EXP (Any one person)	$ 10,000
							PERSONAL & ADV INJURY	$ 2,000,000
	GEN'L AGGREGATE LIMIT APPLIES PER:						GENERAL AGGREGATE	$ 4,000,000
	POLICY X PRO-JECT LOC						PRODUCTS - COMP/OP AGG	$ 4,000,000
	OTHER:							$
A	AUTOMOBILE LIABILITY						COMBINED SINGLE LIMIT (Ea accident)	$ 1,000,000
	X ANY AUTO			S 2253659	1/18/2022	1/18/2023	BODILY INJURY (Per person)	$
	OWNED AUTOS ONLY / SCHEDULED AUTOS						BODILY INJURY (Per accident)	$
	HIRED AUTOS ONLY / NON-OWNED AUTOS ONLY						PROPERTY DAMAGE (Per accident)	$
								$
A	X UMBRELLA LIAB X OCCUR			S 2253659	1/18/2022	1/18/2023	EACH OCCURRENCE	$ 2,000,000
	EXCESS LIAB CLAIMS-MADE						AGGREGATE	$ 2,000,000
	DED RETENTION $							$
B	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY			100003072	1/18/2022	1/18/2023	X PER STATUTE OTH-ER	
	ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) Y/N: N	N/A					E.L. EACH ACCIDENT	$ 1,000,000
	If yes, describe under DESCRIPTION OF OPERATIONS below						E.L. DISEASE - EA EMPLOYEE	$ 1,000,000
							E.L. DISEASE - POLICY LIMIT	$ 1,000,000
C	Prof / Pollution			MKLV3ENV102697	8/22/2021	8/22/2022	Per Claim	5,000,000
A	Leased / Rented			S 2253659	1/18/2022	1/18/2023	Equipment	25,000

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

CERTIFICATE HOLDER

Piedmont Design Associates, PA
125 East Plaza Drive, Ste 101
Mooresville, NC 28115

CANCELLATION

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

Connie Garkalns

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CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 05/17/2022

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 Klein Agency, LLC P.O. Box 219 Timonium MD 21094	**CONTACT NAME:** **PHONE (A/C, No, Ext):** (410) 832-7600 **FAX (A/C, No):** (410) 832-1849 **E-MAIL ADDRESS:** ljones@kleinagencyllc.com
INSURED Piedmont Design Associates, P.A. 125 East Plaza Drive, Suite 101 Mooresville NC 28115	**INSURER(S) AFFORDING COVERAGE** / **NAIC #** **INSURER A :** RLI Insurance Company 13056 **INSURER B :** **INSURER C :** **INSURER D :** **INSURER E :** **INSURER F :**

COVERAGES **CERTIFICATE NUMBER:** 21-23 **REVISION NUMBER:**

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	
	COMMERCIAL GENERAL LIABILITY CLAIMS-MADE OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: POLICY PRO-JECT LOC OTHER:						EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG	$ $ $ $ $ $
	AUTOMOBILE LIABILITY ANY AUTO OWNED AUTOS ONLY HIRED AUTOS ONLY SCHEDULED AUTOS NON-OWNED AUTOS ONLY						COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident)	$ $ $ $
	UMBRELLA LIAB OCCUR **EXCESS LIAB** CLAIMS-MADE DED RETENTION $						EACH OCCURRENCE AGGREGATE	$ $
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY Y / N ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? **(Mandatory in NH)** If yes, describe under DESCRIPTION OF OPERATIONS below	N / A					PER STATUTE OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	$ $ $
A	Professional Liability			RDP0042420	02/18/2021	02/18/2023	Per Claim Aggregate	$2,000,000 $2,000,000

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

CERTIFICATE HOLDER

Evidence of Coverage

CANCELLATION

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

Justin R Klein

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Erie Insurance®

CERTIFICATE OF INSURANCE

— THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY —

DATE ISSUED (MM/DD/YY): 5/11/22

Home Office • 100 Erie Insurance Place • Erie, Pennsylvania 16530 • 814.870.2000
Toll free 1.800.458.0811 • Fax 814.870.3126 • www.erieinsurance.com

NAME AND ADDRESS OF AGENCY
SNIDER INSURANCE GROUP LLC
1438 WILKESBORO HWY
STATESVILLE, NC 28625

AGENT'S NO.: JJ2072

COMPANY(IES) AFFORDING COVERAGE
Co.: C ERIE INSURANCE COMPANY
Co.: D ERIE INSURANCE PROPERTY & CASUALTY COMPANY
Co.: E ERIE INSURANCE EXCHANGE Erie Indemnity Co., Attorney-In-Fact (Not Applicable in NY)
Co.: F ERIE INSURANCE COMPANY OF NEW YORK
Co.: G FLAGSHIP CITY INSURANCE COMPANY

NAME AND ADDRESS OF NAMED INSURED
Lentz Wastewater
Management Inc
463 Lentz Rd
Statesville, NC 28625-1596

This certificate is issued for information purposes only and confers no rights on the certificate holder. It does not affirmatively or negatively amend, extend, or otherwise alter the terms, exclusions and conditions of insurance coverage contained in the policy(ies) indicated below. The terms and conditions of the policy(ies) govern the insurance coverage as applied to any given situation. Limits shown may have been reduced by claims paid. This certificate of insurance does not constitute a contract between the issuing insurer(s), authorized representative or producer and the certificate holder.

This is to certify that policies, as indicated by the Policy Number below, are in force for the Named Insured at the time that the Certificate is being issued.

CO LTR	Add'l Ins'd	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS	
E	☐	**GENERAL LIABILITY** ☒ COMMERCIAL GENERAL LIABILITY ☐ CLAIMS MADE ☐ OCCUR ☐ _____ ☐ _____ GEN'L AGGREGATE LIMIT APPLIES PER: ☐ POLICY ☐ PROJECT ☐ LOC	Q31 1120611	7/11/21	7/11/22	EACH OCCURRENCE FIRE DAMAGE (Any One Fire) MED EXP (Any One Person) PERSONAL & ADV. INJURY GENERAL AGGREGATE PRODUCTS-COMP/OP AGG	$ 1,000,000 $ $ 5,000 $ 1,000,000 $ 2,000,000 $ 2,000,000
E	☐	**AUTOMOBILE LIABILITY** ☐ "ANY AUTO" (OWNED, HIRED, NON-OWNED) ☐ OWNED ☐ HIRED ☐ NON-OWNED ☐ GARAGE	Q07 0131769	7/1/21	7/1/22	BODILY INJURY (EACH PERSON) BODILY INJURY (EACH ACCIDENT) PROPERTY DAMAGE BODILY INJURY AND PROPERTY DAMAGE COMBINED	$ $ $ $ 1,000,000
	☐	**EXCESS LIABILITY** ☐ OCCURRENCE ☐ RETENTION $				EACH OCCURRENCE AGGREGATE	$ $ $ $
G		**WORKERS COMPENSATION & EMPLOYERS LIABILITY**	Q91 5101780	7/1/21	7/1/22	STATUTORY BODILY INJURY BY: ACCIDENT DISEASE DISEASE	$ 1,000,000 EACH ACCIDENT $ 1,000,000 POLICY LIMIT $ 1,000,000 EACH EMPLOYEE
		OTHER					

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/EXCLUSIONS ADDED BY ENDORSEMENT/SPECIAL PROVISIONS

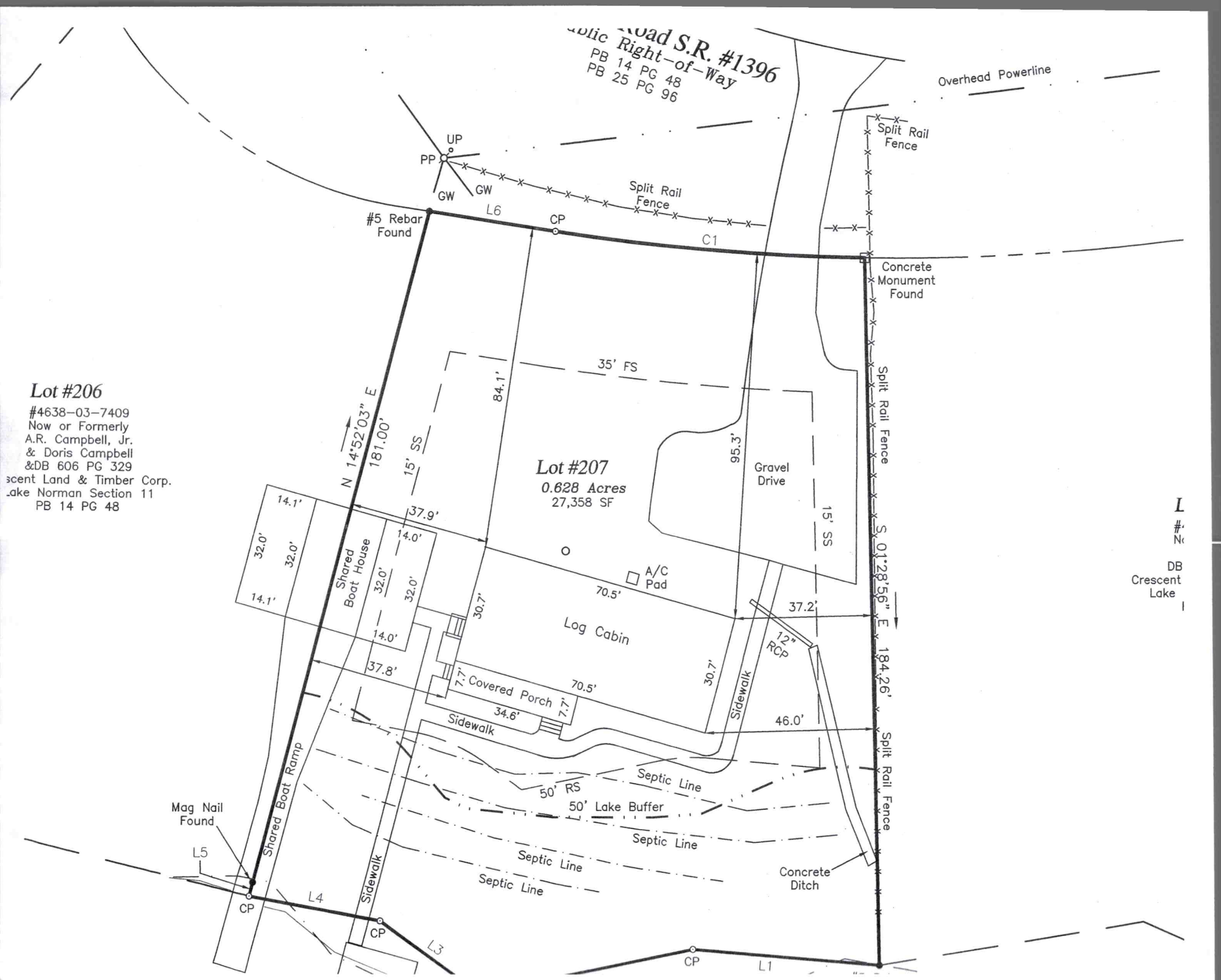
CANCELLATION: SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

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NAME AND ADDRESS OF CERTIFICATE HOLDER
KCI Technologies, Inc
936 Ridgebrook Rd
Sparks, MD 21152

AUTHORIZED REPRESENTATIVE

EIG6230 8/11


Public Road S.R. #1396
Right-of-Way
PB 14 PG 48
PB 25 PG 96
Overhead Powerline
Split Rail Fence
UP
PP
GW
GW
Split Rail Fence
#5 Rebar Found
L6
CP
C1
Concrete Monument Found
Lot #206
#4638-03-7409
Now or Formerly
A.R. Campbell, Jr.
& Doris Campbell
&DB 606 PG 329
scent Land & Timber Corp.
Lake Norman Section 11
PB 14 PG 48
35' FS
84.1'
N 14°52'03" E
181.00'
15' SS
Lot #207
0.628 Acres
27,358 SF
95.3'
Gravel Drive
15' SS
Split Rail Fence
S 01°28'56" E
184.26'
14.1'
32.0'
32.0'
14.1'
37.9'
14.0'
Shared Boat House
32.0'
32.0'
14.0'
A/C Pad
70.5'
37.2'
30.7'
Log Cabin
12" RCP
37.8'
7.7'
Covered Porch
7.7'
70.5'
30.7'
Sidewalk
34.6'
Sidewalk
46.0'
Split Rail Fence
Septic Line
50' RS
50' Lake Buffer
Septic Line
Mag Nail Found
L5
Shared Boat Ramp
Septic Line
Septic Line
Concrete Ditch
Sidewalk
CP
L4
CP
L3
CP
L1