



NC DEPARTMENT OF HEALTH AND HUMAN SERVICES

ROY COOPER • Governor
KODY H. KINSLEY • Secretary
MARK BENTON • Chief Deputy Secretary for Health
SUSAN KANSAGRA • Assistant Secretary for Public Health
Division of Public Health

Submittal Includes: [x] (a2) Improvement Permit [x] (a2) Construction Authorization [] Fee \$ _____

IMPROVEMENT PERMIT FOR G.S. 130A-335(a2)

County: Harnett
PIN/Lot Identifier: 0519-79-0472.000
Issued To: LGI Homes NC LLC
Property Location: 155 Camp Rock Road, Lillington, NC
Subdivision (if applicable): Boone Trail Village Phase 1 Lot #: 52 Block: Section:
LSS Report Provided: Yes [x] No []
If yes, name and license number of LSS: Scott Mitchell - 1237
New [x] Expansion [] System Relocation [] Change of Use []
Facility Type: Single-Family Dwelling Unit
Number of bedrooms: 4 Number of Occupants: 8 or less Other:
Design Wastewater Strength: [x] Domestic [] High Strength [] Industrial Process Wastewater
Proposed Design Daily Flow: 480 GPD Proposed LTAR (Initial): 0.35 Proposed LTAR (Repair): 0.35
Proposed Wastewater System Type*: IIIif ; 10" LDP (Initial) Pump Required: [] Yes [x] No [] May be required
Proposed Wastewater System Type*: IIb (Repair) Pump Required: [] Yes [] No [x] May be required
*Please include system classification for proposed wastewater system types in accordance with Rule .1301 Table XXXII
Effluent Standard: [x] DSE [] HSE [] NSF/ANSI 40 [] TS-I [] TS-II [] RCW
Saprolite System (Initial): [] Yes [x] No Saprolite System (Repair): [] Yes [x] No
Fill System (Initial): [] Yes [x] No If yes, specify: [] New [] Existing (when adding more than 6 inches of fill to system area provide a fill plan)
Fill System (Repair): [] Yes [x] No If yes, specify: [] New [] Existing (when adding more than 6 inches of fill to system area provide a fill plan)
Usable Depth to LC (Initial)*: 36"+ Usable Depth to LC (Repair)*: 36"+ * Limiting Condition
Max. Trench Depth (Initial)*: 24 inches Max. Trench Depth (Repair)*: 24 inches * Measured on the downhill side of the trench
Artificial Drainage Required: [] Yes [x] No If yes, please specify details:
Type of Water Supply: [] Private well [] Public well [] Shared well [x] Municipal Supply [] Spring [] Other:
Drainfield location meets requirements of Rule .0508: Yes [x] No [] Drainfield location meets requirements of Rule .0601: Yes [x] No []
Permit valid for: [x] Five years [site plan submitted pursuant to GS 130A-334(13a)] [] No expiration [plat submitted pursuant to GS 130A-334(7a)]

Permit conditions:
Permit is subject to revocation of the Site Plan or Plat changes, or if the intended use changes, including bedroom count.
No cutting, grading, alterations, or utilities allowed in septic area.
Maintain all required setbacks.

Licensed Soil Scientist Print Name: Scott Mitchell
Licensed Soil Scientist Signature: [Signature] Date: January 15, 2025

The LSS evaluation is being submitted pursuant to and meets the requirements of G.S. 130A-335(a2).
See attached site sketch

This Section for Local Health Department Use Only

Initial submittal received: _____ by _____
Date Initials

G.S. 130A-335(a3) states the following:

When an applicant for an Improvement Permit submits to a local health department an Improvement Permit application, the permit fee charged by the local health department, the common form developed by the Department, and a soil evaluation pursuant to subsection (a2) of this section, the local health department shall, within five business days of receiving the application, conduct a completeness review of the submittal. A determination of completeness means that the Improvement Permit includes all of the required components. If the local health department determines that the Improvement Permit is incomplete, the local health department shall notify the applicant of the components needed to complete the Improvement Permit. The applicant may submit additional information to the local health department to cure the deficiencies in the Improvement Permit. The local health department shall make a final determination as to whether the Improvement Permit is complete within five business days after the local health department receives the additional information from the applicant. If the local health department fails to act within any period set out in this subsection, the applicant may treat the failure to act as a determination of completeness. The Department shall develop a common form for use as the Improvement Permit.

The review for completeness of this Improvement Permit was conducted in accordance with G.S. 130A-335(a3). This Improvement Permit is determined to be:

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

The following items are missing:

Copies of this were sent to the LSS and the Applicant on _____
Date

State Authorized Agent: _____ Date: _____

Complete

State Authorized Agent: _____ Date: _____

This Improvement Permit is issued pursuant to G.S. 130A-335 (a2) and (a3) using the signed and sealed LSS/LG evaluation(s) attached here. The issuance of this permit in no way guarantees the issuance of other permits. The permit holder is responsible for checking with appropriate governing bodies in meeting their requirements. *This permit is subject to revocation if the site plan, plat, or the intended use changes.* The Improvement Permit shall not be affected by a change in ownership of the site. This permit is subject to compliance with the provisions of 15A NCAC 18E and to the conditions of this permit.

The Department, the Department's authorized agents, and the local health departments shall be discharged and released from any liabilities, duties, and responsibilities imposed by statute or in common law from any claim arising out of or attributed to evaluations, submittals, or actions from a licensed soil scientist or licensed geologist pursuant to GS 130A-335(a2).

Improvement Permit Expiration Date: _____

See attached site sketch



Permit/File #: _____

Re-submittal of Improvement Permit

LHD USE ONLY: This IP resubmittal received: _____ by _____
Date *Initials*

The following items are being resubmitted pursuant to G.S. 130A-335(a3) for issuance of the Improvement Permit:

I, _____ hereby attest that the information required to be included with this re-submittal
Licensed Soil Scientist (Print Name)
is accurate and complete to the best of my knowledge and that the proposed Improvement Permit meets all applicable federal, State, and local laws, regulations, rules, and ordinances.

Signature of Licensed Soil Scientist

Date

The section below is for Local Health Department use after submittal of items noted as missing above.

LHD Follow-up Completeness Review of Improvement Permit

The review for completeness of this Improvement Permit re-submittal was conducted in accordance with G.S. 130A-335(a3). This Improvement Permit is determined to be:

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

The following items are missing:

Copies of this were sent to the LSS and the Applicant on _____
Date

State Authorized Agent: _____

Date: _____

Complete

State Authorized Agent: _____

Date: _____



Harnett County GIS

PID: 130519 0103 57
PIN: 0519-79-0472.000
Account Number: 1500028388
Owner: LGI HOMES NC LLC
Mailing Address: 1450 LAKE ROBBINS DR STE 430 THE WOODLANDS, TX 77380-3294
Physical Address: 155 CAMP ROCK RD LILLINGTON, NC 27546 ac
Description: LOT#52 BOONE TRAIL VILLAGE PH1 MAP#2024-600
Surveyed/Deeded Acreage: 0.69
Calculated Acreage: 0.69
Deed Date:
Deed Book/Page: 4144 - 0878
Plat(Survey) Book/Page: 2024 - 600
Last Sale: 2022 - 4
Sale Price: \$2220000
Qualified Code: A
Vacant or Improved: V
Transfer of Split: T
Actual Year Built:
Heated Area : SqFt
Building Count : 0

Building Value: \$0
Parcel Outbuilding Value: \$0
Parcel Land Value: 0
Market Value: \$0
Deferred Value: \$0
Total Assessed Value: \$0
Zoning: RA-30 - 0.69 acres (100.0%)
Zoning Jurisdiction: Harnett County
Wetlands: No
FEMA Flood: Minimal Flood Risk
Within 1mi of Agriculture District: Yes
Elementary School: Boone Trail Elementary
Middle School: Western Harnett Middle
High School: Western Harnett High
Fire Department: Boone Trail
EMS Department: Medic 12, D12 EMS
Law Enforcement: Harnett County Sheriff
Voter Precinct: Boone Trail
County Commissioner : Duncan Edward Jagers
School Board Member: John Hair



Mitchell Environmental, P.A.

I hereby authorize representatives of Mitchell Environmental, P.A., to provide subsurface wastewater evaluations and septic system designs on my behalf, for the issuance of an IP and CA, for the property identified below.

For Improvement Permit (IP) issuance:

"The LSS/LG evaluation(s) attached to this application is to be used to issue an Improvement Permit in accordance with G.S. 130A-335(a2) and (a3)."

For Construction Authorization (CA) issuance:

"The plans or evaluations attached to this application are to be used to issue a Construction Authorization in accordance with G.S. 130A-335(a2), (a5), and (a6)."

The LSS evaluation attached to this application was used to produce and design a subsurface wastewater septic system for permitting to obtain an IP and CA in accordance with G.S. 130A-335(a2), (a3), (a5), and (a6).

Subject Property (Address, PIN, etc.): 158/155 Camp Rock Rd, Lillington NC 27546

Property Owner Name (Print): LGI Homes

Owner Representative (Print): Keith Sears

Owner Representative (Sign): Keith Sears

Date: 1/8/25

1501 Lakestone Village Lane, Suite 205
Fuquay-Varina, North Carolina 27526
919-669-0329

Mitchell Environmental, P.A.

January 15, 2025

Mr. Robert Putze
LGI Homes - NC, LLC
1450 Lake Robbins Drive, Suite 430
The Woodlands, Texas 77380

**Re: On-Site Sewage Disposal Site and Soils Evaluation Report for:
Boone Trail Village Subdivision – Lot 52
155 Camp Rock Road, Lillington, Harnett County**

Mr. Putze:

At your request, we have completed a site evaluation for use of on-site sewage disposal systems at Lot 52 of Boone Trail Village Subdivision located at 155 Camp Rock Road in Lillington, Harnett County. The site evaluation was completed using hand augers on November 22 and 25, 2024, under moist soil conditions, based on the criteria found in the State Subsurface Rules, 15A NCAC 18E, "Wastewater Treatment and Dispersal Systems". This report was prepared pursuant to and meets the requirements of G.S. 130A-335(a2).

Site Evaluation for Use of On-Site Sewage Disposal Systems:

The evaluation included all usable areas of the property as limited by state and local laws, rules, and regulations. The purpose of the evaluation was to determine the suitability of the site for on-site waste disposal systems per applicable laws, rules, and regulations. **"The LSS evaluation is being submitted pursuant to and meets the requirements of G.S. 130A-335(a2)."**

A soil/site evaluation for use of on-site waste disposal systems on any site in North Carolina must include an evaluation of each of the following criteria: 1) topography and landscape position, 2) soil morphology, 3) soil wetness, 4) soil depth, 5) restrictive horizons and 6) available space. Upon field evaluation of the site, the majority of the lot was confirmed to contain sufficient suitable depth for on-site waste disposal systems.

Most septic systems in North Carolina that include a sub-surface waste disposal element require nitrification trenches to distribute effluent for final treatment. Any nitrification trench that has an associated width (*conventional, LPP, LDP, etc.*) must be designed to accommodate slope corrections (*typically 1 to 4 inches*). Slope corrections are based on trench width and cross slope to ensure the minimum separation distance between the trench bottom and an unsuitable soil condition is maintained over the entire trench width. Sloping sites are required to have greater suitable soil depth to accommodate slope correction as opposed to flat sites that require no slope correction. Please note that all proposed lots that utilize sub-surface nitrification fields must have sufficient area for the initial septic system as well as a full repair system. However, the initial and repair systems are not required to be the same type of system, nor are they required to be contiguous. For example, a lot may have a conventional, gravity system installed as the initial septic system and specify an LPP or subsurface drip system for its repair, several hundred feet away from the house or other structure being served.

The number of bedrooms or wastewater design flowrate that any lot will accommodate is entirely dependent upon the usable area of the lot and the long-term acceptance rate (*LTAR; LTAR is the*

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effluent application rate for a septic system. For conventional systems, the LTAR indicates the number of gallons that can be applied to each square foot of the trench bottom per day. For an LPP or subsurface drip system, the LTAR indicates the number of gallons that can be applied to each square foot of the nitrification field per day. An LTAR of 0.2 gallons per day per ft² (gpd/ft²) will require a nitrification field that is twice as large as a field that has an LTAR of 0.4 gpd/ft². Assigned LTARs will affect the number of bedrooms or wastewater design flowrate lots will accommodate as illustrated above. LTARs can vary from one location to another on a property. Our observations indicate that the majority of the lot contains sufficient suitable soil depth to accommodate subsurface wastewater systems with an LTAR of 0.35 gpd/ft². Observed suitable soil depths on this site are greater than 36 inches, with LTAR controlling soil textures ranging from sandy clay loam to clay.

Topography on this lot can be generally characterized as a gentle side slope that generally sheds to the east. Based on observed site and soil characteristics, in combination with the proposed plot plan, it is my professional opinion that adequate available space exists on this lot for properly designed septic system drainfields (*initial and repair*) sufficient for one, four-bedroom home.

This site evaluation is based upon the conditions of the site at the time of the evaluation. Any alteration of the site, including compaction, clearing, grading, timbering, etc., could negatively affect the suitability for on-site septic systems. Great care should be exercised during site preparation to protect areas that are to be utilized for septic system nitrification fields. No vehicular or construction traffic should be allowed on these areas. Additionally, no sedimentation and erosion control devices or stormwater collection, treatment, diversion, or dispersal devices should be allowed on or near these areas.

Thank you for the opportunity to provide you with this wastewater system soil suitability evaluation. Do not hesitate to call me if you have any questions or concerns about this evaluation or if you need any additional information.

Sincerely,

Scott Mitchell, PE, LSS
President



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

OWNER: LGI Homes NC LLC DATE EVALUATED: 11/25/2024
 ADDRESS: 1450 Lake Robbins Drive, Suite 430, The Woodlands, TX 77380
 PROPOSED FACILITY: Single-Family Dwelling PROPOSED DESIGN FLOW (.0400): 480 PROPERTY SIZE: 0.69 acres
 LOCATION OF SITE: Boone Trail Village - Lot 52 ; 155 Camp Rock Road, Lillington PROPERTY RECORDED: 12/05/2024
 WATER SUPPLY: Public Single Family Well Shared Well Spring Other _____ WATER SUPPLY SETBACK: _____
 EVALUATION METHOD: Auger Boring Pit Cut TYPE OF WASTEWATER: Domestic High Strength IPWW

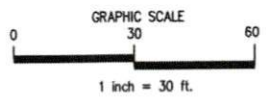
P R O F I L E #	.0502 LANDSCAPE POSITION/ SLOPE %	HORIZON DEPTH (IN.)	SOIL MORPHOLOGY		OTHER PROFILE FACTORS				.0509 PROFILE CLASS & LTAR*	.0502(d) SLOPE CORRE CTION
			.0503 STRUCTURE/ TEXTURE	.0503 CONSISTENCE/ MINERALOGY	.0504 SOIL WETNESS/ COLOR	.0505 SOIL DEPTH	.0506 SAPRO CLASS	.0507 RESTR HORIZ		
1	L, 3%	Ap, 0-6	SL, G	VFR, NS, NP, NEXP	10YR 5/2				S, 0.35	1"
		E, 6-33	SL, SBK	VFR, NS, NP, NEXP	2.5Y 6/4					
		Bt, 33-36+	SCL, SBK	FR, SS, SP, SEXP	10YR 6/6	36+				
2	L, 3%	Ap, 0-6	SL, G	VFR, NS, NP, NEXP	10YR 5/2				S, 0.30	1"
		E, 6-25	SL, SBK	VFR, NS, NP, NEXP	2.5Y 6/4					
		Bt1, 25-30	SCL, SBK	FR, SS, SP, SEXP	10YR 6/6					
		Bt2, 30-36+	C, SBK	FR, SS, SP, SEXP	10YR 6/6 2.5YR 4/8; 15%	36+				
3	L, 3%	Ap, 0-6	SL, G	VFR, NS, NP, NEXP	10YR 5/2				S, 0.40	1"
		E, 6-30	SL, SBK	VFR, NS, NP, NEXP	2.5Y 6/4					
		Bt, 30-36+	SCL, SBK	FR, SS, SP, SEXP	10YR 6/6	36+				
4	L, 3%	Ap, 0-6	SL, G	VFR, NS, NP, NEXP	10YR 5/2				S, 0.50	1"
		E, 6-36	SL, SBK	VFR, NS, NP, NEXP	2.5Y 6/4					
		Bt, 36+	SCL, SBK	FR, SS, SP, SEXP	10YR 6/6	36+				

DESCRIPTION	INITIAL SYSTEM	REPAIR SYSTEM	SITE CLASSIFICATION (.0509): <u>Suitable</u> EVALUATED BY: <u>Scott Mitchell / Adam Aycock</u> OTHER(S) PRESENT: _____
Available Space (.0508)	Yes	Yes	
System Type(s)	IIIif (10" LDP)	IIb	
Site LTAR	0.35	0.35	
Maximum Trench Depth	24" on Low Side	24" on Low Side	

Comments: _____

4-Bedroom
 LTAR: 0.35 gpd/ft²
 Initial: Gravity-to-10" Large Diameter
 Pipe utilizing lines 5-10 (552')
 Repair: Pump-to-Innovative 25%
 Reduction Status Product utilizing
 lines 1-4 (360')

Initial septic drainfield



SITE
 BOUNDARY

133.27'

Soil Boring 4

Soil Boring 3

Repair septic drainfield

Soil Boring 1

Soil Boring 2

51

52

1-15-2025

222.80'

112.36'

BUCKSHOT DRIVE

CAMP ROCK ROAD



Notes:
 -No soil cuts within 20 feet of septic trenches.
 -No swales within 30 feet of septic trenches
 unless approved, in writing, by Engineer.

REVISION NO. Original Submitted Revision 1 Revision 2 Revision 3 Master Set		DATE January 13, 2025	SHEET NUMBER 1 of 5
PREPARED FOR: LG Homes 5511 Capital Center Drive Raleigh, NC 27612		DATE: January 13, 2025	DESIGNER CONTACT: ADAM AYCOCK, EIT
DESIGNER CONTRACT: ADAM AYCOCK, EIT		DRAWN BY: ADAM AYCOCK, EIT	Boone Precast Village Lot 52 Overall Septic
MITCHELL ENVIRONMENTAL, PA C-2917 1501 LAKESTONE VILLAGE LANE SUITE 205 FUQUAY VARINA, NC 27526			





NC DEPARTMENT OF HEALTH AND HUMAN SERVICES

ROY COOPER • Governor
KODY H. KINSLEY • Secretary
MARK BENTON • Chief Deputy Secretary for Health
SUSAN KANSAGRA • Assistant Secretary for Public Health
Division of Public Health

Permit/File #: _____

Submittal Includes: [X] (a2) Improvement Permit [X] (a2) Construction Authorization [] Fee \$ _____

IMPROVEMENT PERMIT FOR G.S. 130A-335(a2)

County: Harnett

PIN/Lot Identifier: 0519-79-0472.000

Issued To: LGI Homes NC LLC

Property Location: 155 Camp Rock Road, Lillington, NC

Subdivision (if applicable) Boone Trail Village Phase 1 Lot #: 52 Block: _____ Section: _____

LSS Report Provided: Yes [X] No []

If yes, name and license number of LSS: Scott Mitchell - 1237

New [X] Expansion [] System Relocation [] Change of Use []

Facility Type: Single-Family Dwelling Unit

Number of bedrooms: 4 Number of Occupants: 8 or less Other: _____

Design Wastewater Strength: [X] Domestic [] High Strength [] Industrial Process Wastewater

Proposed Design Daily Flow: 480 GPD Proposed LTAR (Initial): 0.35 Proposed LTAR (Repair): 0.35

Proposed Wastewater System Type*: IIf; 10" LDP (Initial) Pump Required: [] Yes [X] No [] May be required

Proposed Wastewater System Type*: IIf (Repair) Pump Required: [] Yes [] No [X] May be required

*Please include system classification for proposed wastewater system types in accordance with Rule .1301 Table XXXII

Effluent Standard: [X] DSE [] HSE [] NSF/ANSI 40 [] TS-I [] TS-II [] RCW

Saprolite System (Initial): [] Yes [X] No Saprolite System (Repair): [] Yes [X] No

Fill System (Initial): [] Yes [X] No If yes, specify: [] New [] Existing (when adding more than 6 inches of fill to system area provide a fill plan)

Fill System (Repair): [] Yes [X] No If yes, specify: [] New [] Existing (when adding more than 6 inches of fill to system area provide a fill plan)

Usable Depth to LC (Initial)*: 36"+ Usable Depth to LC (Repair)*: 36"+ * Limiting Condition

Max. Trench Depth (Initial)*: 24 inches Max. Trench Depth (Repair)*: 24 inches * Measured on the downhill side of the trench

Artificial Drainage Required: [] Yes [X] No If yes, please specify details: _____

Type of Water Supply: [] Private well [] Public well [] Shared well [X] Municipal Supply [] Spring [] Other: _____

Drainfield location meets requirements of Rule .0508: Yes [X] No [] Drainfield location meets requirements of Rule .0601: Yes [X] No []

Permit valid for: [X] Five years [site plan submitted pursuant to GS 130A-334(13a)] [] No expiration [plat submitted pursuant to GS 130A-334(7a)]

Permit conditions:
Permit is subject to revocation of the Site Plan or Plat changes, or if the intended use changes, including bedroom count.
No cutting, grading, alterations, or utilities allowed in septic area.
Maintain all required setbacks.

Licensed Soil Scientist Print Name: Scott Mitchell

Licensed Soil Scientist Signature: _____ Date: January 15, 2025

The LSS evaluation is being submitted pursuant to and meets the requirements of G.S. 130A-335(a2).

See attached site sketch



Permit/File #: _____

This Section for Local Health Department Use Only

Initial submittal received: _____ by _____
Date Initials

G.S. 130A-335(a3) states the following:

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The review for completeness of this Improvement Permit was conducted in accordance with G.S. 130A-335(a3). This Improvement Permit is determined to be:

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

The following items are missing:

Copies of this were sent to the LSS and the Applicant on _____
Date

State Authorized Agent: _____ Date: _____

Complete

State Authorized Agent: _____ Date: _____

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Improvement Permit Expiration Date: _____

See attached site sketch





Permit/File #: _____

Re-submittal of Improvement Permit

LHD USE ONLY: This IP resubmittal received: _____ by _____
Date *Initials*

The following items are being resubmitted pursuant to G.S. 130A-335(a3) for issuance of the Improvement Permit:

I, _____ hereby attest that the information required to be included with this re-submittal
Licensed Soil Scientist (Print Name)
is accurate and complete to the best of my knowledge and that the proposed Improvement Permit meets all applicable federal, State, and local laws, regulations, rules, and ordinances.

Signature of Licensed Soil Scientist

Date

The section below is for Local Health Department use after submittal of items noted as missing above.

LHD Follow-up Completeness Review of Improvement Permit

The review for completeness of this Improvement Permit re-submittal was conducted in accordance with G.S. 130A-335(a3). This Improvement Permit is determined to be:

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Date: _____

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State Authorized Agent: _____

Date: _____





Harnett County GIS

PID: 130519 0103 57
PIN: 0519-79-0472.000
Account Number: 1500028388
Owner: LGI HOMES NC LLC
Mailing Address: 1450 LAKE ROBBINS DR STE 430 THE WOODLANDS, TX 77380-3294
Physical Address: 155 CAMP ROCK RD LILLINGTON, NC 27546 ac
Description: LOT#52 BOONE TRAIL VILLAGE PH1 MAP#2024-600
Surveyed/Deeded Acreage: 0.69
Calculated Acreage: 0.69
Deed Date:
Deed Book/Page: 4144 - 0878
Plat(Survey) Book/Page: 2024 - 600
Last Sale: 2022 - 4
Sale Price: \$2220000
Qualified Code: A
Vacant or Improved: V
Transfer of Split: T
Actual Year Built:
Heated Area : SqFt
Building Count : 0

Building Value: \$0
Parcel Outbuilding Value: \$0
Parcel Land Value: 0
Market Value: \$0
Deferred Value: \$0
Total Assessed Value: \$0
Zoning: RA-30 - 0.69 acres (100.0%)
Zoning Jurisdiction: Harnett County
Wetlands: No
FEMA Flood: Minimal Flood Risk
Within 1mi of Agriculture District: Yes
Elementary School: Boone Trail Elementary
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High School: Western Harnett High
Fire Department: Boone Trail
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Subject Property (Address, PIN, etc.): 158/155 Camp Rock Rd, Lillington NC 27546

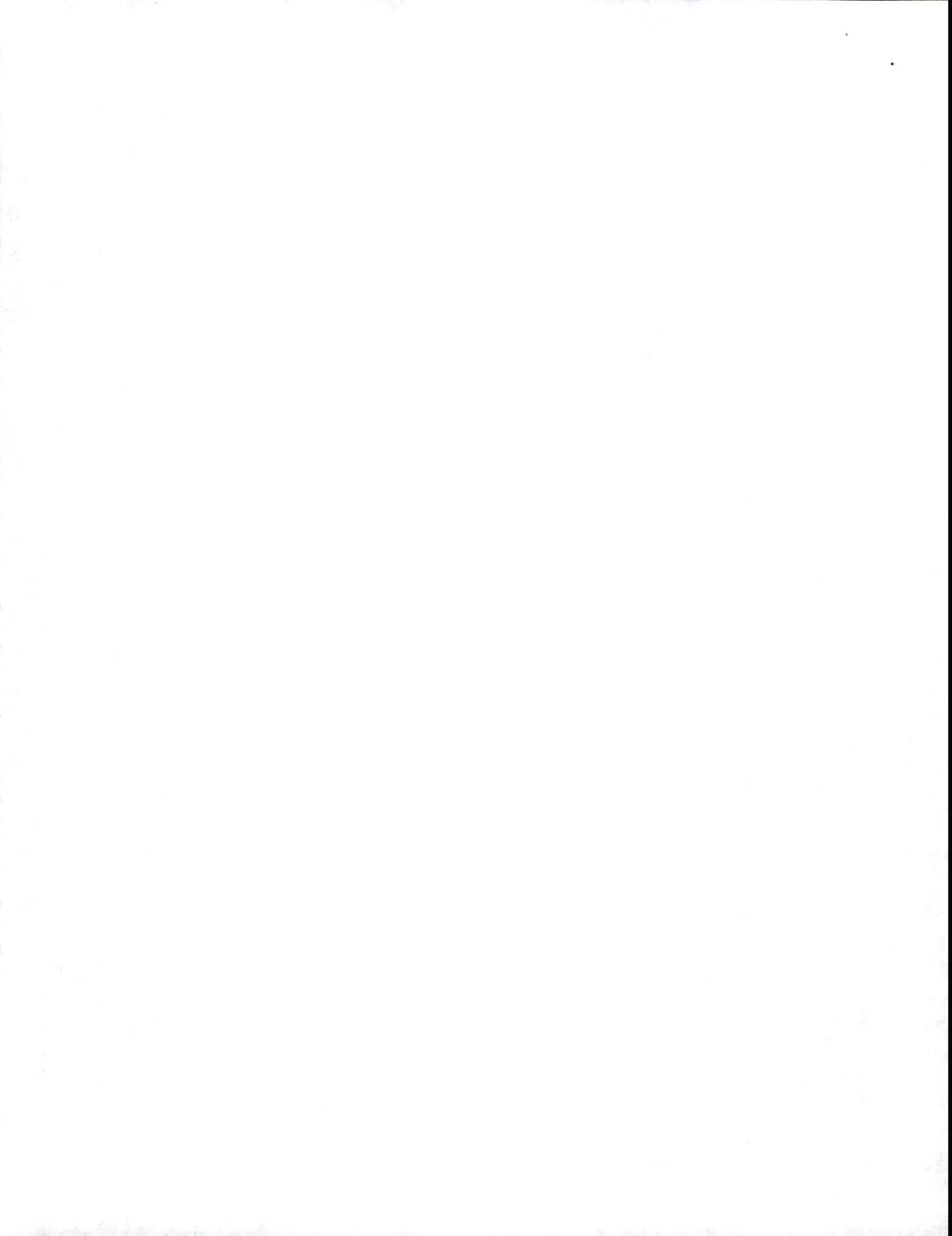
Property Owner Name (Print): LGI Homes

Owner Representative (Print): Keith Sears

Owner Representative (Sign): Keith Sears

Date: 1/8/25

1501 Lakestone Village Lane, Suite 205
Fuquay-Varina, North Carolina 27526
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Site Evaluation for Use of On-Site Sewage Disposal Systems:

The evaluation included all usable areas of the property as limited by state and local laws, rules, and regulations. The purpose of the evaluation was to determine the suitability of the site for on-site waste disposal systems per applicable laws, rules, and regulations. **"The LSS evaluation is being submitted pursuant to and meets the requirements of G.S. 130A-335(a2)."**

A soil/site evaluation for use of on-site waste disposal systems on any site in North Carolina must include an evaluation of each of the following criteria: 1) topography and landscape position, 2) soil morphology, 3) soil wetness, 4) soil depth, 5) restrictive horizons and 6) available space. Upon field evaluation of the site, the majority of the lot was confirmed to contain sufficient suitable depth for on-site waste disposal systems.

Most septic systems in North Carolina that include a sub-surface waste disposal element require nitrification trenches to distribute effluent for final treatment. Any nitrification trench that has an associated width (*conventional, LPP, LDP, etc.*) must be designed to accommodate slope corrections (*typically 1 to 4 inches*). Slope corrections are based on trench width and cross slope to ensure the minimum separation distance between the trench bottom and an unsuitable soil condition is maintained over the entire trench width. Sloping sites are required to have greater suitable soil depth to accommodate slope correction as opposed to flat sites that require no slope correction. Please note that all proposed lots that utilize sub-surface nitrification fields must have sufficient area for the initial septic system as well as a full repair system. However, the initial and repair systems are not required to be the same type of system, nor are they required to be contiguous. For example, a lot may have a conventional, gravity system installed as the initial septic system and specify an LPP or subsurface drip system for its repair, several hundred feet away from the house or other structure being served.

The number of bedrooms or wastewater design flowrate that any lot will accommodate is entirely dependent upon the usable area of the lot and the long-term acceptance rate (LTAR; LTAR is the

1501 Lakestone Village Lane, Suite 205
Fuquay-Varina, North Carolina 27526
919-669-0329



effluent application rate for a septic system. For conventional systems, the LTAR indicates the number of gallons that can be applied to each square foot of the trench bottom per day. For an LPP or subsurface drip system, the LTAR indicates the number of gallons that can be applied to each square foot of the nitrification field per day. An LTAR of 0.2 gallons per day per ft² (gpd/ft²) will require a nitrification field that is twice as large as a field that has an LTAR of 0.4 gpd/ft². Assigned LTARs will affect the number of bedrooms or wastewater design flowrate lots will accommodate as illustrated above. LTARs can vary from one location to another on a property. Our observations indicate that the majority of the lot contains sufficient suitable soil depth to accommodate subsurface wastewater systems with an LTAR of 0.35 gpd/ft². Observed suitable soil depths on this site are greater than 36 inches, with LTAR controlling soil textures ranging from sandy clay loam to clay.

Topography on this lot can be generally characterized as a gentle side slope that generally sheds to the east. Based on observed site and soil characteristics, in combination with the proposed plot plan, it is my professional opinion that adequate available space exists on this lot for properly designed septic system drainfields (*initial and repair*) sufficient for one, four-bedroom home.

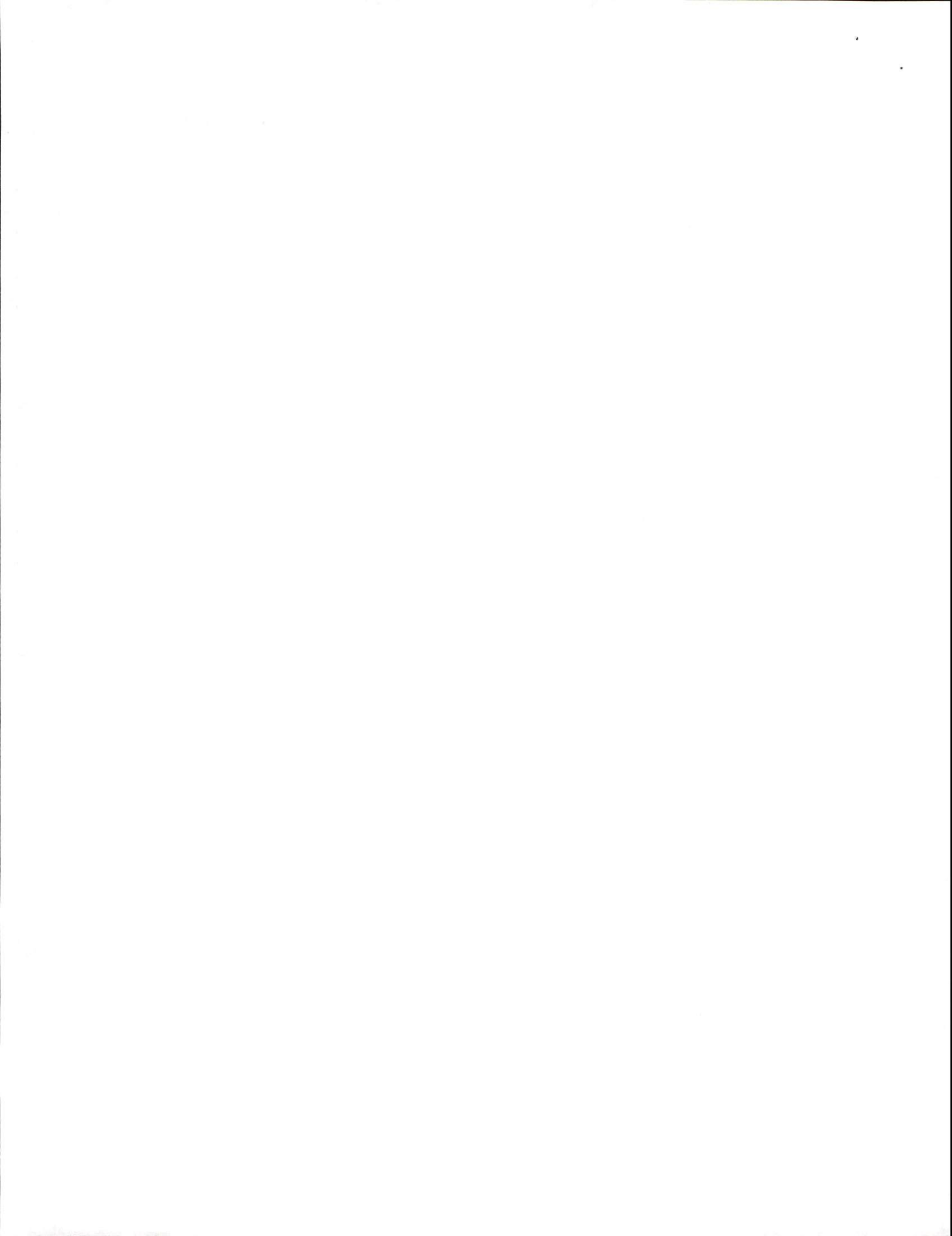
This site evaluation is based upon the conditions of the site at the time of the evaluation. Any alteration of the site, including compaction, clearing, grading, timbering, etc., could negatively affect the suitability for on-site septic systems. Great care should be exercised during site preparation to protect areas that are to be utilized for septic system nitrification fields. No vehicular or construction traffic should be allowed on these areas. Additionally, no sedimentation and erosion control devices or stormwater collection, treatment, diversion, or dispersal devices should be allowed on or near these areas.

Thank you for the opportunity to provide you with this wastewater system soil suitability evaluation. Do not hesitate to call me if you have any questions or concerns about this evaluation or if you need any additional information.

Sincerely,

Scott Mitchell, PE, LSS
President





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

OWNER: LGI Homes NC LLC DATE EVALUATED: 11/25/2024
 ADDRESS: 1450 Lake Robbins Drive, Suite 430, The Woodlands, TX 77380
 PROPOSED FACILITY: Single-Family Dwelling PROPOSED DESIGN FLOW (.0400): 480 PROPERTY SIZE: 0.69 acres
 LOCATION OF SITE: Boone Trail Village - Lot 52 ; 155 Camp Rock Road, Lillington PROPERTY RECORDED: 12/05/2024
 WATER SUPPLY: Public Single Family Well Shared Well Spring Other _____ WATER SUPPLY SETBACK: _____
 EVALUATION METHOD: Auger Boring Pit Cut TYPE OF WASTEWATER: Domestic High Strength IPWW

P R O F I L E #	.0502 LANDSCAPE POSITION/ SLOPE %	HORIZON DEPTH (IN.)	SOIL MORPHOLOGY		OTHER PROFILE FACTORS				.0509 PROFILE CLASS & LTAR*	.0502(d) SLOPE CORRE CTION
			.0503 STRUCTURE/ TEXTURE	.0503 CONSISTENCE/ MINERALOGY	.0504 SOIL WETNESS/ COLOR	.0505 SOIL DEPTH	.0506 SAPRO CLASS	.0507 RESTR HORIZ		
1	L, 3%	Ap, 0-6	SL, G	VFR, NS, NP, NEXP	10YR 5/2	36+			S, 0.35	1"
		E, 6-33	SL, SBK	VFR, NS, NP, NEXP	2.5Y 6/4					
		Bt, 33-36+	SCL, SBK	FR, SS, SP, SEXP	10YR 6/6					
2	L, 3%	Ap, 0-6	SL, G	VFR, NS, NP, NEXP	10YR 5/2	36+			S, 0.30	1"
		E, 6-25	SL, SBK	VFR, NS, NP, NEXP	2.5Y 6/4					
		Bt1, 25-30	SCL, SBK	FR, SS, SP, SEXP	10YR 6/6					
		Bt2, 30-36+	C, SBK	FR, SS, SP, SEXP	10YR 6/6 2.5YR 4/8; 15%					
3	L, 3%	Ap, 0-6	SL, G	VFR, NS, NP, NEXP	10YR 5/2	36+			S, 0.40	1"
		E, 6-30	SL, SBK	VFR, NS, NP, NEXP	2.5Y 6/4					
		Bt, 30-36+	SCL, SBK	FR, SS, SP, SEXP	10YR 6/6					
4	L, 3%	Ap, 0-6	SL, G	VFR, NS, NP, NEXP	10YR 5/2	36+			S, 0.50	1"
		E, 6-36	SL, SBK	VFR, NS, NP, NEXP	2.5Y 6/4					
		Bt, 36+	SCL, SBK	FR, SS, SP, SEXP	10YR 6/6					

DESCRIPTION	INITIAL SYSTEM	REPAIR SYSTEM	SITE CLASSIFICATION (.0509): <u>Suitable</u> EVALUATED BY: <u>Scott Mitchell / Adam Aycock</u> OTHER(S) PRESENT: _____
Available Space (.0508)	Yes	Yes	
System Type(s)	III f (10" LDP)	II b	
Site LTAR	0.35	0.35	
Maximum Trench Depth	24" on Low Side	24" on Low Side	

Comments: _____



LEGEND

LANDSCAPE POSITION	SOIL GROUP	SOIL TEXTURE	CONVENTIONAL LTAR (gpd/ft ²)	SAPROLITE LTAR (gpd/ft ²)	LPP LTAR (gpd/ft ²)	MINERALOGY/ CONSISTENCE		STRUCTURE	
						MOIST	WET		
CC (Concave slope)	I	S (Sand)	0.8 - 1.2	0.6 - 0.8	0.4 - 0.6	MOIST	WET	SG (Single grain)	
CV (Convex Slope)		LS (Loamy sand)		0.5 - 0.7		Lo (Loose)	NS (Non-sticky)	M (Massive)	
D (Drainage way)	II	SL (Sandy loam)	0.6 - 0.8	0.4 - 0.6	0.3 - 0.4	VFR (Very friable)	SS (Slightly sticky)	GR (Granular)	
FP (Flood plain)		L (Loam)		0.2 - 0.4		FR (Friable)	S (Sticky)	SBK (Subangular blocky)	
FS (Foot slope)	III	SIL (Silt loam)	0.3 - 0.6	0.1 - 0.3	0.15 - 0.3	FI (Firm)	VS (Very sticky)	ABK (Angular blocky)	
H (Head slope)		SCL (Sandy clay loam)		0.05 - 0.15**		VFI (Very firm)	NP (Non-plastic)	PR (Prismatic)	
L (Linear Slope)		CL (Clay loam)		None		0.15 - 0.3	EFI (Extremely firm)	SP (Slightly plastic)	PL (Platy)
N (Nose slope)		SiCL (Silty clay loam)					P (Plastic)	VP (Very plastic)	
R (Ridge/summit)		Si (Silt)							
S (Shoulder slope)	IV	SC (Sandy clay)	0.1 - 0.4	0.05 - 0.2	SEXP (Slightly expansive)				
T (Terrace)		SiC (Silty clay)			EXP (Expansive)				
TS (Toe Slope)		C (Clay)							
		O (Organic)	None						

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

**Sandy clay loam saprolite can only be used with advanced pretreatment in accordance with 15A NCAC 18E .1200.

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); Evaluation of saprolite shall be by pits.

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

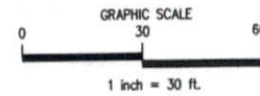
CLASSIFICATION S (Suitable) or U (Unsuitable)

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



4-Bedroom
 LTAR: 0.35 gpd/ft²
 Initial: Gravity-to-10" Large Diameter
 Pipe utilizing lines 5-10 (552')
 Repair: Pump-to-Innovative 25%
 Reduction Status Product utilizing
 lines 1-4 (360')

Initial septic drainfield



SITE
 BOUNDARY

133.27'

Soil Boring 4

Soil Boring 3

Repair septic drainfield

Soil Boring 1

BUCKSHOT DRIVE

Soil Boring 2

51

52

1-15-2025

222.80'

112.36'

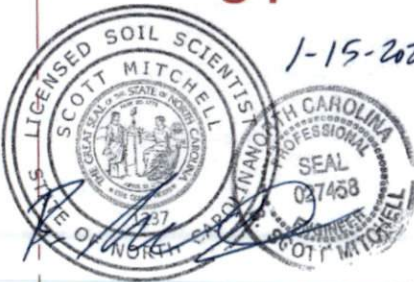
CAMP ROCK ROAD

8"W

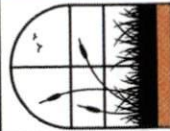
8"W

Notes:

- No soil cuts within 20 feet of septic trenches.
- No swales within 30 feet of septic trenches unless approved, in writing, by Engineer.



REVISION NO. Original Submittal Revision 1 Revision 2 Revision 3 Master Set		DATE January 13, 2025	SHEET NUMBER 1 of 5
PREPARED FOR: 2011 Capital Center Drive Raleigh, NC 27612 DATE: January 13, 2025 DESIGNER CONTACT: ADAM AYCOCK, P.E. DRAWN BY: ADAM AYCOCK, P.E.		PROJECT: Boone Truss Village Lot 62 Overall Septic	
MITCHELL ENVIRONMENTAL, PA C-2917 1501 LAKESTONE VILLAGE LANE SUITE 205 FUQUAY VARINA, NC 27526			







Permit/File #: _____

CONSTRUCTION AUTHORIZATION FOR G.S. 130A-335(a2)

County: Harnett

Pre-Construction Conference Required: Yes No

PIN/Lot Identifier: 0519-79-0472.000

Issued To: LGI Homes NC LLC

Property Location: 155 Camp Rock Road, Lillington, NC

AOWE/PE Plans/Evaluations Provided: Yes No If yes, name and license number of AOWE/PE: Scott Mitchell - PE 27458

Facility Type: Single-Family Dwelling Unit

Number of bedrooms: 4 Number of Occupants: 8 or less Other: _____

New Expansion Repair System Relocation Change of Use

Basement? Yes No Basement Fixtures? Yes No

Crawl Space? Yes No Slab Foundation? Yes No

Type of Wastewater System* IIIf; 10" LDP (Initial) IIb (Repair)

**Please include system classification for proposed wastewater system types in accordance with Rule .1301 Table XXXII*

Design Daily Flow: 480 GPD Wastewater Strength: Domestic High Strength Industrial Process WW

Session Law 2014-120 Section 53, Engineering Design Utilizing Low-flow Fixtures and Low-flow Technologies? Yes No
(If yes, please provide engineering documentation)

Effluent Standard: DSE HSE NSF/ANSI 40 TS-I TS-II RCW

Type of Water Supply: Private well Public well Shared well Municipal Supply Spring Other: _____

Installation Requirements/Conditions

Septic Tank Size: 1,000 gallons Total Trench/Bed Length: 552 feet Trench/Bed Spacing: 6 feet on center

Trench/Bed Width: 18 inches LTAR: 0.35 gpd/ft² Usable Depth to LC (Initial)*: 36"+ **Limiting condition*

Soil Cover: 12 inches Slope Corrected Maximum Trench/Bed Depth*: 24 inches ** Measured on the downhill side of the trench*

Pump Tank Size (if applicable): N/A gallons Requires more than 1 pump? Yes No

Pump Requirements: _____ ft. TDH vs. _____ GPM Grease Trap Size (if applicable): N/A gallons

Distribution Method: Serial D-Box or Parallel Pressure Manifold(s) LPP Other: _____

Artificial Drainage Required: Yes No If yes, please specify details: _____

Legal Agreements (If the answer is "Yes" to any type of legal agreements, please attach a copy of the agreement.)

Multi-party Agreement Required [.0204(g)]: Yes No Declaration of Restrictive Covenants: Yes No

Easement, Right-of-Way, or Encroachment Agreement Required [.0301(b)]: Yes No

Management Entity Required: Yes No Minimum O&M Requirements: _____

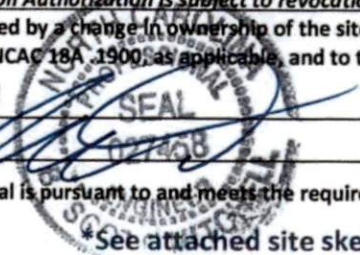
Permit conditions:
Trench walls shall be raked when any Group III or Group IV soils are present.
Photo documentation of trench sidewall raking is required, where Group III or Group IV soils are present.
All lot corners and boundaries shall be clearly marked by a licensed surveyor prior to system installation.
Septic system installation not allowed when soil moisture conditions are near saturation within initial or repair drainfield areas.
No garbage disposals / insinkerators allowed in the house. County shall provide system O&M guidance materials to Owner.

The requirements of 15A NCAC 18E are incorporated by reference into this permit and shall be met. Systems shall be installed in accordance with the attached site sketch. This Construction Authorization is subject to revocation if the site plan, plat, or the intended use changes. The Construction Authorization shall not be affected by a change in ownership of the site. This Construction Authorization is subject to compliance with the provisions of 15A NCAC 18A .1900, as applicable, and to the conditions of this permit.

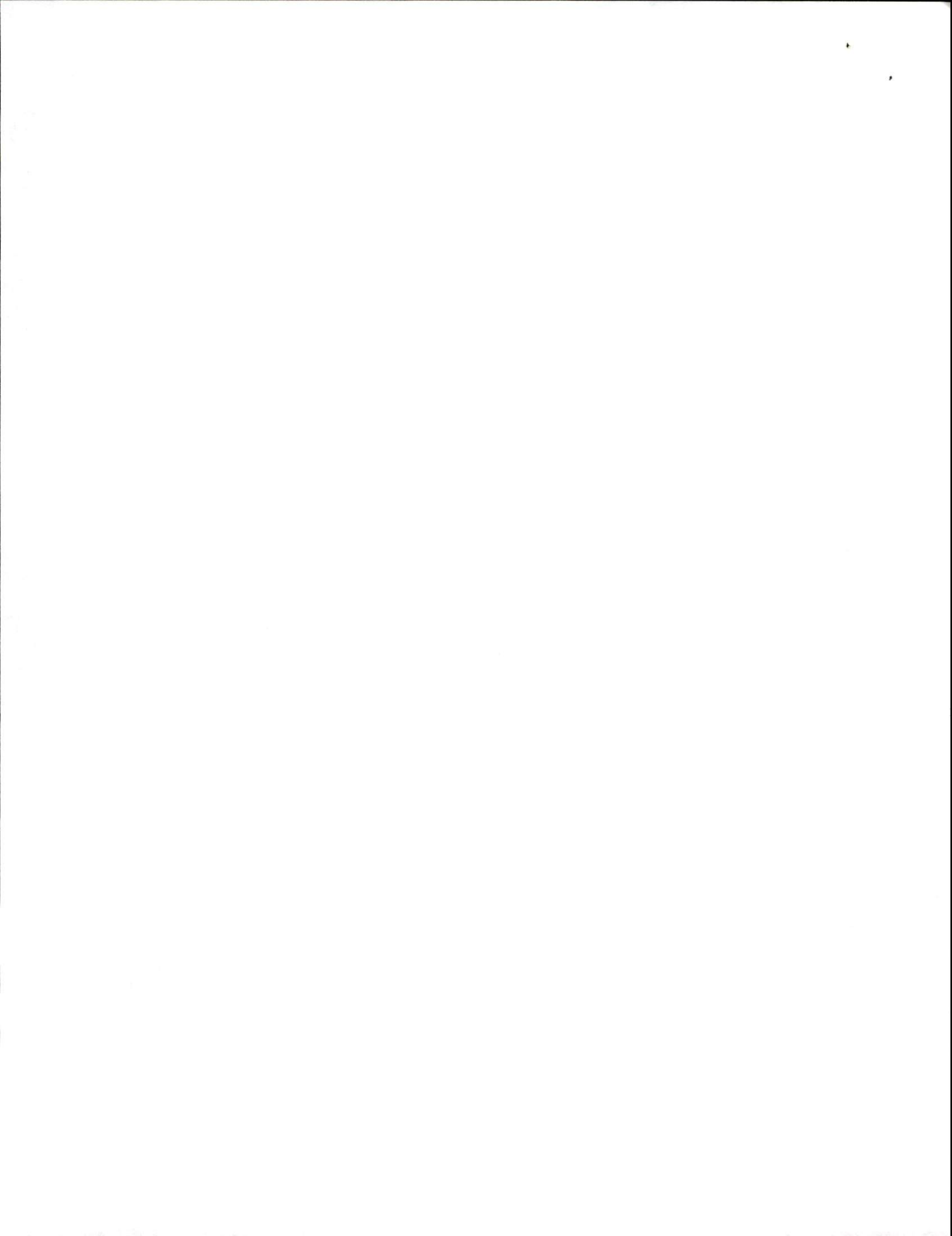
AOWE/PE Print Name: B. Scott Mitchell

AOWE/PE Signature: _____ Date: January 15, 2025

This AOWE/PE submittal is pursuant to and meets the requirements of G.S. 130A-335(a2) and (a5).



See attached site sketch



This Section for Local Health Department Use Only

Initial submittal received: _____ by _____
Date Initials

G.S. 130A-335(a5) states the following:

When an applicant for a Construction Authorization, or an Improvement Permit and Construction Authorization together, submits a Construction Authorization, or an Improvement Permit and Construction Authorization application together, the permit fee charged by the local health department, the common form developed by the Department, and any necessary signed and sealed plans or evaluations conducted by a person licensed pursuant to Chapter 89C of the General Statutes as a licensed engineer or a person certified pursuant to Article 5 of Chapter 90A of the General Statutes as an Authorized On-Site Wastewater Evaluator, the local health department shall, within five business days of receiving the application, conduct a completeness review of the submittal. A determination of completeness means that the Construction Authorization or Improvement Permit and Construction Authorization includes all of the required components. If the local health department determines that the Construction Authorization or Improvement Permit and Construction Authorization is incomplete, the local health department shall notify the applicant of the components needed to complete the Construction Authorization or Improvement Permit and Construction Authorization. The applicant may submit additional information to the local health department to cure the deficiencies in the Construction Authorization or Improvement Permit and Construction Authorization. The local health department shall make a final determination as to whether the Construction Authorization or Improvement Permit and Construction Authorization is complete within five business days after the local health department receives the additional information from the applicant. If the local health department fails to act within any period set out in this subsection, the applicant may treat the failure to act as a determination of completeness. The applicant may apply for the building permit for the project upon the decision of completeness of the Construction Authorization or Improvement Permit and Construction Authorization by the local health department or if the local health department fails to act within five business days. The Authorized On-Site Wastewater Evaluator or licensed engineer submitting the evaluation pursuant to this subsection may request that the local health department revoke or suspend the Construction Authorization or Improvement Permit and Construction Authorization for cause. Upon written request of the Authorized On-Site Wastewater Evaluator or licensed engineer, the local health department shall suspend or revoke the Construction Authorization or Improvement Permit and Construction Authorization pursuant to G.S. 130A-23. The Department shall develop a common form for use as the Construction Authorization.

The review for completeness of this Construction Authorization was conducted in accordance with G.S. 130A-335(a5). This

Construction Authorization is determined to be:

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

The following items are missing: _____

Copies of this were sent to the AOWE/PE and the Applicant on _____
Date

State Authorized Agent: _____ Date: _____

Complete

State Authorized Agent: _____ Date of Issuance: _____

This Construction Authorization is issued pursuant to G.S. 130A-335(a2) and (a5) using the signed and sealed plans or evaluations attached here. This Construction Authorization is subject to revocation if the site plan, plat, or the intended use changes. The Construction Authorization shall not be affected by a change in ownership of the site. This Construction Authorization is subject to compliance with the provisions of the Laws and Rules for Sewage Treatment and Disposal and to the conditions of this permit.

The Department, the Department's authorized agents, and the local health departments shall be discharged and released from any liabilities, duties, and responsibilities imposed by statute or in common law from any claim arising out of or attributed to plans, evaluations, preconstruction conference findings, submittals, or actions from a person licensed pursuant to Chapter 89C of the General Statutes as a licensed engineer or a person certified pursuant to Article 5 of Chapter 90A of the General Statutes as an Authorized On-Site Wastewater Evaluator in GS 130A-335(a2), (a5), and (a7). The Department, the Department's authorized agents, and the local health departments shall be responsible and bear liability for their actions and evaluations and other obligations under State law or rule, including the issuance of the operations permit pursuant to GS 130A-337.

Construction Authorization Expiration Date: _____

See attached site sketch





Permit/File #: _____

Re-submittal of Construction Authorization

LHD USE ONLY: This CA resubmittal received: _____ by _____
Date *Initials*

The following items are being resubmitted pursuant to G.S. 130A-335(a5) for issuance of the Construction Authorization:

I, _____ hereby attest that the information required to be included with this re-submittal
Authorized Onsite Wastewater Evaluator (Print Name)
is accurate and complete to the best of my knowledge and that the proposed Construction Authorization meets all applicable federal, State, and local laws, regulations, rules, and ordinances.

Signature of Authorized On-Site Wastewater Evaluator *Date*

The section below is for Local Health Department use after submittal of items noted as missing above.

LHD Follow-up Completeness Review of Construction Authorization

The review for completeness of this Construction Authorization re-submittal was conducted in accordance with G.S. 130A-335(a5). This Construction Authorization is determined to be:

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

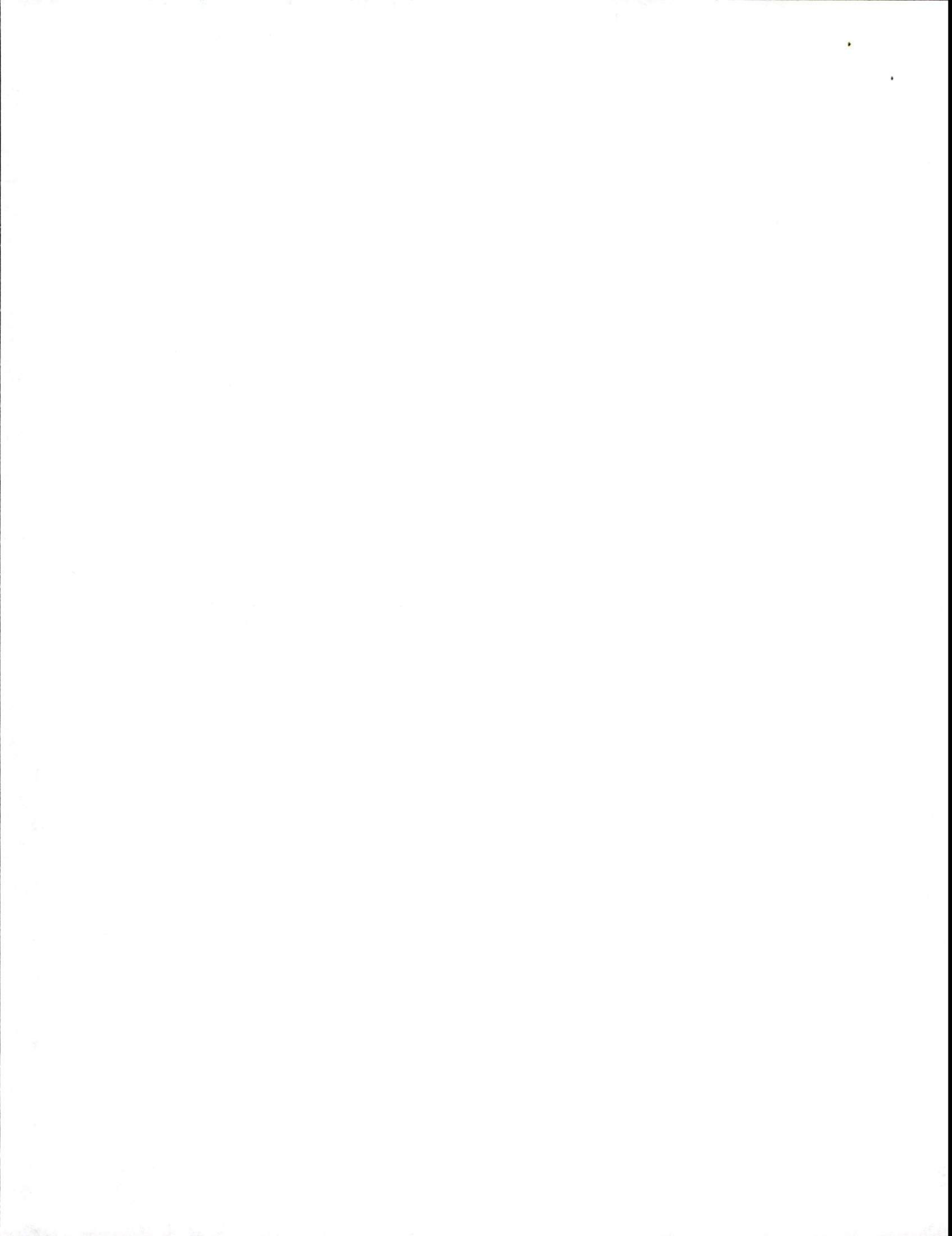
The following items are missing:

Copies of this were sent to the AOWE/PE and the Applicant on _____
Date

State Authorized Agent: _____ Date: _____

Complete

State Authorized Agent: _____ Date: _____





Permit/File #: _____

ADDENDUM TO G.S. 130A-335(a2) SUBMITTAL

County: _____

PIN/Lot Identifier: _____

Issued To: _____

Additional Improvement Permit Conditions:

Additional Construction Authorization Conditions:



Mitchell Environmental, P.A.

I hereby authorize representatives of Mitchell Environmental, P.A., to provide subsurface wastewater evaluations and septic system designs on my behalf, for the issuance of an IP and CA, for the property identified below.

For Improvement Permit (IP) issuance:

"The LSS/LG evaluation(s) attached to this application is to be used to issue an Improvement Permit in accordance with G.S. 130A-335(a2) and (a3)."

For Construction Authorization (CA) issuance:

"The plans or evaluations attached to this application are to be used to issue a Construction Authorization in accordance with G.S. 130A-335(a2), (a5), and (a6)."

The LSS evaluation attached to this application was used to produce and design a subsurface wastewater septic system for permitting to obtain an IP and CA in accordance with G.S. 130A-335(a2), (a3), (a5), and (a6).

Subject Property (Address, PIN, etc.): 158/155 Camp Rock Rd, Lillington NC 27546

Property Owner Name (Print): LGI Homes

Owner Representative (Print): Keith Sears

Owner Representative (Sign): Keith Sears

Date: 1/8/25

1501 Lakestone Village Lane, Suite 205
Fuquay-Varina, North Carolina 27526
919-669-0329



Mitchell Environmental, P.A.

SEPTIC SYSTEM DESIGN

for

BOONE TRAIL VILLAGE SUBDIVISION- LOT 52

Lillington, Harnett County, North Carolina

Submitted to:

Harnett County Health Department
307 Cornelius Harnett Blvd.
Lillington, NC 27546

Prepared for:

LGI Homes
5511 Capital Center Drive
Suite 560
Raleigh, North Carolina 27612

Prepared by:

Scott Mitchell, PE, LSS
Adam Aycok, EI

DATE: January 13, 2025
PROJECT NO.: 1624







Harnett County GIS

PID: 130519 0103 57
PIN: 0519-79-0472.000
Account Number: 1500028388
Owner: LGI HOMES NC LLC
Mailing Address: 1450 LAKE ROBBINS DR STE 430 THE WOODLANDS, TX 77380-3294
Physical Address: 155 CAMP ROCK RD LILLINGTON, NC 27546 ac
Description: LOT#52 BOONE TRAIL VILLAGE PH1 MAP#2024-600
Surveyed/Deeded Acreage: 0.69
Calculated Acreage: 0.69
Deed Date: 1650949200000
Deed Book/Page: 4144 - 0878
Plat(Survey) Book/Page: 2024 - 600
Last Sale: 2022 - 4
Sale Price: \$2220000
Qualified Code: A
Vacant or Improved: V
Transfer of Split: T
Actual Year Built:
Heated Area : SqFt
Building Count : 0

Building Value: \$0
Parcel Outbuilding Value: \$0
Parcel Land Value: 0
Market Value: \$0
Deferred Value: \$0
Total Assessed Value: \$0
Zoning: RA-30 - 0.69 acres (100.0%)
Zoning Jurisdiction: Harnett County
Wetlands: No
FEMA Flood: Minimal Flood Risk
Within 1mi of Agriculture District: Yes
Elementary School: Boone Trail Elementary
Middle School: Western Harnett Middle
High School: Western Harnett High
Fire Department: Boone Trail
EMS Department: Medic 12, D12 EMS
Law Enforcement: Harnett County Sheriff
Voter Precinct: Boone Trail
County Commissioner : Duncan Edward Jagers
School Board Member: Duncan Jagers





Repair System

PRESSURE MANIFOLD DESIGN

Name: LGI Homes P.I.N. #: 0519-79-0472 D #: N/A
 Address: 155 Camp Rock Rd Subdiv: Boone Trail Village Lot#: 52
 # of BDR: 4 Daily Flow: 480 gal/day L.T.A.R.: 0.350 gal/day/sq.ft
 Septic Tank: 1000 gals (min.) Pump Tank: 1000 gals (min.) Sq. Foot: 1080 Stone Depth: N/A
 (EZ Flow)
 Number of Taps: 4 Length of Trenches: 90 ft(See Tap Chart for Details)
 Depth of Trenches: 24 inches Manifold Length: 42 in
 Manifold Diameter: 4 in sch 80pvc (minimum) Tap Configuration: 6 in spacing 1 side(s) of manifold
 Supply Line: length: 25 ft Diameter: 2 in sch 40pvc
 Friction Loss + Fitting Loss: 1.11 ft(supply line length + 70' for fittings in pump tank)
 Design Head: 2.0 ft Elevation Head: 8.90 ft
 Vent Hole Size: 3/16 in Orifice Coefficient of Discharge: 0.60
 Orifice Coefficient of Contraction: 0.62 Orifice Coefficient of Velocity: 0.97
 Maximum Head Supplied by Selected Pump(s) at Total Design Flowrate: 22 ft
 Orifice / Vent Hole Flowrate: 1.94 gpm Head Loss at Orifice / Vent Hole: 1.40 ft
 Total Head: 13.41 ft Pump to Deliver: 23.86 gals/min at 13.41 ft head
 Dosing Volume: 154.44 gals.
 Drawdown: 154.44 gals divided by 18 gals/in = 8.58 inches

SJE Rhombus Installer Friendly Series simplex control panel, or equivalent, required
 A septic tank filter, or equal is required.
 Possible pumps: Hydromatic: Goulds: Myers:
 Zoeller: 137 Other:

TAP CHART

Bench Mark	<u>4.57</u>	is = 100.00	set at	<u>EG at 50/51 back EIP</u>	Design Head:	<u>2.0</u>			
Pump tank elev.	<u>11.5</u>	<u>93.07</u>	Pump elev.	<u>88.07</u>	Manifold elev.	<u>96.97</u>			
line	color	rod read	Elevation	length	hole size	flow/tap	gal/day	trench area	LINE LTAR
1	Blue	8.60	95.97	90	1/2in SCH 80	5.48	120.00	270	0.4444
2	Orange	8.85	95.72	90	1/2in SCH 80	5.48	120.00	270	0.4444
3	Purple	9.13	95.44	90	1/2in SCH 80	5.48	120.00	270	0.4444
4	Yellow	9.50	95.07	90	1/2in SCH 80	5.48	120.00	270	0.4444
		total	feet =	<u>360</u>	gal/min =	<u>21.9</u>		<u>LTAR =</u>	<u>0.3500</u>
% of Pipe Vol.	<u>66</u>			<u>Des. Flow</u>	<u>480.00</u>			<u>(Itar + 5%)</u>	<u>0.3675</u>
Dose Volume	<u>154.44</u>			<u>Pump Run=</u>	<u>21.90</u>			<u>(Itar W/ INOV)</u>	<u>0.4667</u>
Dose Pump Time	<u>7.05</u>			<u>Tank Gal/IN</u>	<u>18</u>			<u>(Itar + 5%)</u>	<u>0.4900</u>
Drawdown in Inches	<u>8.58</u>			<u>Elev. Head</u>	<u>8.90</u>				
Supply Line Length	<u>25</u>								
Comments:									



STB - 345 - Top Seam

Approval Date: 12 - 09 - 99

Liquid Capacity 1007 Gallons

Non Traffic Rated

Reinforcing Schedule: # 3 Grade 60 Rebar

4500 PSI Concrete w/ State Approved Structural Fiber

Est. Weight: 8,200 lbs.

Manufactured By:

GARNERS

Septic Tanks, Inc.

Eddie Garner, President

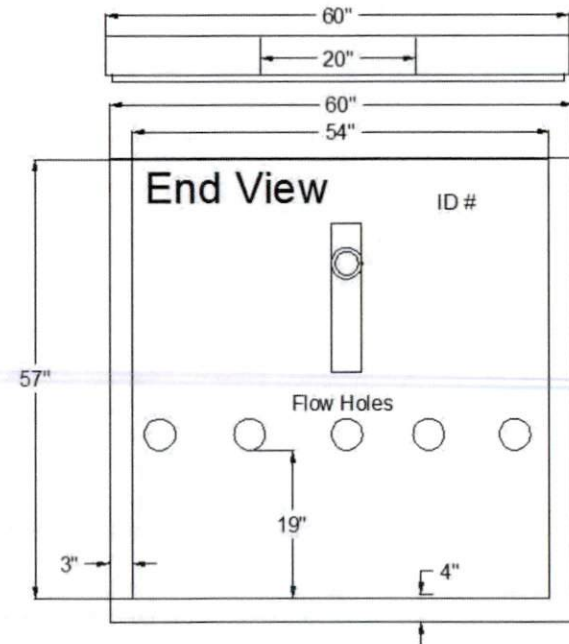
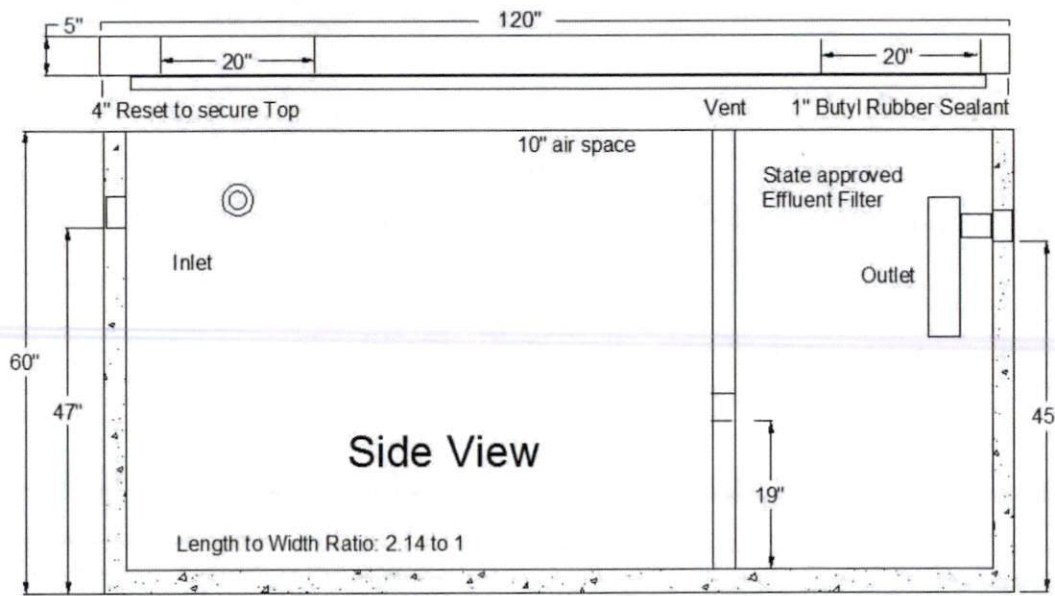
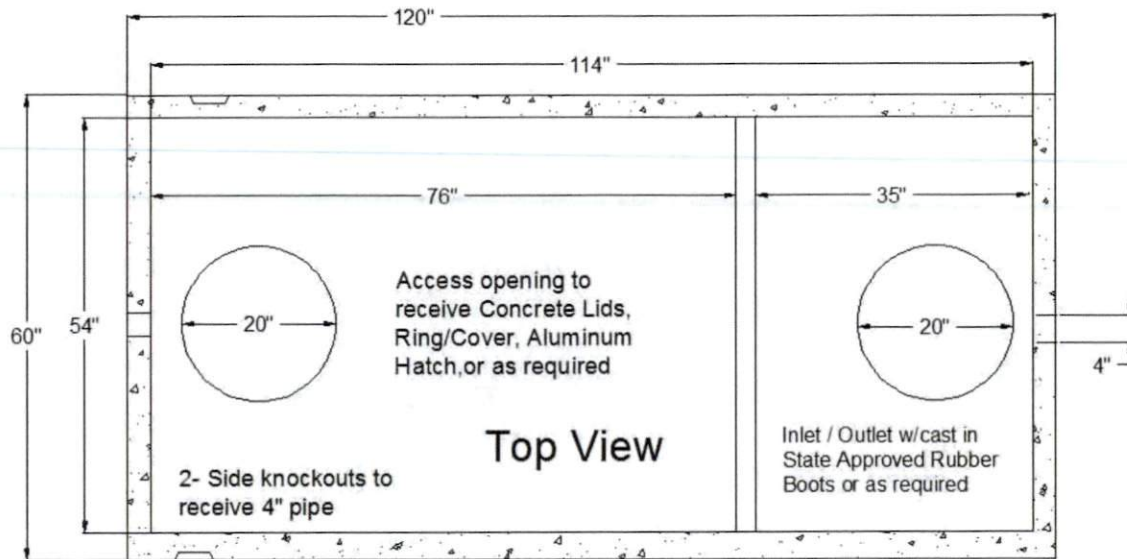
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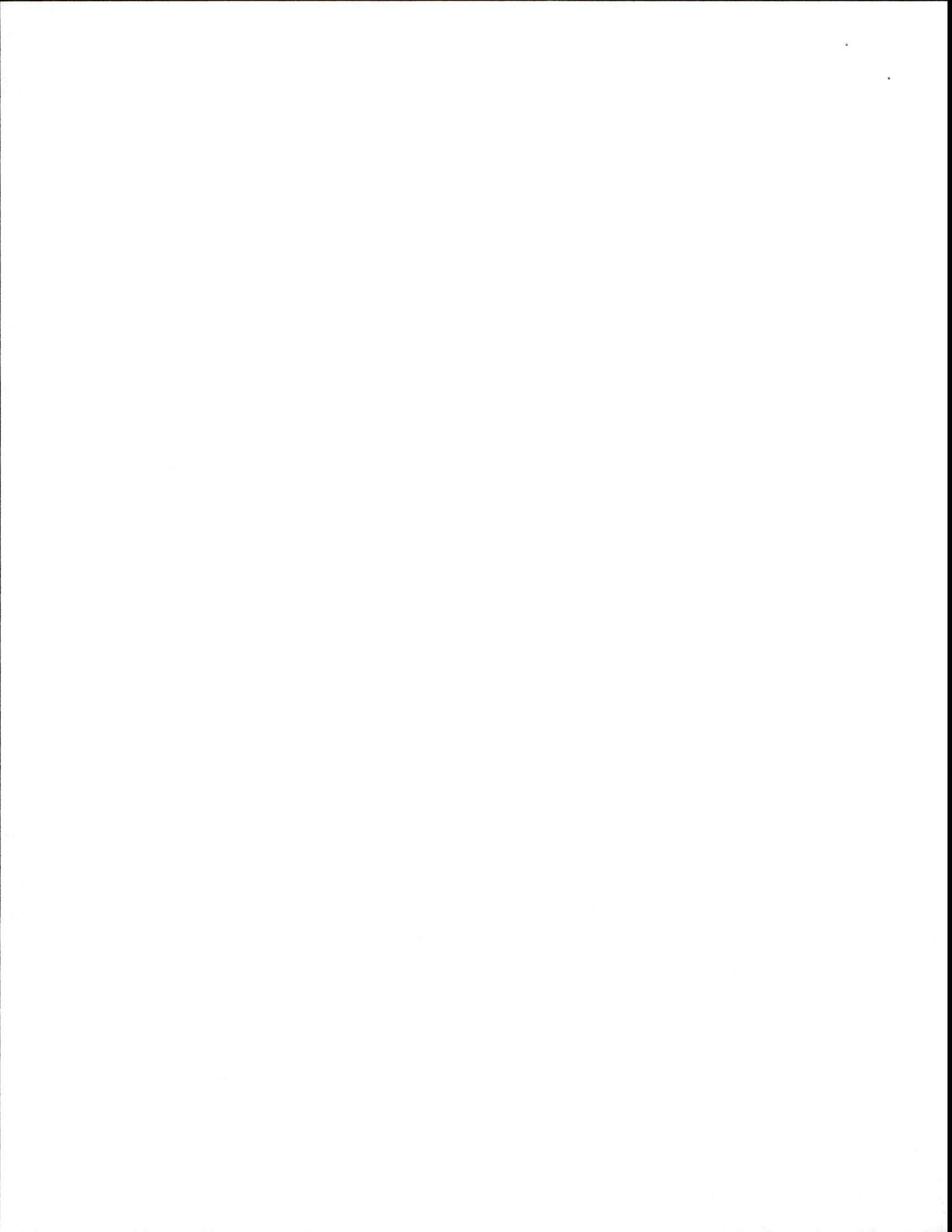
121 Stanton Hill Road

Carthage, NC 28327

Fax 919-775-2229

Eddie@garnersseptic tanks.com







PL-68 Filter and Tee

PL-68 is much more than just an effluent filter. The housing can also be used as an inlet baffle (tee) or an outlet baffle. The housing is designed to accept Polylok's snap in gas deflector to deflect gas bubbles away from the tee and to keep the solids in the tank.

Features:

- Offers 68 linear feet of 1/16" filter slots, which significantly extends time between cleaning.
- Accepts 3/4" PVC handle.
- Locks in any 360° position when used with PL-68 Tee.
- PL-68 Housing can be used as an inlet or outlet tee.
- Gasket prevents bypass.

PL-68 Installation:

Ideal for residential waste flows up to 800 gallons per day (GPD). Easily installs in any new or existing 4" outlet tee.

1. Locate the outlet of the septic tank.
2. Remove the tank cover and pump tank if necessary.
3. Glue the filter housing to the outlet pipe, or use a Polylok Extend & Lok if not enough pipe exists.
4. Insert the PL-68 filter into tee.
5. Replace and secure the septic tank cover.

PL-68 Maintenance:

The PL-68 Effluent Filter will operate efficiently for several years under normal conditions before requiring cleaning. It is recommended that the filter be cleaned every time the tank is pumped, or at least every three years.

1. Do not use plumbing when filter is removed.
2. Pull PL-68 out of the tee.
3. Hose off filter over the septic tank. Make sure all solids fall back into septic tank.
4. Insert filter back into tee/housing.

Related Products:

PL-68 Filter Concrete Baffle
 Extend & Lok™



Extend & Lok™
 Easily installs into existing tanks.



Spacer Bushing
 4" SCHD 40 to SDR 35



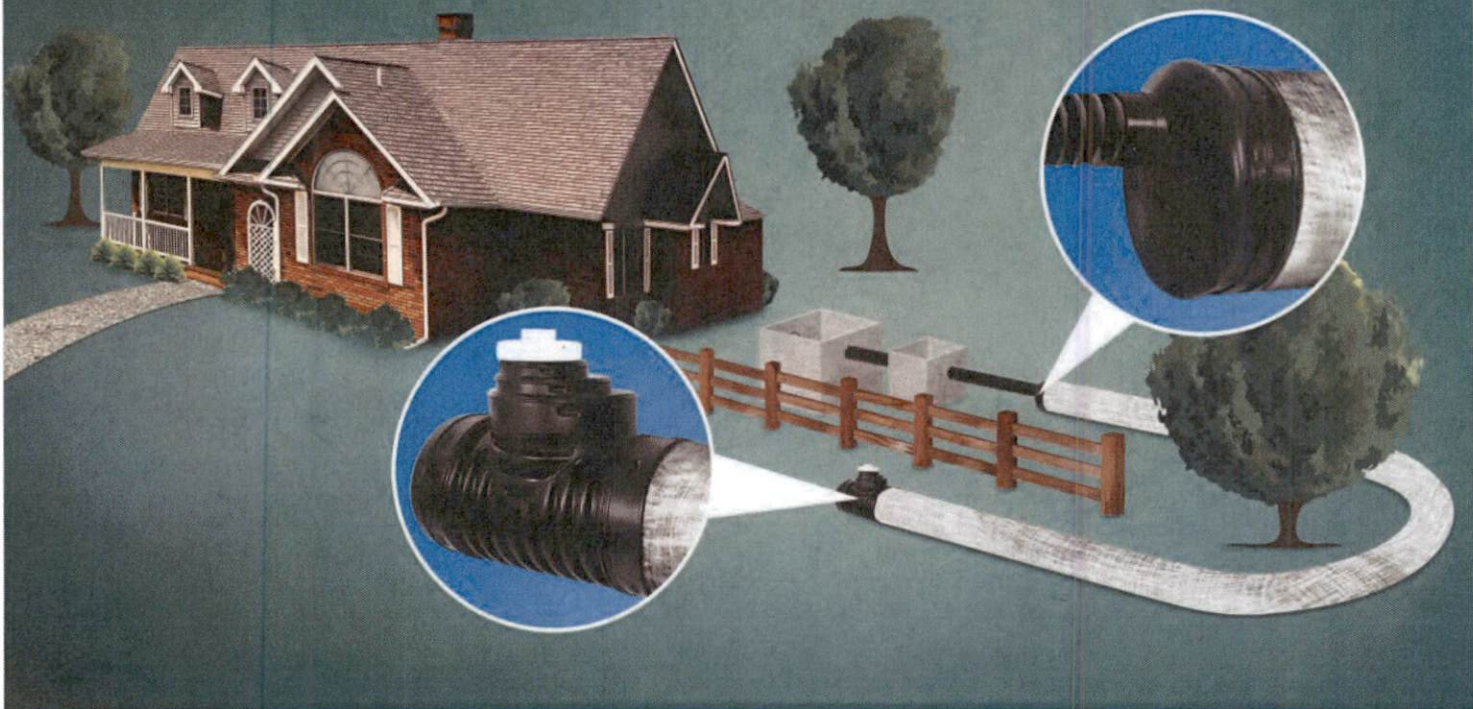
Spacer Bushing
 4" SCHD 40 to 110mm Pipe



2" Extender



Crumpler's No-Rock™ Fabric Wrapped Large Diameter (LDP) Septic Pipe



Crumpler Plastic Pipe, Inc.

Manufacturers of Corrugated Plastic Drainage Pipe

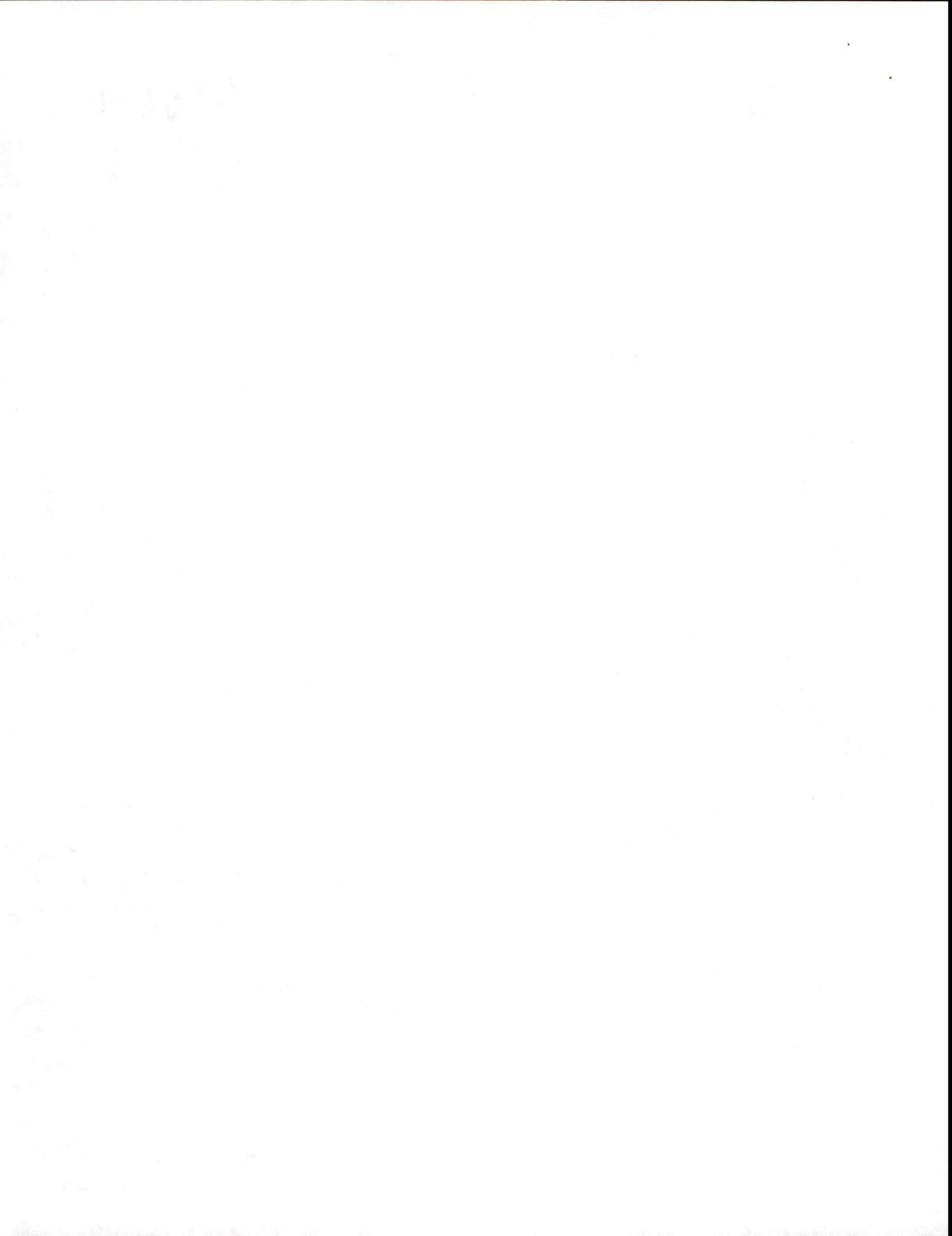
Phone 910-525-4046 / (800) 334-5071

Post Office Box 2068

Roseboro, North Carolina 28382

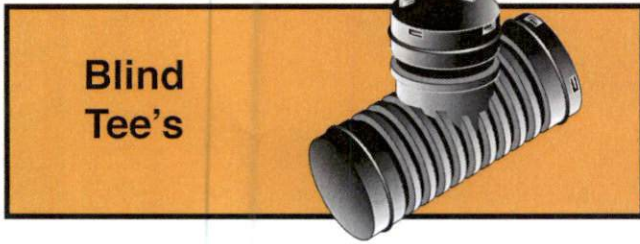
Web Site: www.cpp-pipe.com



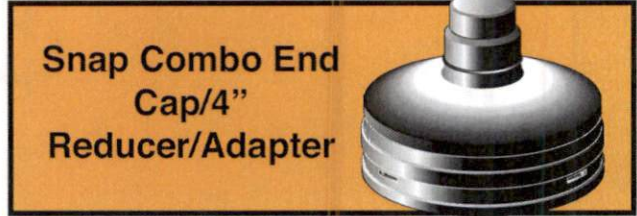




Crumpler's No-Rock™ Fabric Wrapped Large Diameter (LDP) Septic Pipe

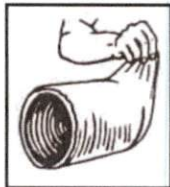
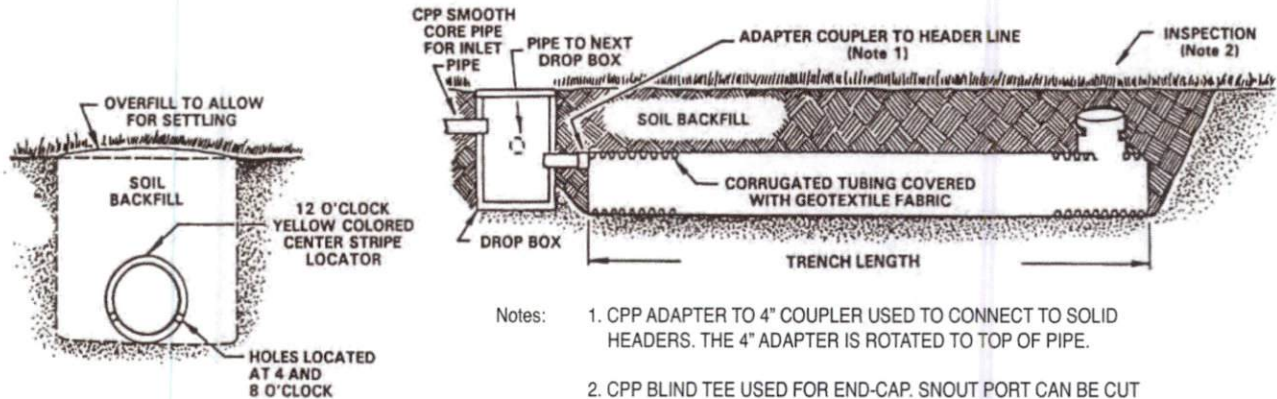


Blind Tee's



Snap Combo End Cap/4" Reducer/Adapter

CPP Gravelless LDP Trench Construction Details



TYPE	SIZE	PART NO.	PACKAGE DESCRIPTION	PRICE
	8"	0830020B	CRUMPLER'S NO-ROCK™ SEPTIC - 20 ft. with filter wrap	
	10"	1030020B	CRUMPLER'S NO-ROCK™ SEPTIC - 20 ft. with filter wrap	

Large diameter (LDP) CPP GRAVELLESS septic tank trench systems use a filter wrap that allows for the installation of septic treatment pipes without gravel. The advantage in using CPP NO-ROCK is evident in areas where there is a shortage of inexpensive quality rock or where the shape and topography of a lot hinder the access of heavy construction equipment. Less equipment use means more trees can be saved,

less lot grading is needed, and thus fuel and labor are saved. Additionally, narrow trenches for 8" and 10" CPP pipes create a reduced OC (On-Center) Spacing between parallel septic trenches. An 8" CPP pipe can fit in a 10" wide trench and a 10" CPP pipe in a 12" wide trench. Thus Lot space is saved for other uses.

- Eliminates Rock
- Saves On Lot Grading
- Saves Trees On Lot
- Saves on Installation Labor
- Saves Fuel
- Increases Lot Value





Crumpler's No-Rock™ Fabric Wrapped Large Diameter (LDP) Septic Pipe



TYPE	SIZE	PART NO.	PACKAGE DESCRIPTION	PRICE
	8"	0830020B	CRUMPLER'S NO-ROCK™ SEPTIC - 20 ft. with filter wrap	
	10"	1030020B	CRUMPLER'S NO-ROCK™ SEPTIC - 20 ft. with filter wrap	

Large diameter GRAVELLESS septic tank trench systems were developed as an alternative to 4" pipe systems in gravel-filled trenches for use in soils that most conventional 4" gravel would be allowed in. Organic Iron Ochre soils, however, are unsuitable For Filter Enclosed Gravelless Septic Pipes. The advantage in using the large diameter systems is evident in areas where there is a shortage of inexpensive quality rock, or where the shape and topography of a lot hinder the access of heavy construction equipment. The use of small trenchers for digging narrow trenches means more trees can be saved, less grading is needed, and thus fuel and labor are saved.

Crumpler's NO-ROCK™ septic systems include using either an 8" or a 10" corrugated HDPE pipe enclosed in a polypropylene filter wrap. ASTM-F-481 septic installation specification should be reviewed prior to installation. **Most states allow GRAVELLESS large diameter systems to be substituted for conventional systems in ANY SOIL TYPE deemed acceptable for a**

conventional system. One should check with local septic inspectors for locally approved soils.

Crumpler's NO-ROCK™ septic system may be substituted for any conventional 4" pipe gravel trench system utilizing distribution devices, serial distribution, hillside or stepdowns. However, it should not be substituted for bed systems. It should also be limited to domestic sewage, and not used where there will be large amounts of grease or oil such as in restaurants unless designed by an engineer.

The 8" size pipe will equal to 2-foot wide conventional trench; and the 10" size will equal a 2.5 foot wide trench. To determine the required linear footage of either pipe size, first determine the square footage by dividing the design sewage flow by the appropriate soil's long term application rate. Then divide this total square footage area figure by either 2 feet (for 8") or 2.5 feet (for 10") to establish the linear footage amount. Per chart below, on center (oc) spacing will be determined by actual trench width.

Example: A 3-bedroom house on a loam soil
0.6 gpd/ft² = loam soil's long term application rate.

3BR x 120 gpd = 360 gpd
360 gpd ÷ 0.6 gpd/ft² = 600 ft.

600 ft² ÷ 2ft = 300 linear ft of 8" or
600 ft² ÷ 2.5 ft = 240 linear ft of 10"
600 ft² ÷ 3 ft = 200 ft for conventional 4" gravel

SUGGESTED INSTALLATION OF STANDARDS

Nitrification trench bottom minimum width for 8".....	10"
Nitrification trench bottom minimum width for 10"	12"
Nitrification line center spacing on 8"	5' oc
Nitrification line center spacing on 10"	6' oc
Nitrification trench bottom minimum depth	18"
Nitrification trench bottom maximum depth (24" preferred)	36"
Nitrification trench bottom slope.....	level to 1" per 100 ft
Nitrification line minimum cover	6"
Nitrification line maximum cover (12" preferred).....	24"

To eliminate voids and clods under pipes 15" - 18" trenches is recommended unless sand backfill is used.

The corrugated pipe used shall comply with ASTM-F-667. Also the installer should be careful to note that the filter wrap is light

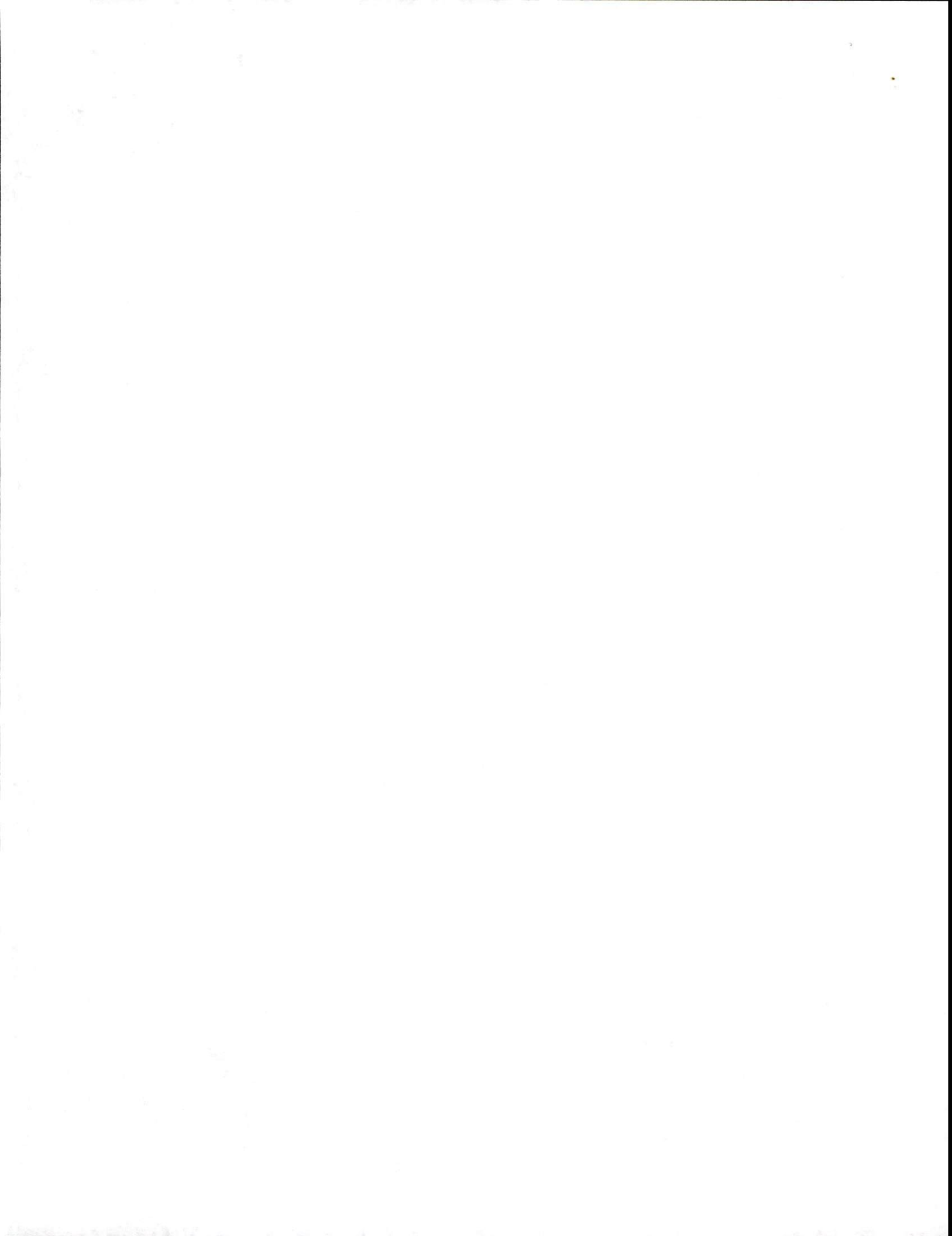
sensitive, and should not be exposed to sunlight for extended periods of time. The installer should also take care during installation to avoid tearing of the filter material. The protective plastic wrap that protects the filter should be disposed of off site.

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Slope Correction Table



NOTE: Add the inches from Slope Table to the MSD¹ to determine the RSD²

PERCENT SLOPE	10" Trench	12" Trench	18" Trench	24" Trench	36" Trench
6	0.6	0.7	1.1	1.4	2.2
12	1.2	1.4	2.2	2.9	4.3
18	1.8	2.2	3.2	4.3	6.5
24	2.4	2.9	4.3	5.8	8.6
30	3	3.6	5.4	7.2	10.8
36	3.6	4.3	6.5	8.6	13.0
42	4.2	5.0	7.6	10.1	15.1
48	4.8	5.8	8.6	11.5	17.3
54	5.4	6.5	9.7	13.0	19.4
60	6	7.2	10.8	14.4	21.6

NOTE: For sloping sites a calculation of the additional required soil depth is necessary using the table above or the following formula: $RSD = MSD + (TW \times .S)$

Where; RSD = Required Soil Depth (inches),

MSD - Min. Soil Depth (Min. Soil Cover + Ht. of Sys. + Min. Separation) (in)

TW = Trench Width (inches), &

.S = Percent Slope (.00)

Example: Assume site for septic system dispersal field has a slope of 28% and the trench bottom is required to be 12 inches above a site limitation, such as, weathered rock or perched water table. Also, assume that the proposed site has a usable or acceptable soil depth of 38 inches. Further, a minimum soil cover of 6 inches is required over the dispersal system.

Trial 1: Conventional trench (36 inches wide, 12 inches gravel, 6 inches over) would require a usable soil depth of 40 inches. [40 inches RSD - 30 inches MSD + (36 inches TW x .28 S)] Thus, a conventional or 36 inch wide trench is unsuitable at this site.

Trial 2: Crumpler NO ROCK™ 8 inch ID (10 in. OD) installed in a 12 inch wide trench would require a usable soil depth of 31.4 inches. [31.4 RSD = 28 inches MSD + (12 inches TW x .28 S)] Therefore, site is acceptable for Crumpler 8 in. NO ROCK™.

Trial 3: Crumpler NO ROCK™ 10 inch ID (12 in. OD) installed in an 18 inch wide trench would require a usable soil depth of 35 inches. [35 inches RSD = 30 inches MSD + (18 inches TW x .28 S)] Therefore, site is acceptable for Crumpler 10 inch NO ROCK™.

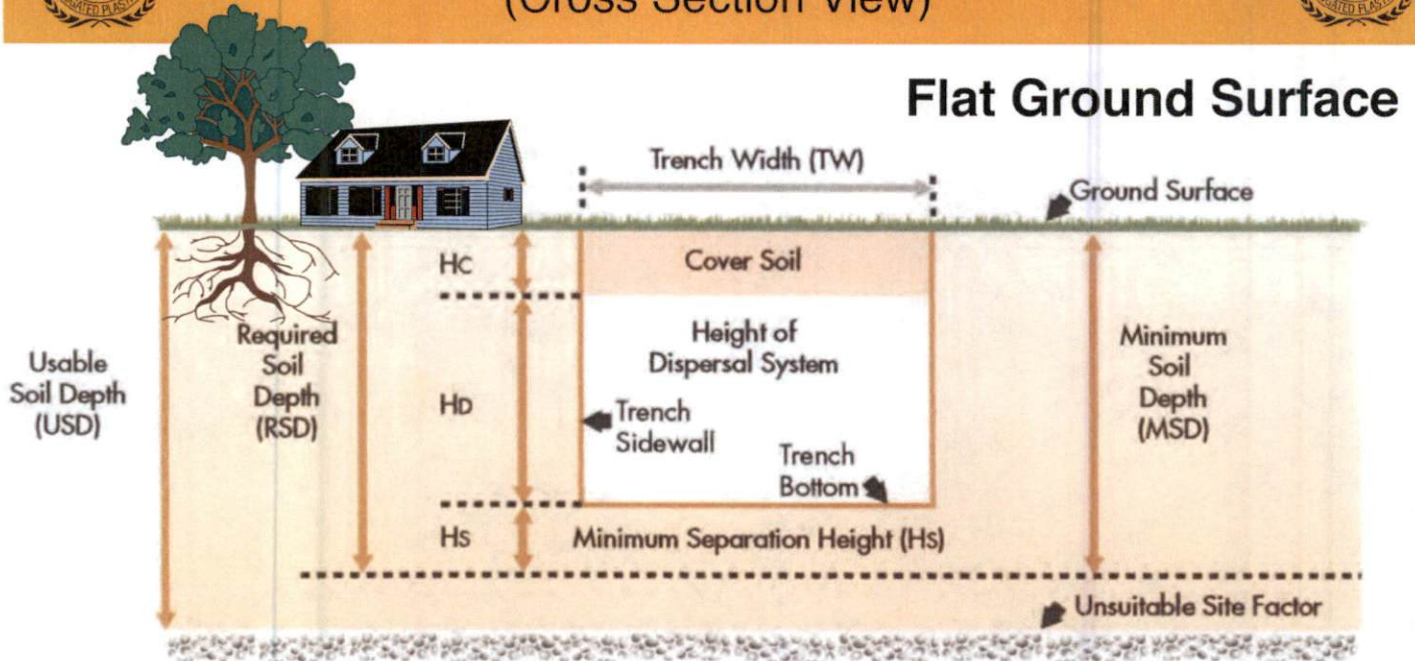
¹ MSD is the minimum soil depth at 0% slope and is the sum of the min. separation distance between trench bottom and limiting horizon (typ. 12 in), plus the system height, plus the min. soil cover (typ. 6 in.).

² RSD is the required soil depth to install a trench on a sloping site with the added inches to meet the minimum separation distance on the uphill side of the trench.





Septic Effluent Disposal Trenches on Sloping Sites (Cross Section View)

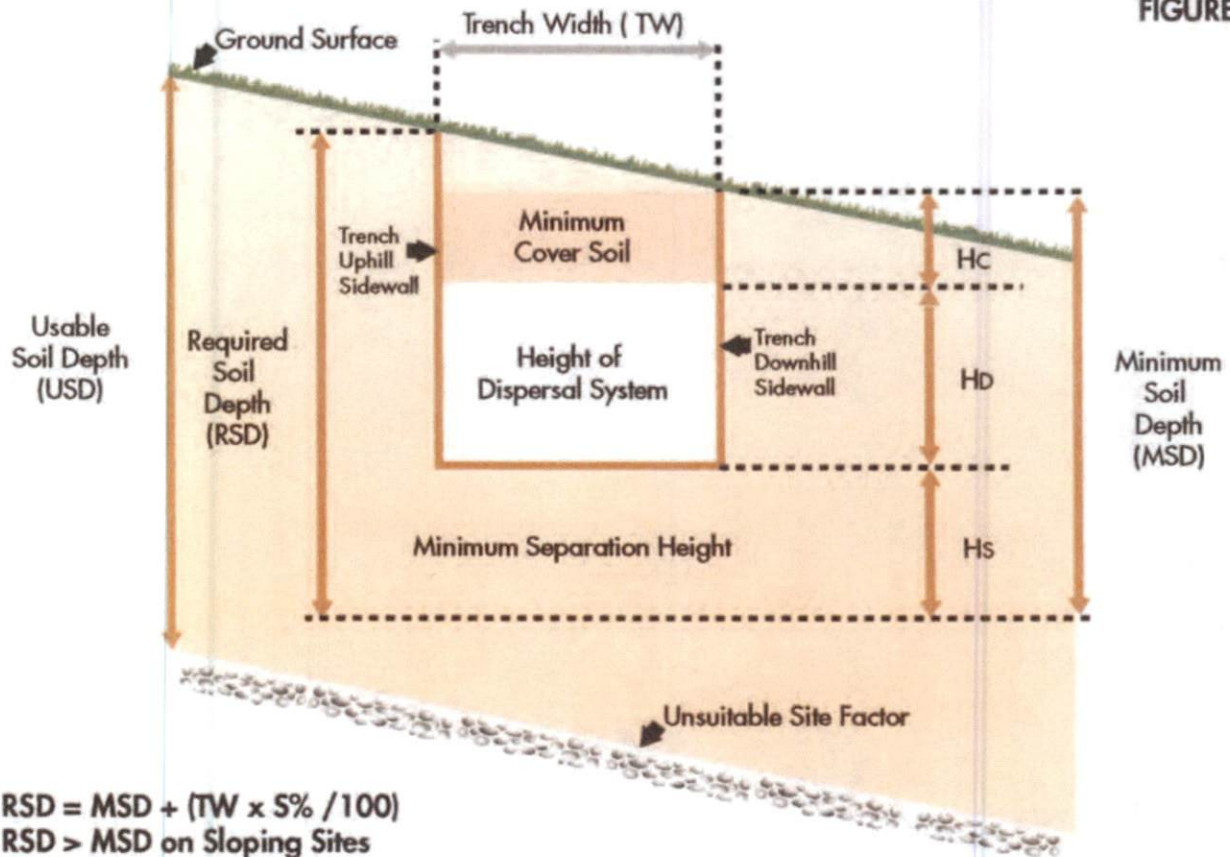


$$\text{MSD} = H_c + H_d + H_s$$
$$\text{MSD} = \text{RSD on Flat Sites}$$

Not To Scale

FIGURE 1

Sloping ground Surface



$$\text{RSD} = \text{MSD} + (\text{TW} \times 5\% / 100)$$
$$\text{RSD} > \text{MSD on Sloping Sites}$$
$$\text{USD} \geq \text{RSD}$$

Not To Scale

FIGURE 2

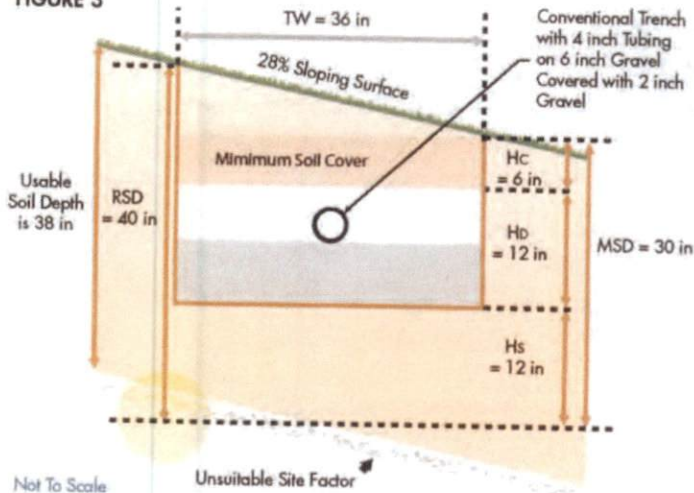




Septic Effluent Disposal Trenches on Sloping Sites (Cross Section View)



FIGURE 3



Septic Effluent Disposal Trenches on Sloping Sites (Cross Section) Trial No. 1

Site has 28% slope and soil is 38 inches deep

Trial No. 1: Use 36 inch wide conventional trench system

$$MSD = 6 \text{ in} + 12 \text{ in} + 12 \text{ in} = 30 \text{ inches}$$

$$RSD = 30 \text{ in} (36 \text{ in} \times 28\%/100) = 40 \text{ inches}$$

$$RSD (40 \text{ in}) > USD (38 \text{ in})$$

Proposed System **Unsuitable** for Slope

Septic Effluent Disposal Trenches on Sloping Sites (Cross Section) Trial No. 2

Site has 28% slope and soil is 38 inches deep

Trial No. 2: Use CPP 8 inch NO-ROCK™ with 12 inch wide trench.

$$MSD = 6 \text{ in} + 10 \text{ in} + 12 \text{ in} = 28 \text{ inches}$$

$$RSD = 30 \text{ in} (12 \text{ in} \times 28\%/100) = 31.4 \text{ inches}$$

$$USD (38 \text{ in}) > RSD (31.4 \text{ in})$$

Proposed **CPP 8 inch NO-ROCK™** Suitable for Slope

FIGURE 4

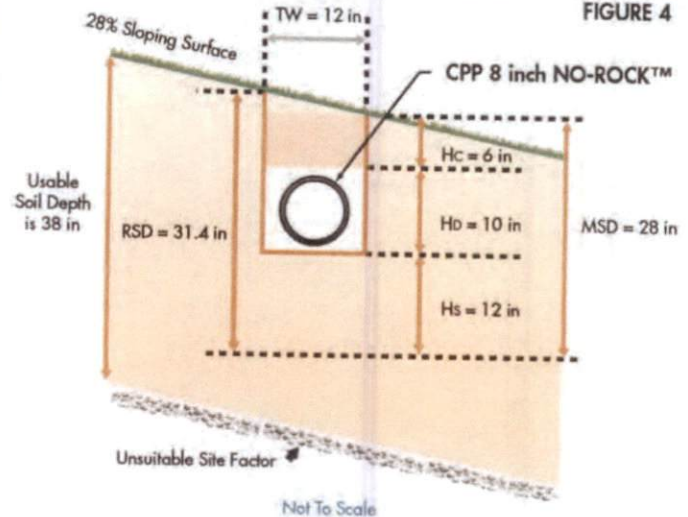
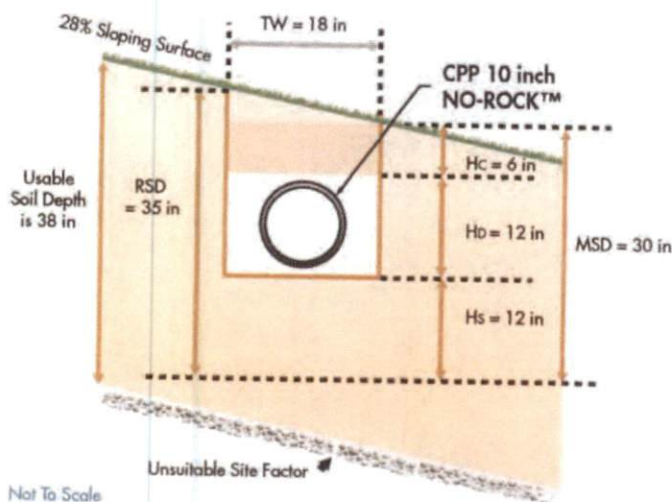


FIGURE 5



Septic Effluent Disposal Trenches on Sloping Sites (Cross Section) Trial No. 3

Site has 28% slope and soil is 38 inches deep

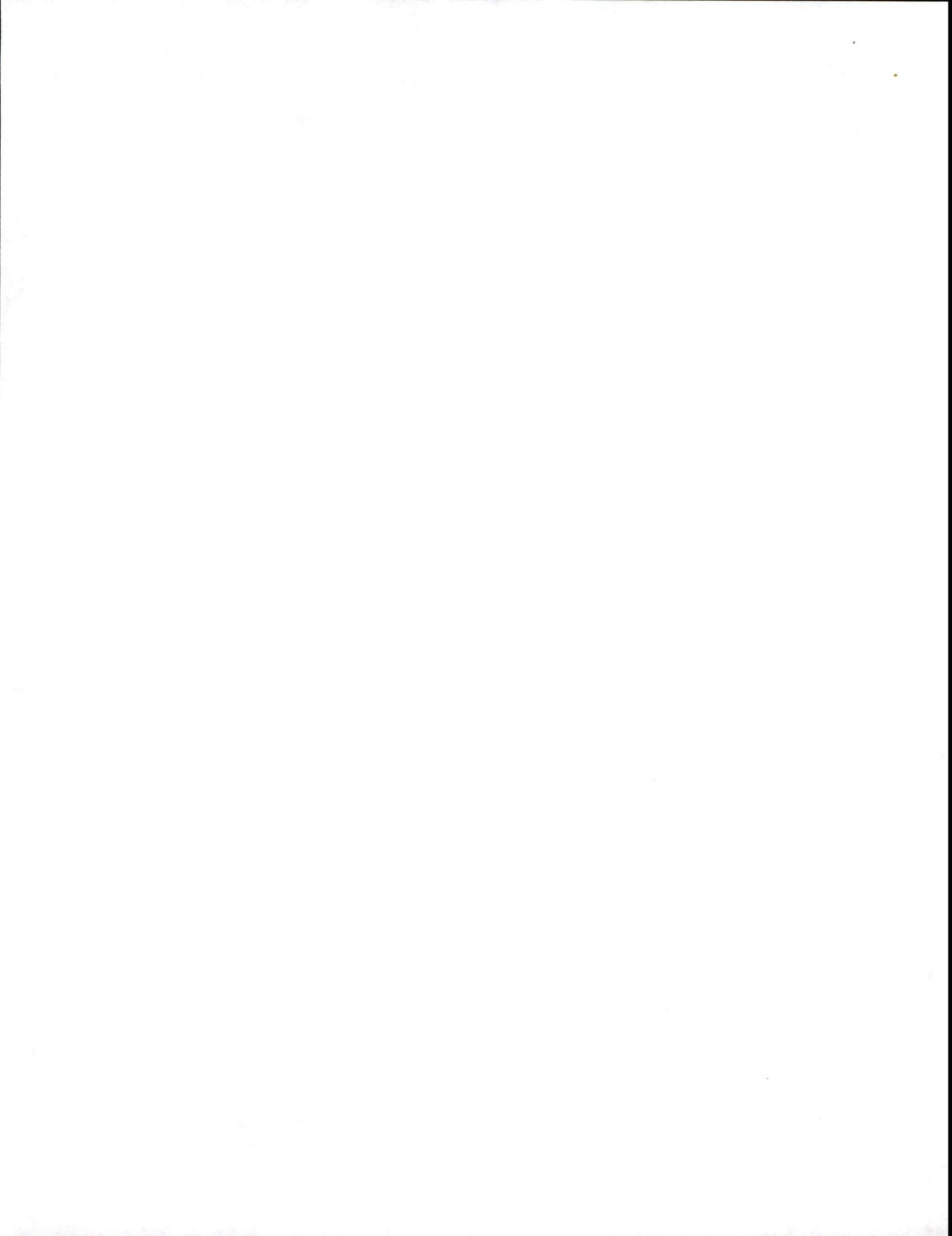
Trial No. 3: Use CPP 10 inch NO-ROCK™ with 18 inch wide trench.

$$MSD = 6 \text{ in} + 12 \text{ in} + 12 \text{ in} = 30 \text{ inches}$$

$$RSD = 30 \text{ in} (18 \text{ in} \times 28\%/100) = 35 \text{ inches}$$

$$USD (38 \text{ in}) > RSD (35 \text{ in})$$

Proposed **CPP 10 inch NO-ROCK™** Suitable for Slope





Crumpler's No-Rock™ Fabric Wrapped Large Diameter (LDP) Septic Pipe



1
NC State University layout of CPP No-Rock Septic at the Ed Booth field Learning Lab.



2
Laser Level adjustment setting prior to trenching sequence.



3
Laser Level check of trench depth grade and bag encased protected pipe moved onto trench site. The plastic bags protect the filter wrap from extended storage UV deterioration and natural handling abuses.



4
Protective plastic bags removed just prior to trench placement.



5
Protective plastic bags removed from the site for disposal elsewhere.



6
Trenching complete, and ready for Side-Wall rake prep sequence.



7
CPP No-Rock Septic pipes allow for narrow trenches that offer a closer OC spacing, which requires a reduced land area foot print compared to conventional 3-foot wide trenches.



8
A Blind Tee with a screw off Clean Out Plug is placed at the end of each individual line. This allows for a line inspection.



9
Final cover sequence begins.



10
Narrow trenches allow for faster, less cumbersome of equipment about the site during the final cover phase, and this saves equipment time on the job.



To Spec (HDPE) Corrugated Plastic Pipe Spec as:

ASTM General Construction

CPP-ASTM-F-677 (3" - 24")

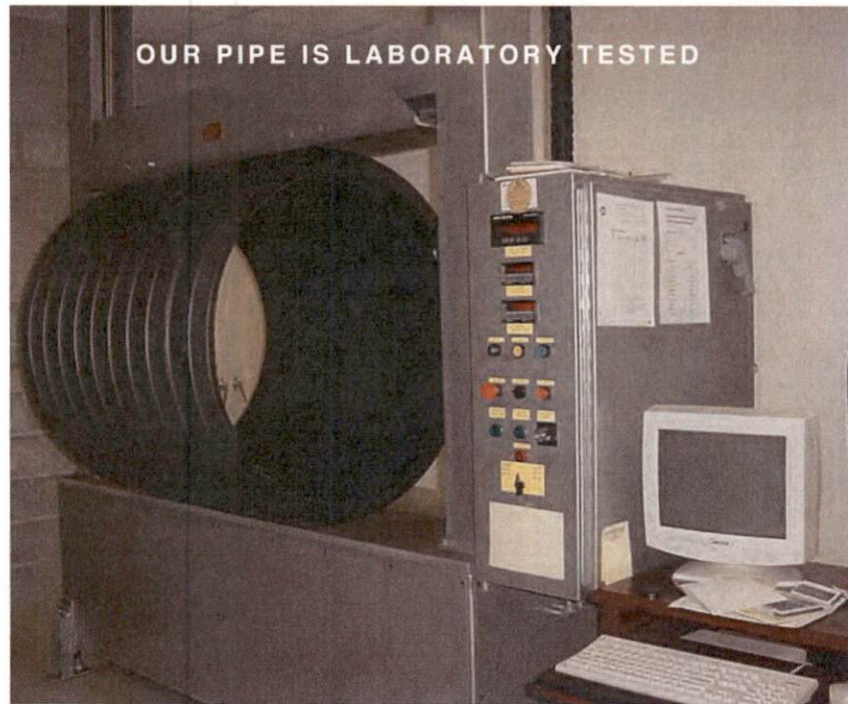
CPP-ASTM-F-2306 (12" - 60")

CPP-ASTM-F-2648 (2"-60")

AASHTO Highway Construction

CPP-AASHTO-M-252 (3" - 10")

CPP-AASHTO-M-294 (12" - 60")



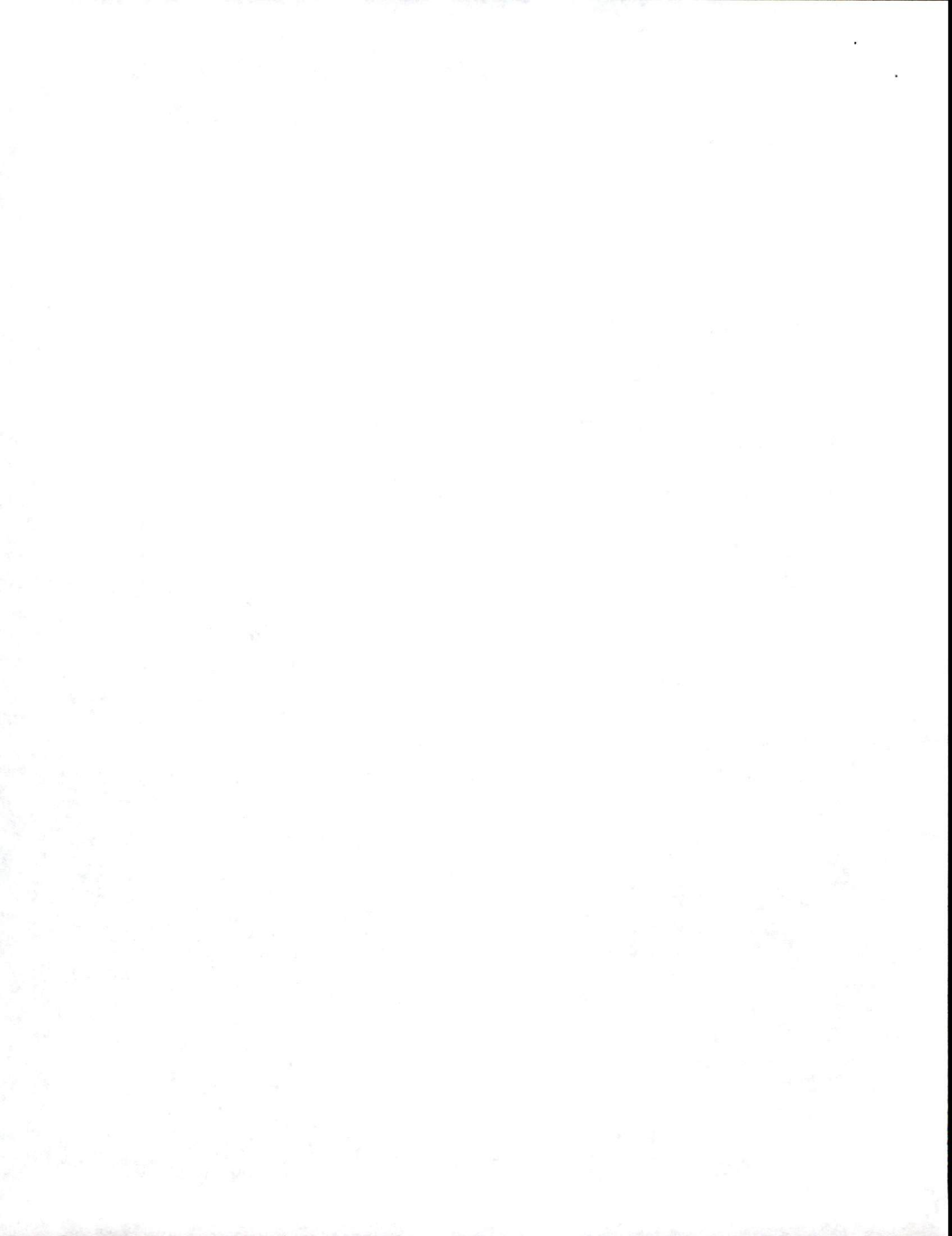
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WEB SITE: www.cpp-pipe.com

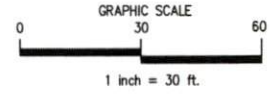
The East Coast's Largest Producer Under One Roof





4-Bedroom
 LTAR: 0.35 gpd/ft²
 Initial: Gravity-to-10" Large Diameter
 Pipe utilizing lines 5-10 (552')
 Repair: Pump-to-Innovative 25%
 Reduction Status Product utilizing
 lines 1-4 (360')

Initial septic drainfield

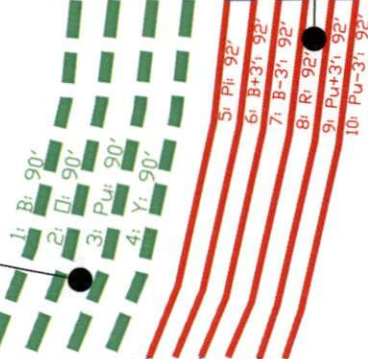


SITE
 BOUNDARY

133.27'

BUCKSHOT DRIVE

Repair septic drainfield



51

222.80'

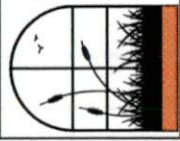
52

112.36'

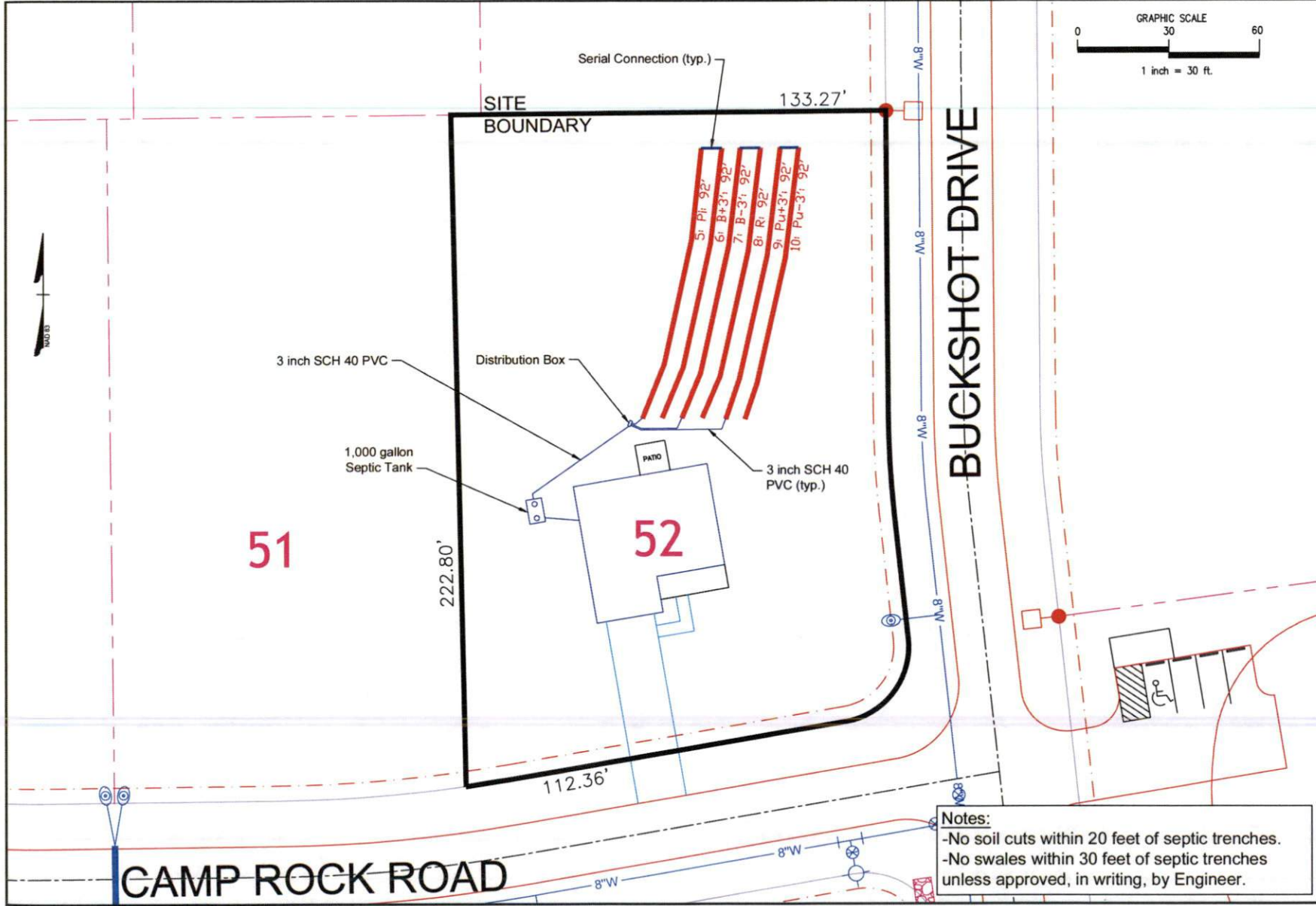
CAMP ROCK ROAD

Notes:
 -No soil cuts within 20 feet of septic trenches.
 -No swales within 30 feet of septic trenches
 unless approved, in writing, by Engineer.

US Homes PREPARED FOR : 501 Capital Center Drive Raleigh, NC 27612		REVISION NO. Original Submitted Revision 1 Revision 2 Revision 3 Header Set	DATE January 13, 2025	SHEET NUMBER 1 of 5
1501 LAKESTONE VILLAGE LANE SUITE 205 FUQUAY VARINA, NC 27526		DESIGNER CONTRACT: ADAM AYCOCK, B	DATE : January 13, 2025	Boone Tract Village Lot 62 Overall Septic
MITCHELL ENVIRONMENTAL, PA C-2917		DRAWN BY: ADAM AYCOCK, B		

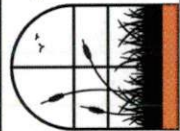


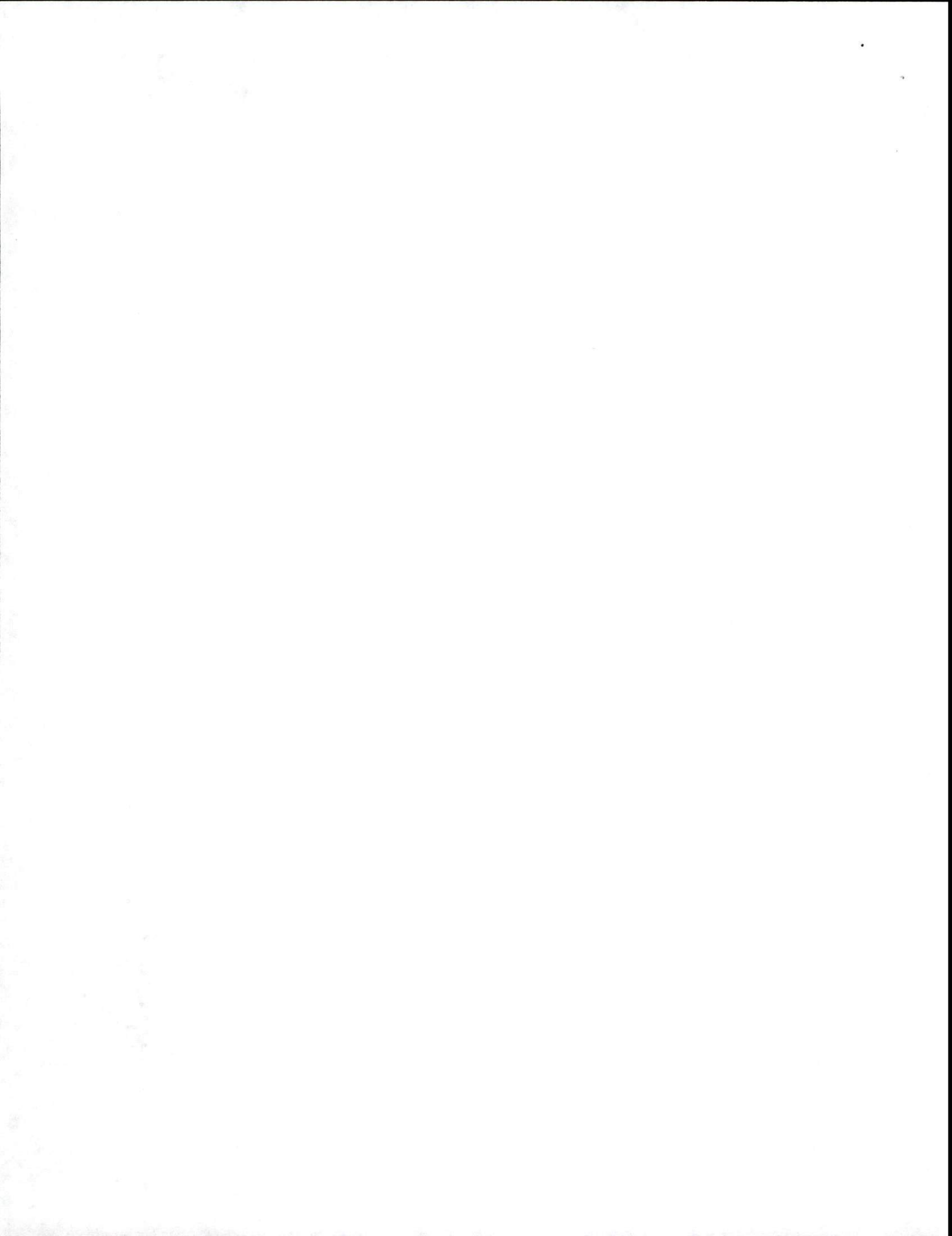


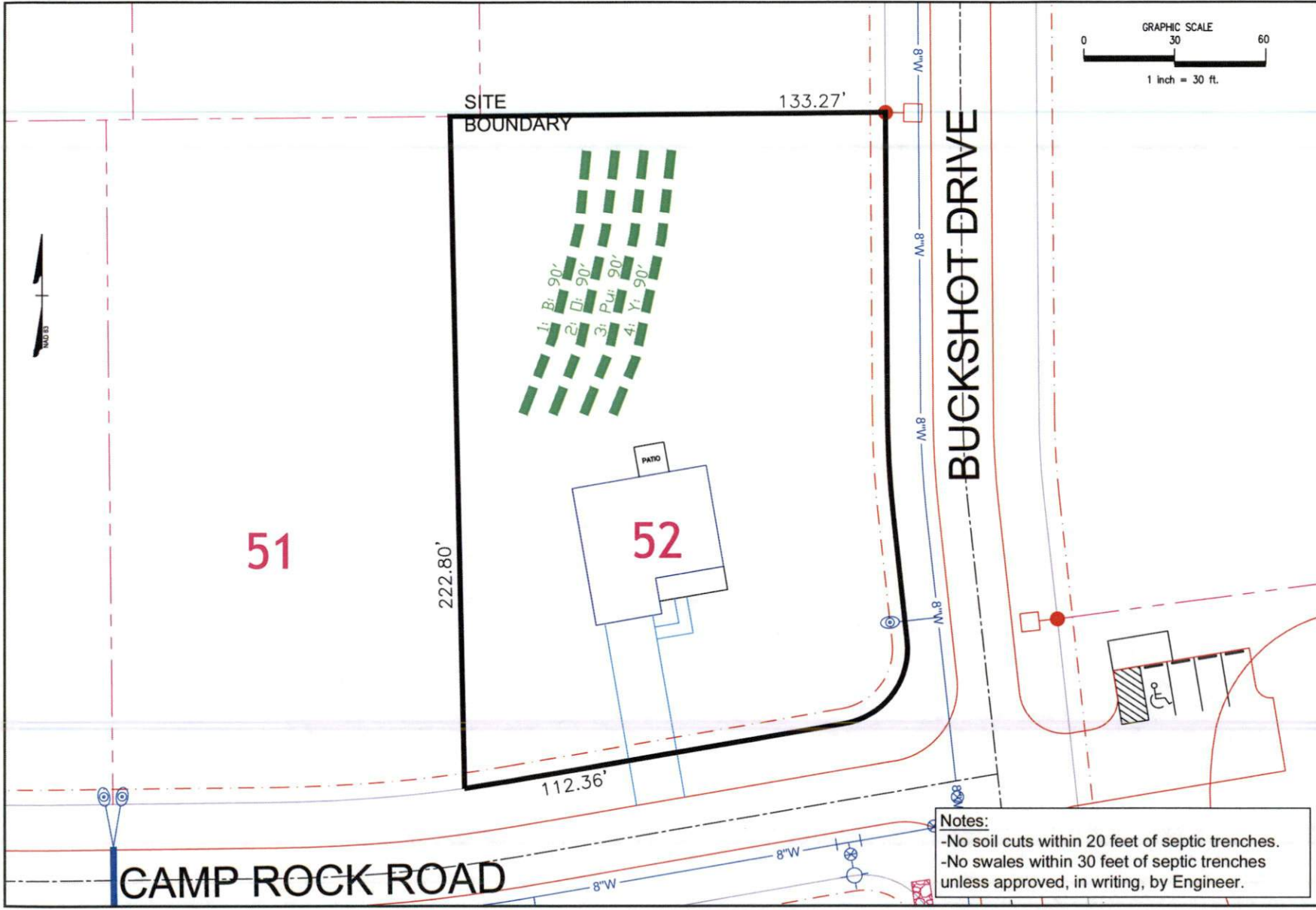


Notes:
 -No soil cuts within 20 feet of septic trenches.
 -No swales within 30 feet of septic trenches unless approved, in writing, by Engineer.

MITCHELL ENVIRONMENTAL, PA C-2917 1501 LAKESTONE VILLAGE LANE SUITE 205 FUQUAY VARINA, NC 27526		DATE January 13, 2025	SHEET NUMBER 2 of 5
REVISION NO. Original Submitted	REVISION 1 Revision 2 Revision 3 Master Set	DATE January 13, 2025	Boone Treat Village Lot 62 Initial Nitritification Field
PREPARED FOR: US Homes 501 Capital Center Drive Raleigh, NC 27612	DESIGNER CONTACT: ADAM AYCOCK, B DRAWN BY: ADAM AYCOCK, B	DATE: January 13, 2025 DESIGNER CONTACT: ADAM AYCOCK, B DRAWN BY: ADAM AYCOCK, B	







51

52

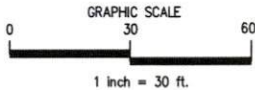
222.80'

133.27'

112.36'

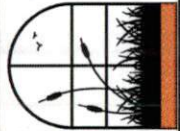
CAMP ROCK ROAD

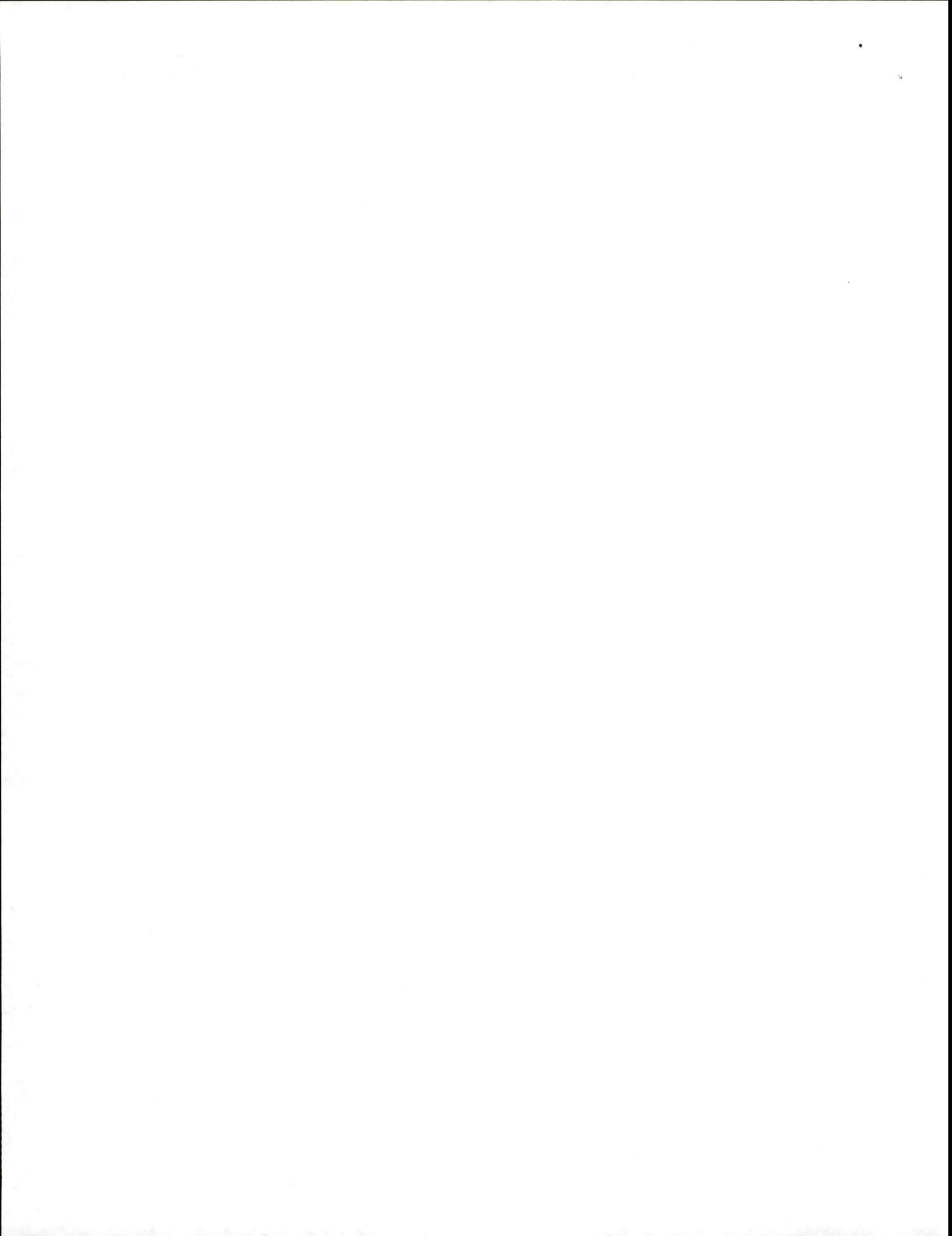
BUCKSHOT DRIVE

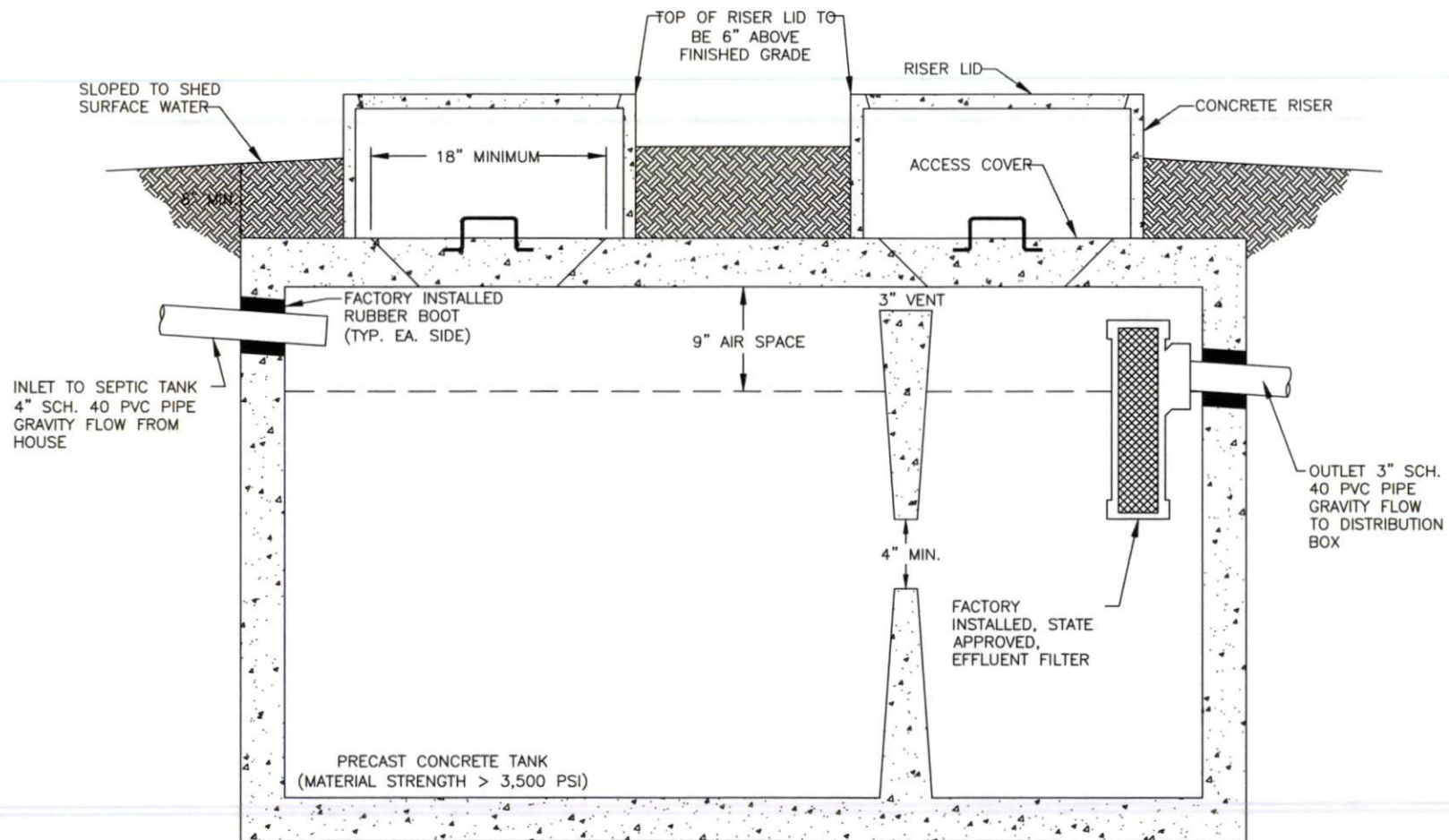


Notes:
 -No soil cuts within 20 feet of septic trenches.
 -No swales within 30 feet of septic trenches unless approved, in writing, by Engineer.

MITCHELL ENVIRONMENTAL, PA C-2911 1501 LAKESTONE VILLAGE LANE SUITE 205 FUQUAY VARINA, NC 27526		REVISION NO. Original Submittal Revision 1 Revision 2 Revision 3 Master Set	DATE January 13, 2025	SHEET NUMBER 3 of 5
PREPARED FOR : US Home Center Div Suite 240 Raleigh, NC 27612		Boome Treat Village Lot 62 Repair -Nitrogenation Field		
DATE : January 13, 2025 DESIGNER CONTACT: ADAM AYCOCK, B DRAWN BY: ADAM AYCOCK, B				





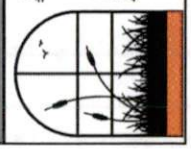


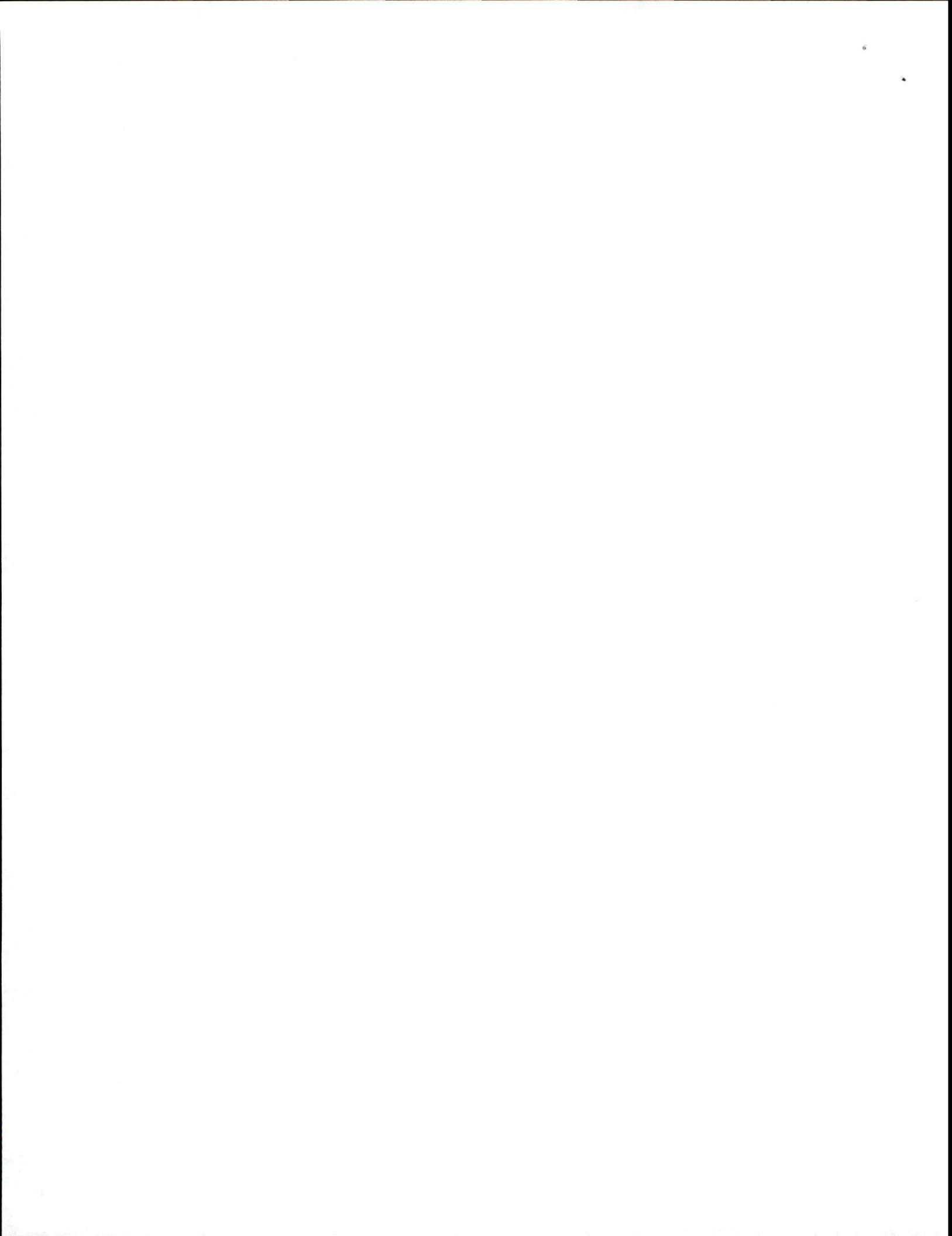
1,000 GALLON SEPTIC TANK

SEPTIC TANK DETAIL

N.T.S.

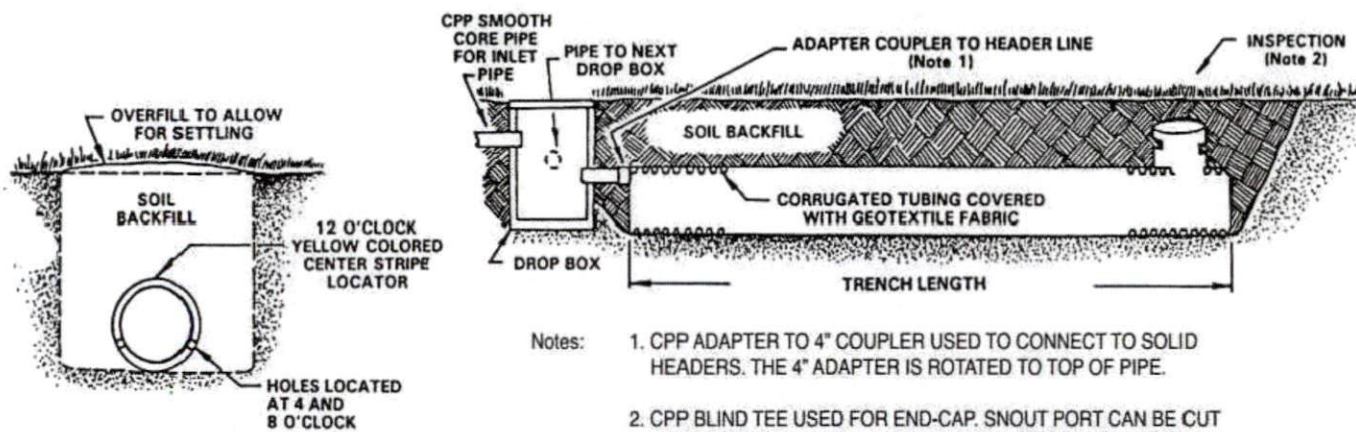
REVISION NO. Original Submitted Revision 1 Revision 2 Revision 3 Motor Set		DATE January 13, 2025	SHEET NUMBER 4 of 5
PREPARED FOR : SSI Capital Center Drive Suite 205 Raleigh, NC 27612		DATE : January 13, 2025	Boone Tract Village Septic Tank Detail
DESIGNER CONTACT: ADAM AYCOCK, B		DATE : January 13, 2025	
DRAWN BY: ADAM AYCOCK, B			
MITCHELL ENVIRONMENTAL, PA C-2911 1501 LAKESTONE VILLAGE LANE SUITE 205 FUQUAY VARINA, NC 27526			





TRENCH DEPTH: 24" MAXIMUM
 TRENCH WIDTH: 18" MAXIMUM
 TRENCH SPACING: 6' o.c.

CPP Gravelless LDP Trench Construction Details



- Notes:
1. CPP ADAPTER TO 4" COUPLER USED TO CONNECT TO SOLID HEADERS. THE 4" ADAPTER IS ROTATED TO TOP OF PIPE.
 2. CPP BLIND TEE USED FOR END-CAP. SNOUT PORT CAN BE CUT OUT FOR INSTALLING A CLEAN OUT ADAPTER THAT ALLOWS FOR POST INSTALLATION INSPECTION.

L3 HANCO PREPARED FOR : 301 Capital Center Drive Suite 500 Raleigh, NC 27612 DATE : January 13, 2025 MANUFACTURER CONTACT: COMPLEX PLASTIC PIPE DRAWN BY: COMPLEX PLASTIC PIPE	REVISION NO. Original Submittal Revision 1 Revision 2 Revision 3 Master Set	DATE January 13, 2025	SHEET NUMBER 5 of 5
	BOONE TRAIL VILLAGE Lot 68 Trench Detail		
MITCHELL ENVIRONMENTAL, PA C-2911 1501 LAKESTONE VILLAGE LANE SUITE 205 FUQUAY VARINA, NC 27526			

