



DEPARTMENT OF HEALTH AND HUMAN SERVICES
DIVISION OF PUBLIC HEALTH

ROY COOPER
GOVERNOR

MANDY COHEN, MD, MPH
SECRETARY

DANIEL STALEY
DIRECTOR

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: \_\_\_\_\_ by \_\_\_\_\_
Date Initials

PART 1: Notice of Intent to Construct (NOI)

- [X] New [ ] Expansion
[ ] Repair - LHD Permit Number \_\_\_\_\_ [ ] Repair - EOP Permit Number \_\_\_\_\_

1. Facility Owner's name: (Owner, Company Name, Utility, Partnership, Individual, etc.): \_\_\_\_\_
CUMMINGS BROTHERS ENTERPRISES

Mailing address: PO BOX 591 City: MAMERS State: NC Zip: 27552
Telephone number: 919-525-5856 E-mail Address: PLAMM@WADEJURNEYHOMES.COM

2. Professional Engineer (PE) name: ATHAN M PARKER, PE License number: 43250
Mailing address: PO BOX 4580 City: EMERALD ISLE State: NC Zip: 28594
Telephone number: 919-795-9594 E-mail Address: ATHAN.PARKER@AMPDENGINEERING.COM

3. Licensed Soil Scientist (LSS) name: HAYWOOD PITTMAN, LLS License number: 1262
Mailing address: 1073-1 GREGORY FORK RD City: RICHLANDS State: NC Zip: 28574
Telephone number: 910-324-2892 E-mail Address: PITTMANSOIL@YAHOO.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: HAYWOOD PITTMAN, LLS License number: 3825
Mailing address: 1073-1 GREGORY FORK RD City: RICHLANDS State: NC Zip: 28574
Telephone number: 910-324-2892 E-mail Address: PITTMANSOIL@YAHOO.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



State of NC EOP

LHD Reference: \_\_\_\_\_

*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, [Signature] hereby designate ATHAN M PARKER, PE  
*Print Name of Owner* *Print Name of Registered Professional Engineer*

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

[Signature] 7-16-18  
*Signature of Owner* *Date*

**Owner self-submittal of NOI:**

I, \_\_\_\_\_ hereby submit this NOI prepared by \_\_\_\_\_  
*Print Name of Owner* *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 Engineered Option Permit. [(NC General Statute 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 above, 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 by the PE 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 \_\_\_\_\_

via \_\_\_\_\_ with directions to re-submit missing items using Page 5 of this form.

*Email, FAX, USPS, hand-delivered*

\_\_\_\_\_  
*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 by the PE 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 \_\_\_\_\_ via \_\_\_\_\_.

A copy of this NOI and tracking information was sent to the State on \_\_\_\_\_ via \_\_\_\_\_.

\_\_\_\_\_  
*Print Name of Authorized Agent of the LHD*

\_\_\_\_\_  
*Signature of Authorized Agent of the LHD*

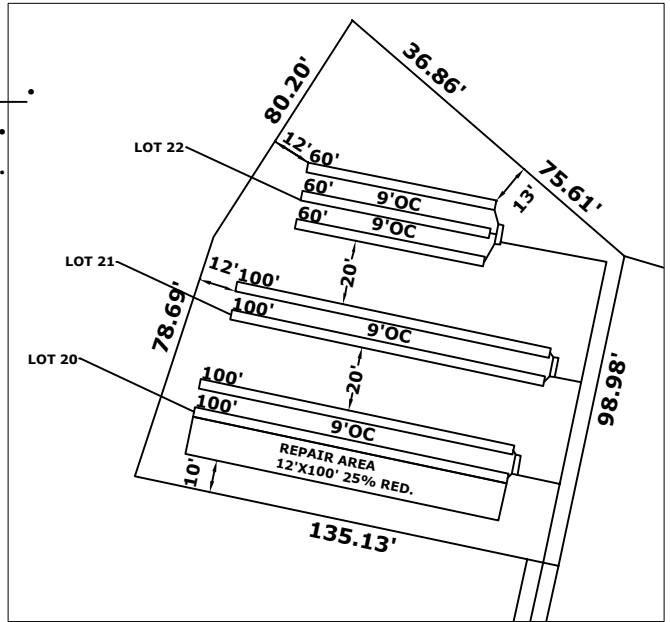
\_\_\_\_\_  
*Date*



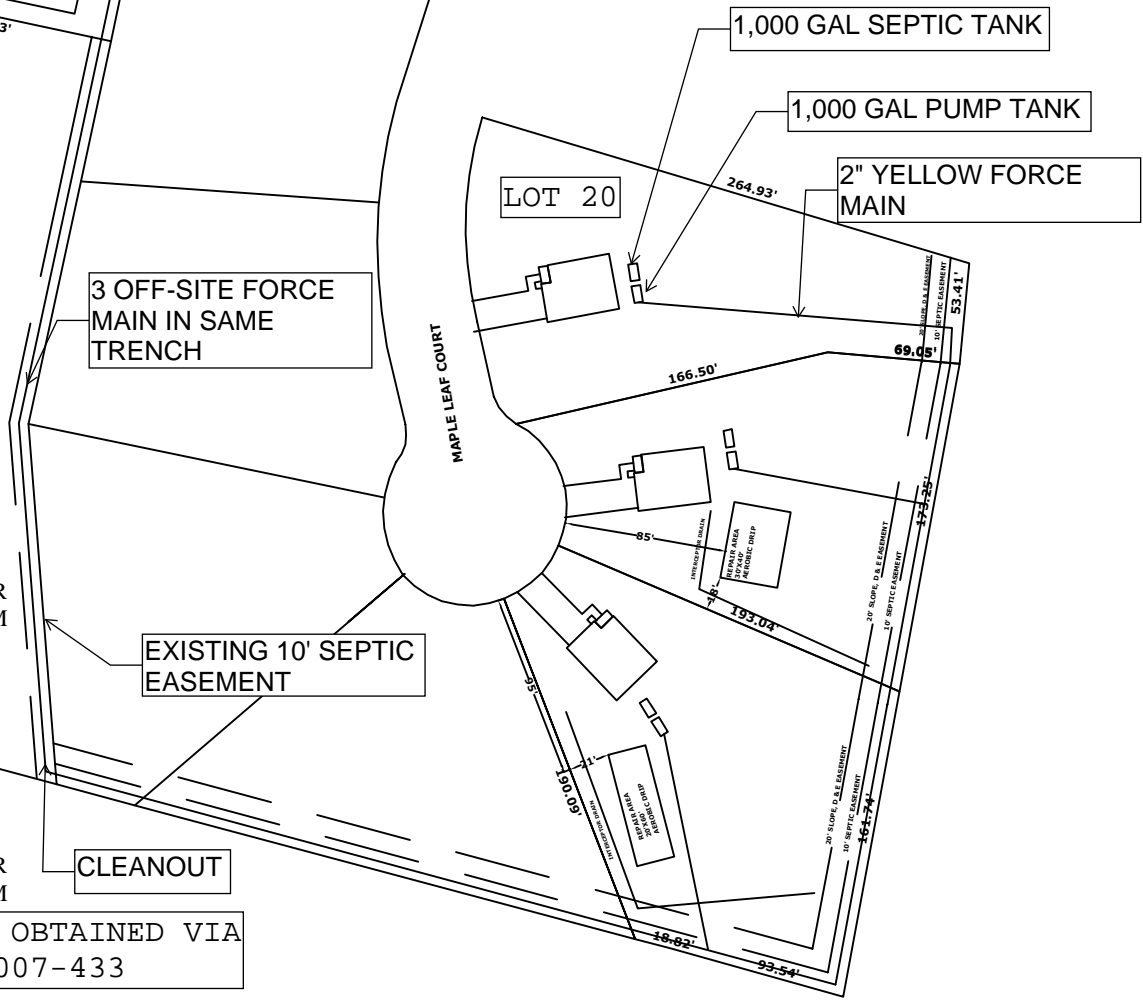
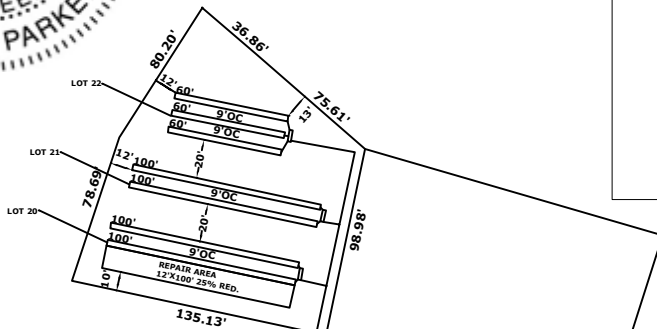


# PITTMAN SOIL CONSULTING

Owner: SUMMERHILL  
 Address: LOT 20  
 Location: 165 MAPLE LEAF COURT



SCALE 1"=60'



SCALE 1"=100'

**INITIAL**  
 3 BEDROOM  
 LTAR .45  
 2-100' 25% REDUCTION LINES  
 18"TB  
 >6" SOIL COVER REQUIRED OVER  
 SYSTEM AND 5' BEYOND SYSTEM

**REPAIR AREA**  
 3 BEDROOM  
 LTAR .45  
 2-100' 25% REDUCTION LINES  
 18"TB  
 >6" SOIL COVER REQUIRED OVER  
 SYSTEM AND 5' BEYOND SYSTEM

PROPERTY INFORMATION OBTAINED VIA  
 HARNETT COUNTY MAP#2007-433

# *Pittman Soil Consulting*

*1003 Gregory Fork Road*

*Richlands, NC 28574*

*Phone (910)330-2784*

*pittmansoil@yahoo.com*

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October 1, 2018

Ref: EOP-Summerhill lot 20, 165 Maple Leaf Court, Harnett County

Dear Sir,

A soil evaluation was conducted on the above referenced tract to determine the sites suitability for septic. The current laws and rules of NC was used as guide for this evaluation.

Hand Auger borings on the site were used to characterize the soil texture, and depth to the soil wetness condition. The attached plot plan shows the location of the septic system in the most ideal location on the site( off-site septic). The soil wetness condition was found to be 30" from the surface with a sandy clay loam texture. I have assigned an LTAR of 0.45 gpd/sqft for a 360 gpd 3 bedroom residence. This will require the installation of 2-100' 25% reduction lines that shall be installed in accordance with the current rules. The depth to soil wetness of 30" would constitute an 18" trench bottom. The system will require 6" of Group II or III soil cover that shall extend 5' from the edge of the system. The system will require a 1000 gallon septic tank and a 1000 gallon pump tank..

The repair area will require 2-100' 25% reduction lines installed at 18" from the surface.

If you have any questions please feel free to contact me at 910-330-2784. Thank You.

Sincerely,



**R. Haywood  
Pittman II**

Digitally signed by R. Haywood  
Pittman II  
DN: cn=R. Haywood Pittman II,  
o, ou,  
email=pittmansoil@yahoo.com,  
c=US  
Date: 2018.10.01 05:14:00 -04'00'

R. Haywood Pittman II  
NC Licensed Soil Scientist





# CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)

07/30/2018

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).

<b>PRODUCER</b> N.C. Farm Bureau Ins. Agency 5301 Glenwood Avenue (27612) P.O. Box 27427 Raleigh NC 27611		<b>CONTACT NAME:</b> PHONE (A/C, No, Ext): E-MAIL ADDRESS: FAX (A/C, No):	
<b>INSURED</b> Ronald H. Pittman, II DBA Pittman Soil Consulting 1003 Gregory Fork Rd Richlands NC 28574		<b>INSURER(S) AFFORDING COVERAGE</b> INSURER A : Capitol Specialty Insurance Corporation INSURER B : INSURER C : INSURER D : INSURER E : INSURER F :	

**COVERAGES**      **CERTIFICATE NUMBER:** CL1821212375      **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	<input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR <input checked="" type="checkbox"/> Professional Liability GEN'L AGGREGATE LIMIT APPLIES PER: <input checked="" type="checkbox"/> POLICY <input type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC OTHER:			EV20182381-01	07/19/2018	07/19/2019	EACH OCCURRENCE \$ 1,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 50,000 MED EXP (Any one person) \$ 5,000 PERSONAL & ADV INJURY \$ 1,000,000 GENERAL AGGREGATE \$ 2,000,000 PRODUCTS - COMP/OP AGG \$ 2,000,000 Profess Occ/Agg \$ 1m/2m
	<b>AUTOMOBILE LIABILITY</b> <input type="checkbox"/> ANY AUTO <input type="checkbox"/> OWNED AUTOS ONLY <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> HIRED AUTOS ONLY <input type="checkbox"/> NON-OWNED AUTOS ONLY <input type="checkbox"/> UMBRELLA LIAB <input type="checkbox"/> OCCUR <input type="checkbox"/> EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE DED RETENTION \$						
	<b>WORKERS COMPENSATION AND EMPLOYERS' LIABILITY</b> ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below						PER STATUTE <input type="checkbox"/> OTH-ER <input type="checkbox"/> E.L. EACH ACCIDENT \$ E.L. DISEASE - EA EMPLOYEE \$ E.L. DISEASE - POLICY LIMIT \$
A	Contractors Pollution Liability-Occurrence Form			EV20182381-01	07/19/2018	07/19/2019	Each Contractors 1,000,000 Pollution Limit Aggregate Limit 2,000,000

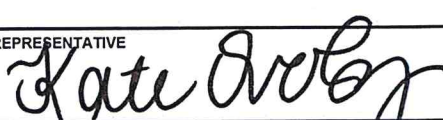
DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

**CERTIFICATE HOLDER**

AMP'd Engineering, PLLC  
 PO Box 4580  
 Emerald Isle NC 28594

**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  




# CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)

3/6/2018

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).

<b>PRODUCER</b> SIA Group, Inc. 827 Gum Branch Road Jacksonville NC 28540	<b>CONTACT NAME:</b> Lindsay Lutz <b>PHONE (A/C. No. Ext):</b> 910-478-3373 <b>E-MAIL ADDRESS:</b> certs@siagroup.com	<b>FAX (A/C. No):</b> 910-455-7481
	<b>INSURER(S) AFFORDING COVERAGE</b>	
<b>INSURED</b> 30102 AMP'D Engineering 2500 N Heritage St, Ste 2 Kinston NC 28504	<b>INSURER A:</b> TRAVELERS CAS & SURETY CO  <b>INSURER B:</b>  <b>INSURER C:</b>  <b>INSURER D:</b>  <b>INSURER E:</b>  <b>INSURER F:</b>	<b>NAIC #</b> 19038

**COVERAGES**

CERTIFICATE NUMBER: 178254178

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
	<b>COMMERCIAL GENERAL LIABILITY</b> <input type="checkbox"/> CLAIMS-MADE <input type="checkbox"/> OCCUR  GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC OTHER:						EACH OCCURRENCE \$ DAMAGE TO RENTED PREMISES (Ea occurrence) \$ MED EXP (Any one person) \$ PERSONAL & ADV INJURY \$ GENERAL AGGREGATE \$ PRODUCTS - COMP/OP AGG \$ \$
	<b>AUTOMOBILE LIABILITY</b> <input type="checkbox"/> ANY AUTO <input type="checkbox"/> OWNED AUTOS ONLY <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> HIRED AUTOS ONLY <input type="checkbox"/> NON-OWNED AUTOS ONLY						COMBINED SINGLE LIMIT (Ea accident) \$ BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$ \$
	<b>UMBRELLA LIAB</b> <input type="checkbox"/> OCCUR <b>EXCESS LIAB</b> <input type="checkbox"/> CLAIMS-MADE DED <input type="checkbox"/> RETENTION \$						EACH OCCURRENCE \$ AGGREGATE \$ \$
	<b>WORKERS COMPENSATION AND EMPLOYERS' LIABILITY</b> ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? <input type="checkbox"/> Y/N <input checked="" type="checkbox"/> N/A (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below						PER STATUTE <input type="checkbox"/> OTH-ER <input type="checkbox"/> E.L. EACH ACCIDENT \$ E.L. DISEASE - EA EMPLOYEE \$ E.L. DISEASE - POLICY LIMIT \$
A	Professional Liability			106460474	2/10/2018	2/10/2019	Each Occurrence \$ Aggregate \$ 1,000,000 2,000,000

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

Office Use Only.

**CERTIFICATE HOLDER****CANCELLATION**

Office Use Only  
 This certificate is for information purpose only.  
 Certificate is not valid unless certificate is issued with certificate holder information filled in from SIA Group.

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

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*AMP'd Engineering, PLLC*

Civil Engineer – Consulting Engineer – Land Development

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PO Box 4580

Emerald Isle, NC 28594

(919) 795-9594-athan.parker@ampdengineering.com

Firm License Number P-1532

WASTEWATER DISPOSAL SYSTEM

For

Wade Journey Homes, Inc  
Harnett County, North Carolina

To serve: Lot 20 - 3 Bed Room Home

Owner: Wade Journey Homes, Inc  
3300 Battleground Ave, Ste 230  
Greensboro, NC 27410-2490  
919-525-5856

Agency: Environmental On-Site Health Department  
Harnett County Health Department

October 2018



## **I. Purpose**

This report was prepared for the sole purpose of permitting 165 Maple Leaf Court, Lot 20 of Summerhill Subdivision in Harnett County, NC.

## **II. Description**

The project will be consistent of one 3 bedroom single family home producing 360 GPD. The effluent will fall with gravity flow from the home to a 1,000 gallon septic and then into a 1,000 gallon pump tank.

Supply Line was designed to have 1,218 LF plus 10%, designed for a total of 1,440 feet. One pump will be utilized to operate the system.

## **III. Soil Investigation**

Haywood Pittman, LSS, has provided soil analysis and has staked the proposed field for the project. As shown on the map, the disposal field is located approximately 250 feet West of the Collection Site.

## **IV. Site Evaluation**

Soil suitability was evaluated by Haywood Pittman, LSS, and found to be that the wetness condition is greater than 30" from the surface with an assigned LTAR of 0.45 gpdpsf. For more soil information see report by Pittman Soil Consulting.

## **V. Design**

The septic tank shall be located as shown on the attached plan or approved by engineer and the pump tank shall be located as shown on the attached plan or approved by engineer to collect wastewater from the home and meet all required setbacks.

Design Flow:                    3 bed rooms x 120 gpd per bed room = 360 gpd  
Septic Tank Size:            V = 1,000 gallon  
Pump Tank Size:              V = 1,000

# *AMP'd Engineering, PLLC*

Civil Engineer – Consulting Engineer – Land Development

Gravity lines shall have cleanouts at 50' and shall be sloped per NC Building code and per Rule .1955(o)(1), shall be a minimum of 2%.

Pump tank shall have operable 24"x24" square hatch light in weight and be hinged with locking mechanism.

The nitrification field as shown should be 2-100' 25% reduction lines type IIIg with pressure manifold.

Haywood Pittman, LLS, established the LTAR at 0.45.

Total Dynamic head calculation is derived utilizing 25 gpm with a total distance of 1,440 feet from the pump tank at the collection site to the pressure manifold at the distribution site.

Supply line to be 2" PVC Sch 40. Force main to have cleanouts at the end of each line, at all main junctions and at least every 1,000 feet.

Dosing: Daily dose – 360 gallons to the distribution field, preferable 5 doses per day yielding 72 gallons per dose, the field yields a total flow from above 25 gpm, the tank shall run approximately 2.88 mins (72 gallons). For a tank size of 1,000 gallons yields approximately 300 gallons per foot or 25 gallons per inch or say 2.88 inches for typical dose.

Float Design: There shall be three (3) float system located at the collection site where simplex pump tank is utilized. The floats shall meet .1952(c)(5).

A float tree shall be constructed of PVC making the float system readily available to be removed and maintained or adjusted. They should be positioned to be free of turbulence within the tank. Simplex system shall have off, on and high alarm.

Control Panel shall be NEMA-4x and shall be clearly identified. Panel shall be mounted on a ground contact treated 4x4 within 10' of the pump tank and shall be 4' above grade. Control panel shall be a simplex system having the capability to turn off, on, and high-water alarm. Control panel shall be equipped with the following: H-O-A switch, event counter, elapsed time meter, run light, alarm light, audible alarm, convenience outlet and shall meet NC .1952 rules.

Line should be pressure tested prior to connection to ensure no leaks. Test per the following:

1. Close the downstream, normally open outlet valve at the pressure manifold.
2. Open the normally closed valve for flushing air from the line.
3. Fill the line to be tested and ensure all air is flushed from the line.
4. Carefully monitor the discharge (normally closed) valve which is open to ensure air is evacuated.
5. Hook up hydrostatic pump and increase pressure until 50 psi.
6. Hold 50 psi for two (2) hours for successful test.
7. If pressure does not hold, evaluate for leaking and re-test after repair until passed.

Manifold Design: Required ratio inside areas of manifold compared to laterals shall exceed 0.7:1.

Inside area of 1/2" pipe Sch 40 PVC – 0.311 inches radius = 0.304 sq inches

2 laterals present – 0.608 sq inches total present.

3" diameter manifold – comparison

Inside area of 3" pipe Sch 40 PVC – 1.534 inches radius = 7.393 sq inches

$7.393 / .608 = 12.16 > 0.7$  required

2" schedule 40 force main

Friction loss per 100 feet @ 25 gpm = 1.27 feet

1,440 feet x 1.27 feet of head loss / 100 foot = 18.3 feet

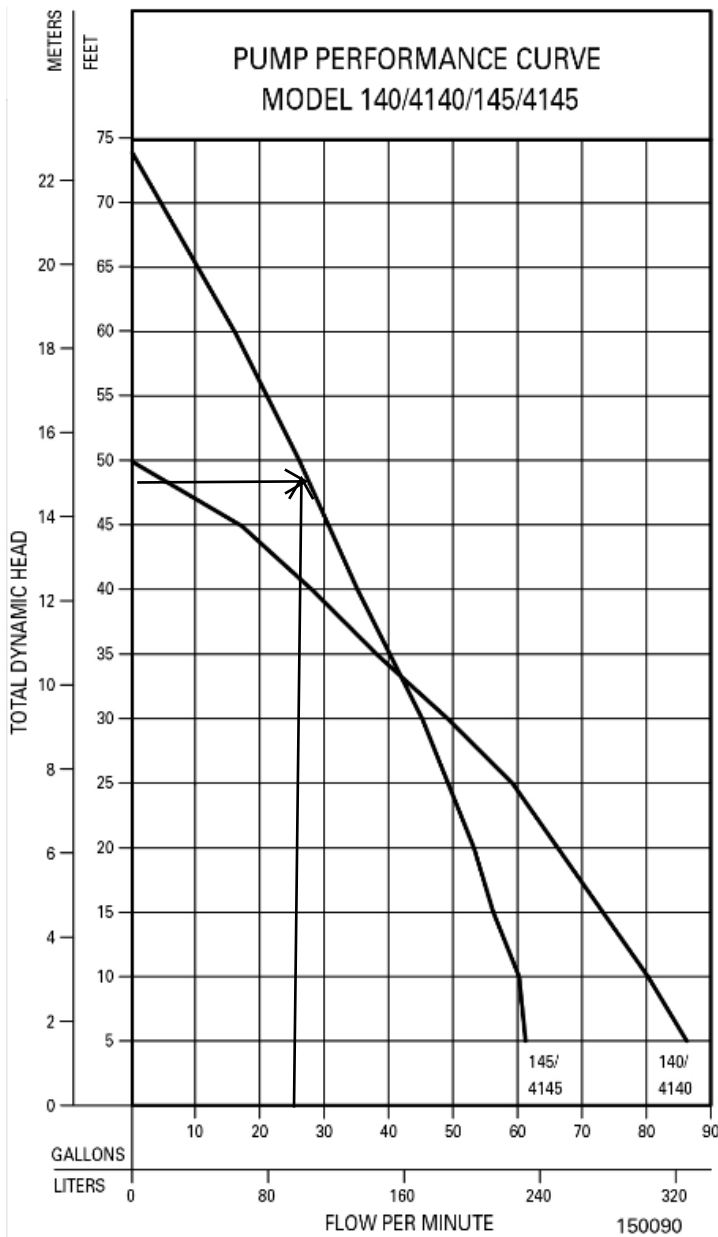
Total friction loss = 18.3 feet + 10 % = 20 feet

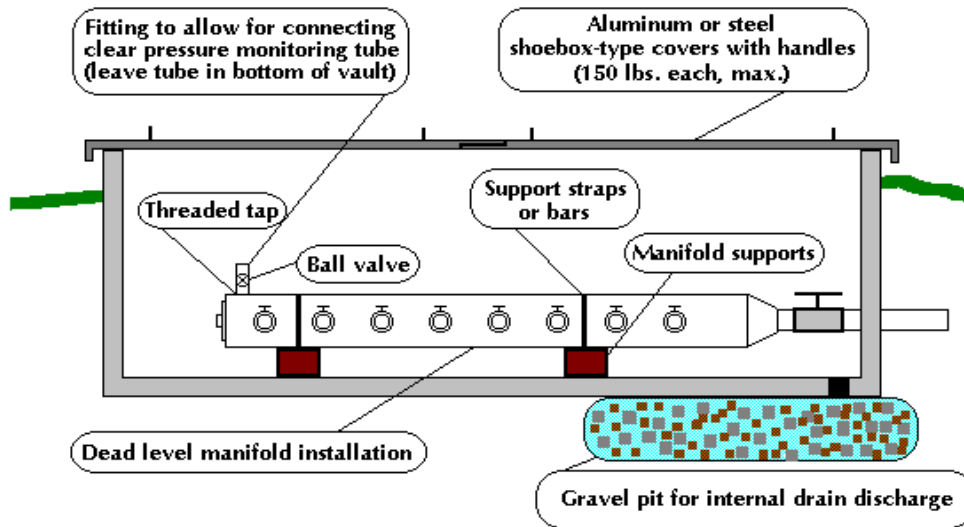
TDH for Nitrification Field

$$\begin{aligned} \text{TDH} &= \text{design} + \text{lift} + \text{friction in pipe} + \text{misc} \\ &= 3' + 14' + 20' + 10' \\ &= 47' \text{ at } 25 \text{ gpm as previously designed} \end{aligned}$$

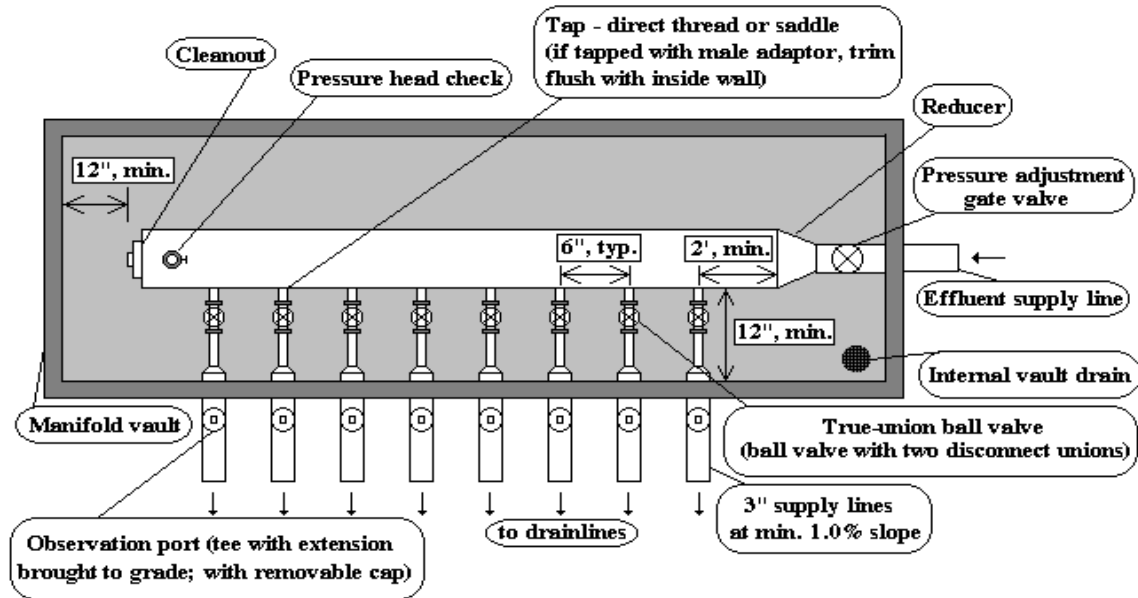
Pump to be used:

Zoller 145 or approved equal to match below pump curve.





### Profile View of Pressure Manifold for Sloping Site Installation (not to scale)



### Plan View of Pressure Manifold for Sloping Site Installation (not to scale)