8492B

MECKLENBURG COUNTY HEALTH DEPARTMENT

Appt# 5580

APPLICATION FOR A RESIDENTIAL SITE IMPROVEMENT PERMIT/ CONSTRUCTION AUTHORIZATION FOR AN ON-SITE WASTEWATER SYSTEM, NEW WELL INSTALLATION, OR REPAIR OF EXISTING WELL

1. SEPTIC / TYPE APPLICATION: ○ N/A ● NEW SYSTEM ○ ALTERATION ○ REPAIR ○ MODIFIED PLOT PLAN

2. WELL / TYPE APPLICATION: ○ N/A ● NEW WELL ○ MAJOR REPAIR ○ ABANDONMENT

3. JOB LOCATION INFORMATION:

TAX PARCEL NUMBER: 13927625

STREET ADDRESS: 10726 Hadrians Walk Ct

CITY: Charlotte

STATE: NC ZIP: 28227

SUBDIVISION NAME: Sherwood Forest

LOT #: 35 LOT SIZE (acres): 1.075

TOWNSHIP:

○ MECKLENBURG ○ CORNELIUS ○ HUNTERSVILLE
○ DAVIDSON ○ CHARLOTTE ○ PINEVILLE
○ MATTHEWS ● MINT HILL

4. BUILDING INFORMATION:

BUILDING TYPE:

○ SINGLE MOBILE HOME ○ MODULAR HOME
○ DOUBLE WIDE ○ MULTIPLE FAMILY
● HOUSE ○ OTHER _____

HEATED SQUARE FOOTAGE: 3800

NUMBER OF BEDROOMS: X3

NUMBER OF OCCUPANTS: 5

FOUNDATION TYPE:

● CONCRETE SLAB ○ BASEMENT WITH PLUMBING
○ CRAWL SPACE ○ BASEMENT WITH NO PLUMBING

5. IF PLANNING TO EXPAND OR ALTER THE EXISTING SEPTIC SYSTEM PLEASE COMPLETE THE FOLLOWING SECTION: ☐ N/A

NUMBER OF BEDROOMS TO BE ADDED: _____ NUMBER OF ADDITIONAL OCCUPANTS IN THE RESIDENCE: _____

6. WATER SUPPLY: ○ MUNICIPAL ● PRIVATE WELL ○ PUBLIC WELL ○ SHARED WELL ○ OTHER _____

7. PROPOSED USE OF WELL: ○ N/A ○ IRRIGATION ● POTABLE (DRINKING WATER) ○ OTHER _____

8. PLEASE INDICATE AND RANK DESIRED SEPTIC SYSTEM TYPE(S) IN ORDER OF PREFERENCE *(1-MOST DESIRED 5-LEAST DESIRED)*:

☐ N/A ☐ ANY TYPE ☐ CONVENTIONAL ☐ ACCEPTED ☐ INNOVATIVE ☐ ALTERNATIVE ☐ OTHER _____

8A. RANK: ____ ____ ____ ____ ____

9. DO ANY OF THE FOLLOWING APPLY TO THE PROPERTY IN QUESTION? IF "YES" PLEASE ATTACH SUPPORTING DOCUMENTATION.

BURIED CABLES, LANDFILLS, STUMPHOLES	○ YES ● NO	GRADING/SOIL REMOVAL PERFORMED	○ YES ● NO
EXISTING WASTEWATER (SEPTIC) SYSTEMS	○ YES ● NO	JURISDICTIONAL WETLANDS	○ YES ● NO
WELLS, SPRINGS, OR WATER LINES	○ YES ● NO	APPROVAL REQUIRED BY ANY OTHER PUBLIC AGENCY	○ YES ● NO
EASEMENTS OR RIGHT-OF-WAYS	○ YES ● NO	WASTEWATER OTHER THAN DOMESTIC SEWAGE	○ YES ● NO
CHEMICAL/PETROLEUM STORAGE TANKS	○ YES ● NO	KNOWN UNDERGROUND CONTAMINATION	○ YES ● NO
WASTE STORAGE	○ YES ● NO	GROUNDWATER USE RESTRICTIONS/VARIANCES	○ YES ● NO

10. WHAT DATE WAS THE PROPERTY ORIGINALLY DEEDED AND RECORDED? _____ ☒ UNKNOWN

11. WHAT IS THE ANTICIPATED CLOSING DATE FOR THIS PROPERTY? 8/1/12 ☐ N/A

12. PROPERTY OWNER:

NAME: B&C Land Holdings LLC
ADDRESS: 3649 Brekonridge Centre Dr
CITY: Monroe
STATE: NC ZIP: 28110
WORK PHONE: _____
MOBILE PHONE: 803-383-3387
FAX: _____
E-MAIL: _____

13. OWNER'S LEGAL REPRESENTATIVE, IF APPLICABLE:

NAME: Scott Twiddy
ADDRESS: 1932 Clark Elliott St
CITY: Fort Mill
STATE: SC ZIP: 29708
WORK PHONE: _____
MOBILE PHONE: 803-389-3387
FAX: 800-980-4077
E-MAIL: Stwiddy.cds@gmail.com

MECKLENBURG COUNTY – GROUNDWATER & WASTEWATER SERVICES
700 N. TRYON ST. SUITE 211 CHARLOTTE, NC 28202, OFFICE: 704-336-5103, FAX: 704-336-6894

Revised on: 12/15/10

14. SEPTIC SYSTEM PERMIT APPLICATION:

If the information in this application is falsified, changed, or the site is altered, then the Improvement Permit and Authorization to Construct shall become invalid. I have read this application and certify that the information provided herein is true, complete and correct. Authorized county and state officials are granted right of entry to conduct necessary inspections to determine compliance with applicable laws and rules. I understand that I am solely responsible for the proper identification and labeling of all property lines and corners and making the site accessible so that a complete site evaluation can be performed. The permit is valid for either sixty (60) months or is non-expiring depending upon the documentation submitted: complete site plan = 60 months, complete plat = non-expiring.

SF (Initial here for septic system applications)

15. WELL PERMIT APPLICATION:

If the information in this application is falsified, changed, or the site is altered, then the Well Permit shall become invalid. I have read this application and certify that the information provided herein is true, complete and correct. Authorized county and state officials are granted right of entry to conduct necessary inspections to determine compliance with applicable laws and rules. I understand that I am solely responsible for the proper identification and labeling of all property lines and corners and making the site accessible so that a complete site evaluation can be performed. The permit is valid for a period of twelve (12) months from the date of issuance.

SF (Initial here for well applications)

16. APPLICATION SIGNATURE SECTION:

ONLY COMPLETE APPLICATIONS WILL BE PROCESSED. A proper signature is required in order to process your application. Please review the application carefully and sign in the space provided below. A PROPOSED PLOT PLAN is required to be submitted with each application.

Scott Priddy
Property Owner's or Owner's Legal Representative Signature

4/26/12
Date

OFFICE USE ONLY

O SURVEY PLAT TO SCALE SUBMITTED O SCALED SITE PLAN SUBMITTED O UN-SCALED SITE PLAN SUBMITTED

SEPTIC APPLICATION FEE RECEIVED: $ 250.00 DATE FEE RECEIVED: 4/27/12

WELL APPLICATION FEE RECEIVED: $ _____ DATE FEE RECEIVED: _____

APPLICATION PROCESSED BY: lwo

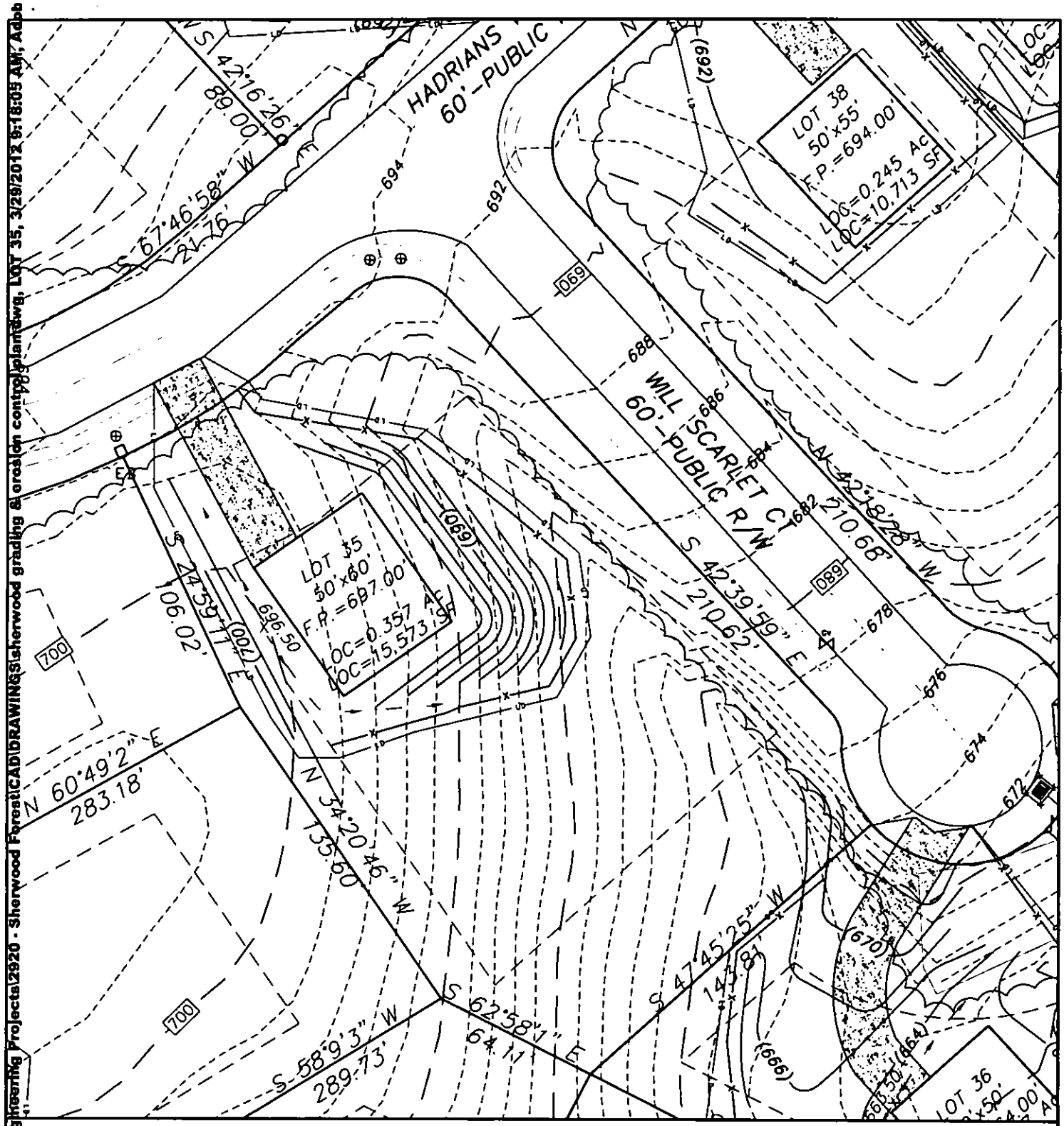
GWS FILE NUMBER ASSIGNED: 8492B

APPLICATION ID NUMBER ASSIGNED: 5580

COMMENTS:

MECKLENBURG COUNTY – GROUNDWATER & WASTEWATER SERVICES
700 N. TRYON ST. SUITE 211 CHARLOTTE, NC 28202, OFFICE: 704-336-5103, FAX: 704-336-6894

Revised on: 12/15/10



LOT GRADING PLAN
LOT 35
SHERWOOD FOREST SUBDIVISION
MINT HILL, NORTH CAROLINA
CAROLINA DEVELOPMENT SOLUTIONS, LLC
1932 CLARK ELLIOT STREET
FORT MILL, SOUTH CAROLINA 29708
SCALE 1"=50'

GRAPHIC SCALE
50 25 0 50

summit
landservices
P.O. BOX 7442
CHARLOTTE, NC 28241
OFFICE: 704.506.0554
FAX: 704.504.1125
WWW.SUMMIT-COMPANIES.COM

D:\Summit Land Services\SLS Engineering Projects\2920 - Sherwood Forest\CAD\DRAWINGS\sherwood grading & erosion control plan.dwg, LOT 35, 3/29/2012 9:18:05 AM, Adob

Department of Environment, Health, and Natural Resources
Division of Environmental Health
On-site Wastewater Section

Sheet: 1 of 2
Property ID: 13927625
Lot #: 35
File #: 8492B
AppID: 5580

SOIL/SITE EVALUATION for ON-SITE WASTEWATER SYSTEM

Owner: B and C Land Holdings LLC
Applicant: Scott Twiddy
Address: 2649 Brekonridge Centre Dr Monroe, NC 28110
Date Evaluated: 5/21/2012
Proposed Facility: 4 bedroom House Design Flow (.1949) 360 gpd
Property Size: 1.075
Location of Site: 10726 Hadrians Walk Ct (sherwood Forest lot 35)
Property Recorded:
Water Supply: [ ] Public [ ] Individual [X] Well [ ] Spring [ ] Other
Evaluation Method: [ ] Auger Boring [X] Pit [ ] Cut
Type of Wastewater: [X] Sewage [ ] Industrial Process [ ] Mixed

PROFILE #	.1940 Landscape Position/ Slope%	Horizon Depth (IN.)	SOIL MORPHOLOGY .1941 .1941 Structure/ Texture	.1941 Consistence Mineratogy	b PROFILE FACTORS .1942 Soil Wetness/ Color	.1943 Soil Depth (IN.)	.1956 Sapro Class	.1944 Restr Horiz	Profile Class & LTAR
Pit 1	LS	0-3	w f gr SL	ns np fr nexp	>38	38	NA	PS	PS IV
	20%	3-21	m m sbk C	ss sp fi sexp					0.3
		21-38	w f sbk CL	ss sp fi sexp					
Pit 2	LS	0-2	w f gr SL	ns np fr nexp	>43	43	NA	PS	PS IV
	22%	2-22	m m sbk C	ss sp fi sexp					0.3
		22-43	w f sbk CL	ss sp fr sexp					
Pit 3	LS	0-3	w f gr SL	ns np fr nexp	14	25	US	PS	US IV
	22%	3-14	m m sbk C	ss sp fi sexp					
		14-25	w c abk C	s p fi exp					
		25-35	Cr	ns np fr nexp					
		35-41	Cr	Cr					
Pit 4	LS	0-7	w f sbk SCL	ns np fr nexp	31	28	US	PS	PS IV
	19%	7-22	m m sbk C	ss sp fi sexp					0.1 Drip
		22-28	w f sbk CL	ss sp fr sexp					
		28-33	sls m L	ns np fr nexp					
		33-45	Cr/saprolite	Cr/saprolite					

Description	Initial System	Repair System
Available Space (.1945)	PS	PS
System Type(s)	IIIb	V
Site LTAR	0.3	0.1

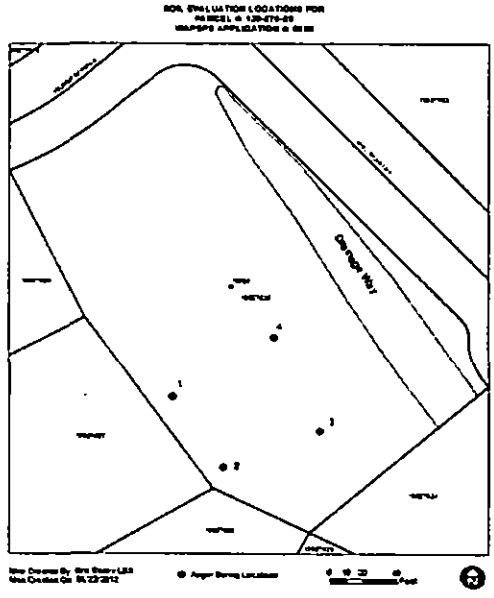
Other Factors (.1946):
Soil Evaluation By: Eric Bailey LSS Eric Bailey
Others Present:
Site Classification (.1948):
Site Evaluation By: Jeremy Michael Jeremy Michael REHS
Others Present: Eric Bailey LSS

COMMENTS:

Landscape Position	Group	Texture	1955 LTAR	Structure
R-Ridge	I	S-Sand	1.2 - 0.8	SG-Single Grain
SS-Shoulder Slope		LS-Loamy Sand		M-Massive
LS-Linear Slope				CR-Crumb
FS-Foot Slope	II	SL-Sandy Loam	0.8 - 0.6	GR-Granular
NS-Nose Slope		L-Loam		SBK-Subangular Blocky
HS-Head Slope				ABK-Angular Blocky
CC-Concave Slope	III	Si-Silt	0.6 - 0.3	PL-Platy
CV-Convex Slope		SiCL-Silty Clay Loam		PR-Prismatic
T-Terrace		CL-Clay Loam		
FP-Flood Plain		SCL-Sandy Clay Loam		
D-Drainage Way		SiL- (Silt Loam)		
	IV	SC-Sandy Clay	0.4 - 0.1	
		SiC-Silty Clay		
		C-Clay		

Consistence Moist	Consistence Wet	Mineralogy
VFR-Very Friable	NS-Non-Sticky	NEXP-(Non-expansive)
FR-Friable	SS-Slightly Sticky	SEXP-Slightly Expansive
FI-Firm	S-Sticky	EXP-Expansive
VFI-Very Firm	VS-Very Sticky	
EFI-Extremely Firm	NP-Non-Plastic	
	SP-Slightly Plastic	
	P-Plastic	
	VP-Very Plastic	

Sketch of Soil Evaluation Locations



Mecklenburg County Groundwater & Wastewater Services
700 N. Tryon St, Suite 211 Charlotte, NC 28202
Phone: (704) 336-5103 Fax: (704) 336-6894

NC DENR
Division of Environmental Health
On-Site Wastewater Section

IMPROVEMENT PERMIT for a RESIDENTIAL ON-SITE WASTEWATER TREATMENT & DISPOSAL SYSTEM

Permit #: 30005580 GWS File #: 8492B Tax Parcel #: 139-276-26

- This IMPROVEMENT PERMIT is subject to revocation if site plans or the intended use change. There is to be NO grading, filling, or disturbance of the soil in the area of the septic tank system or repair area.
- CONSTRUCTION AUTHORIZATION must be obtained prior to receiving a Building Permit. The Construction Authorization is NOT transferable. Do not clear, grade, fill or disturb soil prior to obtaining a Construction Authorization.
- Domestic-type wastewater only. No industrial process wastewater may be discharged into the system.

I. This Improvement Permit Shall: Expire in Five (5) Years **Expiration Date (If Applicable):** 7/24/2017

Type of Installation: Residential - New System Lot Number: 35

Structure Type: HOUSE Size (ft^2): 3200 # Bedrooms: 3 # Occupants: 6

Building Foundation: Concrete Slab Water Supply: Private Well

II. Initial System Type: Pump to Innovative/Controlled Demand **System Classification:** IIIb

Initial System Specifications:

Design Flow (gpd):	360	LTAR (gpd/ft^2):	0.3	Septic Tank Size (gal):	1500	Pump Tank Size (gal):	1000
Trench Width (ft):	3	Trench Spacing (ft):	9	Absorption Area (ft^2):	1200	Total Trench Length (ft):	400
Maximum Trench Depth (in):	10	Depth of Media (in):	8	Distribution Device:	Pressure Manifold		

III. Repair System Type: Pretreatment with Drip Irrigation **System Classification:** Va

Repair System Specifications:

Design Flow (gpd):	360	LTAR (gpd/ft^2):	0.1	Septic Tank Size (gal):	1500	Pump Tank Size (gal):	1000
Trench Width (ft):	0	Trench Spacing (ft):	2	Absorption Area (ft^2):	0	Total Trench Length (ft):	0
Maximum Trench Depth (in):	3	Depth of Media (in):	N/A	Distribution Device:	Headworks (Drip Irr.		

IV. Permit Conditions/Comments:

(Please See the Following Page for Permit Conditions.)

The undersigned, an authorized agent of the MECKLENBURG COUNTY HEALTH DEPARTMENT, certifies that the Department is issuing an IMPROVEMENT PERMIT for the above referenced property. This permit is being issued in accordance with the *Laws and Rules For Sewage Treatment, and Disposal Systems* and is subject to the following provisions:

- No work shall be conducted on the septic system until an INSTALLATION APPROVAL is granted by the Department.
- The septic system installer shall be a registered septic contractor with Mecklenburg County Health Department.
- The permitted system shall be installed in accordance with the included PLOT PLAN.
- This IMPROVEMENT PERMIT is transferable.

DENR Authorized Agent: Jeremy Michael Owner/Legal Agent: Scott Twiddy
Print Name

Signature: Jeremy Michael REHS. Signature: Scott Twiddy

Date Issued: 7/24/2012

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700 N. Tryon St, Suite 211 Charlotte, NC 28202
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NC DENR
Division of Environmental Health
On-Site Wastewater Section

IMPROVEMENT PERMIT for a RESIDENTIAL
ON-SITE WASTEWATER TREATMENT & DISPOSAL SYSTEM

Permit #: 30005580 GWS File #: 8492B

IV. Permit Conditions/Comments:

- This type of septic system requires an inspection once every 5 years by our office. The system owner is responsible for any fees, as determined by the Mecklenburg County Board of Commissioners, associated with this inspection.
- Additional soil cover, as specified on the plot plan, required over the drain field must be inspected and approved prior to issuance of an Operation Permit.
- This type of repair system requires the property owner to obtain a contract with a Certified Operator to perform routine inspections and maintenance on the system.
- This type of repair system requires periodic inspections by our office. The system owner is responsible for any fees, as determined by the Mecklenburg County Board of Commissioners, associated with this inspection.
- The septic system shall be installed in accordance with the plans submitted by the wastewater system design consultant.
- All components of the septic system must be installed in accordance with the required setbacks listed on the corresponding plot plan.
- All components of the septic system must be located at least 100 ft. (50 ft. minimum) from all private wells.
- All waterlines must be located a minimum of 10 ft. from any part of the septic system.
- Upon completion of the project the system designer shall provide Groundwater & Wastewater Services with a letter certifying that the system was installed in accordance with the approved design.
- The permitted system design requires a pressure manifold with varying tap diameters and/or pipe schedules. The contractor should review the specification detail provided by the system designer prior to bidding the project.
- Flow from all gutters and downspouts shall be directed not to discharge water onto or across any part of the septic system.
- Foundation drains shall be constructed not to discharge water onto or across any part of the septic system.
- This permit is issued for a control demonstration wastewater system No: CDWS-2010-1 RIB for Infiltrator Quick4 Plus Standard Low Profile (LP) Chambers. This system shall be installed/maintained in accordace with this approval and the wastewater counsultant design. Due to percent slope and soil conditions at the site, this controlled demonstration system was considered.

The undersigned, an authorized agent of the MECKLENBURG COUNTY HEALTH DEPARTMENT, certifies that the Department is issuing an IMPROVEMENT PERMIT for the above referenced property. This permit is being issued in accordance with the *Laws and Rules For Sewage Treatment and Disposal Systems* and is subject to the following provisions:

- No work shall be conducted on the septic system until an INSTALLATION APPROVAL is granted by the Department.
- The septic system installer shall be a registered septic contractor with Mecklenburg County Health Department.
- The permitted system shall be installed in accordance with the included PLOT PLAN.
- This IMPROVEMENT PERMIT is transferable.

http://hmc-ms-zone1/WASPS/ImprovementPermitOutputForm2b.aspx?appid=5580 7/24/2012

FEE: 200.00
DATE: 9/20/2013

CONSTRUCTION AUTHORIZATION FOR AN ON-SITE WASTEWATER TREATMENT & DISPOSAL SYSTEM

MECKLENBURG COUNTY
GROUNDWATER & WASTEWATER SERVICES

FILE NUMBER: 8492B

PERMIT NUMBER: 30005580

PARCEL NUMBER: 13927625

JOB LOCATION INFORMATION

ADDRESS: 10726 HADRIANS WALK CT

CITY: CHARLOTTE **STATE: NC** **ZIP:** 28227

ISSUED TO: B & C Land Holdings LLC

CONSTRUCTION AUTHORIZATION ISSUANCE DATE: 7/24/2012

CONSTRUCTION AUTHORIZATION CONDITIONS

1. WASTEWATER SYSTEM CONSTRUCTION AND INSTALLATION MUST MEET ALL CONDITIONS AND SPECIFICATIONS AS SET FORTH IN IMPROVEMENT PERMIT NUMBER 30005580, AND THE ATTACHED SITE PLAN WITH SYSTEM DETAILS. CONSTRUCTION AND INSTALLATION MUST ALSO MEET ALL REQUIREMENTS SET FORTH IN THE RULES GOVERNING SANITARY SEWAGE COLLECTION, TREATMENT, AND DISPOSAL AND ANY OTHER APPLICABLE RULES AND LAWS.

2. AN INSTALLATION APPROVAL MUST BE SECURED PRIOR TO INSTALLATION OF THE SEPTIC TANK SYSTEM. THE INSTALLER OF THE SYSTEM SHALL BE A REGISTERED SEPTIC TANK CONTRACTOR WITH THE MECKLENBURG COUNTY HEALTH DEPARTMENT.

3. ANY ALTERATION IN SITE OR SOIL CONDITIONS (INCLUDING LOCATION OF STRUCTURES AND APPURTENANCES) OR MODIFICATION IN USE, DESIGN WASTEWATER FLOW, OR WASTEWATER CHARACTERISTICS AS SPECIFIED IN THE ASSOCIATED IMPROVEMENT PERMIT AND APPLICATION, MAY SUBJECT THIS CONSTRUCTION AUTHORIZATION AND ASSOCIATED PERMIT(S) TO REVOCATION.

4. THIS CONSTRUCTION AUTHORIZATION AS PROVIDED IN G.S. 130A-335(f) AND G.S. 130A-336(b) SHALL BE VALID FOR A PERIOD EQUAL TO THE VALIDITY OF THE IMPROVEMENT PERMIT, NOT TO EXCEED 60 MONTHS.
   *CONSTRUCTION AUTHORIZATION EXPIRATION DATE: 7/24/2017

Mecklenburg County Groundwater & Wastewater Services
700 N. Tryon St, Suite 211 Charlotte, NC 28202
Phone: (704) 336-5103 Fax: (704) 336-6894

NC DENR
Division of Environmental Health
On-Site Wastewater Section

IMPROVEMENT PERMIT for a RESIDENTIAL ON-SITE WASTEWATER TREATMENT & DISPOSAL SYSTEM

Permit #: **30005580** GWS File #: **8492B** Tax Parcel #: **139-276-25**

- This IMPROVEMENT PERMIT is subject to revocation if site plans or the intended use change. There is to be NO grading, filling, or disturbance of the soil in the area of the septic tank system or repair area.
- CONSTRUCTION AUTHORIZATION must be obtained prior to receiving a Building Permit. The Construction Authorization is NOT transferable. Do not clear, grade, fill or disturb soil prior to obtaining a Construction Authorization.
- Domestic-type wastewater only. No industrial process wastewater may be discharged into the system.

I. This Improvement Permit Shall: Expire in Five (5) Years **Expiration Date (If Applicable):** 7/24/2017

Type of Installation: Residential - New System Lot Number: 35

Structure Type: HOUSE Size (ft^2): 3200 # Bedrooms: 3 # Occupants: 5

Building Foundation: Concrete Slab Water Supply: Private Well

II. Initial System Type: Pump to Innovative **System Classification:** IIIb

Initial System Specifications:

Design Flow (gpd):	360	LTAR (gpd/ft^2):	0.3	Septic Tank Size (gal):	1500	Pump Tank Size (gal):	1000
Trench Width (ft):	3	Trench Spacing (ft):	9	Absorption Area (ft^2):	1200	Total Trench Length (ft):	400
Maximum Trench Depth (in):	10	Depth of Media (in):	8	Distribution Device:	Pressure Manifold		

III. Repair System Type: Pretreatment with Drip Irrigation **System Classification:** Va

Repair System Specifications:

Design Flow (gpd):	360	LTAR (gpd/ft^2):	0.1	Septic Tank Size (gal):	1500	Pump Tank Size (gal):	1000
Trench Width (ft):	0	Trench Spacing (ft):	2	Absorption Area (ft^2):	0	Total Trench Length (ft):	0
Maximum Trench Depth (in):	3	Depth of Media (in):	N/A	Distribution Device:	Headworks (Drip Irr.		

IV. Permit Conditions/Comments:

(Please See the Following Page for Permit Conditions.)

The undersigned, an authorized agent of the MECKLENBURG COUNTY HEALTH DEPARTMENT, certifies that the Department is issuing an IMPROVEMENT PERMIT for the above referenced property. This permit is being issued in accordance with the *Laws and Rules For Sewage Treatment, and Disposal Systems* and is subject to the following provisions:

- No work shall be conducted on the septic system until an INSTALLATION APPROVAL is granted by the Department.
- The septic system installer shall be a registered septic contractor with Mecklenburg County Health Department.
- The permitted system shall be installed in accordance with the included PLOT PLAN.
- This IMPROVEMENT PERMIT is transferable.

DENR Authorized Agent: Jeremy Michael Owner/Legal Agent: _____
Print Name

Signature: Jeremy Michael REHS. Signature: _____

Date Issued: 7/24/2012

Mecklenburg County Groundwater & Wastewater Services
700 N. Tryon St, Suite 211 Charlotte, NC 28202
Phone: (704) 336-5103 Fax: (704) 336-6894

NC DENR
Division of Environmental Health
On-Site Wastewater Section

IMPROVEMENT PERMIT for a RESIDENTIAL ON-SITE WASTEWATER TREATMENT & DISPOSAL SYSTEM

Permit #: **30005580** GWS File #: **8492B**

IV. Permit Conditions/Comments:

- This type of septic system requires an inspection once every 5 years by our office. The system owner is responsible for any fees, as determined by the Mecklenburg County Board of Commissioners, associated with this inspection.
- Additional soil cover, as specified on the plot plan, required over the drain field must be inspected and approved prior to issuance of an Operation Permit.
- This type of repair system requires the property owner to obtain a contract with a Certified Operator to perform routine inspections and maintenance on the system.
- This type of repair system requires periodic inspections by our office. The system owner is responsible for any fees, as determined by the Mecklenburg County Board of Commissioners, associated with this inspection.
- The septic system shall be installed in accordance with the plans submitted by the wastewater system design consultant.
- All components of the septic system must be installed in accordance with the required setbacks listed on the corresponding plot plan.
- All components of the septic system must be located at least 100 ft. (50 ft. minimum) from all private wells.
- All waterlines must be located a minimum of 10 ft. from any part of the septic system.
- Upon completion of the project the system designer shall provide Groundwater & Wastewater Services with a letter certifying that the system was installed in accordance with the approved design.
- The permitted system design requires a pressure manifold with varying tap diameters and/or pipe schedules. The contractor should review the specification detail provided by the system designer prior to bidding the project.
- Flow from all gutters and downspouts shall be directed not to discharge water onto or across any part of the septic system.
- Foundation drains shall be constructed not to discharge water onto or across any part of the septic system.
- This permit is issued for a control demonstration wastewater system No: CDWS-2010-1 for Infiltrator Quick4 Plus Standard Low Profile (LP) Chambers. This system shall be installed/maintained in accordace with this approval and the wastewater counsultant design. Due to percent slope and soil conditions at the site, this controlled demonstration system was considered.

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- The permitted system shall be installed in accordance with the included PLOT PLAN.
- This IMPROVEMENT PERMIT is transferable.

DENR Authorized Agent: Jeremy Michael

Signature: Jeremy Michael REHS

Date Issued: 7/24/2012

Owner/Legal Agent: _____
Print Name

Signature: _____

Page 2 of 2

Mecklenburg County Groundwater & Wastewater Services
700 N. Tryon St., Suite 211 Charlotte, NC 28202
Phone: (704) 336-5103 Fax: (704) 336-6894

NC DENR
Division of Environmental Health
On-Site Wastewater Section

OPERATION PERMIT for an ON-SITE WASTEWATER TREATMENT & DISPOSAL SYSTEM

File #: 8492B Permit #: 30005580 Tax Parcel #: 139-276-23

Property Owner: True Homes

Job Location Address: 10726 Hadrians Walk Ct

City: Charlotte State: NC Zip Code: 28227

Operation Permit Issuance Date: 10/3/2014 Contractor Name: Steven's Septic

Permitted Design Flow: 360 GPD

Liquid Capacity of Septic Tank: 1500 gallons

Liquid Capacity of Dosing Tank: 1000 gallons

Effluent Pump Model: Liberty 1/2 hp FL51M

Drainfield Installation ☐ N/A

Trench Depth: 10 inches

Trench Width: 3 feet

Line Spacing: 9 feet (O.C.)

Total line length: 400 feet

# of Lines: 5 @ Varying feet Infiltrator QH

Depth of Media: 8 inches (Type) Standard Low Profile Chamber System

Depth of Cover: 12 inches

Distribution Device: Pressure Manifold

Inspection Dates STB338-1600 8/22/14 DT-27 8/18/14

Tank(s) Inspected: 10/3/14

Excavation Inspected: 10/3/14

Pump & Controls Inspected: 10/10/14 BWH

SKETCH OF SYSTEM INSTALLATION
(As-Built Drawing)

Installed with accordance to plan submitted by waste water design consultant

Bed Installation *(For Repair Installations ONLY.)* ☒ N/A

Bed Depth: _____ inches

Bed Width: _____ feet

Total line length: _____ feet

# of Lines: _____ @ _____ feet

Depth of Media: _____ inches (Type) _____

Depth of Cover: _____ inches

Distribution Device: _____

Water Supply Source

☐ Municipal ☒ Private Well ☐ Community Well

☐ Other _____

System Installation Setbacks

Distance from Building Foundation: >5 feet

Distance from Property Line: 10 feet

Distance from Water Supply Source: >50 feet

The undersigned has inspected the Septic Tank System described above, and certifies it has been ☒ installed ☐ altered ☐ repaired ☐ as detailed in the plot above ☐ in accordance with the permit issued and meets the provisions of 15A NCAC 18A. 1900, "Laws and Rules for Sewage Treatment and Disposal Systems" in effect on the date of issuance of the permit. The issuance of this Operation Permit does not in any way guarantee that the system will operate properly or relieve any person now or hereafter owning, controlling, or using such system from any liability resulting from the failure of the system to operate properly. This document is issued subject to those restrictions and conditions shown on the permit(s) and the provisions of 15A NCAC 18A. 1900 in addition to those listed below under "Comments." This document shall be null and void if any information contained in the application is untrue or if any additions are made to the property which would increase the requirements for said system.

Notice: Disturbance of the designated repair area may result in the Suspension or Revocation of this permit.

Comments: System Classification & Type: III/P/na/na 1045LP/P/na/na

Drive Down 75 gal/min

DENR Authorized Agent: Shelby Ledford Signature: Shelby Ledford

Mecklenburg County Groundwater & Wastewater Services
700 N. Tryon St., Suite 211 Charlotte, NC 28202
Phone: (704) 336-5103 Fax: (704) 336-6894

NC DENR
Division of Environmental Health
On-Site Wastewater Section

OPERATION PERMIT for an
ON-SITE WASTEWATER TREATMENT & DISPOSAL SYSTEM

File #: 8492B Permit #: 3000 5580 Tax Parcel #: 139-276-25

Property Owner: True Homes

Job Location Address: 10726 Hedrians walk Ct

City: Charlotte State: NC Zip Code: 28277

OPERATION PERMIT CONDITIONS:

I. Performance: System shall perform in accordance with 15A NCAC 18A .1961.

II. Monitoring: System shall be monitored as required by 15A NCAC 18A .1961.

III. Maintenance: Ground absorption sewage treatment and disposal systems shall be checked, and the contents of the septic tank removed, periodically from all compartments, to ensure proper operation of the system. The contents shall be pumped whenever the solids level is found to be more than 1/3 of the liquid depth in any compartment.

IV. Operation: System shall be operated in accordance with 15A NCAC 18A .1961.

System Classification: III b

*Operation Permits for Type V and VI systems expire five (5) years from the date of issuance (in accordance with Table V(a)). The system owner must contact GWS six (6) months prior to expiration for permit renewal.

Subsurface system operator required: Yes ☒ No ☐

☐ This type of system requires the system owner to maintain a contract with a certified operator to perform system inspection, maintenance, and reporting as required in 15A NCAC 18A .1961. and Table V(a). The system owner is responsible for all fees associated with these services.

☐ System does not require inspection by GWS on a routine frequency.

☒ System requires inspection by GWS once every five (5) years. The system owner is responsible for all fees associated with the inspection.

☐ System requires inspection by GWS once every three (3) years. The system owner is responsible for all fees associated with the inspection.

☐ System requires inspection by GWS once every twelve (12) months. The system owner is responsible for all fees associated with the inspection.

☐ System requires inspection by GWS once every six (6) months. The system owner is responsible for all fees associated with the inspection.

V. Other:

DENR Authorized Agent: Shelby Ledford Date: 11/13/2014

Signature: Shelby Ledford

Mecklenburg County Groundwater & Wastewater Services
700 N. Tryon St., Suite 211 Charlotte, NC 28202
Phone: (704) 336-5103 Fax: (704) 336-6894

NC DENR
Division of Environmental Health
On-Site Wastewater Section

INSTALLATION APPROVAL for an ON-SITE WASTEWATER TREATMENT & DISPOSAL SYSTEM

File #: 8492B Permit #: 3000 5580 Tax Parcel #: 139-276-35

Property Owner: Tree Homes

Job Location Address: 10726 Hadrians Walk Court lot 35

City: Charlotte State: NC Zip Code: 28227

Installation Approval Issuance Date: 9/16/14

Permission is hereby given to ☒ install ☐ alter ☐ repair an on-site wastewater treatment & and disposal system, with subsurface soil absorption and effluent discharge, as specified herein at the described location. This approval is granted based upon the application information submitted to our office. All work shall be completed on or before _____, after which date this approval shall be null and void. The system shall meet all of the construction requirements of 15A NCAC 18A. 1900 which are in effect on the date of granting this approval. An **Operation Permit** must be obtained from the Mecklenburg County Health Department before any system can be covered up or placed into service. The issuance of this permit does not in any way guarantee that the system anticipated to be constructed will operate properly, or relieve any person now of hereafter owning, controlling or using such system from any liability resulting from the failure of the system to operate properly.

***NOTICE: This system shall not be installed while soils are in a wet condition.**

Permitted Design Flow: 360 GPD

Site LTAR: 0.3 GPD/ft² (For new installations only.)

Liquid Capacity of Septic Tank: 1250 gallons

Liquid Capacity of Dosing Tank: 1000 gallons

Drainfield Design ☐ N/A

Trench Depth: 10 inches

Trench Width: 3 feet

Line Spacing: 9 feet (O.C.)

Total line length: 400 feet

# of Lines: 5 @ Varying feet

Depth of Media: 8 inches (Type) III

Distribution Device: Pressure Manifold

Bed Design *(For Repair Installations ONLY.)* ☒ N/A

Bed Depth: _____ inches

Bed Width: _____ feet

Total line length: _____ feet

# of Lines: _____ @ _____ feet

Depth of Media: _____ inches (Type) _____

Distribution Device: _____

Water Supply Source

☐ Municipal ☒ Private Well ☐ Community Well

☐ Other _____

Minimum System Setbacks

Distance from Building Foundation: >10 feet

Distance from Property Line: >10 feet

Distance from Water Supply Source: >50 feet

SKETCH OF SYSTEM LAYOUT
(Proposed Layout)

* Install according to wastewater design consultant plans

Comments: System Classification & Type: III/P/na/na

DENR Authorized Agent: Shelby Ledford Signature: Shelby Ledford

AQUAWORX™
by INFILTRATOR

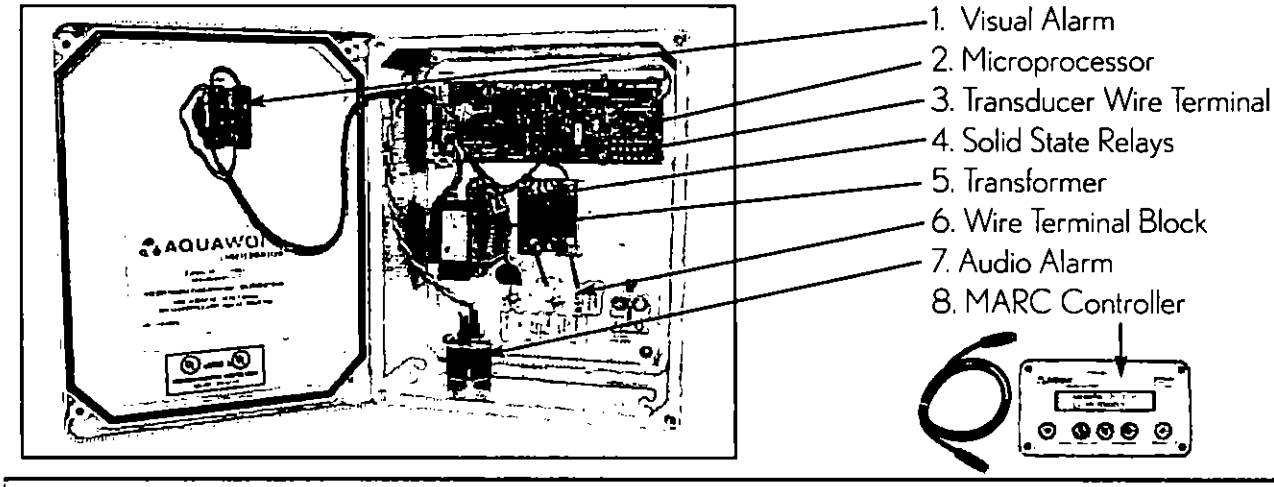
Aquaworx by Infiltrator
6 Business Park Road
P.O. Box 768
Old Saybrook, CT 06475

Ph: 860.577.7000
Toll Free: 1.877.278.2979
Fax: 860.577.7001
www.aquaworx.com

Technical Data Sheet

IPC-SM Simplex Control Panel

The Aquaworx Intelligent Pump Controller (IPC) Panel provides an innovative approach to time controlled pumping. It is used with a single pump operation - (on demand/time dose, lift stations, pump to gravity, etc.). Designed specifically for the onsite industry, the IPC Panel leverages floatless pressure transducer technology. The IPC Panel monitors liquid levels, controls pumping time intervals, and logs events in real time. Using the MARC (Mountable and Removable Controller) as the user interface, the Aquaworx IPC Panel offers a cost-effective solution with expanded capability. The data logging capabilities of the IPC Panel enables monitoring of multiple types of system events, which enhances operational assessment, troubleshooting, and maintenance of the onsite system.



Standard Specifications

- Enclosure dimensions: 11.31"(H) x 9.31"(W) x 5.43"(D)
- Weight: 14.5 lbs.
- 115 VAC, 20 FLA, 1-HP Max, single phase, 60Hz
  220 VAC, 20 FLA, 2-HP Max, single phase, 60Hz
- NEMA 4X rated - constructed of UV-resistant fiberglass, with stainless steel hinge
- Manual / Off / Auto Operation
- Audio / Visual Alarm - 95 decibel, w/push to silence
- UL/cUL listed
- Built-in dose counter and pump run timer
- Solid-state relay
- Pressure transducer: liquid level sensing with no floats.
- Transducer wire: 14-gauge, 3-wire connection (red, blue, black), rated for direct burial

Features and Benefits

Programmable Interface - both mountable and removable
- Control liquid levels
- Allows for timed dosing
- Removable controller

Floatless Transducer - sensor mounted in pump chamber
- Simple 3-wire connection
- Reduces water tight connections in junction box
- Eliminates sewer gases in panel and crimped tubing

Data Logging - date and time stamp for 4,000+ events
- Allows for system troubleshooting and timely diagnostics
- Allows design vs. actual flow comparisons
- Identify water usage patterns

Veto Level Function
- Allows a programmable override

Ease of Installation
- Only basic tools required - screwdriver, pipe cutter, wirestripper, drill, step bit, tape measure, etc.

GOULDS PUMPS

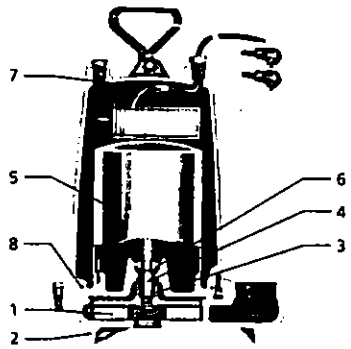
Submersible Effluent Pump

MODEL 3885

WE Series

COMPONENTS

Item No.	Description
1	Impeller
2	Casing
3	Mechanical Seal
4	Motor Shaft
5	Motor
6	Ball Bearings
7	Power Cable
8	Casing O-Ring



MODELS

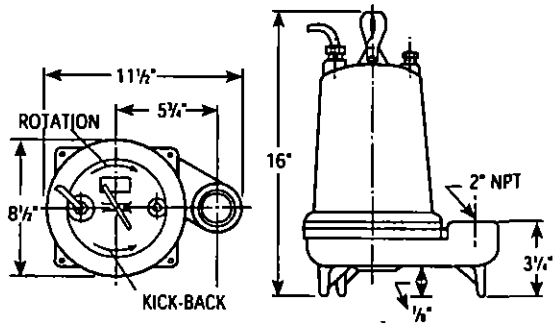
Order No.	HP	Volts	Phase	Max. Amp.	RPM	Solids	Wt. (lbs.)
WE0311L	⅓	115	1	10.7	1750	¾"	56
WE0318L		208		6.8			
WE0312L		230		4.9			
WE0311M		115		10.7			
WE0318M		208		6.8			
WE0312M		230		4.9			
WE0511H	½	115	1	14.5	3500		60
WE0518H		208		8.1			
WE0512H		230		7.3			
WE0538H		200	3	4.9			
WE0532H		230		3.3			
WE0534H		460		1.7			
WE0537H		575		1.4			
WE0511HH		115	1	14.5			
WE0518HH		208		8.1			
WE0512HH		230		7.3			
WE0538HH		200	3	4.9			
WE0532HH		230		3.6			
WE0534HH		460		1.8			
WE0537HH		575		1.5			
WE0718H	¾	208	1	11.0			70
WE0712H		230		10.0			
WE0738H		200	3	6.2			
WE0732H		230		5.4			
WE0734H		460		2.7			
WE0737H		575		2.2			
WE1018H	1	208	1	14.0			
WE1012H		230		12.5			
WE1038H		200	3	8.1			
WE1032H		230		7.0			
WE1034H		460		3.5			
WE1037H		575		2.8			
WE1518H	1½	208	1	17.5			80
WE1512H		230		15.7			
WE1538H		200	3	10.6			
WE1532H		230		9.2			
WE1534H		460		4.6			
WE1537H		575		3.7			
WE1518HH		208	1	17.5			
WE1512HH		230		15.7			
WE1538HH		200	3	10.6			
WE1532HH		230		9.2			
WE1534HH		460		4.6			
WE1537HH		575		3.7			
WE2012H	2	230	1	18.0			83
WE2038H		200	3	12.0			
WE2032H		230		11.6			
WE2034H		460		5.8			
WE2037H		575		4.7			

PERFORMANCE RATINGS (gallons per minute)

Order No.		WE03L	WE03M	WE05H	WE07H	WE10H	WE15H	WE05HH	WE15HH	WE20H
	HP	⅓	⅓	½	¾	1	1½	½	1½	2
	RPM	1750	1750	3500	3500	3500	3500	3500	3500	3500
Total Head Feet of Water	5	86	–	–	–	–	–	–	–	–
	10	70	63	78	–	–	–	58	–	–
	15	52	50	70	90	–	–	53	–	–
	20	27	35	60	83	98	123	49	90	136
	25	–	–	48	76	94	117	45	87	133
	30	–	–	35	67	88	110	40	83	130
	35	–	–	20	57	82	103	35	80	126
	40	–	–	–	45	74	95	30	77	121
	45	–	–	–	35	64	86	25	74	116
	50	–	–	–	25	53	77	–	70	110
	55	–	–	–	–	40	67	–	66	103
	60	–	–	–	–	30	56	–	63	96
	65	–	–	–	–	20	45	–	58	89
	70	–	–	–	–	–	35	–	55	81
	75	–	–	–	–	–	25	–	51	74
	80	–	–	–	–	–	–	–	47	66
	90	–	–	–	–	–	–	–	37	49
	100	–	–	–	–	–	–	–	28	30

DIMENSIONS

(All dimensions are in inches. Do not use for construction purposes.)



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SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE.

Goulds Pumps

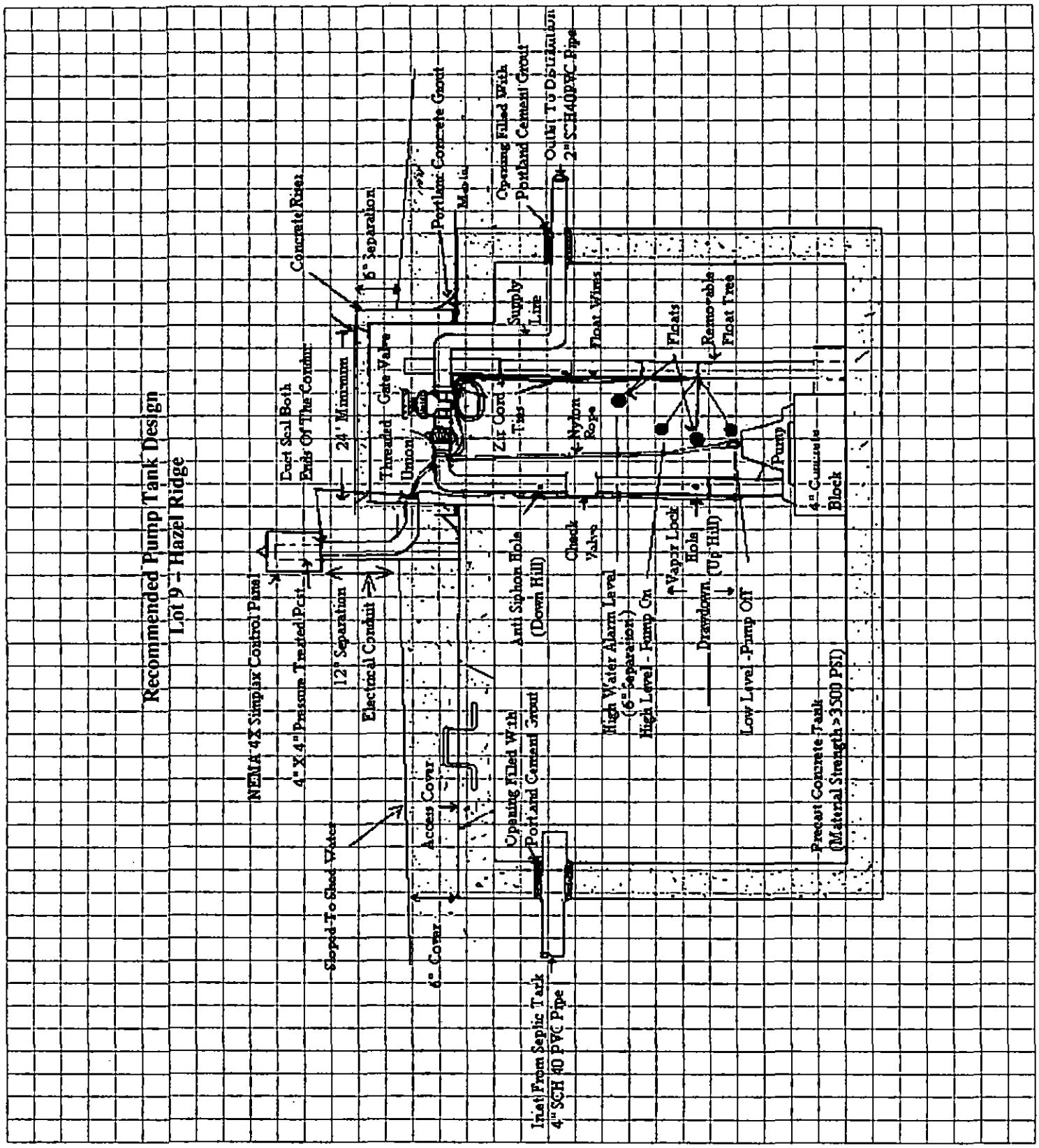
ITT Industries

Thompson Environmental Consulting
PO Box 541
Midland, NC 28107-0541

Tax ID Number: 139-276-25

Location: Lot 35 – Sherwood Forest

Date: July 16, 2012



Department of Environment, Health, and Natural Resources
Division of Environmental Health
On-site Wastewater Section

Sheet: 1 of 2
Property ID: 13927625
Lot #: 35
File #: 8492B
AppID: 5580

SOIL/SITE EVALUATION for ON-SITE WASTEWATER SYSTEM

Owner: B and C Land Holdings LLC
Applicant: Scott Twiddy
Address: 2649 Brekonridge Centre Dr Monroe, NC 28110
Date Evaluated: 5/21/2012
Proposed Facility: 4 bedroom House Design Flow (.1949) 480 gpd
Property Size: 1.075
Location of Site: 10726 Hadrians Walk Ct (sherwood Forest lot 35)
Property Recorded:
Water Supply: [ ] Public [ ] Individual [X] Well [ ] Spring [ ] Other
Evaluation Method: [ ] Auger Boring [X] Pit [ ] Cut
Type of Wastewater: [X] Sewage [ ] Industrial Process [ ] Mixed

PROFILE #	.1940 Landscape Position/ Slope%	Horizon Depth (IN.)	SOIL MORPHOLOGY .1941 .1941 Structure/ Texture	.1941 Consistence Mineralogy	b PROFILE FACTORS .1942 Soil Wetness/ Color	.1943 Soil Depth (IN.)	.1956 Sapro Class	.1944 Restr Horiz	Profile Class & LTAR
Pit 1	LS	0-3	w f gr SL	ns np fr nexp	>38	38	NA	PS	PS IV
	20%	3-21	m m sbk C	ss sp fi sexp					0.3
		21-38	w f sbk CL	ss sp fi sexp					
Pit 2	LS	0-2	w f gr SL	ns np fr nexp	>43	43	NA	PS	PS IV
	22%	2-22	m m sbk C	ss sp fi sexp					0.3
		22-43	w f sbk CL	ss sp fr sexp					
Pit 3	LS	0-3	w f gr SL	ns np fr nexp	14	25	US	PS	US IV
	22%	3-14	m m sbk C	ss sp fi sexp					
		14-25	w c abk C	s p fi exp					
		25-35	Cr	ns np fr nexp					
		35-41	Cr	Cr					
Pit 4	LS	0-7	w f sbk SCL	ns np fr nexp	31	28	US	PS	PS IV
	19%	7-22	m m sbk C	ss sp fi sexp					0.1 Drip
		22-28	w f sbk CL	ss sp fr sexp					
		28-33	sls m L	ns np fr nexp					
		33-45	Cr/saprolite	Cr/saprolite					

Description	Initial System	Repair System
Available Space (.1945)		
System Type(s)		
Site LTAR		

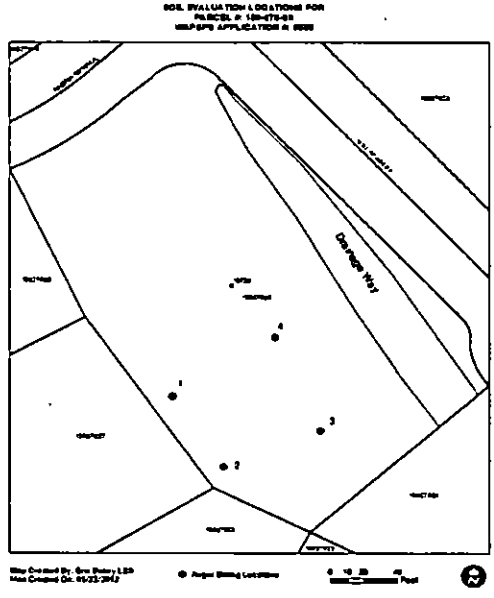
Other Factors (.1946):
Soil Evaluation By: Eric Bailey LSS Eric Bailey
Others Present:
Site Classification (.1948):
Site Evaluation By:
Others Present:

COMMENTS:

Landscape Position	Group	Texture	.1955 LTAR	Structure
R-Ridge	I	S-Sand	1.2 - 0.8	SG-Single Grain
SS-Shoulder Slope		LS-Loamy Sand		M-Massive
LS-Linear Slope				CR-Crumb
FS-Foot Slope	II	SL-Sandy Loam	0.8 - 0.6	GR-Granular
NS-Nose Slope		L-Loam		SBK-Subangular Blocky
HS-Head Slope				ABK-Angular Blocky
CC-Concave Slope	III	Si-Silt	0.6 - 0.3	PL-Platy
CV-Convex Slope		SiCL-Silty Clay Loam		PR-Prismatic
T-Terrace				
FP-Flood Plain		CL-Clay Loam		
D-Drainage Way		SCL-Sandy Clay Loam		
		SiL- (Silt Loam)		
	IV	SC-Sandy Clay	0.4 - 0.1	
		SiC-Silty Clay		
		C-Clay		

Consistence Moist	Consistence Wet	Mineralogy
VFR-Very Friable	NS-Non-Sticky	NEXP-(Non-expansive)
FR-Friable	SS-Slightly Sticky	SEXP-Slightly Expansive
FI-Firm	S-Sticky	EXP-Expansive
VFI-Very Firm	VS-Very Sticky	
EFI-Extremely Firm	NP-Non-Plastic	
	SP-Slightly Plastic	
	P-Plastic	
	VP-Very Plastic	

Sketch of Soil Evaluation Locations



Residential Subsurface Wastewater Treatment and Disposal System Proposal

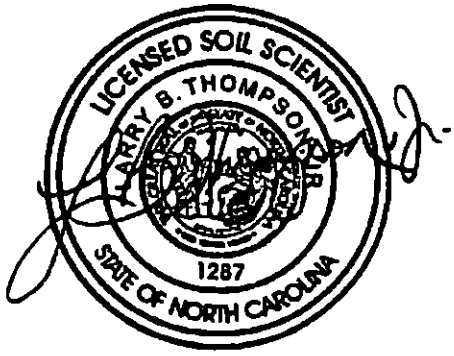
for

Sherwood Forest – Lot 35
10726 Hadrian's Walk Court
Mint Hill, North Carolina

Tax Parcel # 139-276-25
MCGWS File # 8492B
July 21, 2012

Prepared for:

True Homes
2649 Brekonridge Center Drive
Monroe, NC 28110
704-238-1229

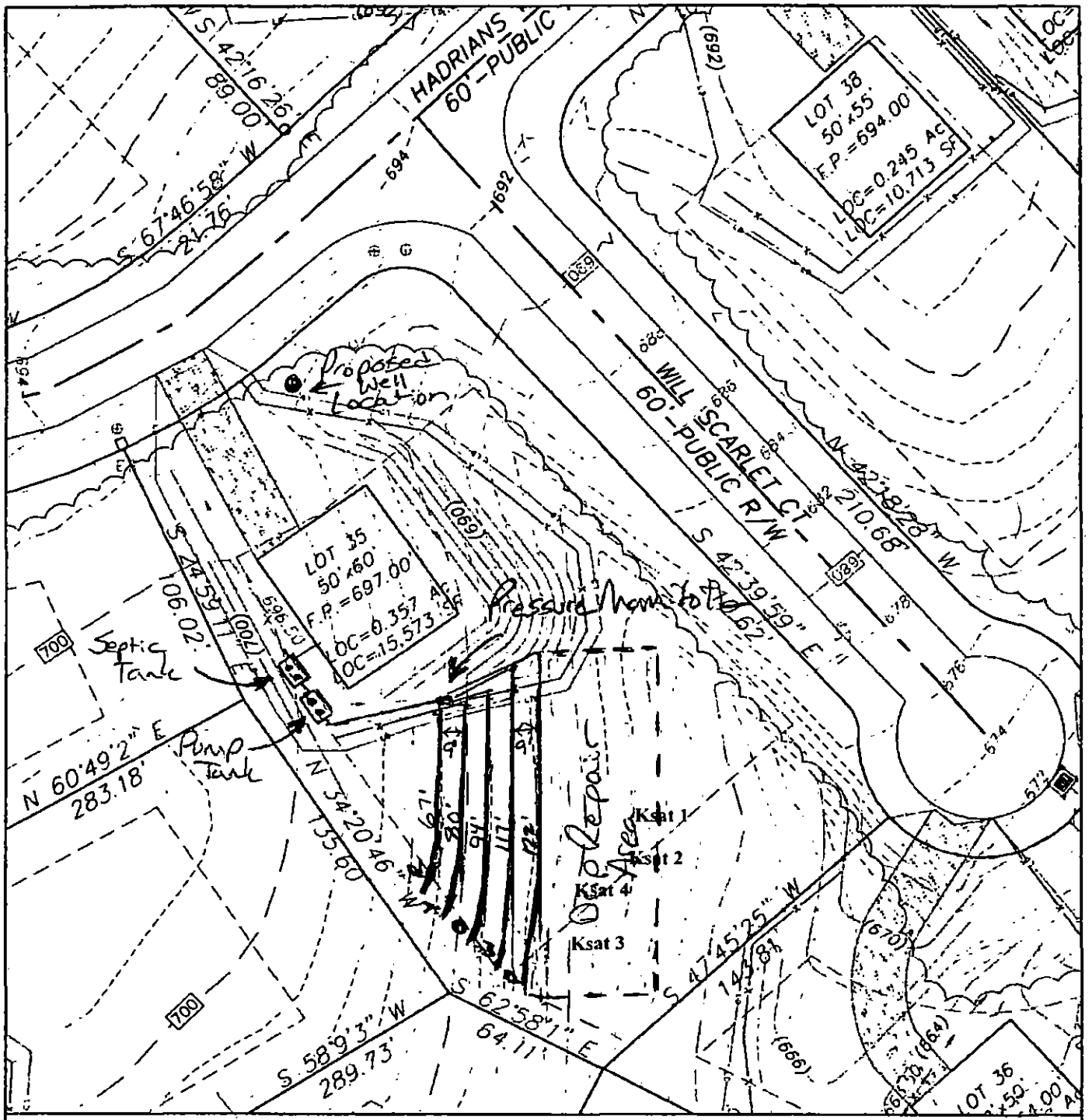


Prepared by:

Larry Thompson, REHS, PWS, LSS
Thompson Environmental Consulting, Inc.
PO Box 541
Midland, NC 28107-0541
Phone: 704-301-4881
Fax: 704-888-6066
larry@thompsonenv.com



cc: Mr. Jeremy Michael, RS
Mecklenburg County Groundwater and Wastewater Services



LOT GRADING PLAN
LOT 35
SHERWOOD FOREST SUBDIVISION
MINT HILL, NORTH CAROLINA
CAROLINA DEVELOPMENT SOLUTIONS, LLC
1932 CLARK ELLIOT STREET
FORT MILL, SOUTH CAROLINA 29708
SCALE 1"=50'

GRAPHIC SCALE
50 25 0 50

summit
landservices
P.O. BOX 7442
CHARLOTTE, NC 28241
OFFICE: 704.508.0354
FAX: 704.504.1125
WWW.SUMMIT-COMPANIES.COM

Details

True Homes has contracted with Thompson Environmental Consulting, Inc. (TEC) to prepare a septic proposal for a new 3-bedroom single family residence to be located on Lot 35 of the Sherwood Forest subdivision in Mint Hill, North Carolina.

Based upon a soils investigation performed by Mecklenburg County Groundwater and Wastewater Services (MCGWS) on the 1.075 acre lot, TEC has determined that a sufficient amount of "Suitable" Group IV soils are available for the installation of an Infiltrator Quick4 Plus Low Profile Chamber for the initial system and a pre-treated drip irrigation repair system repair (E-Z Drip or Perc-Rite Aerobic Drip) for a 3-bedroom residence to be served by a private well.

True Homes would like to request that Mecklenburg County Groundwater and Wastewater Services (MCGWS) consider issuing the appropriate permits for a subsurface wastewater treatment and disposal system based upon the following proposal.

Location

The subject property is located at 10726 Hadriana Walk Court in Mint Hill, North Carolina. From downtown Charlotte, travel east on US 74 and continue on to NC 27 approximately 9.1 miles. Turn right onto Cabarrus Road, right onto Ferguson Road and right onto Brief Road. Take the second right onto Friar Tuck Lane and the second right onto Hadrian's Walk Court. Lot 35 will be located on the right at the corner of Will Scarlet Court.

References

Laws and Rules for Sewage Treatment and Disposal Systems, 15A NCAC 18A, Section .1900, Department of Environment and Natural Resources, Division of Environmental Health, On-Site Wastewater Section, August 2007.

Controlled Demonstration Wastewater System No. CDWS-2010-1; North Carolina Department of Environment and Natural Resources, Division of Environmental Health, On-Site Wastewater Section, May 24, 2010.

Primary Investigator's Credentials

NC Registered Sanitarian No. 1208
NC Licensed Soil Scientist No. 1287
NC Subsurface Septic System Operator No. 22199
NC Grade IV Wastewater System Installer No. 1762
NC Certified Wastewater System Inspector No. 17621

Plans and Specifications

A. Septic Tank

1. The septic tank shall be State approved (Section .1953 of 15A NCAC 18A), watertight, structurally sound, and 1500 gallons in capacity.
2. The septic tank will be fitted with an approved effluent filter and riser for easy access and periodic maintenance.
3. It is the responsibility of the septic contractor to thoroughly inspect the septic tank prior to accepting delivery to assure that the tank has had time to properly cure and is free of cracks or other structural deficiencies.

B. Pump Tank

1. The pump tank shall be State approved, of one-piece construction, watertight, structurally sound and 1000 gallons in capacity. Again, it is the responsibility of the septic tank contractor to thoroughly inspect each pump tank prior to accepting delivery.
2. All pipe penetrations into the tank shall be booted (i.e., C-293 boot with a stainless steel strap).
3. The pump tank shall have access risers that extend, at a minimum, 6 inches above finished grade and must have less than 36 inches of fill over its top once finished grade has been established (a reinforced concrete tank will be required if finished soil cover is 36 inches or greater in depth).
4. The pump and alarm controls shall be provided with manual circuit disconnects within a watertight, corrosion resistant, Nema 4x rated **Aquaworx control panel** (The Aquaworx control panel is required as part of the controlled demonstration approval. The panel will allow for monitoring of the volume of effluent that is pumped to the drainfield). The Aquaworx control panel must be securely mounted outside, adjacent to the pump tank riser and at a minimum of 12 inches above finished grade. Pump and float control wiring should be long enough to reach from the tank to the control panel without splicing, routed through wire conduit, and sealed at the openings within the pump tank as well as the control panel enclosure. It is paramount that the conduit is properly sealed to prevent the escape of flammable gases from the pump tank. Furthermore, there must be two electrical circuits for the pump tank controls: one for the pump and one for the alarm controls.
5. Floats, pump and control circuits, and the Aquaworx control panel shall meet the requirements of Rule .1952(c). Panel and control equipment shall include lightning protection, be protected from unauthorized access, and remain accessible at all times to the system operator.
6. Float switch tie downs must be made of a corrosion resistant material (all metal in the tanks shall be stainless steel). Floats should be mounted on a separate "float tree" rather than the pump supply line (see pump tank detail).
7. The pump removal system will be via a pump tether made of nylon rope or its equivalent. The tether material should be resistant to mildew and rot.

C. Pipe, Fittings and Supply Line

1. All discharge piping, connectors and supply lines should be made of SCH 40 PVC.
2. All joints must be properly "welded" utilizing the appropriate PVC cement for each application.
3. The supply line shall be constructed of 2 inch SCH 40 PVC (approximately 40 feet in length).

D. Pressure Manifold

1. A pressure manifold shall be used to distribute wastewater equally to each of the six drainlines.
2. The pressure manifold shall be contained within an adequately sized box/vault that will allow future repair lines to be installed and is designed to allow for drainage of effluent that may accumulate in it during flushing and head pressure adjustments. The box should be placed upon a gravel base.
3. A gate valve shall be provided at the pressure manifold box to allow for final pressure adjustment (2 foot of head pressure as per design).
4. The pressure manifold shall be constructed of SCH 80 PVC.
5. There shall be 5 taps (direct thread or saddle) on the manifold each to have a true union ball valve that will allow for future removal/replacement.
6. The following tap sizes and schedules are required:
    a. Line 1 = ½ inch schedule 80 PVC (5.48 GPM)
    b. Line 2 = ½ inch schedule 40 PVC (7.11 GPM)
    c. Line 3 = ½ inch schedule 40 PVC (7.11 GPM)
    d. Line 4 = ¾ inch schedule 80 PVC (10.1 GPM)
    e. Line 5 = ¾ inch schedule 80 PVC (10.1 GPM)
7. The connecting pipe between the pressure manifold taps and the drain field shall be constructed of PVC.

E. Drain Field Installation

1. The drainfield has been laid out on-site utilizing metal stemmed flags. Once this area has been approved by the MCHD, the property owner/builder should mark this area and isolate it as much as possible from construction traffic. Prior to the system installation, the septic contractor shall contact the MCHD and the system designer for a preconstruction conference at which time the drain field area will be re-verified.
2. Under no circumstances shall any construction take place within the drain field area while the soil is in a wet condition. If the installer has doubts as to whether or not the drain field area is dry enough to begin construction, the MCHD should be contacted for permission to proceed with the installation.
3. The specified system is a shallow placed controlled demonstration system, specifically the **Infiltrator Quick4 Standard Low Profile Chamber System.**

4. The drain field consists of five (5) lateral trenches to be constructed 3 foot wide by various lengths:
    a. Line 1 = 67 Feet
    b. Line 2 = 80 Feet
    c. Line 3 = 94 Feet
    d. Line 4 = 117 Feet
    e. Line 5 = 122 Feet

5. The maximum trench depth for this system shall be **10 inches**. The final soil cover required over the entire drainfield area is 6 inches. Additional soil cover may be required in order to achieve the required 6 inch depth.
6. The drainlines are to be installed on contour with the land, keeping the individual trench bottoms level from beginning to end.
7. The distal end of each nitrification trench shall have a 2 inch inspection port installed in the top of the chamber that extends to finish grade, without elbows or turns, to facilitate access for periodic monitoring of ponding levels within the trenches.
8. The trenches should be left open for the final inspection by the MCHD.

F. Final Landscaping

1. Final cover over the drainfield shall be at least 6 inches deep.
2. The drainfield shall be shaped to shed rainwater and be free from low spots.
3. The drainfield area should be planted with grass as soon as possible to prevent erosion. The soil should be properly tilled, limed (if necessary) and fertilized prior to planting. After applying grass seed, the area should be heavily mulched with straw or other suitable material.

G. Utility Conflicts

1. The builder and property owner must take special care in planning for water, power, gas, telephone and cable lines. These utilities shall be kept clear of all parts of the septic system and its proposed repair area. Improper planning for underground utilities can negatively impact the installation and, in some cases, cause irreparable damage and permit revocation. If there are any questions regarding preferred routes, contact the MCHD as soon as possible.
2. Lawn irrigation should not be placed over the drain field area.

Maintenance

H. In General

1. The homeowner must maintain the drainfield area through periodic mowing. The drainfield must not be allowed to become overgrown.
2. The septic tank should be pumped every 4 years or when the solids within the septic tank reach an elevation that is equivalent to 25 percent of the volume of the tank. In some situations, the tanks may need to be pumped more frequently. If

using a garbage disposal, it is recommended that the homeowner has the septic and pump tanks cleaned out annually (TEC recommends that the property owner does not use a garbage disposal).

3. When it becomes necessary to clean the effluent filter, the filter should be removed and the accumulated debris washed back into the septic tank – not onto the lawn.
4. Any damp areas, leakages or malfunctions in the drainfield area should be addressed immediately.
5. Divert gutter downspouts and surface water runoff away from the septic and pump tanks.
6. This system may be monitored periodically by Infiltrator Systems Inc. as part of their controlled demonstration approval. If needed, the homeowner has agreed to be interviewed by representatives of Infiltrator Systems Inc. regarding water usage within the home, system performance, etc.
7. If the system reveals an average water ponding height greater than 5 inches within the trenches, the following analysis shall be provided by a third party as part of the monitoring requirements:
    - Acquire property water usage records;
    - Investigate plumbing fixtures for broken seals or running water;
    - Evaluate and report condition of septic tank and effluent filter; and/or
    - Install continuous monitoring equipment to assess system use characteristics over an extended period.

I. Suggestions to the Homeowner

1. As previously mentioned, TEC does not recommend that a garbage disposal be used in the home. If you plan to use a garbage disposal in your home you should plan to have your septic and pump tanks cleaned out annually. Garbage disposal wastes tend to degrade at a very slow rate.
2. Grease, cooking oils, coffee grounds and non-degradable solids (disposable diapers, cigarettes and solid paper wastes) should never be put into a septic tank.
3. Used motor oil or any oily liquids should not be disposed of in a septic tank.
4. Be aware of the amount of water that you are using in your home. Water saving fixtures and devices can be installed on sinks, toilets and showers to reduce the volume of wastewater that you are sending to your drain field.
5. Run dishwashers and washing machines only when you have a full load.
6. Use liquid detergents. Powdered detergents have binding agents in them that tend to solidify in the wastewater disposal system.
7. Repair leaky faucets and toilets. Small drips equal large volumes of water over time and can over burden your drain field.
8. Do not use chemical additives in your system. Studies have indicated that they do not increase the biological activity that naturally occurs in the septic system and in some cases certain additives have been found to be detrimental to the life of a system.

Design Specifics

Daily Design Flow:	360 GPD – 3 bedroom house
Septic Tank Size:	1500 gallons (2 compartments)
Pump Tank Size:	1000 gallons (one piece const.)
Control Panel Required:	Aquaworx
Effluent Loading Rate:	Design = 0.25 GPD per sq. ft.
Drain Field Type:	Infiltrator Quick 4 Standard Low Profile Chambers
Supply Line:	+/- 40 Feet (2 inch SCH 40)
Distribution Method:	Pressure Manifold (SCH 80)
Number of Taps and Size:	Line 1 = ½ inch SCH 80 Tap Line 2 = ½ inch SCH 40 Tap Line 3 = ½ inch SCH 40 Tap Line 4 = ¾ inch SCH 80 Tap Line 5 = ¾ inch SCH 80 Tap
Total Length of Drainfield:	480 Linear Feet
Drain Lines:	(5) 3' Wide x Various Lengths: Line 1 = 67 Feet Line 2 = 80 Feet Line 3 = 94 Feet Line 4 = 117 Feet Line 5 = 122 Feet
Maximum Trench Depth:	10 inches
Final Cover Requirement:	6 inches (minimum)
Pump Requirements:	39.9 GPM at 10 Feet TDH
Pump Specified:	Goulds WE03L (or equivalent)
Check Valve Required:	Yes

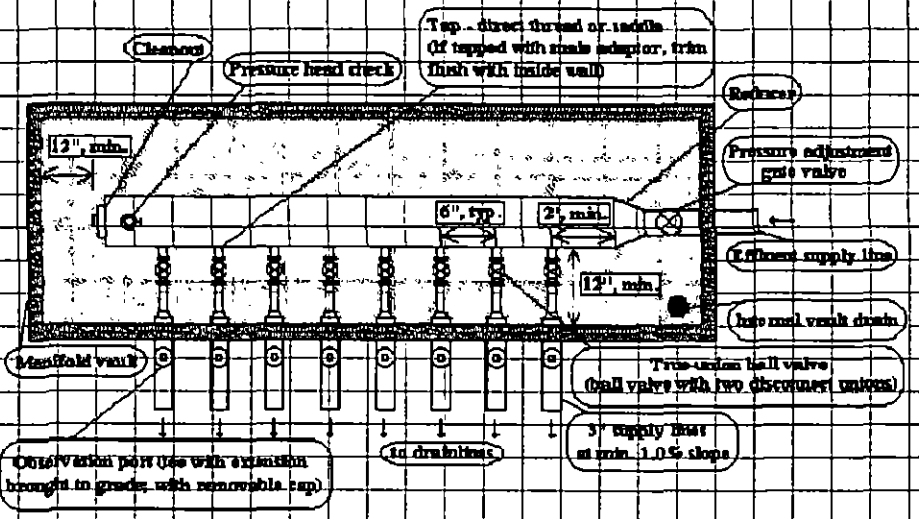
Thompson Environmental Consulting, Inc.
PO Box 541
Midland, NC 28107

Tax ID Number: 139-276-25

Location: Lot 35 – Sherwood Forest

Date: July 16, 2012

Recommended Pressure Manifold Design



GOULDS PUMPS



Submersible Effluent Pump

MODEL 3885

WE Series

PROSURANCE AVAILABLE FOR RESIDENTIAL APPLICATIONS.

APPLICATIONS

Specifically designed for the following uses:

- Homes
- Farms
- Trailer courts
- Motels
- Schools
- Hospitals
- Industry
- Effluent systems

SPECIFICATIONS

Pump

- Solids handling capabilities: ¾" maximum.
- Discharge size: 2" NPT.
- Capacities: up to 140 GPM.
- Total heads: up to 128 feet TDH.
- Temperature: 104°F (40°C) continuous 140°F (60°C) intermittent.
- See order numbers on reverse side for specific HP, voltage, phase and RPM's available.

FEATURES

■ **Impeller:** Cast iron, semi-open, non-clog with pump-out vanes for mechanical seal protection. Balanced for smooth operation. Silicon bronze impeller available as an option.

■ **Casing:** Cast iron volute type for maximum efficiency. 2" NPT discharge.

■ **Mechanical Seal: SILICON CARBIDE VS. SILICON CARBIDE** sealing faces. Stainless steel metal parts, BUNA-N elastomers.

■ **Shaft:** Corrosion-resistant, stainless steel. Threaded design. Locknut on all models to guard against component damage on accidental reverse rotation.

■ **Fasteners:** 300 series stainless steel.

■ Capable of running dry without damage to components.

■ Designed for continuous operation when fully submerged.

MOTORS

■ Fully submerged in high-grade turbine oil for lubrication and efficient heat transfer.

■ Class B insulation on ⅓-1½ HP models.

■ Class F insulation on 2 HP models.

Single phase (60 Hz):

- Capacitor start motors for maximum starting torque.
- Built-in overload with automatic reset.
- SJTOW or STOW severe duty oil and water resistant power cords.
- ⅓ and ½ HP models have NEMA three prong grounding plugs.
- ¾ HP and larger units have bare lead cord ends.

Three phase (60 Hz):

- Class 10 overload protection must be provided in separately ordered starter unit.
- STOW power cords all have bare lead cord ends.

■ **Designed for Continuous Operation:** Pump ratings are within the motor manufacturer's recommended working limits, can be operated continuously without damage when fully submerged.

■ **Bearings:** Upper and lower heavy duty ball bearing construction.

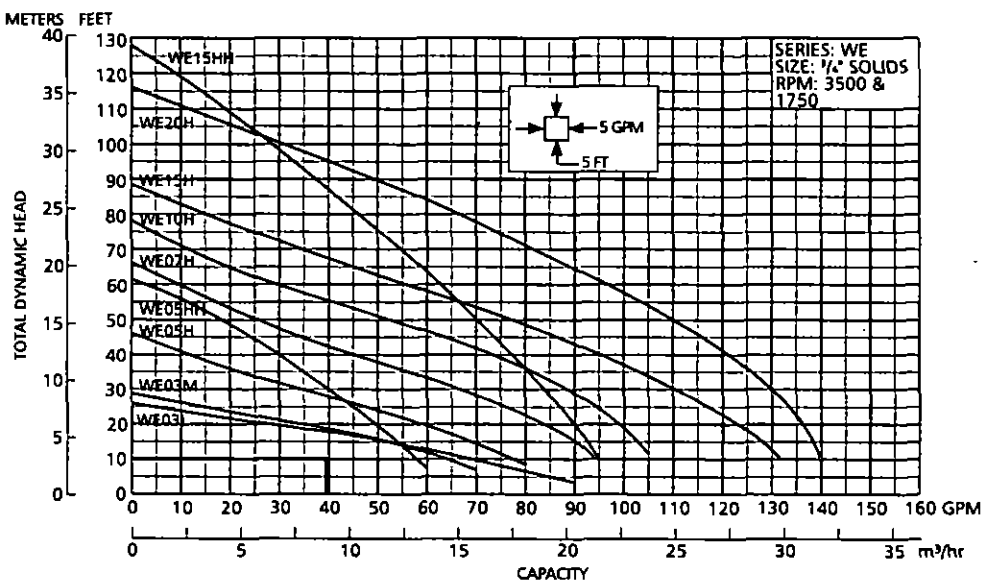
■ **Power Cable:** Severe duty rated, oil and water resistant. Epoxy seal on motor end provides secondary moisture barrier in case of outer jacket damage and to prevent oil wicking. Standard cord is 20'. Optional lengths are available.

■ **O-ring:** Assures positive sealing against contaminants and oil leakage.

AGENCY LISTINGS

C SA US — Tested to UL 778 and CSA 22.2 108 Standards By Canadian Standards Association File #LR38549

Goulds Pumps is ISO 9001 Registered.



Goulds Pumps

ITT Industries

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Effective July, 2003
B3885

GOULDS PUMPS

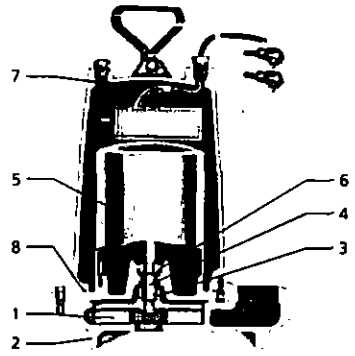
Submersible Effluent Pump

MODEL 3885

WE Series

COMPONENTS

Item No.	Description
1	Impeller
2	Casing
3	Mechanical Seal
4	Motor Shaft
5	Motor
6	Ball Bearings
7	Power Cable
8	Casing O-Ring



MODELS

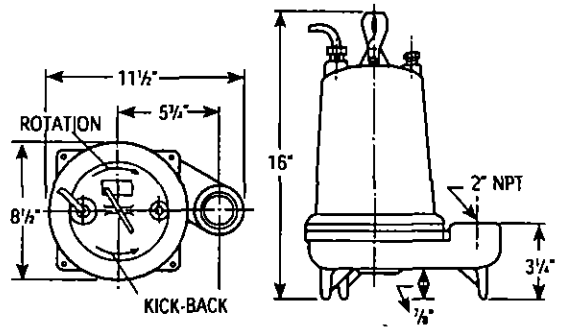
Order No.	HP	Volts	Phase	Max. Amp.	RPM	Solids	Wt. (lbs.)
WE0311L	⅓	115	1	10.7	1750	½"	56
WE0318L		208		6.8			
WE0312L		230		4.9			
WE0311M		115		10.7			
WE0318M		208		6.8			
WE0312M		230		4.9			
WE0511H	½	115	1	14.5	3500		60
WE0518H		208		8.1			
WE0512H		230		7.3			
WE0538H		200	3	4.9			
WE0532H		230		3.3			
WE0534H		460		1.7			
WE0537H		575		1.4			
WE0511HH		115	1	14.5			
WE0518HH		208		8.1			
WE0512HH		230		7.3			
WE0538HH		200	3	4.9			
WE0532HH		230		3.6			
WE0534HH		460		1.8			
WE0537HH		575		1.5			
WE0718H	¾	208	1	11.0			70
WE0712H		230		10.0			
WE0738H		200	3	6.2			
WE0732H		230		5.4			
WE0734H		460		2.7			
WE0737H		575		2.2			
WE1018H	1	208	1	14.0			
WE1012H		230		12.5			
WE1038H		200	3	8.1			
WE1032H		230		7.0			
WE1034H		460		3.5			
WE1037H		575		2.8			
WE1518H	1½	208	1	17.5			80
WE1512H		230		15.7			
WE1538H		200	3	10.6			
WE1532H		230		9.2			
WE1534H		460		4.6			
WE1537H		575		3.7			
WE1518HH		208	1	17.5			
WE1512HH		230		15.7			
WE1538HH		200	3	10.6			
WE1532HH		230		9.2			
WE1534HH		460		4.6			
WE1537HH		575		3.7			
WE2012H	2	230	1	18.0			83
WE2038H		200	3	12.0			
WE2032H		230		11.6			
WE2034H		460		5.8			
WE2037H		575		4.7			

PERFORMANCE RATINGS (gallons per minute)

Order No.		WE03L	WE03M	WE05H	WE07H	WE10H	WE15H	WE05HH	WE15HH	WE20H
	HP	⅓	⅓	½	¾	1	1½	⅓	1½	2
	RPM	1750	1750	3500	3500	3500	3500	3500	3500	3500
Total Head Feet of Water	5	86	–	–	–	–	–	–	–	–
	10	70	63	78	–	–	–	58	–	–
	15	52	50	70	90	–	–	53	–	–
	20	27	35	60	83	98	123	49	90	136
	25	–	–	48	76	94	117	45	87	133
	30	–	–	35	67	88	110	40	83	130
	35	–	–	20	57	82	103	35	80	126
	40	–	–	–	45	74	95	30	77	121
	45	–	–	–	35	64	86	25	74	116
	50	–	–	–	25	53	77	–	70	110
	55	–	–	–	–	40	67	–	66	103
	60	–	–	–	–	30	56	–	63	96
	65	–	–	–	–	20	45	–	58	89
	70	–	–	–	–	–	35	–	55	81
	75	–	–	–	–	–	25	–	51	74
	80	–	–	–	–	–	–	–	47	66
	90	–	–	–	–	–	–	–	37	49
	100	–	–	–	–	–	–	–	28	30

DIMENSIONS

(All dimensions are in inches. Do not use for construction purposes.)



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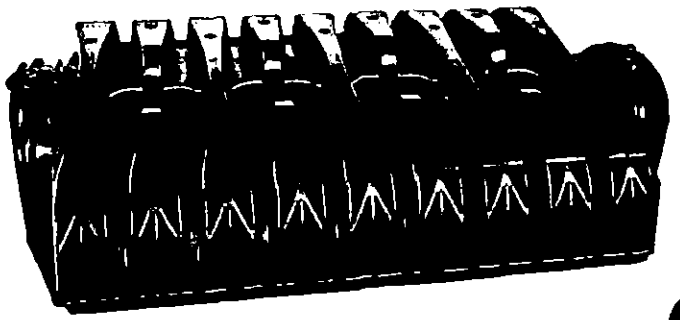
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SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE.

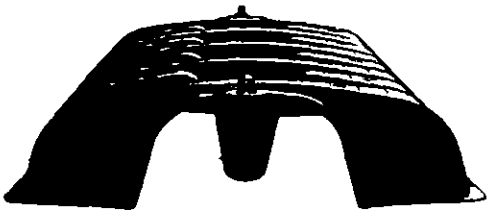
Goulds Pumps

ITT Industries

THE **QUICK4® PLUS STANDARD LP** CHAMBER



Quick4 Plus Standard LP Chamber



Center Structural Column



Quick4 Plus All-in-One Periscope



Quick4 Plus Endcap



Quick4 Plus All-in-One Endcap

The Quick4 Plus Standard Low Profile (LP) Chamber offers maximum strength through its four center structural columns. This chamber can be installed in a 36-inch-wide trench. It is shorter in height than Infiltrator's other Standard model chambers, allowing for shallower installation. Like the original line of Quick4 chambers, it offers advanced contouring capability with its Contour Swivel Connection™, which permits 10-degree turns, right and left. It is also available in four-foot lengths to provide optimal installation flexibility. The Quick4 Plus All-in-One and Quick4 Plus Endcaps are available with this chamber and provide increased flexibility in system design and configurations.

Quick4 Plus Standard LP Chamber

- Low profile design makes this chamber ideal for shallow applications
- Reduces imported fill needed for cap and fill systems
- Center structural columns offer superior strength
- Advanced contouring connections
- Latching mechanism allows for quick installation
- Four-foot chamber lengths are easy to handle and install

Quick4 Plus All-in-One Endcap

- May be used at either end of a chamber row for an inlet/outlet or can be installed mid-trench
- Mid-trench connection feature allows center feed inletting of chamber rows
- Center feed connection allows for easy installation of serial distribution systems
- Variable pipe connection options allow for side, end or top inletting
- Piping drill points are set for gravity or pressure pipe

Quick4 Plus Endcap

- Simple, flat design
- Allows installation of a pipe from the end only
- Piping drill points are set for gravity or pressure pipe

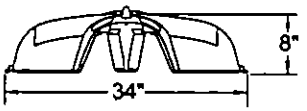
Quick4™ PLUS
STD LOW PROFILE CHAMBER



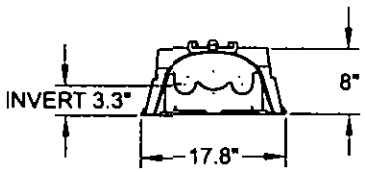
THE **QUICK4 PLUS STANDARD LP** CHAMBER

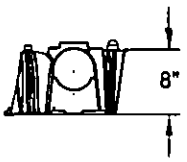
Quick4 Plus Standard LP Chamber Side and End Views

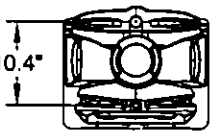


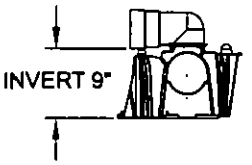


Quick4 Plus All-in-One End Cap Front, Side and End Views

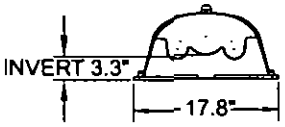


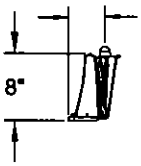


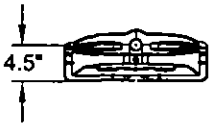




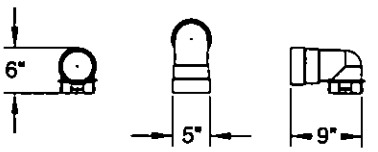
Quick4 Plus End Cap Front, Side and End Views







Quick4 Plus All-in-One Periscope



Quick4 Plus Standard Chamber Specifications	
Size (W x L x H) ..... 34" x 53" x 8" (86 cm x135 cm x 20 cm)	Invert Height .....3.3", 9" (8.4 cm, 22.8 cm)
Effective Length ..... 48" (122 cm)	

INFILTRATOR SYSTEMS, INC. STANDARD LIMITED WARRANTY

(a) The structural integrity of each chamber and side and other accessory unit manufactured by Infiltrator ("Units"), when installed and operated in a typical end-to-end septic system in accordance with Infiltrator instructions, is warranted to the original purchaser ("Holder") against defective materials and workmanship for one year from the date that the septic permit is issued for the Holder's system containing the Units, provided, however, that if a septic permit is not required by applicable law, the warranty period will begin upon the date of installation of the septic system commences. To exercise its warranty rights, Holder must notify Infiltrator in writing at its Corporate Headquarters in Old Saybrook, Connecticut within fifteen (15) days of the alleged defect. Infiltrator will supply replacement Units for Units determined by Infiltrator to be covered by this Limited Warranty. Infiltrator's liability hereunder is expressly limited to the cost of removal and/or installation of the Units.

(b) THE LIMITED WARRANTY AND REMEDIES IN SUBPARAGRAPH (a) ARE EXCLUSIVE. THERE ARE NO OTHER WARRANTIES WITH RESPECT TO THE UNITS, INCLUDING NO IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

(c) This Limited Warranty shall be void if any part of the chamber system is manufactured by anyone other than Infiltrator. The Limited Warranty does not extend to incidental, consequential, special or indirect damages. Infiltrator shall not be liable for penalties or liquidated damages, including loss of production and profits, labor and materials, overhead costs, or other losses or expenses incurred by the Holder or any third party. Specifically excluded from Limited Warranty coverage are damage to the Units due to ordinary wear and tear, alteration, accident, misuse, abuse or neglect of the Units or the Units being subjected to vehicular traffic or other conditions which are not permitted by the installation instructions, failure to maintain the Units' minimum grade as set forth in the installation instructions, the placement of improper materials into the system containing the Units, failure of the Units or the septic system due to improper sizing, excessive water usage, improper grease disposal, or improper operation, or any other event not caused by Infiltrator. This Limited Warranty shall be void if the Holder fails to comply with all of the terms set forth in this Limited Warranty. Further, in no event shall Infiltrator be responsible for any loss or damage to the Holder, the Units or any third party resulting from installation or shipment, or from any product liability claims of Holder or any third party. For this Limited Warranty to apply, the Units must be installed in accordance with all site conditions required by state and local codes, all other applicable laws and Infiltrator's installation instructions.

(d) No representative of Infiltrator has the authority to change or expand this Limited Warranty. No warranty applies to any party other than the original Holder.

* * * * * * *

The above represents the Standard Limited Warranty offered by Infiltrator. A limited number of states and localities have different warranty requirements. Any purchasers of Units should contact Infiltrator's Corporate Headquarters in Old Saybrook, Connecticut, prior to such purchase, to obtain a copy of the applicable warranty, and should carefully read that warranty prior to the purchase of Units.

INFILTRATOR®
systems inc.

6 Business Park Road • P.O. Box 768
Old Saybrook, CT 06475
860.577.7000 • FAX 860.577.7001

800.221.4436
www.infiltratorsystems.com

For technical assistance, installation instructions or customer service, call Infiltrator Systems at 800.221.4436

U.S. Patents: 4,759,661; 5,017,041; 5,156,488; 5,336,017; 5,401,116; 5,401,459, 5,511,903; 5,716,163; 5,588,778; 5,839,844
Canadian Patents: 1,329,959; 2,004,564 Other patents pending.

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THOMPSON ENVIRONMENTAL CONSULTING, INC.
WATER ♦ WASTEWATER ♦ WETLANDS

HYDRAULIC CONDUCTIVITY EVALUATION

Lot 35 –Sherwood Forest
10726 Hadrian's Walk Court
Mecklenburg County File No. 8492B
Charlotte, North Carolina

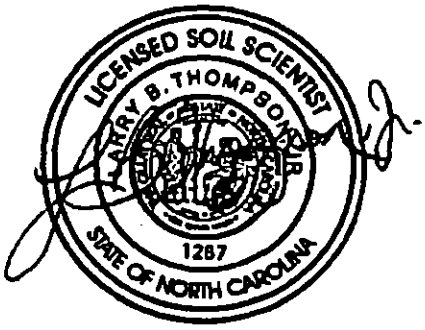
Prepared For:

True Homes
2649Brekonridge Centre Drive
Monroe, NC 28110

Prepared By:

Thompson Environmental Consulting, Inc.
PO Box 541
Midland, NC 28107-0541

July 16, 2012



PO BOX 541 • MIDLAND, NC • 28107-0541
PHONE: 704-301-4881 • FAX: 704-888-6066
E-MAIL: LARRY@THOMPSONENV.COM
WEB: WWW.THOMPSONENV.COM

INTRODUCTION

The following Saturated Hydraulic Conductivity report is submitted to assist in a site assessment for the proposed repair area on Lot 35 – Sherwood Forest, a 1.075 acre lot located in Charlotte, North Carolina. The property is currently undeveloped and vegetated by a mixed deciduous forest.

A soil and site evaluation was conducted on the property Thompson Environmental Consulting on July 7, 2012. The evaluation revealed variable soil depths that ranged from 14 to 43-inches in depth. Surface textures were recorded as sandy loam, exhibiting granular structure, and subsurface textures were recorded as clay, exhibiting sub-angular blocky structure.

INVESTIGATION AND METHODOLOGY

Four in-situ saturated hydraulic conductivity tests were performed on the lot in order to determine the assimilative capacity of the soils within the most restrictive horizon observed during TEC's soil evaluation. The tests were conducted in the A, Bt, and Cr soil horizons utilizing a compact constant-head permeameter (Amoozemeter) to measure their respective K_{sat} values.

A Trimble Geo XT hand held global positioning system (GPS) with sub-meter accuracy was used to locate each K_{sat} location (see the enclosed Septic Layout).

RESULTS

The geometric mean of the measured conductivities is 2.055 gpd/ft^2 and the geometric mean of the most restrictive horizon (Bt horizon) is 1.592 gpd/ft^2.

Typically 4 – 10% of the measured K_{sat} is taken for the final loading rate or long-term acceptance rate (LTAR) of the soils. In this case, TEC is proposes an LTAR of 0.1 gpd/ft^2 which is approximately 6% of the measured K_{sat}.

It is anticipated that an LTAR of 0.1 gpd/ft^2 for a pre-treated drip irrigation repair will be well within the assimilative capacity of the soil found within the repair area of this lot.

HYDRAULIC CONDUCTIVITY STUDY
Lot 35 - Sherwood Forest

Date: 6/30/2012
Location: Ksat 1

SET UP

	cm	inches
Hole Depth (cm):	17.8	7.0
Reference (cm):	+ 10.2	4.0
Head (cm):	- 15.2	6.0
CHT Tube(s) setting:	= 12.7	

Valve Setting: x

1-ON 2-ON

	cm	inches
Target Water Level:	2.5	1.0
Beginning Water Level:	2.5	1.0
Ending Water Level:	2.5	1.0

Hole diameter (cm): 7.6
Hole radius (r): 3.81
coefficient A: 0.00090038

NOTE: Readings based on Ending Water Level

Coversion Factor (C.F.): 20.0

Water Reading	change in water level	Chamber C.F.	clock time (min)	Elapsed Time (min)	Elapsed Time (hr)	Q (cm3/hr)	K (cm/hr)	K (in/hr)	K (gpd/sq foot)
43.7	0.0	20.0	125.0						
40.5	3.2	20.0	135.0	10.00	0.167	384.0	0.3457	0.1361	2.037
37.5	3.0	20.0	140.0	5.00	0.083	720.0	0.6483	0.2552	3.819
34.7	2.8	20.0	145.0	5.00	0.083	672.0	0.6051	0.2382	3.564
31.9	2.8	20.0	150.0	5.00	0.083	672.0	0.6051	0.2382	3.564
28.8	3.1	20.0	155.0	5.00	0.083	744.0	0.6699	0.2637	3.946
25.7	3.1	20.0	160.0	5.00	0.083	744.0	0.6699	0.2637	3.946
22.6	3.1	20.0	165.0	5.00	0.083	744.0	0.6699	0.2637	3.946
						Final Ksat	**0.670**	**0.264**	**3.946**

HYDRAULIC CONDUCTIVITY STUDY
Lot 35 - Sherwood Forest

Date: 6/30/2012
Location: Ksat 2

SET UP

	cm	inches
Hole Depth (cm):	40.6	16.0
Reference (cm):	+ 10.2	4.0
Head (cm):	- 15.2	6.0
CHT Tube(s) setting:	= 35.6	

Valve Setting: x

1-ON 2-ON

	cm	inches
Target Water Level:	25.4	10.0
Beginning Water Level:	25.4	10.0
Ending Water Level:	24.1	9.5

Hole diameter (cm): 7.6
Hole radius (r): 3.8
coefficient A: 0.00080524

NOTE: Readings based on Ending Water Level

Coversion Factor (C.F.): 20.0

Water Reading	change in water level	Chamber C.F.	clock time (min)	Elapsed Time (min)	Elapsed Time (hr)	Q (cm3/hr)	K (cm/hr)	K (in/hr)	K (gpd/sq foot)
18.5	0.0	20.0	115.0						
16.9	1.8	20.0	120.0	5.00	0.083	432.0	0.3479	0.1370	2.049
15.2	1.7	20.0	125.0	5.00	0.083	408.0	0.3285	0.1293	1.935
13.4	1.8	20.0	130.0	5.00	0.083	432.0	0.3479	0.1370	2.049
11.9	1.5	20.0	135.0	5.00	0.083	360.0	0.2899	0.1141	1.708
10.4	1.5	20.0	140.0	5.00	0.083	360.0	0.2899	0.1141	1.708
8.9	1.5	20.0	145.0	5.00	0.083	360.0	0.2899	0.1141	1.708
7.4	1.5	20.0	150.0	5.00	0.083	360.0	0.2899	0.1141	1.708
						Final Ksat	**0.290**	**0.114**	**1.708**

HYDRAULIC CONDUCTIVITY STUDY
Lot 35 - Sherwood Forest

Date: 7/7/2012
Location: Ksat 3

SET UP

	cm	inches
Hole Depth (cm):	127.0	50.0
Reference (cm):	+ 10.2	4.0
Head (cm):	- 15.2	6.0
CHT Tube(s) setting:	= 121.9	

Valve Setting: x (1-ON / 2-ON)

Coversion Factor (C.F.): 20.0

	cm	inches
Target Water Level:	111.8	44.0
Beginning Water Level:	111.8	44.0
Ending Water Level:	111.8	44.0

Hole diameter (cm): 7.6
Hole radius (r): 3.8
coefficient A: 0.00090178

NOTE: Readings based on Ending Water Level

Water Reading	change in water level	Chamber C.F.	clock time (min)	Elapsed Time (min)	Elapsed Time (hr)	Q (cm3/hr)	K (cm/hr)	K (in/hr)	K (gpd/sq foot)
37.8	0.0	20.0	90.0						
36.4	1.4	20.0	95.0	5.00	0.083	336.0	0.3030	0.1193	1.785
34.9	1.5	20.0	100.0	5.00	0.083	360.0	0.3246	0.1278	1.912
33.6	1.3	20.0	105.0	5.00	0.083	312.0	0.2814	0.1108	1.657
32.3	1.3	20.0	110.0	5.00	0.083	312.0	0.2814	0.1108	1.657
30.9	1.4	20.0	115.0	5.00	0.083	336.0	0.3030	0.1193	1.785
29.5	1.4	20.0	120.0	5.00	0.083	336.0	0.3030	0.1193	1.785
28.1	1.4	20.0	125.0	5.00	0.083	336.0	0.3030	0.1193	1.785
						Final Ksat	**0.303**	**0.119**	**1.785**

HYDRAULIC CONDUCTIVITY STUDY
Lot 35 - Sherwood Forest

Date: 7/7/2012
Location: Ksat 4

SET UP

	cm	inches
Hole Depth (cm):	61.0	24.0
Reference (cm):	+ 10.2	4.0
Head (cm):	- 17.8	7.0
CHT Tube(s) setting:	= 53.3	

Valve Setting: x (1-ON / 2-ON)

Coversion Factor (C.F.): 20.0

	cm	inches
Target Water Level:	43.2	17.0
Beginning Water Level:	43.2	17.0
Ending Water Level:	41.9	16.5

Hole diameter (cm): 7.6
Hole radius (r): 3.8
coefficient A: 0.00065556

NOTE: Readings based on Ending Water Level

Water Reading	change in water level	Chamber C.F.	clock time (min)	Elapsed Time (min)	Elapsed Time (hr)	Q (cm3/hr)	K (cm/hr)	K (in/hr)	K (gpd/sq foot)
34.3	0.0	20.0	220.0						
32.5	1.8	20.0	225.0	5.00	0.083	432.0	0.2832	0.1115	1.668
30.8	1.7	20.0	230.0	5.00	0.083	408.0	0.2675	0.1053	1.575
29.2	1.6	20.0	235.0	5.00	0.083	384.0	0.2517	0.0991	1.483
27.6	1.6	20.0	240.0	5.00	0.083	384.0	0.2517	0.0991	1.483
26	1.6	20.0	245.0	5.00	0.083	384.0	0.2517	0.0991	1.483
24.4	1.6	20.0	250.0	5.00	0.083	384.0	0.2517	0.0991	1.483
22.8	1.6	20.0	255.0	5.00	0.083	384.0	0.2517	0.0991	1.483
						Final Ksat	**0.252**	**0.099**	**1.483**

		Average	GeoMean	Percent of Geometric Mean 4	10	25
Ksat 1	3.946	2.231	2.055	0.08	0.21	0.51
Ksat 2	1.708					
Ksat 3	1.785					
Ksat 4	1.483					

		Average	GeoMean	Percent of Geometric Mean 4	10	25
Ksat 3	1.708	1.596	1.592	0.06	0.16	0.40
Ksat 4	1.483					

NORTH CAROLINA DEPARTMENT OF HEALTH AND HUMAN SERVICES
DIVISION OF PUBLIC HEALTH
ENVIRONMENTAL HEALTH SECTION
ON-SITE WATER PROTECTION BRANCH

CONTROLLED DEMONSTRATION SYSTEM APPROVAL

CONTROLLED DEMONSTRATION WASTEWATER SYSTEM NO: CDWS-2010-1-R1B

Issued To:	Dave Lentz Infiltrator Systems Inc. PO Box 768 Old Saybrook, CT 06475 800-221-4436; Fax: 860-577-7001 www.infiltratorsystems.com	
For:	Infiltrator Quick4 Plus Standard Low Profile (LP) Chamber Installations Located in the Piedmont Physiographic Region	
Approval Dates:	May 24, 2010	
	July 7, 2014	Modified Controlled Demonstration Criteria specific to Piedmont physiographic region

In accordance with 15A NCAC 18A .1969, an application by Infiltrator Systems Inc. of Old Saybrook, CT for use of the Quick4 Plus Standard LP Chamber (gravel-less) nitrification trench system has been reviewed and has been found to meet the standards of a controlled demonstration system when all of the following conditions are met:

I. General

A. This Controlled Demonstration Approval arises from Infiltrator Systems Inc.'s application to modify Innovative Wastewater System No. IWWS-2010-1 CDWS 2010-1 (incorporated herein by reference), by allowing installation of the Quick4 Plus Standard LP chamber at a site having a minimum of 20 inches of Group II, III, or IV or a minimum of 26 inches of Group I suitable or provisionally suitable soil with the system sized at a rating of 3.0 square feet per linear foot (sf/lf). In response to Infiltrator Systems Inc.'s Application for Modification, the Innovative & Experimental Committee ("I&E Committee") recommended and the NC Onsite Staff approved the modification as a Controlled Demonstration system.

B. The purpose of this Controlled Demonstration is to evaluate the performance of a wastewater system that is constructed and operated as described herein.

C. This approval establishes the siting, sizing and testing criteria for the Quick4 Plus Standard LP in shallow soil profiles in the Piedmont physiographic region, as described in detail below. The field evaluation of the Quick4 Standard LP chamber systems in North Carolina shall be limited to evaluating the hydraulic performance and surge volume capability of the Quick4 Plus Standard LP chamber system.

D. Except for the criteria provided herein, the design, siting, permitting, operation and maintenance shall be governed by the provisions of the Infiltrator Systems Inc. Innovative Wastewater System Approval No. IWWS-2010-1 or most recent version, and the applicable laws and regulations of the State of North Carolina.

II. System Description, Siting, and Sizing Criteria

A. The Quick4 Plus Standard LP unit consists of a polypropylene arch-shaped injection molded chamber. The connected overall length is 4 feet, the height is 8 inches, and the slotted sidewall height is 6.3 inches. The nominal width is 34 inches, and the average open bottom width is 29.2 inches. The invert height is 3.3 or 9 inches. Twenty-five Quick4 Standard LP chambers are approximately equal to 100 feet.

B. For Group II, III, and IV soils, the nitrification trench assembly may be utilized on any site where a minimum of 20 inches and maximum of 24 inches of naturally occurring soil are present above saprolite, rock, parent material, expansive clay mineralogy, unsuitable soil structure, restrictive horizon, or soil wetness conditions and all other factors are provisionally suitable or suitable.

C. For Group I soils, the nitrification trench assembly may be utilized on any site where a minimum of 26 inches and maximum 30 inches of naturally occurring soil are present above saprolite, rock, or soil wetness conditions and all other factors are provisionally suitable or suitable.

D. To determine the total trench bottom area (ft^2) required, the design daily sewage flow shall be divided by the applicable long-term acceptance rate. The minimum linear footage for the Quick4 Plus Standard LP chamber shall be determined by dividing the total trench bottom area by an equivalency factor of 3.0 square feet per linear foot (3.0 sf/lf).

EXAMPLE:

Assume: Three bedroom residence with a design daily sewage flow of 360 gallons on a sandy clay loam (Group III) soil.

Then: Total computed trench bottom area is:
360 gpd/0.5 LTAR = 720 ft^2

The required linear footage for Standard Infiltrator Systems is:
720 ft^2/3.0 ft = 240 linear ft.
(Where 3.0 ft. is the equivalency factor for the chamber system)

E. The Quick4 Plus Standard LP chamber system used in nitrification trenches shall be installed with a maximum trench width of 36 inches, and with a minimum trench depth of 8 inches. The minimum on-center trench spacing shall be 9 feet, and the minimum soil cover shall be 6 inches.

F. Each nitrification trench shall be installed with a minimum 2-inch-diameter inspection port located at the distal end of the trench. The observation port shall be extended directly to grade, without turns or elbows to facilitate access for periodic monitoring of ponding levels.

G. This Controlled Demonstration study shall be for nitrification trenches only. Successful

demonstrated performance of the Quick4 Plus Standard LP in trenches shall be adequate to justify innovative approval in other types of system configurations.

H. The systems shall be for primary residences only, with a maximum daily design flow of 720 gallons per day.

I. The county health department shall conduct a soil evaluation prior to each system installation site and shall complete a soil evaluation sheet.

J. For systems included in the field performance evaluation:
   1. Pump systems shall be equipped with a pressure manifold and Aquaworx control panel to monitor effluent flow volume.
   2. Where water use records are not available, a water meter shall be installed on gravity systems to ascertain effluent flow volume.

III. Controlled Demonstration Criteria

A. Systems may be installed and evaluated in the Piedmont physiographic region only, defined as located in any of the following counties:

Table I

Piedmont Counties			
Alamance	Durham	McDowell	Rowan
Alexander	Forsyth	Mecklenburg	Rutherford
Anson	Franklin	Montgomery	Stanly
Burke	Gaston	Moore	Stokes
Cabarrus	Granville	Nash	Surry
Caswell	Guilford	Northhampton	Union
Caldwell	Halifax	Orange	Vance
Catawba	Harnett	Person	Wake
Chatham	Iredell	Polk	Warren
Cleveland	Johnston	Randolph	Wilkes
Davidson	Lee	Richmond	Wilson
Davie	Lincoln	Rockingham	Yadkin

B. Systems shall be installed for at least two wet seasons, defined as the time period beginning December 1 through April 30. A maximum of 50 systems may be installed in the Piedmont physiographic region. Sites shall be identified by street address, city, and zip code. Global positioning coordinates should be provided when available.

C. Water usage records shall be provided for all monitored sites for the wet season #1 monitoring event, unless determined to be unavailable by the independent third party. All monitored systems shall be designed and installed using parallel distribution. Successful demonstrated performance of the Quick4 Plus Standard LP in parallel distribution shall be adequate justification for innovative approval in both parallel and serial distribution configurations.

D. Ponding measurements shall be recorded in each trench. All measurements shall be reported for each individual site at each visit.

E. The ponding behavior monitoring protocol for the designated systems shall be as follows:
   1. Three monitoring events will be conducted, two in the wet season (defined as December 1 through April 30) and one in the dry season.
   2. The monitoring events shall occur in the following calendar order: wet season #1, dry season, and wet season #2.
   3. A minimum of 21 sites will be monitored during each monitoring event.
   4. The manufacturer can forgo wet season #2 monitoring event if more than 21 sites are monitored during the wet season #1 monitoring event and during the dry season monitoring event (for example, visit at least double the number of sites during each of the two monitoring events for a minimum of 42 sites visited twice).
   5. Pass/fail criteria is as follows:
      a. Average ponding depth across all trenches at a site must be less than five inches, and
      b. Equal to or greater than 95% of systems must pass during each monitoring event.
   6. For the dry season monitoring event, no water use data is required. Verification must be provided that the system has been in recent use prior to the monitoring event. However no data will be excluded from consideration based on hydraulic overload unless data collection performed under Section III.E of CDWS 2010-1-R1B demonstrates that such as exclusion is warranted.
   7. Monitoring shall begin no sooner than 12 months after issuance of the Operation Permit by the county health department.
   8. Monitoring shall begin after at least part of two wet seasons of operation, as determined from the time of Operation Permit issuance by the county health department.

F. Monitoring events shall be conducted by an independent third party. Visual inspection for evidence of malfunction shall also be conducted at the ground surface, and the homeowner or occupant shall be interviewed about system operation at the time of the site evaluation. Homeowner or occupant information shall be gathered where available, recognizing that the homeowner or occupant may not be available or willing to answer questions. Criteria for evaluation of each system are provided in an example form in Appendix A.

G. Should any of the evaluated systems reveal an average ponding height greater than 5 inches, the following analysis shall be provided by the independent third-party:
   1. Evaluate siting, site soil characterization, installation method, and/or signs of misuse;
   2. Acquire property water usage records;
   3. Investigate plumbing fixtures for broken seals or running water;
   4. Evaluate and report condition of septic tank and effluent filter; and/or
   5. Install continuous monitoring equipment to assess system use characteristics over an extended period.

   Infiltrator Systems, Inc. may commission a North Carolina-licensed soil scientist to conduct an evaluation to determine if the observed effluent ponding resulted from the Quick4 Plus Standard LP chambers or other unrelated factors.

H. At the conclusion of the controlled demonstration period, it shall be determined whether the Quick4 Plus Standard LP chamber provides adequate hydraulic performance and surge capacity

when installed in the soil profiles described herein. The performance standard is: a minimum of 20 of the 21 designated systems or at least 95% of the average ponding measurements if more than 21 sites are monitored shall meet the hydraulic performance criterion of not exceeding 5 inches, and without indications of a malfunction based on visual inspection of the drainfield.

I. Systems determined to have malfunctioned as a result of improper siting, installation, or usage will not be considered in determining performance. In the event that such a system is identified, an alternate site will be substituted in the evaluation.

J. A written report summarizing the results of the review shall be developed by an independent third party, approved by both the On-Site Water Protection Branch and Infiltrator Systems Inc., and submitted along with any recommendations for changes as identified during the demonstration period. Copies of all ponding height measurement reports and soil evaluation sheets for monitoring systems shall be submitted with the final report.

K. Successful passage of the above criteria and compliance with the requirements in 15A NCAC 18A.1969, (g), (1) shall result in innovative approval of the Quick4 Plus Standard LP for sites having a minimum of 20 inches of Group II, III, or IV or a minimum of 26 inches of Group I suitable or provisionally suitable soil in the Piedmont Physiographic region identified in Table I.

L. Eligibility for innovative approval in the Mountain physiographic region requires that the Quick4 Plus Standard LP chamber is approved as innovative for both the Coastal Plain and Piedmont physiographic regions, per approvals CDWS-2014-1 and CDWS-2014-2, respectively.

IV. Responsibilities and Permitting

A. A pre-construction conference shall be required to be attended by the local health department (LHD) and Infiltrator Systems, Inc. or its authorized representative prior to beginning installation of the Quick4 Plus Standard LP chamber.
B. Infiltrator Systems, Inc.'s participation in the pre-construction conference can be either in person or by teleconference.
C. To ensure that each installation is eligible for monitoring, Infiltrator will provide written verification that the minimum number of monitoring ports are installed and that for the systems that are not connected to a water purveyor, a method of flow measurement has been installed (i.e., Aquaworx control panel or flow meter).
D. LHD will verify that the system in installed in accordance with the provisions of this approval.
E. LHD will inform applicant in writing on the Improvement Permit and Construction Authorization that the system is a controlled demonstration product with limited availability.
F. LHD will attach a copy of the controlled demonstration approval to all Improvement Permits and Construction Authorizations.
G. The LHD will notify the On-Site Water Protection Branch of all Improvement Permits, Construction Authorizations, and Operation Permits issued under this Controlled Demonstration approval, and the On-Site Water Protection Branch will correspondingly notify Infiltrator.
H. Infiltrator shall maintain a list of installers authorized to install the Quick4 Plus Standard LP chamber.

Approved by:_____ Date:_____

Appendix A
North Carolina Controlled Demonstration Criteria for Evaluating the Performance of the Quick4 Standard LP in Shallow Soil

System Question	Response (Comment required for no response)	Comments
INSTALLATION		
What is the address of the site being evaluated?	Address:_____ City : _____ Zip : _____	
When was the system installed?	Month___ Day___Yr___	
What soil group and at what depth was the system installed?	Group: I Depth (in): 26 27 28 29 30 Group: II, III, IV Depth (in): 20 21 22 23 24	
Was the elevation of the top of the chamber equal to the elevation of the natural grade?	Yes No	If no, explain:
Was the system gravity fed or pressure dosed?	Gravity Pressure dosed	
Was the residence supplied by public water source? If no, is another means of water usage recording provided?	Yes No	If no, provide recording method:
MONITORING		
When was the system evaluated?	Month:___ Day:___ Yr:_____	
Were water usage records obtained for determining average daily flow?	Yes No	If no, explain:
Were any wet areas observed above or near the drainfield?	Yes No	If yes, explain:
What were the ponding levels recorded for each trench? Calculate average.	T1___" T2___" T3___" T4___" Average Ponding Ht:_____"	
Was the homeowner or occupant available for interview or willing to answer questions?	Yes No	If no, explain:
Did the homeowner or occupant cite functional wastewater drainage within residence?	Yes No	If no, explain:
Did the homeowner or occupant cite backing of water in the home or surfacing near the drainfield?	Yes No	If yes, explain:
Did the homeowner or occupant cite system malfunction as a result of a system component other than the drainfield?	Yes No	If yes, explain:

THOMPSON ENVIRONMENTAL CONSULTING, INC.
WATER • WASTEWATER • WETLANDS

November 13, 2014

Shelby Ledford
Mecklenburg County Groundwater and Wastewater Services
700 N. Tryon Street, Suite 211
Charlotte, NC 28202

Dear Ms. Ledford,

The purpose of this letter is to inform you that I have performed an inspection of the wastewater treatment and disposal system installed for Lot 35 in the Sherwood Forest subdivision. I am satisfied that the installation meets the intent of the original proposal submitted to your office.

Please feel free to call on me if you have any further questions or concerns regarding this project.

Sincerely,

Larry B. Thompson, Jr.

PO BOX 541 • MIDLAND, NC • 28107-0541
PHONE: 704-301-4881 • FAX: 206-350-8895
E-MAIL: LARRY@THOMPSONENV.COM
WEB: WWW.THOMPSONENV.COM

SHEET:	4
JOB:	Le Spindle
REVISION:	
SCALE:	1/4"
DATE:	1.24.13
DRAWN BY:	MACLAREN

FIRST FLOOR PLAN

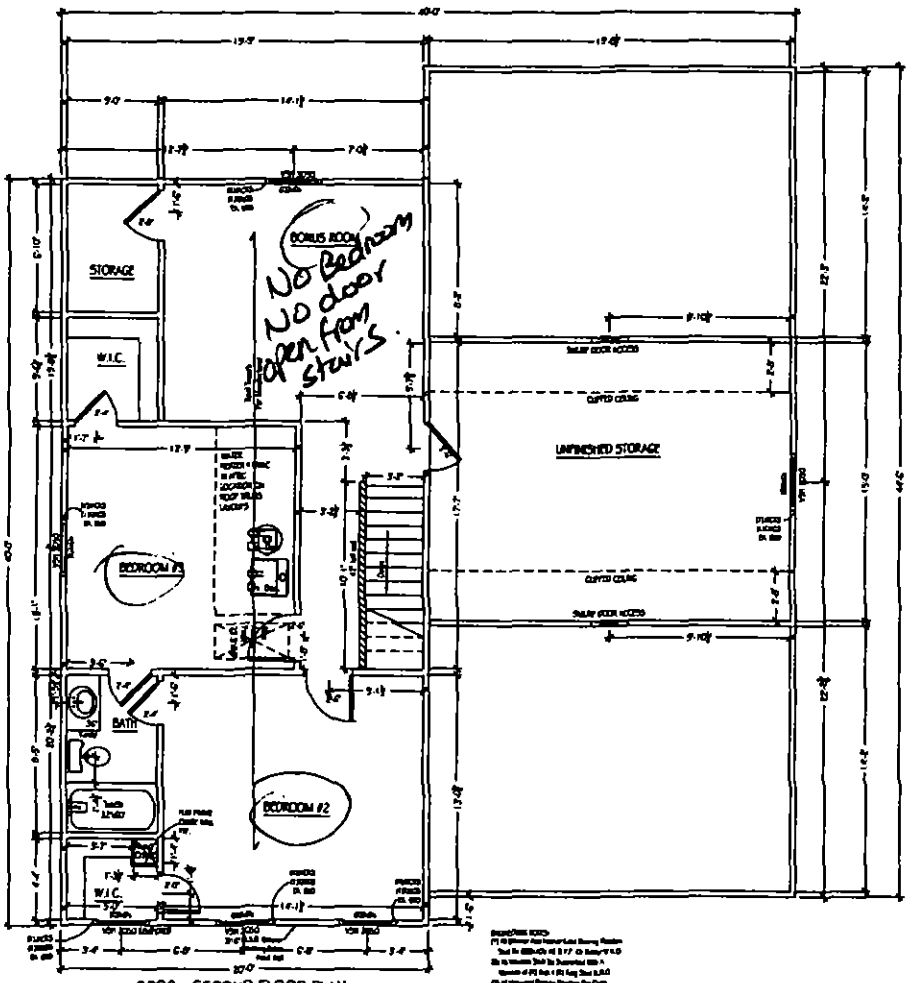
2098 DEVIN

SHERWOOD FORREST
Lot #35

TRUE HOMES L.L.C.
2649 Brekon Ridge Centre Dr.
Suite 104
Monroe, N.C. 28110
704-226-9486

8492B

10726 Hadrians Walk Ct.



2098 - SECOND FLOOR PLAN

APPROVED
Mecklenburg/Raleigh

REVIEWED FOR COMPLIANCE WITH THE NC NC RESIDENTIAL CODE. THIS AUTHORIZATION SHALL NOT BE CONSTRUED TO PERMIT ANY VIOLATIONS OF LOCAL, STATE OR FEDERAL LAWS.

Plan Examiner: Ron Featherstone

Date: 9/11/2013

Plan Approval ID: C1453

2098 DEVIN I SQUARE FOOTAGE TABLE	
FIRST FLOOR	1298 SF
SECOND FLOOR	800 SF
TOTAL HOUSE SF	2098 SF
OPT. BONUS/STORAGE	311 SF
FULL PORCH SF	108 SF
2 STALL GARAGE	394 SF

GENERAL NOTES:

1. 9'-1 UP CEILING HEIGHT, UNLESS NOTED OTHERWISE.
2. ALL EXTERIOR WALLS 1 HOUR RATED 2X6 @ 16" O.C. AND INTERIOR PARTITIONS TO BE 2X4 @ 16" O.C. EXCEPT WHERE NOTED OTHERWISE.
3. WINDOWS TO BE VINYL SINGLE HUNG, SIZE AS INDICATED BY NUMBER ON PLAN SEE WINDOW SCHEDULE.
4. DIMENSIONS ARE FROM FACE OF STUDS.
5. PROVIDE BLOCKING ABOVE HEADERS AT DOORS 1'0" O.C. TYP.
6. PROVIDE EXTRA STUDS AS INDICATED AT BEAM BEARING LOCATIONS.
7. ALL WINDOWS ARE TO BE 6'-10 3/8" ABOVE FLOOR UNLESS OTHERWISE NOTED.
8. PROVIDE SOLID CAPPED LINTELS HEADERS FOR BEARING AT OPENINGS 6'-0" WIDE AND GREATER.
9. STEEL EXTERIOR DOORS 1 PLY, OCCUPIES 1/2" FROM SURFACE.
10. UPPER KITCHEN CABINETS 30" ABOVE SURFACE.
11. 16" O.C. STUDS AT KITCHEN WALLS TYP.

CHIMNEY

WALL TYPES

- 2X4 STUD WALL
- 2X4 STUD WALL (Sound proof for attic)
- 2X4 BEARING WALL
- 2X4 EXTERIOR WALL
- 2X6 STUD WALL (Sound proof for plumbing wall)
- 2X6 WALL PLUMBING WALL
- 2X6 EXTERIOR WALL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 26248 DEVIN T. SALVESON

NORTH CAROLINA REGISTERED ENGINEERING CORPORATE SEAL C-2378

CERTIFICATE OF AUTHORIZATION

RESIDENTIAL STRUCTURES, P.C.
3440 N. Davidson St.
Charlotte, N.C. 28205
Seal for Structural Only

TRUE HOMES L.L.C.
2649 Brekon Ridge Centre Dr.
Suite 104
Monroe, N.C. 28110
704-226-9486

SHERWOOD FORREST
Lot #35

SECOND FLOOR PLAN

2098 DEVIN

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DRAWN BY: McCLAREN

DATE: 8.26.13

SCALE: NTS

REVISION:

JOB: Lot Specific

SHEET: 5 / 9