Proj. # 236067

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 #: **30001936** GWS File #: **6963B** Tax Parcel #: **139-033-05**

- 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):** 6/8/2012

Type of Installation: Residential - New System Lot Number: 4

Structure Type: HOUSE Size (ft^2): 3500 # Bedrooms: 5 # Occupants: 5

Building Foundation: Crawl Space Water Supply: Municipal

II. Initial System Type: PPBPS (pressurized) **System Classification:** IVa

Initial System Specifications:

Design Flow (gpd):	600	LTAR (gpd/ft^2):	0.25	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):	28	Depth of Media (in):	N/A	Distribution Device:	Pressure Manifold		

III. Repair System Type: Low Pressure Pipe (LPP) **System Classification:** IVa

Repair System Specifications:

Design Flow (gpd):	600	LTAR (gpd/ft^2):	0.125	Septic Tank Size (gal):	1500	Pump Tank Size (gal):	1000
Trench Width (ft):	8	Trench Spacing (ft):	5	Absorption Area (ft^2):	19200	Total Trench Length (ft):	2400
Maximum Trench Depth (in):	12	Depth of Media (in):	N/A	Distribution Device:	Manifold (LPP Distri		

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: David Cornelius

Signature: DWC

Date Issued: 6/8/2007

Owner/Legal Agent: Patrica Garner
Print Name

Signature: Patrica Garner



8143 CASTLESTONE DR

13903305

1/11/2008

duponbj

Groundwater and Wastewater Services File Imaging Project
May 2007
Barcode Font = IDAutomationHC39M

Mecklenburg County Groundwater & Wastewater Services
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 #: 30001936 GWS File #: 6963B

IV. Permit Conditions/Comments:

- This type of septic system requires an inspection once every 3 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.
- This type of septic system requires a Certified Operator to maintain the system. A system maintenance contract with a Certified Operator must be on file prior to issuance of an Operation Permit.
- 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 Improvement Permit is being issued based on a supplemental soil investigation performed by staff from our office.
- 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.
- The system must be water tested during the final inspection to verify proper operation and set system pressure.
- An effluent filter is required on the pump discharge pipe exiting the pump tank.
- Minimum of 4" soil cover required over finished grade. Maintenance contract with certified operator required before CO release.

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: David Cornelius

Signature: _____

Date Issued: 6/8/2007

Owner/Legal Agent: Patrice Garner
Print Name

Signature: Patrice Garner

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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

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

File #: 69163B Permit #: _____ Tax Parcel #: 139-033-05PO

Property Owner: NVR, INC

Job Location Address: 8143 CASTLESTONE DR.

City: MINT HILL State: _____ Zip Code: _____

Installation Approval Issuance Date: 9/14/07

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 10/14/07, 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: 480 GPD

Site LTAR: 0.25 GPD/ft² (For new installations only.)

Liquid Capacity of Septic Tank: 1500 gallons

Liquid Capacity of Dosing Tank: 1000 gallons

Drainfield Design ☐ N/A 50% REDUCTION

Trench Depth: 28 inches

Trench Width: 3 feet 5 X 55', 1 X 45'

Line Spacing: 9 feet (O.C.)

Total line length: 320 feet

# of Lines: 6 @ VAR feet

Depth of Media: _____ inches (Type) LVA

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: 5 feet

Distance from Property Line: 10 feet

Distance from Water Supply Source: 7100 feet

SKETCH OF SYSTEM LAYOUT
(Proposed Layout)

INSTALL ACCORDING TO PLANS ON FILE SUBMITTED BY LARRY THOMPSON & THE CATENA GROUP. 5/20/07

Comments: System Classification & Type: TVA, 50% REDUCTION. 1X45' & 5X55'. INSTALL ACCORDING TO PLAN. MAINTENANCE CONTRACT REQ. B/F

DENR Authorized Agent: DAVID CORNELIUS, RS Signature: _____

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NC DENR
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On-Site Wastewater Section

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

File #: 69638 Permit #: _____ Tax Parcel #: 139-033-05PO

Property Owner: NVR, INC

Job Location Address: 8143 CASTLESTONE DR

City: MINT HILL State: NC Zip Code: 28227

Operation Permit Issuance Date: 9/17/07 Contractor Name: SID GASKINS

Permitted Design Flow: 480 GPD

Liquid Capacity of Septic Tank: 1500 gallons

Liquid Capacity of Dosing Tank: 1000 gallons

Effluent Pump Model: GOULDS 0.5 HP

Drainfield Installation ☐ N/A 50% REDUCTION PPBDS

Trench Depth: 28 inches

Trench Width: 3 feet

Line Spacing: 9 feet (O.C.) 5X55' 1X45'

Total line length: 320 feet

# of Lines: 6 @ VAR feet

Depth of Media: N/A inches (Type) N/A

Depth of Cover: 12 inches

Distribution Device: PRESSURE MANIFOLD

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: 75 feet

Distance from Property Line: >10 feet

Distance from Water Supply Source: 7100 feet

Inspection Dates

Tank(s) Inspected: 9/17/07

Excavation Inspected: 9/17/07

Pump & Controls Inspected: 9/17/07

SKETCH OF SYSTEM INSTALLATION
(As-Built Drawing)

INSTALLED ACCORDING TO PLANS ON FILE SUBMITTED BY LATOZY THOMPSON & CATTENA GRAP.
5/20/07

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: IVa. PPBDS. 50% Reduction. / INSTALLED ACCORDING TO PLANS ON FILE. MAINTENANCE CONTRACT REQ. B/F COREASE

DENR Authorized Agent: DAVID CATHEY, RS Signature: _____, RS

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NC DENR
Division of Environmental Health
On-Site Wastewater Section

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

File #: 69638 Permit #: _____ Tax Parcel #: 139-033-05 PO

Property Owner: NVR, INC.

Job Location Address: 8143 CASTLESTONE DR.

City: MINT HILL State: NC Zip Code: 28227

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: IVa

*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: Chris Carrelus Date: 9/21/07

Signature: _____

6033 FLORENCE AVENUE, SUITE 100
CHARLOTTE, NORTH CAROLINA 28212
(704) 536-8190

SCALE: 1" = 30'

N IS TO SHOW
) LOCATION OF
I THE LOT AND
RELIED UPON
CTION.

E TABLE

STH	BEARING
55	S09°58'06"E
701	S83°23'57"W

10' DARNAGE & UTILITY EASEMENT
DB 18902 PG 883-908

DR

N 29°43'26" E 60.20'

ER

LOT 11
MB 46 PG 453

NOW OR FORMERLY
MARK B. BARTLETT & WIFE
KATHY R.
DB 6728 PG 224

152.72'-AW
153.92'-PLAT

N 43°29'56" W
N 43°23'41" W

Low Pressure P/L
Repair Area

FOLDING AXLE

& UTILITY
ENT
: 883-908

45' 55' 55' 55' 55'

Stonebridge
Lot 4

35'

41

Pump Tank

Septic Tank

#8143
(DIMENSIONS REFLECT
FULL BRICK)

18.84
18.00
2.00
33.00
56.84
56.84
30.08
2.00
2.80
22.04
2.00
20.84
43.04
4.30

S 87°23'41" W
175.87'-PLAT
175.42'-AW

S 79°10'25" E

64.00

C1

C1

LOT 5
MB 46 PG 45

3
PG 453

CASTLESTONE DRIVE
60' PUBLIC R/W

ESTIMATED SIDEWA
AREA = 178 SQ. F

ESTIMATED DRIVEWA
AREA = 1555 SQ. F

STAKEOUT

CURVE TABLE

NGTH	CHORD	BEARING	DELTA

Feb 19 07 08:37p Kim Stanley Widenhouse 7047958996 p.1

BR 1034

FILE NUMBER: 69638 Revised On: January 3, 2007 APPLICATION NUMBER: 1936

SEPTIC FEE: 200.00
DATE: 2-19-07
X33575 JNA

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

WELL FEE: _____
DATE _____

1. SEPTIC / TYPE APPLICATION: ☐ NONE ☒ NEW SYSTEM ☐ ALTERATION ☐ REPAIR ☐ MODIFIED PLOT PLAN

2. WELL / TYPE APPLICATION: ☒ NONE ☐ NEW WELL ☐ MAJOR REPAIR ☐ ABANDONMENT

3. JOB LOCATION INFORMATION:
TAX PARCEL NUMBER: 139-03-3-05 ~~225~~ 90
STREET ADDRESS: 8143 Castlestone Dr.
CITY: Mint Hill
STATE: NC ZIP: 28227
SUBDIVISION NAME: Stonebridge at Mint Hill
LOT #: 4 LOT SIZE (acres): 1/3 acre
TOWNSHIP:
☐ 0-MECKLENBURG ☐ 3-CORNELIUS ☐ 6-HUNTERSVILLE
☐ 1-CHARLOTTE ☐ 4-PINEVILLE ☒ 7-MINT HILL
☐ 2-DAVIDSON ☐ 5-MATTHEWS

4. BUILDING INFORMATION:
BUILDING TYPE:
☐ SINGLE MOBILE HOME ☐ MODULAR HOME
☐ DOUBLE WIDE ☐ MULTIPLE FAMILY
☒ HOUSE ☐ OTHER _____
HEATED SQUARE FOOTAGE: 3,502
NUMBER OF BEDROOMS: 5
NUMBER OF OCCUPANTS: 5
FOUNDATION TYPE:
☐ CONCRETE SLAB ☐ BASEMENT WITH PLUMBING
☒ CRAWL SPACE ☐ BASMENT WITH NO PLUMBING

5. IF PLANNING TO EXPAND OR ALTER THE EXISTING 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 ☐ PUBLIC WELL ☐ PRIVATE WELL ☐ SHARED WELL ☐ SPRING
7. PROPOSED USE OF WELL: ☒ N/A ☐ IRRIGATION ☐ POTABLE ☐ GEOTHERMAL ☐ OTHER

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

10. PROPERTY OWNER:
NAME: NVR, Inc.
ADDRESS: 10815 David Taylor Dr., Ste 100
CITY: Charlotte
STATE: NC ZIP: 28262
HOME PHONE: WORK PHONE: 704-548-3534
MOBILE PHONE: FAX:

11. OWNER'S LEGAL REPRESENTATIVE, IF APPLICABLE:
NAME: Kim Widenhouse
ADDRESS:
CITY:
STATE: ZIP:
HOME PHONE: WORK PHONE
MOBILE PHONE: 704-791-6858 FAX:

12. WHAT DATE WAS THE PROPERTY ORIGINALLY DEEDED AND RECORDED? 8-18-06
13 WHAT IS THE ANTICIPATED CLOSING DATE FOR THIS PROPERTY? June 2007

14. SEPTIC SYSTEM PERMIT APPLICATION SIGNATURE SECTION:
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 60 months or is non-expiring depending upon the documentation submitted: complete site plan = 60 months, complete plat = non-expiring.

Kim Widenhouse 2/16/07
Property Owners or Owner's Legal Representative Signature Date

15. WELL PERMIT APPLICATION SIGNATURE SECTION:
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 12 months from the date of issuance.

_____
Property Owner's or Owner's Legal Representative Signature Date

☐ SURVEY PLAT TO SCALE SUBMITTED ☐ SCALED SITE PLAN SUBMITTED ☒ UN-SCALED SITE PLAN SUBMITTED

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

SITE DEVELOPMENT PLAN

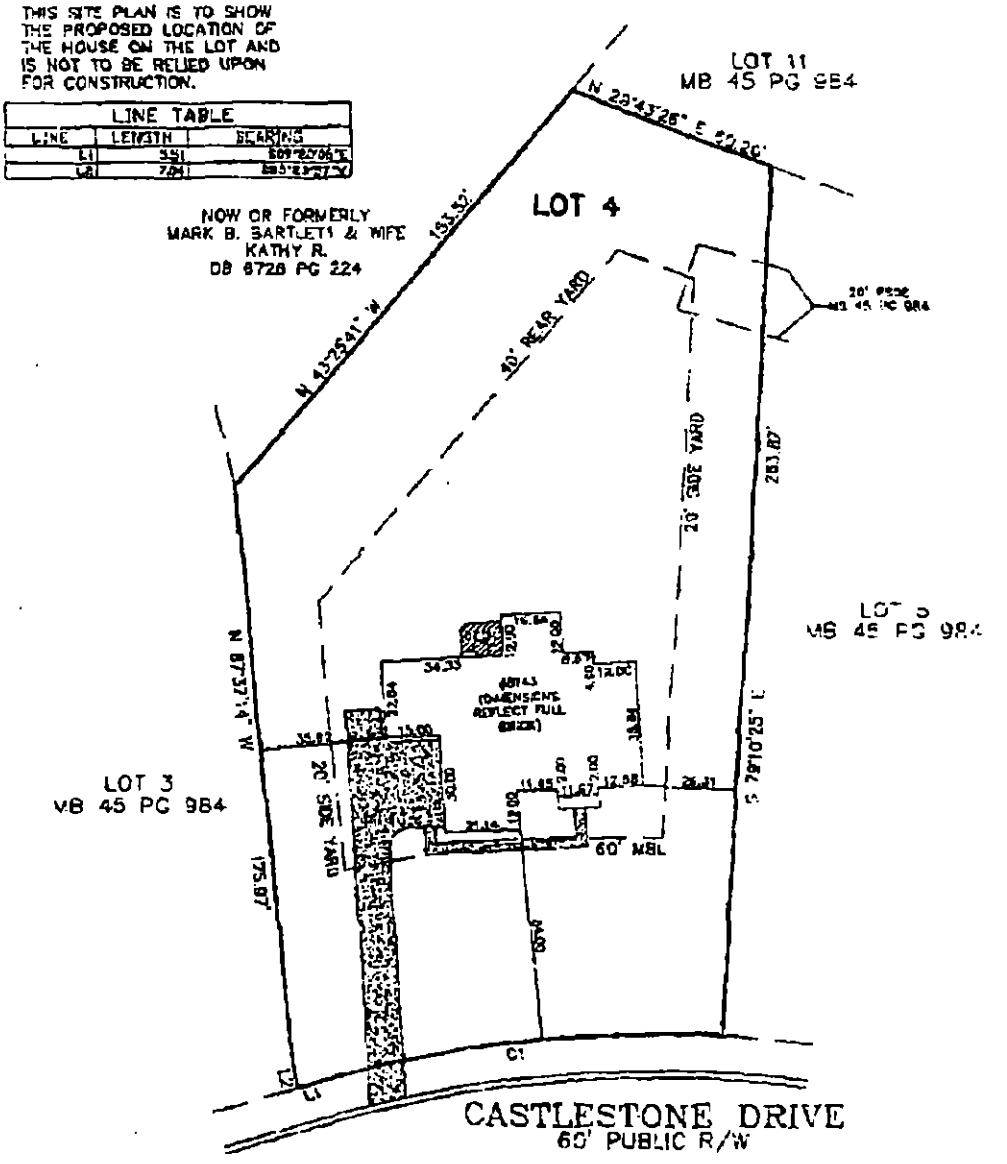
PREPARED BY:

DELTA LAND SERVICES, INC.
6033 FLORENCE AVENUE, SUITE 100
CHARLOTTE, NORTH CAROLINA 28212
(704) 536-8190

SCALE: 1" = 10'

THIS SITE PLAN IS TO SHOW THE PROPOSED LOCATION OF THE HOUSE ON THE LOT AND IS NOT TO BE RELIED UPON FOR CONSTRUCTION.

LINE TABLE		
LINE	LENGTH	BEARING
L1	5.41	S 89°20'06" E
L2	7.01	S 89°58'27" W



CURVE TABLE					
CURVE	RADIUS	LENGTH	CHORD	BEARING	DELTA
C1	530.00'	114.10'	113.91'	S 85°41'29" W	12°20'16"

ESTIMATED DRIVEWAY AREA = 1618.3 SQ. FT.±
STAKEOUT:

NOT FOR RECORDATION, CONVEYANCES OR SALES

Subdivision STONEBRIDGE SUBDIVISION, PHASE 2, MAP 1 (REVISED) County MECKLENBURG
Address 8143 CASTLESTONE DRIVE Owner RYAN
Lot 4 Block ___ Plan 2900CWE36 Elevation A Drive (Left) SIDE (Right) ___ (Courtyard) ___ Deck X
Patio ___ Fireplace REAR Garage (1 Car) ___ (2 Car) ___ (3 Car) X Brick FULL Basement ___ Curtain Wall ___ X
Crawl ___ Slab ___ Other MORNING ROOM, FIRST FLOOR SUITE, FIREPLACE AT REAR PER PLAN

REVISED: DWN: JDA CKD: DATE: 2 / 5 / 07

J:\STONEBRIDGE\98-CCDA.DWG - JDA

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

Sheet: 1 of 2
Property ID: 139-033-05
Lot #: 4
File #: 6963B
AppID: 1936

SOIL/SITE EVALUATION for ON-SITE WASTEWATER SYSTEM

Owner: NVR,Inc.
Applicant: Kim Stanley
Address: 10815 David Taylor Drive, Suite 100, Charlotte, NC 28262
Date Evaluated: 2/28/07
Proposed Facility: Residence
Design Flow (.1949): 600 gpd
Property Size:
Location of Site: 8143 Castlestone Drive
Property Recorded:
Water Supply: [x] Public [ ] Individual [ ] Well [ ] Spring [ ] Other
Evaluation Method: [x] Auger Boring [ ] 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
1	LS,8	0-9	GR/SCL	FR/SS/SP/SEXP	>27" TO SOIL WETNESS	27	NA	NONE	US,IV
		9-27	ABK/SBK/C	FI/S/P/SEXP					.125 GPD/FT^2/LPP
2	"	0-3	GR/SCL	FR/SS/SP/SEXP	>27" TO SOIL WETNESS	27	"	"	"
		3-27	ABK/SBK/C	FI/S/P/SEXP					
3	"	0-3	GR/SL	FR/SS/SP/SEXP	>32" TO SOIL WETNESS	32	"	"	"
		3-32	ABK/SBK/C	FI/S/P/SEXP					
4	"	0-2	GR/SCL	FR/SS/SP/SEXP	>48" TO SOIL WETNESS	48	"	"	PS,IV
		2-48	ABK/SBK/C	FI/S/P/SEXP					.25 GPD/FT^2
5	"	0-2	GR/SCL	FR/SS/SP/SEXP	"	"	"	"	"
		2-48	ABK/SBK/C	FI/S/P/SEXP					
6	"	0-2	GR/SCL	FR/SS/SP/SEXP	"	"	"	"	"
		2-48	ABK/SBK/C	FI/S/P/SEXP					
					SITE LTAR				.25 GPD/FT^2

Description	Initial System	Repair System
Available Space (.1945)	PS	PS
System Type(s)	Iva	Iva
Site LTAR	0.25	0.25

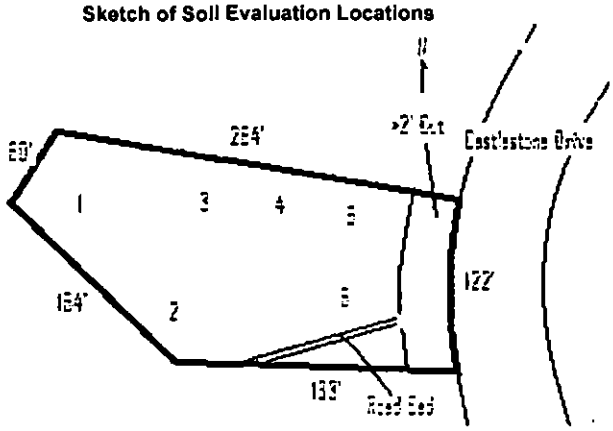
Other Factors (.1946): None
Soil Evaluation By: Chris Sherrill, RS, LSS
Others Present: No
Site Classification (.1948): Provisionally Suitable
Site Evaluation By: David Cornelius, RS
Others Present:

COMMENTS: 100% Repair Area Required

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		
		SCL-Sandy Clay 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	SEXP-Slightly Expansive
FR-Friable	SS-Slightly Sticky	EXP-Expansive
FI-Firm	S-Sticky	
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



6963B

Water Management

INSPECTION AND MAINTENANCE AGREEMENT

STATE OF NORTH CAROLINA

This agreement is made and entered into this 17th day of September, 2007, by and between _____ (hereinafter referred to as the "Owner") and **Water Management** (hereinafter referred to as the "Contractor").

WITNESSETH

WHEREAS, the Owner owns or controls the property upon which a ground absorption sewage treatment system (hereinafter "system") is installed, such system being designated a Type IV(a) system under the Rules for Sanitary Sewage Collection, Treatment and Disposal found at 15A N.C. Administrative Code 18A.1900 et seq.; and

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

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

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

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

1. The Contractor's Obligations. The Contractor shall perform the following services on the Owner's system located at:
Stonebridge Subdivision, Lot 4, Mecklenburg County, NC.

a) The contractor shall inspect, document, and report the system at least at the frequency required in Table V(b) of 15A N.C. Admin. Code 18A.1961(b), to satisfy conditions of the Operation Permit and to comply with manufacturers' operation requirements.

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

c) The Contractor shall notify the Owner of needed repairs, which are outside of the scope of routine maintenance described in this contract. The Contractor shall

perform necessary repairs to the system at the request of the Owner and shall be entitled to payment therefor at the Contractor's normal charge for services and materials.

d) The Contractor shall respond to a request for a nonscheduled service or maintenance call within 48 hours after receipt of such request.

2. The Owner's Obligations.

a) The Owner shall pay to the Contractor:

- **$300 per year, billed at $150.00 twice per year;**
- **Any charges for necessary replacement parts.**
- **Any charges for pumping/removal of solids from tanks.**
- **Any fees charged by the Mecklenburg County Health Department.**

The annual fee may be amended upon sixty (60) days advance notice to the Owner. The Owner shall pay to the Contractor his normal and customary fees for any work performed on the system as a result of nonscheduled service or maintenance calls. All fees are due and payable within thirty (30) days of billing. Payments due to the Contractor and unpaid by the Owner after thirty (30) days shall accrue interest from the due date until paid at a rate of 1.5% per month.

b) Within 30 days of receipt of notice of needed repairs, the Owner shall request the Contractor to complete needed repairs or shall provide to the Contractor evidence that the needed repairs were satisfactorily completed by another entity.

c) The Owner shall provide the Contractor with such access to the system as is reasonably necessary for the Contractor to comply with the terms of this Agreement.

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

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

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

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

termination.

d) Termination by the Contractor.

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

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

b) failure of the Owner to provide to the Contractor authorization to complete needed repairs or satisfactory evidence that needed repairs to the system were completed by another entity. If said authorization to complete needed repairs or evidence of completion of said repairs is provided after notice of termination is given but prior to the date of termination of this Agreement, this Agreement shall continue in effect; or

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

2) The Contractor may terminate this Agreement without cause, by notification to the Owner no less than ninety (90) days in advance of the termination date. The Contractor may also assign its rights and duties under this Agreement as provided in paragraph 4, below.

4. Assignment.

a) Assignment by the Owner.
The Owner shall notify the Contractor of the name and address of any purchaser of the property on which the system is located. The Owner shall also notify any purchaser of the property on which the system is located of the existence of this Agreement and shall assign all rights and duties under this Agreement to said purchaser.

b) Assignment by the Contractor.
The Contractor may assign its rights and duties under this Agreement to another management entity, which is qualified pursuant to 15A N.C. Admin. Code

18A.1961 to manage the system upon thirty (30) days written notice to the Owner and to the local health department.

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

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

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

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

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

To the Owner: _____

_____

_____

To the Contractor: **Water Management**
4744 Celia Creek Road
Lenoir, NC 28645

To the Local Health Department: **Mecklenburg County Environmental Health**
700 N. Tryon Street
Suite 211
Charlotte, NC 28202

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

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

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

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

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

Ryan Homes
(Owner)

9/20/07
(Date)

Water Management
(Contractor)

Sidney L. Gaskins, Jr. 9/17/07
(Sidney L. Gaskins, Jr.) (Date)

Residential Subsurface Wastewater Treatment and Disposal System Design

for

Lot 4 – Stonebridge at Mint Hill
8143 Castlestone Drive
Mint Hill, North Carolina

Tax Parcel # 139-033-05
Mecklenburg County File # 6963B
May 20, 2007

GWS Septic System Design Review

GWS File # 6963B **Approved** ☐ **Disapproved** ☐

Design Review JCT 6-6-07 ☒

Field Review 6/7/07 ☒

*Projects are not considered "APPROVED" until both sections above are completed and indicate an **APPROVED** status.

Prepared for:

NVR, Inc.
10815 David Taylor Drive, Ste. 100
Charlotte, NC 28262

Prepared by:

Larry Thompson, RS, PWS, LSS
Michael Wood, LSS
Gary Kreiser, LSS
The Catena Group, Inc.
410-B Millstone Drive
Hillsborough, NC 27278
Phone: 704-301-4881
Fax: 704-888-1496

LICENSED SOIL SCIENTIST
LARRY B. THOMPSON
1287
STATE OF NORTH CAROLINA

LICENSED SOIL SCIENTIST
MICHAEL G. WOOD
1219
STATE OF NORTH CAROLINA

CC: Mr. David Cornelius, RS
Mecklenburg County Environmental Health

CMS Sewage System Design Review

CMS File #: _____

Design Engineer: _____

☐ Approved ☐ Disapproved

Details

The following proposal is submitted to the Mecklenburg County Health Department (MCHD), Ground Water Section, to help assist the county in the issuance of an Improvement Permit for a 4-bedroom residence served by a municipal water supply on Lot 4 of the Stonebridge at Mint Hill Subdivision.

Based upon an investigation by The Catena Group, Inc. (TCG), it was determined that Lot 4 would be considered "Unsuitable" under the *Laws and Rules for Sewage Treatment, and Disposal Systems* 15A NCAC 18A .1900 (North Carolina Department of Environment and Natural Resources, Division of Environmental Health, On-Site Wastewater Section). There is, however, a sufficient amount of "Suitable" Group IV soils located on the property which would allow for the installation of a shallow placed Type IV pressure dosed prefabricated porous block panel system (PPBPS) for a 4-bedroom residence (low-pressure pipe repair). It is the desire of the owner that the MCHD consider issuing an Improvement Permit, based upon the following proposal.

Location

The subject property is located in Stonebridge Subdivision (Lot 4 – 8143 Castlestone Drive) in the town of Mint Hill, North Carolina. From NC 51, travel south on NC 218 approximately 0.9 mile, turn left onto SR 3109 (Bartlett Road). Stonebridge is the first subdivision on the right after crossing the I-485 overpass. Turn right onto Stonebridge Way and right onto Castlestone Way. Lot 4 is located on the right.

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, June 2006.

Onsite Wastewater Treatment and Disposal Systems; EPA 625/R-00/008 Design Manual, February 2002.

Design, Installation and Maintenance of the T & J Panel Wastewater Treatment System; Sixth Edition, published by T & J Panel.

Design and Installation of Low Pressure Pipe Wastewater Treatment Systems; by Craig Cogger, Bobby Carlisle; Dennis Osborne and Ed Holland. Published by UNC Sea Grant College Pub. UNC-SC-82-03, May 1982.

Plans and Specifications

Septic Tank

- The septic tank shall be State approved (Section .1953 of 15A NCAC 18A), watertight, structurally sound, and 1500 gallons in capacity.
- The septic tank will be fitted with an approved effluent filter and riser for easy access and periodic maintenance.
- 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.

Pump Tank

- 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.
- 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).
- The pump and alarm controls shall be provided with manual circuit disconnects within a watertight, corrosion resistant, Nema 4X rated control panel. The 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.
- The pump tank shall have a properly functioning high water alarm incorporated into the control panel. The alarm circuit shall be supplied separate from any pump overload and short circuit devices. The alarm shall be both audible and visible by the system users.
- The float switch for the high water alarm should be mounted at a location slightly above the "pump on" elevation for the pump float control switch. The high water alarm float switch shall not be set more than 3 inches above this elevation.
- Pump float(s) shall be mounted so that the effluent at the end of a pump cycle is above the top of the effluent pump. The septic contractor must determine pump draw down and set the float switch accordingly.
- Float switch tie downs must be made of a corrosion resistant material (do not use electrical tape or metal hose clamps to secure these switches). Floats should be mounted on a separate "float tree" rather than the pump supply line (see pump tank detail).

- The pump must be placed on two 4-inch concrete blocks to allow for some settling of solid particulates within the pump tank.

Pump Tank Effluent

- The pump discharge piping shall be fitted with a pressure effluent filter. The filter must be equivalent to the GAG Sim Tech Filter, Boyne City, Michigan, 49712, telephone: 1-888-999-3290. This device provides a very high degree of filtration and is highly recommended.

Pipe and Fittings

- All discharge piping, supply lines, valves and disconnects should be made of PVC and pressure rated.
- All joints must be properly "welded" utilizing the appropriate PVC cement for each application.
- The supply line from the pump tank to the pressure manifold shall be 2 inch Schedule 40 PVC (approximate length of supply line is 15 feet).
- The lateral distribution lines shall be 1¼ inch Schedule 40 PVC. Holes in the laterals should be drilled on site and at the 12 o'clock position (one hole per panel). Lateral hole size is 5/32 of an inch.
- There shall be a threaded PVC union above each pump to facilitate easy removal of the pumps for maintenance or replacement.
- The end of each lateral is to be provided with a "turn up", contained within a turf/gate valve box, that provides above ground access for periodic clean out and pressure head adjustment.

Valve Box

- The control valves (gate valves) for each lateral distribution line shall be contained within one manifold box/vault of adequate size. The box should be placed upon a gravel base.
- The supply manifold conveys effluent from the pump to the lateral distribution lines.
- The supply manifold should be constructed by connecting a series of (6) 2" x 2" x 1 ¼" tees to the 2 inch supply line.

Backfill

- Backfill sand shall be a clean, washed, medium sand that is naturally occurring and falls within the gradation of ASTM C-33 specification (used in the ready mix industry and is readily available).

√ TCT 6-4-07

- The pump must be placed on two 4-inch concrete blocks to allow for some settling of solid particulates within the pump tank.

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Drain Field Installation

- The drain field has been previously 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.
- 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 Mecklenburg County Health Department should be contacted for permission to proceed with the installation.
- The specified system is a Type IVa, pressure dosed, pre-fabricated permeable block panel system – specifically the 16 inch high panel system manufactured by T&J Panel Wastewater Treatment System, Patent No. 4013559; telephone: 1-800-222-2577. The installer must follow the manufacturer's guidelines for installing the T&J Panel System and should request an installation manual from the manufacturer prior to beginning construction.
- The initial drain field consists of (1) one lateral trenches 3 feet wide by 45 feet in length and (5) five later trenches 3 feet wide by 55 feet in length. It is essential that the lateral trenches be constructed on contour with the land, with each trench being excavated level from beginning to end. The use of a tripod mounted engineer's level is essential to assure that each trench is constructed as level as possible.
- The maximum trench depth for this system shall be 28 inches. Each trench shall be placed on a minimum of 9 foot on centers. Additional soil cover may be required.
- Once trenches are dug, the side walls shall be raked and a light dusting of lime applied.
- Backfill the trench with 6 inches of sand and level to grade. Once leveled, place 1 x 4 or 6 inch boards on top of the sand the entire length of each trench. Once the grade boards have been set, the panels may be set into the trench. The panels should be placed 6 inches apart.
- Once the panels have been set, line the top chamber of each panel with 10 – 12 pounds of clean particle sand (medium sand blasting sand). Coverage depth should be approximately 1 inch thick. *Please note that this sand is not the same material specified for backfill.*
- Tar seal rope, or approved foam, should be placed in the "U" outs of each end of the panel to form seals. Once the tar rope is in place, the 1 ¼ inch Schedule 40 PVC laterals can be added and the seal completed by the addition of more tar rope on the top and sides of the pipe. Now that the connection and seals are complete, a block cap is placed on each end of the panel so that all openings are covered.
- The end of each lateral should be fitted with a short turn up topped by a threaded female coupling with cap. Each turn up must be fitted with a turf/gate valve box with lid fitted flush to finished grade.
- Once the lateral has been installed and the panels closed, the trench is ready to be backfilled to the top with the sand used in the trench bottom. At this point, the trenches should be left open for the final inspection by the MCHD.

Proper Operation Check

- After all components of the waste water disposal system have been installed and connected, the system shall be checked for proper operation.
- With the electrical power turned off, fill the pump tank with water until the liquid rises to a level high enough to activate the high water alarm float. Turn on the electrical power. The alarm, alarm light and pump should activate at this time. Turn off the electrical power once these checks have been performed and prepare to set the head pressure at the valve box.

Pressure Head Adjustment

- The pressure head must be adjusted to match the design specifications. The pressure head is measured by the height of the liquid coming from the turn ups at the end of each lateral when the pump is running (utilizing stand pipes).
- Prepare a length of pipe (stand pipe), cut to the desired head pressure height and fitted with a threaded adapter that will screw into the turn up couplings at the end of each lateral. Thread the stand pipes into each lateral and then turn the power on to the pump, allowing the water to rise within the stand pipes. Adjust the gate valves within the supply manifold box to achieve the specified head pressure (liquid height in the stand pipes should equal the design head pressure).
- Once the pressure head has been adjusted, allow the pump to run through the remainder of the cycle. The pump float switch will automatically turn the pump off if it is operating properly. Make sure that the effluent pump is completely submerged in the remaining water, making adjustments to the float switch(es) as needed. This completes the checks for proper operation of the pump, alarm and float switches.
- At this point, the standpipes may be removed and replaced with the threaded turn up caps.

Final Landscaping

- The drainfield shall be shaped to shed rainwater and be free from low spots.
- The entire area of the drainfield 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.

Utility Conflicts

- 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. If there are any questions regarding preferred routes, contact the MCHD as soon as possible. Irrigation systems should not be placed in the drain field area.

Maintenance

Operation and Maintenance

The designed system is classified as a Type IVa wastewater treatment and disposal system and will require ongoing maintenance. State regulations require that a system of this type be managed by a person certified (Certified Subsurface System Operator) by the North Carolina Department of Environment and Natural Resources to operate subsurface wastewater systems (Section .1961 Maintenance of Sewage Systems). A "Maintenance Contract" between the system owner and a Certified Operator will be required by the MCHD prior to the issuance of a final system approval or Operation Permit.

- The minimum inspection/maintenance and reporting frequency for a Type IVa system is twice a year by the Certified Operator. The local health department is required to inspect the system once every three years.
- The septic and pump tanks shall be pumped every 4 years or when the solids within the septic tank reach an elevation that is equivalent to 1/3 of the volume of the tank. In some situations, the tanks may need to be pumped more frequently; for example, if you are using a garbage disposal, it is recommended that the septic and pump tanks be cleaned out annually. Regardless, the Certified Operator will be able to advise when it is necessary to pump out tank solids.
- Pressure head for laterals should be checked and adjusted semi-annually, flushing with clean water as necessary to remove any accumulated solids.
- The effluent filters should be inspected semi-annually. When it becomes necessary to clean the effluent filters, the filters should be removed and the accumulated debris washed back into the septic or pump tank – not onto the lawn.
- All piping and valves should be inspected semi-annually for damage and corrections/repairs made immediately.
- The pump and float controls/switches should be inspected semi-annually to assure proper operation
- The drain field area should be maintained to prevent over growth of vegetation. Any damp areas, leakages or malfunctions should be addressed immediately.
- Divert gutter downspouts and surface water runoff away from the septic and pump tanks.

Suggestions to the Homeowner

- As previously mentioned, if you plan to use a garbage disposal in your home you should plan to have your septic and pump tanks cleaned out annually. The ground up garbage adds large amounts of solids into a septic tank that tend to degrade at a very slow rate.
- Grease, cooking oils, coffee grounds and non-degradable solids (disposable diapers, cigarettes and solid paper wastes) should never be put into a septic tank.
- Used motor oil or any oily liquids should not be disposed of in a septic tank.

- 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.
- Run dishwashers and washing machines only when you have a full load.
- Use liquid detergents. Powdered detergents have binding agents in them that tend to solidify in the wastewater disposal system.
- Repair leaky faucets and toilets. Small drips equal large volumes of water over time and can over burden your drain field.
- 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.
- Finally, taking good care of your septic system will help to assure that you experience years of trouble free service at a relatively low cost. On-site wastewater treatment and disposal is still the most environmentally friendly method of treating residential/commercial waste and you should keep your system in use for as long as it is properly functioning! If you have additional questions, please feel free to contact your system designer or the MCHD.

√ TCT 6-4-07

Design Specifics

Daily Design Flow:	480 GPD – 4 bedroom house
Septic Tank Size:	1500 gallons (2 compartments)
Pump Tank Size:	1000 gallons
Effluent Loading Rate:	Design = 0.25 GPD per sq. ft. (50 % reduction for the PPBPS)
Supply Length and Diameter:	Approx. 15 ft. of 2 in. SCH 40
Number and Size of Laterals:	(1) 1 ¼ inch x 45 feet in length (5) 1 ¼ inch x 55 feet in length
Hole Size:	5/32 inch
Hole Spacing:	1 per panel = 70 total
Number of Panels:	70
Dosing Volume:	252.00 gallons per dose
Flow Rate Through System:	28.7 gallons per minute
Elevation Head:	10 feet (may vary, please see note at the bottom of this page)
Pressure Head:	2 feet
Pump Requirements:	30.7 GPM at 12 Feet TDH (2 GPM added for vapor lock)
Depth of Water Pumped:	12.00" check with individual tank manufacturer (1 cu. Ft. of water equals 7.5 gal.)
Pump Run:	8.78 minutes
Check Valve:	Yes
Vapor Lock Hole:	Yes (A vapor lock hole can reduce vibrations in the discharge pipe upon start up and shut down)

* Please note that supply line and elevation head measurements are approximate. It is the contractor's responsibility to confirm these values based upon the actual house and plumbing location. If there is a discrepancy, contact the system designer prior to beginning construction.

PPBPS Design Worksheet								File #:	6963B		
								Tax #:	139-033-05		
System Requirements								Address:	8143 Castlestone Drive		
Design Flow	480	gpd							Charlotte, NC 28227		
LTAR	0.250	gpd/ft.^2						Consultant:	Larry Thompson		
Linear footage	640	ft. (conventional)						Phone:	704-301-4881		
Linear footage	320	ft. (50% Reduction)									
								Reviewed By:	TCT		
Design Layout								Date:	6-4-07 ✓		
Laterals	Length (ft)	# Panels									
Line # 1	45	10									
Line # 2	55	12									
Line # 3	55	12									
Line # 4	55	12									
Line # 5	55	12									
Line # 6	55	12									
Totals	**320**	**70**									
Absorption Area											
Length (ft)	Width (ft)	Area (ft^2)									
320	3	960									
System Pressure Head	2	ft.	Value selected by system designer (must be between 2-5 ft.)								
Orifice Diameter	5/32	in.	Size selected by system designer (1/8 in. minimum)								
Flow Rate per Orifice	0.41	gpm	Determined from orifice flow design table (value dependent on pressure head & orifice diameter)								
Total System Flow Rate	28.7	gpm	Total number of panels required multiplied by the orifice flow rate								
System Dose Volume	252.00	gal.	Total number of panels required multiplied by 3.6 gal./panel								
Pump Run Time	8.78	min.	System dose volume divided by the total system flow rate								
Pump Tank Drawdown	12.00	in.	1,000 gal. Pump tank, volume is approximately 21 gallons per inch								
Comments:											
1. Install system using 3 ft. wide trenches.											
2. Install drainlines on 9 ft. centers, level, and on contour.											
3. System design requires effluent pump for distribution.											
4. 100% repair area required for property.											

T & J Panels	
Linear Feet	# Panels
50	11
60	14
70	16
80	18
90	21
100	23

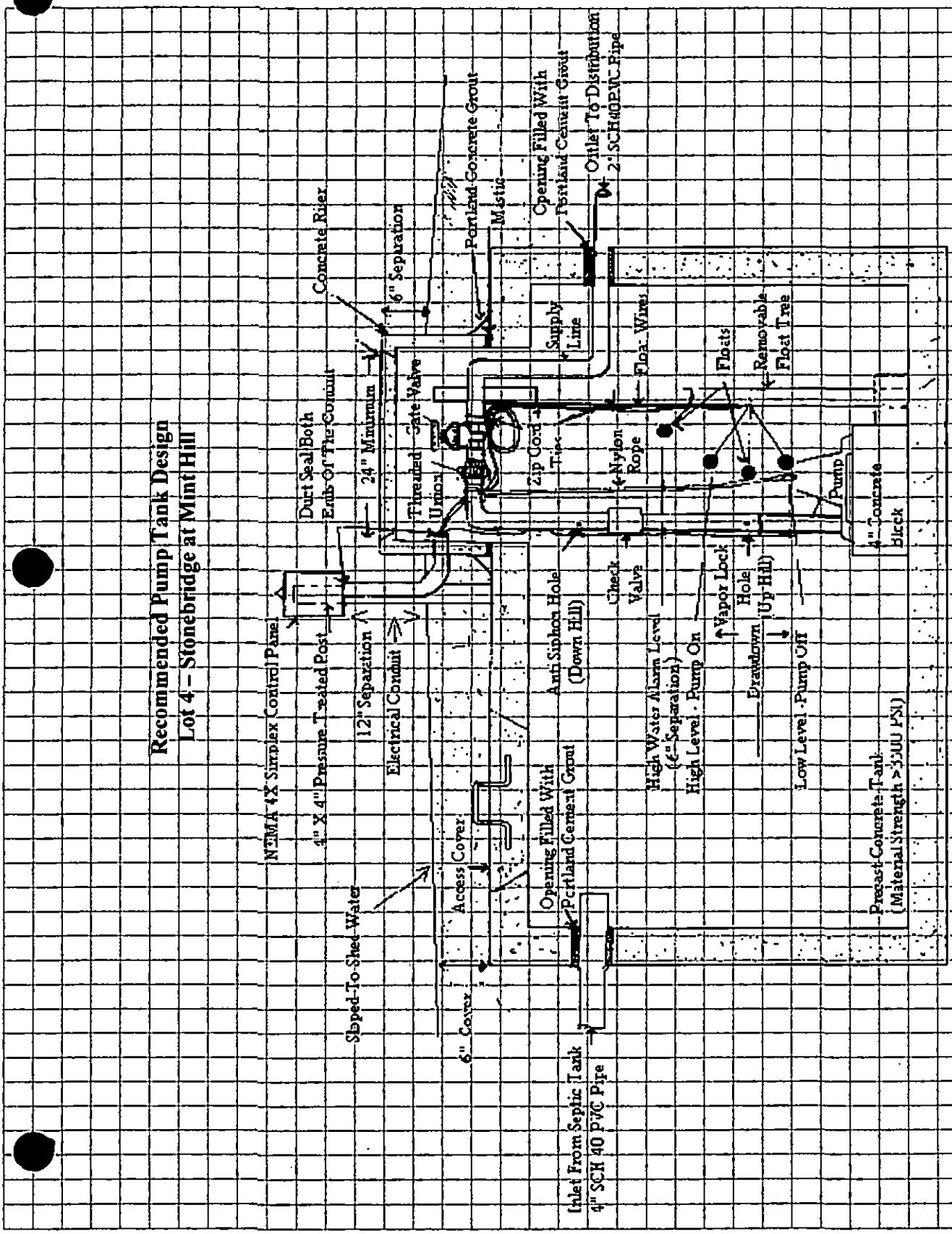
The Catena Group
410-B Millstone Drive
Hillsborough, NC 27278

File Number: 6963B

Location: Lot 4 – Stonebridge

Date: May 20, 2007

Recommended Pump Tank Design
Lot 4 – Stonebridge at Mint Hill



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

Sheet: 1 of 2
Property ID: 139-033-05
Lot #: 4
File #: 69638
AppID: 1836

SOIL/SITE EVALUATION for ON-SITE WASTEWATER SYSTEM

Owner: NVR Inc.
Address: 10815 David Taylor Drive, Suite 100, Charlone, NC 28262
Proposed Facility: Residence Design Flow (.1949): 600 gpd
Location of Site: 8143 Castlestone Drive
Water Supply: [x] Public [ ] Individual [ ] Well [ ] Spring [ ] Other
Evaluation Method: [x] Auger Boring [ ] Pit [ ] Cut
Type of Wastewater: [x] Sewage [ ] Industrial Process [ ] Mixed

Applicant: Kim Stanley
Date Evaluated: 2/28/2007
Property Size:
Property Recorded:

PROFILE #	SOIL MORPHOLOGY 1941			PROFILE FACTORS b				
	1946 Landscape Position/ Slope%	Horizon Depth (IN.)	1941 Structure/ Texture	1941 Consistence Mineralogy	1942 Soil Wetness/ Color	1943 Soil Depth (IN.)	1956 Sapro Class	1944 Restr Horiz	Profile Class & LTAR
1	LS,8	0-9	GR/SCL	FR/SS/SP/SEXP	>27" TO SOIL WETNESS	27	NA	NONE	US,IV
		9-27	ABK/SBK/C	FI/S/P/SEXP					.125 GPD/FT²/LPP
2	"	0-3	GR/SCL	FR/SS/SP/SEXP	>27" TO SOIL WETNESS	27	"	"	"
		3-27	ABK/SBK/C	FI/S/P/SEXP					
3	"	0-3	GR/SL	FR/SS/SP/SEXP	>32" TO SOIL WETNESS	32	"	"	"
		3-32	ABK/SBK/C	FI/S/P/SEXP					
4	"	0-2	GR/SCL	FR/SS/SP/SEXP	>48" TO SOIL WETNESS	48	"	"	PS,IV
		2-48	ABK/SBK/C	FI/S/P/SEXP					.25 GPD/FT²
5	"	0-2	GR/SCL	FR/SS/SP/SEXP	"	"	"	"	"
		2-48	ABK/SBK/C	FI/S/P/SEXP					
6	"	0-2	GR/SCL	FR/SS/SP/SEXP	"	"	"	"	"
		2-48	ABK/SBK/C	FI/S/P/SEXP					
					SITE LTAR				.25 GPD/FT²

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

Other Factors (.1948): None
Soil Evaluation By: Chris Sherrill, RS, LSS
Others Present: No
Site Classification (.1948):
Site Evaluation By:
Others Present:

Christopher M Sherrill

Thompson Environmental Consulting, Inc.
514 Orchard Ridge Road
Locust, NC 28097-8748
704-301-4881

SHEET 1 OF 1

COUNTY: Mecklenburg County
PROPERTY I.D.#: 69636
TAX #: 139-033-05

SUBDIVISION: Stonebridge
SECTION/PHASE: II

DATE: 5-21-07

→ sketched on Meck County's report

PROFILES		1	2		4-1 — 9/12/06						
LANDSCAPE POSITION	.1940	LS	LS		LS	Gary Kreider					
SLOPE (%)	.1940	4%	4%		3%						
HORIZON 1 DEPTH	.1943	0-6	0-3		0-4						
TEXTURE	.1941 (a)(1)	SCL	SCL		CL						
CONSISTENCE	.1941	FR	FR		FR						
STRUCTURE	.1941 (a)(2)	GR	GR		GR						
CLAY MINERALOGY	.1941 (a)(3)	NE	NE		NE						
HORIZON 2 DEPTH	.1943	6-40"	3-48"		4-40"						
TEXTURE	.1941 (a)(1)	C	C		CL						
CONSISTENCE	.1941	FI	FI		FI						
STRUCTURE	.1941 (a)(2)	SBK	SBK		SBK						
CLAY MINERALOGY	.1941 (a)(3)	SE	SE		SE						
HORIZON 3 DEPTH	.1943										
TEXTURE	.1941 (a)(1)										
CONSISTENCE	.1941										
STRUCTURE	.1941 (a)(2)										
CLAY MINERALOGY	.1941 (a)(3)										
HORIZON 4 DEPTH	.1943										
TEXTURE	.1941 (a)(1)										
CONSISTENCE	.1941										
STRUCTURE	.1941 (a)(2)										
CLAY MINERALOGY	.1941 (a)(3)										
SOIL WETNESS	.1942										
RESTRICTIVE HORIZON	.1944										
SAPROLITE	.1943/.1956	40"	~~3'~~								
CLASSIFICATION	.1948										
L.T.A.R. (gpd/ft²)	.1955	.275	.3		.3						

OTHER FACTORS (.1946):	**SITE LTAR (gpd/ft²):**
AVAILABLE SPACE (.1945):	
SITE CLASSIFICATION (.1948):	SYSTEM TYPE:
EVALUATED BY: L. Thompson	OTHERS PRESENT:

COMMENTS:
Meck County's #4 boring is located at lowest proposed drain line – added two more borings to verify soils.

LOT # 4

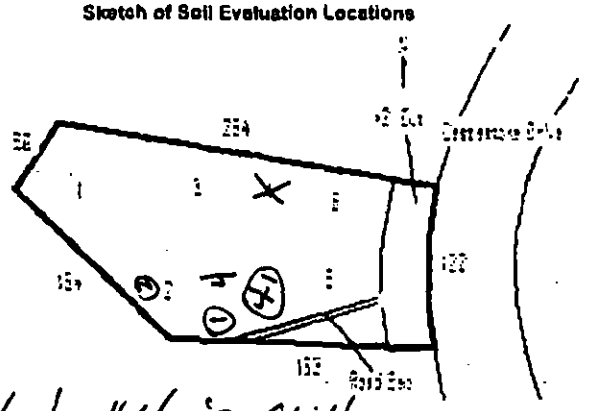
COMMENTS: 100% Repair Area Required

FILE #: 6963B

Landscape Position	Group	Texture	1995 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		
	IV	SC-Sandy Clay	0.4 - 0.1	
		SIC-Silty Clay		
		C-Clay		

Consistence Moist	Consistence Wet	Mineralogy
VFR-Very Friable	NS-Non-Sticky	SEXP-Slightly Expansive
FR-Friable	SS-Slightly Sticky	EXP-Expansive
FI-Firm	S-Sticky	
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



* Flagging tape for hole #4 is still up - incorrectly noted on sketch.

Groundwater & Wastewater Services
Septic Project File & Data Review Worksheet

GWS File #: 6563 B WASPS App #: 1936

Primary ES assigned to project: DC

Secondary ES assigned to project: _____

Project Type: New System ☑ Alteration ☐ Repair ☐ Modified Plot Plan ☐

I. File Review:

Rule or Law				
	Permit Application			
.1937(d)	Is the Application complete	Yes ☑	No ☐	N/A ☐
.1937(d)	Is there a Site plan/Plat with application	Yes ☑	No ☐	N/A ☐
.1937(d)	Is the Facility shown?	Yes ☑	No ☐	N/A ☐
.1937(d)	Are appurtenances shown	Yes ☑	No ☐	N/A ☐
	Site Evaluation Information			
.1939 (a)(1)	Topography and Landscape Position Recorded?	Yes ☑	No ☐	N/A ☐
.1940 (a-g)	Slope % Recorded?	Yes ☑	No ☐	N/A ☐
.1939 (a)(2)	Texture Class Recorded?	Yes ☑	No ☐	N/A ☐
.1939 (a)(2)	Structure type Recorded?	Yes ☑	No ☐	N/A ☐
.1939 (a)(2)	Consistence Recorded?	Yes ☑	No ☐	N/A ☐
.1939 (a)(2)	Mineralogy Recorded?	Yes ☑	No ☐	N/A ☐
.1939 (a)(3)	Soil Wetness Condition Recorded?	Yes ☐	No ☐	N/A ☑
.1939 (a)(4)	Soil Depth to Rock or Parent Material Recorded When Encountered	Yes ☐	No ☐	N/A ☑
.1939 (a)(5)	Depth to Restrictive Horizons Recorded When Encountered?	Yes ☐	No ☐	N/A ☑
.1939 (a)(6)	Sufficient Available Space Recorded?	Yes ☑	No ☐	N/A ☐
.1937(m)	Are the Profile Locations Shown?			
.1939(a)	Are the S/PS Profiles in system & in repair area?	Yes ☑	No ☐	N/A ☐
& .1945(b)	Number of auger borings made: 6 Were sufficient auger borings made?	Yes ☐	No ☐	N/A ☐
.1939(d), .1955, .1956, .1957	LTAR .25	Yes ☑	No ☐	N/A ☐
	Improvement Permit/Construction Authorization			
.1937(g) 130A-336(a)	Proposed System Type stated-Initial	Yes ☑	No ☐	N/A ☐
.1945(b) 130A-336 (a)(3)	Proposed System Type stated-Repair	Yes ☑	No ☐	N/A ☐
	System location identifiable by setbacks - Initial	Yes ☑	No ☐	N/A ☐
.1937(g) .1945(b)	System components shown – Initial	Yes ☑	No ☐	N/A ☐
.1945(b)	Repair area shown	Yes ☑	No ☐	N/A ☐
.1937 (f)(g)	Does System design match facility, flow & WWcharacteristics?	Yes ☑	No ☐	N/A ☐
.1937 (f)(g)	Is System design consistent with soil/site conditions?	Yes ☑	No ☐	N/A ☐
.1937 (f)(g)	Is the System located in the approved area?	Yes ☑	No ☐	N/A ☐
130A-336(a)	Is the Design flow (gpd) indicated?	Yes ☑	No ☐	N/A ☐

130A-336(a)	Number of Bedrooms, employees, seats, etc. indicated?	Yes ☑	No ☐	N/A ☐
.1937(g)	Trench depth indicated?	Yes ☑	No ☐	N/A ☐
.1937(g)	Trench width indicated?	Yes ☑	No ☐	N/A ☐
.1937(g)	Trench length indicated?	Yes ☑	No ☐	N/A ☐
130A-336(a)(1)	Proposed/existing well shown?	Yes ☐	No ☐	N/A ☑
130A-336(a)(1)	Property line lengths shown?	Yes ☑	No ☐	N/A ☐
130A-336(a)	Facility/appurtenance setbacks shown from fixed points?	Yes ☑	No ☐	N/A ☐

Operation Permit

.1937(i)	System type as described in table V(a) of rule .1961	Yes ☑	No ☐	N/A ☐
.1937(i)	Conditions for system performance, operation, maintenance, monitoring and reporting.	Yes ☑	No ☐	N/A ☐

II. WASPS Review:

Construction authorization issued	Yes ☐	No ☐	N/A ☐
Installation approval issued	Yes ☐	No ☐	N/A ☐
Operation permit issued	Yes ☐	No ☐	N/A ☐
Other related documentation	Yes ☐	No ☐	N/A ☐

Comments: # Items requiring correction/modification: _____

IA issued date: 9-4-07

OP issued date: 9-17-07

Review performed by: JCR Date performed: 6/1/07

MECKLENBURG COUNTY
LAND USE AND ENVIRONMENTAL SERVICES
Payment Receipt

Receipt Information

Date:	06/11/07	**Amount:**	150.00
Receipt #:	51213	**Tendered:**	0.00
Check / Auth #:	CHARGE	**Returned:**	0.00
Received By:	AIDOOJK		

Account Information

Account #: X33575
Contractor: NVR INC (EAST)
Attn:
Address: 10815 DAVID TAYLOR DR 100
Address:
City/State/Zip: CHARLOTTE, NC 28262

Item	Description	Permit#	Quantity	Unit Price	Total Price
0734	Auth for Waste Wtr Sys Constr 8143 CASTLESTONE DRIVE		1	150.00	150.00

----------**Outstanding Balances**----------

Month-To-Date	Prior Month	30 Days	60 Days	90 Days	Balance
15,467.32	57,405.63				

MECKLENBURG COUNTY
LAND USE AND ENVIRONMENTAL SERVICES
Payment Receipt

Receipt Information

Date:	06/11/07	**Amount:**	150.00
Receipt #:	51214	**Tendered:**	0.00
Check / Auth #:	CHARGE	**Returned:**	0.00
Received By:	AIDOOJK		

Account Information

Account #: X33575
Contractor: NVR INC (EAST)
Attn:
Address: 10815 DAVID TAYLOR DR 100
Address:
City/State/Zip: CHARLOTTE, NC 28262

Item	Description	Permit#	Quantity	Unit Price	Total Price
0703	Installation/Final Approval 8143 CASTLESTONE DRIVE		1	150.00	150.00

----------Outstanding Balances----------

Month-To-Date	Prior Month	30 Days	60 Days	90 Days	Balance
15,617.32	57,405.63				