ROLLANS *Soil & Environmental Services, Inc.*

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Attached is a proposed design for an Accepted (25% reduction) Septic System with Gravity distribution for a 4 bedroom single family residence on Lot #50 Autumn Brook Subdivision, Iredell County, North Carolina.

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June 20, 2008
Project #: 01-1439
Design By: Rollans Soil and Environmental Services

INFORMATION FOR THE INSTALLER:

- The permit should be read very carefully prior to bidding. The following are details that must be considered along with all other considerations.
- Tanks shall be approved by DEHNR, and certification supplied by the manufacturer.
- Tanks shall be water tested prior to installation.
- The installer shall be responsible to the owner for placement of the tanks and to insure that final grades are returned to the original natural grade, with exception of added structural features.
- The supply trench shall be compacted to eliminate cavities left during initial fill placement.
- Installation of the system shall be during dry conditions in order to protect the soil structure.
- All fittings shall be pressure rated fittings.
- All joints shall be cleaned with PVC pipe cleaner and a heavy bodied glue applied to weld all joints.
- Where required by the county health department, post installation inspections by the designer must be scheduled 5 week days in advance.
- Trenches shall be carefully excavated so the bottom is within 2" from the highest to . the lowest points of elevation within the trench. If the bottom elevation needs adjusting after it has been trenched, it will be done by removing high points rather than filling low points. It is extremely important to insure that trenches are not over excavated during initial trenching. All fine grading within the trench will be hand done with a shovel. No loose material will be left in the trench
- All pipe openings in the tanks shall be properly grouted. This also applies to the joints around the riser.
- All tanks shall be properly back filled and compacted to prevent slump at a later date.
- Earth dams, constructed of relatively impervious material, shall be installed at the beginning and end of each lateral.
- No heavy equipment shall be used on the field during or after installation. The use of a small loader (i.e. Bobcat) or a trencher (i.e. Ditch Witch 2300/2310) may be used for installation.
- Elevations at pinflag locations should be checked by the installer prior to beginning trenches.
- Pumptank riser should be 6" above grade, control panel should be 12" above grade.
- Septic tank riser shall be a minimum of 6" above finished grade.
- Design precludes use of foundation drains on the residence.
- System is specified as an innovative gravity 25% reduction installation.
- Repair is specified as an innovative 25% reduction installation.
- Rake trench walls, lime sidewalls, install trenches 36" wide level but have no more than 1/4" fall in 10 feet.
- Backfill against house to achieve positive drainage.
- All gulleys near system and repair areas must be filled with provisionally suitable material.

Gravity 25% Reduction
FOR WASTEWATER TREATMENT

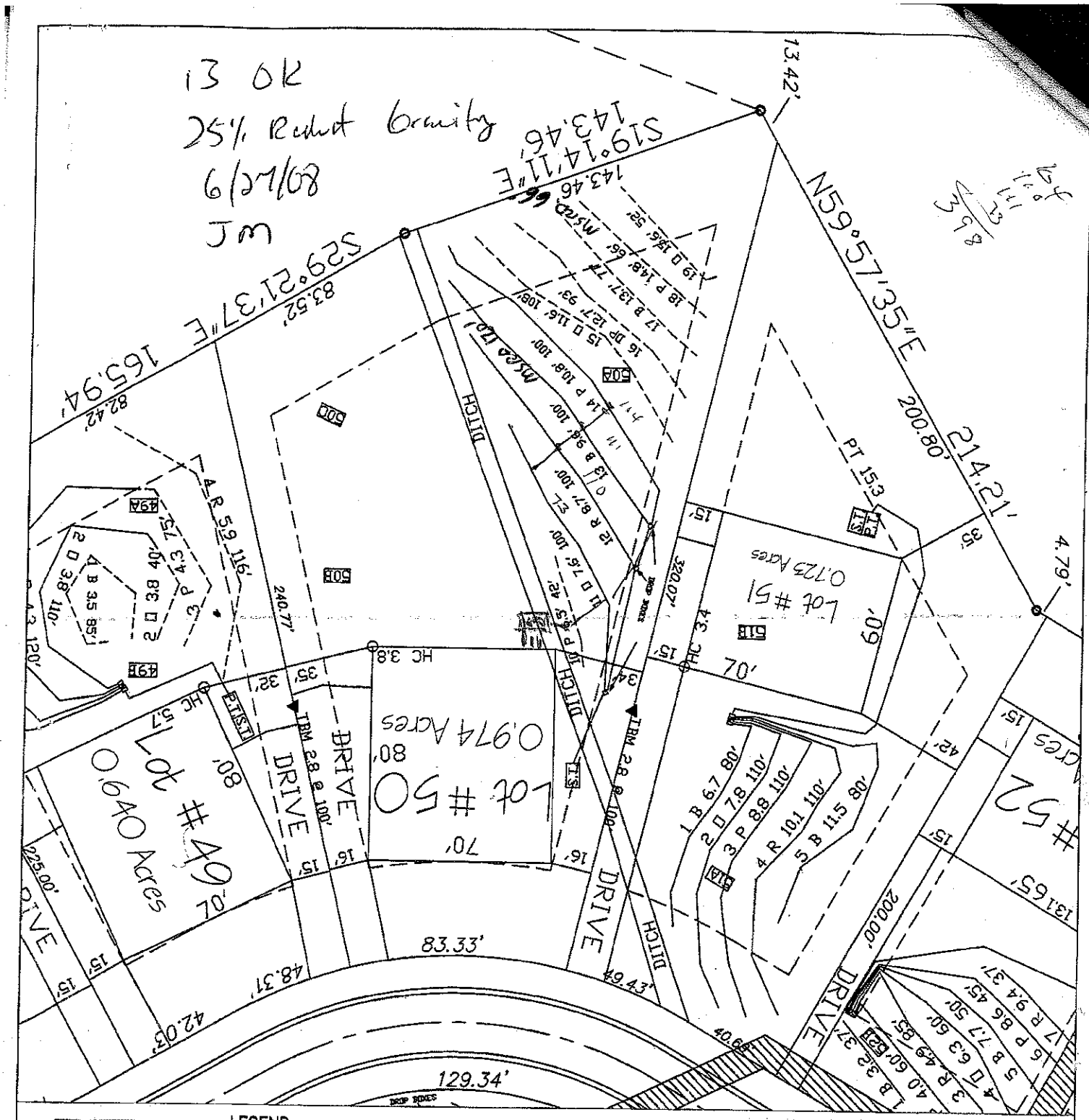
Owner:	The Johnson Group
Address:	132 Court Street Statesville, NC 28677
Phone:	704-881-0098
County:	Iredell
Location:	AUTUMN BROOK LOT #50
Source of Wastewater Flow:	4 Bedroom Single Family Residence
Estimated Gallons Per Day Flow:	480
System Flow:	NA

Design Specifications

Drainfield Size:	400
Loading Rate (gpd/ft.^{2}):	0.3
Depth of Gravel in Trench:	NA (25% reduction)
Gravel Size:	NA (25% reduction)
Trench Depth:	36 in.
Trench Width:	36 in.
Septic Tank Size:	1000
Pump Tank Size:	N/A
Estimated Supply Line Length:	29
Supply Line Diameter:	3 in. SCH 40 PVC
Supply Line Volume:	5.05
Dosing Volume:	NA
Supply Manifold:	DROP BOX
Supply Manifold Length:	NA
Supply Manifold Volume:	N/A
Recommended Float Controls:	NA
Recommended Control Panel:	NA
Pressure Head:	NA
Friction Head:	NA
Elevation Head:	NA
Total Dynamic Head:	NA
Threaded Union:	NA
Gate Valves:	NA NA
Check Valves:	NA
Anti-Siphon Hole:	NA
Additional Comments:	Soil suitability was performed by Rollans Soil & Environmental Services.

AUTUMN BROOK LOT #50

DESIGN FLOW (gpd):	480
SOIL APPLICATION RATE (gpd/ft.^{2}):	0.3
TOTAL AREA TRENCH BOTTOM:	1200
TOTAL LATERAL LENGTH:	400
NUMBER OF FIELDS:	1
LATERAL LENGTH REQUIRED PER FIELD:	400
SUPPLY LINE LENGTH:	29
TOTAL DYNAMIC HEAD:	NA
MANIFOLD SIZE:	NA
DOSING VOLUME:	NA
PUMP TANK DRAW DOWN*:	NA
SEPTIC TANK SIZE:	1000
PUMP TANK SIZE:	N/A



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MAP TITLE: PRELIMINARY SOIL EVALUATION

PROJECT NAME: THE JOHNSON GROUP / AUTUMN BROOK

LOCATION/DATE: WALLACE SPRINGS ROAD, IREDELL COUNTY, NORTH CAROLINA, JUNE 2008

JOB # : 01-1439
FILE: C:\JOBS\01-1439
PROJECT MGR.: A.L.P
FIELD WORK: A.L.P
DRAWN BY: A.L.P

AUTUMN BROOK LOT #50

Project #: 01-1439

LAYOUT FOR 4 BEDROOM HOME

June 20, 2008

LINE #	FLAG COLOR	BS	HI	FS	ELEVATION	FLAGGED LINE LENGTH	DESIGN LINE LENGTH
TBM		N/A			100.00		
TANK			N/A	N/A			
HOUSE			N/A	N/A			
INSTR. 1				N/A			
1	PINK			N/A	N/A	42	42
2	***ORANGE***			***N/A***	***N/A***	***119***	***100***
3	***RED***			***N/A***	***N/A***	***112***	***100***
4	***BLUE***			***N/A***	***N/A***	***120***	***100***
5	***PINK***			***N/A***	***N/A***	***123***	***100***
6	ORANGE			N/A	N/A	108	108
7	DARK PINK			N/A	N/A	93	93
8	BLUE			N/A	N/A	77	77
9	PINK			N/A	N/A	66	66
10	ORANGE			N/A	N/A	52	52
					Total	**912**	**838**

	LINE LENGTH	LTAR GPD/FT^2	SYSTEM TYPE	SOIL LTAR GPD/FT^2	TRENCH SYSTEM	DISTRIBUTION
****System***	***400***	***0.30***	***ACCEPT.***	***0.30***	***25% RED.***	**GRAVITY**
Repair	438	0.30	*ACCEPT.*	0.30	25% RED.	**DISTRIBUTION** PRESSURE MANIFOLD

Notes:

** TBM NOT REQUIRED

**All measures in feet

**Nitrification lines are demonstrated on contour via colored pin flags

**BS, HI, and FS indicate rod readings

CALCULATIONS

Location AUTUMN BROOK SUBDIVISION

Project Number 01-1439

Lot No: Lot 50

No. of Bedrooms	4	
Design Flow	480	$^{gal}/_{day}$
LTAR	0.30	$^{gal}/_{ft^2\ day}$
25% RED.? (YES OR NO)	YES	
Supply Line Length	29	ft.
Supply Line Volume	5.046	gal.
Required Feet of Line	400	ft.
Amount of Line from Layout	400	ft.
Gallons per Minute	NA	$^{gal}/_{min}$
Required Septic Tank Capacity	1000	gal.
Minimum Standard Tank Size	1000	
Lateral Line Volume	261.2	gal.
Dosing Volume	NA	gal.

Note: Dosing Volume based on70% of lateral line volume

Tank Draw Down	NA	*Generic Draw Down of 21 gal.per in.*
Pump Run Time	NA	minutes
Elevation Head	NA	ft.
Pressure Head	NA	ft.
Friction Factor	NA	ft./100 ft. *(From the interpolater.)*
Friction Head	NA	ft.
Total Dynamic Head (+15%)	NA	ft.

FRICTION FACTOR INTERPOLATER
2" SCH 40 PVC

GPM	*f*
20	0.84
	-0.88
25	1.27
	-1.28
30	1.78
	-1.76
35	2.37
	-2.25
40	3.03
43.07	3.48
45	3.77
48.14	4.28
50	4.58
57.11	5.89
60	6.42

DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL HEALTH
ON-SITE WASTEWATER SECTION

Sheet 1 of 1
PROPERTY ID #:
COUNTY: Iredell

SOIL/SITE EVALUATION
for ON-SITE WASTEWATER SYSTEM

OWNER: The Johnson Group — APPLICATION DATE 6/08
ADDRESS: 132 Court St. Statesville NC 28677 — DATE EVALUATED: 4/08
PROPOSED FACILITY: 4 BRM — PROPOSED DESIGN FLOW (.1949): 480 gpd — PROPERTY SIZE: 0.974 Ac
LOCATION OF SITE: Autumn Brook Subdivision Off Wallace Springs Rd) Lot 50 — PROPERTY RECORDED: NO
WATER SUPPLY: ☐ Private ☑ Public ☐ Well ☐ Spring ☐ Other
EVALUATION METHOD: ☐ Auger Boring ☑ Pit ☐ Cut — TYPE OF WASTEWATER: ☑ Sewage ☐ Industrial Process ☐ Mixed

PROFILE #	.1940 LANDSCAPE POSITION/ SLOPE %	HORIZON DEPTH (IN.)	SOIL MORPHOLOGY (.1941) STRUCTURE/ TEXTURE	SOIL MORPHOLOGY (.1941) CONSISTENCE/ MINERALOGY	OTHER PROFILE FACTORS .1942 SOIL WETNESS/ COLOR	.1943 SOIL DEPTH	.1956 SAPRO CLASS	.1944 RESTR HORIZ	PROFILE CLASS & LTAR
P50A	LSS	0-22	R C MFSBk	SS, SP, Fr SExP	—	Lt 3"	PS	—	PS
1	5-10%	22-43	R CL WSBk	SS, SP, Fr SExP	com. Sap				
		43-60	Var SL Sap Mass	SS, SP, Fr SExP					.3
	6%								
3	LSS	0-24	R C MFSBk	SS, SP, Fr SExP	0-9" compacted	18"	PS	—	PS
		24-42	Var. L Sap Mass	SS, NP, Fr SExP	com RC, incl.				
	0-5%	42-63	Var L Sap Mass	SS, NP, Fr SExP					.35
P50C	LSS	0-18	R CL WFSBk	SS, SP, Fr SExP	—				
2	5-10%	18-39	Var. SL Sap Mass	SS, NP, Fr SExP	com RC CL incl.	18"	PS	—	PS
		39-66	Var. SL Sap Mass	SS, NP, Fr SExP					.4
SOD		0-4	sbk scl						
4		4-22	mod sbk C	fr			com-sap		.3
		22-43	wk sbk C	fi/fr					
		43	SL Sap	fr					

DESCRIPTION	INITIAL SYSTEM	REPAIR SYSTEM
Available Space (.1945)		
System Type(s)		
Site LTAR		

OTHER FACTORS (.1946):
SITE CLASSIFICATION (.1948):
EVALUATED BY:
OTHER(S) PRESENT:

COMMENTS:

50E 0-5 sbk scl
5-20 mo sbk ^{R}C fr .3
20-40 wk sbk ^{R}cl fr c-m sap
40-60 L/SL sap

50F 0-5 gr scl
5-36 mo sbk C 24-36 c-sap .3
36-60 SL sap

50G 0-4 scl compacted plough layer
4-24 mo sbk ^{R}C 16-24" c-sap .35
24-63 sl sap w/scl bands

50H 0-8 B scl
8-26 mo sbk C fr ss sp .35
26-39 wk sbk cl fr c-m sap
39-60 L sap