ROLLANS *Soil & Environmental Services, Inc.*

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Attached is a proposed design for a PPBPS Septic System with low pressure distribution for a 4 bedroom single family residence on Lot # 28 in Autumn Brook Subdivision, Iredell County, North Carolina.

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May 22, 2008
Project #: 01-1439
Design By: Rollans Soil & 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 NC DENR, 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.
- Design precludes foundation drains.
- Septic tank riser shall be a minimum of 6" above finished grade.
- System is specified as a PPBPS installation.
- Repair is specified as a PPBPS installation.
- Backfill 4 - 6" of material (County Approved) over panels, rake trench walls, lime side-walls, install trenches 24" wide and 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.

LP PPBPS SYSTEM
FOR WASTEWATER TREATMENT

Owner/Applicant:	The Johnson Group
Address:	132 Court Street Statesville, NC 28677
Phone:	704-881-0098
County:	Iredell
Location:	AUTUMN BROOK LOT 28
Source of Wastewater Flow:	4 Bedroom Single Family Residence
Estimated Gallons Per Day Flow:	480
System Flow:	26.24

Design Specifications

Drainfield Size:	280
Loading Rate (gpd/ft.^{2}):	0.3
Depth of Gravel in Trench:	NA (PPBPS)
Gravel Size:	NA (PPBPS)
Trench Depth:	36 in.
Trench Width:	24 in.
Septic Tank Size:	1000
Pump Tank Size:	1000
Estimated Supply Line Length:	119
Supply Line Diameter:	2 in. SCH 40 PVC
Supply Line Volume:	20.71
Dosing Volume:	154.37
Supply Manifold:	N/A
Supply Manifold Length:	N/A
Supply Manifold Volume:	N/A
Recommended Float Controls:	SJE Sensor Float Control Switches as Required for Control Panel or County Approved Equivalents
Recommended Control Panel:	SJE-Rhombus Model 112 (NEMA 4x) Control Panel or County Approved Control Panel.
Pressure Head:	2 ft.
Friction Head:	2.12
Elevation Head:	14.00
Total Dynamic Head:	20.84
Threaded Union:	In Tank
Gate Valves:	1 in Tank 1 per lateral
Check Valves:	In Tank
Anti-Siphon Hole:	NA
Additional Comments:	Soil suitability was performed by Rollans Soil & Environmental Services

AUTUMN BROOK LOT 28
LP PPBPS

DESIGN FLOW (gpd):	480
SOIL APPLICATION RATE (gpd/ft.^{2}):	0.3
TOTAL AREA TRENCH BOTTOM:	840
TOTAL LATERAL LENGTH:	280
NUMBER OF FIELDS:	1
LATERAL LENGTH REQUIRED PER FIELD:	266.6666667
SUPPLY LINE LENGTH:	119
TOTAL DYNAMIC HEAD:	20.84
MANIFOLD SIZE:	N/A
DOSING VOLUME:	154.37
PUMP TANK DRAW DOWN*:	7.4
SEPTIC TANK SIZE:	1000
PUMP TANK SIZE:	1000

**Pump tank draw down based on a volume basis of 21 gallons per inch. Draw down may vary among pump tank manufacturers.*

AUTUMN BROOK LOT 28

Project #: 01-1439

LAYOUT FOR 4 BEDROOM HOME

May 22, 2008

LINE #	FLAG COLOR	BS	HI	FS	ELEVATION	FLAGGED LINE LENGTH	DESIGN LINE LENGTH
TBM		8.0			100.00		
INSTR. 1			108.00				
HOUSE CNR				10.50	97.50		
P. TANK				14.20	93.80		
1	ORANGE			1.30	106.70	41	41
2	BLUE			2.00	106.00	61	61
3	PINK			3.30	104.70	87	87
4	RED			4.40	103.60	78	78
5	***BLUE***			***5.20***	***102.80***	***76***	***70***
6	***ORANGE***			***5.90***	***102.10***	***75***	***70***
7	***PINK***			***6.80***	***101.20***	***75***	***70***
8	***RED***			***7.60***	***100.40***	***74***	***70***
					Total	**567**	**547**

	LINE LENGTH	LTAR GPD/FT2	SYSTEM TYPE	SOIL LTAR GPD/FT2	TRENCH SYSTEM	DISTRIBUTION
**** System***	***280***	***0.300***	***MOD.***	***0.300***	***PPBPS***	***LOW PRESSURE***
Repair	267	0.300	MOD.	0.300	PPBPS	LOW PRESSURE

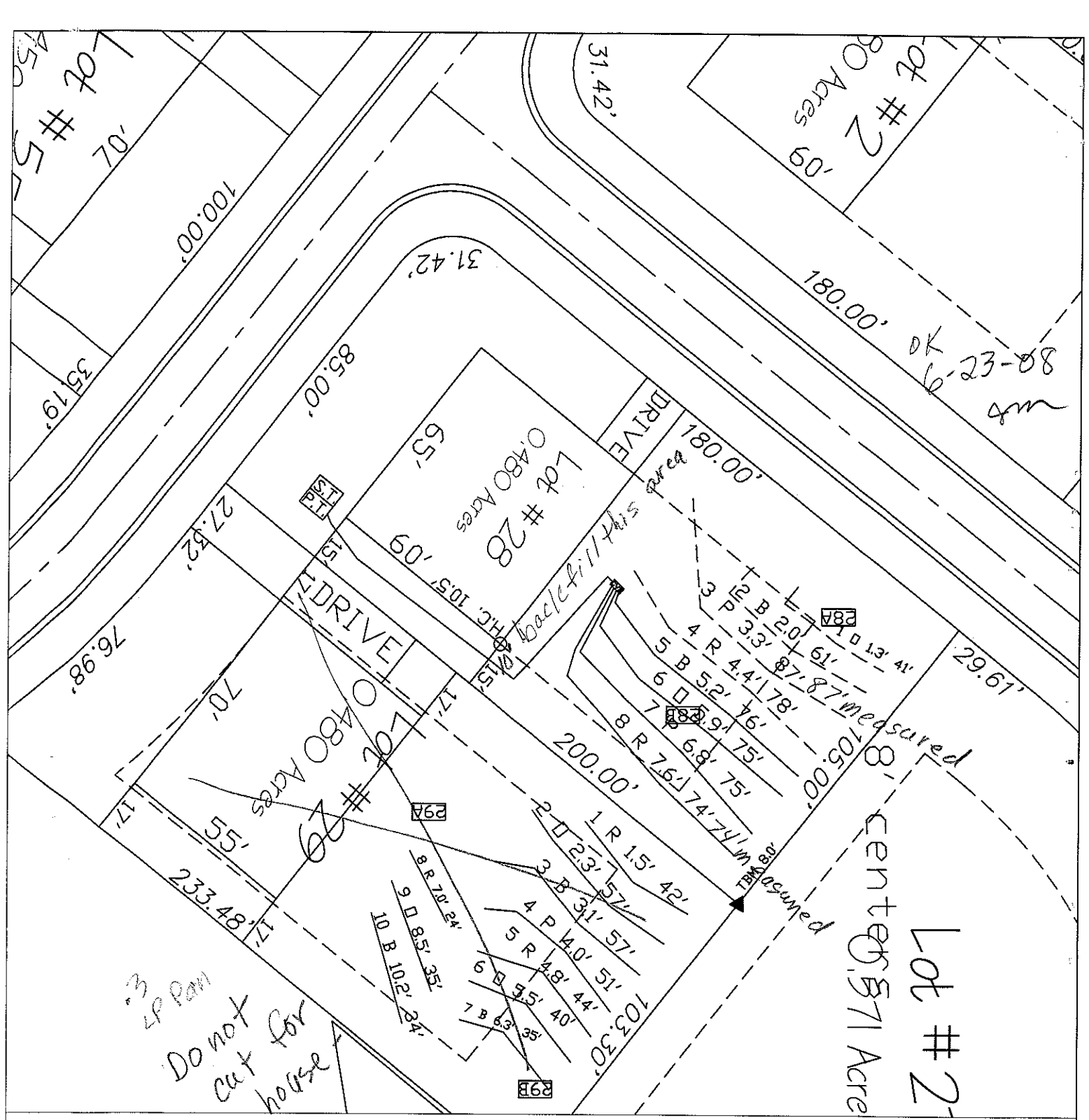
Notes:
** TBM located top of ground at EIP at corner of lot (see site plan)
**TBM is assumed to be 100'
**All measures in feet
**Nitrification lines are demonstrated on contour via colored pin flags
**BS, HI, and FS indicate rod readings

LP PPBPS TAPSHEET -AUTUMN BROOK LOT# 28

SYSTEM

Line #	Color	Elevation	Length	Hole Size	Flow/hole	Trench Area	Number of Panels
5	***BLUE***	***102.80***	***70***	0.156	**0.41**	210	16
6	***ORANGE***	***102.10***	***70***	0.156	**0.41**	210	16
7	***PINK***	***101.20***	***70***	0.156	**0.41**	210	16
8	***RED***	***100.40***	***70***	0.156	**0.41**	210	16
							64
	total	**feet =**	**280**	**gal/min =**	**26.24**		
			Des. Flow	**480**			
			Pump Run=	**5.88**			
			soil LTAR	**0.3**			
			LTAR +5%	**0.315**			
			LTAR with mod.	**0.6**			
			LTAR with mod.. + 5%	**0.63**			

.156 equals 5/32 inch hole



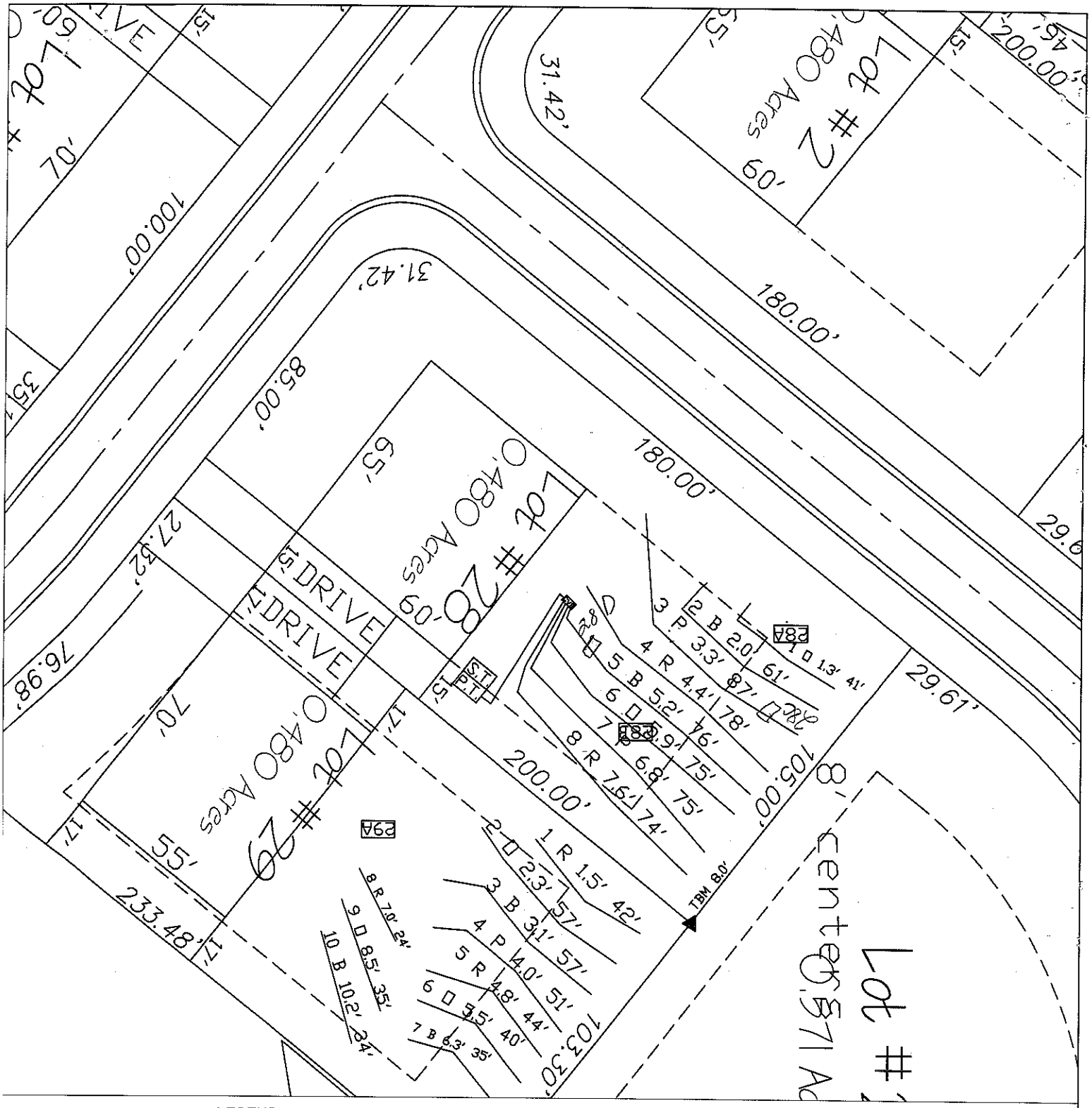
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MAP TITLE: PRELIMINARY SOIL EVALUATION

PROJECT NAME: THE JOHNSON GROUP / AUTUMN WOODS

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



LEGEND

- HOUSE
- PIT
- SEPTIC LINES
- REPAIR LINES

GRAPHIC SCALE
1" = 40'

40 0 40 80

FOR PRELIMINARY PLANNING PURPOSES ONLY. ALL LOTS WILL REQUIRE FINAL APPROVAL BY THE COUNTY HEALTH DEPARTMENT ON A LOT BY LOT BASIS. THIS MAP SHOULD BY USED AS A GENERAL GUIDE, SOME ADJUSTMENTS WILL BE NECESSARY IN THE FIELD DUE TO SOIL VARIABILITY AND COMPLEX TOPOGRAPHIC FEATURES.
THIS MAP ONLY REFLECTS EXISTING SOIL SUITABILITY FOR ON-SITE SEPTIC TANK SYSTEMS.

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CALCULATIONS

Location AUTUMN BROOK

Project Number 01-1439

Lot No: Lot 28

No. of Bedrooms	4	
Design Flow	480	$^{gal}/_{day}$
LTAR	0.300	$^{gal}/_{ft^2\,day}$
PPBPS? (YES OR NO)	YES	
Supply Line Length	119	ft.
Supply Line Volume	20.706	gal.
Required Feet of Line	266.6667	ft.
Amount of Line from Layout	280	ft.
Gallons per Minute	26.24	$^{gal}/_{min}$
Required Septic Tank Capacity	1000	gal.
Minimum Standard Tank Size	1000	
Panel Volume	3.6	gal.
# of Panels	64	
Dosing Volume	154.37	gal.

Note: Dosing Volume based on 67% of # of panels times 3.6 gal/panel

Tank Draw Down	7.4	*Generic Draw Down of 21 gal.per in.*
Pump Run Time	5.88	minutes
Elevation Head	14.00	ft.
Pressure Head	2	ft.
Friction Factor	1.78	ft./100 ft. *(From the interpolater.)*
Friction Head	2.12	ft.
Total Dynamic Head (+15%)	20.84	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
ADDRESS: 132 Court St. Statesville NC 28677
PROPOSED FACILITY: 4 BRM
PROPOSED DESIGN FLOW (.1949): 480 gpd
LOCATION OF SITE: Autumn Brook Subdivision Off Wallace Springs Rd) Lot 28
WATER SUPPLY: ☐ Private ☑ Public ☐ Well ☐ Spring ☐ Other
EVALUATION METHOD: ☐ Auger Boring ☑ Pit ☐ Cut

APPLICATION DATE 6/08
DATE EVALUATED: 4/08
PROPERTY SIZE: 0.480 AC
PROPERTY RECORDED: No
TYPE OF WASTEWATER: ☑ Sewage ☐ Industrial Process ☐ Mixed

PROFILE #	.1940 LANDSCAPE POSITION/ SLOPE %	HORIZON DEPTH (IN.)	SOIL MORPHOLOGY (.1941)		OTHER PROFILE FACTORS				PROFILE CLASS & LTAR
			.1941 STRUCTURE/ TEXTURE	.1941 CONSISTENCE/ MINERALOGY	.1942 SOIL WETNESS/ COLOR	.1943 SOIL DEPTH	.1956 SAPRO CLASS	.1944 RESTR HORIZ	
P28A 4	LSS 5-10%	0-24	R C MFSBK	Fr, SS, SP SExP	—	57"	—	—	PS .3
		24-57	R CL WSBK	Fr, SS, SP SExP	com. sap				
P28B 2	LSS 5-10%	0-19	R C MFSBK	Fr, SS, SP SExP	—	54"	—	—	PS .3
		19-54	R CL WFSBK	Fr, SS, SP SExP	com. sap				
28 C 3		0-18	RB C MOSBK				C-sap		.3
		18-54	R WK/MO SBK						
		54-72	L Sap						
28 D 4		0-44	MO SBK RC				f-Sap		.3
		44-72	WK SBK RCl						

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: