ROLLANS *Soil & Environmental Services, Inc.*

470 North Broad St., Suite D, Mooresville, NC 28115 Phone: (704) 658-1723 Fax: (704) 658-1724

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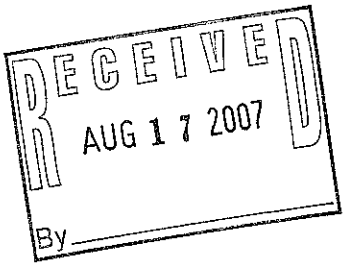
Brady Freeman, Registered Sanitarian
Mobile: (704) 746-6497
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Attached is a proposed design for an Accepted (25% reduction) Septic System with Gravity distribution for a 4 bedroom single family residence on Lot #19 Autumn Grove Subdivision, Iredell County, North Carolina.

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August 10, 2007
Project #: 01-1043
Design By: Rollans Soil and Environmental Services



FOR WASTEWATER TREATMENT

Owner:	E&J DEVELOPMENT
Address:	227 Hideaway Lane Mooresville, NC 28117
Phone:	704-201-6465
County:	Iredell
Location:	AUTUMN GROVE LOT #19
Source of Wastewater Flow:	4 Bedroom Single Family Residence
Estimated Gallons Per Day Flow:	480
System Flow:	N/A

Design Specifications

Drainfield Size:	420
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:	5
Supply Line Diameter:	3 in. SCH 40 PVC
Supply Line Volume:	0.87
Dosing Volume:	n/a
Supply Manifold:	drop box
Supply Manifold Length:	n/a
Supply Manifold Volume:	N/A
Recommended Float Controls:	n/a n/a
Recommended Control Panel:	n/a n/a
Pressure Head:	N/A
Friction Head:	N/A
Elevation Head:	N/A
Total Dynamic Head:	N/A
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 GROVE LOT #19

DESIGN FLOW (gpd):	480
SOIL APPLICATION RATE (gpd/ft.^{2}):	0.3
TOTAL AREA TRENCH BOTTOM:	1260
TOTAL LATERAL LENGTH:	420
NUMBER OF FIELDS:	1
LATERAL LENGTH REQUIRED PER FIELD:	400
SUPPLY LINE LENGTH:	5
TOTAL DYNAMIC HEAD:	N/A
MANIFOLD SIZE:	N/A
DOSING VOLUME:	N/A
PUMP TANK DRAW DOWN*:	N/A
SEPTIC TANK SIZE:	1000
PUMP TANK SIZE:	N/A

AUTUMN GROVE LOT #19

Project #: 01-1043

LAYOUT FOR 4 BEDROOM HOME

August 10, 2007

LINE #	FLAG COLOR	BS	HI	FS	ELEVATION	FLAGGED LINE LENGTH	DESIGN LINE LENGTH
TBM		N/A			100.00		
INSTR. 1			N/A				
HOUSE CNR				N/A	N/A		
P. TANK				N/A	N/A		
1	PINK			N/A	N/A	61	61
2	RED			N/A	N/A	100	100
3	BLUE			N/A	N/A	100	100
4	ORANGE			N/A	N/A	100	100
5	***PINK***			***N/A***	***N/A***	***130***	***130***
6	***RED***			***N/A***	***N/A***	***120***	***120***
7	***BLUE***			***N/A***	***N/A***	***95***	***95***
8	***ORANGE***			***N/A***	***N/A***	***75***	***75***
					Total	**781**	**781**

	LINE LENGTH	LTAR GPD/FT^2	SYSTEM TYPE	SOIL LTAR GPD/FT^2	TRENCH SYSTEM	DISTRIBUTION
****System***	***420***	***0.300***	***ACCEPT.***	***0.300***	***25% RED.***	**GRAVITY**
Repair	361	0.300	*MOD.*	0.300	PPBPS	**DISTRIBUTION** LOW PRESSURE

Notes:

** TBM located on angle point 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

CALCULATIONS

Location Autumn Grove

Project Number 01-1043

Lot No: Lot 19

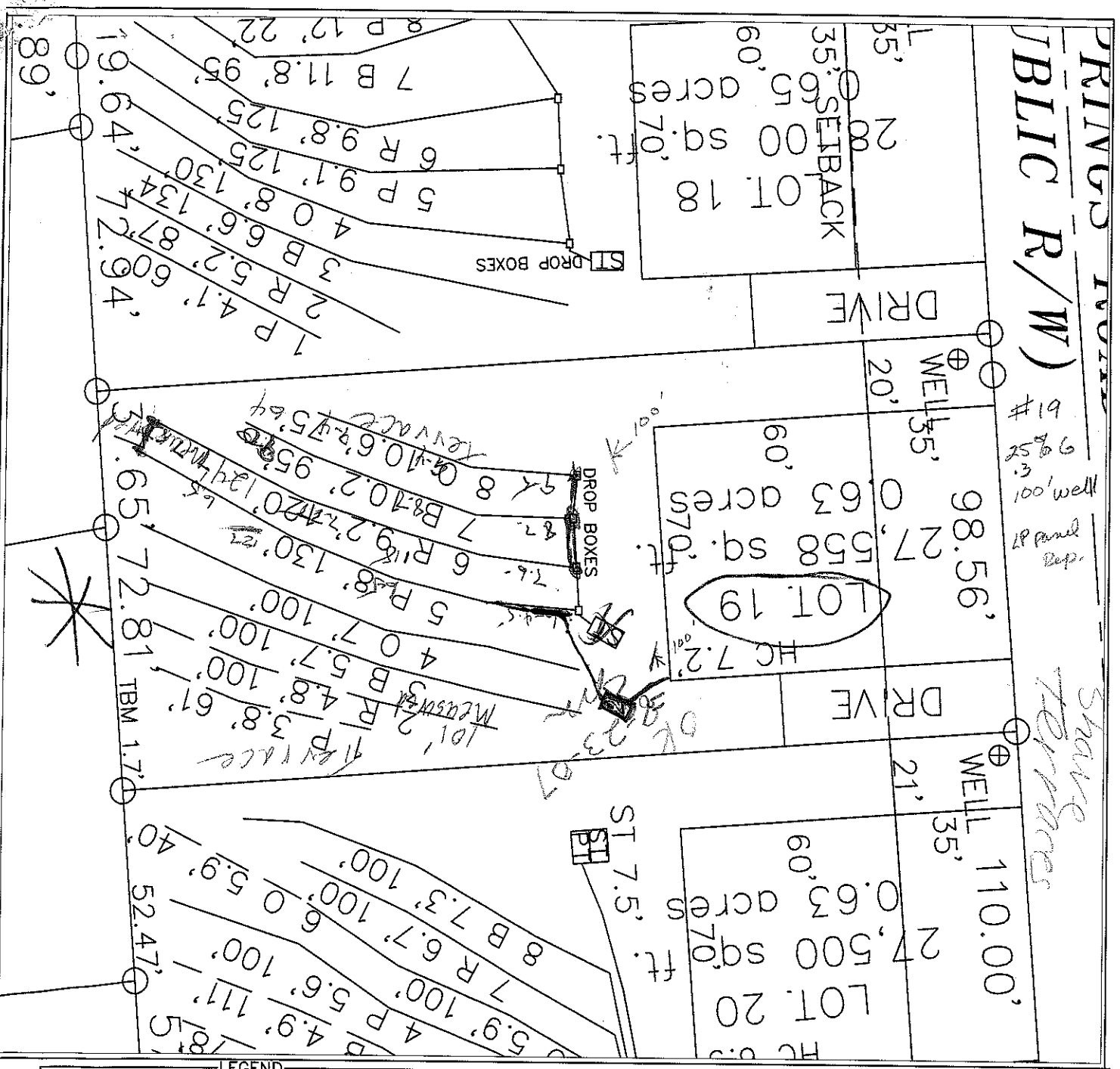
No. of Bedrooms	4	
Design Flow	480	$^{gal}/_{day}$
LTAR	0.3	$^{gpd/ft^2}$
25% RED.? (YES OR NO)	YES	
Supply Line Length	5	ft.
Supply Line Volume	0.87	gal.
Required Feet of Line	400	ft.
Amount of Line from Layout	420	ft.
Gallons per Minute	N/A	$^{gal}/_{min}$
Required Septic Tank Capacity	1000	gal.
Minimum Standard Tank Size	1000	
Lateral Line Volume	274.26	gal.
Dosing Volume	N/A	gal.

Note: Dosing Volume based on70% of lateral line volume

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



LEGEND

- House Box.
- System lines.
- Repair lines.
- House Corner Shot.
- T.B.M.

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.

PLEASE REFER TO ATTACHED SOIL REPORT FOR ADDITIONAL SITE SPECIFIC INFORMATION

ROLLANS SOIL & ENVIRONMENTAL SERVICES
2120 GRAHAM ROAD
MOUNT ULLA, NC 28125
PHONE/FAX: (704) 278 - 0989
ASHLEY ROLLANS, NC LICENSED SOIL SCIENTIST
MOBILE (704) 746 - 5046
EMAIL: ROLLANSFORTC@AOL.COM

MAP TITLE: SITE PLAN & DRAINFIELD AREAS

PROJECT NAME: Orchard Farms LLC/ AUTUMN GROVE

LOCATION/DATE: FERNHILL, BULLFINCH RD IREDELL COUNTY, NORTH CAROLINA FEBRUARY 2007

JOB # : 01-1043
FILE: C:\JOBS\01-1043
PROJECT MGR.: C.B.F.
FIELD WORK: C.B.F. & A.L.P.
DRAWN BY: C.B.F.

SOIL/SITE EVALUATION

(Continuation Sheet)

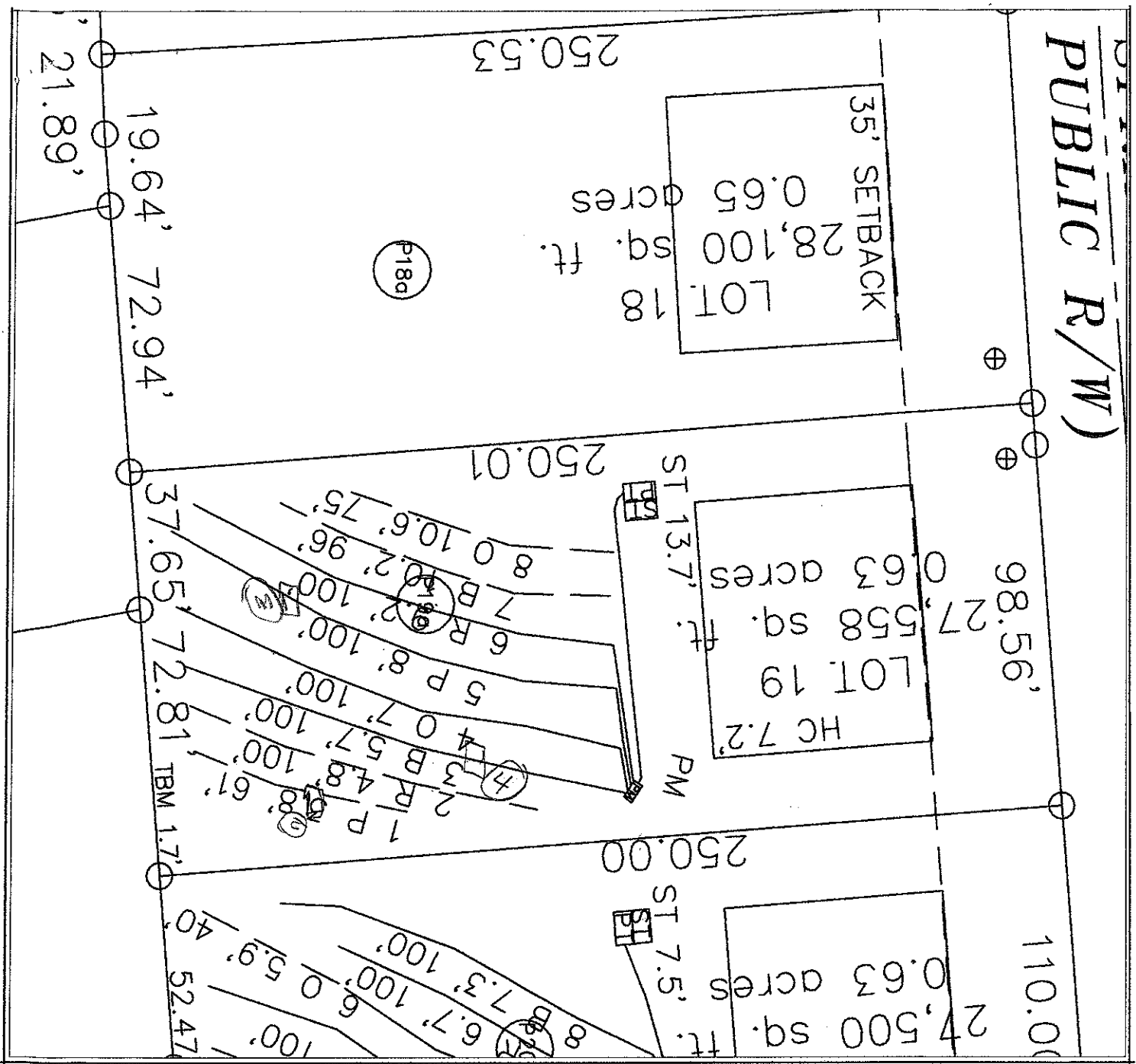
Sheet ___ of ___

DEPARTMENT OF ENVIRONMENT
AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL HEALTH

PROPERTY ID #: #19
DATE OF EVALUATION:
COUNTY: Autumn Grove

PROFILE #	.1940 LANDSCAPE POSITION/ SLOPE %	HORIZON DEPTH (IN.)	SOIL MORPHOLOGY (.1941) .1941 STRUCTURE/ TEXTURE	SOIL MORPHOLOGY (.1941) .1941 CONSISTENCE/ MINERALOGY	OTHER PROFILE FACTORS .1942 SOIL WETNESS/ COLOR	.1943 SOIL DEPTH	.1956 SAPRO CLASS	.1944 RESTR HORIZ	PROFILE CLASS & LTAR
P19A	4/5-10 11%0	0-28	Rcmsbk/Abk	Frsssp SExP					ps
		28-52	Rcl wfsbk	Frsssp SExP	+f. sap.	52	—	—	0.3
2		0-6	gr bpwl spl	fr					
		6-16	MSBK rel	frssspsexp			38"+ ps		.3
		16-38	WKSBK cl+sp	frssspl					
		38-57	Massive LS+fg	frsssp	few mod c/cl				
3		0-4	mSBK rel dg	frssp					
		4-17	MSBK rel c	frsssp					
		17-31	WKSBK cl	frsssp	few sp mod				.3
		31-52	WKSBK cl	frsssp	common many sp mod				
		52-67	Massive SL sp	fr					
4		0-4	WKSBKCRcl	frssspp					
		4-19	modSBKRC	frssspse					
		19-60	WKcSBKRcl	frsssp			f-sap		.3

COMMENTS: _____



LEGEND

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