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Attached is a proposed design for an Accepted (25% reduction) Septic System with Pressure Manifold distribution for a 4 bedroom single family residence on Lot #2 Highland Ridge Subdivision, Iredell County, North Carolina.

Contents: **Page**

Information for the Installer---------- 1

Design Information
- Design Specifications---------- 2-3
- Layout Specifications---------- 4
- System Tapsheet---------- 5
- Pressure Manifold Diagram---------- 6

Site Plan/System Plan---------- 7

Calculations---------- 8

Profile Descriptions---------- 9

April 20, 2007
Project #: 01-1329
Design By: Rollans Soil and Environmental Services

PRESSURE MANIFOLD SYSTEM
FOR WASTEWATER TREATMENT

Owner:	Orchard Farms LLC
Address:	227 Hideaway Lane Mooresville, NC 28117
Phone:	704-201-6465
County:	Iredell
Location:	HIGHLAND RIDGE LOT #2
Source of Wastewater Flow:	4 Bedroom Single Family Residence
Estimated Gallons Per Day Flow:	480
System Flow:	42.66

Design Specifications

Drainfield Size:	480
Loading Rate (gpd/ft.^{2}):	0.25
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:	1000
Estimated Supply Line Length:	241
Supply Line Diameter:	2 in. SCH 40 PVC
Supply Line Volume:	41.93
Dosing Volume:	219.41
Supply Manifold:	4 in. SCH 80 PVC
Supply Manifold Length:	4 ft. (minimum)
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:	9.09
Elevation Head:	7.90
Total Dynamic Head:	21.83
Threaded Union:	In Tank
Gate Valves:	1 in Tank 1 at Pressure Manifold
Check Valves:	In Tank
Anti-Siphon Hole:	NA
Additional Comments:	Soil suitability was performed by Rollans Soil & Environmental Services.

HIGHLAND RIDGE LOT #2
PRESSURE MANIFOLD DESIGN

DESIGN FLOW (gpd):	480
SOIL APPLICATION RATE (gpd/ft.^{2}):	0.25
TOTAL AREA TRENCH BOTTOM:	1440
TOTAL LATERAL LENGTH:	480
NUMBER OF FIELDS:	1
LATERAL LENGTH REQUIRED PER FIELD:	480
SUPPLY LINE LENGTH:	241
TOTAL DYNAMIC HEAD:	21.83
MANIFOLD SIZE:	4 in.SCH 80 PVC
DOSING VOLUME:	219.41
PUMP TANK DRAW DOWN*:	10.4
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.*

HIGHLAND RIDGE LOT #2

Project #: 01-1329

LAYOUT FOR 4 BEDROOM HOME — April 20, 2007

LINE #	FLAG COLOR	BS	HI	FS	ELEVATION	FLAGGED LINE LENGTH	DESIGN LINE LENGTH
TBM		4.3			100.00		
INSTR. 1			104.30				
HOUSE CNR				6.10	98.20		
P. TANK				6.20	98.10		
1	*PINK*			*3.30*	*101.00*	*80*	*80*
2	*PINK*			*3.30*	*101.00*	*80*	*80*
3	*DARK PINK*			*3.30*	*101.00*	*80*	*80*
4	*DARK PINK*			*3.30*	*101.00*	*80*	*80*
5	ORANGE			3.30	101.00	54	54
6	ORANGE			2.30	102.00	83	83
7	*BLUE*			*3.50*	*100.80*	*80*	*80*
8	*BLUE*			*3.50*	*100.80*	*80*	*80*
9	ORANGE			3.10	101.20	100	100
10	PINK			4.70	99.60	71	71
11	DARK PINK			5.10	99.20	50	50
					Total	**838**	**838**

	LINE LENGTH	LTAR GPD/FT^2	SYSTEM TYPE	SOIL LTAR GPD/FT^2	TRENCH SYSTEM	DISTRIBUTION
** System*	*480*	*0.250*	*ACCEPT.*	*0.250*	*25% RED.*	**PRESSURE**
Repair	358	0.250	*MOD.*	0.250	PPBPS	**MANIFOLD** LOW PRESSURE

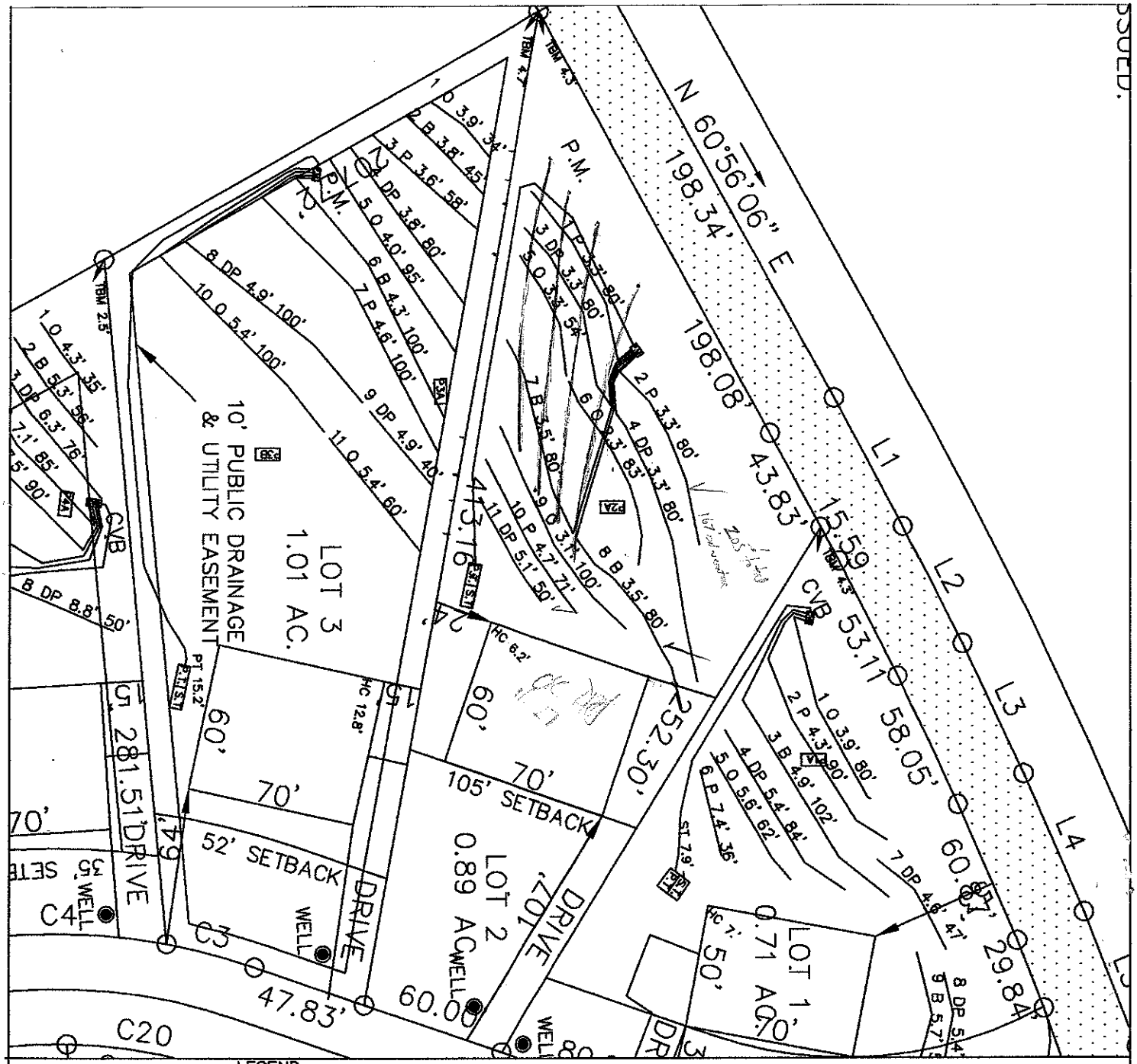
Notes:

** 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

PRESSURE MANIFOLD TAPSHEET - HIGHLAND RIDGE LOT#2

SYSTEM

Line #	Color	Elevation	Length	Hole Size	Flow/Tap	Trench Area
1	*PINK*	101	80	SCH 40 1/2	7.11	240
2	*PINK*	101	80	SCH 40 1/2	7.11	240
3	*DARK PINK*	101	80	SCH 40 1/2	7.11	240
4	*DARK PINK*	101	80	SCH 40 1/2	7.11	240
7	*BLUE*	100.8	80	SCH 40 1/2	7.11	240
8	*BLUE*	100.8	80	SCH 40 1/2	7.11	240
	total	**feet =**	**480**	**gal/min =**	**42.66**	
			Des. Flow	**480**		
			Pump Run=	**5.14**		
			soil LTAR	**0.25**		
			LTAR +5%	**0.2625**		
			LTAR with ACCEPTED	**0.333333333**		
			LTAR with ACCEPTED + 5%	**0.35**		



LEGEND

House Box.

System lines.

Repair lines.

House Corner Shot.

T.B.M.

GRAPHIC SCALE
1" = 60'

60 0 60 120

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: ORCHARDS OF LLC / HIGHLAND RIDGE

LOCATION/DATE: PERTH ROAD, IREDELL COUNTY, NORTH CAROLINA, FEBRUARY 2007

JOB # : 01-1329
FILE: C:\JOBS\01-1329
PROJECT MGR.: C.B.F.
FIELD WORK: C.B.F. & A.L.P.
DRAWN BY: C.B.F.

CALCULATIONS

Location Highland Ridge

Project Number 01-1329

Lot No: Lot 2

No. of Bedrooms	4	
Design Flow	480	$^{gal}/_{day}$
LTAR	0.25	$^{gpd/ft^2}$
25% RED.? (YES OR NO)	YES	
Supply Line Length	241	ft.
Supply Line Volume	41.934	gal.
Required Feet of Line	480	ft.
Amount of Line from Layout	480	ft.
Gallons per Minute	42.66	$^{gal}/_{min}$
Required Septic Tank Capacity	1000	gal.
Minimum Standard Tank Size	1000	
Lateral Line Volume	313.44	gal.
Dosing Volume	219.41	gal.

Note: Dosing Volume based on70% of lateral line volume

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

Tank Draw Down	10.4	*Generic Draw Down of 21 gal.per in.*
Pump Run Time	5.14	minutes
Elevation Head	7.9	ft.
Pressure Head	2	ft.
Friction Factor	3.77	ft./100 ft. *(From the interpolater.)*
Friction Head	9.09	ft.
Total Dynamic Head (+15%)	21.83	ft.

SOIL/SITE EVALUATION

(Continuation Sheet)

Sheet ___ of ___

DEPARTMENT OF ENVIRONMENT
AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL HEALTH

6 + 2
High Land Fish

PROPERTY ID #: ___
DATE OF EVALUATION: 1/07
COUNTY: Iredell

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
B2	LSS 0-5%	0-6	Bsic wk	fr sss sp sap	—	48	—	—	.3
		6-24	Rc mpsbk	fri sssp sap					
		24-48	Rcl wsbk	fri sssp sap					
2		0-4	wk gr L	fr sss sp					.3
		4-32	m f sbk/abk c	fr sss sap					
		32-60	wk mabk/sbk c + sap	fr sss sp					
3		0-4	wk gr L	fr ss sp	few yel/br				.275
		4-13	wk sbk cl	fr ss sp					
		13-28	m f-m abk c	fr ss sp	few sap				>28"
		28-60	w sbk cl + sap	fr ss sp					.3
4		0-2	gr scl						>28
		2-28	m f abk R c	fr ss sp	common yel/br.				.3
		28-53	w sbk R cl	fr ss/sp	few sap				<28
									.225
6		0-7	gr scl	fr ss sp					
		7-40	m f abk R c	fr ss sp	com yel/br	little water			.25
		40-58	w sbk VR cl + sap	fr ss sp					

COMMENTS: ___

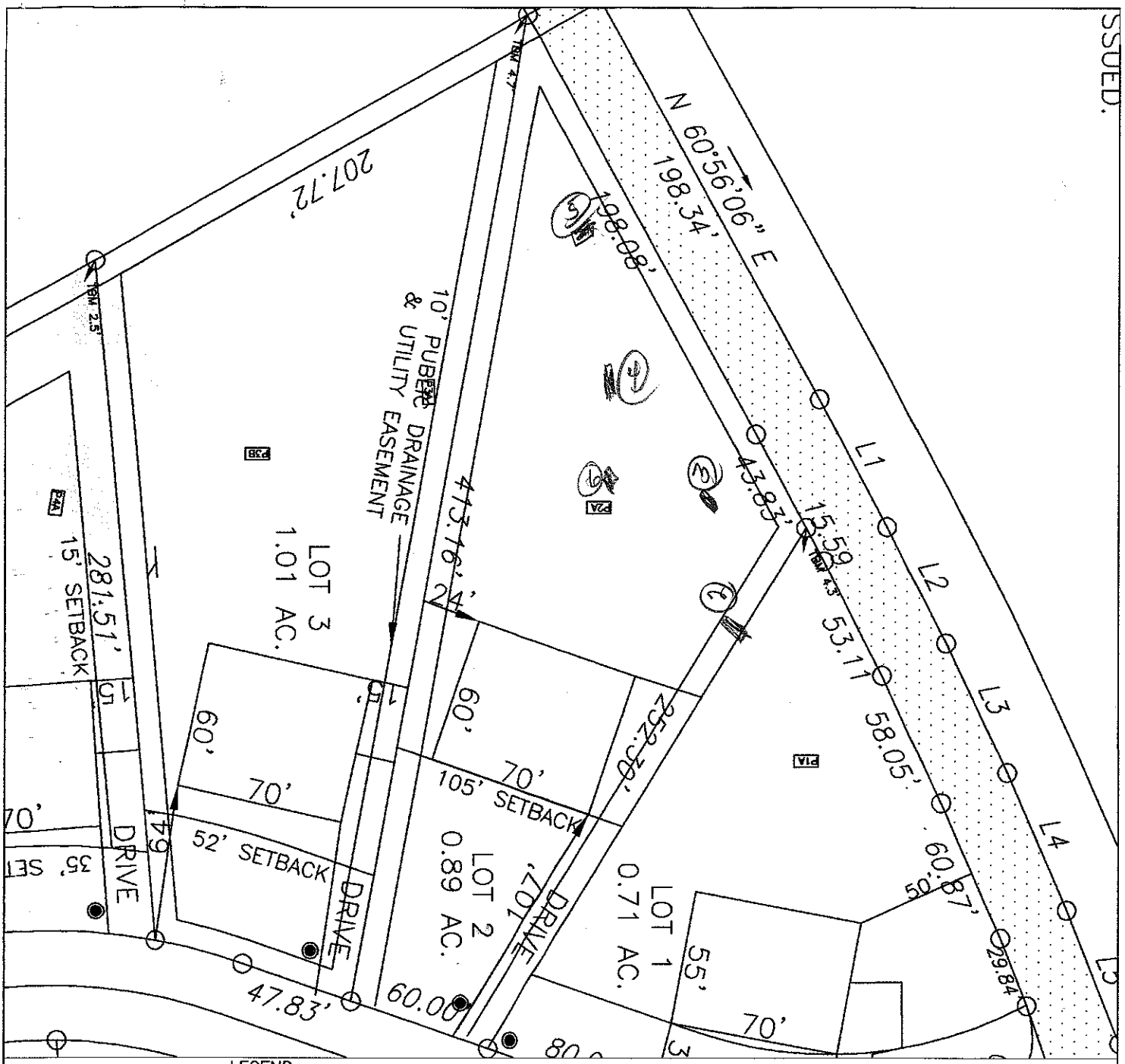
⑥ 0-2 w gr ^{B}L fr ss sp

2-21 mf-mabk ^{R}C fr ss/sp com. yel/br

21-60 w sbk cl fr ss/sp com. sap

.3 @ 36"

≤ 21 .25



LEGEND

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

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