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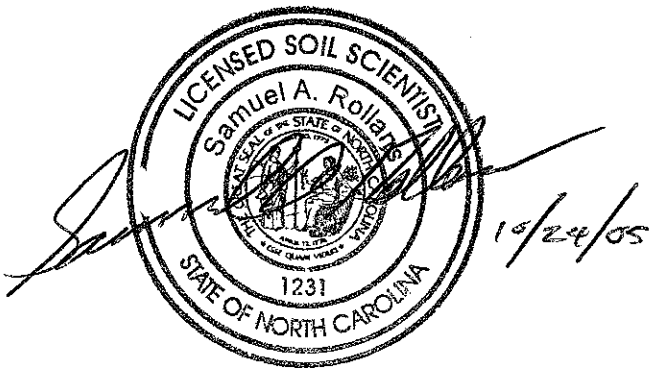
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Attached is a proposed design for an Accepted (25% reduction) Septic System with Pressure Manifold distribution for a 4 bedroom single family residence on Lot #4 Lakewood Crossing Subdivision, Iredell County, North Carolina.

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September 6, 2005
Project No. 01-1089
Design By: Rollans Soil and Environmental Services



PRESSURE MANIFOLD SYSTEM
FOR WASTEWATER TREATMENT

Owner: Nation Land Company LLC

Address: 4330 Sterilite Street SE
Massillion, OH 44646
Phone: 330-832-4091
County: Iredell
Location: Lakewood Crossing Subdivision Lot #4

Source of Wastewater Flow: 4 Bedroom Single Family Residence
Estimated Daily Wastewater Production: 480 gpd
System Flow: 28.44

Design Specifications

Drainfield Size: 400
Loading Rate: 0.3 gpd/ft.^{2}
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: 165
Supply Line Diameter: 2 in. SCH 40 PVC
Supply Line Volume: 28.71
Dosing Volume: 182.84
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: 2.94
Elevation Head: 26.60
Total Dynamic Head: 36.27

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.

LAKEWOOD CROSSING SUBDIVISION LOT 4
PRESSURE MANIFOLD DESIGN

DESIGN FLOW:	480	
SOIL APPLICATION RATE:	0.3 gpd/ft.^{2}	
TOTAL AREA TRENCH BOTTOM:	1200	
TOTAL LATERAL LENGTH:	400	
NUMBER OF FIELDS:	1	
LATERAL LENGTH REQUIRED PER FIELD:	400	
SUPPLY LINE LENGTH:	165	
TOTAL DYNAMIC HEAD:	36.27	
MANIFOLD SIZE:	4 in.SCH 80 PVC	
DOSING VOLUME:	182.84	
PUMP TANK DRAW DOWN*:	8.7	
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.*

LAKEWOOD CROSSING LOT #4

Project #: 01-1089

LAYOUT FOR 4 BEDROOM HOME

September 6, 2005

LINE #	FLAG COLOR	BS	HI	FS	ELEVATION	FLAGGED LINE LENGTH	DESIGN LINE LENGTH
TBM		1.6			100.00		
TANK		23.7	76.3				
HOUSE		16.0	84.0				
INSTR. 1			101.60				
1	RED			0.30	101.30	97	97
2	***ORANGE***			***2.20***	***99.40***	***112***	***100***
3	***BLUE***			***3.00***	***98.60***	***112***	***100***
4	***PINK***			***5.70***	***95.90***	***117***	***100***
5	***RED***			***6.70***	***94.90***	***113***	***100***
6	ORANGE			8.00	93.60	70	70
7	BLUE			8.80	92.80	70	70
8	PINK			10.70	90.90	43	43
					Total	**734**	**680**

	LINE LENGTH	LTAR GPD/FT²	SYSTEM TYPE	SOIL LTAR GPD/FT²	TRENCH SYSTEM	DISTRIBUTION
* *System*	*400*	*0.30*	*ACCEPT.*	*0.30*	*25% RED.*	**PRESSURE**
Repair	280	0.30	*MOD.*	0.30	PPBPS	**MANIFOLD** LOW PRESSURE

Notes:

** TBM located on property corner of lot 3/lot 4 at road (see site plan)

**TBM is assumed to be 100'

**All measures in feet

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

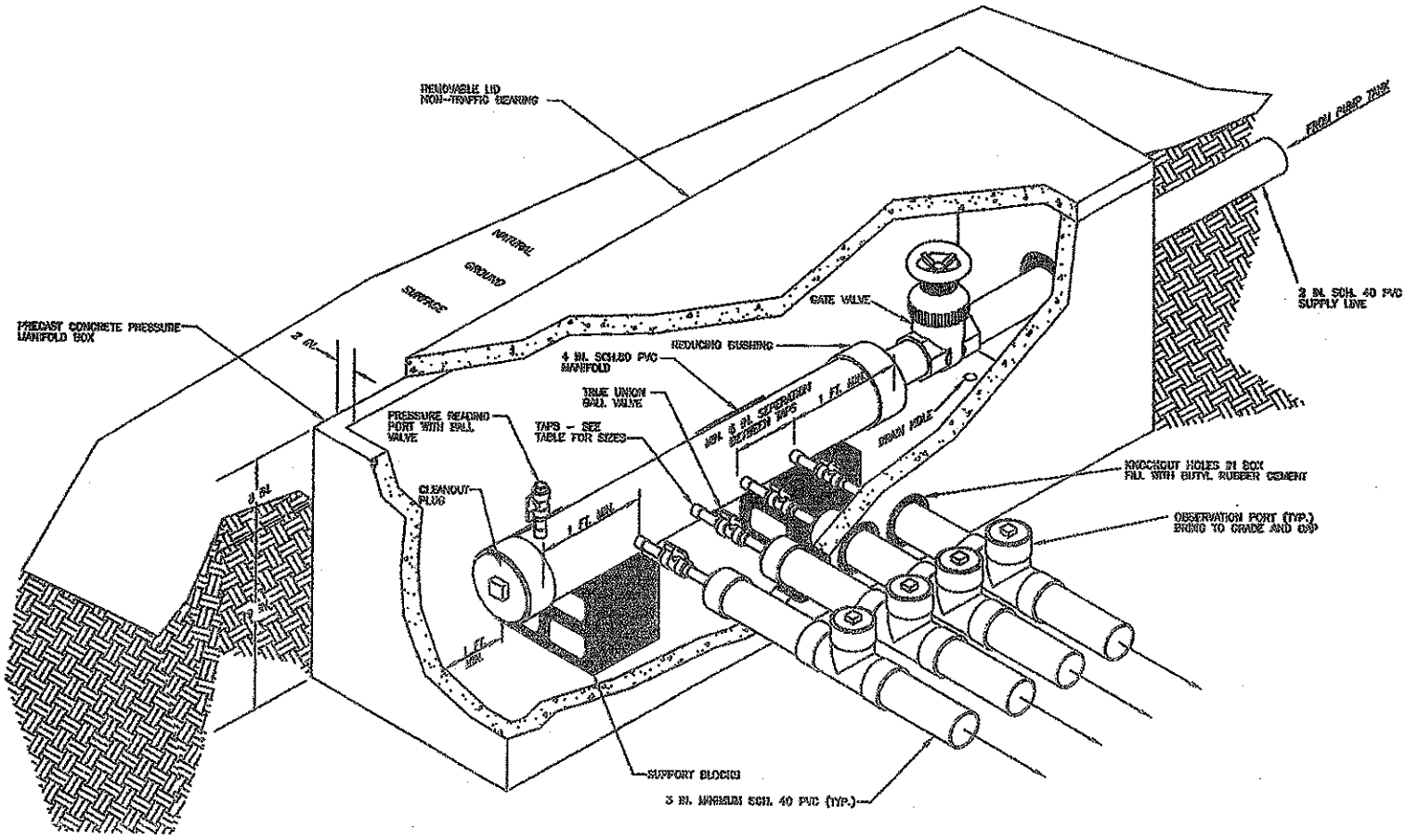
**BS, HI, and FS indicate rod readings

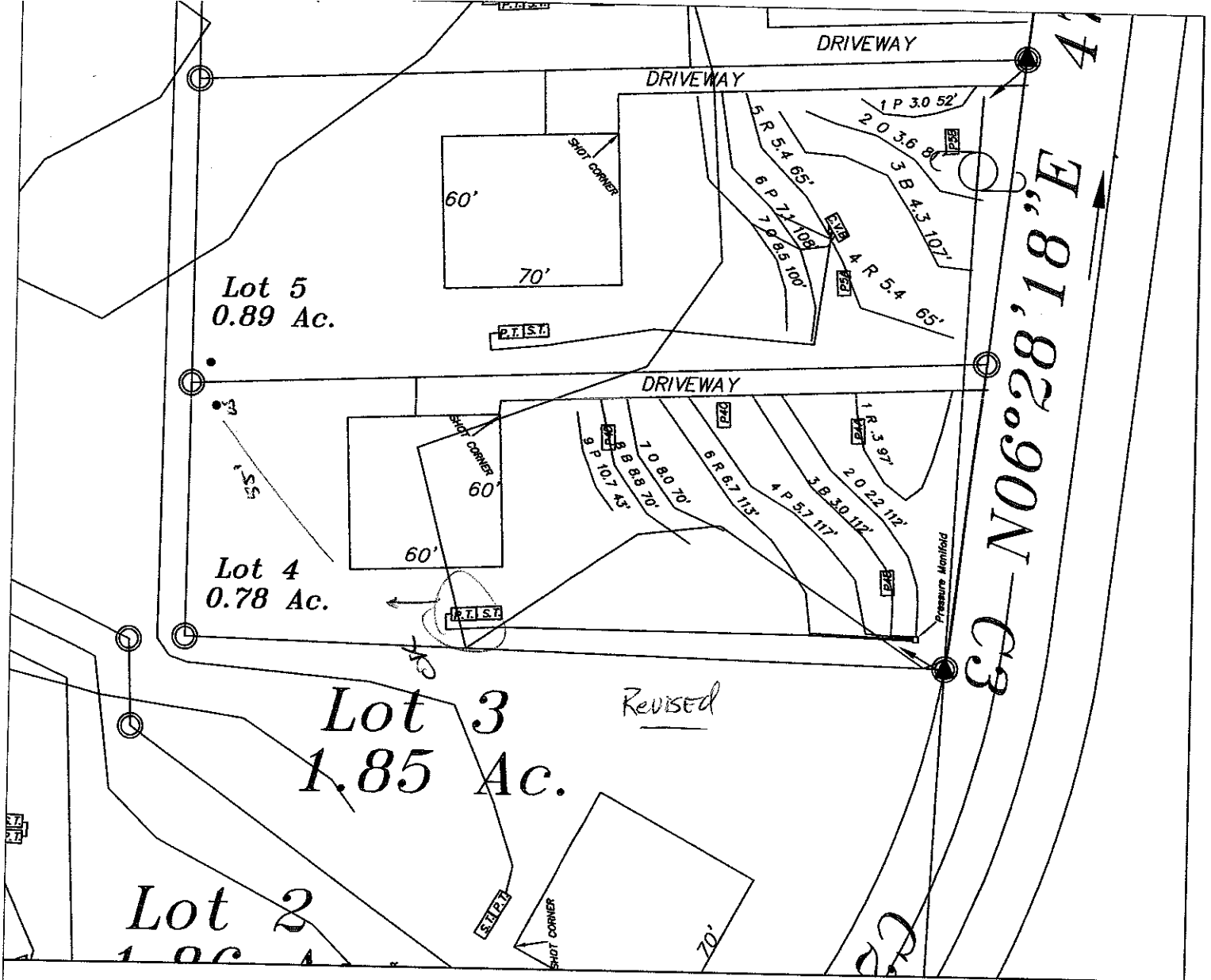
PRESSURE MANIFOLD TAPSHEET - LAKEWOOD CROSSING LOT#4

SYSTEM

Line #	Color	Elevation	Length	Hole Size	Flow/Tap	gpd	Trench Area
2	ORANGE	99.4	**100**	SCH 40 1/2	**7.11**	45.72	300
3	BLUE	98.6	**100**	SCH 40 1/2	**7.11**	45.72	300
4	PINK	95.9	**100**	SCH 40 1/2	**7.11**	45.72	300
5	RED	94.9	**100**	SCH 40 1/2	**7.11**	45.72	300
	total	**feet =**	**400**	**gal/min =**	**28.44**		
			Des. Flow	**480**			
			Pump Run=	**6.43**			
			soil LTAR	**0.3**			
			LTAR +5%	**0.315**			
			LTAR with ACCEPTED	**0.4**			
			LTAR with ACCEPTED + 5%	**0.42**			

TYPICAL SCHEMATIC
OF PRESSURE MANIFOLD





LEGEND

- Areas contain soils with 24 inches or more of useable material and have potential for conventional, modified conventional and low-pressure pipe (lpp) septic systems.
- Unsuitable areas.
- System lines.
- Repair lines.
- Temporary Bench Mark (TBM)
- Well Location.

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

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MOBILE: (704) 746-5046
EMAIL: ROLLANSPORTC@AOL.COM

MAP TITLE: SITE PLAN & DRAINFIELD AREAS

PROJECT NAME: RIDGELINE DEVELOPMENT CORP. / ANNISTON PHASE II

LOCATION/DATE: SHEARER CHAPEL ROAD IREDELL COUNTY, NORTH CAROLINA AUGUST 2005

JOB # : 01-1005
FILE: C:\JOBS\01-1005
PROJECT MGR.: S.A.R.
FIELD WORK: S.A.R.
DRAWN BY: S.A.R.

CALCULATIONS

Location LAKEWOOD CROSSING SUBDIVISION

Project Number 01-1089

Lot No: Lot 4

No. of Bedrooms	4
Design Flow	480 $^{gal}/_{day}$
LTAR	0.3 $^{gal}/_{ft^2\ day}$
25% RED.? (YES OR NO)	YES
Supply Line Length	165 ft.
Supply Line Volume	28.71 gal.
Required Feet of Line	400 ft.
Amount of Line from Layout	400 ft.
Gallons per Minute	28.44 $^{gal}/_{min}$
Required Septic Tank Capacity	1000 gal.
Minimum Standard Tank Size	1000
Lateral Line Volume	261.2 gal.
Dosing Volume	182.84 gal.

Note: Dosing Volume based on70% of lateral line volume

Tank Draw Down	8.7 *Generic Draw Down of 21 gal.per in.*
Pump Run Time	6.43 minutes
Elevation Head	26.6 ft.
Pressure Head	2 ft.
Friction Factor	1.78 ft./100 ft. *(From the interpolater.)*
Friction Head	2.94 ft.
Total Dynamic Head (+15%)	36.27 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