ROLLANS *Soil & Environmental Services, PA.*

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Ashley Rollans, NC Licensed Soil Scientist
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Attached is a proposed design for an 25% Reduction Septic System with gravity distribution for a 3 bedroom single family residence at 146 Starboard Lane (PIN#: 3782843877), Iredell County, North Carolina.

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Site Plan/System Plan----------SUBMITTED

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Septic Application----------SUBMITTED

Authorization Form----------SUBMITTED

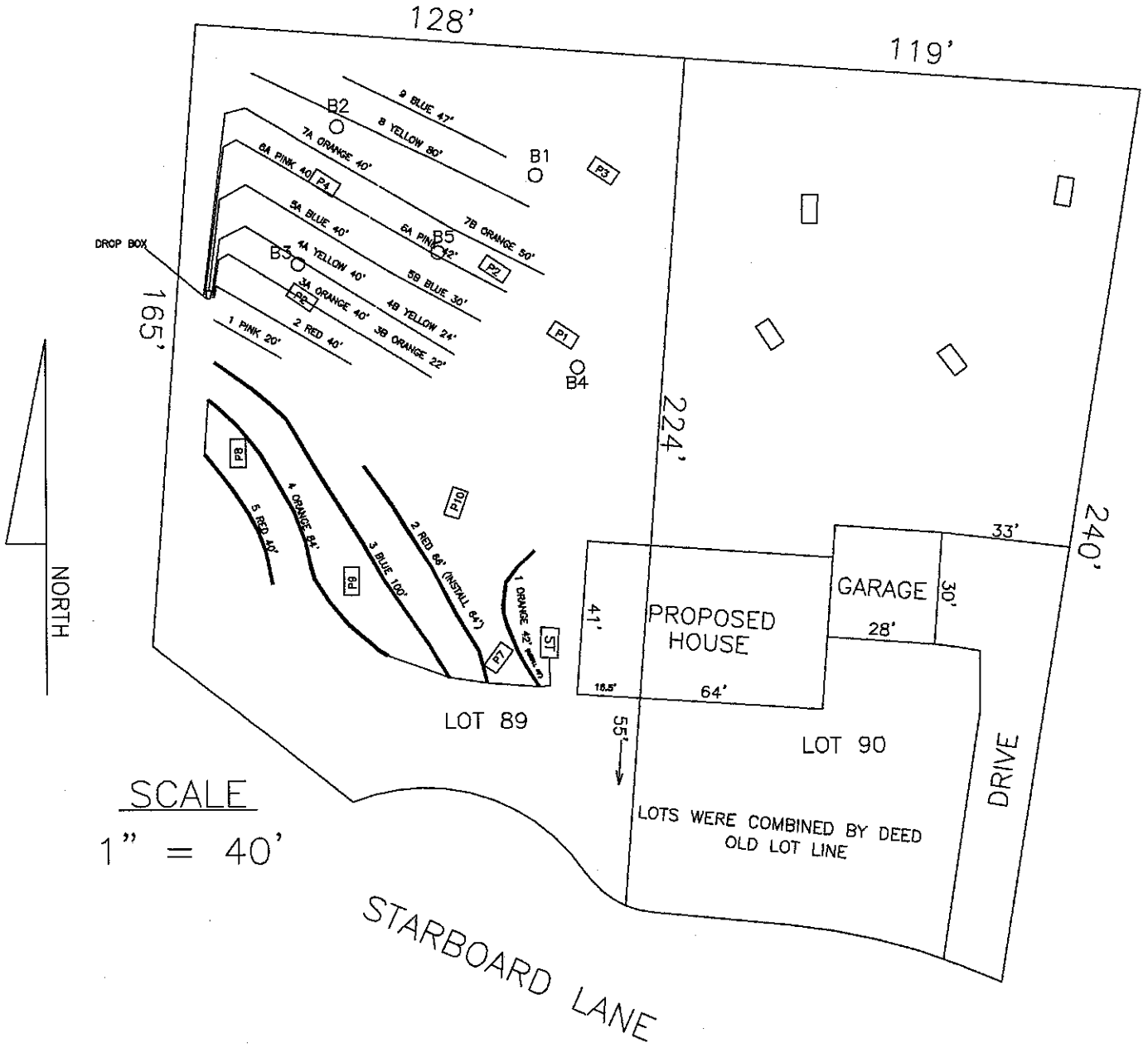
Zoning Permit & Receipt----------SUBMITTED

December 4, 2015
Project #: 01-3033
Design By: Rollans Soil & Environmental Services, PA

146 STARBOARD LANE (3 Bedroom)

ACCEPTED SYSTEM

DESIGN FLOW (gpd):	360
SOIL APPLICATION RATE (gpd/ft.^{2}):	0.275
TOTAL AREA TRENCH BOTTOM:	984
TOTAL LATERAL LENGTH:	328
NUMBER OF FIELDS:	1
LATERAL LENGTH REQUIRED PER FIELD:	327.2727273
SUPPLY LINE LENGTH:	10
TOTAL DYNAMIC HEAD:	N/A
MANIFOLD SIZE:	N/A
DOSING VOLUME:	N/A
PUMP TANK DRAW DOWN*:	N/A
SEPTIC TANK SIZE:	1000


128'
119'
165'
224'
240'
33'
30'
28'
41'
18.5'
64'
55'
DROP BOX
B1
B2
B3
B4
B5
P1
P2
P3
P4
P5
P6
P7
P10
ST
9 BLUE 47'
8 YELLOW 50'
7A ORANGE 40'
6A PINK 40'
7B ORANGE 50'
6A PINK 42'
5A BLUE 40'
5B BLUE 30'
4A YELLOW 40'
4B YELLOW 24'
3A ORANGE 40'
3B ORANGE 22'
2 RED 40'
1 PINK 20'
5 RED 40'
4 ORANGE 84'
3 BLUE 100'
2 RED 66' (INSTALL 64')
1 ORANGE 42'
PROPOSED HOUSE
GARAGE
LOT 89
LOT 90
DRIVE
LOTS WERE COMBINED BY DEED
OLD LOT LINE
NORTH
SCALE
1" = 40'
STARBOARD LANE

146 STARBOARD LANE (3 Bedroom)

Project #: 01-3033

LAYOUT FOR 3 BEDROOM HOME

December 4, 2015

LINE #	FLAG COLOR	BS	HI	FS	ELEVATION	FLAGGED LINE LENGTH	DESIGN LINE LENGTH
TBM							
INSTR. 1							
1	*ORANGE*					*42*	*40*
2	*RED*					*66*	*64*
3	*BLUE*					*100*	*100*
4	*ORANGE*					*84*	*84*
5	*RED*					*40*	*40*
1	PINK					20	20
2	RED					40	40
3A	ORANGE					40	40
3B	ORANGE					22	22
4A	YELLOW					40	40
4B	YELLOW					24	24
5A	BLUE					40	40
5B	BLUE					30	30
6A	PINK					40	40
6B	PINK					42	42
7A	ORANGE					40	40
7B	ORANGE					50	50
8	YELLOW					80	80
9	BLUE					47	47
					Total	**887**	**883**

	LINE LENGTH	LTAR GPD/FT2	SYSTEM TYPE	SOIL LTAR GPD/FT2	TRENCH SYSTEM	DISTRIBUTION
** System*	*328*	*0.275*	*ACCEPT.*	*0.275*	*25% RED*	*GRAVITY*
Repair	555	0.250	*PPBPS*	0.250	*50% RED*	*GRAVITY*

Notes: **All measures in feet

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

CALCULATIONS

Location 146 Starboard Lane

Project Number 01-3033

Lot No: 89/90

No. of Bedrooms 3

Design Flow 360 $^{gal}/_{day}$

LTAR 0.275 $^{gal}/_{ft^2\,day}$

PPBPS? (YES OR NO) NO

Supply Line Length 10 ft.

Supply Line Volume 6.53 gal.

Required Feet of Line 327.2727 ft.
Amount of Line from Layout 328 ft.

Gallons per Minute N/A $^{gal}/_{min}$

Required Septic Tank Capacity 1000 gal.
Septic Tank Size 1000 gal.

Panel Volume N/A gal.
# of Panels N/A
Dosing Volume N/A gal.

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 N/A

Pump Run Time

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.

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

HSW

Sheet 1 of 1
PROPERTY ID #: 3702343877
COUNTY: Iredell

SOIL/SITE EVALUATION
for ON-SITE WASTEWATER SYSTEM

OWNER: Adam & Heidi Harpe — APPLICATION DATE: 10/22/15
ADDRESS: 314 Baymount Dr, Statesville NC 28625 — DATE EVALUATED: 11/15
PROPOSED FACILITY: SBR — PROPOSED DESIGN FLOW (.1949): 360, — PROPERTY SIZE: 1.14ac
LOCATION OF SITE: 146 Stackboard Ln, Statesville NC 28625 Lot 91 90 Riverbanks — PROPERTY RECORDED:
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) .1941 STRUCTURE/ TEXTURE	.1941 CONSISTENCE/ MINERALOGY	OTHER PROFILE FACTORS .1942 SOIL WETNESS/ COLOR	.1943 SOIL DEPTH	.1956 SAPRO CLASS	.1944 RESTR HORIZ	PROFILE CLASS & LTAR
P1	L/5%	0-8	RBC vmAGk	FSSP SEXP					PS
		8-24	RBCfd vfAGk/SBk	FrSSSP "	-f sap	44	PS	-	0.3
		24-44	RBCl mfSBk/AGk	" " "	-f-c sap				
		44-74	var sl mass	" " "					
P2	L/7%	0-8	RBC vmAGk	FSP SEXP	-comp.				PS
		8-17	RBC vmAGk	FSSP SEXP	-f Fr dpl				.275-.3
		17-32	RBC mfSBk/pBk	FrSSSP SEXP	-fsap	44	PS	-	
		32-44	RYCl mfSBk	" " "	-f-c sap				
		44-47	var sl mass	" " "					
P9	L/10%	0-4	BRCl vmSBk	FrSSSP SEXP					PS
		4-32	RC mfAGk/fSBk	FSSP SEXP	-f Fr dpl/loss				
		32-43	RYCl mfSBk/fABk	FrSSSP SEXP	-fcsap	43	PS	-	0.3
		43-65	var l/sl mass	" " "					
P10	L/6%	0-6	BSl/gr/mfSBk	FSSSP SEXP					PS
		6-15	RBC vfAGk	VFSP SEXP	-compacted				
		15-43	RBC cmfAGk/fSBk	FrSSSP SEXP	-f Fr dpl	56	PS	-	0.275
		43-56	RCl mfSBk/fABk	" " "	-f-c sap				
		56-63	var l/sl mass	" " "					

DESCRIPTION	INITIAL SYSTEM	REPAIR SYSTEM
Available Space (.1945)	PS	PS
System Type(s)	Accepted	PPBPS
Site LTAR	0.275	0.25

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

COMMENTS: * Descriptions for Repair already provided.

Attached are Tim Johnson's recommendations for installation of deep panels. I think the buyer should consider removal of 6" or so of soil from lines 1-3 to reduce the trench bottom to 36". I think this would be preferred over 24 pipes in the back yard.

Let me know your thoughts.

FYI: The closing is scheduled for this Friday.

Thanks
Ashley

-------- Original message --------
From: Tim Johnson <timj_tjpanel@yahoo.com>
Date: 07/28/2015 9:15 AM (GMT-05:00)
To: rollans.ashley@yahoo.com
Subject: deep placement of the T & J Panel

When using a Panel System at more than the normal depth placement a passive venting system should be used. This is accomplished by placing venting tubes off the 2 inch connecting pipes at the start and finish of each line and at every third panel. When using LPP distribution in a panel line this accomplished at the same rate and by sliding the 1 1/4 inch LPP line through a 2 inch vent T that extend into the top chamber of the panel the same as in gravity flow system

Ashley in the system we talked about last week and just now (7/28/15) and you are putting the system with trench bottom at 42 inches I would put 6 inches of sand over the panel and put in the vent system as described
Call with any other questions you may have.

Tim Johnson
T & J Panel Systems, inc
704-880-0718 cell

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

HS ✓

Sheet 1 of 2
PROPERTY ID #: 3179284391
COUNTY: Iredell

SOIL/SITE EVALUATION
for ON-SITE WASTEWATER SYSTEM

OWNER: Denise Akulis
ADDRESS: Lot 89 148 Starboard Lane Statesville NC
PROPOSED FACILITY: 3BR
PROPOSED DESIGN FLOW (.1949): 360gpd
APPLICATION DATE
DATE EVALUATED: July 2015
LOCATION OF SITE: The Oaks at Lake Norman Lot 89
PROPERTY SIZE: ±1.576ac
WATER SUPPLY: ☐ Private ☑ Public ☐ Well ☐ Spring ☐ Other
PROPERTY RECORDED:
EVALUATION METHOD: ☑ Auger Boring ☑ Pit ☐ Cut
TYPE OF WASTEWATER: ☑ Sewage ☐ Industrial Process ☐ Mixed

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
P 1	L/15%	0-7	B l-cl wmsbk	~~Fr~~ SSSPSExP	c Fe dep 25-50" chr 2's @ 37	50	—	—	PS-37 0.25 HD - 25 chr 2's DRIP
		7-37	RBc wmsbk/sbk	FSSSP SExP					
		37-50	Rc wmsbk/sbk	FSSSP SExP	c Fe dep/ chr 2's f sap				
P 2	L/18%	0-3	B l-cl wmsbk	F SSSPSExP	f-c sap; wh. to mic.	70	PS	—	PS 0.25-275 HD - 12" Platy 30" Panel 6" Above Pipe
		3-36	Rc wf abk/sbk	F SS SPSExP					
		36-70	R cl wmsbk/abk	FSSSP SExP					
		70-84	var sl mass	FrSSSPSExP					
P 3	L/13%	0-7	BSl/sr	FrSSSPSExP	f sap + Fe dep/ chr 2's @ 24"	45	—	—	Slope correct PS-24 HD - 24" chr 2's DRIP
		7-20	RBsl-cl wfsbk	FSSSPSExP					
		20-45	Rcl wmsbk	" " "					
P 4	L/17%	0-7	B fcl smsbk	FrSSSPSExP	f-fr sap	67"	PS		PS HD - 38" .25 Panel
		7-33	Rcmmsbk/abk	F " " "					
		33-67	RYcl wmsbk	F " " "					
		67-78	var sl mass	FrSSSPSExP					

DESCRIPTION	INITIAL SYSTEM	REPAIR SYSTEM
vailable Space (.1945)	PS	PS
/stem Type(s)	PPBPS	PPBPS
te LTAR	.25	.25

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

MMENTS:

SOIL/SITE EVALUATION

(Continuation Sheet-Complete all field in full)

DEPARTMENT OF HEALTH AND HUMAN SERVICES
DIVISION OF PUBLIC HEALTH
ENVIRONMENTAL HEALTH SECTION
ON-SITE WATER PROTECTION BRANCH

PROPERTY ID #: 378284390 1
DATE OF EVALUATION: June 2015
COUNTY: Iredell

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
D S	L/12%	0-7	B cl wfsbk	F SSSP SExP		80"	—	—	PS 0.3 HD 11"-20" plate.
		7-36	RCmmAbk/sbk	" " " "					
		36-48	RCmmsbk/Abk	" " " "	-f sap				
		48-80	RYclwmsbk	" " " "	-fr-c sap				
B 2	L/18	0-8	Bsl sr	Fr SSSP SExP		76"	—	—	PS @.25-.35
		8-30	RCwmAbk/sbk	F SSSP SExP	- white mica				
		30-55	RYCwmAbk/sbk	Fr SSSP SExP	-f sap				
		55-76	RYclwfsbk	Fr SSSP SExP	-f-c sap				
B 1	L/15%	0-7	Bsl sr	Fr SSSP SExP		72"	—	—	PS 0.25-.35
		7-36	BCwmAbk/sbk	F SSSP SExP	Fe Dep. 18-36				
		36-60	RYCwmsbk	Fr SSSP SExP	-Cac sap				
		60-72	RYclwfsbk	Fr SSSP SExP	-f-c sap				

COMMENTS: