J.J

8148B

MECKLENBURG COUNTY
GROUNDWATER & WASTEWATER SERVICES

4550

APPLICATION FOR A COMMERCIAL SITE IMPROVEMENT PERMIT/ CONSTRUCTION AUTHORIZATION FOR AN ON-SITE WASTEWATER SYSTEM, NEW WELL INSTALLATION, OR REPAIR OF EXISTING WELL

1. **SEPTIC / TYPE APPLICATION:** ☐ N/A ☑ NEW SYSTEM ☐ ALTERATION ☐ REPAIR ☐ MODIFIED PLOT PLAN

2. **WELL / TYPE APPLICATION:** ☐ N/A ☐ NEW WELL ☐ MAJOR REPAIR ☐ ABANDONMENT

3. **JOB LOCATION INFORMATION:**
TAX PARCEL NUMBER: 01721107
STREET ADDRESS: HAMBRIGHT ROAD
CITY: Huntersville
STATE: NC ZIP: 28078
LOT #: LOT SIZE (acres): 27 Acres
TOWNSHIP:
☐ 0-MECKLENBURG ☐ 3-CORNELIUS ☒ 6-HUNTERSVILLE
☐ 1-CHARLOTTE ☐ 4-PINEVILLE ☐ 7-MINT HILL
☐ 2-DAVIDSON ☐ 5-MATTHEWS

4. **BUILDING INFORMATION:**
DESCRIBE TYPE OF BUSINESS: RACE SHOP
☒ COMMERCIAL ☒ INDUSTRIAL
SQUARE FOOTAGE OF FACILITY: 10,000
NUMBER OF EMPLOYEES PER SHIFT: 10
NUMBER OF SHIFTS: 1 NUMBER OF SEATS: 2
TYPE OF WASTEWATER GENERATED:
☑ DOMESTIC SEWAGE ☐ INDUSTRIAL WASTEWATER
☐ OTHER _____

5. ***IF PLANNING TO EXPAND OR ALTER THE EXISTING SEPTIC SYSTEM, INFORMATION DOCUMENTING THE INCREASED WASTEWATER FLOW AND/OR A JUSTIFICATION FOR SYSTEM ALTERATION IS REQUIRED.***

6. **WATER SUPPLY:** ☑ MUNICIPAL ☐ PRIVATE WELL ☐ PUBLIC WELL ☐ SHARED WELL ☐ OTHER _____

7. **PROPOSED USE OF WELL:** ☐ N/A ☐ IRRIGATION ☐ POTABLE (DRINKING WATER) ☐ OTHER _____

8. **PLEASE INDICATE AND RANK DESIRED SEPTIC SYSTEM TYPE(S) IN ORDER OF PREFERENCE** *(1-MOST DESIRED 5-LEAST DESIRED):*
☐ N/A ☑ ANY TYPE ☐ CONVENTIONAL ☐ ACCEPTED ☐ INNOVATIVE ☐ ALTERNATIVE ☐ OTHER _____

8A. **RANK:** ____ ____ ____ ____ ____

9. **DO ANY OF THE FOLLOWING APPLY TO THE PROPERTY IN QUESTION? IF "YES" PLEASE ATTACH SUPPORTING DOCUMENTATION.**

BURIED CABLES, LANDFILLS, STUMPHOLES	☐ YES ☑ NO		GRADING/SOIL REMOVAL PERFORMED	☐ YES ☑ NO	
EXISTING WASTEWATER (SEPTIC) SYSTEMS	☐ YES ☑ NO		*JURISDICTIONAL WETLANDS*	☐ YES ☑ NO	
WELLS, SPRINGS, OR WATER LINES	☐ YES ☑ NO		APPROVAL REQUIRED BY ANY OTHER PUBLIC AGENCY	☐ YES ☑ NO	
EASEMENTS OR RIGHT-OF-WAYS	☑ YES ☐ NO		WASTEWATER OTHER THAN DOMESTIC SEWAGE	☐ YES ☑ NO	
CHEMICAL/PETROLEUM STORAGE TANKS	☐ YES ☑ NO		KNOWN UNDERGROUND CONTAMINATION	☐ YES ☑ NO	
WASTE STORAGE	☐ YES ☑ NO		GROUNDWATER USE RESTRICTIONS/VARIANCES	☐ YES ☑ NO	

10. **WHAT DATE WAS THE PROPERTY ORIGINALLY DEEDED AND RECORDED?** _____ ☑ UNKNOWN

11. **WHAT IS THE ANTICIPATED CLOSING DATE FOR THIS PROPERTY?** MAY 1 ☐ N/A

12. **PROPERTY OWNER:**
NAME: North-South Assoc. LLC c/o Melvin Graham
ADDRESS: 6100 FAIRVIEW ROAD
CITY: Charlotte
STATE: NC ZIP: 28210
HOME PHONE:
WORK PHONE:
MOBILE PHONE:
FAX:

13. **OWNER'S LEGAL REPRESENTATIVE, IF APPLICABLE:**
NAME: Steve Knox
ADDRESS: 16740 Birkdale Commons Pkwy
CITY: Huntersville NC
STATE: NC ZIP: 28078
HOME PHONE:
WORK PHONE: 704 896 0911
MOBILE PHONE: 704 400 2444
FAX:

MECKLENBURG COUNTY – GROUNDWATER & WASTEWATER SERVICES
700 N. TRYON ST. SUITE 211 CHARLOTTE, NC 28202, OFFICE: 704-336-5103, FAX: 704-336-6894

Revised on: 7/1/08

0735

14. SEPTIC SYSTEM PERMIT APPLICATION:

If the information in this application is falsified, changed, or the site is altered, then the Improvement Permit and Authorization to Construct shall become invalid. I have read this application and certify that the information provided herein is true, complete and correct. Authorized county and state officials are granted right of entry to conduct necessary inspections to determine compliance with applicable laws and rules. I understand that I am solely responsible for the proper identification and labeling of all property lines and corners and making the site accessible so that a complete site evaluation can be performed. The permit is valid for either sixty (60) months or is non-expiring depending upon the documentation submitted: complete site plan = 60 months, complete plat = non-expiring.

MC (Initial here for septic system applications)

15. WELL PERMIT APPLICATION:

If the information in this application is falsified, changed, or the site is altered, then the Well Permit shall become invalid. I have read this application and certify that the information provided herein is true, complete and correct. Authorized county and state officials are granted right of entry to conduct necessary inspections to determine compliance with applicable laws and rules. I understand that I am solely responsible for the proper identification and labeling of all property lines and corners and making the site accessible so that a complete site evaluation can be performed. The permit is valid for a period of twelve (12) months from the date of issuance.

_____ (Initial here for well applications)

16. APPLICATION SIGNATURE SECTION:

ONLY COMPLETE APPLICATIONS WILL BE PROCESSED. *A proper signature is required in order to process your application.* Please review the application carefully and sign in the space provided below.



Property Owner's or Owner's Legal Representative Signature

3/10/10
Date

OFFICE USE ONLY

☐ SURVEY PLAT TO SCALE SUBMITTED ☐ SCALED SITE PLAN SUBMITTED ☐ UN-SCALED SITE PLAN SUBMITTED

SEPTIC APPLICATION FEES RECEIVED: $ 450.00 CK 5524 DATE FEE RECEIVED: 3/11/10

WELL APPLICATION FEES RECEIVED: $ _____ DATE FEE RECEIVED: _____

APPLICATION PROCESSED BY: JC

GWS FILE NUMBER ASSIGNED: 8148B

APPLICATION ID NUMBER ASSIGNED: 4550

COMMENTS:

MECKLENBURG COUNTY – GROUNDWATER & WASTEWATER SERVICES
700 N. TRYON ST. SUITE 211 CHARLOTTE, NC 28202, OFFICE: 704-336-5103, FAX: 704-336-6894

The Knox Group
Commercial Real Estate

Office - Retail - Industrial - Land - Investment Properties - Landlord Representation
Tenant Representation - Development - Zoning & Consulting

March 10, 2010

Mecklenburg County
Groundwater & Wastewater Services
700 N. Tryon Street, Suite 211
Charlotte, NC 28202

RE: Septic System – 01721107

Dear Sirs:

Attached please find the commercial application for septic system on the referenced site.

Initially, our plans are to build a 10,000 SF facility fronting Hambright Road. Our future plans would be to potentially expand that building to 20,000 SF as well as build two additional buildings as shown on the attached site plan. Ideally we would locate the septic systems in the blue highlighted areas with our secondary locations highlighted in green; however, based on some preliminary investigations, it appears we may have some difficulty finding appropriate soil for a septic system. Therefore, we are open to suggestions of where is the most appropriate placement of a septic system, either a joint system or individual systems for each building.

Thank you for your prompt consideration.

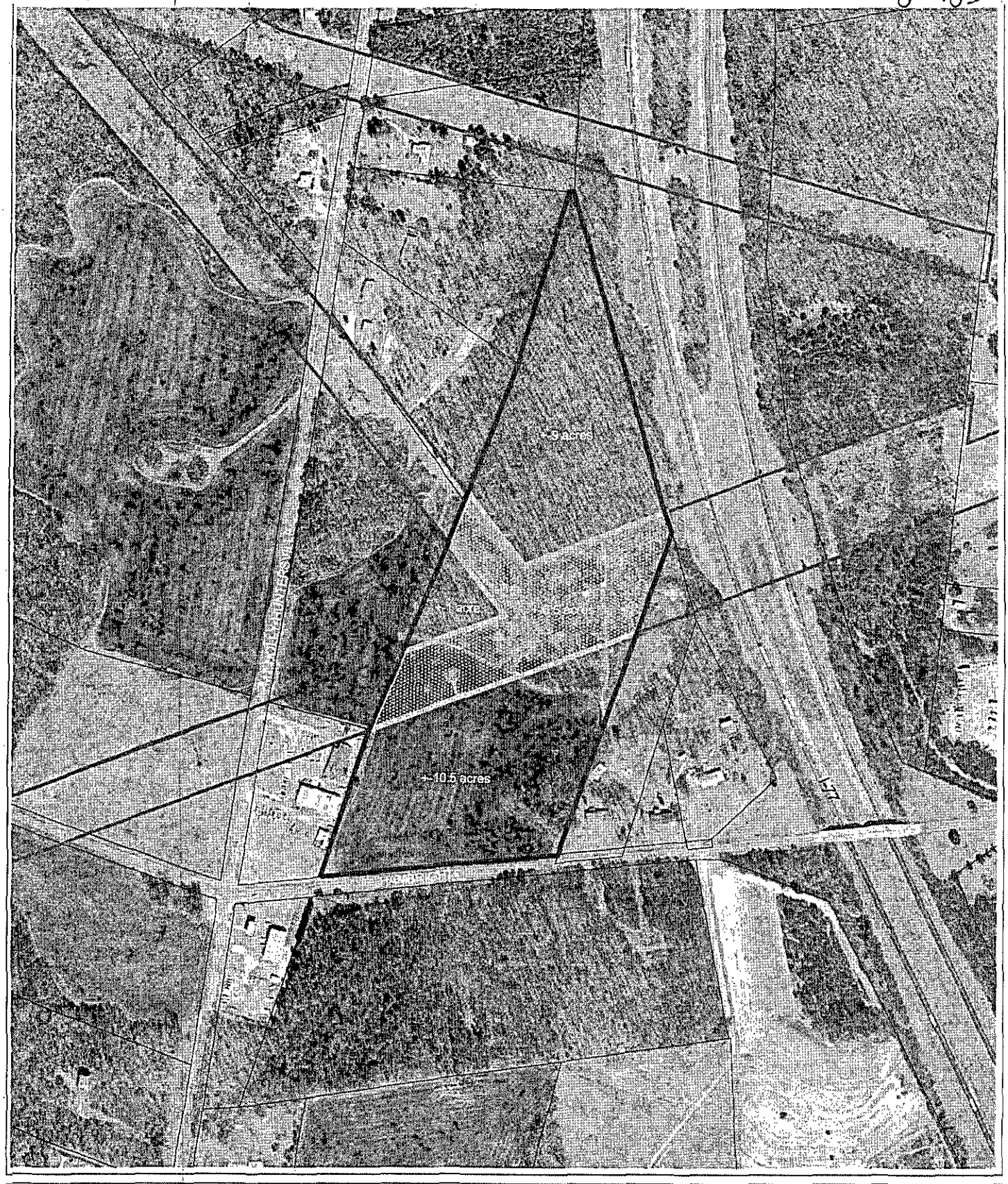
You may call my cell should you have any questions: 704-400-2444.

Sincerely,

Steve Knox
Vice President

16740 Birkdale Commons Parkway, Suite 202, Huntersville, NC 28078
704-896-1911 - Fax: 704-655-0541 - www.knoxgroupinc.com

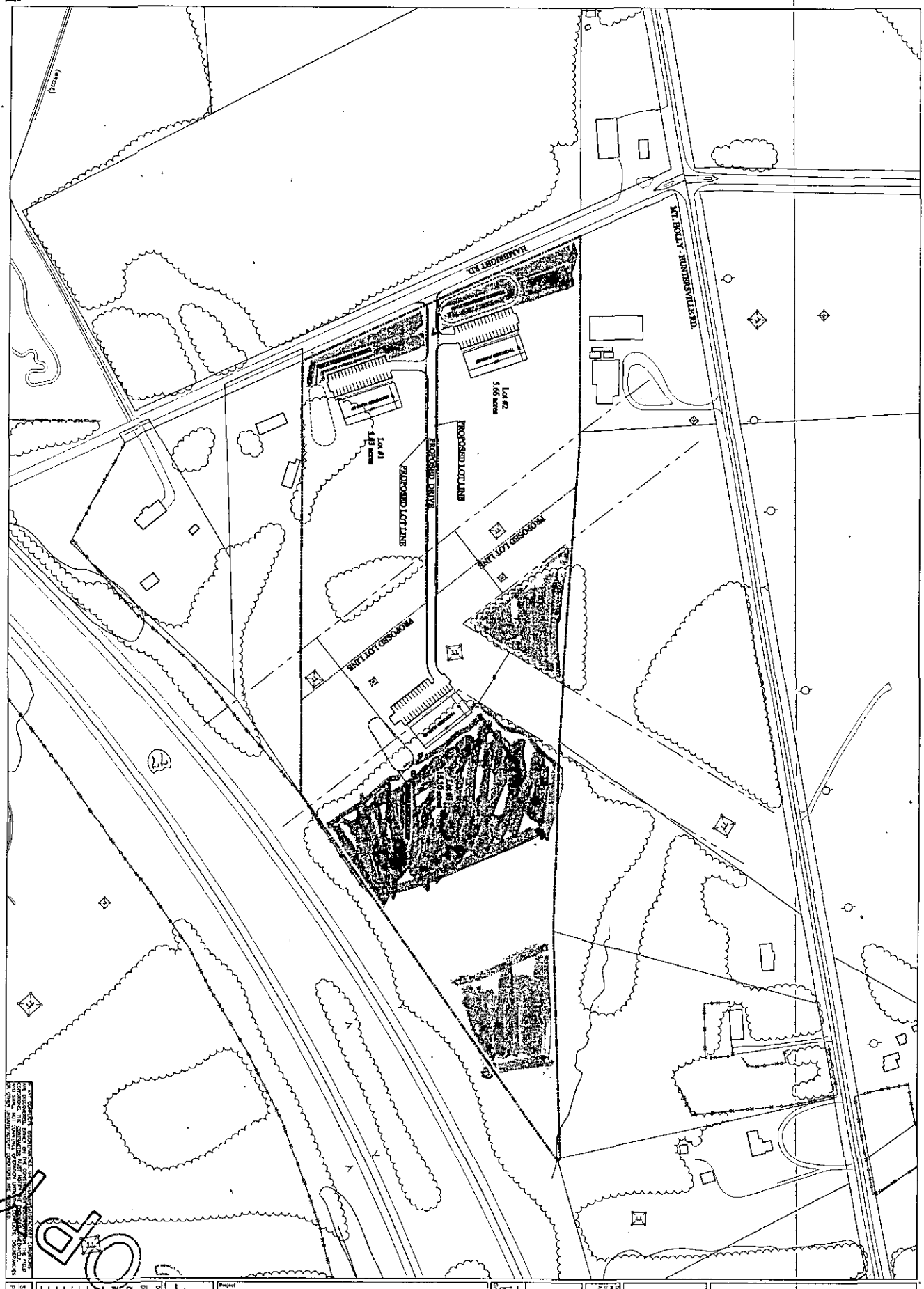
8.148B



GIBSON SMITH REALTY CO. **Hambright Rd**

Contact: HP Smith or F.G. (Buddy) Hege @ 704-333-7151 20081215

For diagrammatic review only! Buyer to verify accuracy of all information shown.This property is not listed with Gibson Smith Realty Co.



Project Number: Sheet 1 of 1

Drawn By: PW Date: 3/29/10

Designed By: DRA

Project: KNOX COMMERCIAL PROPERTY

Location:

Sheet Title: SKETCH PLAN

Graphic Scale: 1" = 100'

environmental DESIGN

20816 n. main street suite 204
cornelius, nc 28031
t. 704.896.9020
f. 704.892.5478
e. edpa.info@edpa.net

landscape architecture
civil engineering
land planning
land surveying

81488

Department of Environment, Health, and Natural Resources
Division of Environmental Health
On-site Wastewater Section

Sheet: 1 of 5
Property ID: 1721107
Lot #:
File #: 8148B
AppID: 4550

SOIL/SITE EVALUATION for ON-SITE WASTEWATER SYSTEM

Owner: North South Association LLC% Melvin Graham — Applicant Steve Knox
Address: 6100 Fairview rd Charlotte nc 28210 — Date Evaluated: 3/24/10
Proposed Facility: Business — Design Flow (.1949): 10 employees — Property Size: 27a
Location of Site: Hambright rd huntersville NC 28078 — Property Recorded:
Water Supply: [x] Public [ ] Individual [ ] Well [ ] Spring [ ] Other
Evaluation Method: [ ] Auger Boring [x] Pit [ ] Cut
Type of Wastewater: [x] Sewage [ ] Industrial Process [ ] Mixed

PROFILE #	1940 Landscape Position/ Slope%	Horizon Depth (IN.)	SOIL MORPHOLOGY 1941 Structure/ Texture	SOIL MORPHOLOGY 1941 Consistence Mineralogy	b PROFILE FACTORS 1942 Soil Wetness/ Color	1943 Soil Depth (IN.)	1956 Sapro Class	1944 Restr Horiz	Profile Class & LTAR
1	4%	0-8	GR-SBK/SL	FR,SS,SP,SXP	>50" TO SOIL WETNESS	50	N/A	NONE	P.S IV
	L.S	8-35	SBK/C	FI,S,P,SXP					.275GPD/FT2
		35-50	SBK/CL	FI,S,P,SXP					
2	"	0-12	GR/SCL	FR,SS,SP,SXP	>55" TO SOIL WETNESS	55	"	"	P.S IV
		12-55	ABK/C	FI,S,P,SXP					.25GPD/FT2
		30"	PL/C	PLATY AT 30" DOWN					
3	"	0-15	GR/SCL	FR,SS,SP,SXP	>58" TO SOIL WETNESS	58	"	"	P.S IV
		15-41	ABK/C	FI,S,P,SXP					.275GPD/FT2
		41-58	SBK/C-CL	"					
4	"	0-10	GR/SCL	FR,SS,SP,SXP	>57" TO SOIL WETNESS	57	"	"	"
		10-27	ABK/C	FI,S,P,SXP					
		27-38	SBK/SCL	FI-FR,S,P,SXP					
		38-57	M/SCL	SAP W/SBK MIXED					
5	"	0-4	GR/L	VFR,SS,SP,SXP	>44" TO WETNESS	44	"	"	P.S IV
		4-18	GR/SL	"					.25GPD/FT2
		18-23	GR-SBK/SCL	FR-FI,SS,SP,SXP					
		23-44	SBK/C	FI,S,P,SXP					
					SITE LTAR .25GPD/FT2				

Description	Initial System	Repair System
Available Space (.1945)	PS	PS
System Type(s)	IIIb	IIIb
Site LTAR	0.25	0.25

Other Factors (.1946):

Soil Evaluation By: Jason Jackson
Others Present: Bill Marlin
Site Classification (.1948): Provisionally Suitable
Site Evaluation By: Jeremy Michelone, R.S.
Others Present: Ashley Rollins, LSS,

COMMENTS:

100% repair area required

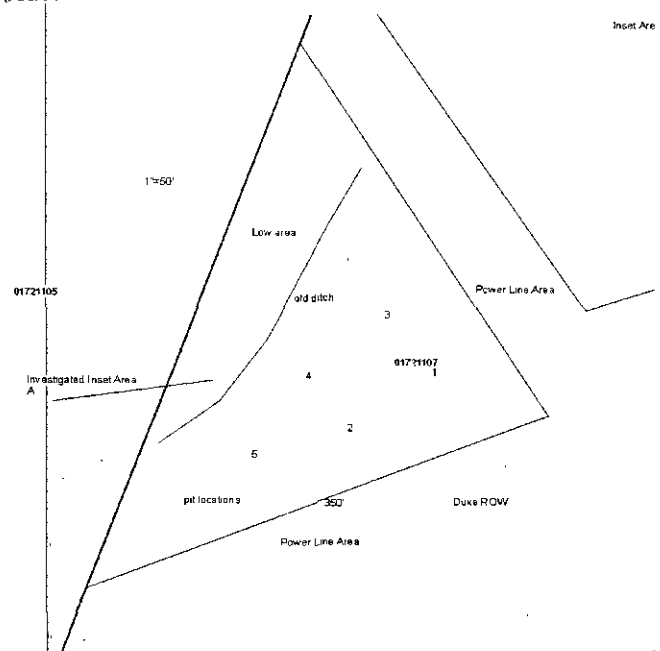
Area is located adjacent to property line and 2 Duke Power ROW

Landscape Position	Group	Texture	.1955 LTAR	Structure
R-Ridge	I	S-Sand	1.2 - 0.8	SG-Single Grain
SS-Shoulder Slope		LS-Loamy Sand		M-Massive
LS-Linear Slope				CR-Crumb
FS-Foot Slope	II	SL-Sandy Loam	0.8 - 0.6	GR-Granular
NS-Nose Slope		L-Loam		SBK-Subangular Blocky
HS-Head Slope				ABK-Angular Blocky
CC-Concave Slope	III	SI-Silt	0.6 - 0.3	PL-Platy
CV-Convex Slope		SICL-Silty Clay Loam		PR-Prismatic
T-Terrace		CL-Clay Loam		
FP-Flood Plain		SCL-Sandy Clay Loam		
	IV	SC-Sandy Clay	0.4 - 0.1	
		SIC-Silty Clay		
		C-Clay		

Consistence Moist	Consistence Wet	Mineralogy
VFR-Very Friable	NS-Non-Sticky	SEXP-Slightly Expansive
FR-Friable	SS-Slightly Sticky	EXP-Expansive
FI-Firm	S-Sticky	
VFI-Very Firm	VS-Very Sticky	
EFI-Extremely Firm	NP-Non-Plastic	
	SP-Slightly Plastic	
	P-Plastic	
	VP-Very Plastic	

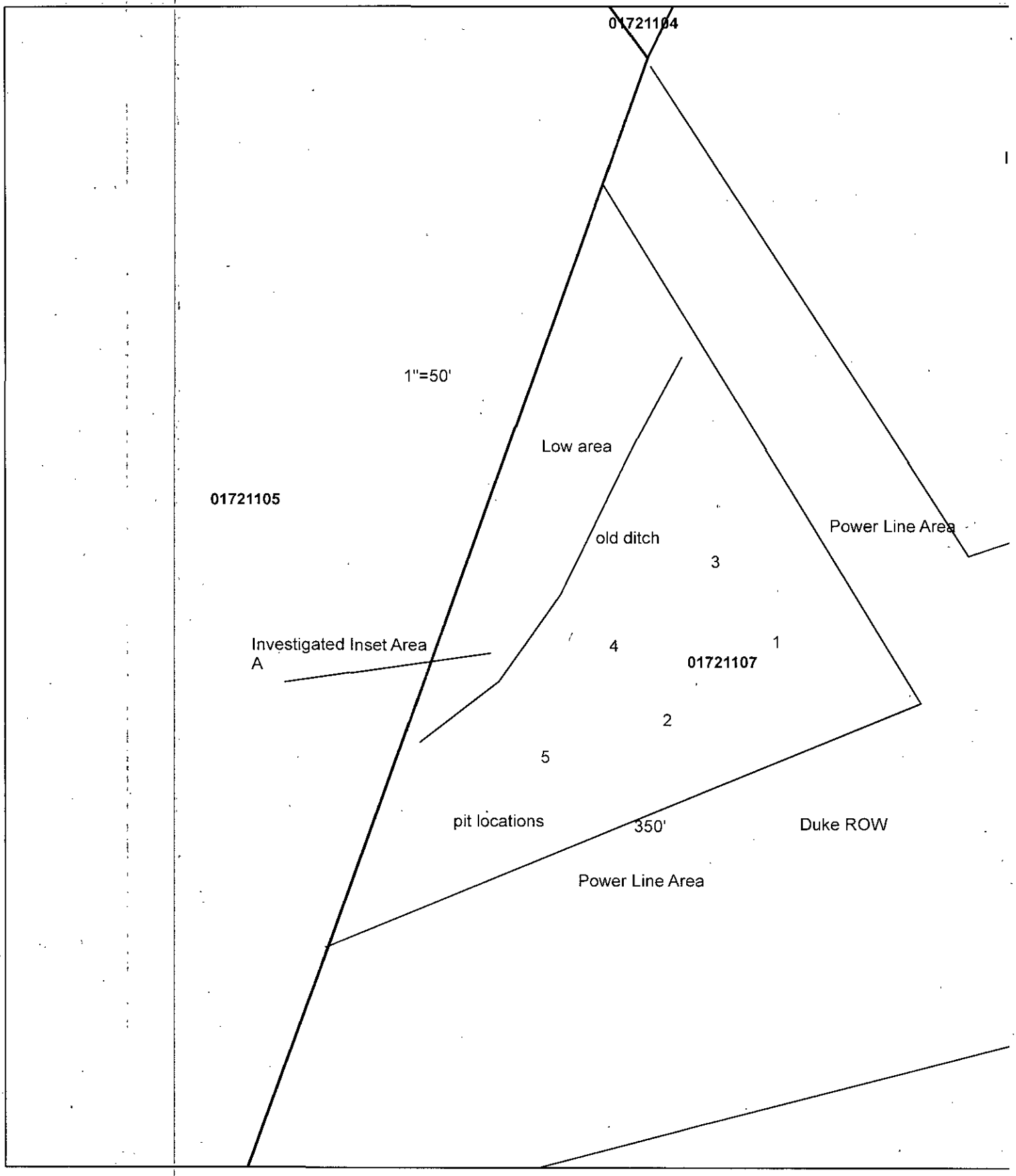
Sketch of Soil Evaluation Locations

Inset Area A



Hambright Rd
FILE# 8148B

A



Map Created By: J. Jackson
Map Created On: 3/25/10

0 50 100

Department of Environment, Health, and Natural Resources
Division of Environmental Health
On-site Wastewater Section

Sheet: 2 of 5 B
File #: 8148 B

SOIL/SITE EVALUATION
for ON-SITE WASTEWATER SYSTEM
CONTINUED

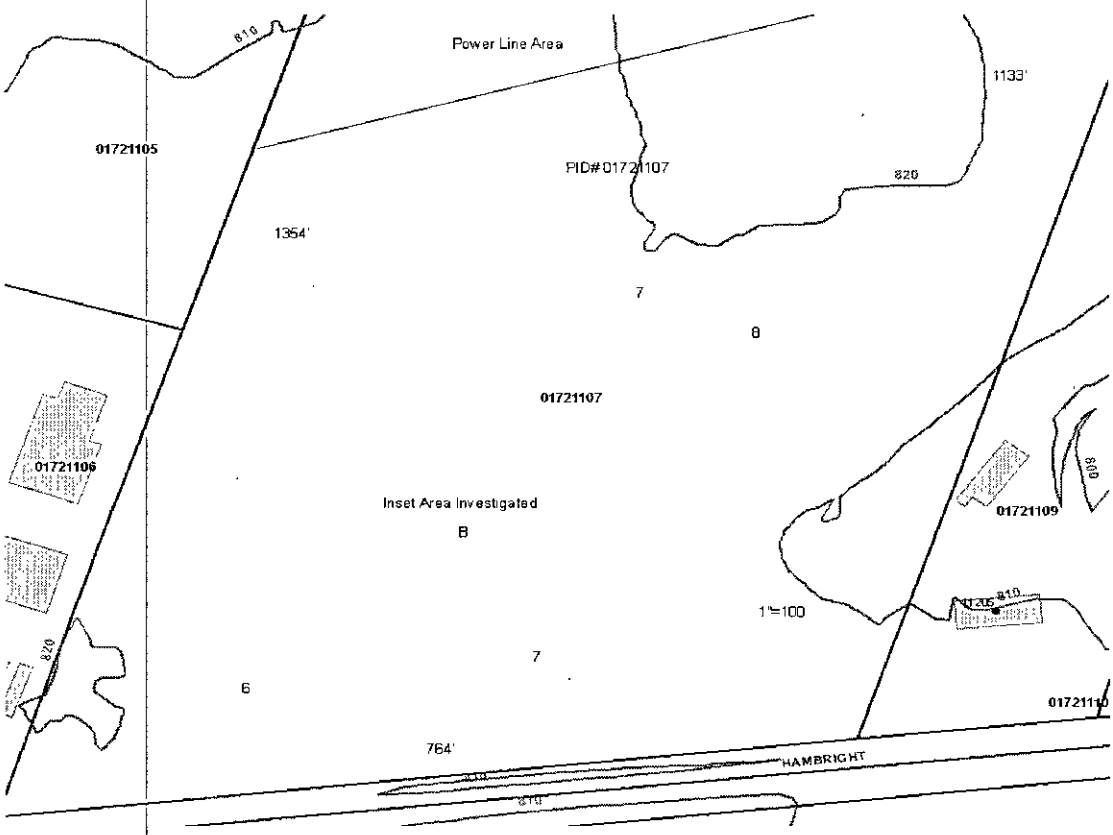
PROFILE #	1940 Landscape Position/ Slope%	Horizon Depth (IN.)	SOIL MORPHOLOGY 1941		OTHER PROFILE FACTORS				Profile Class & LTAR
			1941 Structure/ Texture	1941 Consistence Mineralogy	1942 Soil Wetness/ Color	1943 Soil Depth (IN.)	1956 Sapro Class	1944 Restr Horiz	
6	L.S	0-15	GR/SL	FR,SS,SP,SXP	>52" TO SOIL WETNESS	52	N/A	NONE	U IV
	1%	15-52	ABK/C	VFI,S,P,EXP	MIXED MINEROLOGY				
				PLATY AT 26" DOWN					
7	"	0-10	GR/SCL	FR,SS,SP,SXP	MOTTLES AT 19" DOWN	40	"	"	"
		10-40	ABK/C	FI,S,P,SXP	2.5Y 7/2				
8	L.S	0-6	ABK/C	FI,S,P,SXP	>55" TO SOIL WETNESS	55	"	"	"
	2	6-25	PL/C	"					
		25-55	M/LC	SAPROLITE					
9	"	0-17	GR/SL	FR,SS,SP,SXP	>48" TO SOIL WETNESS	48	"	"	"
		17-30	PL/C	FI,S,P,SXP					
		30-48	M/CL	SAPROLITE					
					Investigated area B				

COMMENTS:
Diagram of Soil Investigation Area
Investigated Area Inset B

Landscape Position	Group	Texture	.1955 LTAR	Structure
R-Ridge	I	S-Sand	1.2 - 0.8	SG-Single Grain
SS-Shoulder Slope		LS-Loamy Sand		M-Massive
LS-Linear Slope				CR-Crumb
FS-Food Slope	II	SL-Sandy Loam	0.8 - 0.6	GR-Granular
NS-Nose Slope		L-Loam		SBK-Subangular Blocky
HS-Head Slope				ABK-Angular Blocky
CC-Concave Slope	III	SI-Silt	0.6 - 0.3	PL-Platy
CV-Convex Slope		SICL-Silty Clay Loam		PR-Prismatic
T-Terrace		CL-Clay Loam		
FP-Flood Plain		SCL-Sandy Clay Loam		
	IV	SC-Sandy Clay	0.4 - 0.1	
		SIC-Silty Clay		
		C-Clay		

Consistence Moist	Consistence Wet	Mineralogy
VFR-Very Friable	NS-Non-Sticky	SEXP-Slightly Expansive
FR-Friable	SS-Slightly Sticky	EXP-Expansive
FI-Firm	S-Sticky	
VFI-Very Firm	VS-Very Sticky	
EFI-Extremely Firm	NP-Non-Plastic	
	SP-Slightly Plastic	
	P-Plastic	
	VP-Very Plastic	

Sketch of Soil Evaluation Locations



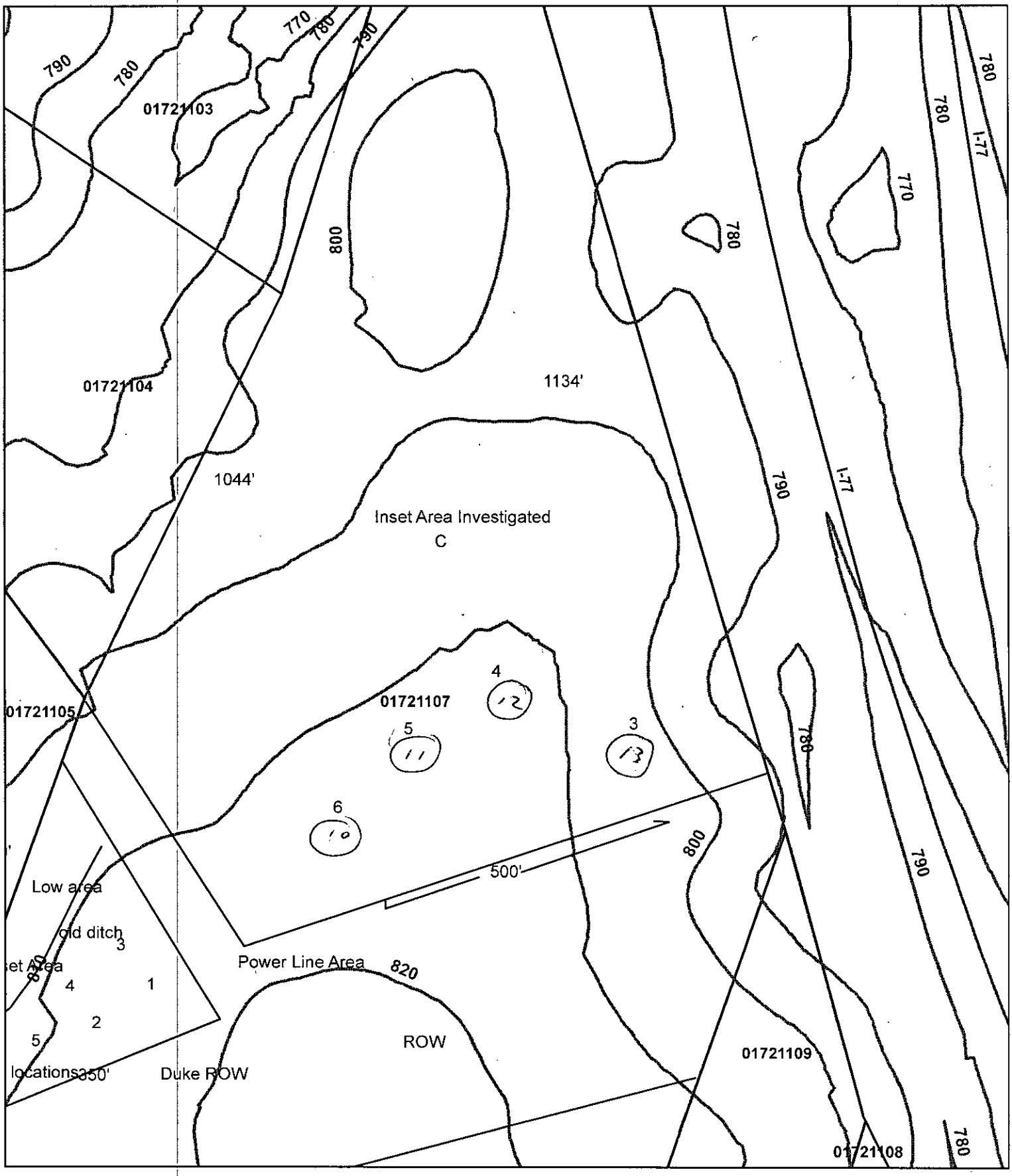
Department of Environment, Health, and Natural Resources
Division of Environmental Health
On-site Wastewater Section

Sheet: 4 of 5
File #: 8148B

SOIL/SITE EVALUATION
for ON-SITE WASTEWATER SYSTEM
CONTINUED

PROFILE #	1940 Landscape Position/ Slope%	Horizon Depth (IN.)	SOIL MORPHOLOGY 1941		OTHER PROFILE FACTORS				
			1941 Structure/ Texture	1941 Consistence Mineralogy	1942 Soil Wetness/ Color	1943 Soil Depth (IN.)	1956 Sapro Class	1944 Restr Horiz	Profile Class & LTAR
10	L.S	0-10	GR/SL	FR,SS,SP,SXP	> 45" TO WETNESS	45	N/A	NONE	U IV
	7	10-27	SBK/C	FI,S,P,SXP					
		27-45	PL/ABK/C	"					
		45-59	M/CL	SAP "					
11	"	0-10	GR/SL	FR,SS,SP,SXP	>53" TO SOIL WETNESS	53	"	"	"
		10-17	GR/SCL	"					
		17-27	ABK/C	FI,S,P,EXP	MIXED MINEROLGY				
		27-53	PL/C	FI,S,P,SXP					
12	"	0-15	GR/SL	FR,SS,SP,SXP					
		15-26	ABK/C	FI,S,P,EXP	EXPANSIVE	36	"	"	"
		26-36	PL/C	FI,S,P,SXP					
		36-56	M/C	SAPROLITE					
13	"	0-10	GR/SL	FR,SS,SP,SXP		43	"	"	"
		10-22	ABK/C	FI,S,P,EXP	MIXED MINEROLOGY				
		22-43	PL-ABK/C	"	"				
		43-60	M/C	SAPROLITE					
					INVESTIGATED AREA C				

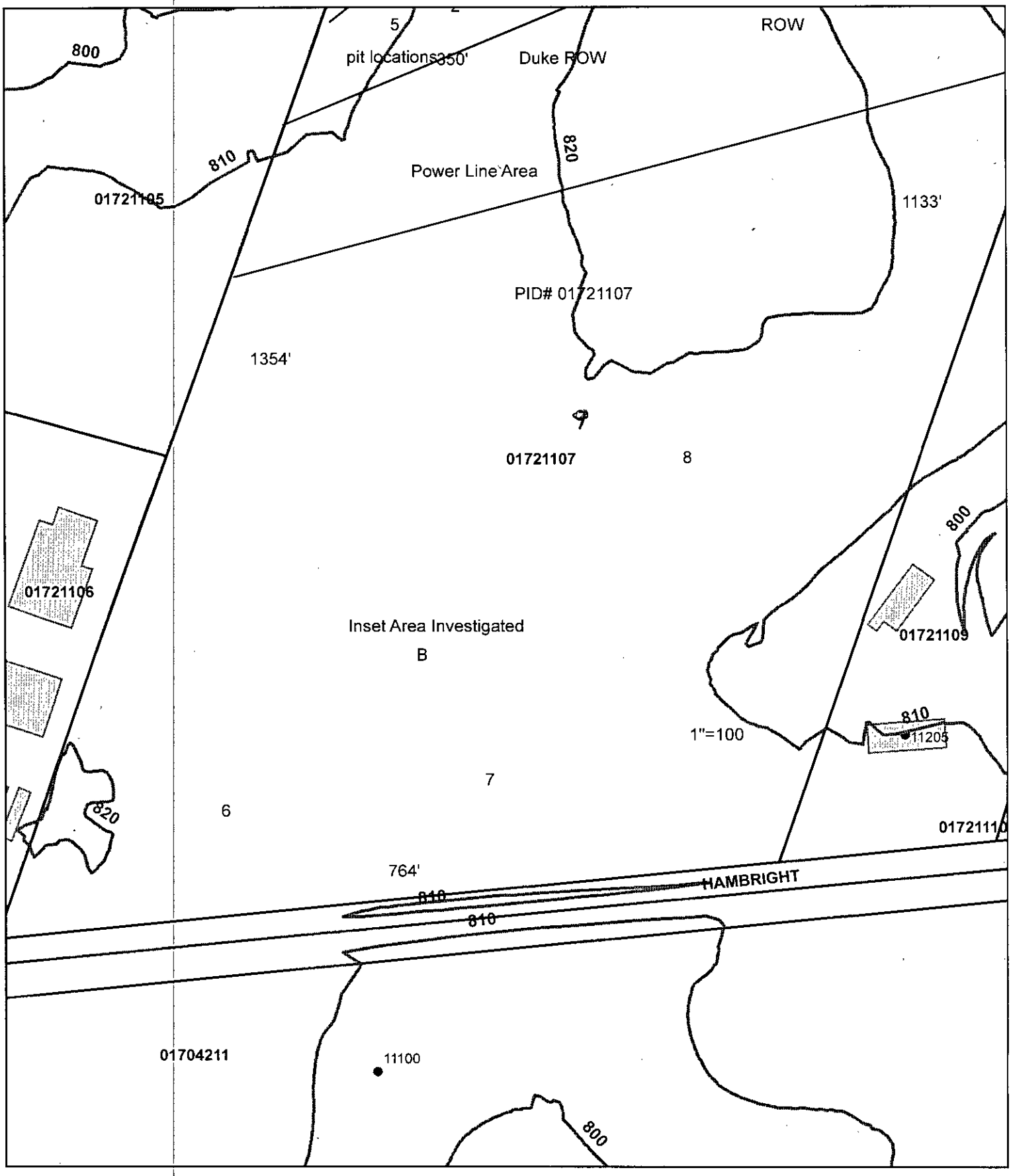
Hambright Rd
FILE# 8148B



Map Created By: J. Jackson
Map Created On: 3/25/10

0 100 200

Hambright Rd
FILE# 8148B



Map Created By: J. Jackson
Map Created On: 3/25/10

0 100 200

ROLLANS *Soil & Environmental Services, Inc.*

PO Box 832, Mooresville, NC 28115 Phone: (704) 278-0989 Fax: (704) 278-0989

Ashley Rollans, NC Licensed Soil Scientist
Mobile: (704) 746-5046
Email: rollans.ashley@yahoo.com

Adrian Pruett, NC Licensed Soil Scientist
Mobile: (704) 202-5791
Email: adrianpruett@yahoo.com

Attached is a proposed design for an Accepted (25% reduction) Septic System with Pressure Manifold distribution for a 10 Employee Office/Warehouse on Hambright Road, Mecklenburg 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 6, 2011
Project #: 01-1657
Design By: Rollans Soil and 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.
- Septic tank riser shall be a minimum of 6" above finished grade.
- System is specified as an accepted 25% reduction installation.
- Repair is specified as an accepted 25% reduction installation.
- Rake trench walls, lime sidewalls, install trenches 36" wide and have no more than 1/4" fall in 10 feet.

PRESSURE MANIFOLD SYSTEM
FOR WASTEWATER TREATMENT

Owner:	SB Properties
	Attn: Tom Logano
Address:	8687 Arbor Oaks Cr
	Concord, NC 28027
Phone:	678-592-3140
County:	Mecklenburg
Location:	SB Properties / Hambright Rd
Source of Wastewater Flow:	10 Employee Office/Warehouse
Estimated Gallons Per Day Flow:	250
System Flow:	19.7

Design Specifications

Drainfield Size:	250
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:	1500 gal.
Pump Tank Size:	1500 gal.
Estimated Supply Line Length:	597
Supply Line Diameter:	2 in. SCH 40 PVC
Supply Line Volume:	103.88
Dosing Volume:	114.28
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:	5.01
Elevation Head:	6.95
Total Dynamic Head:	16.76
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.

SB Properties / Hambright Rd
PRESSURE MANIFOLD DESIGN

DESIGN FLOW (gpd):	250
SOIL APPLICATION RATE (gpd/ft.^{2}):	0.25
TOTAL AREA TRENCH BOTTOM:	750
TOTAL LATERAL LENGTH:	250
NUMBER OF FIELDS:	1
LATERAL LENGTH REQUIRED PER FIELD:	250
SUPPLY LINE LENGTH:	597
TOTAL DYNAMIC HEAD:	16.76
MANIFOLD SIZE:	4 in.SCH 80 PVC
DOSING VOLUME:	114.28
PUMP TANK DRAW DOWN*:	5.4
SEPTIC TANK SIZE:	1500 gal.
PUMP TANK SIZE:	1500 gal.

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

SB Properties / Hambright Rd

Project #: 01-1657

LAYOUT FOR 10 EMPLOYEE OFFICE/WAREHOUSE

April 6, 2011

LINE #	FLAG COLOR	BS	HI	FS	ELEVATION	FLAGGED LINE LENGTH	DESIGN LINE LENGTH
TBM					817.50		
INSTR. 1							
SHOP					814.00		
TANK					814.50		
1	*ORANGE*				*816.45*	*44*	*70*
2	*BLUE*				*815.71*	*70*	*90*
3	*PINK*				*815.02*	*98*	*90*
4	RED				814.79	115	115
5	ORANGE				813.82	145	145
6	BLUE				813.28	165	165
7	PINK				812.71	185	185
8	RED				812.21	170	170
9	ORANGE				811.56	140	140
10	BLUE				811.14	136	136
11	PINK				810.57	103	103
					Total	**1371**	**1409**

	LINE LENGTH	LTAR GPD/FT^2	SYSTEM TYPE	SOIL LTAR GPD/FT^2	TRENCH SYSTEM	DISTRIBUTION
** System*	*250*	*0.250*	*ACCEPT.*	*0.250*	*25% RED.*	**PRESSURE MANIFOLD**
Repair	1159	0.250	ACCEPT.	0.250	25% RED.	PRESSURE MANIFOLD

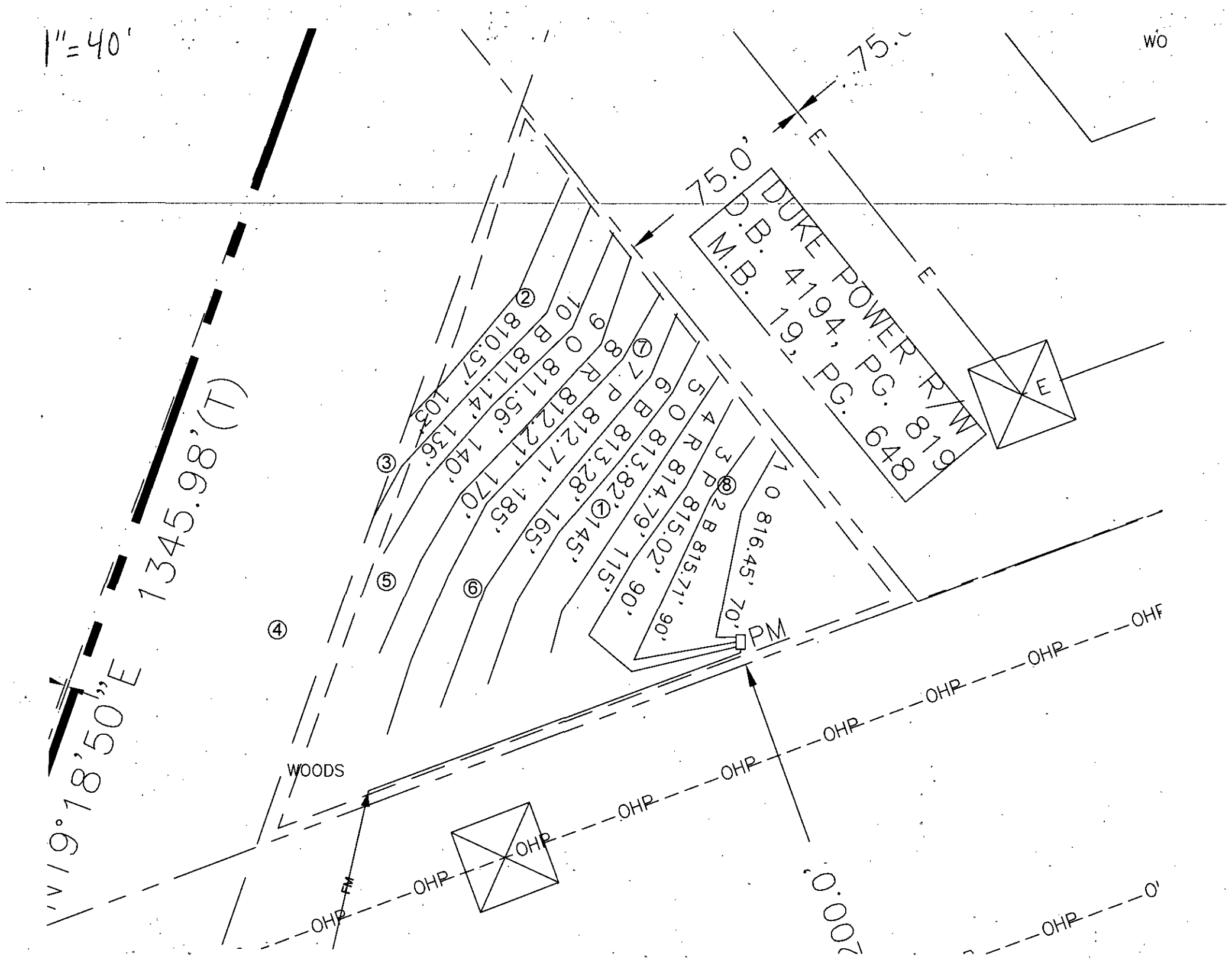
Notes:

** TBM located on left front corner lot (see site plan)

**All measures in feet

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

**BS, HI, and FS indicate rod readings


1"=40'
75.0'
75.0'
E
DUKE POWER R/W
D.B. 4194, PG. 819
M.B. 19, PG. 648
E
WO
N 19°18'50"E 1345.98'(T)
③
④
⑤
⑥
⑦
⑧
1 O 816.45, 70,
2 B 815.71, 90,
3 P 814.79, 90,
4 R 813.82, 0145,
5 O 813.28, 115,
6 B 812.71, 165,
7 P 812.21, 170,
8 R 811.56, 140,
9 O 811.14, 136,
10 B 810.57, 103'
PM
WOODS
OHP
FM
0.00'

SB Properties / Hambright Rd

SYSTEM

Line #	Color	Elev	Length	Hole Size	Flow/Tap	gpd	Trench Area	Line LTAR
1	*ORANGE*	*816.45*	*70*	SCH 80 1/2	**5.48**	31.79	210	0.15
2	*BLUE*	*815.71*	*90*	SCH 40 1/2	**7.11**	41.24	270	0.15
3	*PINK*	*815.02*	*90*	SCH 40 1/2	**7.11**	41.24	270	0.15
	total	feet =	250	gal/min =	19.7			
			Des. Flow	250				
			Pump Run=	5.80				
			LTAR	0.25				
			LTAR + 5%	0.2625				
			LTAR w / INNOV	0.333333333				
			LTAR w / INNOV + 5%	0.35				

Some lines flagged longer in the field, shorten to lengths shown here.

CALCULATIONS

Location Hambright Rd

Project Number 01-1657

Lot No:

No. of Employees	10	
Design Flow	250	$^{gal}/_{day}$
LTAR	0.25	$^{gpd/ft^2}$
25% RED.? (YES OR NO)	YES	
Supply Line Length	597	ft.
Supply Line Volume	103.878	gal.
Required Feet of Line	250	ft.
Amount of Line from Layout	250	ft.
Gallons per Minute	19.7	$^{gal}/_{min}$
Required Septic Tank Capacity	1500	gal.
Minimum Standard Tank Size	1500 gal.	
Lateral Line Volume	163.25	gal.
Dosing Volume	114.28	gal.

Note: Dosing Volume based on70% of lateral line volume

Tank Draw Down	5.4	*Generic Draw Down of 21 gal.per in.*
Pump Run Time	5.80	minutes
Elevation Head	6.95	ft.
Pressure Head	2	ft.
Friction Factor	0.84	ft./100 ft. *(From the interpolater.)*
Friction Head	5.01	ft.
Total Dynamic Head (+20%)	16.76	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

PROPERTY ID #: 01721107
COUNTY: Mecklenburg

SOIL/SITE EVALUATION
for ON-SITE WASTEWATER SYSTEM

OWNER: SB Properties
APPLICATION DATE
ADDRESS:
DATE EVALUATED: 11/2010
PROPOSED FACILITY: Office/Warehouse PROPOSED DESIGN FLOW (.1949): 250gpd
PROPERTY SIZE: ±27.9 ac
LOCATION OF SITE: Hambright Rd
PROPERTY RECORDED:
WATER SUPPLY: X Private ☐ Public X Well ☐ Spring ☐ Other
EVALUATION METHOD: X Auger Boring ☐ Pit ☐ Cut TYPE OF WASTEWATER: X 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	OTHER PROFILE FACTORS .1943 SOIL DEPTH	OTHER PROFILE FACTORS .1956 SAPRO CLASS	OTHER PROFILE FACTORS .1944 RESTR HORIZ	PROFILE CLASS & LTAR
B 1	L 0-5%	0-6	B SL GR	SS, SP, FR, SEXP	-Com. Sap -Many Sap	48"	-	-	PS 0.275 gpd/sqft
		6-22	R C MMABK	S, P, FR SEXP					
		22-30	R C WFSBK	SS, SP, FR, SEXP					
		30-48	RY CL WFSBK	SS, SP,FR, SEXP					
B 2	L 0-5%	0-11	B SL GR	SS, SP, FR, SEXP	-Com Sap & RB clay veins w/ MMABK structure, few YB -Many Sap	48"	-	-	PS 0.25 gpd/sqft
		11-26	R C MFABK/SBK	S, SP, FR, SEXP					
		26-37	R C WFSBK	SS, SP, FR SEXP					
		37-48	RY CL WFSBK	SS, SP, FR, SEXP					
B 3	L 0-5%	0-12	B SL GR/SG	SS, SP, FR, SEXP	-Few YB & Sap -Com Sap & CL Incl. -Com Sap & clay veins -Many Sap	48"	-	-	PS 0.25 gpd/sqft
		12-26	RY C MMABK	S, P, FR, SEXP					
		26-32	R C WMSBK	SS, SP, FR SEXP					
		32-40	R CL WFSBK	SS, SP, FR, SEXP					
		40-48	RY CL VWFSBK	SS, SP, FR, SEXP					
B 4	L 0-5%	0-19	B LS SG	SS, SP, FR, SEXP	-Com. YB EXP clay veins, few Chr. 2 at 32-40", few Sap -Com Sap	48"	-	-	PS 0.2 gpd/sqft to 32"
		19-32	YB SC WMABK/SBK	S, SP, FR, SEXP					
		32-40	YB C/SC WFSBK	S, SP, FR, SEXP					
		40-48	RY CL WFSBK	SS, SP, FR SEXP					

DESCRIPTION	INITIAL SYSTEM	REPAIR SYSTEM
Available Space (.1945)	PS	PS
System Type(s)	Accepted	Accepted
Site LTAR	0.25 gpd/sqft	0.25 gpd/sqft

OTHER FACTORS (.1946): None
SITE CLASSIFICATION (.1948): PS

EVALUATED BY: Adrian L. Pruett, LSS
OTHER(S) PRESENT:

COMMENTS:

SOIL/SITE EVALUATION

(Continuation Sheet)

DEPARTMENT OF ENVIRONMENT
AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL HEALTH

PROPERTY ID #: _01721107_
DATE OF EVALUATION: ___11/2010__
COUNTY: __Mecklenburg_____

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
B 5	L 0-5%	0-10	B SL SG	SS, SP, FR, SEXP	-Few/Com YB	48"	-	-	PS 0.25 gpd/sqft to 33"
		10-33	RY C WFSBK/ABK	S, P, FR, SEXP					
		33-40	R C WFSBK/ABK	S, P, FR, SEXP	-Com/Many YB, few Chr 3 & 4, few Chr 2 at 33-40"				
		40-48	R CL WFSBK	SS, SP, FR, SEXP	-Com Sap & YB				
B 6	L 0-5%	0-7	B SL SG	SS, SP, FR, SEXP	-Few YB, few sap >20"	48"	-	-	PS 0.25 gpd/sqft
		7-27	R C MMABK	S, P, FR, SEXP					
		27-48	RY CL WFSBK	SS, SP, FR, SEXP	-Many Sap				
B 7	L 0-5%	0-14	B SL GR	SS, SP, FR, SEXP		48"	-	-	PS 0.225 gpd/sqft
		14-24	YB SC/SCL WFSBK	SS, SP, FR, SEXP					
		24-40	R C MMABK	S, SP, FR, SEXP	-Com YB, few sap				
		40-48	R CL WFSBK	SS, SP, FR, SEXP	-Com. Sap				
B 8	L 0-5%	0-8	B SL GR	SS, SP, FR, SEXP	-Few Sap & YB	48"	-	-	PS 0.25-.275 gpd/sqft
		8-26	R C MFSBK/ABK	SS, SP, FR, SEXP					
		26-48	R CL WFSBK	SS, SP, FR, SEXP	- Com. Sap				

COMMENTS:

Mecklenburg County Groundwater & Wastewater Services
700 N. Tryon St, Suite 211 Charlotte, NC 28202
Phone: (704) 336-5103 Fax: (704) 336-6894

NC DENR
Division of Environmental Health
On-Site Wastewater Section

IMPROVEMENT PERMIT for a COMMERCIAL ON-SITE WASTEWATER TREATMENT & DISPOSAL SYSTEM

Permit #: **30004550** GWS File #: **8148B** Tax Parcel #: **017-211-07**

- This IMPROVEMENT PERMIT is subject to revocation if site plans or the intended use change. There is to be **NO** grading, filling, or disturbance of the soil in the area of the septic tank system or repair area.
- CONSTRUCTION AUTHORIZATION must be obtained prior to receiving a Building Permit. The Construction Authorization is **NOT** transferable. Do not clear, grade, fill or disturb soil prior to obtaining a Construction Authorization.
- Domestic-type wastewater only. No industrial process wastewater may be discharged into the system.

I. This Improvement Permit Shall: Expire in Five (5) Years **Expiration Date (If Applicable):** 5/3/2016

Intallation Type: Commercail/Industrial - New System Business Type: Commercial

Facility Size (ft^2): 10000 # Employees/Shift: 10 # Shifts: 1

Wastewater Type: Sewage Water Supply: Municipal

II. Initial System Type: Pump to Approved **System Classification:** IIIb

Initial System Specifications:

Design Flow (gpd):	250	LTAR (gpd/ft^2):	0.25	Septic Tank Size (gal):	1500	Pump Tank Size (gal):	1500
Trench Width (ft):	3	Trench Spacing (ft):	9	Absorption Area (ft^2):	750	Total Trench Length (ft):	250
Maximum Trench Depth (in):	36	Depth of Media (in):	12	Distribution Device:	Pressure Manifold		

III. Repair System Type: Pump to Approved **System Classification:** IIIb

Repair System Specifications:

Design Flow (gpd):	250	LTAR (gpd/ft^2):	0.25	Septic Tank Size (gal):	1500	Pump Tank Size (gal):	1500
Trench Width (ft):	3	Trench Spacing (ft):	9	Absorption Area (ft^2):	750	Total Trench Length (ft):	250
Maximum Trench Depth (in):	36	Depth of Media (in):	12	Distribution Device:	Pressure Manifold		

IV. Permit Conditions/Comments:

(Please See the Following Page for Permit Conditions.)

The undersigned, an authorized agent of the MECKLENBURG COUNTY HEALTH DEPARTMENT, certifies that the Department is issuing an IMPROVEMENT PERMIT for the above referenced property. This permit is being issued in accordance with the *Laws and Rules For Sewage Treatment, and Disposal Systems* and is subject to the following provisions:

- No work shall be conducted on the septic system until an INSTALLATION APPROVAL is granted by the Department.
- The septic system installer shall be a registered septic contractor with Mecklenburg County Health Department.
- The permitted system shall be installed in accordance with the included PLOT PLAN.
- This IMPROVEMENT PERMIT is transferable.

DENR Authorized Agent: Jeremy Michelone Owner/Legal Agent: _____
Print Name

Signature: Jeremy Michelone, REHS Signature: _____

Date Issued: 5/3/2011

Mecklenburg County Groundwater & Wastewater Services
700 N. Tryon St, Suite 211 Charlotte, NC 28202
Phone: (704) 336-5103 Fax: (704) 336-6894

NC DENR
Division of Environmental Health
On-Site Wastewater Section

IMPROVEMENT PERMIT for a COMMERCIAL ON-SITE WASTEWATER TREATMENT & DISPOSAL SYSTEM

Permit #: **30004550** GWS File #: **8148B**

IV. Permit Conditions/Comments:

- Easement agreement forms shall be on file and the property shall be deeded and recorded prior to issuance of Construction Authorization.
- This type of septic system requires an inspection once every 5 years by our office. The system owner is responsible for any fees, as determined by the Mecklenburg County Board of Commissioners, associated with this inspection.
- The septic system shall be installed in accordance with the plans submitted by the wastewater system design consultant.
- Upon completion of the project the system designer shall provide Groundwater & Wastewater Services with a letter certifying that the system was installed in accordance with the approved design.
- The permitted system design requires a pressure manifold with varying tap diameters and/or pipe schedules. The contractor should review the specification detail provided by the system designer prior to bidding the project.

The undersigned, an authorized agent of the MECKLENBURG COUNTY HEALTH DEPARTMENT, certifies that the Department is issuing an IMPROVEMENT PERMIT for the above referenced property. This permit is being issued in accordance with the *Laws and Rules For Sewage Treatment and Disposal Systems* and is subject to the following provisions:

- No work shall be conducted on the septic system until an INSTALLATION APPROVAL is granted by the Department.
- The septic system installer shall be a registered septic contractor with Mecklenburg County Health Department.
- The permitted system shall be installed in accordance with the included PLOT PLAN.
- This IMPROVEMENT PERMIT is transferable.

DENR Authorized Agent: Jeremy Michelone

Signature: Jeremy Michelone REHS

Date Issued: 5/3/2011

Owner/Legal Agent: _____
Print Name

Signature: _____

5/3/11

Jeremy,

Attached is the encroachment letter from Duke Energy for SB Properties. Please let me know when the IP is ready and I will set floor plans. Also let me know if there is a balance due.

Thank you
Ashley

Duke Energy Corporation
PO Box 1244
TV02C
Charlotte, NC, 28201-1244
704-382-2664

January 4, 2011

Mr. Chris Hope
2617 Rolling Hills Drive
Monroe, NC, 28110

Re: S & B Properties

Dear Mr. Hope,

I have reviewed the design for S & B Properties in Mecklenburg County. The drawings reviewed are numbered sheets SE-1, SE-2, U-1 dated 12-21-10 and sheet U-2 dated 12-10-10. Duke Energy does not object to the use of the right of way as shown by these drawings.

In summary, the following details Duke Energy comments.

- Contractors operating grading equipment should be instructed not to grade within 25ft of the poles or towers and to maintain a 4:1 slope or flatter. No spoil dirt is to be placed within the Duke R/W limits.
- All borrow areas must be brought back to the original grade shown on the drawings or kept at a lower elevation from what is shown on the drawings.
- All proposed sewer line easements must not cross any closer than 25' to any Duke Energy electrical structure,
- Any damage to the line and claims due to the damage is the responsibility of the contractor/owner.
- We have not reviewed, and therefore have not approved, any other plans than what is referenced above. Duke Energy restrictions prohibit, within the right-of-way, trees that exceed 15 ft at maturity or lights that exceed 15ft.

Duke Energy also offers the following comments to ensure that other potential conflicts are not created during construction.

- If there are design changes to any drawings that involve the right of way, Duke Energy would like the opportunity to review these changes for compliance.
- Proper clearances must be maintained. If any construction work by Duke Energy is required to maintain proper clearances, the cost will be the responsibility of the developer.

In not objecting to the use of the right-of-way for use as shown on the drawings, Duke Energy is not relinquishing the right to control and maintain the right-of-way as specified in the agreements. Any damage to the tower or lines and claims caused by the damage is the responsibility of the developer. It is the responsibility of the contractors to ensure all persons working near the transmission lines are made aware of the safety hazards associated with this line. I have attached a copy of the right-of-way restrictions as well as the approved plantings list.

Thank you for the opportunity to work with you on this project. If you have any questions, please feel free to contact me at 704-382-2664.

Sincerely,

Ed Williams
R/W Asset Protection

Enclosures: R/W Restrictions, Plant list, "Look up and Live" Brochure
Reference: 2A12 T-107

QUESTIONS?

If you have any questions about power line safety, please call Duke Energy at:

Ohio or Kentucky: 800.544.6900

Indiana: 800.521.2232

North/South Carolina: 800.777.9898

Nantahala: 828.524.2121

For more safety information, visit our web site at www.duke-energy.com.

Stay away from power lines.

Power Line Safety

It's something to think about.

Duke Energy®

rev. 8/08

LOOK UP AND LIVE.

Working around high voltage transmission lines.



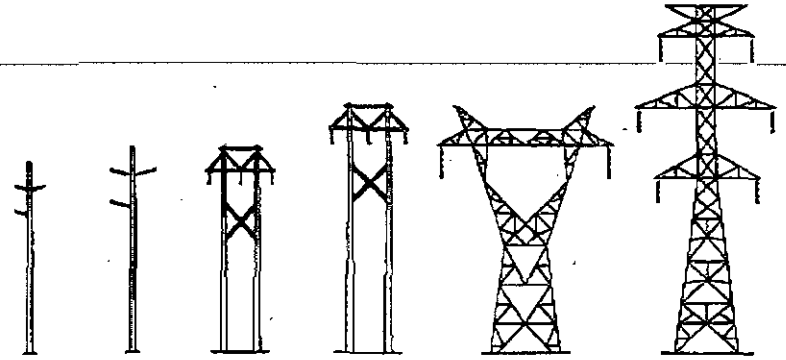
Know how to protect yourself, your crew, and the public when working around transmission lines.

Duke Energy cares about your safety. This brochure is for the safety of:

- Anyone Working around Power Lines
- Grading Contractors
- Fork Lift Operators
- Crane Operators
- Developers (Residential, Commercial, Industrial)
- Architects and Engineers
- Dump Truck Operators

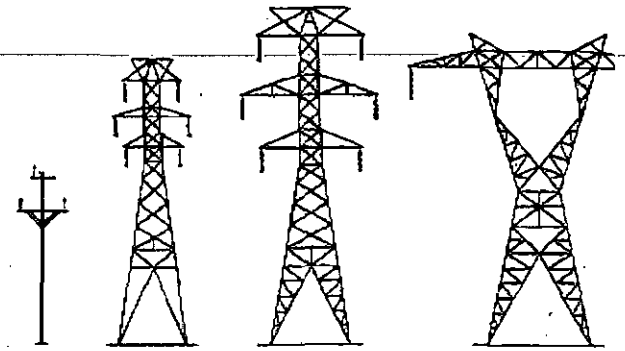
Duke Energ

Midwest Transmission Line Structures



Maximum Voltage	72 kV	145 kV	145 kV	242 kV	362 kV	362 kV
OSHA Minimum Approach Distance	10 ft. 9 in.	13 ft. 2 in.	13 ft. 2 in.	16 ft. 6 in.	20 ft. 5 in.	20 ft. 5 in.
Conductor to Ground Clearances	Contact Duke Energy					

Carolina Transmission Line Structures



Maximum Voltage	48 kV	107 kV	242 kV	550 kV
OSHA Minimum Approach Distance	10 ft.	11 ft. 11 in.	16 ft. 5 in.	26 ft. 8 in.
Conductor to Ground Clearances	Contact Duke Energy			

Hold a pre-work safety meeting, pointing out areas where overhead lines and electric equipment are located.

Here are some things we can help you with:

- Confirm voltages
- Confirm clearance
- Confirm wire height under peak conditions
- Provide safety guidance around power lines
- Review and approve drawings for:
  - Compliance with right of way restrictions
  - Compliance to National Electrical Safety Code
- Work with you for the best solution

For more information, visit www.duke-energy.com for your contact person and right-of-way restrictions.

In case of an emergency

If your equipment makes contact with an overhead power line, notify Duke Energy immediately and take these precautions:

- Have someone call 911.
- Do not attempt to turn off engines or generators.
- Move equipment away from the line only if it is safe to do so.
- Remain on equipment until utility workers arrive and de-energize the line.
- Warn others to stay away. Those on the ground can be injured or killed if they make contact with the equipment.
- If you must leave the equipment because of fire other dangers, jump off with your feet together. Never touch the ground and equipment at the sa time. Keeping your feet together, shuffle or hop away until you are clear of the area.

Duke Energy

ELECTRIC TRANSMISSION RIGHTS-OF-WAY GUIDELINES/RESTRICTIONS
VALID FOR NORTH CAROLINA AND SOUTH CAROLINA

This list of rights-of-way restrictions has been developed to answer the most frequently asked questions about property owner use of Duke Energy's electric transmission rights of way. This list does not cover all restrictions or all possible situations. You should contact the Asset Protection Right-of-Way Specialist if you have additional concerns about the rights of way. This list of restrictions is subject to change at any time and without notice. Duke Energy reserves all rights conveyed to it by the right-of-way agreement applicable to the subject property. All activity within the rights of way shall be reviewed by an Asset Protection Right-of-Way Specialist. It is strongly suggested that you contact Duke Energy and submit plans for approval prior to construction of any improvements within the rights of way.

1. Structures, buildings, manufactured homes, mobile homes and trailers, satellite signal receiver systems, swimming pools (and any associated equipment and decking), graves, billboards, dumpsters, signs, wells, septic systems or storage tanks and systems (whether above or below ground), refuse of any type, flammable material, building material, wrecked or disabled vehicles and all other objects (whether above or below ground) which may, in Duke Energy's opinion, interfere with the electric transmission right of way, in any way, are not allowed within the rights-of-way limits. Transformers, telephone/cable pedestals (and associated equipment), and fire hydrants are not allowed. Manholes, water valves, water meters and backflow preventors are not permitted.
2. Fences shall not be attached to poles or towers. Fences shall not exceed 10 feet in height and shall be installed greater than 25 feet from poles, towers and guy anchors. Fences shall not parallel the centerline within the rights of way but may cross from one side to the other at any angle not less than 30 degrees with the centerline. If a fence crosses the rights of way, a gate (16 foot wide gate at each crossing) shall be installed by the property owner, per Duke Energy's specifications, to allow free access required by Duke Energy equipment.
3. Contact Duke Energy and obtain written approval before grading or filling on the rights of way. Grading (cuts or fill) shall be no closer than 25 feet from a pole or tower leg, and the slope shall not exceed 4:1 on the rights of way. Grading or filling within the rights of way or near a structure, which will prevent free equipment/vehicle access, or creates ground to conductor clearance violations, will not be permitted. Sedimentation control, including re-vegetation, is required per state regulations.
4. Streets, roads, driveways, sewer lines, water lines, and other utility lines, or any underground facilities shall not parallel the centerline within the rights of way, but may cross, from one side to the other, at any angle not less than 30 degrees with the centerline. No portion of such facility shall be located within 25 feet of Duke Energy's supporting structures. Intersections of roads, driveways, or alleyways are not permitted within the rights of way.
5. Any drainage feature that allows water to pond, causes erosion, directs storm water toward the rights of way, or limits access to or around a structure is prohibited.
6. Contact Duke Energy prior to the construction of lakes, ponds or retention facilities, etc. within the rights-of-way limits.
7. Duke Energy does not object to parking within the rights of way, provided that:
   a. A barrier, sufficient to withstand a 15 mph vehicular impact, shall be erected by the party constructing the parking area to protect the pole, tower or guy anchor. The barrier shall be located in such a manner as to restrict parking to at least 5 feet from the structure.
   b. Any access areas, entrances, or exits shall cross (from one side to the other) the rights of way at or near right angles to the centerlines, and shall not pass within 25 feet of any structure. Parking lot entrances/exits cannot create an intersection within the right of way.
   c. Lighting structures within the rights-of-way limits must be approved by Duke Energy before installing. Total height may not exceed 15 feet.
   d. Signs and other attachments to Duke Energy structures are prohibited.

8. Duke Energy Carolinas will not object to certain vegetation plantings as long as:
   a. It does not interfere with the access of existing structures or the safe and reliable operation and maintenance of the line.
   b. With prior written approval, Duke Energy Carolinas does not object to plants, shrubs and trees that are of a species that will not exceed, at maturity, fifteen (15) feet in height.
   c. Duke Energy Carolinas reserves the right to object to the planting of all plants, shrubs and trees within the right of way easement that may interfere with the proper operation and maintenance of the line.
   d. Duke Energy Carolinas may exercise the right to cut "danger trees" outside the rights of way limits as authorized by the right of way agreement applicable to the subject property and as required to properly maintain and operate the transmission line.

We hope this is useful information. If you have additional questions or plan any activity not mentioned above, please contact:

Duke Energy Representative: _____

Telephone number: _____

Form 02191 (5/02/2008)

APPROVED PLANT MATERIALS THAT CAN BE PLANTED ON DUKE ENERGY'S ELECTRIC TRANSMISSION RIGHTS-OF-WAY

Plant materials below 15feet in height are approved for planting on Duke Energy's Electric Transmission Rights-of-Way in order to maintain the reliability of these major power lines that serve the public. The following lists of plants generally do not exceed 15feet in mature height in the service area of Duke Energy's Electric Transmission under the environmental conditions that exist on our rights-of-way. However, if any approved plants exceed the 15foot limit, they will be subject to removal.

This is not an all-inclusive list.

Note that some species have cultivars that exceed 15feet in mature height and some that will not.

Botanical Name	Common Name	Mature Height
Aesculus parvifolia	Bottlebrush Buckeye	15'
Amelanchier canadensis	Servicebeny	15'
Ternstroemai (Cleyara) japonica	Japanese Cleyera	10'
Camellia sasanqua	Sasanqua	10'
Corylopsis glabescens	Fragrant Winterhazel	15'
Corylus americana	American Filbert	15'
Cotinus coggygria	Common Smoketree	15'
Exochorda racemosa	Pearlbush	15'
Hamamelis mollis	Chinese Witchhazel	15'
Hamamelis vernalis	Vernal Witchhazel	10'
Hibiscus syriacus	Rose-of-Sharon	10'
Hydrangea quercifolia	Oak-leafed Hydrangea	12'
Ilex cornuta burfordi nana	Dwarf Burford Holly	10'
Ilex crenata	Japanese Holly	10'
Ilex verticillata	Winterberry	15'
Juniperus chinensis 'Hetzi'	Hetzi Juniper	12'
Kolkwitzia amabilis	Beautybush	10'
Lagerstroemia indica (cultivars under 15-ft)*	Crepe Myrtle*	15'
Loropetallum chinense	Loropetallum	12'
Prunus 'Holly Jolivette'	Holly Jollvette Flowering Cherry	15'
Punica granatum	Pomegranate	15'
Syringa vulgaris	Common Lilac	15'
Viburnum burkwoodi	Burkwood Viburnum	10'
Viburnum dilatatum	Linden Viburnum	10'
Viburnum plicatum var. tomentosum	Doublefile Viburnum	10'
Viburnum prunifolium	Blackhaw Viburnum	15'
Viburnum rhytidophylloides	Lantanaphyllum Viburnum	12'
Viburnum rhytidophyllum	Leatherleaf Viburnum	15'
Viburnum sargenti	Sargent's Viburnum	15'
Viburnum tinus	Laurlstinus Viburnum	8'
Vitex negundo	Chasetree	15'

***Crepe Myrtle Cultivars That Generally Do Not Exceed 15-Feet Mature Height**

Acoma	Osage
Apalachee	Pecos
Caddo	Sioux
Comanche	Tonto
Hopi	Yuma
Lipan	Zuni

Revised: 10/09