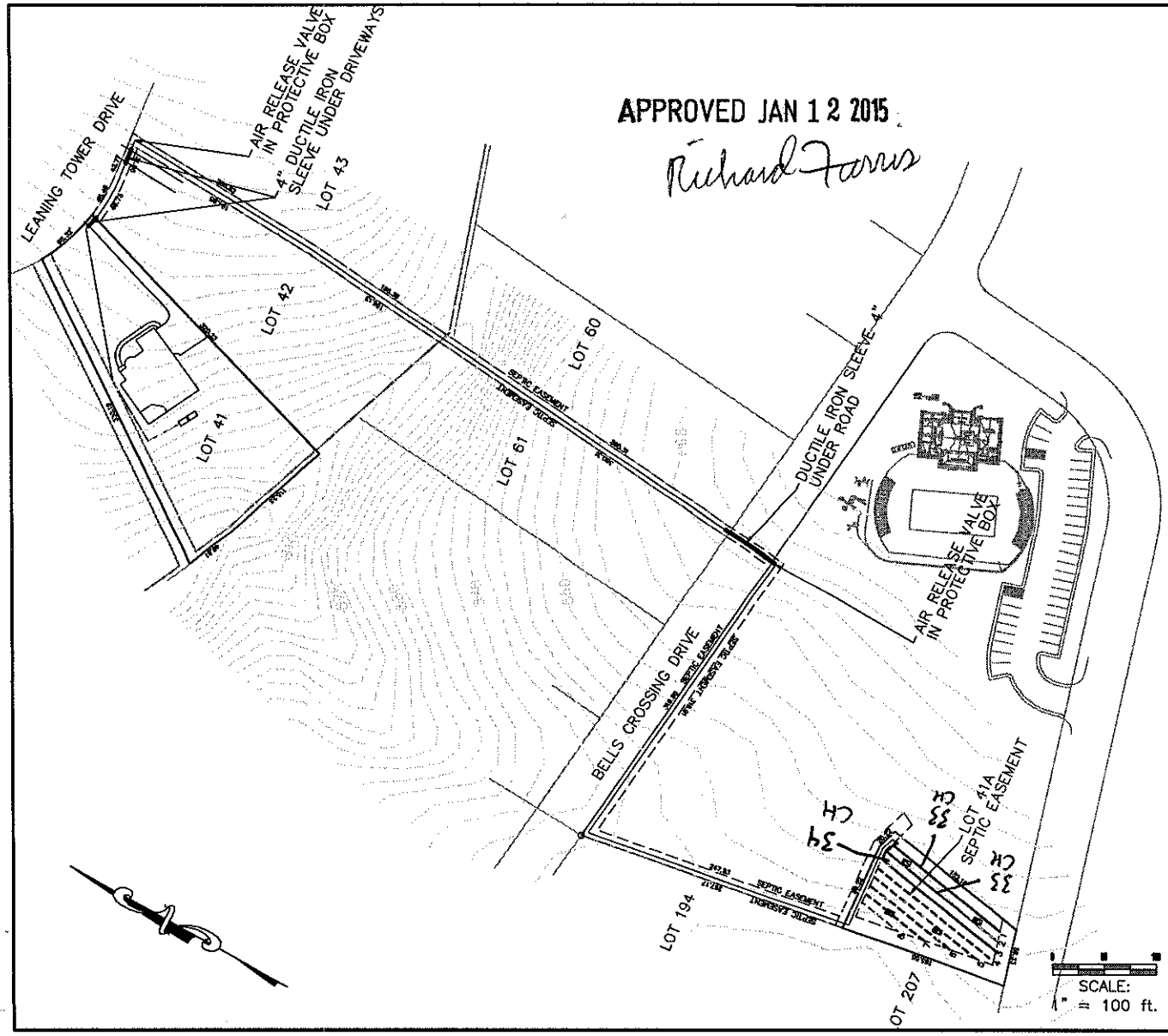


Bateman Civil Survey Company
Engineers • Surveyors • Planners
200 N. Main Street, Holly Springs, NC 27540 Ph: 919.577.1080 Fax: 919.577.1081
www.batemancivilsurvey.com info@batemancivilsurvey.com
NCBELS Firm No. C-0278

LINE SCHEDULE

LINE NUMBER	COLOR	FIELD ELEVATION	LENGTH (FT)	DESIGN LENGTH
1	YELLOW	2.7	132	132
2	ORANGE	3.2	139	134
3	PINK	3.5	141	134
4	RED	3.9	142	142
5	YELLOW	4.4	100	100
6	ORANGE	4.8	80	80
7	RED	5.2	60	60
8	ORANGE	5.5	36	36
	TANKS	35.7		

LOT 41 BELLS CROSSING SUBDIVISION

4-BEDROOM ACCEPTED STATUS PRESSURE MANIFOLD SYSTEM
LINES 1-3 TOTAL 400 LINEAR FEET
EZFLOW OR CHAMBER
LTAR 0.3
25% REDUCTION
36" TRENCH DEPTH MAX

4-BEDROOM LPP FED PANEL BLOCK REPAIR
LINES 4-8 TOTAL 418 LINEAR FEET
LTAR 0.3
58" TRENCH DEPTH MAX

FOR GENERAL USE NOT A SURVEY
PRELIMINARY NOT FOR CONSTRUCTION

SOIL PROFILES AND ANALYSIS PROVIDED BY
CENTRAL CAROLINA SOIL CONSULTING PLLC

PRIMARY SYSTEM
REPAIR SYSTEM
REPAIR LINES (NOT USED)
PIT OR AUGER BORING

SEPTIC SYSTEM LAYOUT - LOT 41

FOR

MeritageHomes

BELLS CROSSING PHASE TWO LOT 41
MOORESVILLE, IREDELL COUNTY
REVISED 12/31/14
DATE: 12/08/14 DRAWN BY: TMB CHECKED BY: TMB

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

Sheet 1 of 2
PROPERTY ID #: 4639857102
COUNTY: Cumberland

SOIL/SITE EVALUATION
for ON-SITE WASTEWATER SYSTEM

OWNER: Meritage Homes
ADDRESS: 11605 N° Community Rd Suit 250 Charlotte NC 28217
APPLICATION DATE 12/15/14
DATE EVALUATED: 12/19, 30/14
PROPOSED FACILITY: 4BR SFD
PROPOSED DESIGN FLOW (.1949): 4BR 480
PROPERTY SIZE: 1/3 ac 41A
LOCATION OF SITE: Bells Crossing sect 2 lot 41/41A
PROPERTY RECORDED: 2015
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	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
P1	altered	0-17	CL+SAP (fill) none	Fr SE					min TD 30" mon TD 36" .3
		17-60	C+SAP AB w-mod	fi-Fr SE					
P2	altered	0-16	CL+SAP none	Fr SE					min TD 30" mon TD 36" .3
		16-48	CL+SAP WSB	Fr-Fi SE					
P3	altered	0-23	C+SAP (fill) none	fi-Fr SE					min trench depth 58" for panel block repair .3
		23-31/33	C+SAP PL→AB	Fi SE	23"-33" 2.5YR 7/1 (5YR 7/1)				
		33-60	CL+SAP WAB	Fr-fi SE	(no SW)				
P4	altered	0-9	C+SAP none (fill)	Fr SE					min trench depth for panel block repair 42" .3
		9-18	C+SAP PL→AB	fi-vfi SE					
		18-33	CL+SAP WAB	fi SE					
		33-60	CL+SAP/SAP (fill)	massive SE friable, wet					

DESCRIPTION	INITIAL SYSTEM	REPAIR SYSTEM
Available Space (.1945)	S	S
System Type(s)	25% reduct w/ pump III.b	IV.a LPP panels
Site LTAR	.3	.3

OTHER FACTORS (.1946): S
SITE CLASSIFICATION (.1948): PS
EVALUATED BY: Jarrod
OTHER(S) PRESENT: Steve Price, Matt Board & Other

COMMENTS: 16-17" fill in initial area; PL→AB structure in repair area @ 9" to 33" + 9-23" fill

DIVISION OF ENVIRONMENTAL HEALTH

PROPERTY I.D.#: _____
PROPERTY RECORDED: _____
COUNTY: _____

APPLICANT: Meritage Homes
DATE OF EVALUATION: 12/19/14

Bells Crossing lot 41 offsite

auger holes

PROFILE #	.1940 LANDSCP POS. (%)	HORIZON DEPTH (IN.)	.1941 STRUCTURE/TEXTURE	.1941 MINERALOGY/ CONSISTENCE	.1942 WETNESS COND.	.1944 RESTRICT HORIZONS	.1948 CLASS OF HORIZ	1943/ 1956 SAPRLT CLASS.	HORIZON LTAR
1	altered fill?	0-17/20	C+SAP none m	~~FF~~ SE					
		17/20	C+SAP none m	fi-vfi SE					
		20-40	C+SAP none m	fi SE					
		40-48+	C+SAP WAB	~~FF~~ SE					
2	fill? altered	0-18	CLSAP none vfi	~~FF~~ SE					
		18-36	C+SAP none m	fi-vfi SE					
		36-48+	CL+SAP WSB	~~FF~~ SE					
3	fill? altered	0-18	C+SAP none	~~FF~~ SE					
		18-30	C+SAP none to AB	fi SE					
		30-48	CL+SAP WSB	~~FF~~ SE					
4	fill?	0-18	C+SAP none	~~FF~~ SE	24"-30" from mottles				
		18-33	C+SAP WSK-m	fi SE					
		33-48	CL+SAP WSB	fi SE					

COMMENTS: lot map sketch on back auger holes

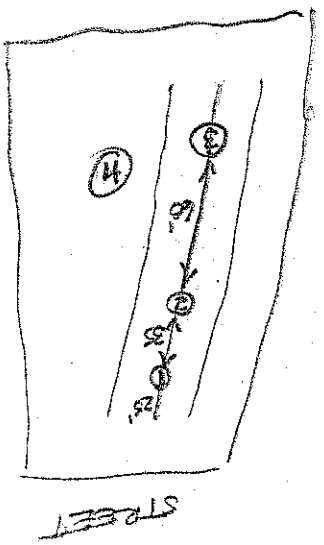
12/30 w/ Matt Burdette and Steve Price
pits

P1 0-17 CL+SAP fr none fill
17-60 C+SAP AB w-m 36" MTD
.3

P2 0-16 CL+SAP fr none fill 36" MTD
16-48 CL+SAP fr-fi w AB SE .3

P3 0-23 C+SAP fi fr none fill 3
23-31/33 C+SAP PL → AB SE
27-33" 2.5YR 7/1 5YR 7/1
33-60 CL+SAP fr-fi w AB SE

P4 0-9 C+SAP fr none m acid .3
9-18 C+SAP fi-vfi PL → AB SE
18-33 CL+SAP fi w AB SE
33-66 CL+SAP/SAP (EL-G) fr m acid



Sheet: 1 of 2
Property ID:
Lot #: 41 EASEMENT
File #:
AppID:

CCSC SOIL/SITE EVALUATION for ON-SITE WASTEWATER SYSTEM

Owner: Meritage Homes
Address: 11605 N Community House Rd, Charlotte NC 28277
Proposed Facility: 4 Bedroom Design Flow (.1949) 480 gpd
Location of Site: Bells Crossing Subdivision, Lot 41 Septic Easement

Applicant: Same
Date Evaluated: 2012
Property Size:
Property Recorded: 2013

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 .1941 Structure/ Texture	.1941 Consistence Mineralogy	b PROFILE FACTORS .1942 Soil Wetness/ Color	.1943 Soil Depth (IN.)	.1956 Sapro Class	.1944 Restr Horiz	Profile Class & LTAR
Pit 6	R, 3-5%	Bt1, 0-22	SBK, Clay	FI, SS, SP	2.5 YR 4/6	PS			PS, 0.275
					5 YR 4/6, 10%				
		Bt2, 22-55	SBK, SCL	FI, SS, SP	2/5 YR 4/8	S			S, 0.35
					5 YR 4/8, 5%				
					5-10% Mica				
Pit 7	R, 3-5%	Bt1, 0-18	SBK, CL	FI, SS, SP	2.5 YR 4/8				
		Bt2, 18-32	SBK, SCL	FI, SS, NP	2.5 YR 4/8	PS			PS, 0.35
		Bt3, 32-51	SBK, CL	FI, SS, SP	2/5 YR 5/8	S			S, 0.35
					5 YR 5/8, 15%				
Pit 8	R, 3-5%	Bt1, 0-21	SBK, SCL	FI, SS, NP	2/5 YR 4/8	PS Drip			PS, 0.15 Drip
		Bt2, 21-34	PL, Clay	EFI, S, VP	2.5 YR 4/8	UN			UN
					7.5 YR 6/8, 15%				
					7/5 YR 5/1, 10%				
		Bt3, 34-44	SBK, Clay	FI, S, P	2.5 YR 3/6	PS, SLT			PS, SLT, 0,.25
					7.5 YR 6/8, 15%				
		Bt4, 44-53	SBK, Clay	FI, S, P	2.5 YR 4/8	.25			PS, SLT, 0
					7.5 YR 6/8, 30%				
Pit 9	R, 3%	Bt1, 0-18	SBK, Clay	FI, S, P	2.5 YR 4/8	PS, Drip			PS, Drip 0.1
		Bt2, 18-24	Mass, Clay	EFI, S, VP	2.5 YR 4/8	UN			Un
					2.5 YR 5/1, 20%				
					7.5 YR 4/8, 20%				
		Bt3, 24-33	SBK, Clay	FI, S, P	2.5 YR 4/8	PS, SLT			PS, SLT .25
					7.5 YR 4/8, 15%				
		BC, 33-47	Wk SBK, SCL	FI, SS, SP	2.5 RY 4/8	PS, SLT			PS, SLT
		C, 47-53	SG, SL	VFR, NS, NP	5 YR 5/8	PS, SLT			PS, SLT, 0.4

* no I dont agree. I found 16-18" of fill on surface and platy structure in pits 3,4 Richard Farris

Description	Initial System	Repair System
Available Space (.1945)	Yes	Yes
System Type(s)	Accepted	Drip or SLB
Site LTAR	.275	0.1-0.25

Other Factors (.1946):

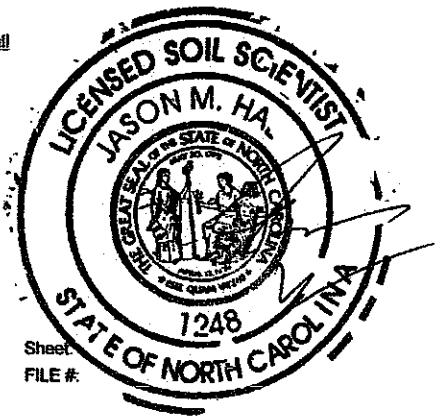
Soil Evaluation By: Jason Hall

Others Present:

Site Classification (.1948):

Site Evaluation By:

Others Present:



Sheet

FILE #:

COMMENTS:

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

Pressure Manifold
Septic System Design

for

Bells Crossing S/D Lot 41
Mooresville, North Carolina

Designed by:

Matt Burdette
Bateman Civil Survey Company
Holly Springs, North Carolina
BCSC Project #: 120342

Engineer:

Brian J. Kraynak
Bateman Civil Survey Company
Holly Springs, North Carolina



12-10-2014

October 2013
Revised Dec 2014

APPROVED JAN 12 2015

Richard Farris

Bells Crossing S/D Lot 41

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Pump Specifications ---------- 7
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Air Release Valve ---------- 11
Supply Line Hydraulic Profile ---------- 17

Attachments

Septic and Pumptank Details Figure 1

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Bells Crossing S/D Lot 41

Contact Information

Client: Meritage Homes
Attn: Robert Price
Street Address: 11605 N. Community House Road
Charlotte, NC 28277
Phone: (704) 944-8903
Fax: (704) 944-8910

Designer: Bateman Civil Survey Company, PC
Attn: Matt Burdette
Street Address: 200 North Main Street
Holly Springs, NC 27540
Phone: 919-577-1080
Fax: 919-577-1081

Engineer: Bateman Civil Survey Company, PC
Attn: Brian J. Kraynak
Street Address: 200 North Main Street
Holly Springs, NC 27540
Phone: 919-577-1080
Fax: 919-577-1081

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Bells Crossing S/D Lot 41

Layout/Design Specifications

Facility Type:	Single Family Home	
# of Bedrooms:	4	
Daily Flow:	~~480~~	**~~gal/day~~**
L.T.A.R.:	0.30	**gal/day/sq.ft**
Trench Depth:	36	**in**
Trench Width:	36	**in**
Stone Depth:	chamber	**in**
Manifold Length:	36	**in**
Manifold Diameter:	4	**in sch 80pvc**
Supply Line Length:	1800	**ft**
Supply Line Diameter:	2	**in sch 40pvc**
Supply Line Volume:	313.20	**gallons**
Friction Loss + Fitting Loss:	21.38	**ft (+ 25% for fittings)**
Design Head:	2	**ft**
Elevation Head:	50.40	**ft**
Total Head:	73.78	**ft**
Dose Volume:	209.10	**gals**
% of Pipe Vol.	.85	
Drawdown:	10.37	**in @ 20.16 gal/in**
Pump Run Time:	9.80	**minutes**
Control Panel:	SJE Rhombus Model112 control panel (or approved equivalent)	
Pump:	Zoeller 188 Flow-Mate (or approved equivalent)	
Septic Tank Effluent Filter:	Zoeller 170-0144 residential effluent filter (or approved equivalent)	
Septic Tank:	1000	**gallon**
Pump Tank:	1000	**gallon**

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Bells Crossing S/D Lot 41
SYSTEM TAP CHART

Bench Mark:	0	= 100.00	**Manifold elev:**	98.30	
Pump tank elevation:	64.30		**Pump elev:**	58.90	

line	color	rod read	elevation	length	hole size	flow/tap	gal/day	trench area	LINE LTAR
1	Blue	2.70	97.30	132	1/2in SCH 40	7.11	160.00	396	0.404
2	Pink	3.20	96.80	134	1/2in SCH 40	7.11	160.00	402	0.398
3	Red	3.50	96.50	134	1/2in SCH 40	7.11	160.00	402	0.398
	P-TANK	35.70	64.30						

	total	**feet =**	**400**	**gal/min =**	**21.33**		**LTAR =**	**0.300**
			Des. Flow	480			**(ltar + 5%)**	0.32
			24 Hour Pump Run=	22.50	minutes		**(ltar W/ INOV)**	0.40
							(ltar + 5%)	0.42

Comments:

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Richard Farris