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

OPERATION PERMIT for an ON-SITE WASTEWATER TREATMENT & DISPOSAL SYSTEM

File #: 7811 B Permit #: 6107 Tax Parcel #: 195-022-02

Property Owner: Ussery Homes

Job Location Address: 13111 Belle Grove Manor Ln Lot #2

City: Mint Hill State: NC Zip Code:

Operation Permit Issuance Date: 2/27/14 Contractor Name: Sid Gaskins

Permitted Design Flow: 600 GPD

Liquid Capacity of Septic Tank: 1500 gallons

Liquid Capacity of Dosing Tank: 1500 gallons

Effluent Pump Model: Goulds PSI 1/2hp

Drainfield Installation ☐ N/A

Trench Depth: 30 inches

Trench Width: 3 feet

Line Spacing: 9 feet (O.C.)

Total line length: 400 feet

# of Lines: 8 @ 50 feet

Depth of Media: NA inches (Type) IVa PPBPS

Depth of Cover: 12"+ inches

Distribution Device: Pressure Manif. (LPP)

Bed Installation *(For Repair Installations ONLY.)* ☒ N/A

Bed Depth: _____ inches

Bed Width: _____ feet

Total line length: _____ feet

# of Lines: _____ @ _____ feet

Depth of Media: _____ inches (Type) _____

Depth of Cover: _____ inches

Distribution Device: _____

Water Supply Source

☒ Municipal ☐ Private Well ☐ Community Well

☐ Other _____

System Installation Setbacks

Distance from Building Foundation: 5' min feet

Distance from Property Line: 10 feet

Distance from Water Supply Source: 10' min feet

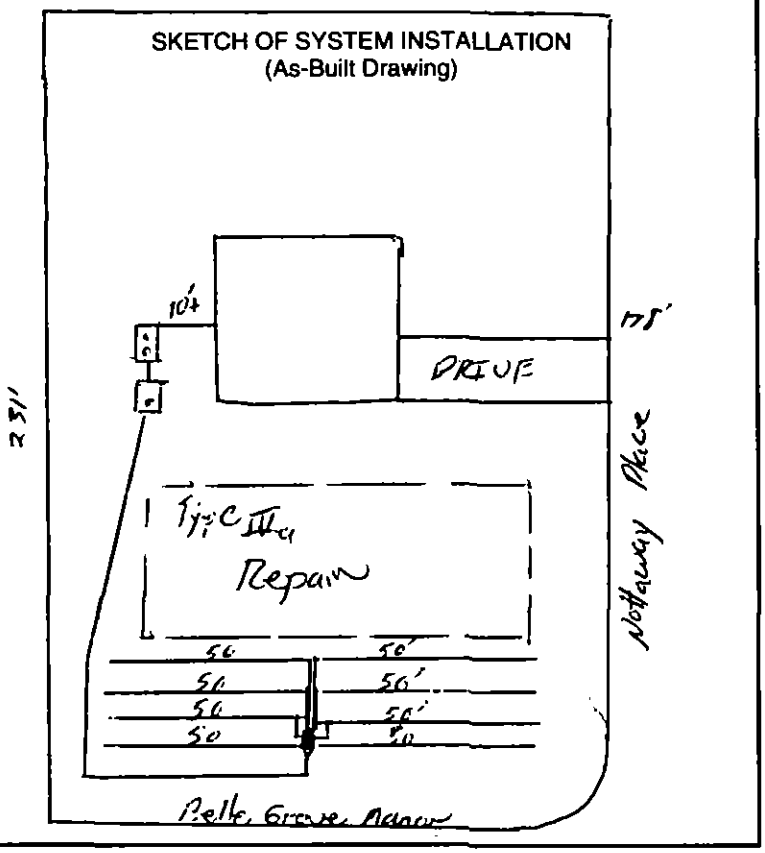
Inspection Dates

Tank(s) Inspected: 12/13/13

Excavation Inspected: 12/13/13

Pump & Controls Inspected: 4/23/14 (12/13/13)

SKETCH OF SYSTEM INSTALLATION
(As-Built Drawing)



The undersigned has inspected the Septic Tank System described above, and certifies it has been ☒ installed ☐ altered ☐ repaired ☐ as detailed in the plot above ☐ in accordance with the permit issued and meets the provisions of 15A NCAC 18A. 1900, "Laws and Rules for Sewage Treatment and Disposal Systems" in effect on the date of issuance of the permit. The issuance of this Operation *Permit does not in any way guarantee that the system will operate properly or relieve any person now or hereafter owning, controlling,* or using such system from any liability resulting from the failure of the system to operate properly. This document is issued subject to those restrictions and conditions shown on the permit(s) and the provisions of 15A NCAC 18A. 1900 in addition to those listed below under "Comments." This document shall be null and void if any information contained in the application is untrue or if any additions are made to the property which would increase the requirements for said system.

Notice: Disturbance of the designated repair area may result in the Suspension or Revocation of this permit.

Comments: System Classification & Type: IVa / PPBPS / P / NA / NA

Draw Down 348 gal @ 10.9 min

DENR Authorized Agent: Bradley W. Hallman Signature:

Mecklenburg County Groundwater & Wastewater Services
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Phone: (704) 336-5103 Fax: (704) 336-6894

NC DENR
Division of Environmental Health
On-Site Wastewater Section

OPERATION PERMIT for an
ON-SITE WASTEWATER TREATMENT & DISPOSAL SYSTEM

File #: 7111B Permit #: 6107 Tax Parcel #: 195-022-02

Property Owner: Essex Homes

Job Location Address: 13111 Belle Grove Manor Ln

City: Mint Hill State: NC Zip Code: _____

OPERATION PERMIT CONDITIONS:

I. Performance: System shall perform in accordance with 15A NCAC 18A .1961.

II. Monitoring: System shall be monitored as required by 15A NCAC 18A .1961.

III. Maintenance: Ground absorption sewage treatment and disposal systems shall be checked, and the contents of the septic tank removed, periodically from all compartments, to ensure proper operation of the system. The contents shall be pumped whenever the solids level is found to be more than 1/3 of the liquid depth in any compartment.

IV. Operation: System shall be operated in accordance with 15A NCAC 18A .1961.

System Classification: IIIa

*Operation Permits for Type V and VI systems expire five (5) years from the date of issuance (in accordance with Table V(a)). The system owner must contact GWS six (6) months prior to expiration for permit renewal.

Subsurface system operator required: Yes ☒ No ☐

☐ This type of system requires the system owner to maintain a contract with a certified operator to perform system inspection, maintenance, and reporting as required in 15A NCAC 18A .1961. and Table V(a). The system owner is responsible for all fees associated with these services.

☐ System does not require inspection by GWS on a routine frequency.

☐ System requires inspection by GWS once every five (5) years. The system owner is responsible for all fees associated with the inspection.

☒ System requires inspection by GWS once every three (3) years. The system owner is responsible for all fees associated with the inspection.

☐ System requires inspection by GWS once every twelve (12) months. The system owner is responsible for all fees associated with the inspection.

☐ System requires inspection by GWS once every six (6) months. The system owner is responsible for all fees associated with the inspection.

V. Other:

_____

_____

_____

_____

DENR Authorized Agent: Bradley W. Hellman Date: 3/27/14

Signature: _____

Mecklenburg County Groundwater & Wastewater Services
700 N. Tryon St., Suite 211 Charlotte, NC 28202
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NC DENR
Division of Environmental Health
On-Site Wastewater Section

INSTALLATION APPROVAL for an
ON-SITE WASTEWATER TREATMENT & DISPOSAL SYSTEM

File #: 78113 Permit #: 6107 Tax Parcel #: 195-022-07

Property Owner: Essex Homes

Job Location Address: 13111 Belle Grove Manor Ln

City: Mint Hill State: NC Zip Code: _____

Installation Approval Issuance Date: 12/4/13

Permission is hereby given to ☒ install ☐ alter ☐ repair an on-site wastewater treatment & and disposal system, with subsurface soil absorption and effluent discharge, as specified herein at the described location. This approval is granted based upon the application information submitted to our office. All work shall be completed on or before _____, after which date this approval shall be null and void. The system shall meet all of the construction requirements of 15A NCAC 18A. 1900 which are in effect on the date of granting this approval. An **Operation Permit** must be obtained from the Mecklenburg County Health Department before any system can be covered up or placed into service. The issuance of this permit does not in any way guarantee that the system anticipated to be constructed will operate properly, or relieve any person now of hereafter owning, controlling or using such system from any liability resulting from the failure of the system to operate properly.

***NOTICE: This system shall not be installed while soils are in a wet condition.**

Permitted Design Flow: 600 GPD

Site LTAR: .25 GPD/ft² (For new installations only.)

Liquid Capacity of Septic Tank: 1500 gallons

Liquid Capacity of Dosing Tank: 1500 gallons

Drainfield Design ☐ N/A

Trench Depth: 30 inches

Trench Width: 3 feet

Line Spacing: 9 feet (O.C.)

Total line length: 400 feet

# of Lines: 8 @ 50 feet

Depth of Media: Panel inches (Type) PPBPS

Distribution Device: Press LPP

Bed Design *(For Repair Installations ONLY.)* ☒ N/A

Bed Depth: _____ inches

Bed Width: _____ feet

Total line length: _____ feet

# of Lines: _____ @ _____ feet

Depth of Media: _____ inches (Type) _____

Distribution Device: _____

Water Supply Source

☒ Municipal ☐ Private Well ☐ Community Well

☐ Other _____

Minimum System Setbacks

Distance from Building Foundation: 5' min feet

Distance from Property Line: 10' feet

Distance from Water Supply Source: 10' feet

SKETCH OF SYSTEM LAYOUT
(Proposed Layout)

Do not alter system design without prior approval.

Install system per engineered design

Comments: System Classification & Type: IIIa / PPBPS / Press Manifold LPP

DENR Authorized Agent: Bradley W. Hollman Signature: _____

Hugh Creed Associates, Inc. P.A.

Consulting Engineers & Land Surveyors

1306 W. WENDOVER AVENUE P.O. BOX 9623
GREENSBORO, N.C. 27408 GREENSBORO, N.C. 27429
TELE: (336) 275-9826 OR (336) 275-8084 FAX: (336) 275-3379
FIRM LICENSE #C-0551 E-MAIL: HCA@TRIADBIZ.RR.COM

December 30, 2013

Mecklenburg County Ground Water and Wastewater Services
700 N. Tryon Street, Suite 211
Charlotte, NC 28202
Attn: Mr. Brad Hallman,

Re: Final Certification of Installation for PPBPS Septic System
Lot 2 Belle Grove Manor Subdivision
13111 Belle Grove Manor Lane, Matthews, NC 28105

Dear Mr. Hallman,

This letter is to certify, based upon inspections by myself, and/or others under my supervision, the above referenced pressure dosed PPBPS septic system was completed in accordance with the approved design.

Sincerely,
Hugh Creed Associates, Inc., P.A.

Norris Z. Clayton, P.E., P.L.S.



December 30, 2013

FEE: 200.00
DATE: 12/6/2013

CONSTRUCTION AUTHORIZATION FOR AN ON-SITE WASTEWATER TREATMENT & DISPOSAL SYSTEM

MECKLENBURG COUNTY
GROUNDWATER & WASTEWATER SERVICES

FILE NUMBER: 7811B

PERMIT NUMBER: 30006107

PARCEL NUMBER: 19502202

JOB LOCATION INFORMATION

ADDRESS: 13111 BELLE GROVE MANOR LN

CITY: MATTHEWS **STATE: NC** **ZIP:** 28105

ISSUED TO: Essex Homes Southeast Inc

CONSTRUCTION AUTHORIZATION ISSUANCE DATE: 5/15/2012

CONSTRUCTION AUTHORIZATION CONDITIONS

1. WASTEWATER SYSTEM CONSTRUCTION AND INSTALLATION MUST MEET ALL CONDITIONS AND SPECIFICATIONS AS SET FORTH IN IMPROVEMENT PERMIT NUMBER 30006107, AND THE ATTACHED SITE PLAN WITH SYSTEM DETAILS. CONSTRUCTION AND INSTALLATION MUST ALSO MEET ALL REQUIREMENTS SET FORTH IN THE RULES GOVERNING SANITARY SEWAGE COLLECTION, TREATMENT, AND DISPOSAL AND ANY OTHER APPLICABLE RULES AND LAWS.

2. AN INSTALLATION APPROVAL MUST BE SECURED PRIOR TO INSTALLATION OF THE SEPTIC TANK SYSTEM. THE INSTALLER OF THE SYSTEM SHALL BE A REGISTERED SEPTIC TANK CONTRACTOR WITH THE MECKLENBURG COUNTY HEALTH DEPARTMENT.

3. ANY ALTERATION IN SITE OR SOIL CONDITIONS (INCLUDING LOCATION OF STRUCTURES AND APPURTENANCES) OR MODIFICATION IN USE, DESIGN WASTEWATER FLOW, OR WASTEWATER CHARACTERISTICS AS SPECIFIED IN THE ASSOCIATED IMPROVEMENT PERMIT AND APPLICATION, MAY SUBJECT THIS CONSTRUCTION AUTHORIZATION AND ASSOCIATED PERMIT(S) TO REVOCATION.

4. THIS CONSTRUCTION AUTHORIZATION AS PROVIDED IN G.S. 130A-335(f) AND G.S. 130A-336(b) SHALL BE VALID FOR A PERIOD EQUAL TO THE VALIDITY OF THE IMPROVEMENT PERMIT, NOT TO EXCEED 60 MONTHS.
   *CONSTRUCTION AUTHORIZATION EXPIRATION DATE: 5/15/2018

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 RESIDENTIAL ON-SITE WASTEWATER TREATMENT & DISPOSAL SYSTEM

Permit #: 30006107 GWS File #: 7811B Tax Parcel #: 196-022-02

- 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):** 5/15/2018

Type of Installation: Residential - New System Lot Number: 2

Structure Type: HOUSE Size (ft^2): 4246 # Bedrooms: 6 # Occupants: 2

Building Foundation: Crawl Space Water Supply: Municipal

II. Initial System Type: PPBPS (pressurized) **System Classification:** IVa

Initial System Specifications:

Design Flow (gpd):	600	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):	1200	Total Trench Length (ft):	400
Maximum Trench Depth (in):	30	Depth of Media (in):	28	Distribution Device:	Manifold (LPP Distr		

III. Repair System Type: PPBPS (pressurized) **System Classification:** IVa

Repair System Specifications:

Design Flow (gpd):	600	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):	1200	Total Trench Length (ft):	400
Maximum Trench Depth (in):	26	Depth of Media (in):	28	Distribution Device:	Manifold (LPP Distr		

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: Jacob Presley

Signature: _____

Date Issued: 5/15/2013

Owner/Legal Agent: Susan Catt
Print Name

Signature: _____

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 RESIDENTIAL ON-SITE WASTEWATER TREATMENT & DISPOSAL SYSTEM

Permit #: 30006107 GWS File #: 7811E

IV. Permit Conditions/Comments:

- This type of septic system requires an inspection once every 3 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.
- This type of septic system requires a Certified Operator to maintain the system. A system maintenance contract with a Certified Operator must be on file prior to issuance of an Operation Permit.
- This type of repair system requires the property owner to obtain a contract with a Certified Operator to perform routine inspections and maintenance on the system.
- This type of repair system requires periodic inspections 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.
- All components of the septic system must be installed in accordance with the required setbacks listed on the corresponding plot plan.
- All components of the septic system must be located at least 100 ft. (50 ft. minimum) from all private wells.
- All waterlines must be located a minimum of 10 ft. from any part of the septic system.
- 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.
- Flow from all gutters and downspouts shall be directed not to discharge water onto or across any part of the septic system.
- See wastewater system design consultant's design documents for more details. Repair area requires minimum of 6" of cover if it is ever used with a PPBPS system.

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: Jacob Presley

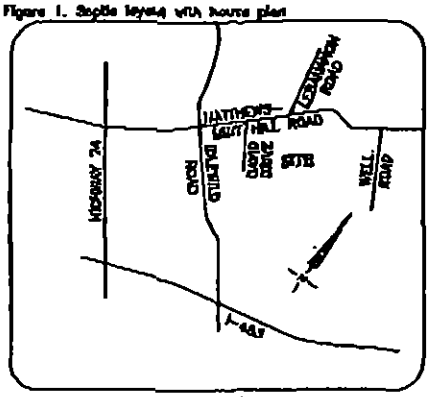
Signature: _____

Date Issued: 5/16/2013

Owner/Legal Agent: Susan Catt
Print Name

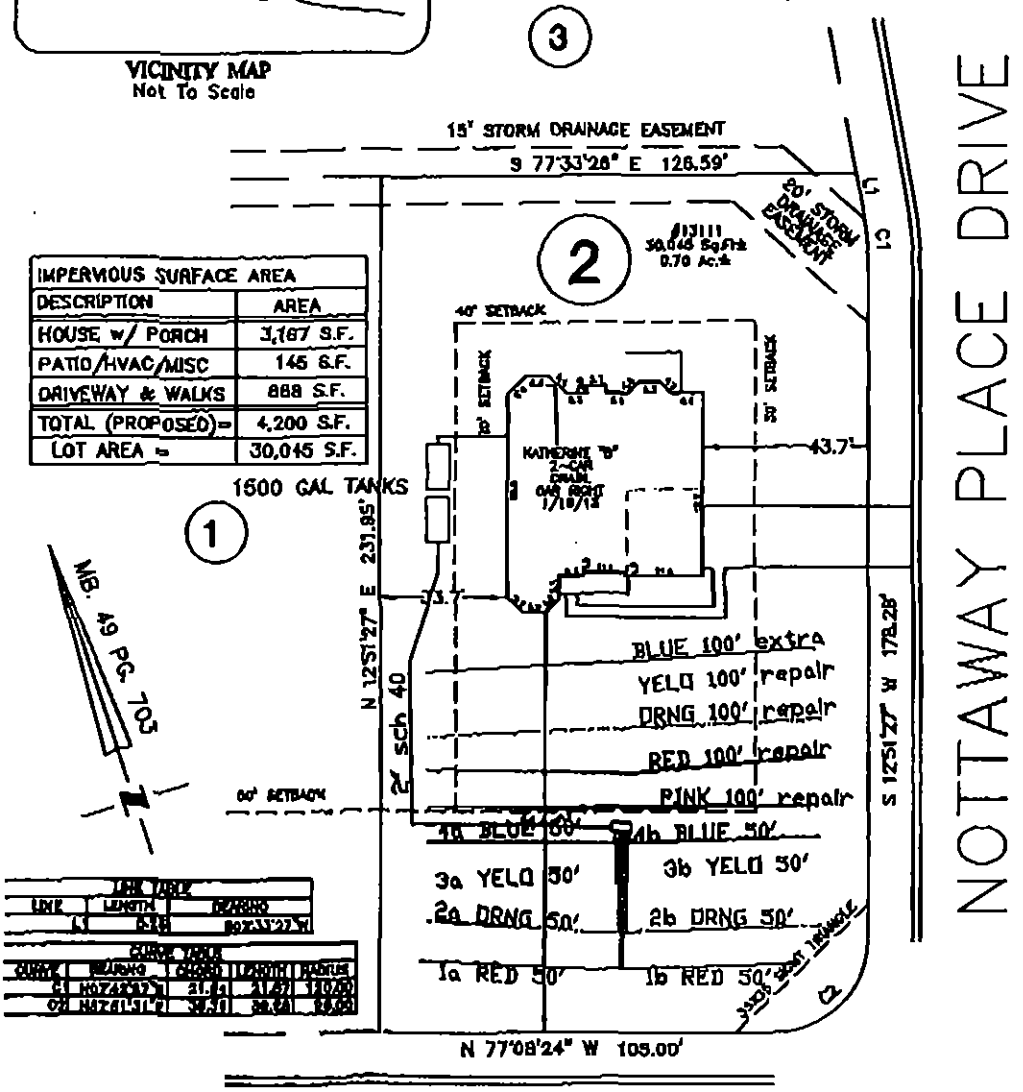
Signature: Susan Catt

Figure 1. Site layout with house plan



VICINITY MAP
Not To Scale

*Layout performed by S&FS, PA



IMPERVIOUS SURFACE AREA	
DESCRIPTION	AREA
HOUSE w/ PORCH	3,187 S.F.
PATIO/HVAC/MISC	145 S.F.
DRIVEWAY & WALKS	868 S.F.
TOTAL (PROPOSED)=	4,200 S.F.
LOT AREA =	30,045 S.F.

LINE TABLE		
LINE	LENGTH	BEARING
L1	5.18	S02°33'22"W

CURVE TABLE				
CURVE	BEARING	CHORD	LENGTH	RADIUS
C1	N02°45'53"E	21.41	21.47	110.00
C2	N12°51'27"E	36.71	36.84	110.00

BELL GROVE MANOR LANE

VARIABLE PUBLIC R/W

PRELIMINARY PLAT
NOT FOR RECORDATION, CONVEYANCES, OR SALES

SCALE: 1" = 40'

HOUSE LOCATION PLOT PLAN
FOR

LOT 2, BELLE GROVE MANOR PHASE 1 MAP 1
Town of Mint Hill, Mecklenburg County, North Carolina

PROPERTY OF: ESSEX HOMES

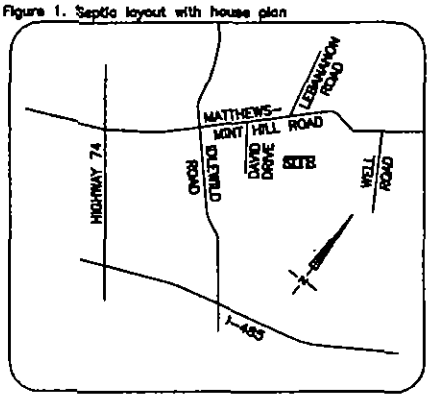
MAP BOOK 49 PAGE 703 DEED REFERENCE:

DRAWN BY: BUI | DATE: 3/22/2013

EASTOVER
LAND SURVEYING COMPANY, P.A.
LAND SURVEYORS – PLANNERS – C-1833
600 TOWNE CENTRE BOULEVARD, SUITE #309
PINEVILLE, NORTH CAROLINA 28134
PHONE (704) 927-8080
FAX (704) 889-0105

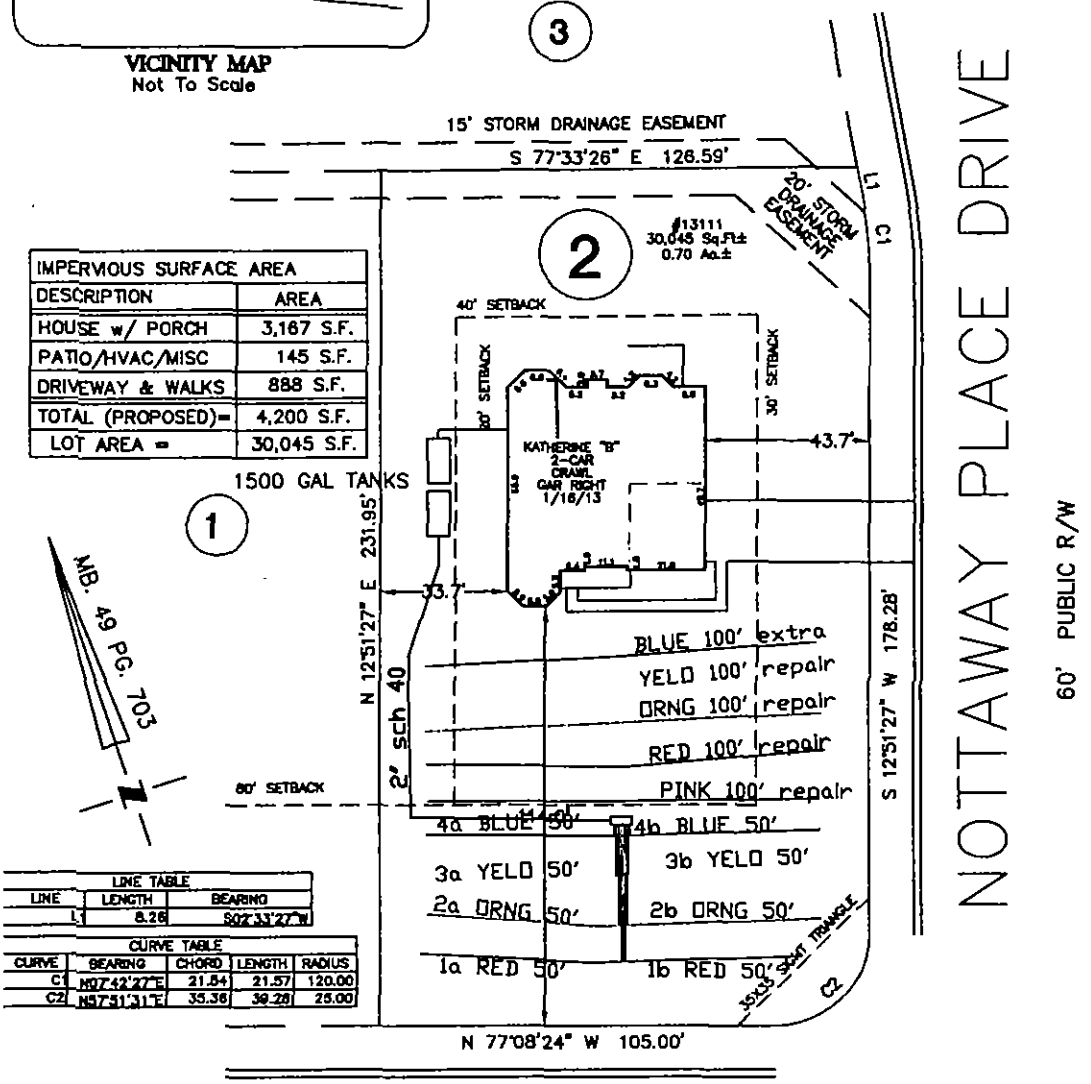
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Figure 1. Septic layout with house plan



VICINITY MAP
Not To Scale

*Layout performed by S&FS, PA



IMPERVIOUS SURFACE AREA	
DESCRIPTION	AREA
HOUSE w/ PORCH	3,167 S.F.
PATIO/HVAC/MISC	145 S.F.
DRIVEWAY & WALKS	888 S.F.
TOTAL (PROPOSED)=	4,200 S.F.
LOT AREA =	30,045 S.F.

LINE TABLE		
LINE	LENGTH	BEARING
L1	8.26	S02°33'27"W

CURVE TABLE				
CURVE	BEARING	CHORD	LENGTH	RADIUS
C1	N07°42'27"E	21.54	21.57	120.00
C2	N57°51'31"E	35.36	39.28	25.00

BELL GROVE MANOR LANE

VARIABLE PUBLIC R/W

PRELIMINARY PLAT
NOT FOR RECORDATION, CONVEYANCES, OR SALES.

40 0 40
SCALE: 1" = 40'

HOUSE LOCATION PLOT PLAN

FOR

LOT 2, BELLE GROVE MANOR PHASE 1 MAP 1

Town of Mint Hill, Mecklenburg County, North Carolina

PROPERTY OF: ESSEX HOMES

MAP BOOK 49 PAGE 703 DEED REFERENCE

DRAWN BY: BUI | DATE: 3/22/2013

EASTOVER
LAND SURVEYING COMPANY, P.A.
LAND SURVEYORS – PLANNERS – C-1833
600 TOWNE CENTRE BOULEVARD, SUITE #309
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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 RESIDENTIAL ON-SITE WASTEWATER TREATMENT & DISPOSAL SYSTEM

Permit #: **30006107** GWS File #: **7811B** Tax Parcel #: **195-022-02**

- 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):** 5/15/2018

Type of Installation: Residential - New System Lot Number: 2

Structure Type: HOUSE Size (ft^2): 4246 # Bedrooms: 5 # Occupants: 2

Building Foundation: Crawl Space Water Supply: Municipal

II. Initial System Type: PPBPS (pressurized) **System Classification:** IVa

Initial System Specifications:

Design Flow (gpd):	600	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):	1200	Total Trench Length (ft):	400
Maximum Trench Depth (in):	30	Depth of Media (in):	28	Distribution Device:	Manifold (LPP Distri		

III. Repair System Type: PPBPS (pressurized) **System Classification:** IVa

Repair System Specifications:

Design Flow (gpd):	600	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):	1200	Total Trench Length (ft):	400
Maximum Trench Depth (in):	25	Depth of Media (in):	28	Distribution Device:	Manifold (LPP Distri		

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: Jacob Presley

Signature: _____

Date Issued: 5/15/2013

Owner/Legal Agent: _____
Print Name

Signature: _____

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 RESIDENTIAL ON-SITE WASTEWATER TREATMENT & DISPOSAL SYSTEM

Permit #: **30006107** GWS File #: **7811B**

IV. Permit Conditions/Comments:

- This type of septic system requires an inspection once every 3 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.
- This type of septic system requires a Certified Operator to maintain the system. A system maintenance contract with a Certified Operator must be on file prior to issuance of an Operation Permit.
- This type of repair system requires the property owner to obtain a contract with a Certified Operator to perform routine inspections and maintenance on the system.
- This type of repair system requires periodic inspections 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.
- All components of the septic system must be installed in accordance with the required setbacks listed on the corresponding plot plan.
- All components of the septic system must be located at least 100 ft. (50 ft. minimum) from all private wells.
- All waterlines must be located a minimum of 10 ft. from any part of the septic system.
- 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.
- Flow from all gutters and downspouts shall be directed not to discharge water onto or across any part of the septic system.
- See wastewater system design consultant's design documents for more details. Repair area requires minimum of 6" of cover if it is ever used with a PPBPS system.

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: Jacob Presley

Signature: _____

Date Issued: 5/15/2013

Owner/Legal Agent: _____
Print Name

Signature: _____

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

Sheet: 1 of 2
Property ID: 195-022-02
Lot #: 2
File #: 7811B
AppID: 6107

SOIL/SITE EVALUATION for ON-SITE WASTEWATER SYSTEM

Owner: Essex Homes Southeast, Inc.
Address: 13000 S. Tryon St., Suite F-135, Charlotte, NC 28278
Proposed Facility: 5BR Home — Design Flow (.1949): 600 GPD
Location of Site: 13111 Belle Grove Manor Ln, Mint Hill, NC 28105
Water Supply: [X] Public [ ] Individual [ ] Well [ ] Spring [ ] Other
Evaluation Method: [X] Auger Boring [X] Pit [ ] Cut
Type of Wastewater: [X] Sewage [ ] Industrial Process [ ] Mixed

Applicant: Susan Latt w/ Essex Homes
Date Evaluated: 4/ 10 & 23 /2013
Property Size: 0.7 ac
Property Recorded: Unknown

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	General Comments	Profile Class & LTAR	Maximum Trench Bottom Depth for 3' Wide Conventional Trench
Pit #1	LS 3%	0 - 14	wfsbk CL	SS SP FR SEXP							
		14 - 32	mfsbk C	SS P FR SEXP	10YR 7/2	46	NA	PS		PS IV	24"
		32 - 46	mmabk SIC	SS P FI SEXP	@ 37"					0.25	
Boring #2	LS 3%	0 - 13	wfsbk CL	SS SP FR SEXP							
		13 - 32	mmsbk C	SS P FI SEXP	10YR 7/2	45	NA	PS		PS IV	24"
		32 - 45	mfabk SIC	SS P FI SEXP	@ 37"					0.25	
Boring #3	LS 5%	0 - 18	wfsbk CL	SS SP FR SEXP							
		18 - 43	mmsbk C	SS P FI SEXP	>48"	48	NA	PS		PS IV	34"
		43 - 48	mfabk SIC	SS P FI SEXP						0.275	
Pit #4	LS 5%	0 - 10	wfsbk CL	SS SP FR SEXP					Saprolite inclusions		
		10 - 48	mmsbk C	SS P FI SEXP	>48"	48	NA	PS	from 34 - 48"	PS IV	34"
										0.3	
Pit #5	LS 3%	0 - 14	wfsbk CL	SS SP FR SEXP						PS IV	
		14 - 44	mfsbk C	SS P FI SEXP	>44"	44	NA	PS		0.275	31"
Pit #6	LS 5%	0 - 15	wfsbk CL	SS SP FR SEXP						PS IV	
		15 - 48	mmsbk C	S P FR SEXP	>48"	48	NA	PS		0.3	34"
Pit #7	LS 2%	0 - 7	wfsbk CL	SS SP FR SEXP							
		7 - 36	mfsbk C	S P FR SEXP	10YR 7/2	36	NA	PS		PS IV	15"
					@ 27"					0.225	(Need Cover)

Description	Initial System	Repair System
Available Space (.1945)	PS	PS
System Type(s)	Iva	Iva
Site LTAR (gpd/sq ft)	0.25*	0.25*

Site LTAR (gpd/sq ft) is only valid if area around Pit #7 is not utilized.
If area around Pit #7 is utilized then the LTAR (gpd/sq ft) should be 0.225.

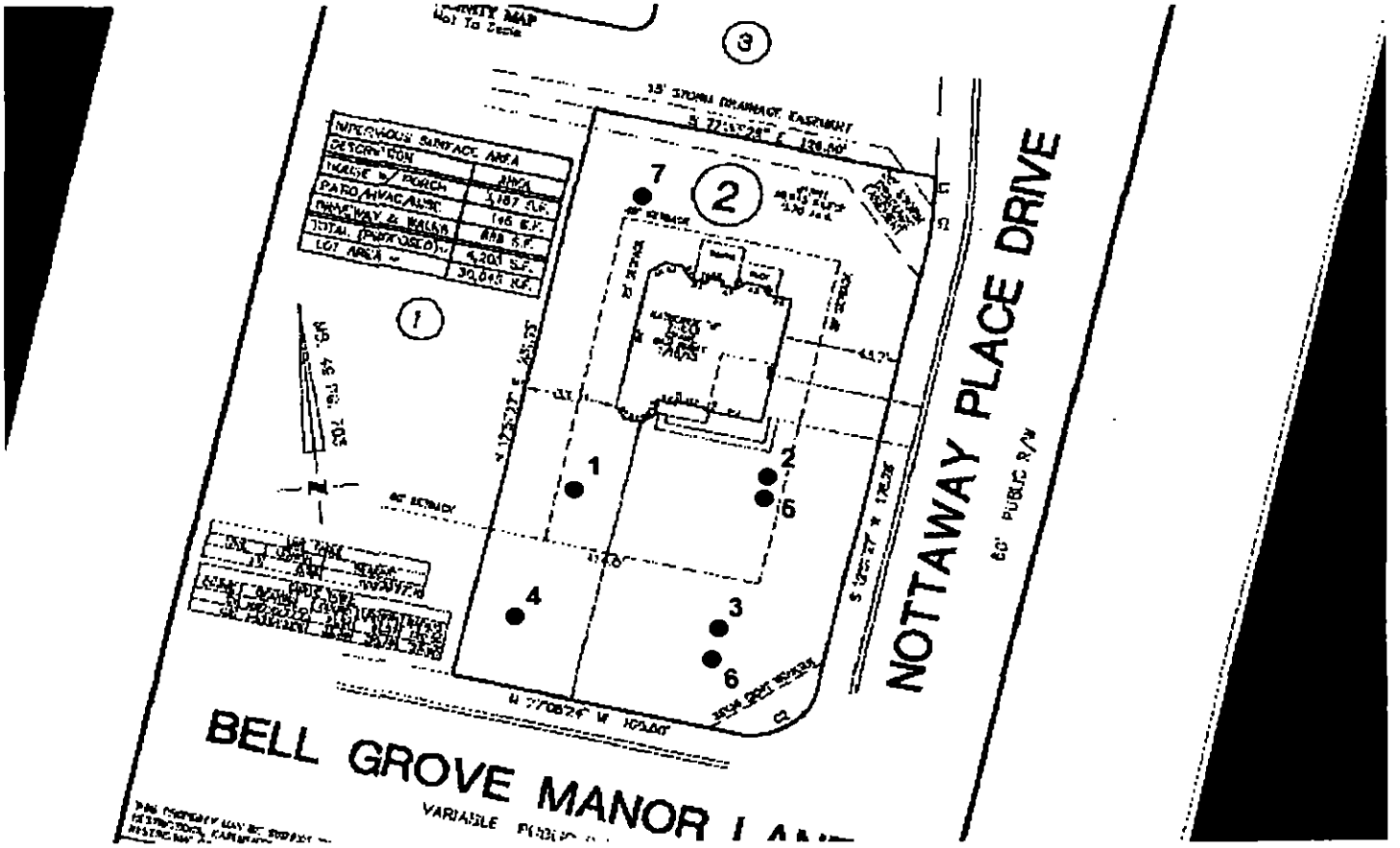
Other Factors (.1946):
Soil Evaluation By: Jacob Presley, LSS
Others Present: Wendell Overby
Site Classification (.1948): Provisionally Suitable
Site Evaluation By: Jacob Presley
Others Present:

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		mass-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				
FP-Flood Plain		CL-Clay Loam		**Structure Prefixes**
D-Drainage Way		SCL-Sandy Clay Loam		w-weak
		SiL-Silt Loam		m-moderate
				s-strong
				f-fine
	IV	SC-Sandy Clay	0.4 - 0.1	m-medium
		SiC-Silty Clay		c-coarse
		C-Clay		

Consistence Moist	Consistence Wet	Mineralogy
VFR-Very Friable	SS-Slightly Sticky	SEXP-Slightly Expansive
FR-Friable	S-Sticky	EXP-Expansive
FI-Firm	VS-Very Sticky	
VFI-Very Firm	NP-Non-Plastic	**Classification**
EFI-Extremely Firm	SP-Slightly Plastic	US-Unsuitable
	P-Plastic	PS-Provisionally Suitable
	VP-Very Plastic	S-Suitable
		NA-Not Applicable

Sketch of Soil Evaluation Locations



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

Sheet: 1 of 2
Property ID: 195-022-02
Lot #: 2
File #: 7811B
AppID: 6107

SOIL/SITE EVALUATION for ON-SITE WASTEWATER SYSTEM

Owner: Essex Homes Southeast, Inc.
Applicant: Susan Latt w/ Essex Homes
Address: 13000 S. Tryon St., Suite F-135, Charlotte, NC 28278
Date Evaluated: 4/ 10 & 23 /2013
Proposed Facility: 5BR Home
Design Flow (.1949): 600 GPD
Property Size: 0.7 ac
Location of Site: 13111 Belle Grove Manor Ln, Mint Hill, NC 28105
Property Recorded: Unknown
Water Supply: [X] Public [ ] Individual [ ] Well [ ] Spring [ ] Other
Evaluation Method: [X] 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	General Comments	Profile Class & LTAR	Maximum Trench Bottom Depth for 3' Wide Conventional Trench
Pit	LS	0 - 14	wfsbk CL	SS SP FR SEXP							
#1	3%	14 - 32	mfsbk C	SS P FR SEXP	10YR 7/2	46	NA	PS		PS IV	24"
		32 - 46	mmabk SIC	SS P FI SEXP	@ 37"					0.25	
Boring	LS	0 - 13	wfsbk CL	SS SP FR SEXP							
#2	3%	13 - 32	mmsbk C	SS P FI SEXP	10YR 7/2	45	NA	PS		PS IV	24"
		32 - 45	mfabk SIC	SS P FI SEXP	@ 37"					0.25	
Boring	LS	0 - 18	wfsbk CL	SS SP FR SEXP							
#3	5%	18 - 43	mmsbk C	SS P FI SEXP	>48"	48	NA	PS		PS IV	34"
		43 - 48	mfabk SIC	SS P FI SEXP						0.275	
Pit	LS	0 - 10	wfsbk CL	SS SP FR SEXP					Saprolite inclusions		
#4	5%	10 - 48	mmsbk C	SS P FI SEXP	>48"	48	NA	PS	from 34 - 48"	PS IV	34"
										0.3	
Pit	LS	0 - 14	wfsbk CL	SS SP FR SEXP						PS IV	
#5	3%	14 - 44	mfsbk C	SS P FI SEXP	>44"	44	NA	PS		0.275	31"
Pit	LS	0 - 15	wfsbk CL	SS SP FR SEXP						PS IV	
#6	5%	15 - 48	mmsbk C	S P FR SEXP	>48"	48	NA	PS		0.3	34"
Pit	LS	0 - 7	wfsbk CL	SS SP FR SEXP							
#7	2%	7 - 36	mfsbk C	S P FR SEXP	10YR 7/2	36	NA	PS		PS IV	15"
					@ 27"					0.225	(Need Cover)

Description	Initial System	Repair System
Available Space (.1945)		
System Type(s)		
Site LTAR (gpd/sq ft)	0.25*	0.25*

Site LTAR (gpd/sq ft) is only valid if area around Pit #7 is not utilized.
If area around Pit #7 is utilized then the LTAR (gpd/sq ft) should be 0.225.

Other Factors (.1946):
Soil Evaluation By: Jacob Presley, LSS
Others Present: Wendell Overby
Site Classification (.1948):
Site Evaluation By:
Others Present:

COMMENTS:

Landscape Position	Group	Texture	.1955 LTAR	Structure
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CV-Convex Slope		SiCL-Silty Clay Loam		pr-Prismatic
T-Terrace		CL-Clay Loam		**Structure Prefixes**
FP-Flood Plain		SCL-Sandy Clay Loam		w-weak
D-Drainage Way		SiL-Silt Loam		m-moderate
				s-strong
				f-fine
	IV	SC-Sandy Clay	0.4 - 0.1	m-medium
		SiC-Silty Clay		c-coarse
		C-Clay		

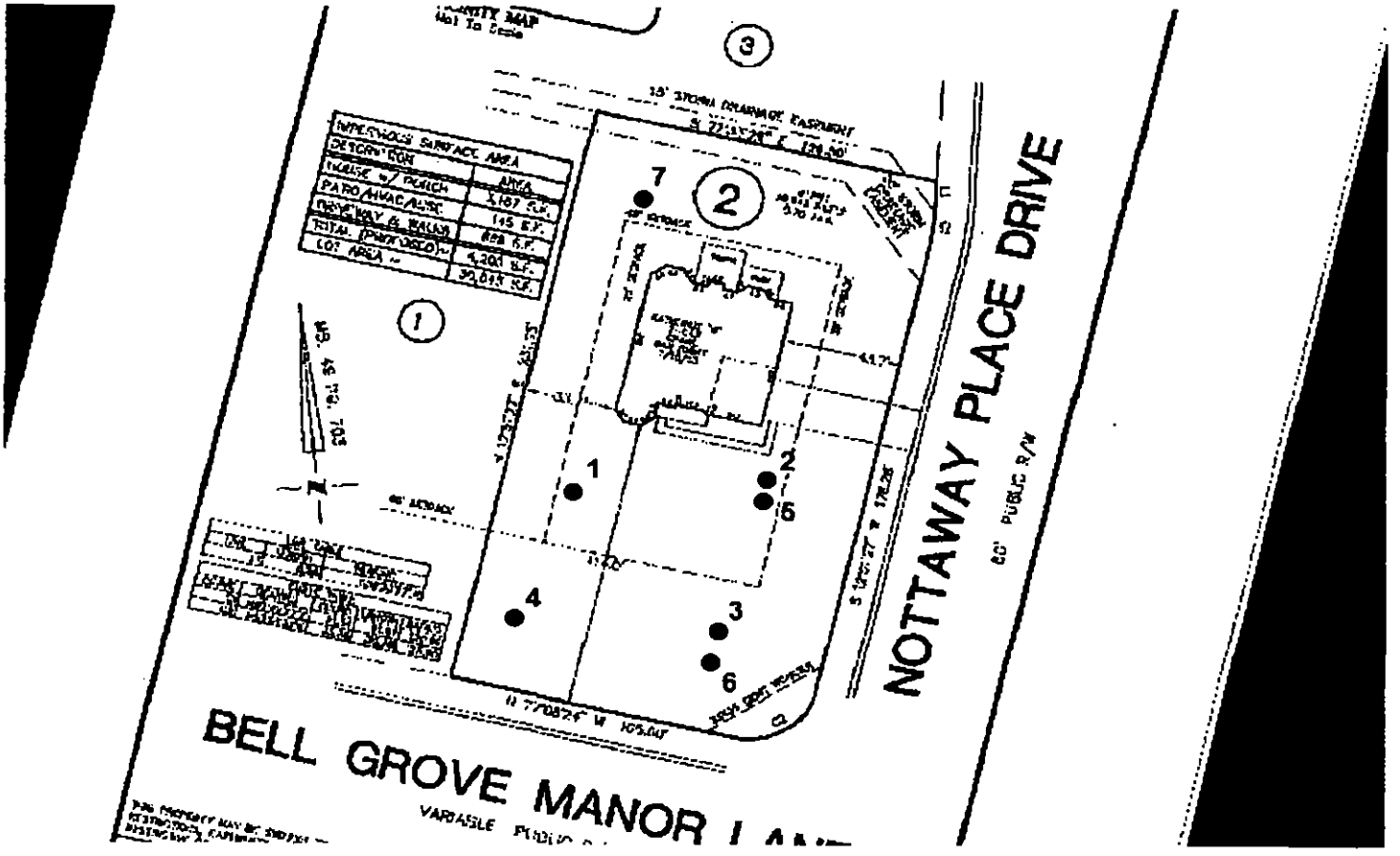
Consistence
Moist
VFR-Very Friable
FR-Friable
FI-Firm
VFI-Very Firm
EFI-Extremely Firm

Consistence
Wet
SS-Slightly Sticky
S-Sticky
VS-Very Sticky
NP-Non-Plastic
SP-Slightly Plastic
P-Plastic
VP-Very Plastic

Mineralogy
SEXP-Slightly Expansive
EXP-Expansive

Classification
US-Unsuitable
PS-Provisionally Suitable
S-Suitable
NA-Not Applicable

Sketch of Soil Evaluation Locations



7811B

MECKLENBURG COUNTY
HEALTH DEPARTMENT App #6107

APPLICATION FOR A RESIDENTIAL 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: 1950220 2
STREET ADDRESS: 13111 Belle Grove Manor Ln.
CITY: Mint Hill
STATE: NC ZIP: 28105
SUBDIVISION NAME: Belle Grove Manor Lane
LOT #: 2 LOT SIZE (acres): _____
TOWNSHIP:
○ MECKLENBURG ○ CORNELIUS ○ HUNTERSVILLE
○ DAVIDSON ○ CHARLOTTE ○ PINEVILLE
○ MATTHEWS ● MINT HILL

4. BUILDING INFORMATION:

BUILDING TYPE:
○ SINGLE MOBILE HOME ○ MODULAR HOME
○ DOUBLE WIDE ○ MULTIPLE FAMILY
● HOUSE ○ OTHER _____
HEATED SQUARE FOOTAGE: 4246
NUMBER OF BEDROOMS: 5
NUMBER OF OCCUPANTS: _____
FOUNDATION TYPE:
○ CONCRETE SLAB ○ BASEMENT WITH PLUMBING
● CRAWL SPACE ○ BASEMENT WITH NO PLUMBING

5. IF PLANNING TO EXPAND OR ALTER THE EXISTING SEPTIC SYSTEM PLEASE COMPLETE THE FOLLOWING SECTION: ☐ N/A

NUMBER OF BEDROOMS TO BE ADDED: 5 NUMBER OF ADDITIONAL OCCUPANTS IN THE RESIDENCE: _____

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? 10/2013 ☐ N/A

12. PROPERTY OWNER:

NAME: Essex Homes Southeast Inc
ADDRESS: 13000 STRYON F-135
CITY: Charlotte
STATE: N.C. ZIP: 28273
WORK PHONE: 704-423-8988
MOBILE PHONE: 704-825-9284
FAX: 980-225-8990
E-MAIL: Starr@essexhomes.Net

13. OWNER'S LEGAL REPRESENTATIVE, IF APPLICABLE:

NAME: Susan Lott
ADDRESS: _____
CITY: _____
STATE: _____ ZIP: _____
WORK PHONE: _____
MOBILE PHONE: _____
FAX: _____
E-MAIL: _____

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

Revised on: 12/15/10

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.

SC (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. A PROPOSED PLOT PLAN is required to be submitted with each application.

Jason Tatt — Property Owner's or Owner's Legal Representative Signature

3/22/2013 — Date

OFFICE USE ONLY

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

SEPTIC APPLICATION FEE RECEIVED: $ 250.00 DATE FEE RECEIVED: 4/1/13

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

APPLICATION PROCESSED BY: Jws

GWS FILE NUMBER ASSIGNED: 7811B

APPLICATION ID NUMBER ASSIGNED: 6107

COMMENTS:

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

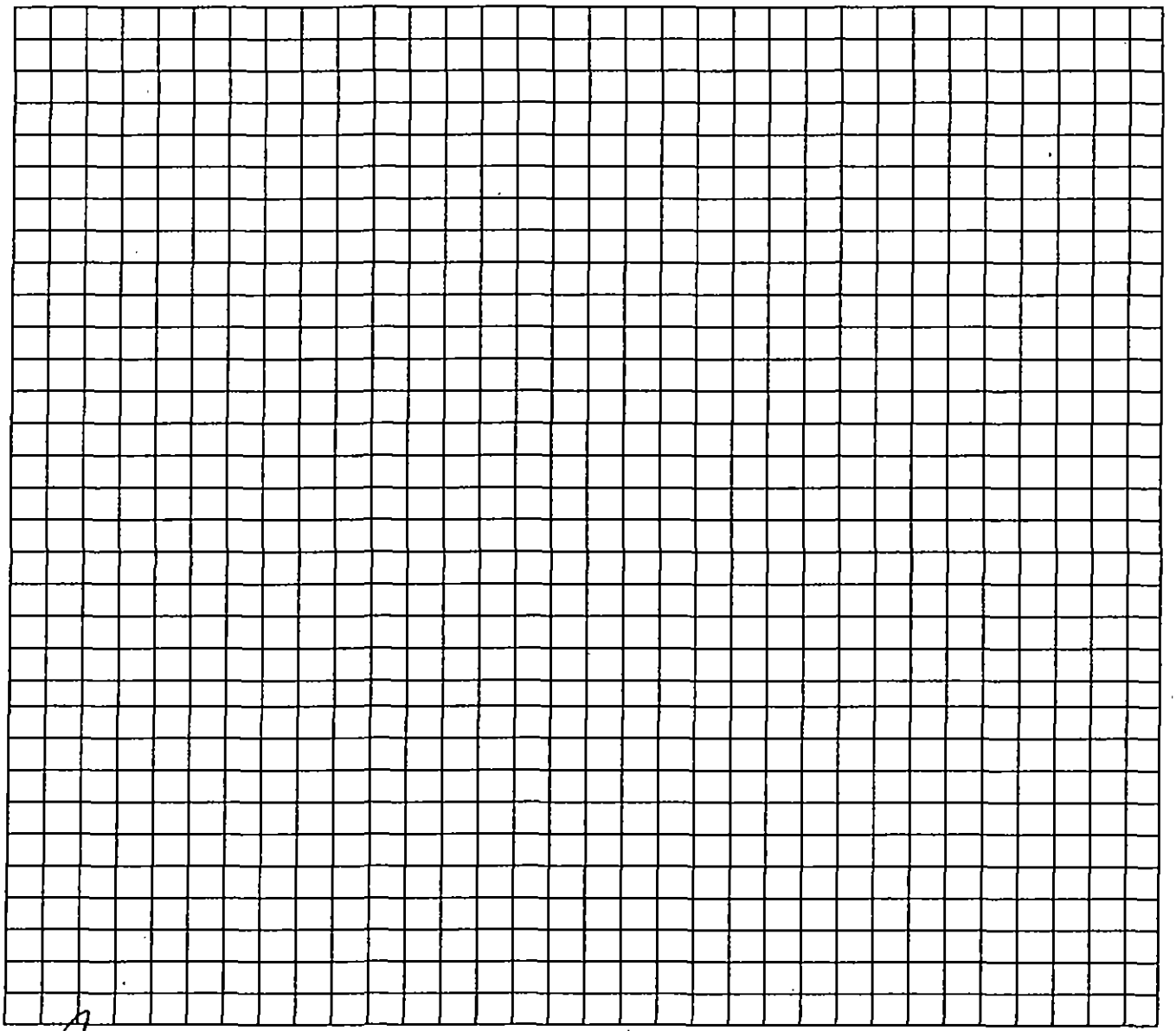
File #: _____

PROPOSED PLOT PLAN

A drawing showing the locations of the following items is required: existing and proposed property lines with dimensions, easements or *right-of-ways, proposed building pad(s) or existing building footprint(s),* all appurtenances (garage, driveway, deck, pool, etc.), location of existing or proposed well(s), location of existing or proposed sewer lines and sewage disposal systems, surface water bodies, and any aboveground or underground storage tanks. Provide names for all roads that adjoin the property.

Street Address: 13111 Belle Grove Manor Lane Tax Parcel #: 195 02202

Subdivision Name: Belle Grove Manor Lot #: 002

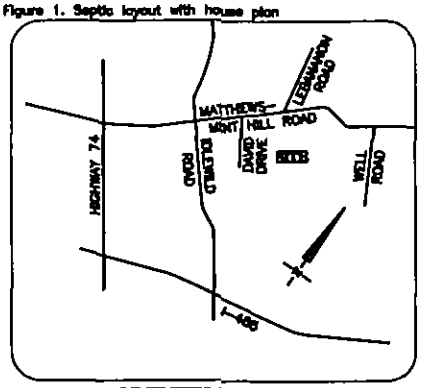


Property Owner's or Owner's Legal Representative Signature Date

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

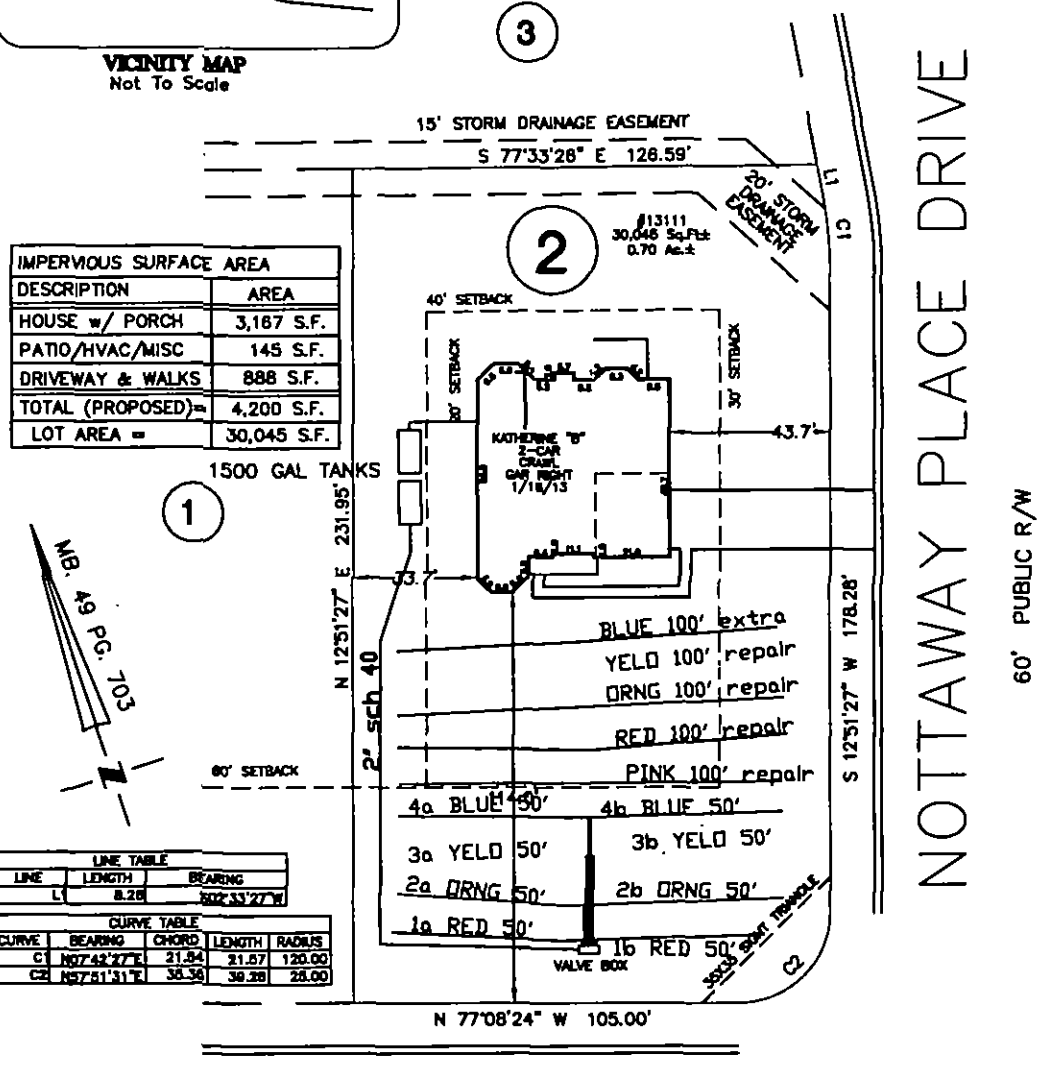
Revised on: 12/15/10

Figure 1. Septic layout with house plan



VICINITY MAP
Not To Scale

*Layout performed by S&FS, PA



IMPERVIOUS SURFACE AREA	
DESCRIPTION	AREA
HOUSE w/ PORCH	3,167 S.F.
PATIO/HVAC/MISC	145 S.F.
DRIVEWAY & WALKS	888 S.F.
TOTAL (PROPOSED)≈	4,200 S.F.
LOT AREA ≈	30,045 S.F.

LINE TABLE		
LINE	LENGTH	BEARING
L1	8.28	N02°33'27"W

CURVE TABLE				
CURVE	BEARING	CHORD	LENGTH	RADIUS
C1	N07°42'27"E	21.54	21.57	120.00
C2	N57°51'31"E	36.36	39.28	25.00

BELL GROVE MANOR LANE

VARIABLE PUBLIC R/W

PRELIMINARY PLAT
NOT FOR RECORDATION, CONVEYANCES, OR SALES

40 0 40
SCALE: 1" = 40'

EASTOVER
LAND SURVEYING COMPANY, P.A.
LAND SURVEYORS – PLANNERS – C-1833
600 TOWNE CENTRE BOULEVARD, SUITE #309
PINEVILLE, NORTH CAROLINA 28134
PHONE (704) 927-8080
FAX (704) 889-0105

HOUSE LOCATION PLOT PLAN

FOR

LOT 2, BELLE GROVE MANOR PHASE 1 MAP 1
Town of Mint Hill, Mecklenburg County, North Carolina

PROPERTY OF: ESSEX HOMES

MAP BOOK 49 PAGE 703 DEED REFERENCE

DRAWN BY: BUI | DATE: 3/22/2013

MECKLENBURG COUNTY
LAND USE AND ENVIRONMENTAL SERVICES
Payment Receipt

Receipt Information

Date:	04/01/13	**Amount:**	250.00
Receipt #:	83468	**Tendered:**	250.00
Check / Auth #:	CHECK 2985	**Returned:**	0.00
Received By:	SADERLW		

Account Information

Account #: 200000
Contractor: ESSEX HOMES SOUTHEAST INC
Attn:
Address: 120 CROMER RD
Address:
City/State/Zip: LEXINGTON, SC 29073

Item	Description	Permit#	Quantity	Unit Price	Total Price
0701	Improvment Permit App-Residen 13111 BELLE GROVE MANOR LN		1	250.00	250.00

Outstanding Balances

Month-To-Date	Prior Month	30 Days	60 Days	90 Days	Balance
	1,427.15				

MECKLENBURG COUNTY
LAND USE AND ENVIRONMENTAL SERVICES
Payment Receipt

Receipt Information

Date:	05/23/13	**Amount:**	200.00
Receipt #:	84190	**Tendered:**	200.00
Check / Auth #:	CHECK 2988	**Returned:**	0.00
Received By:	SADERLW		

Account Information

Account #: 200000
Contractor: ESSEX HOMES COUTHEAST INC
Attn:
Address: 120 CROMER RD
Address:
City/State/Zip: LEXINGTON, SC 29073

Item	Description	Permit#	Quantity	Unit Price	Total Price
0703	Installation/Final Approval 13111 BELLE GROVE MANOR LN		1	200.00	200.00

Outstanding Balances

Month-To-Date	Prior Month	30 Days	60 Days	90 Days	Balance
	40.00	1,387.15			

MECKLENBURG COUNTY
LAND USE AND ENVIRONMENTAL SERVICES
Payment Receipt

Receipt Information

Date: 05/23/13
Receipt #: 84192
Check / Auth #: CHECK 2988
Received By: SADERLW

Amount: 200.00
Tendered: 200.00
Returned: 0.00

Account Information

Account #: 200000
Contractor: ESSEX HOMES SOUTHEAST INC
Attn:
Address: 120 CROMER RD
Address:
City/State/Zip: LEXINGTON, SC 29073

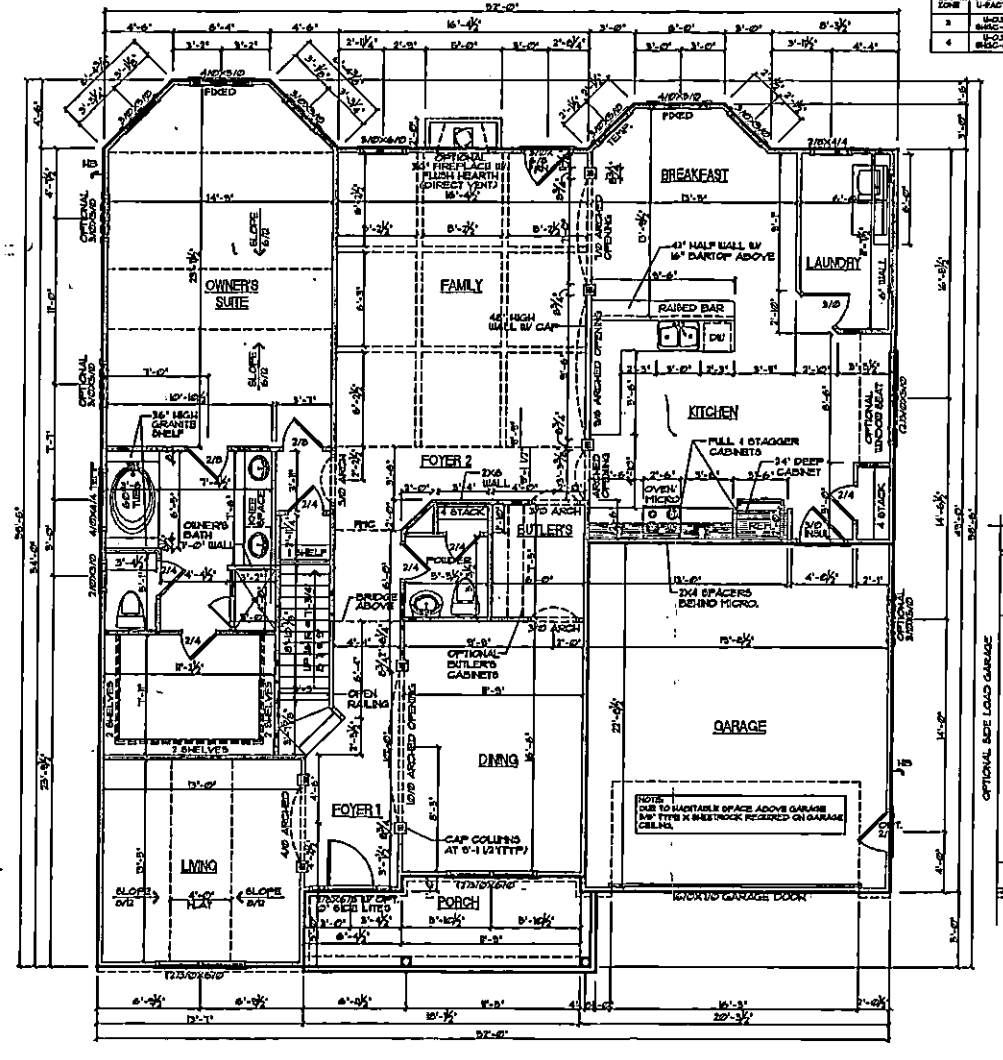
Item	Description	Permit#	Quantity	Unit Price	Total Price
0734	Auth for Waste Wtr Sys Constr 13111 BELLE GROVE MANOR LN		1	200.00	200.00

Outstanding Balances

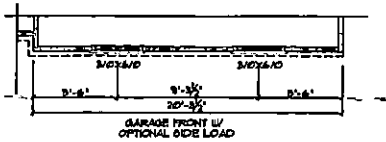
Month-To-Date	Prior Month	30 Days	60 Days	90 Days	Balance
	40.00	1,387.15			

Bell Grove Manor
#002

13111 Bell Grove Manor Lane



FIRST FLOOR–"A"
SCALE: 1/8"=1'



CLIMATE ZONE	FENESTRATION U-FACTOR	CEILING R-VALUE	WOOD FRAME WALL R-VALUE	MASS WALL R-VALUE	FLOOR R-VALUE	BASEMENT WALL R-VALUE	SLAB R-VALUE & DEPTH	CRAWL SPACE WALL R-VALUE
3	U=0.35/ SHGC=0.30	30	13	5/10	19	10/13	0	5/13
4	U=0.35/ SHGC=0.30	38	13 OR 13+5	5/10	19	10/13	10, 2 FT.	10/13

NOTE:
CABINET BLOCKING
-FOR 36" PULLED AND STAGGERED 56" TO CENTER OF BLOCKING AT FRIDGE AND MICRO.
36" ALL OTHER LOCATIONS.
-FOR 42" PULLED AND STAGGERED 62" TO CENTER OF BLOCKING AT FRIDGE AND MICRO.
36" ALL OTHER LOCATIONS.

PLANS ARE DESIGNED TO MEET THE REQUIREMENTS OF THE NORTH CAROLINA AND THE SOUTH CAROLINA RESIDENTIAL CODE, 2012 EDITION

GENERAL NOTES

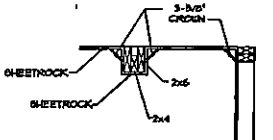
WALLS:
ALL WALLS ARE DRAWN 3-1/2" THICK U.N.O.
ANGLED WALL ARE DRAWN @45 U.N.O.

SMOKE DETECTORS:
LOCATION AND NUMBER OF DETECTORS SHALL CONFORM TO NEC.

EGRESS:
ALL BEDROOMS MUST HAVE AT LEAST ONE WINDOW WHICH CONFORMS TO R-310 OF THE N.C. BLDG. CODE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY CHOSEN WINDOWS MEET EGRESS REQUIREMENTS AS MANUFATURERS VARY.

ATTIC ACCESS:
MIN. ATTIC ACCESS SHALL BE PROVIDED BY BUILDER AND LOCATED ON SITE.

WALL/CEILING HGT.
WALL AND CEILING HEIGHT NOTES ARE BASED ON NOMINAL WALL SIZE.
KNEE WALL HEIGHT LABELS FOR WALLS UNDER RAFTERS ASSUME AN EXTRA 2" FOR FURRING (IN HEATED SPACES) FOR INSULATION. THE WALL HEIGHT REFERS TO THE HGT. FROM THE FLOOR DECKING TO THE BOTTOM OF THE FURRING.



DETAIL AT COFFERED CEILING
NOT TO SCALE

NOTE:
IF BUILDING IS LESS THAN 10' FROM PROPERTY LINE PROVIDE SOFFIT PROTECTION PER NC STATE BUILDING CODE SECTION 302 AND 703.12.

FRAZIER HOME DESIGN, LLC.
2840 PLAZA PLACE, SUITE 320
RALEIGH, NC 27612
O: (919)-424-7245
www.frazierhomedesign.com

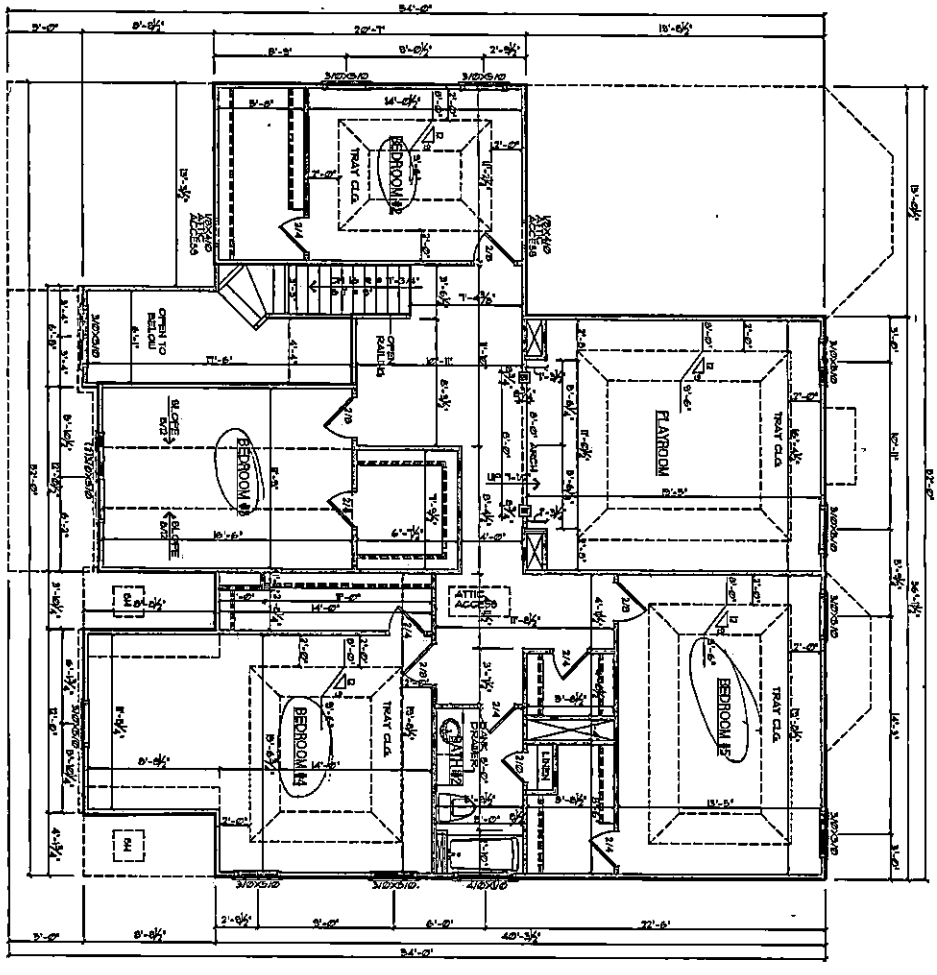
THE KATHERINE

Essex Homes, Inc.

DATE: 12/13/2012
DRAWN BY: JJ
REVISION DATE: XXXXXXXX

FIRST FLOOR

SHEET NO.
4.1



SECOND FLOOR - "A"

SCALE: 1/8"=1'-0"

SHEET NO.	5.1
	SECOND FLOOR
DATE:	12/13/2012
DRAWN BY:	JJ
REVISION DATE:	XXXXXXXX

Essex Homes, Inc.

THE KATHERINE

www.frazierhomedesign.com
FRAZIER HOME DESIGN, LLC.
2840 PLAZA PLACE, SUITE 320
RALEIGH, NC 27612
O: (919)-424-7245

7/8/13

Supervisor/Administrative Professional Checklist

New Septic ☑ **New Well** ☐ **Use Existing** ☐ **Alteration** ☐ **Modified Plot Plan** ☐

New Septic Fees Paid:

IP ($250.00) lwa 4/1/13 Initials/Date

CA ($200.00) lwa 5/23/13 Initials/Date

OP ($200.00) lwa 5/23/13 Initials/Date

(CA and OP fees need to be paid before a building permit can be issued)

New Well Fee Paid: $550.00 _____ Initials/Date

Use Existing Fee Paid: $100.00 _____ Initials/Date

Alteration Fee Paid: $300.00 (Total) $200 (If use existing was paid)_____ Initials/Date

Modified Plot Plan Fee Paid: $100.00 _____ Initials/Date

Floor plans need to be submitted and reviewed before CA can be issued. ☐ Reviewed ☑ JAM 12/5/13

Please issue CA thanks.

done

This site is served by septic and well. Verify each is complete before final hold is released. ☐

Septic file completed. ☐ _____ Well file completed. ☐ _____

Send permit for signature. ☐ Signature received. ☑ 5/20/13

This septic system requires a certified operator contract before final hold is released. ☑

Certified operator contract is on file. ☑ JAM 2/27/14

Groundwater & Wastewater Services
Septic Project File & Data Review Worksheet

GWS File #: 7811B WASPS App #: 6107

Primary ES assigned to project: Jacob Presley

Secondary ES assigned to project: Brad Hallman

Project Type: New System ☑ Alteration ☐ Repair ☐ Modified Plot Plan ☐

I. File Review:

Rule or Law	Permit Application			
.1937(d)	Is the Application complete	Yes ☑	No ☐	N/A ☐
.1937(d)	Is there a Site plan/Plat with application	Yes ☑	No ☐	N/A ☐
.1937(d)	Is the Facility shown?	Yes ☑	No ☐	N/A ☐
.1937(d)	Are appurtenances shown	Yes ☑	No ☐	N/A ☐
	Site Evaluation Information			
.1939 (a)(1)	Topography and Landscape Position Recorded?	Yes ☐	No ☐	N/A ☐
.1940 (a-g)	Slope % Recorded?	Yes ☐	No ☐	N/A ☐
.1939 (a)(2)	Texture Class Recorded?	Yes ☐	No ☐	N/A ☐
.1939 (a)(2)	Structure type Recorded?	Yes ☐	No ☐	N/A ☐
.1939 (a)(2)	Consistence Recorded?	Yes ☐	No ☐	N/A ☐
.1939 (a)(2)	Mineralogy Recorded?	Yes ☐	No ☐	N/A ☐
.1939 (a)(3)	Soil Wetness Condition Recorded?	Yes ☐	No ☐	N/A ☐
.1939 (a)(4)	Soil Depth to Rock or Parent Material Recorded When Encountered	Yes ☐	No ☐	N/A ☐
.1939 (a)(5)	Depth to Restrictive Horizons Recorded When Encountered?	Yes ☐	No ☐	N/A ☐
.1939 (a)(6)	Sufficient Available Space Recorded?	Yes ☐	No ☐	N/A ☐
.1937(m)	Are the Profile Locations Shown?			
.1939(a)	Are the S/PS Profiles in system & in repair area?	Yes ☐	No ☐	N/A ☐
& .1945(b)	Number of auger borings made: 0.25			
	Were sufficient auger borings made?	Yes ☐	No ☐	N/A ☐
.1939(d), .1955, .1956, .1957	LTAR 2	Yes ☐	No ☐	N/A ☐
	Improvement Permit/Construction Authorization			
.1937(g) 130A-336(a)	Proposed System Type stated-Initial	Yes ☑	No ☐	N/A ☐
.1945(b)	Proposed System Type stated-Repair	Yes ☑	No ☐	N/A ☐
130A-336 (a)(3)	System location identifiable by setbacks - Initial	Yes ☑	No ☐	N/A ☐
.1937(g) .1945(b)	System components shown – Initial	Yes ☑	No ☐	N/A ☐
.1945(b)	Repair area shown	Yes ☑	No ☐	N/A ☐
.1937 (f)(g)	Does System design match facility, flow & WWcharacteristics?	Yes ☑	No ☐	N/A ☐
~~.1937 (f)(g)~~	~~Is System design consistent with~~ soil/site conditions?	Yes ☑	No ☐	N/A ☐
.1937 (f)(g)	Is the System located in the approved area?	Yes ☑	No ☐	N/A ☐
130A-336(a)	Is the Design flow (gpd) indicated?	Yes ☑	No ☐	N/A ☐

130A-336(a)	Number of Bedrooms, employees, seats, etc. indicated?	Yes ☑	No ☐	N/A ☐
.1937(g)	Trench depth indicated?	Yes ☑	No ☐	N/A ☐
.1937(g)	Trench width indicated?	Yes ☑	No ☐	N/A ☐
.1937(g)	Trench length indicated?	Yes ☑	No ☐	N/A ☐
130A-336(a)(1)	Proposed/existing well shown?	Yes ☑	No ☐	N/A ☑
130A-336(a)(1)	Property line lengths shown?	Yes ☑	No ☐	N/A ☐
130A-336(a)	Facility/appurtenance setbacks shown from fixed points?	Yes ☑	No ☐	N/A ☐

Operation Permit

.1937(i)	System type as described in table V(a) of rule .1961	Yes ☑	No ☐	N/A ☐
.1937(i)	Conditions for system performance, operation, maintenance, monitoring and reporting.	Yes ☑	No ☐	N/A ☐

II. WASPS Review:

Construction authorization issued	Yes ☐	No ☐	N/A ☐
Installation approval issued	Yes ☐	No ☐	N/A ☐
Operation permit issued	Yes ☐	No ☐	N/A ☐
Other related documentation	Yes ☐	No ☐	N/A ☐

Items requiring correction/modification: _____

Comments:

_____

_____

_____

_____

_____

IA issued date: 12/4/13

OP issued date: 2/27/14

Review performed by: JAM

Date performed: _____

Water
Management

INSPECTION AND MAINTENANCE AGREEMENT

STATE OF NORTH CAROLINA

This agreement is made and entered into this 27 day of February, 2014, by and between Essex Homes SE Inc. (hereinafter referred to as the "Owner") and **Water Management of North Carolina, LLC** (hereinafter referred to as the "Contractor").

WITNESSETH

WHEREAS, the Owner owns or controls the property upon which a ground absorption sewage treatment system (hereinafter "system") is installed, such system being designated a Type IV(a) system under the Rules for Sanitary Sewage Collection, Treatment and Disposal found at 15A N.C. Administrative Code 18A.1900 et seq.; and

WHEREAS, 15A N.C. Administrative Code 18A.1961 requires a contract to be executed between the system owner and a management entity prior to the issuance of an Operation Permit for said system; and

WHEREAS, 15A N.C. Administrative Code 18A.1961 requires that a condition of the Operation Permit for said system be that a properly executed contract between the system owner and a management entity, shall be in effect for as long as the system is in use; and

WHEREAS, the Contractor is a management entity, of a type authorized by 15A N.C. Administrative Code 18A.1961 to manage the system.

NOW THEREFORE, in consideration of the premises and of the mutual covenants and promises contained in this Agreement, it is hereby agreed by and between the Owner and the Contractor as stipulated below.

1. The Contractor's Obligations. The Contractor shall perform the following services on the Owner's system located at:
Belle Grove Manor Subdivision, Lot 2, Mint Hill, Mecklenburg County, NC

   a) The contractor shall inspect, document, and report the system at least at the frequency required in Table V(b) of 15A N.C. Admin. Code 18A.1961(b), to satisfy conditions of the Operation Permit and to comply with manufacturers' operation requirements.

   b) If an inspection indicates the need for system repairs, the Contractor shall notify the local health department within 48 hours of the inspection.

   c) The Contractor shall notify the Owner of needed repairs, which are outside of the

scope of routine maintenance described in this contract. The Contractor shall perform necessary repairs to the system at the request of the Owner and shall be entitled to payment therefor at the Contractor's normal charge for services and materials.

d) The Contractor shall respond to a request for a nonscheduled service or maintenance call within 48 hours after receipt of such request.

2. The Owner's Obligations.

a) The Owner shall pay to the Contractor:

- **For the first year of operation, no charge;**
- **For subsequent years, $300 per year, billed at $150.00 twice per year.**

The annual fee may be amended upon sixty (60) days advance notice to the Owner. The Owner shall pay to the Contractor his normal and customary fees for any work performed on the system as a result of nonscheduled service or maintenance calls. All fees are due and payable within thirty (30) days of billing. Payments due to the Contractor and unpaid by the Owner after thirty (30) days shall accrue interest from the due date until paid at a rate of 1.5% per month.

b) Within 30 days of receipt of notice of needed repairs, the Owner shall request the Contractor to complete needed repairs or shall provide to the Contractor evidence that the needed repairs were satisfactorily completed by another entity.

c) The Owner shall provide the Contractor with such access to the system as is reasonably necessary for the Contractor to comply with the terms of this Agreement.

3. Term. This Agreement shall remain in effect until terminated.

a) Automatic Termination.
This agreement shall automatically terminate if the Operation Permit for the system is revoked and all appeals of the revocation are exhausted or the time for taking an appeal has passed.

b) Termination by Mutual Consent.
The Parties may mutually agree to terminate this Agreement by giving written notice of termination by mutual consent to the local health department thirty (30) days in advance of the date of termination.

c) Termination by the Owner.
The Owner may terminate this Agreement by giving notice to the Contractor and to the local health department thirty (30) days in advance of the date of

termination.

d) Termination by the Contractor.

1) The Contractor may terminate this Agreement for cause by giving written notice of intent to terminate this Agreement to the Owner and to the local health department thirty (30) days in advance of the date of termination. Cause shall be defined as:

a) failure to remit payment for any bill for services performed under and in accordance with this Agreement if said bill is not paid within thirty (30) days of receipt by the Owner of the bill. If said bill is paid after notice of termination of this Agreement, but prior to the date of termination of this Agreement, this Agreement shall continue in effect; or

b) failure of the Owner to provide to the Contractor authorization to complete needed repairs or satisfactory evidence that needed repairs to the system were completed by another entity. If said authorization to complete needed repairs or evidence of completion of said repairs is provided after notice of termination is given but prior to the date of termination of this Agreement, this Agreement shall continue in effect; or

c) failure of the Owner to allow the Contractor such access to the system as is reasonably necessary in order for the Contractor to comply with the terms of this Agreement.

2) The Contractor may terminate this Agreement without cause, by notification to the Owner no less than ninety (90) days in advance of the termination date. The Contractor may also assign its rights and duties under this Agreement as provided in paragraph 4, below.

4. Assignment.

a) Assignment by the Owner.
The Owner shall notify the Contractor of the name and address of any purchaser of the property on which the system is located. The Owner shall also notify any purchaser of the property on which the system is located of the existence of this Agreement and shall assign all rights and duties under this Agreement to said purchaser.

b) Assignment by the Contractor.
The Contractor may assign its rights and duties under this Agreement to another management entity, which is qualified pursuant to 15A N.C. Admin. Code

18A.1961 to manage the system upon thirty (30) days written notice to the Owner and to the local health department.

5. Use of Subcontractors. The Contractor may subcontract with such manufacturers, suppliers and contractors as it deems desirable to perform any of the Contractor's duties under this Agreement. The Contractor shall at all times remain responsible for the performance of and payment for all work performed by all subcontractors.

6. Representations. The Parties represent to each other that each has the power, authority and legal right to enter into and perform its obligations as set forth in this Agreement.

7. Regulatory Amendments. References in this Agreement to sections of the Administrative Code shall include such rules as they may be amended in the future.

8. No Implied Waiver. The waiver by either Party, of the default or a breach by the other Party of any provision of this Agreement shall not operate or be construed to operate as a waiver of any subsequent default or breach. The failure at any time of either Party to enforce any provision of this Agreement (a) shall not be construed to be a waiver of such provisions, or of any other provision; and (b) shall not in any way affect the validity of this Agreement, or any part of this Agreement, or the right of either Party thereafter to enforce each and every provision of this Agreement.

9. Notice. Every notice required under this Agreement shall be in writing and shall be deemed sufficiently given if delivered in person or sent by certified or registered mail, return receipt requested, postage prepaid to the Party to be notified and addressed as follows:

To the Owner: Essex Home SC Inc
120 Cromer Road
Lexington SC 29073

Septic Installed → 13111 Bellegrove Manor Lane
Mint Hill NC 28277

To the Contractor: **Water Management**
4744 Celia Creek Road
Lenoir, NC 28645

The date of any Notice shall be the date of personal delivery or the date shown on the return receipt as the date of delivery or attempted deliver, as the case may be. Changes in the respective addresses to which notice may be directed may be made from time to time by either Party by notice to the other party.

10. Place of Agreement. This Agreement and any questions concerning its validity, the system construction or performance shall be governed by the laws of the State

of North Carolina. notwithstanding the place of execution, or the order in which the signatures of the Parties are affixed.

11. Entire Agreement and Amendment. This Agreement supersedes all prior negotiations, agreements and understandings between the Parties with respect to the subject matter hereof and constitutes the entire Agreement between the Parties with respect to the subject matter hereof. To be effective, any amendment or modification to this Agreement must be in writing and must be signed by the Parties.

12. Severability. In the event that any provision of this Agreement shall, for any reason, be determined to be invalid, illegal or unenforceable in any respect, the Parties shall negotiate in good faith and agree to such amendments, modifications or supplements of or to this Agreement or such other appropriate actions as shall, to the maximum practicable in light of such determination, implement and give effect to the intentions of the Parties as reflected in this Agreement, and the other provisions of this Agreement shall, as so amended, modified, supplemented or otherwise affected by such actions, remain in full force and effect.

Water
Management

IN TESTIMONY WHEREOF, the Parties hereto have executed this Agreement in duplicate originals, one of which is retained by each of the Parties, the day and year first above written.

(Owner)

2/27/14
(Date)

Water Management of North Carolina, LLC
(Contractor)

Sidney L. Gaskins, Jr.
(Sidney L. Gaskins, Jr.)

2/27/2014
(Date)

Hugh Creed Associates, Inc. P.A.

Consulting Engineers & Land Surveyors

1306 W. WENDOVER AVENUE P.O. BOX 9623
GREENSBORO, N.C. 27408 GREENSBORO, N.C. 27429
TELE: (336) 275-9826 OR (336) 275-8084 FAX: (336) 275-3379
FIRM LICENSE #C-0551 E-MAIL: HCA@TRIADBIZ.RR.COM

May 13, 2013

Mecklenburg County Ground Water and Wastewater Services
700 N. Tryon Street, Suite 211
Charlotte, NC 28202

Attn: Mr. Jeremy Michael

Re: Design Review for Pressure Dosed PPBPS Septic System
Five Bedroom Single Family Home on Lot 2 Belle Grove Manor Subdivision
13111 Belle Grove Manor Lane, Mint Hill, NC 28105

Dear Mr. Michael,

Based on our review of the pumping system design submitted by Soil and Forestry Services of the Carolinas, PA, for the above referenced project dated May 6, 2013, we find the design to be of sound engineering practices.

Having not visited the site of the work, our design review is based totally on the limited information provided in the submittal. Hugh Creed Associates, Inc., P.A. assumes no responsibility for incorrect site information provided.

If you have any question, please do not hesitate to call.

Sincerely,
Hugh Creed Associates, Inc., P.A.

Norris Z. Clayton, P.E., P.L.S.

NORTH CAROLINA PROFESSIONAL SEAL 10727 ENGINEER NORRIS Z. CLAYTON

May 13, 2013

GWS Septic System Design Review

GWS File #: 7811B

	Approved	Disapproved
Design Review:	☑	☐
Field Review:	☑	☐

***Projects are not considered "APPROVED" until both sections above are completed and indicate an APPROVED status.**

Goulds P-51 1/2hp

Soil & Forestry Services of the Carolinas, PA

(704) 239-2001

A design for a Pressure Dosed 5-Bedroom PPBPS Septic System:
Belle Grove Manor Subdivision Lot 2
Parcel ID #19502202 / 13111 Belle Grove Manor Lane

Contents: **Page**

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

Design Information

- Design Specifications---------- 2-3
- Layout Specifications---------- 4
- System Flow---------- 5
- Repair Flow---------- 6

Site Plan---------- 7

Septic Tank Diagram---------- 8

Pump Tank Diagram---------- 9

Control Panel Specifications---------- 10-13

Pump Specifications---------- 14-15

Gate Valve Box---------- 16

Calculations---------- 17

May 6, 2013
Design By: W. Overby

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 DEHNR, 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
- Installation of the system shall be during dry conditions in order to protect the soil
- 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 System is specified as pressure dosed panel with 30 inch trench depth.
- 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.
- Repair specified as pressure dosed panel; 25" trench depth needing 6" soil cover
- 3' wide trenches to be used, trenches raked and limed as per manufacturer
- 8-1.25" sch40 gate valves placed in protective box
- Use grade boards with installation
- Refer to Figure 1. Septic Site Plan for house plan and septic layout

PRESSURE DOSED PPBPS SYSTEM
FOR WASTEWATER TREATMENT

Owner:	Essex Homes SE, Inc.
Address:	120 Cromer Road, Lexington, SC 29073
Phone:	803 520-5181
County:	Mecklenburg
Location:	Belle Grove Manor lot 2
Source of Wastewater Flow:	5 Bedroom Single Family Residence
Estimated Daily Wastewater Production:	600 gpd
System Flow:	36.08

Design Specifications

Drainfield Size:	400
Loading Rate:	0.25 gpd/ft.^{2}
Depth of Gravel in Trench:	n/a
Gravel Size:	n/a
Trench Depth:	30
Trench Width:	36 in.
Septic Tank Size:	1500 gal.
Pump Tank Size:	1500 gal.
Estimated Supply Line Length:	130
Supply Line Diameter:	2 in. SCH 40 PVC
Supply Line Volume:	22.62
Dosing Volume:	317.00
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:	2.50
Elevation Head:	8.10
Total Dynamic Head:	19.09
Threaded Union:	In Tank
Gate Valves:	1 in Tank 8 in valve box
Check Valves:	In Tank
Anti-Siphon Hole:	n/a
Recommended Pump:	Myers Model ME50 or County Approved Effluent Rated Pump Capable of Delivering 19 ft.of Head at 36 gpm Total Flow

Belle Grove Manor Lot 2

PPBPS DESIGN

DESIGN FLOW:	600
SOIL APPLICATION RATE:	0.25 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:	130
TOTAL DYNAMIC HEAD:	19.09
DOSING VOLUME:	317.00
PUMP TANK DRAW DOWN*:	10.9
SEPTIC TANK SIZE:	1500 gal.
PUMP TANK SIZE:	1500 gal.
RECOMMENDED PUMP:	Myers Model ME50 or County Approved Effluent Rated Pump Capable of Delivering 19 ft.of Head at 36 gpm Total Flow

**Pump tank draw down based on a volume basis of 29 gallons per inch. Draw down may vary among pump tank manufacturers.*

Belle Grove Manor Lot 2

Layout for a 5 bedroom home

May-13

LINE #	FLAG COLOR	BS	HI	FS	ELEVATION	FLAGGED LINE LENGTH
TBM		0.6			100.0	
INSTR. 1			100.6			
			SYSTEM			
1a	Red			1.50	99.1	50
1b	Red			1.50	99.1	50
2a	Orange			2.20	98.4	50
2b	Orange			2.20	98.4	50
3a	Yellow			3.00	97.6	50
3b	Yellow			3.00	97.6	50
4a	Blue			4.10	96.5	50
4b	Blue			4.10	96.5	50
			REPAIR			
5	Pink			4.60	96.0	100
6	Red			4.80	95.8	100
7	Orange			4.90	95.7	100
8	Yellow			5.00	95.6	100
					TOTAL	800

	LINE LENGTH	LTAR GPD/FT	SYSTEM TYPE	REDUCTION TYPE	DISTRIBUTION
SYSTEM	400	0.250	PPBPS	50%	LPP
REPAIR	400	0.250	PPBPS	50%	LPP

Notes:

** TBM located on top of house corner

**TBM is assumed to be 100'

**All measures in feet

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

**BS and FS indicate rod readings

Belle Grove Manor Lot 2

System (PPBPS)

DESIGN SPECIFICATIONS

Line #	Color	#Panels	#Holes Panel	Line Length	Hole Size	Line Head	Line Flow
1a	Red	11	1	50	5/32"	2	4.51
1b	Red	11	1	50	5/32"	2	4.51
2a	Orange	11	1	50	5/32"	2	4.51
2b	Orange	11	1	50	5/32"	2	4.51
3a	Yellow	11	1	50	5/32"	2	4.51
3b	Yellow	11	1	50	5/32"	2	4.51
4a	Blue	11	1	50	5/32"	2	4.51
4b	Blue	11	1	50	5/32"	2	4.51
		88		400			36.08

Belle Grove Manor Lot 2

REPAIR (PPBPS)

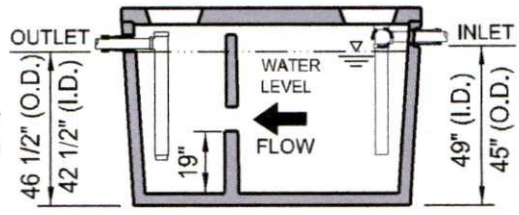
DESIGN SPECIFICATIONS

Line #	Color	#Panels	#Holes Panel	Line Length	Hole Size	Line Head	Line Flow
5a	Pink	11	1	50	5/32"	2	4.51
5b	Pink	11	1	50	5/32"	2	4.51
6a	Red	11	1	50	5/32"	2	4.51
6b	Red	11	1	50	5/32"	2	4.51
7a	Orange	11	1	50	5/32"	2	4.51
7b	Orange	11	1	50	5/32"	2	4.51
8a	Yellow	11	1	50	5/32"	2	4.51
8b	Yellow	11	1	50	5/32"	2	4.51
		88		400			36.08

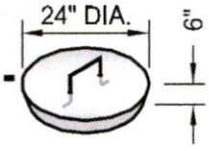
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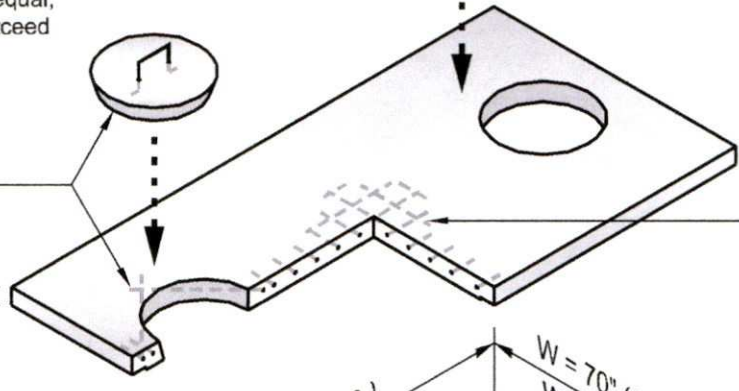
GENERAL NOTES:

1. Design specifications conform to latest ASTM C1227 specifications "Precast Concrete Water and Wastewater Structures"
2. Concrete compressive strength 4,000 psi minimum.
3. Steel reinforcing design to conform to the requirements of ASTM C890 specifications for "Structural Design Loading for Water and Wastewater Structures" and shall utilize grade 60 re-bars conforming to the requirements of ASTM A615 or WWF conforming to the requirements of ASTM A185 or both. Place Additional reinforcing at all openings.
4. Optional EZ set lid cast in place. Supplied by Dellinger Precast. To be field adjusted using approved methods by contractor.
5. Pipe penetration locations as per job requirements. Pipe inlet and outlet locations to have PSX Direct Drive boots or equal. Pipe Inlet locaions (typical 3 sides) to be knock out pannels. Effluent Filter supplied by Dellinger. Inlet Tee & Pipe supplied by contractor.
6. Joints to be sealed with ConSeal CS102. butyl rubber joint sealant or equal. Sealant meets or exceeds the requirements of latest federal specification SS-S-0021(210-A), AASHTO M-198B, and ASTM C-990-91.
7. Lift Insert / Lift Eye Pin by M.A Industries or equal, Cast-in by Dellinger Precast. Lifts meet or exceed OSHA requirements.
8. Method of namufacture is Wet Cast.
9. Sections are monolithic. Weights:
   Top Slab 3,134 ± lbs.
   Base Section 9,751 ± lbs.
10. I.D. = Inside dimension
    O.D. = Outside dimension
    L = Length
    W = Width
    H = Height



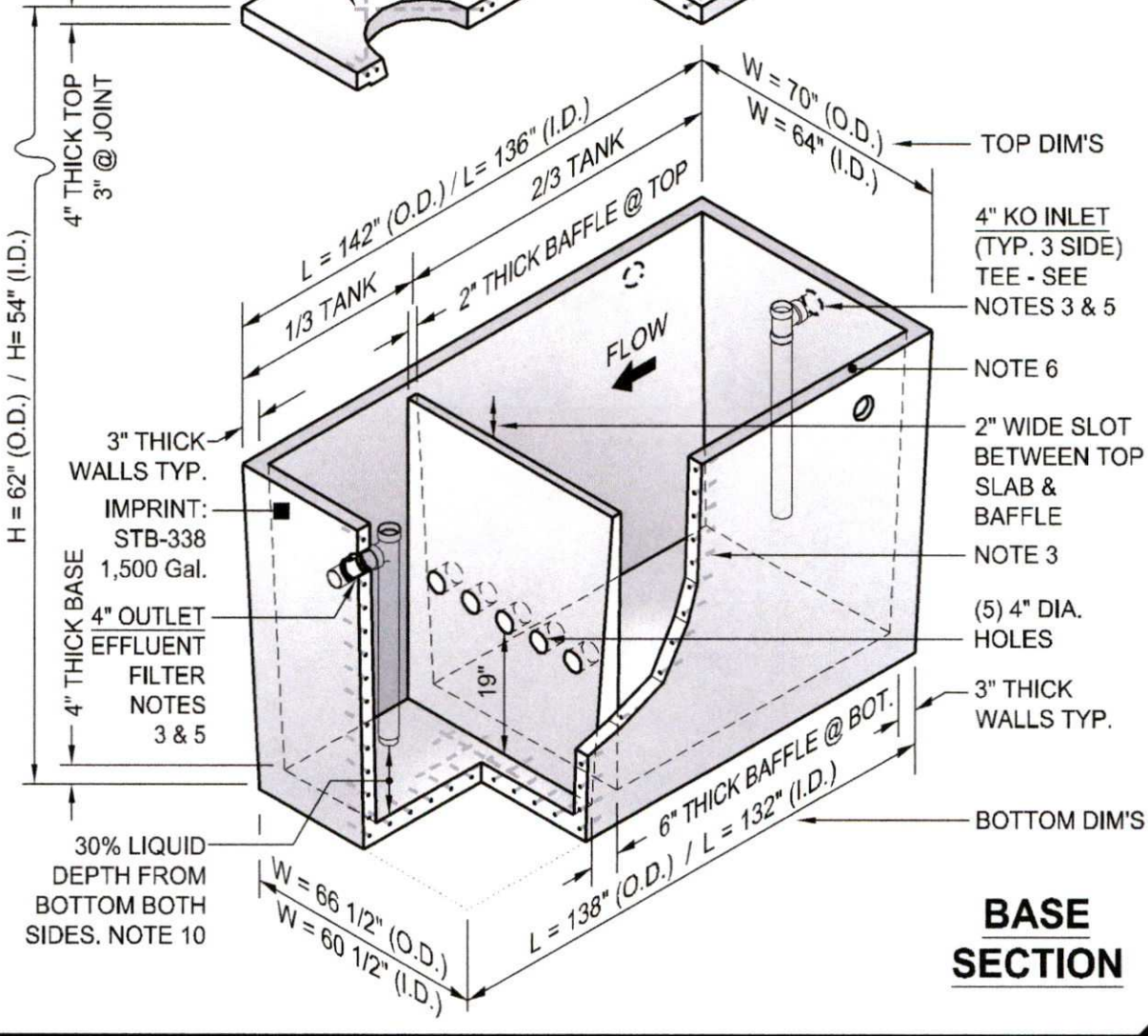
ELEVATION





TOP SLAB





BASE SECTION

DELLINGER PRECAST

1,500 Gallon (Top Slab) SEPTIC TANK

Scale: Not To Scale

Revision Date: February 2008

Detail # ST-1,500-TS

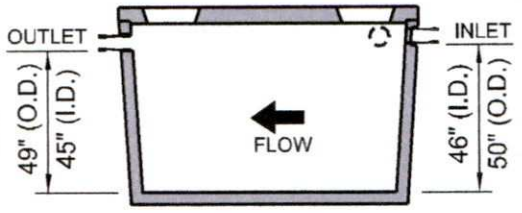
4531 North Hwy 16 ▪ Denver, N.C. 28037 ▪ Phone: 800-948-1666 ▪ 704-483-2868 ▪ Fax: 704-483-2363

8

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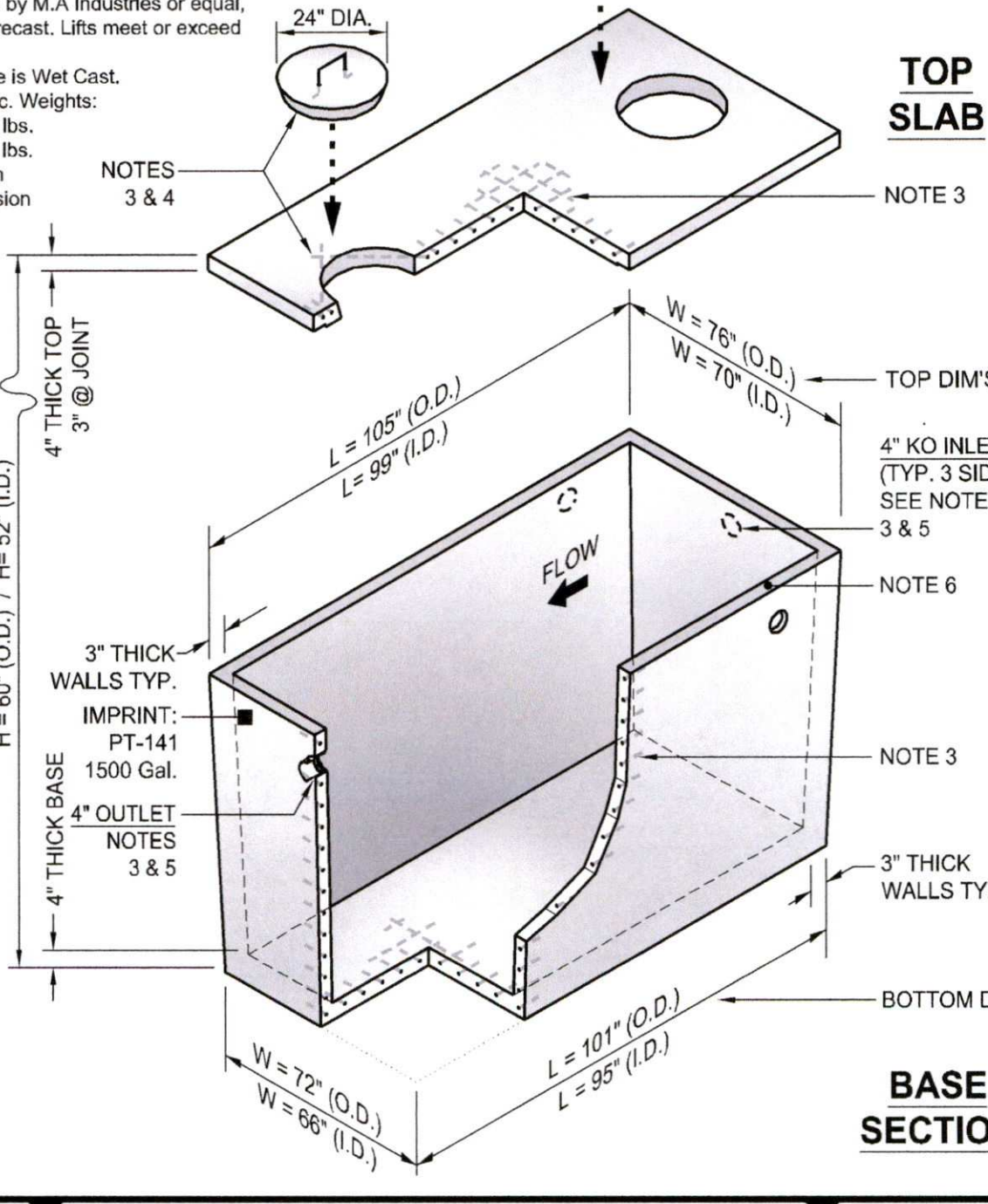
GENERAL NOTES:

1. Design specifications conform to latest ASTM C1227 specifications "Precast Concrete Water and Wastewater Structures"
2. Concrete compressive strength 4,000 psi minimum.
3. Steel reinforcing design to conform to the requirements of ASTM C890 specifications for "Structural Design Loading for Water and Wastewater Structures" and shall utilize grade 60 re-bars conforming to the requirements of ASTM A615 or WWF conforming to the requirements of ASTM A185 or both. Place Additional reinforcing at all openings.
4. Optional EZ set lid cast in place. Supplied by Dellinger Precast. To be field adjusted using approved methods by contractor.
5. Pipe penetration locations as per job requirements. Pipe inlet and outlet locations to have PSX Direct Drive boots or equal. Pipe Inlet locaions (typical 3 sides) to be knock out pannels. Pipe supplied & Installed by contractor.
6. Joints to be sealed with ConSeal CS102. butyl rubber joint sealant or equal. Sealant meets or exceeds the requirements of latest federal specification SS-S-0021(210-A), AASHTO M-198B, and ASTM C-990-91.
7. Lift Insert / Lift Eye Pin by M.A Industries or equal, Cast-in by Dellinger Precast. Lifts meet or exceed OSHA requirements.
8. Method of namufacture is Wet Cast.
9. Sections are monolithic. Weights:
   Top Slab 2,636 ± lbs.
   Base Section 7,453 ± lbs.
10. I.D. = Inside dimension
    O.D. = Outside dimension
    L = Length
    W = Width
    H = Height



ELEVATION





TOP SLAB

BASE SECTION

OPTIONAL ROUND LID



1,500 Gallon (Top Slab) PUMP TANK

Scale: Not To Scale

Revision Date: February 2008

Detail # PT-1,500-TS

DELLINGER PRECAST
4531 North Hwy 16 ▪ Denver, N.C. 28037 ▪ Phone: 800-948-1666 ▪ 704-483-2868 ▪ Fax: 704-483-2363

MODEL 112 Control Panel

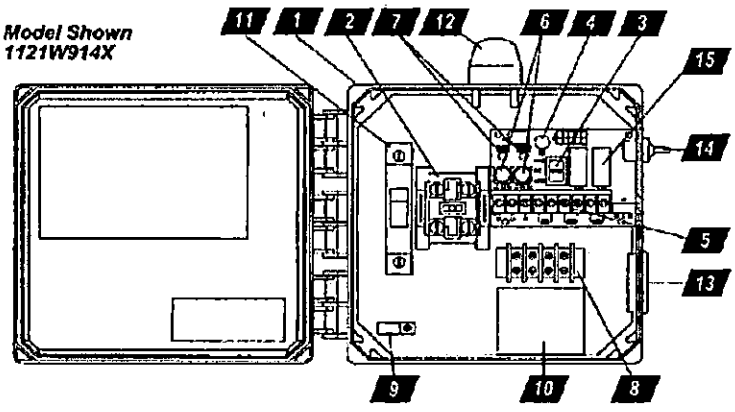
Single phase, simplex motor contactor control.

The Model 112 control panel provides a reliable means of controlling one 120, 208, or 240 VAC single-phase pump in pump chambers, sump pump basins, irrigation systems and lift stations. Two control switches activate a magnetic motor contactor to turn the pump on and off. If an alarm condition occurs, an additional alarm switch activates the audio/visual alarm system.



Indoor *Indoor/outdoor*

Model Shown
1121W914X



1. **Enclosure** measures 8 x 8 x 4 inches (20.32 X 20.32 X 10.16 cm). Choice of NEMA 1 (steel for indoor use), or NEMA 4X (ultraviolet stabilized thermoplastic with removable flanges for outdoor or indoor use).

   * Options selected may increase enclosure size and change component layout.

2. **Magnetic Motor Contactor** controls pump by switching hot electrical lines.
3. **HOA Switch** for manual pump control (mounted on circuit board).
4. **Green Pump Run Indicator Light** (mounted on circuit board).
5. **Float Switch Terminal Block** (mounted on circuit board).
6. **Alarm and Control Fuses** (mounted on circuit board).
7. **Alarm and Control Power Indicators** (mounted on circuit board).
8. **Pump Input Power and Pump Connection Terminal Block**
9. **Ground Lug**
10. **Terminal Block Installation Label**
11. **Circuit Breaker** (optional) provides pump disconnect and branch circuit protection.

STANDARD ALARM PACKAGE (other options available)

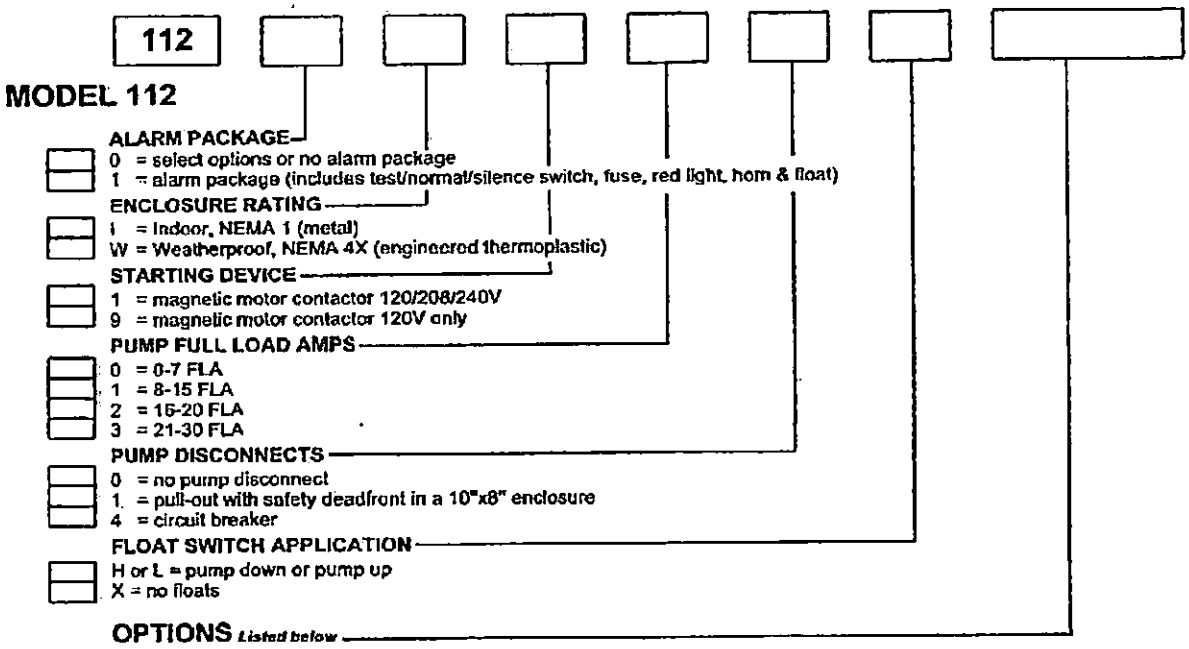
12. **Red Alarm Beacon** provides 360° visual check of alarm condition. **Note:** NEMA 1 style utilizes a door mounted indicator in lieu of a beacon.
13. **Alarm Horn** provides audio warning of alarm condition (83 to 85 decibel rating). **Note:** NEMA 1 style utilizes an internally mounted buzzer (83 to 85 decibel) in lieu of horn.
14. **Exterior Horn Test/Normal/Silence Switch** allows alarm horn to be silenced and testing of horn and light to ensure proper operation of alarm system.
15. **Horn Silence Relay** automatically resets alarm after alarm condition has been resolved (mounted on circuit board).

FEATURES

- Entire control system (panel and switches) is UL Listed to meet and/or exceed industry safety standards
- Dual safety certification for the United States and Canada
- Standard package includes three 20' Sensor Float® control switches
- Complete with step-by-step installation instructions
- Three-year limited warranty

c UL us
LISTED

SJE Rhombus CONTROLS
SJ ELECTRO SYSTEMS, INC.
PO Box 1708, Detroit Lakes, MN 56502
1-888-DIAL-SJE · 1-218-847-1317
1-218-847-4617 Fax
email: sje@sjerhombus.com
www.sjerhombus.com



MODEL 112

ALARM PACKAGE
- 0 = select options or no alarm package
- 1 = alarm package (includes test/normal/silence switch, fuse, red light, horn & float)

ENCLOSURE RATING
- I = Indoor, NEMA 1 (metal)
- W = Weatherproof, NEMA 4X (engineered thermoplastic)

STARTING DEVICE
- 1 = magnetic motor contactor 120/208/240V
- 9 = magnetic motor contactor 120V only

PUMP FULL LOAD AMPS
- 0 = 0-7 FLA
- 1 = 8-15 FLA
- 2 = 16-20 FLA
- 3 = 21-30 FLA

PUMP DISCONNECTS
- 0 = no pump disconnect
- 1 = pull-out with safety deadfront in a 10"x8" enclosure
- 4 = circuit breaker

FLOAT SWITCH APPLICATION
- H or L = pump down or pump up
- X = no floats

OPTIONS *Listed below*

★ Options selected may increase enclosure size and change component layout.

If additional features are required, call the factory for a quote on either a Pro-Line or Engineered Custom control panel system.

CODE	DESCRIPTION
1A	Red beacon only / no audio *must select 1E if floats included*
1C	Horn only / no visual *must select 1E if floats included*
1E	Alarm float
3A	Alarm flasher
★ 4A	Low level cutout *select option 4D if floats included*
★ 4B	Red low-level indicator & alarm *must select 4A also*
4D	Low-level float
6A	Auxiliary alarm contact, form C type
★ 8A	Elapsed time meter
★ 8C	Event (cycle) counter
10E	Lockable latch - NEMA 4X
10E	Lockable latch - NEMA 1
★10F	Lightning arrester
★10K	Anti-condensation heater

CODE	DESCRIPTION
11C	NEMA 1 alarm panel *must select option 6A*
11D	NEMA 4X alarm panel *must select option 6A*
15A	Control / alarm circuit breaker *Does not include the circuit board as in standard.*
16A	10' cord in lieu of 20'
16B	15' cord in lieu of 20'
16C	30' cord in lieu of 20'
16D	40' cord in lieu of 20'
17A	SJE SignalMaster® / mounting strap ●
17B	SJE SignalMaster® / externally weighted ●
17C	Sensor Float® / internally weighted ▲
17D	Sensor Float® / externally weighted ▲
17E	Sensor Float® Mini / pipe clamp ▲
17F	Sensor Float® Mini / externally weighted ▲
19X	Door mounted pump run indicator
21A	Pumpmaster® in lieu of on/off switches ●
21B	PumpMaster® Plus in lieu of on/off switches ●
21C	Super Single® in lieu of on/off switches ▲
21D	Double Float™ in lieu of on/off switches ▲

● Mechanically-activated ▲ Mercury-activated

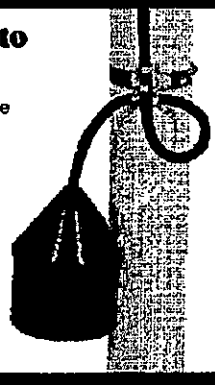
SAMPLE

MODEL	112	1	W	9	1	4	H	3A 8A
Alarm Package								
Enclosure Rating								
Starting Device								
Pump Full Load Amps								
Pump Disconnect								
Float Switch Application								
Options: Alarm Flasher, Elapsed Time Meter								

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SENSOR FLOAT® control switch

Mercury-activated, narrow-angle float switch designed to activate pump control panels and alarms.



This narrow-angle sensing device is used to accurately monitor liquid levels in sewage and non-potable water applications. The Sensor Float® control switch is not sensitive to rotation and is suitable for use with intrinsically safe circuits. Contact SJE-Rhombus regarding specific intrinsically safe applications.

Normally Open Model (high level)
The control switch turns on (closes) when the float tips slightly above horizontal signaling a high level, and turns off (opens) when the float drops slightly below horizontal.

Normally Closed Model (low level)
The control switch turns on (closes) when the float drops slightly below horizontal signaling a low level, and turns off (opens) when the float tips slightly above horizontal.

FEATURES

- Suitable for use with intrinsically safe circuits.
- Not sensitive to rotation.
- Control differential of .5 inches (1 cm) above or below horizontal.
- UL Listed for use in non-potable water and sewage.
- CSA Certified.
- Three-year limited warranty.

LR54245 LISTED E3112

Hydraulic

OPTIONS

This switch is available:

- for normally open (high level) applications or normally closed (low level) applications.
- in standard cable lengths of 10, 15, 20, or 30 feet and 3, 5, 6, or 10 meters.
- with three mounting options that allow for flexibility in installation:

  Mounting Clamp: for applications where the switch can be attached to a discharge pipe or similar mounting device.

  Internally Weighted: for applications where the switch can be suspended from above.

  Externally Weighted: for applications where the switch can be suspended from above.

SPECIFICATIONS

CABLE: flexible 18 gauge, 2 conductor (UL,CSA) SJOW, water-resistant (CPE) jacket

FLOAT: 3.38 inch diameter x 4.55 inch long (8.58 cm x 11.56 cm), high-impact, corrosion resistant, PVC housing for use in sewage and non-potable water up to 140°F (60°C)

MAXIMUM WATER DEPTH: 30 feet (9 meters), 13 psi

MERCURY TILT SWITCH: single pole, single throw, mercury-to-mercury contacts, hermetically sealed in a steel capsule and epoxy sealed in the float housing

ELECTRICAL: 5 amp, 120/230 VAC, 50/60 Hz

SJE Rhombus CONTROLS
SJ ELECTRO SYSTEMS, INC.
PO Box 1708, Detroit Lakes, MN 56502
1-888-DIAL-SJE 1-218-847-1317
1-218-847-4617 Fax
email: sje@sjerhombus.com
www.sjerhombus.com

Sensor Float® control switch installation instructions

⚠WARNING **ELECTRICAL SHOCK HAZARD**
Disconnect power before installing or servicing this product. A qualified service person must install and service this product according to applicable electrical and plumbing codes.

⚠WARNING **EXPLOSION OR FIRE HAZARD**
Do not use this product with flammable liquids. Do not install in hazardous locations as defined by National Electrical Code, ANSI/NFPA 70.

Failure to follow these precautions could result in serious injury or death. Replace product immediately if switch cable becomes damaged or severed. Keep these instructions with warranty after installation. This product must be installed in accordance with National Electric Code, ANSI/NFPA 70 so as to prevent moisture from entering or accumulating within boxes, conduit bodies, fittings, float housing, or cable.

MOUNTING THE SWITCH

1. Place the cord into the clamp as shown in Figure B.
2. Locate clamp at desired activation level and secure the clamp to the discharge pipe as shown in Figures A and B. Note: Do not install cord under hose clamp.
3. Tighten the hose clamp using a screwdriver. Over tightening may result in damage to the plastic clamp. Make sure the float cable is not allowed to touch the excess hose clamp band during operation.
4. Bring cable leads back to control device and wire according to Figure C.
5. Check installation. Allow system to cycle to insure proper operation.

Note: All hose clamp components are made of 18-8 stainless steel material. See your SJE-Rhombus supplier for replacements.

Figure A

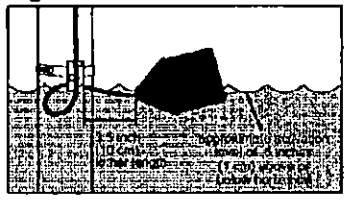
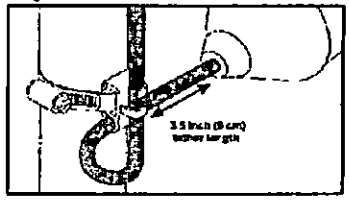


Figure B



INTERNAL WEIGHT

1. Determine desired activation level.
2. Suspend switch 7 inches (18 cm) below desired activation level as shown in Figure D. Switch remains partially submerged during the "on" tipping action. Switch can be totally submerged and still continue to operate properly.
3. Wire cable leads directly into control device as shown in Figure C.
4. Check installation. Allow system to cycle to insure proper operation.

Figure C - Wiring Diagram

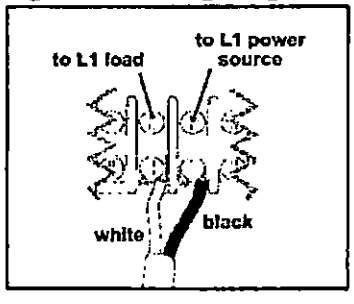
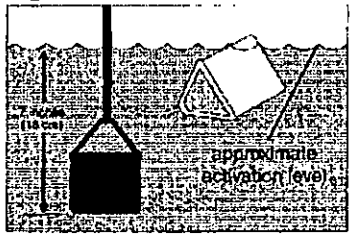


Figure D



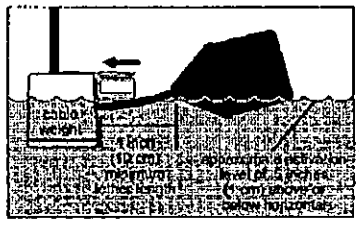
CABLE WEIGHT

1. Determine desired activation level.
2. Suspend switch and cable weight at desired activation level as shown in Figure E.
3. Wire cable leads directly into control device as shown in Figure C.
4. Check installation. Allow system to cycle to insure proper operation.

Cable weight is attached to switch cable at the factory. To adjust:

1. Release clip.
2. Adjust cable weight to desired position.
3. Lay switch cable in weight channel.
4. Align clip with weight channel and slide towards switch cable as shown in Figure E.
5. Snap clip snugly up to cable, moving clip to tightest possible position.

Figure E



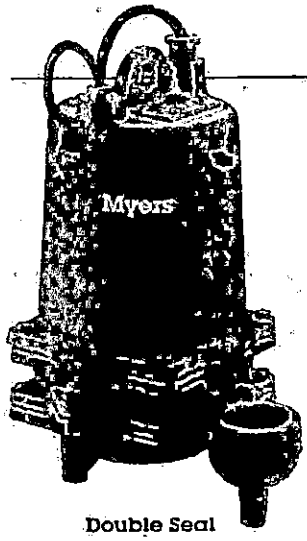
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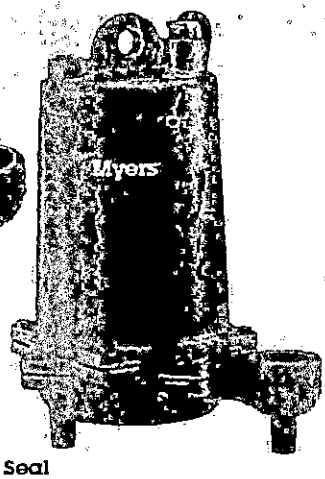
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ME SERIES

1/2 through 1-1/2 HP
Effluent Pumps



Double Seal



Single Seal

THE MYERS ME SERIES EFFLUENT PUMPS ARE DESIGNED SPECIFICALLY FOR TODAY'S EFFLUENT PRESSURE DISTRIBUTION MOUNDS, TRENCHES AND HIGH FLOW DRAINAGE APPLICATIONS. The ME Series effluent pumps with their efficient two vane, enclosed impellers, provide the ideal performance for optimum dosing. ME Series pumps are constructed of only corrosion resistant materials like cast iron, stainless steel and thermoplastics to assure that they will perform for years to come in the harsh effluent environment and drainage applications. For more information, call your Myers distributor today or the Myers Ashland, Ohio sales office at 419/289-1144.

ADVANTAGES BY DESIGN

IDEAL FOR USE IN MOUND AND TRENCH PRESSURE DISTRIBUTION SYSTEMS

- High efficiency, two vane, enclosed impeller provides ideal performance for most efficient dosing.
- Impeller passes full ¾ inch solids.
- Enclosed impeller design eliminates possibility of jamming or corrosion between impeller and volute.

DURABLE MOTOR WILL DELIVER MANY YEARS OF RELIABLE SERVICE

- Oil-filled motor for maximum heat dissipation and constant bearing lubrication.
- High torque, permanent split capacitor (PSC), single phase motors. No starting switches or relays to wear out.
- Optional seal leak probe warns of seal leak condition. (Dual seal motors only.) Helps prevent costly motor damage.
- Motors have an winding current and temperature sensitive overload. (Single phase only.)

THE ME SERIES EFFLUENT PUMPS ARE DESIGNED FOR YEARS OF MAINTENANCE FREE OPERATION

- Volute seal ring is replaceable. Restores pump to original performance if wear should occur.
- Motor is held in place by 4 screws. Easily removed if service is ever needed.

PRODUCT CAPAILITIES

Capacities To	120 GPM	454 LPM
Heads To	95 ft.	28.9 m
Max. Spherical Solids	¾ in.	19 mm
Liquids Handling	domestic effluent & drain water	
Intermittent Liquid Temp.	up to 140° F	up to 60° C
Motor Electrical Data	1/2 HP 115 volts, 1 ph 1/2 to 1-1/2 HP 230 volts, 1 ph 208, 230, 460, 575 volts, 3 ph oil-filled, permanent split capacitor type, 1 ph, 3450 rpm, 60 Hz	
Motor Insulation	Class B (130° C)	
Third Party Approvals	UL, CSA	
Acceptable pH Range	6-9	
Specific Gravity	.9-1.1	
Viscosity	28-35 SSU	
Discharge, NPT	2 in.	50.8 mm
Min. Sump Dia. Simplex	24 in.	61 cm
Duplex	36 in.	91.4 cm

Construction Materials	
Motor Housing, Volute	cast iron, Class 30, ASTM A48-76
Enclosed Two Vane Impeller Standard	engineered thermoplastic
Optional	bronze
Impeller Wear Ring	304 SST
Volute Sealing Ring	Buna-N
Shaft	416 SST
Power Cord	
1/2 HP 1 Ph	20 ft. 16/3 SJOW/SJOW-A
3/4 - 1-1/2 HP 1 Ph	20 ft. 14/3 SJOW/SJOW-A
All 3 Ph	20 ft. 14/4 SOW/SOW-A
Shaft Seals Standard	single carbon & ceramic
Optional	tandem carbon & ceramic
Opt. Lower	tungsten carbide
Fasteners	300 Series SST

WHERE INNOVATION MEETS TRADITION

ISO 9001 Certified Company

Myers
PENTAIR PUMP GROUP

ME SERIES

1/2 through 1-1/2 HP
Effluent Pumps

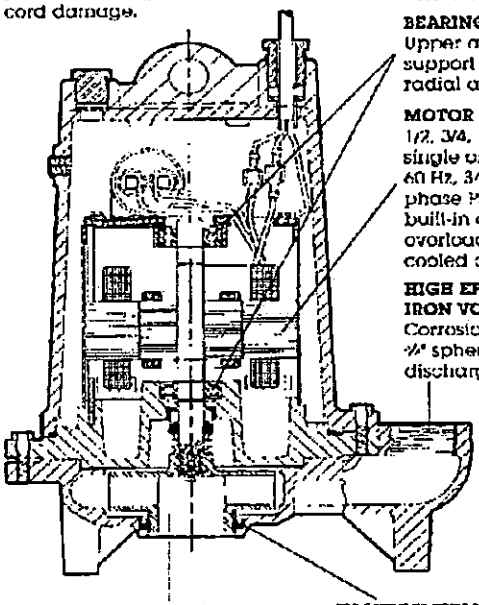
POWER CORD
Jacket sealed with compression fittings. Individual wires potted with epoxy to prevent wicking in case of cord damage.

MOTOR HOUSING
Cast iron for efficient heat transfer and corrosion resistance.

BEARINGS
Upper and lower ball support rotor. Take radial and thrust loads.

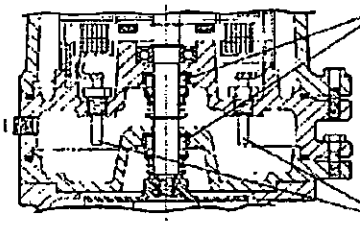
MOTOR
1/2, 3/4, 1 and 1-1/2 HP single or three phase. 60 Hz, 3450 RPM. Single phase PSC motors have built-in on winding overload protection, oil-cooled and lubricated.

HIGH EFFICIENCY CAST IRON VOLUTE
Corrosion resistant. Passes ⅜" spherical solids 2" NPT discharge.



ENCLOSED TWO VANE IMPELLER
high efficiency. Passes ⅜" spherical solids with stainless steel wear ring. Optional bronze construction available

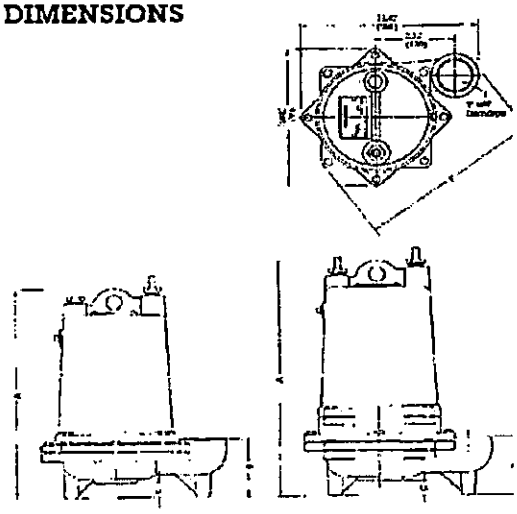
VOLUTE/IMPELLER SEAL RING
Maintains high efficiency and reduces recirculation. Replaceable.



SHAFT SEAL(S)
Carbon and ceramic faces. Optional dual tandem seals. Extends motor life.

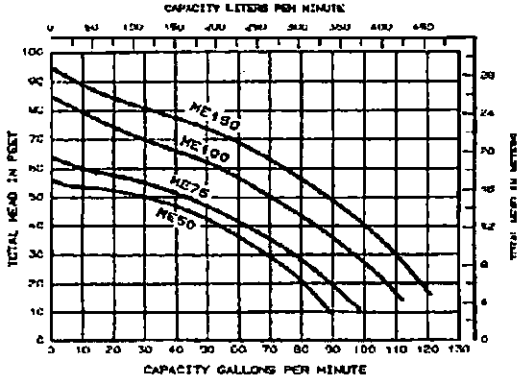
SEAL LEAK PROBES
Optional probes (dual seal only) detect water leakage in seal housing. Activates warning light.

DIMENSIONS



Model Series	Inches (millimeters) A	B	C	F
ME50S	16.8 (427)	4.09 (104)	1.03 (26)	12.13 (308)
ME50D	18.6 (472)	4.09 (104)	1.03 (26)	12.13 (308)
ME75S, ME100S, ME150S	16.8 (427)	4.0 (102)	1.06 (27)	12.5 (318)
ME75D, ME100D, ME150D	18.6 (472)	4.0 (102)	1.06 (27)	12.5 (318)

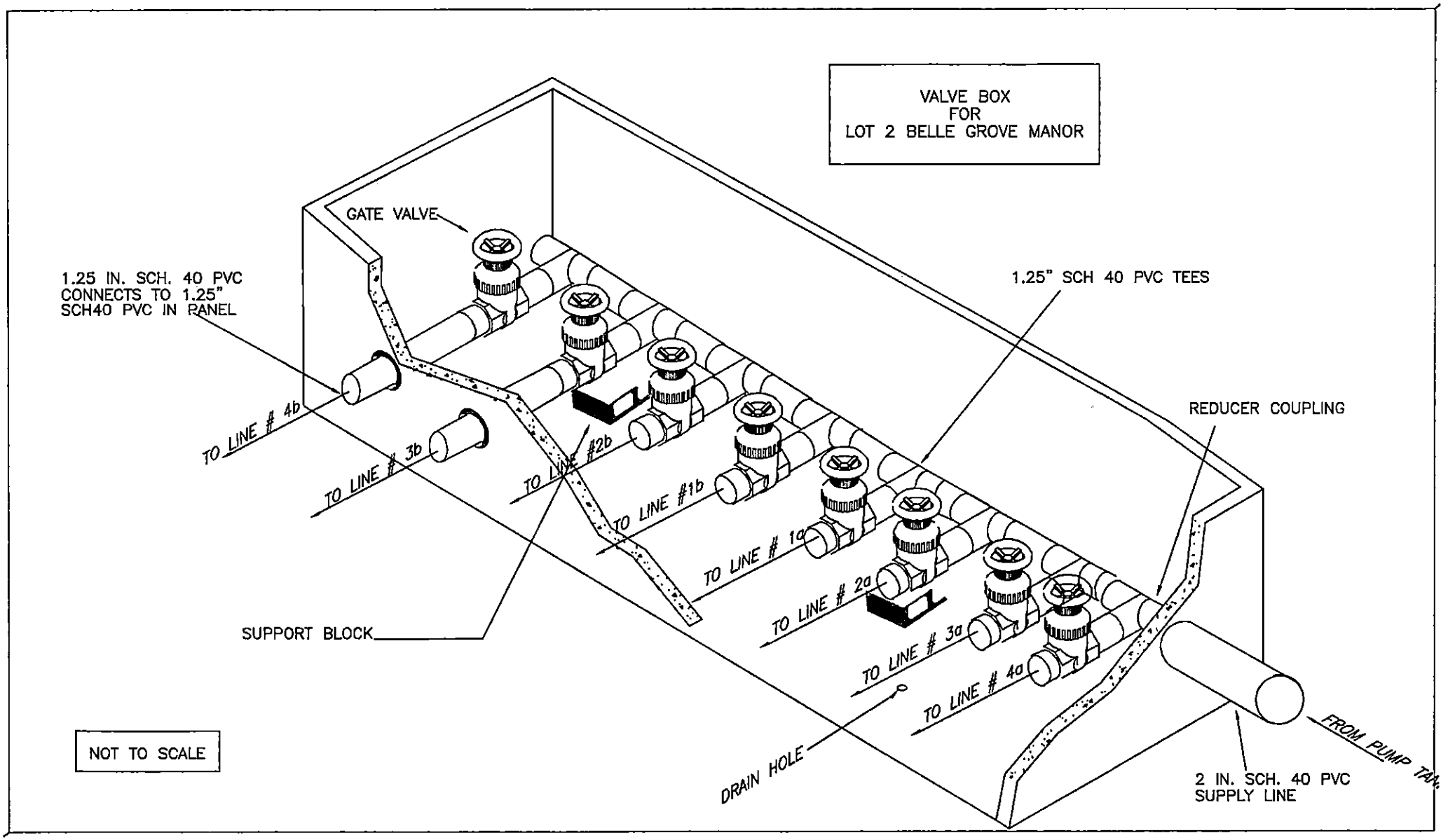
PERFORMANCE CURVE



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Myers (Canada), 269 Trillium Drive, Kitchener, Ontario N2G 4W5
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VALVE BOX
FOR
LOT 2 BELLE GROVE MANOR
GATE VALVE
1.25 IN. SCH. 40 PVC
CONNECTS TO 1.25"
SCH40 PVC IN PANEL
1.25" SCH 40 PVC TEES
REDUCER COUPLING
TO LINE # 4b
TO LINE # 3b
TO LINE #2b
TO LINE #1b
TO LINE # 1a
TO LINE # 2a
TO LINE # 3a
TO LINE # 4a
SUPPORT BLOCK
DRAIN HOLE
FROM PUMP TANK
2 IN. SCH. 40 PVC
SUPPLY LINE
NOT TO SCALE

CALCULATIONS

Location	Belle Grove Manor	
Lot No:	2	
No. of Bedrooms	5	
Design Flow	600	$^{gal}/_{day}$
LTAR	0.25	$^{gal}/_{ft^2\ day}$
Innovative? (YES OR NO)	no	
Supply Line Length	130	ft.
Supply Line Volume	22.62	gal.
Required Feet of Line	400	ft.
Amount of Line from Layout	400	ft.
Gallons per Minute	36.08	$^{gal}/_{min}$
Required Septic Tank Capacity	1500	gal.
Minimum Standard Tank Size	1500 gal.	
Lateral Line Volume	261.2	gal.
Dosing Volume	317	gal.
	Note:	*Dosing Volume 88 panels times 3.6 gallons*
Tank Draw Down	10.9	*Generic Draw Down of 29 gal.per in.*
Pump Run Time	8.79	minutes
Elevation Head	8.1	ft.
Pressure Head	2	ft.
Friction Factor	2	ft./100 ft. *(From the interpolater.)*
Friction Head	2.50	ft.
Drainline Friction 1.25 pvc	4	
Total Dynamic Head (+15%)	19.09	ft.

FRICTION FACTOR INTERPOLATER
2" SCH 40 PVC

GPM	*f*
20	0.84
	-0.88
25	1.27
28	1.58
30	1.78
31.51	1.96
35	2.37
36	2.50
40	3.03
42.4	3.39
45	3.77
48.14	4.28
50	4.58
57.11	5.89
60	6.42