

13735 RAMAH OAKS LN

01126127

1/2/2008

duponbj

Groundwater and Wastewater Services File Imaging Project

May 2007

Barcode Font = IDAutomationHC39M

CERTIFICATE OF COMPLETION/OPERATION PERMIT

HEALTH DEPARTMENT
ENVIRONMENTAL HEALTH DIVISION
700 NORTH TRYON ST., SUITE 211
CHARLOTTE, NC 28202
PHONE (704) 336-5102

FILE: 2989B DATE: 8/22/02

TC: 011-261-27 ☒ L ☐ CRT

SERIAL 19054

Name of Owner Matthew Ahrendt Juris.:

Address of Property 13735 Ramah Oaks Lane

Inspection Data:

Tank Material PCC

Total Length of Drainfield 300'

Number of Lines 4 @ (1) 60' (3) 80'

Cover Depth 24"

Water Supply Source well

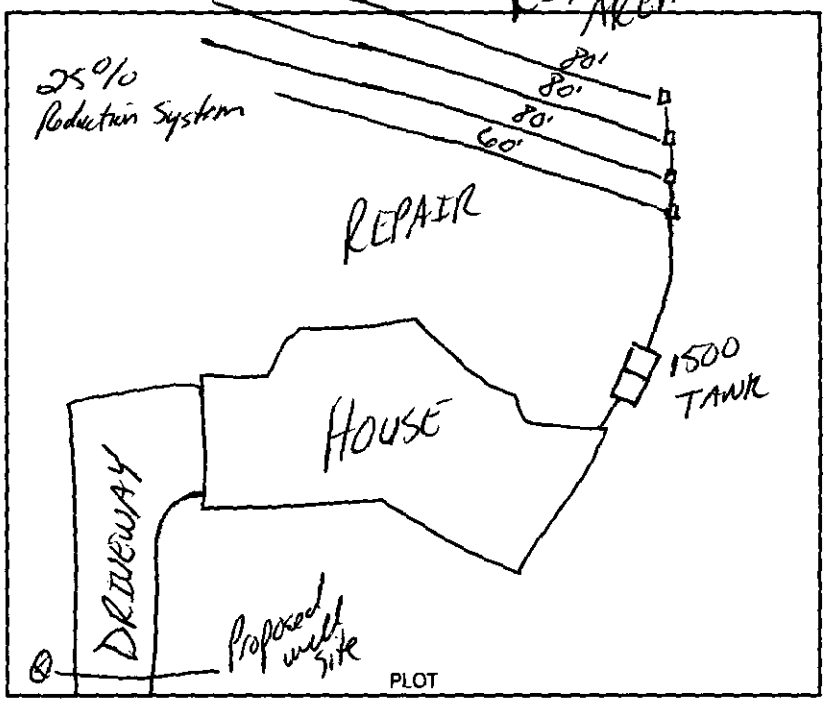
Distance to Water Source Not Drilled

Excavation Inspected 8/22/02

Tank(s) Inspected 8/22/02

Wash Line Inspected N/A

High Water Alarm Inspected N/A



Design 1500 ST, 900 SFT, INV, E-2 FLOW CTR# Tim Ammons

The undersigned has inspected the Septic Tank System described above, and certifies it has been

☒ installed or constructed ☐ altered or repaired

☒ in accordance with the permit issued ☒ as detailed in the plot above

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. This issuance of this

☐ Certificate of Completion ☒ 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. 1990 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/revocation of this permit.

COMMENTS: Four Bedroom Residence (0.4 LTAR)
4 Lines X (60', 80', 80', 80') x 3' w/ Drop Boxes
Type IIIg Innovative System

* Agreement forms needed Before C.O. 1x0

Tommy Wells R.S.
Environmental Health Specialist

Mecklenburg County services are available without regard to ethnic origin, sex, or disability.

INSTALLATION, CONSTRUCTION, ALTERATION, AND/OR REPAIR APPROVAL

HEALTH DEPARTMENT
ENVIRONMENTAL HEALTH DIVISION
700 NORTH TRYON ST., SUITE 211
CHARLOTTE, NC 28202
PHONE (704) 336-5102

FILE: 2989B DATE: 8/8/02

TC: _____ L

SERIAL 19006

Permission is hereby given to _____ Install or Construct, _____ Alter or Repair the individual septic tank wastewater treatment system with subsurface, soil absorption, effluent discharge as specified herein at the described location. This permit is granted based upon the information supplied in the application dated _____. All work shall be completed on or before 9/8/02, after which date this permit 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 the granting of this permit. A Certificate of Completion or 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 or hereafter owning, controlling or using such system from any liability resulting from the failure of the system to operate properly.

Install according to Designed Plans.

PLOT OF SYSTEM

Liquid Capacity of Septic Tank 1500 gallons

Liquid Capacity of Dosing Tank N/A gallons

Tank Construction PCC

Trench Depth 36"

Absorption and/or Nitrification Lines:

Trench Width 3' feet

Trench Walls Scored and Porous yes

Total Line Length 400' feet

Number of Lines 6 lines

Depth of Stone 12" inches

Distance from House >5' feet

Distance from Property Line >10' feet

Distance from Well >100' feet

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

NAME OF OWNER Matthew Ahrendt

LOCATION OF PROPERTY 13735 Ramath Oaks Lane

Comments: Four Bedroom House 0.4 GPAR

Install system according to engineered plans on file

Type II Conventional System

Tony Nichols R.S.

Environmental Health Specialist

WHITE - HEALTH DEPARTMENT's COPY • CANARY - E.H.S. COPY • PINK - OWNER OR AGENT's COPY

FEE: 150 / AUTHORIZATION FOR WASTEWATER SYSTEM CONSTRUCTION
DATE: 12/10/01 VOID SIXTY (60) MONTHS FROM DATE OF ISSUANCE

DATE: _____ PERMIT NO: 2989B

PARCEL NO: 011-261-27

JOB LOCATION ADDRESS: 13735 Ramah Oaks Lane

PROPERTY OWNER: Matthew R. Ahrendt

BUILDING CONTRACTOR: _____

SUBDIVISION NAME: Ramah Oaks

AUTHORIZATION ISSUED BY: Penny F. Mickle R.S. DATE: 12/19/01

DEHNR AUTHORIZED AGENT

AUTHORIZATION CONDITIONS

1. WASTEWATER SYSTEM CONSTRUCTION AND INSTALLATION MUST MEET ALL CONDITIONS AND SPECIFICATIONS AS SET FORTH IN IMPROVEMENT PERMIT NO. 2989B, 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, CONSTRUCTION, ALTERATION AND/OR REPAIR 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 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 AUTHORIZATION AND ASSOCIATED PERMIT(S) TO REVOCATION.

4. OTHER CONDITIONS: Agreement Forms before C.A. Release
   - Install trenches at 36"
   - BOD NA Mona Pretreatment

OWNER CERTIFICATION

I CERTIFY THAT THERE HAVE BEEN NO ALTERATIONS IN SITE OR SOIL CONDITIONS OR MODIFICATIONS TO FACILITY, WASTEWATER FLOW, OR WASTEWATER CHARACTERISTICS FROM THOSE SPECIFIED IN THE ORIGINAL APPLICATION OR ASSOCIATED IMPROVEMENT PERMIT UNLESS AUTHORIZED IN WRITING BY THE MECKLENBURG COUNTY HEALTH DEPARTMENT. I ALSO UNDERSTAND THAT ANY SUCH ALTERATIONS, MODIFICATIONS, OR FALSE INFORMATION ARE GROUNDS FOR REVOCATION OF PERMITS AND AUTHORIZATION TO CONSTRUCT.

X _____

SIGNATURE OF OWNER/OWNER'S REPRESENTATIVE DATE

Permit Number 2989B

CONDITIONS OF IMPROVEMENT PERMIT

Tax Number 011-261-27

The 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.

Basement	___ Yes	✓ No	___ Partial Basement	
Type Primary Wastewater System Type (circle one): I (II) III IV V VI	___ Conventional ___ Prefabricated, permeable block panel system ___ Shallow Placed Conventional	___ Low Pressure Pipe ___ Large Diameter Pipe ___ Fill ___ Other	___ Innovative or Experimental: ___ IWWS-93-1 ___ IWWS-93-2 ___ IWWS-94-1	
0.4 Long-term acceptance rate	480 Max gallons/day wastewater flow	1200 Absorption Area (sq ft)	9' Trench spacing (min. on centers)	
yes Serviced by private well	1500 Gallon septic tank	400' Total trench length (ft)	36" Maximum trench depth (At least 12" of provisionally suitable soil must remain between trench bottom and unsuitable soil conditions)	
4 Bedrooms in residence	NA Gallon pump tank	12" Depth of stone		

Any surface waters present: NO Type: Minimum separation distance:

Site modifications required:

Additional Conditions: Install trenches at 36" into saprolite
- Agreement forms on file before C.A. Release for Repair system.
- Bond NA Mona Pretreatment for Repair

Repair Area System Type Type (circle one): I II III IV (V) VI Type V-d	___ Conventional ___ Prefabricated, permeable block panel system ___ Shallow Placed Conventional	___ Low Pressure Pipe ___ Large Diameter Pipe ___ Fill ___ Other	✓ Innovative or Experimental: ___ IWWS-93-1 ___ IWWS-93-2 ___ IWWS-94-1	
1200 Absorption Area (Sq ft) 400 Total Trench Length (Ft)	12" Depth of Stone Trench	9' Trench spacing (min. on centers)	48" Maximum Trench Depth	

For existing system, enter the year originally installed:

The undersigned, an authorized agent of the MECKLENBURG COUNTY HEALTH DEPARTMENT, certifies that the Department has approved the Request for the Job Location contained in this document. This approval is granted in accordance with the provisions of Laws and Rules For Sewage, Treatment and Disposal in effect at the time of issuance of the permit and is subject to the following provisions:

- No work shall be conducted on the septic tank system until an Installation, Construction, Alteration and/or Repair Approval is granted by this Department
- This Improvement permit is transferable.

Tracy L. Mackie R.S. 12/19/01 X

DEHNR Authorized Agent Date Owner/Agent Signature Date

MECKLENBURG COUNTY
HEALTH DEPARTMENT
ENVIRONMENTAL HEALTH DIVISION
c/o HAL MARSHALL CTR.
SUITE 211
700 N. TRYON ST.
CHARLOTTE, N.C. 28202.
(704) 336-5102

NORTH CAROLINA DEPARTMENT OF
ENVIRONMENTAL, HEALTH,
AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL HEALTH
ON-SITE WASTEWATER SECTION

Present on site 12-18-01.
Concur with conclusions and investigation on site.

W.R. Marlin 12-19-01

Soil & Environmental Consultants, PA

PMB 291, 3020-I Prosperity Church Road • Charlotte, North Carolina 28269-7197 • Phone: (704) 720-9405 • Fax: (704) 720-9406

www.SandEC.com

FACSIMILE SHEET
FAX NO. (704) 720-9406

DATE: 12-18-01 Project Number: S-1065

TO: NAME: Bill Marlin, L.S.S. CC: _____

COMPANY: Meck. Co. Health Dept. _____

FAX NUMBER: 704 336 6894 _____

FROM: Ashley Rollans SUBJECT: Ramah Oaks Lot #2

The following items are being faxed. Number of pages including transmittal sheet: ____

X For Your Comments/Approval	____ For Your Information
____ Per Our Conversation	____ Per Your Request
____ Please Advise	____ Please Call
____ Would Like To Discuss	____ Please Handle

HARD COPY SENT:

____ US Regular Mail	____ Hand Delivery
____ Overnight	____ No Hard Copy Sent

APPROVED

REMARKS: Bill,

Attached is our proposal for septic on Ramah Oaks Lot #2. Please review and contact me back with any comments.

Thanks

Ashley

IF YOU HAVE ANY QUESTIONS OR PROBLEMS WITH THIS TRANSMISSION, PLEASE CONTACT _____ AT (704) 720-9405.

CONFIDENTIALITY NOTICE

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3817-E Lawndale Drive
NC 27455

Hickory Area Office:
710 Boston Road
Taylorsville, NC 28681
Phone: (828) 635-5820

Raleigh Office:
11010 Raven Ridge Road
Raleigh, NC 27614
Phone (919) 846-5900

FROM : SOIL&ENVIRONMENTALCONSULTANTS FAX NO. : 7047209406 Dec. 18 2001 05:06PM P1

S&EC

Soil & Environmental Consultants, PA

PMB 291, 3020-I Prosperity Church Road • Charlotte, North Carolina 28269-7197 • Phone: (704) 720-9405 • Fax: (704) 720-9406
www.SandEC.com

December 18, 2001
Project #5-1065

MATTHEW AHRENDT
178 Castles Gate Drive
Mooresville, NC 28117

Re: Soil/Site Evaluation on Lot #2, a ±1.0-Acre Site in Ramah Oaks Subdivision on Ramah Oaks Lane – Mecklenburg County, NC

Dear Mr. Ahrendt:

This letter details the findings of Soil & Environmental Consultants, Inc. (S&EC) in regards to a detailed soil and site evaluation performed on the above referenced lot. Included with this report is a profile description of the usable soil, a septic system layout, a proposed site plan, and information for the design of a conventional system.

INITIAL FIELDWORK

S&EC traversed the property and observed landforms (slope, drainage patterns, past use, etc.) as well as soil conditions (depth, texture, structure, seasonal wetness, restrictive horizons, etc.) through the use of hand auger borings. The site was evaluated during moist soil conditions. From these observations, an evaluation of the site was developed, relative to subsurface disposal of wastewater. Soil boundaries were flagged in the field using pink S&EC logo tape. The soil/site evaluation criteria used is that contained in 15 A NCAC 18A .1900 "Laws and Rules for Sewage Treatment and Disposal Systems".

FINDINGS

This site is located in western Mecklenburg County. The upland soils on this tract are similar to the Wedowee soil series. The Wedowee soil series has a sandy loam surface material over a sandy clay subsoil. Soil structure in the control section was observed as weak subangular blocky to structureless. Saprolite was encountered at depths less than 36 inches with textures ranging from sandy clay loam to sandy loam. These soils are at least 36 inches deep to prohibitive soil characteristics and are generally useable for subsurface septic systems. The unsuitable soil areas on this lot have limited soil depth due to rock and loss of soil structure. Refer to the attached soil profile for additional information.

S&EC identified an area on the northern portion of the property that contained useable saprolite starting at 36 inches below ground surface. These soils have potential for a conventional system (.1955). The remaining soil areas were generally unsuitable for subsurface septic systems due to rock, soil structure and topography.

LAYOUT

Due to the small amount of available space occupied by the usable saprolite, S&EC performed a septic system layout. S&EC was able to demonstrate placement of 950 linear feet of drainline on 9' centers. The 950 linear feet of line could be used to support a conventional system for a 4BR house (480 GPD) with effluent distributed through a series of drop boxes and a conventional repair with Bord na Mona Pretreament and drop boxes used for distribution. Trench bottom proposed for the system is 36 inches and the recommended LTAR is 0.4gpd/ft2 (sandy loam textured saprolite). Repair field trench bottom is

Greensboro Office:
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Raleigh Office:
11010 Raven Ridge Road
Raleigh, NC 27614
Phone (919) 846-5900
Fax: (919) 846-9467

Dec. 18 2001 05:07PM P2
FAX NO. : 7047209406
FROM : SOILSENVIRONMENTALCONSULTANTS_

recommended at 48 inches and will require pretreatment since trench depth is greater than 36 inches. LTAR for the repair is recommended at 0.4gpd/ft2. The layout specifications including line lengths, flag colors, line elevations, etc. are attached with this report. S&EC recommends that the designated septic area be marked and protected to insure that no disturbance occurs prior to installation.

DESIGN

Attached please find site plans showing placement of the proposed septic system including 1500 gallon septic tank along with the proposed house site and driveway location. Additionally, specifications for the layout are enclosed along with information and drawings regarding conventional systems. Based on a 4-bedroom house that will produce 480 gal/day with an LTAR of 0.40gpd/ft^2 on 3' wide trenches, 400 linear feet of drainline will be needed to support the initial system.

Design flow: 120gal/day * 4 bedrooms = 480gal/day ÷

LTAR: 0.40gpd/ft^2 = 1200ft^2 +

3' trench bottom = 400 linear feet

Soil & Environmental Consultants, Inc. is pleased to be of service in this matter and we look forward to assisting in any site analysis needs you may have in the future. Please feel free to call with any questions or comments.

Sincerely,



12/18/01

Samuel A. Rollans
NC Licensed Soil Scientist

Encl: *Soil/Site Map*
Soil Profile Description
Layout Specifications
Attachment 1

Cc: Mecklenburg County Health Dept.
Attn: Bill Marlin, L.S.S.
Via: Facsimile

Profile Descriptions
Ramah Oaks

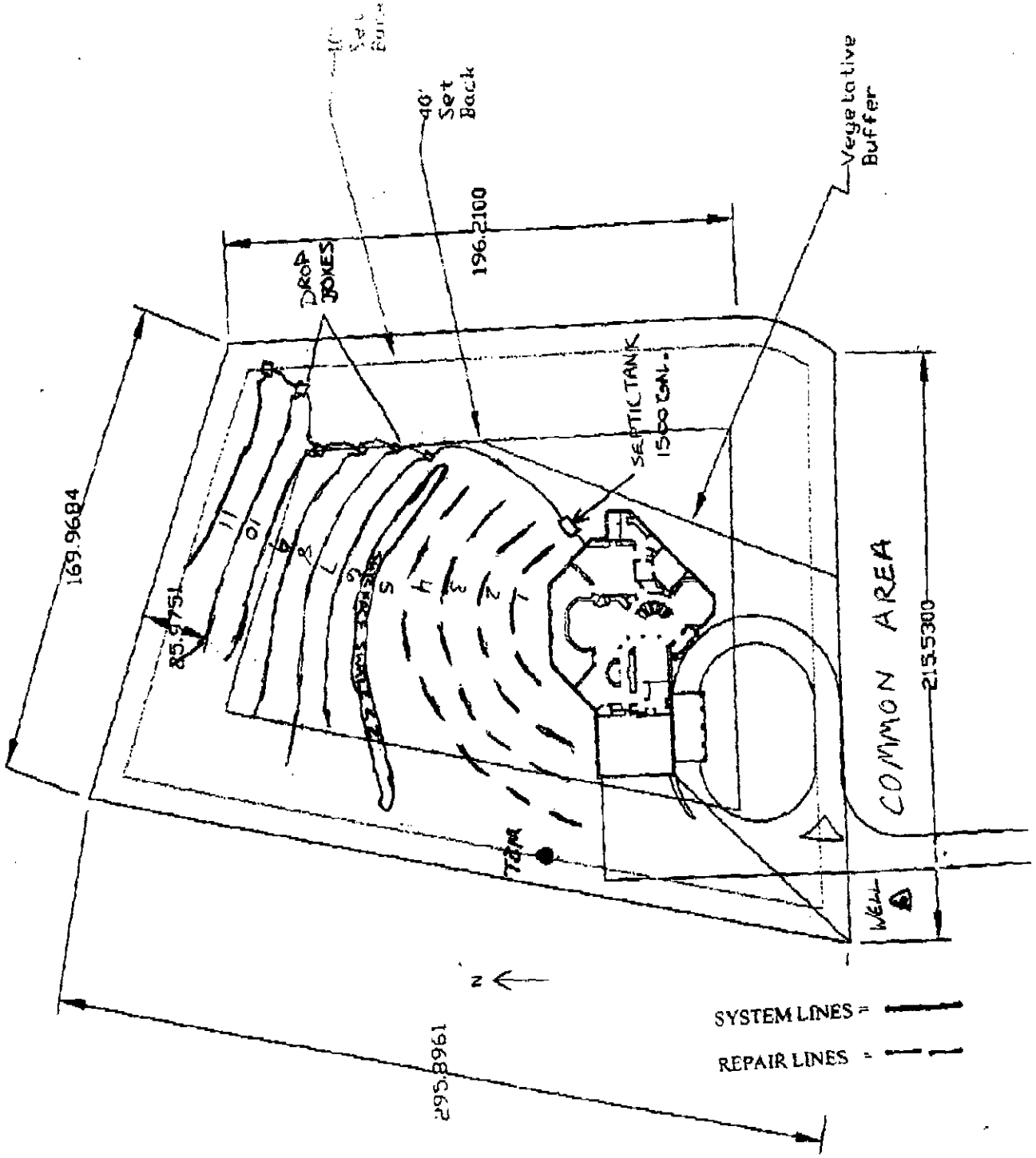
Near location of sample 3

Horizon	Depth(in)	Color	Structure	Texture
A	0-3	10YR 5/4	GRANULAR	SANDY LOAM
Bt	3-30	5YR 4/6, w/10YR 6/6 mottles	SUBANGULAR BLOCKY	CLAY
C1	30-84+	10YR 3/2, and 10YR 8/1 (relic)	STRUCTURELESS	SANDY LOAM

S&EC

Soil & Environmental Consultants, PA

RAMAH OAKS LOT 2
SITE PLAN / SEPTIC SYSTEM LAYOUT
4 BEDROOM RESIDENCE
DEC. 2001
S&EC #5-1065
Scale 1" = 50'



FROM : SOILSENVIRONMENTALCONSULTANTS_ FAX NO. : 7047209406 Dec. 18 2001 05:09PM P5

RAMAH OAKS LOT 2

JOB #: 5-1065

LAYOUT FOR 4 BEDROOM HOME

December-01

LINE #	FLAG COLOR	BS	HI	FS	ELEVATION	LINE LENGTH
TBM		2.7			100.0	
INSTR. 1			102.7			
1	RED			3.10	99.6	50
2	YELLOW			3.60	99.1	115
3	ORANGE			4.30	98.4	130
4	BLUE			5.00	97.7	155
5	RED	(WATER DIVERSION)		5.50	97.2	
6	YELLOW			6.50	96.2	87
7	ORANGE			7.30	95.4	100
8	PINK			7.70	95.0	80
9	ORANGE			9.40	93.3	65
10	RED			10.40	92.3	90
11	YELLOW			11.60	91.1	78
					Total	950

	LINE LENGTH	LTAR GPD/FT^2	SYSTEM TYPE	PROPOSED LTAR GPD/FT^2	INNOVATIVE SYSTEM	DISTRIBUTION
* System	500'	0.32	CONV.	0.40	N/A	DROP BOXES
REPAIR	400' Red line extra.	0.40	INNOVATIVE	0.40	PRETREAT (BORD NA MONA	DROP BOXES

Notes:

** TBM located on top of stake (see attached site plan).
**TBM is assumed to be 100'
**All measures in feet
**Nitrification lines are demonstrated on contour via colored pin flags
** House and driveway location illustrated on the attached map
**BS and FS indicate rod readings
**Lines flagged in field may be longer than lengths shown.
Install at lengths shown on this sheet.

Attachment 1

.1950 Location of Sanitary Sewage Systems

(c) Every sanitary sewage treatment and disposal system shall be located at least the minimum horizontal distance from the following:

(1)	any private water supply source including a well or spring	100 feet
(2)	any public water supply source	100 feet
(3)	streams classified as WS-I	100 feet
(4)	water classified as S.A.	100 feet from mean high water mark
(5)	Other coastal waters	50 feet from mean high water mark
(6)	any other stream, canal, marsh, or other surface waters	50 feet
(7)	any Class I or Class II reservoir	100 feet from normal pool elevation
(8)	any permanent storm water retention pond	50 feet from flood pool elevation
(9)	any other lake or pond	50 feet from normal pool elevation
(10)	any building foundation	5 feet
(11)	any basement	15 feet
(12)	any property line	10 feet
(13)	top of slope of embankments or cuts of 2 feet or more vertical height	15 feet
(14)	any water line	10 feet
(15)	drainage systems:	
	(A) Interceptor drains, foundation drains and storm water diversions	10 feet
	(i) upslope	15 feet
	(ii) sideslope	25 feet
	(iii) downslope	25 feet
	(B) Groundwater lowering ditches and devices	15 feet
(16)	any swimming pool	20 feet
(17)	any other nitrification field (except repair area)	

(b) Ground absorption sewage treatment and disposal systems may be located closer than 100 feet from a private well supply, except springs and uncased wells located downslope and used as a source of drinking water, repairs, space limitations and other site-planning considerations but shall be located the maximum feasible distance and, in no case, less than 50 feet.

(c) Nitrification fields and repair areas shall not be located under paved areas or areas subject to vehicular traffic. If effluent is to be conveyed under areas subject to vehicular traffic, ductile iron or its equivalent pipe shall be used. However, pipe specified in Rule .1955 (e) may be used if a minimum of 30 inches of compacted cover is provided over the pipe.

Note: Systems over 3000 GPD or an individual nitrification fields with a capacity of 1500 GPD or more have more restrictive setback requirements, see .1950 (a) (17) (d) for specifics.

FROM : SOILSENVIRONMENTALCONSULTANTS_ FAX NO. : 7047209406 Dec. 18 2001 05:10PM P7

FOR REGISTRATION JUDITH A. GIBSON
REGISTER OF DEEDS
MECKLENBURG COUNTY, NC
1999 SEP 28 12:30 PM
BOOK:10790 PAGE:349-352 FEE:$12.00
INSTRUMENT # 1999174843

STATE OF NORTH CAROLINA

COUNTY OF MECKLENBURG

WASTEWATER TREATMENT AND DISPOSAL SYSTEM DESIGN AGREEMENT: 15A NCAC 18A .1948 AND ANY OF THE FOLLOWING RULES: .1956; .1957(a); .1957(b); or .1957(c); OR .1969

FILE # 7989B
PARCEL # ~~011-2~~

The undersigned, ROBERT T. & SUSAN C. COUNCIL, owner of property located at 13735 RAMAH OAKS LN, HUNTERSVILLE, NC, (the "site") and described in an instrument recorded in Book 9121 at Page 718, Mecklenburg Public Registry, hereby acknowledges that the undersigned applied to the Mecklenburg County Health Department (the "Department") for a permit to install a septic tank sewage disposal system on the site; that the Department evaluated the site for suitability for such a system in accordance with the regulations promulgated by the North Carolina Commission for Health Services as 15A NCAC 18A .1900 et seq.; that the Department originally classified the site as "unsuitable" pursuant to the standards set forth in the regulations; that the undersigned requested that the Department reclassify the site as "provisionally suitable" in light of the particular septic tank system proposed by the undersigned; that the Department considered various studies, data, and other information which indicate to the Department that the septic tank system proposed by the undersigned is allowed by the rules; and that the Department therefore reclassified the site as "provisionally suitable" and issued an appropriate permit for such proposed septic tank system.

The undersigned further acknowledges that the proper design, construction, operation and maintenance of such septic tank system is the responsibility of the designer, owner, developer, installer, or user of the system, as applicable, and that neither the Department nor its officials, employees, or agents warrant or guarantee that the said system installed pursuant to the permit issued by the Department will function in a satisfactory manner for any given period of time or that the Department, its officials, employees or agents assume any liability for any damages of any kind which are caused, or which may be caused, by a malfunction of such system.

The undersigned further acknowledges that the following conditions will apply to the site:

- Any changes on the property may make the Improvement Permit Null and void and may make the Improvement Permit subject to revocation.

This instrument was prepared by: ROBERT T. COUNCIL
Mail after recording to: 14520 BLACK FARMS RD
HUNTERSVILLE, N.C. 28078

- Do not grade, cut, fill, pave, construct a building or deck, dig a well, install a swimming pool or otherwise cover or disturb the soil (except for planting and maintaining grass or other ground covers) in a manner which will adversely affect the repair area or area where the septic tank system is located.

- When a private certified operator is required, no improvement permit for the designated repair shall be issued unless there is a private certified operator to carry out this management program in the service area where the proposed system is to be located. (Refer to Rule .1961, "Maintenance of Sewage Systems," for further information.)

- Additional fees will be required according to the Mecklenburg County user fee schedule applicable at the time for the issuance of a repair permit for any subsequent repairs to the sewage treatment and disposal system or for installation of a replacement system.

- At the time repairs to the sewage treatment and disposal system are to be made or a replacement system installed, the regulations in effect at that time will govern the repairs or installation of a replacement system.

The undersigned further agrees for himself, his heirs and assigns that he shall indemnify and hold harmless the Department, its employees, and officials, as well as Mecklenburg County and its employees and officials, for any damages or other claims of any person or persons whatsoever arising out of the installation, operation, or failure of said septic tank system.

Use of the singular masculine pronoun forms herein shall be deemed to also include the plural and feminine forms as the context may require.

This document shall be placed on the public records of the Register of Deeds of Mecklenburg County and indexed therein under the Grantor Index in the name or names of the undersigned, and the foregoing acknowledgements shall henceforth be binding on all persons claiming any right, title, or interest in the site.

IN WITNESS WHEREOF, the undersigned has hereunto set his hand and seal, or if corporate, has caused this instrument to be signed in its corporate name by its duly authorized officers and its seal to be hereunto affixed by authority of its Board of Directors, this 28th day of July, 1999.

_____ (SEAL)
(Corporate Name)

Susan C. Council (SEAL)

By: _____ _____ (SEAL)

_____ President _____ (SEAL)

ATTEST:

_____

_____ Secretary

(Corporate Seal)

STATE OF NORTH CAROLINA
COUNTY OF Mecklenburg

I, Sheila B. Kerr, a Notary Public for said County and State, do hereby certify that Robert Council and Susan C. Council personally appeared before me this date and acknowledged the due execution of the foregoing instrument.

WITNESS my hand and notarial seal, this 28 day of July, 1999.

Sheila B. Kerr
Notary Public

My Commission Expires:
7-13-2002

JUDITH A. GIBSON
REGISTER OF DEEDS , MECKLENBURG COUNTY
COUNTY & COURTS OFFICE BUILDING
720 EAST FOURTH STREET
CHARLOTTE NC 28202

****

Filed For Registration: 09/28/1999 12:30 PM

Book: RE 10790 Page: 349-352

Document No.: 1999174843

AGMT 4 PGS $12.00

Recorder: REBECCA MCGOWAN

****

State of North Carolina, County of Mecklenburg

The foregoing certificate of SHEILA B. KERR Notary is certified to be correct. This 28TH of September 1999

JUDITH A. GIBSON, REGISTER OF DEEDS By: Rebecca McGowan
Deputy/Assistant Register of Deeds

****

1999174843

FEE: _____

DATE: _____

APPLICATION FOR IMPROVEMENT PERMIT
FOR RESIDENTIAL SITE
INDIVIDUAL WATER AND WASTEWATER
SYSTEMS PROGRAM

[ ] CRT

TYPE APPLICATION: ___ NEW SYSTEM ✓ EXPANSION/ ALTERATION OF EXISTING SYSTEM ___ REPAIR OF EXISTING SYSTEM

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

FILE #: 2989B

PROPERTY INFORMATION (FROM ENGINEERING FORM) FOR JOB LOCATION:

TAX/PARCEL NUMBER: 01126127

STREET ADDRESS: Roman Oaks Lane

SUBDIVISION OR MOBILE HOME PARK NAME: Roman Oaks

LOT NUMBER: # 2

TYPE OF BUILDING (CHECK ONE):

___ SINGLE MOBILE HOME(S)
___ DOUBLE WIDE (D)
✓ HOUSE (H)
___ MODULAR HOME (M)
___ MULTIPLE FAMILY (U)
___ OTHER (O)

TOWNSHIP (CHECK ONE):

___ 0 MECKLENBURG
___ 1 CHARLOTTE
___ 2 DAVIDSON
___ 3 CORNELIUS
___ 4 PINEVILLE
___ 5 MATTHEWS
✓ 6 HUNTERSVILLE
___ 7 MINT HILL

HEATED SQUARE FOOTAGE: 4242

NUMBER OF BEDROOMS: 4

NUMBER OF OCCUPANTS: 6

CLOSING DATE _____

FOUNDATION FOR RESIDENCE:

___ WITHOUT BASEMENT
___ ON SLAB
✓ CRAWL SPACE
___ WITH BASEMENT /PLUMBING
___ WITH BASEMENT /NO PLUMBING

IF EXPANSION/ALTERATION OF EXISTING SYSTEM, DESCRIBE THE PROPOSED BUILDING ADDITION:

WILL THERE BE A HOME BUSINESS IN THE RESIDENCE: ✓ YES ___ NO TYPE: Consulting

WATER SUPPLY (CHECK ONE):

___ COMMUNITY (C)
___ MUNICIPAL (M)
✓ PRIVATE WELL (P)
___ SHARED WELL (S)
___ OTHER 'SPRINGS' (O)

IF ANY OF THE FOLLOWING ARE LOCATED ON THE PROPERTY, PLEASE SHOW LOCATION ON PLAT:

BURIED CABLES, LANDFILLS, STUMPHOLES ___ YES ✓ NO
EXISTING WASTEWATER SYSTEMS ___ YES ✓ NO
EASTMENTS OR RIGHT-OF-WAYS ___ YES ✓ NO
WELL, SPRINGS OR WATERLINES ___ YES ___ NO
DESIGNATED WETLANDS ___ YES ✓ NO

PROPERTY OWNER:

NAME: Ahrendt (LAST) Matthew (FIRST) R (MI)

ADDRESS: 178 Castles Gate Dr

CITY: Mooresville STATE: NC ZIP: 28117

DAYTIME PHONE: (704) 662 - 0120

LEGAL AGENT FOR PROPERTY OWNER, IF APPLICABLE:

NAME: (LAST) (FIRST) (MI)

DAYTIME PHONE: ( ) -

WHAT DATE WAS THE PROPERTY ORIGINALLY DEEDED AND RECORDED? _____

An Improvement Permit is subject to suspension or revocation if site plans or the intended use change or if information submitted in this application is falsified or changed. The undersigned, owner, or legal agent for the owner, of the property described above as the "Job Location" has read the foregoing application, acknowledges that the contents of same are true, and authorizes agents of the Mecklenburg County Health Department to enter onto the property for the purpose of processing this request.

SIGNED: Matthew Ahrendt DATE: 12/10/2001

MECKLENBURG COUNTY HEALTH DEPARTMENT
ENVIRONMENTAL HEALTH DIVISION
c/o HAL MARSHALL CTR., SUITE 211, 700 N. TRYON ST., CHARLOTTE, N.C. 28202., (704) 336-5102

FEE: 150 AUTHORIZATION FOR WASTEWATER SYSTEM CONSTRUCTION
DATE: 12/10/01 VOID SIXTY (60) MONTHS FROM DATE OF ISSUANCE

DATE: 9-9-99 13735 Ramah Oaks Ct PERMIT NO: 29896
PARCEL NO: 01-151-18 Ro
JOB LOCATION ADDRESS: ~~14520 Blackfoams Road~~ 01 1.261.27
PROPERTY OWNER: Robert T. Council
BUILDING CONTRACTOR:
SUBDIVISION NAME: Ramah Oaks Lot 2
AUTHORIZATION ISSUED BY: Tony B. Thompson Jr. DATE: 9.9.99
DEHNR AUTHORIZED AGENT

AUTHORIZATION CONDITIONS

1. WASTEWATER SYSTEM CONSTRUCTION AND INSTALLATION MUST MEET ALL CONDITIONS AND SPECIFICATIONS AS SET FORTH IN IMPROVEMENT PERMIT NO. 29896 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, CONSTRUCTION, ALTERATION AND/OR REPAIR 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 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 AUTHORIZATION AND ASSOCIATED PERMIT(S) TO REVOCATION.

4. OTHER CONDITIONS: See Conditions Of Improvement Permit.

OWNER CERTIFICATION

I CERTIFY THAT THERE HAVE BEEN NO ALTERATIONS IN SITE OR SOIL CONDITIONS OR MODIFICATIONS TO FACILITY, WASTEWATER FLOW, OR WASTEWATER CHARACTERISTICS FROM THOSE SPECIFIED IN THE ORIGINAL APPLICATION OR ASSOCIATED IMPROVEMENT PERMIT UNLESS AUTHORIZED IN WRITING BY THE MECKLENBURG COUNTY HEALTH DEPARTMENT. I ALSO UNDERSTAND THAT ANY SUCH ALTERATIONS, MODIFICATIONS, OR FALSE INFORMATION ARE GROUNDS FOR REVOCATION OF PERMITS AND AUTHORIZATION TO CONSTRUCT.

X _____ 9/20/99
SIGNATURE OF OWNER/OWNER'S REPRESENTATIVE DATE

CONDITIONS OF IMPROVEMENT PERMIT

Permit Number: 29896

Tax Number: 041-151-18 ~~10~~ 011.261.27

- The 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.

Basement	___ Yes	✓ No	___ Partial Basement	
Type Primary Wastewater System Type (circle one): I II III IV (V) VI	___ Conventional ___ Prefabricated, permeable block panel system ___ Shallow Placed Conventional	___ Low Pressure Pipe ___ Large Diameter Pipe ___ Fill ___ Other	___ Innovative or Experimental: ___ IWWS-93-1 ___ IWWS-93-2 ___ IWWS-94-1	
4 Long-term acceptance rate	480 Max gallons/day wastewater flow	1215 Absorption Area (sq ft)	9' Trench spacing (min. on centers)	
Yes Serviced by private well	1500 Gallon septic tank	405 Total trench length (ft)	48" Maximum trench depth (At least 12" of provisionally suitable soil must remain between trench bottom and unsuitable soil conditions)	
4 Bedrooms in residence	1000 Gallon pump tank	12" Depth of stone		
Any surface waters present:	Type:	Minimum separation distance:		
Site modifications required:				
Additional Conditions: - Maintenance Contract Required - Agreement Forms Required - Approved based upon plans submitted by S&EC				
Repair Area System Type Type (circle one): I II III IV V (VI)	___ Conventional ___ Prefabricated, permeable block panel system ___ Shallow Placed Conventional	___ Low Pressure Pipe ___ Large Diameter Pipe ___ Fill ___ Other	___ Innovative or Experimental: ___ IWWS-93-1 ___ IWWS-93-2 ___ IWWS-94-1	
1200 Absorption Area (Sq ft) 400 Total Trench Length (Ft)	12" Depth of Stone Trench	9' Trench spacing (min. on centers)	48" Maximum Trench Depth	
For existing system, enter the year originally installed:				

The undersigned, an authorized agent of the MECKLENBURG COUNTY HEALTH DEPARTMENT, certifies that the Department has approved the Request for the Job Location contained in this document. This approval is granted in accordance with the provisions of Laws and Rules For Sewage, Treatment and Disposal in effect at the time of issuance of the permit and is subject to the following provisions:

- No work shall be conducted on the septic tank system until an Installation, Construction, Alteration and/or Repair Approval is granted by this Department.
- This Improvement permit is transferable.

Larry B. Thompson Jr. 9-9-99
DEHNR Authorized Agent Date

X [signature] 9/20/99
Owner/Agent Signature Date

MECKLENBURG COUNTY
HEALTH DEPARTMENT
ENVIRONMENTAL HEALTH DIVISION
c/o HAL MARSHALL CTR.
SUITE 211
700 N. TRYON ST.
CHARLOTTE, N.C. 28202.
(704) 336-5102

NORTH CAROLINA DEPARTMENT OF
ENVIRONMENTAL, HEALTH,
AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL HEALTH
ON-SITE WASTEWATER SECTION

Mecklenburg County
Health Department

Conditions of Improvement Permit

File Number: 2989B
Site Address: 14520 Black Farms Road, Lot 2 Ramah Oaks

1. The permitted system is a Type V *Puraflo Peat Filter* wastewater treatment and disposal system and requires ongoing maintenance. A maintenance contract must be executed between the system owner and a private certified operator before an Operation Permit can be issued. It is a condition of the Operation Permit that a maintenance contract shall be in effect for as long as the system is in use. It is also a requirement that subsequent owners of the system shall execute such a contract.
2. The system will require a single phase, simplex control panel with timer and alarm. The control panel must have a Nema 4x weather proof rating.
3. Septic and pump tanks must be installed in an area that is not subject to vehicular traffic. Final cover over both tanks must be less than 3 feet to prevent the need for State approved reinforced tanks.
4. Drain lines must be installed on contour. Trench bottoms shall be constructed as level as possible but in no case shall the fall in a single trench bottom exceed one-fourth inch in 10 feet.
5. Any changes in the site must be pre-approved by the Mecklenburg County Environmental Health Department.
6. The wastewater treatment and disposal drain field area, including the designated repair areas, shall not be used for any of the following:

    - Grading or filling
    - Parking or driving heavy equipment in the area or subjecting the site to possible soil compaction
    - Construction staging area
    - Installation of lawn irrigation components
    - Installation of underground utilities or cables of any type
    - Burial of any debris or material
    - Utilizing the area for gravesites
    - Diversion of storm water runoff into this area

7. Septic system installer must be registered with Mecklenburg County prior to meeting for the required pre-construction conference.
8. System installer will be required to operate the system at the time of the final inspection. Arrangements must be made to have the pump tank filled with water prior to the requested final inspection. The required pressure heads will be adjusted at the time of the final inspection.
9. The system owner shall have the contents of the septic tank checked, and the contents of the tank removed, periodically from all compartments, to ensure proper operation of the system. The contents of the septic tank shall be pumped whenever the solids level is found to be more than 1/3 of the liquid depth in any compartment.
10. All septic tank riser and effluent filter rules will apply to this system. It is strongly recommended that access risers be added to both ends of the septic tank, extending to at least finish grade. This will allow periodic inspection of the solids level in the tank as well as help facilitate the periodic cleaning of the effluent bio-filter.
11. The local Health Department is required, by the State, to perform system reviews of Type V systems at a minimum of once a year. The owner of the system is responsible for paying any inspection fees, as determined by the Board of County Commissioners, at the time of the required inspection.

Owner/Agent Signature X _____ Date X 9/28/99

PEOPLE • PRIDE • PROGRESS

Environmental Health Division

700 North Tryon Street • Suite 211 • Charlotte, North Carolina 28202-2236

PROPOSED PLOT PLAN

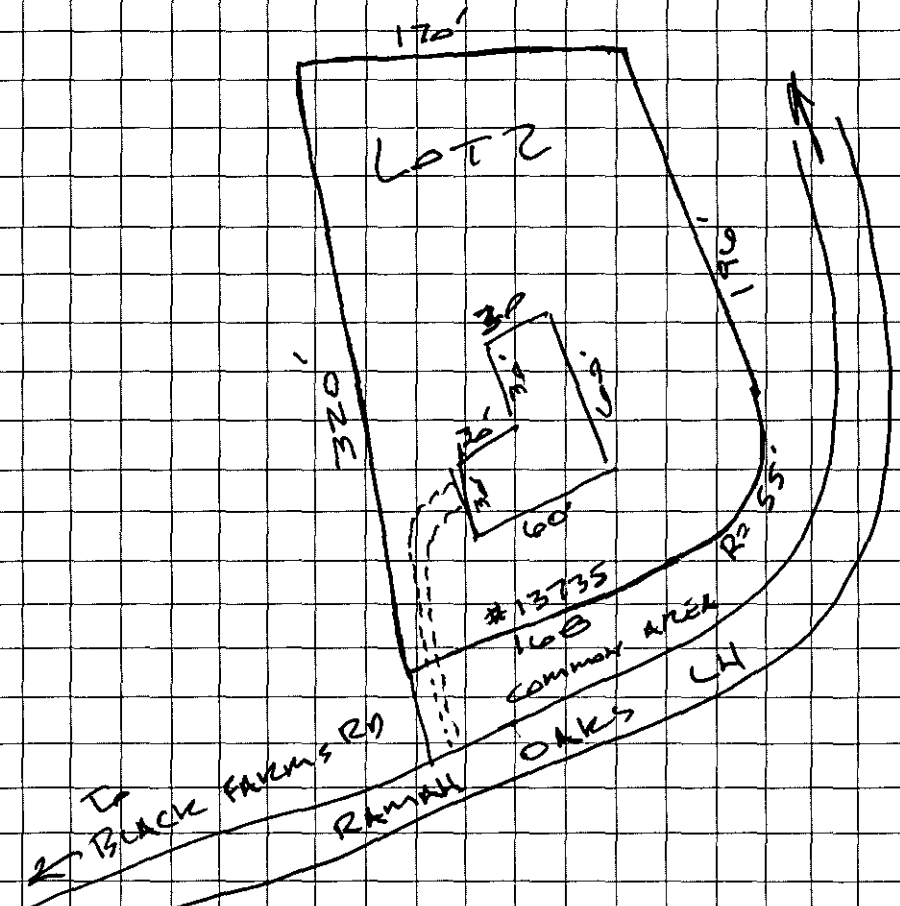
HEALTH DEPARTMENT
ENVIRONMENTAL HEALTH DIVISION
700 NORTH TRYON STREET
CHARLOTTE, NC 28202
PHONE (704) 336-5102

FILE: 8989B

TC: 011-151-18R002

Draw in and name all roads adjoining the property. Draw in and accurately dimension the lot concerned. Accurately indicate property boundaries proposed and/or existing structures and driveways, underground utilities, and wells and springs within 100 feet of the proposed building or drainfield.

LOT 2
RAMADA OAKS



OWNER/AGENT SIGNATURE

DATE 5/19/99

APPROVAL DATE _____

White - Health Department's Copy Canary - E.H.S. Copy Pink - Owner's Copy

FILE COPY

Soil & Environmental Consultants, Inc.

25 North College Avenue ■ Newton, North Carolina 28658 ■ Phone: (828) 466-7404 ■ Fax: (828) 466-7406
Web Page: www.SandEC.com

August 26, 1999
Project #: 2-1249

Bob Council
11743 Trailsend Lane
Huntersville, NC 28078

Dear Mr. Council:

Soil & Environmental Consultants, Inc. (S&EC) performed a preliminary soil/site suitability evaluation on Lot 2 Ramah Oaks Subdivision in Mecklenburg County, NC. The site evaluation was performed at your request as part of the preliminary planning process in order to determine areas of soil, which have potential for subsurface wastewater disposal.

S&EC traversed the property and observed landforms (slope, drainage patterns, past use, etc.) as well as soil conditions (depth, texture, structure, seasonal wetness, restrictive horizons, etc.) through the use of hand auger borings. From these observations, a preliminary evaluation of the site, relative to subsurface disposal of wastewater, was developed. The areas considered potentially useable are those which meet the vertical soil criteria for conventional, or Low Pressure Pipe (LPP) septic systems. The criteria used is contained in Article 11 of GS 130A, "Laws and Rules for Sewage Treatment and Disposal Systems", Sections .1940 through .1944.

Once potentially useable areas are located, the next consideration is the horizontal extent of those areas. The size and configuration of the useable soil area dictate the utility of that area. The size of a subsurface disposal field is determined by: 1) design flow from the source (in residences this is determined by the number of bedrooms, e.g. 120 gallons per day per bedroom) and 2) the long-term acceptance rate (LTAR) of the soil (based on the hydraulic conductivity of the soil, a function of the soil's texture, mineralogy, structure, porosity, etc.). The configuration must be such that an efficient layout of disposal lines (on contour) is possible. An additional consideration is the required setbacks for the system from various elements such as wells (100'), streams and ponds (50'), property lines (10'), top of embankment (15'), etc.

The site plan for a lot must ensure that adequate soil area for system and repair is unaffected by site elements (building placement, parking lots, roads, etc.). The area designated on the site plan for the septic system and repair must remain undisturbed (no mechanical clearing, excavation, heavy traffic or other significant site disturbing activities) until authorized by the appropriate permitting agency. A lot with adequate useable soil area may be rendered unusable as a result of improper site planning and/or disturbance.

This is a preliminary report, which discusses the potentially useable soils for on-site subsurface wastewater disposal, and, of course, does not constitute or imply any approval or permit as needed by the client from the local heath department. An individual septic system permit will be required for this lot prior to obtaining a building permit. This will involve a detailed evaluation by the local health department to determine, among other things, system size and layout, loading rate, well,

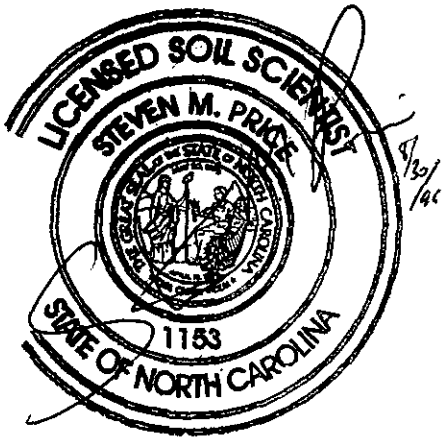
drive and house location. Only after developing this information can a final determination be made concerning specifics of system design and site suitability.

Within the evaluated tract, the unsuitable areas are due to depth to saprolite and complex topography. The saprolite appeared to be potentially usable. Three samples were taken from several pits at a depth of approximately 36 inches for particle size analysis. The reason for sampling at this depth is if the trench bottom is within 3 feet of the ground surface pretreatment is not required. The particle size analysis results showed one sample as a sandy loam, one as a loam, and the third as a sandy clay loam (very close to the loam – sandy clay loam break). The results are attached to this report. Since the one sample came back as a sandy clay loam texture, we are proposing to put the trench bottom 1 foot deeper than planned at 48". In order to utilize saprolite this deep, pretreatment is required. The pretreatment we are utilizing is the Bord Na Mona Puraflo peat filters, with a conventional gravity flow drainfield. At the proposed depth the saprolite texture should be between the loam and sandy loam textures. The state rules allow a long-term acceptance rate (LTAR) ranging between 0.2 and 0.4 gpd.ft^2 for loam textured saprolite, and between 0.4 and 0.6 gpd/ft^2 for sandy loam textured saprolite for a conventional septic system. We are assuming a LTAR of 0.4 gpd/ft^2.

A partial layout of the system and repair areas has been performed and is attached in the system design. The initial system was laid out along with most of the repair, however from line #6 to the back property line the vegetation was too thick to perform a layout, but there is at least 60 feet between line #6 and the back property line. This should be more than enough area for the remainder of the repair area. The house appeared to be flagged out at the time of the layout, but will need to be shifted towards the front of the lot, since portions of the proposed system run through the house as it is currently laid out.

Soil and Environmental Consultants, Inc. is pleased to be of service in this matter and we look forward to assisting in the successful completion of the project. Please feel free to call with any questions or comments.

Sincerely,



Steven M. Price,
NC Licensed Soil Scientist #1153

cc: Larry Thompson

Profile Descriptions
Ramah Oaks

Near location of sample 3

Horizon	Depth(in)	Color	Structure	Texture
A	0-3	10YR 5/4	GRANULAR	SANDY LOAM
Bt	3-30	5YR 4/6, w/10YR 6/6 mottles	SUBANGULAR BLOCKY	CLAY
C1	30-84+	10YR 3/2, and 10YR 8/1 (relic)	STRUCTURELESS	SANDY LOAM

S&EC

Soil & Environmental Consultants, Inc.

25 North College Avenue ■ Newton, North Carolina 28658 ■ Phone: (828) 466-7404 ■ Fax: (828) 466-7406
Web Page: www.SandEC.com

OVERVIEW

Attached is a proposed design for a Pre-treated, Conventional Septic System to be located on **Lot # 2 Ramah Oaks Subdivision**, in Mecklenburg County, NC. The proposed method of pretreatment is the **PURAFLO Peat Biofilter**, manufactured by **Bord Na Mona**.

System Design

1. Treatment system size: 4 bedroom house so 4 modules
2. Disposal system: Type B
3. System size: utilize LTAR of approximately 0.4 gpd/ft^2
4. Layout configuration: 405 linear feet
5. Module Configuration: Must use modules without weep holes. Modules should be placed on level 6" gravel bed for support and arranged similar to attached map. The treated effluent will have gravity flow to the drainfield. Module lids must remain at least 6" above grade.
6. Installation depth: Trench depth will be 48"
7. Pump Requirements: 1/3 HP Goulds pump, approved equal may be utilized.
8. Panel Requirements: attached are the specs for a Rhombus simplex panel. Timer settings should be: **1 min. "ON" and 2 hrs. "OFF"**
9. Septic Tank: 1,500 gal
10. Pump Tank: 1,000 gal
11. Sampling option: samples should be taken via a drop box on the line to the d-box.

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 placement.

- Installation of the system shall be during dry conditions in order to protect the soil structure.

- All pipes shall be schedule 40 PVC.

- 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.

- 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.

- Turn-ups, as indicated on the drawings, shall be placed in larger diameter pipe and either cut off just below the surface and placed in meter pits or left above grade and highly visible.

- No heavy equipment shall be used on the field during or after installation. The use of a small loader (i.e. Bobcat) or a trencher (i.e. Ditch Witch 2300/2310) may be used for installation.

- Elevations at pinflag locations should be checked by the installer prior to beginning trenches.

- Where required by the County Health Department, post installation inspections by the designer must be scheduled 5 week days in advance.

Design Aspects (from Bord Na Mona)

- Dosing is typically regulated from a control panel with programmable timer, low water cut-off float switch and high water alarm/timer override float switch.

- The low water cut-off switch should ensure that the pump remains covered at all times.

- When possible, a draw down test should be done in the field to verify the expected pump performance.

Biofilter Modules (from Bord Na Mona)

- Effluent from the supply line is distributed to the modules via a flow splitting manifold with pressure equalizing orifice plates. Effluent is distributed over the peat media by a pre-installed rectangular grid with large diameter openings to prevent clogging. The effluent charges the grid using the velocity generated by the orifice plates; it is not a pressurized distribution grid.

- Minimum depth of stone for the pad is 6 inches, and must have a minimum of 6" of soil cover over the gravel pad.

Biofibrous Peat Specifications (from Bord Na Mona)

- Peat fiber is residue of Eriophorum (cotton grass) plants, extracted from raised bog peats.

- Moisture content on wet basis is 50-70%.

- Minimum organic content on anhydrous basis is 95%.

- Water adsorption capacity, 72 hr. test, is 400-700%.

- Average air filled porosity (AFP) is 51%.

Puraflo®

PEAT BIOFILTER *for Wastewater Treatment*

DESIGN REFERENCE MATERIAL

For Single Family Systems

INTRODUCTION

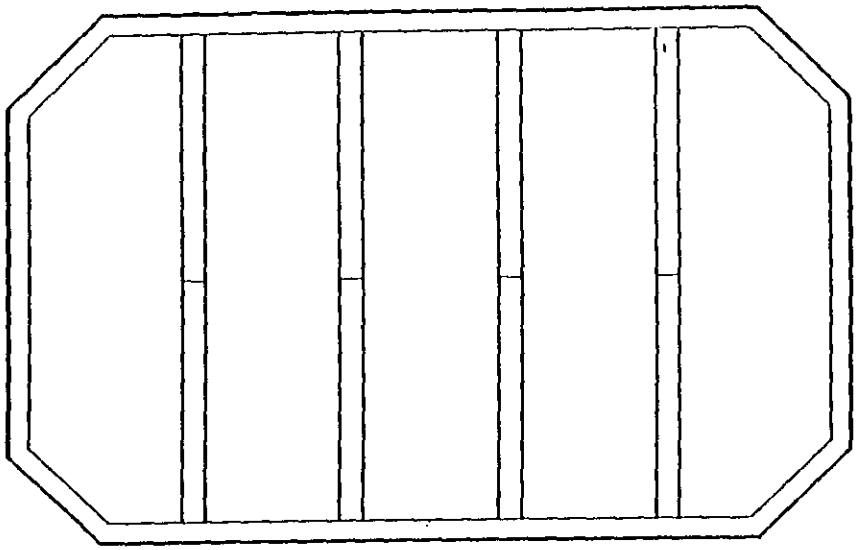
The Puraflo® Peat Biofilter is a secondary treatment system that purifies septic tank effluent to an extremely high degree before effluent disposal. A typical Puraflo® Peat Biofilter consists of:

1. A standard septic tank fitted with an effluent filter on the outlet pipe
2. A dosing tank (pump tank) to dose the septic tank effluent onto the peat biofilter media
3. Modules containing the peat biofilter treatment media - where advanced treatment occurs due to physical, chemical and microbial processes that are optimized in the peat biofilter media
4. Some form of disposal system - typically onsite, subsurface, gravity disposal - however, with simple modifications, the Puraflo® Peat Biofilter can also be used as a stand alone secondary treatment system for use in conjunction with pressure disposal systems, more advanced collection systems or discharge systems as applicable

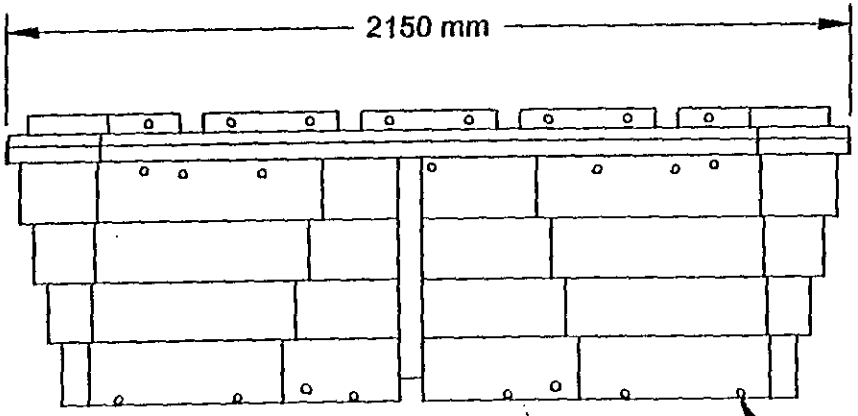
Due to the high quality of the peat biofilter effluent, the siting and sizing requirements for effluent disposal are less stringent than for conventional systems or other systems that do not provide the same degree of pre-treatment. As a result, the Puraflo® Peat Biofilter can be used for repairs and on sites that would otherwise be unsuitable for development.

This document is intended to assist the designer prepare a design in accordance with manufacturer recommended and standard industry practice. Designer should be familiar with any Local and State regulations/practices that supersede this document and modify the system design accordingly.

QUESTIONS? - PLEASE CALL YOUR LOCAL DISTRIBUTOR OR OUR CENTRAL OFFICE AT 1-800-PURAFLO (1-800-787-2356)

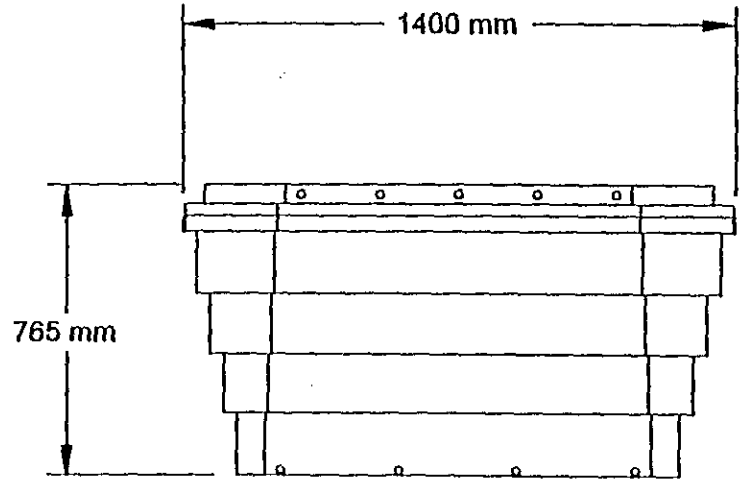


Plan View



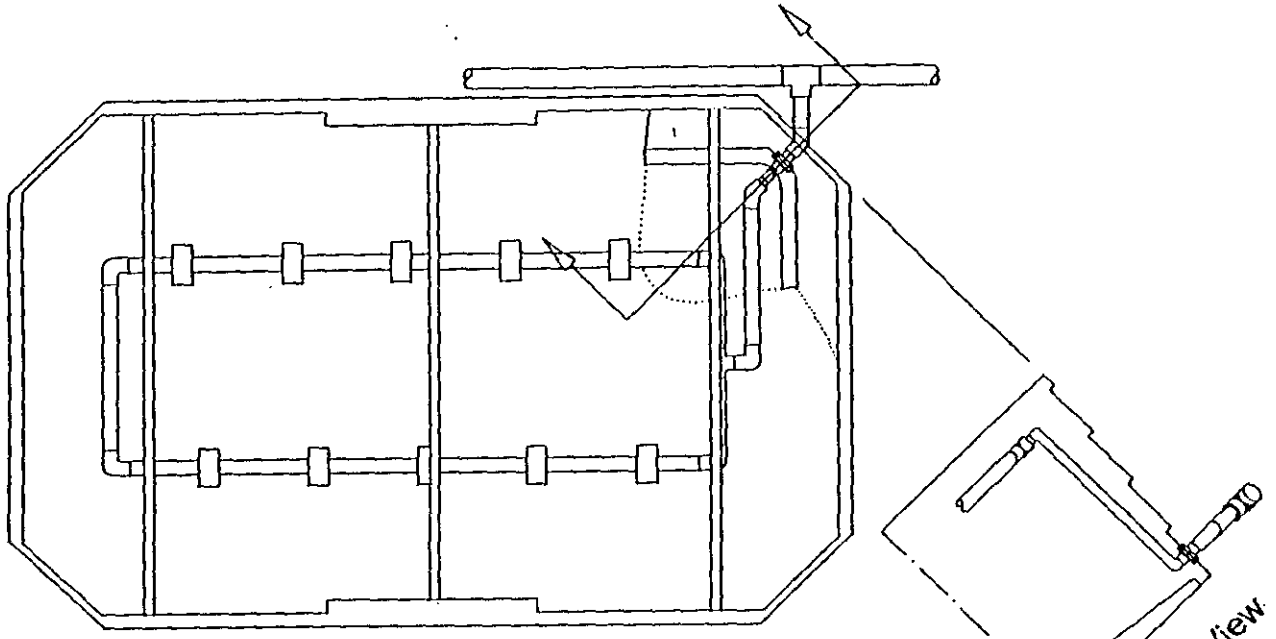
Elevational View

Sealed Modules are without Weep-holes

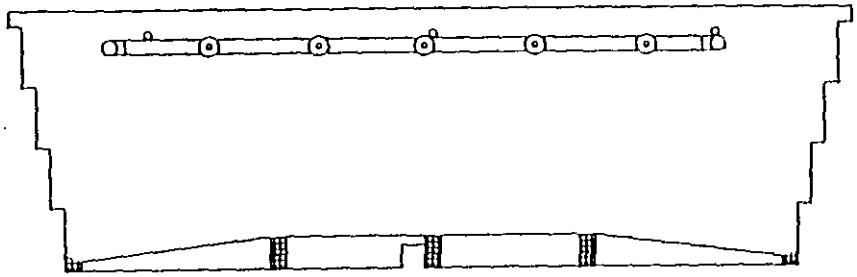


End View

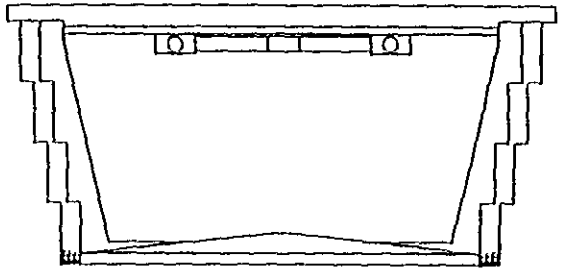
JAN. 15, 1998 DWG. BY: GMO'D	Scale 1:20	Drawing Title: **ASSEMBLED MODULE DETAIL**	Project Reference: **PURAFLO PEAT BIOFILTER**



Plan View



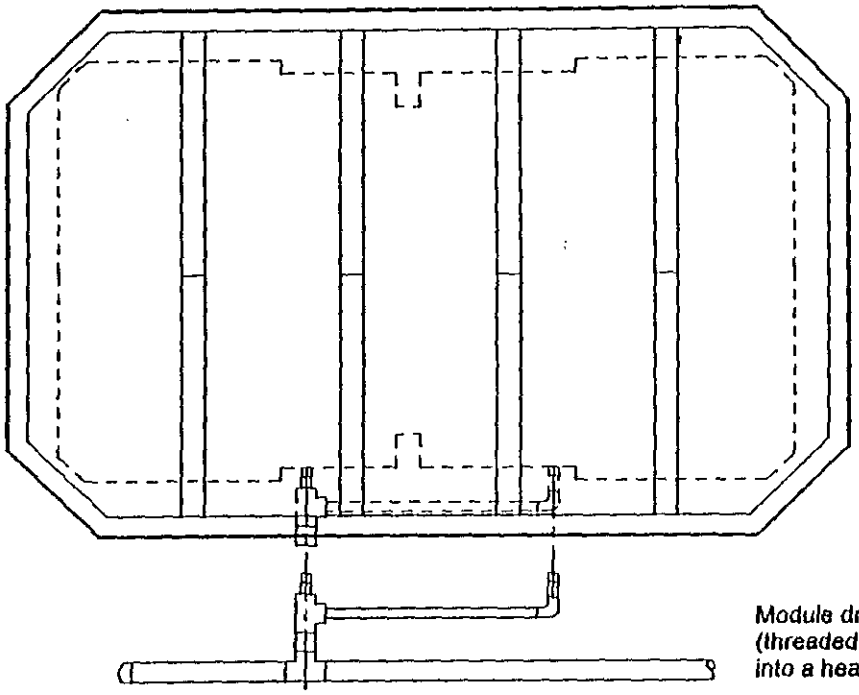
Sectional Elevation View



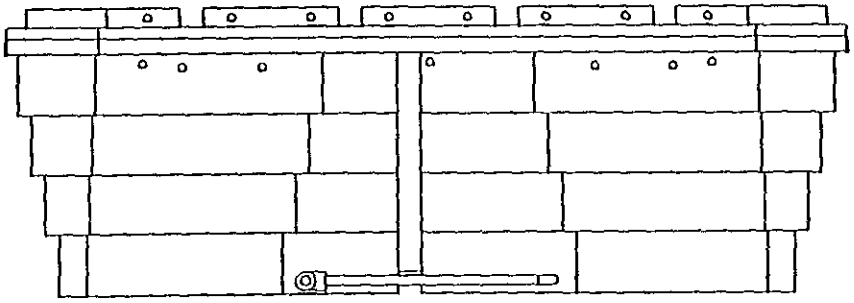
Sectional End View

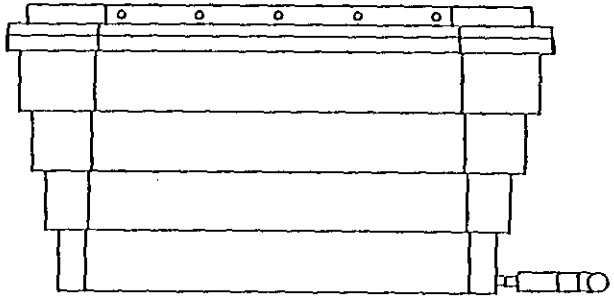
JAN. 15, 1998 DWG. BY: GMO'D	Scale 1:20	Drawing Title: **MODULE GRID DETAIL**	Project Reference: **PURAFLO PEAT BIOFILTER**

Threaded inserts not used for drainage
(oppsite those in use) should be plugged



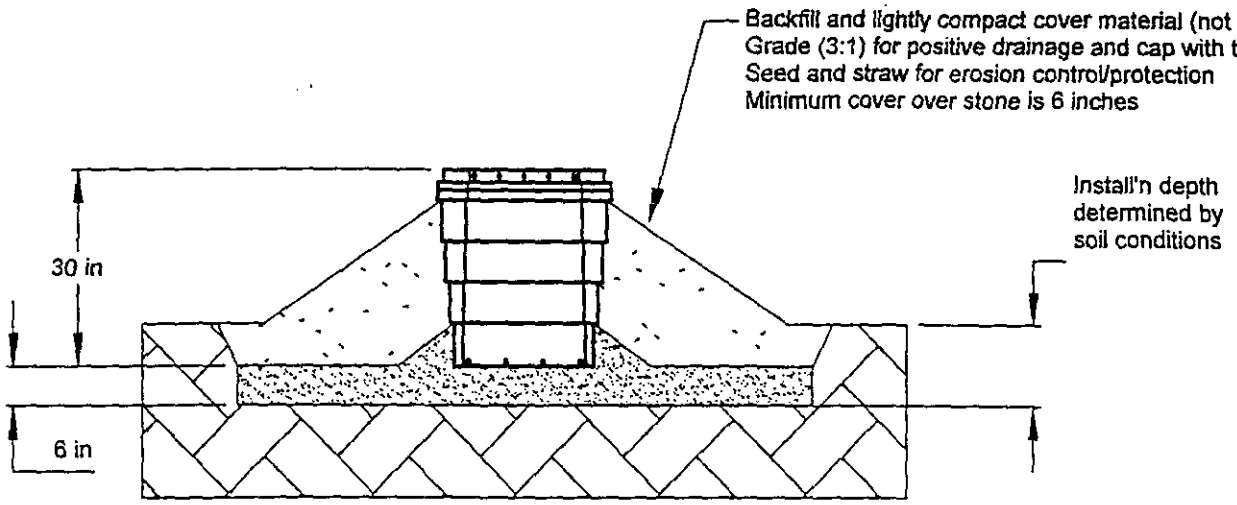
Module drained through 2 openings
(threaded inserts) at the base of the module
into a header/collection line



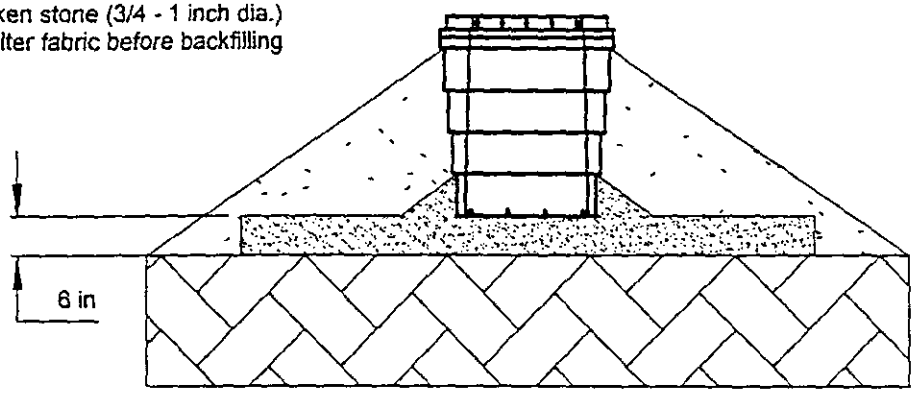


Sealed module has no weep-holes
around the base, all effluent exits the
module through drain-pipe assembly
as shown

JAN. 15, 1998 DWG. BY: GMO'D	Scale 1:20	Drawing Title: **DRAIN PIPE DETAIL**	Project Reference: **PURAFLO PEAT BIOFILTER**



Puraflo modules sit on level gravel pad of clean broken stone (3/4 - 1 inch dia.) Cover with filter fabric before backfilling



Puraflo Sectional Views

Horizontal Scale 1:60
Vertical Scale 1:30

Puraflo®

PEAT BIOFILTER *for Wastewater Treatment*

INSTALLATION REFERENCE MATERIAL

For Single Family Systems

INSTALLATION RECORD

FORM PURUS002

Name: _____

Site Location: _____

Telephone No. _____

Date: dd/mm/yy

Job No./Serial No.

Item	Name/Number
Contacts:	
Contractor/installer	
Phone No.	
Engineer	
Phone No.	
Electrician	
Phone No.	
Call-out contact	
Phone No.	
Distributor (if applic.)	
Phone No.	
Manufacturer	Bord na Mona
Phone No.	1-800-PURAFLO
Comments:	

Item	Units	Comment/Condition
Design/Site Details:		
Tax map No.		
Facility type		
Design flow	gpd	
Avg. No. occupants	ea.	
No. of bed rooms	ea.	
Soil texture	Group	
Design perc rate	*mpi*	
Depth to SHWT	in.	
System Detials:		
Septic tank - type/size	/gpd	
Eff. filter - type/size		
Pump tank - type/size	/gpd	
Pump size/type	hp/	
Pump serial No./MGF date		
Alarm type/location		
Sump control panel type		
Size/type of force main	in./	
Length of force main	ft./	
Number of modules	ea.	
Max. pad/trench depth	in.	
Percolation pad dim.		
Percolation trench dim.		
No. monitoring wells/ports	ea.	

SKETCH OF SYSTEM:

INSTALLATION GUIDE FOR THE PURAFLO® SINGLE HOME SYSTEM

A. CONTRACTOR QUALIFICATIONS

1. Contractor should have recent and continuous experience installing conventional septic tank drainfield absorption systems and/or alternative onsite treatment/disposal systems.

2. Contractor should be certified if certification is available for the onsite industry in the State in question.

3. Contractor should be knowledgeable of applicable state regulations governing onsite waste disposal systems.

4. Contractor should have the necessary equipment and suitably qualified labor to efficiently install a septic tank drainfield absorption system.

5. Contractor should be familiar with the physical components of septic tank drainfield absorption systems and their assembly/installation, including but not limited to;

   - septic tank and riser requirements
   - pump tank and riser requirements
   - piping material requirements and joints
   - plumbing fixtures
   - pumps and alarms
   - programmable timers
   - float switch dosing mechanisms
   - electrical requirements and connections
   - force main and gravity piping requirements.

6. Contractor should be knowledgeable and understand the importance of basic septic tank drainfield absorption system design/installation considerations including but not limited to;

   - clearing site with minimum disturbance of soil structure
   - avoiding installation under wet site conditions
   - maintaining grade in trench lines and/or absorption pad
   - maintaining vertical separation distance from the SHWT (seasonal high water table)
   - keeping machinery off the percolation area
   - raking/roughing exposed excavated percolation pad and/or trench prior to backfilling with stone
   - correctly grading the percolation area to divert surface water
   - stabilizing backfilled area with vegetation to prevent erosion.

B. MATERIALS & INSTALLATION SCOPE

Installation of the *Puraflo®* system is straight forward and can usually be completed in less than a day. The cost of installation is not included in the cost of the *Puraflo®* system (unless otherwise noted). The contractor/installer is required to provide the following:

- Mechanical excavator (back-hoe) with operator
- Licensed electrician (the electrician will be required to connect the pump and alarm to the control panel/junction box, set timer as required, and connect the control panel/junction box with the main power supply
- Provide and supervise the installation of underground cable from the control panel/junction box to the main circuit board
- Gravity and force main Sch. 40 PVC piping
- Clean No. 5 ($^3/_4$ to 1 inch) broken stone as required
- Additional/imported fill material (not sand) and topsoil as required
- Labor necessary to install the system
- Necessary supervision to ensure the system is installed per design

For a typical installation, the contractor/installer is required to perform the following general activities:

A. Clear site vegetation as required (minimize site disturbance - hand clear wooded areas) and provide sufficient access to proposed system - this can be done prior to *Puraflo®* installation

B. Supply and install septic tank and pump tank (unless otherwise noted or unless Bord na Móna's polyethylene pump tank is specified) with risers as required - this can be done prior to *Puraflo®* installation

1. Install filter on septic tank outlet pipe and connect to pump tank
2. Install, connect and test pump assembly and electrics
3. Install and connect the force main
4. Excavate for and place the stone based pad percolation area and trenches as required per design
5. Install the modular assembly (and sampling chamber where applicable)
6. Install and connect the distribution system
7. Place filter fabric or approved equivalent

8. Backfill with suitable fill material (not sand), cover with 6 inches of topsoil, grade and seed in accordance with the intentions of the design

The contractor must exercise due care to identify and avoid all utility lines during installation.

Electrical Requirements

The homeowner must make the following electrical facilities available at the site:

Independent electrical supply to power the control panel/electrical junction box - (120 volts and 20 amps typical)

These requirements may change when a duplex panel, a larger pump or a high head pump is required per design - please refer to site specific design to verify electrical requirements.

C. INSTALLATION GUIDE

1.0 Introduction

1.1 These instructions are only intended to be used as a guideline for installing a septic tank and Puraflo® peat biofilter system for a single dwelling. It does not attempt to address every scenario. Site specific plans supersede these guidelines.

2.0 Septic Tank and Sewer Pipe from Dwelling

2.1 Supply and install septic tank and sewer pipe from dwelling in accordance with applicable State regulations. Septic tank must be watertight against ground and surface water infiltration.

2.2 Fit a Zabel filter (Model A300) on the outlet pipe. Ensure easy access (manhole riser) to service filter.

3.0 Pump Tank Installation

3.1 Supply and install the pump tank in accordance with applicable State regulations. Pump tank must be watertight against ground and surface water infiltration.

3.2 Install gravity main from septic tank to pump tank in accordance with applicable State regulations.

3.3 Excavate a trench 18 inches deep (minimum) from the pump tank to the location of the modules. In colder climates the force main may be buried deeper (below frost line).

3.4 Place sufficient risers on top of the pump tank to reach slightly above grade level. It is extremely important to ensure a watertight seal between the pump tank and the first riser and between individual risers. To achieve this where a polyethylene pump tank is used, the first riser is bedded in silicone sealer at the riser-pump tank interface. Subsequent risers should be bedded in mortar. Rapid hardening cement should be used and backfilling delayed as long as possible to avoid disturbance of risers.

Similarly, if a concrete tank is used all connections/seals should be made water tight with mortar. Follow manufacturers recommendations when specialty risers/adapters are used.

3.5 When a concrete pump tank is used, use the knock-out for the forced main outlet (the polyethylene pump tank has a built-in outlet for the force main). Seal all entree and exit points with mortar (seal with silicone when a polyethylene is used). Leave an opening between risers below surface level for electrical duct/conduit.

3.6 Backfill around pump tank below outlet pipe and electrical cable points of entry. Ensure backfill material is free of stones and other material that could damage the pump tank.

4.0 Preparation of Site for Installation of Modules

4.1 The required vertical separation distance between bottom of trench and seasonal high water table must be maintained. The minimum required vertical separation distance is usually between 6 and 12 inches depending on soil characteristics.

4.2 Excavate to the required installation depth over the area specified in the plans. The pad and/or trench bottom must be level. Fill and level the excavated area (also referred to as the foot-print area) with clean No. 5 (3/4 to 1 inch) broken stone to a minimum depth of 6 inches.

5.0 Percolation Trenches

5.1 There are two basic types of stone trenches used in conjunction with the Puraflo® system. Trenches can be:

(a) Contiguous with the pad, i.e., connected to and extending from the pad area: These trenches are level, on contour, with the same installation depth as the pad and as such can be considered as finger extensions of the pad.

Short (i.e., less than 25 feet) contiguous trenches may be used without perforated piping and have a stone depth equal to that of the adjoining pad. When longer contiguous trenches are required, the should be installed in the same manner as independent trenches. This means a 10 inch stone depth for pad and trench.

(b) Independent trenches installed level and on contour: Effluent from the module is usually piped directly or via a distribution box to the trench. In such cases, modules would not have weep holes around the base and a drop-box on the gravity line from the modules can be used as a sampling point instead of the polyethylene sample chamber. The rest of section 5 refers to installation of independent trenches.

(c) Other forms of approved gravity and pressure disposal systems can be used in conjunction with Puraflo®.

5.2 Excavate for trenches in accordance with design. Trenches are usually installed at a depth of 16 inches when possible (but may be shallower - always refer to specific design) and can vary from 1 to 3 feet wide. A minimum separation distance of three times the trench width should be maintained between adjacent trenches.

5.3 Backfill the trench with 4 inches of No. 5 broken stone; place 4 inch perforated piping in trench; cover the perforated piping with more broken stone to a depth of 2 inches over the perforated pipe.

5.4 Cover the exposed stone surface with filter fabric to prevent smaller soil particles from being washed into and subsequently clogging the percolation trench.

5.5 Backfill with topsoil to grade level or above, providing a minimum of 6 inches cover over stone in trench.

6.0 Modules Installation

6.1 Position the modules on the broken stone pad area. Connect forced main to manifold line. Glue one end of the flexible plastic piping to manifold outlet pipes and glue other end to distribution pipe protruding from each module. (Note; the flexible plastic feed lines have slightly different connections on either end. The end with the orifice plate is connected to the distribution pipe in the module.)

6.2 Where applicable, fit the sample chamber outlet pipes to the appropriate modules. Insert outlet pipes into sample chamber so that they extend 3 inches into sample chamber and are at least 5 inches off the base of the sample chamber. Cut a hole in the base/side of the sample chamber to allow effluent to enter the foot-print area when samples are not being collected. Effluent should not exit the sample chamber at a lower level than the pad installation depth.

6.3 Backfill with broken stone around the modules to a height of 6 inches above the drain holes around the base of the modules when applicable.

6.4 Cover remaining exposed stone surface around the outside of modules with filter fabric. This prevents smaller soil particles from being washed into and subsequently clogging the foot-print area.

6.5 If the effluent is being piped out of the modules to a distribution box for disposal in independent trenches, the pad area's primary function is to level and support the modules.

7.0 Pump Fittings and Pipework

7.1 Place the pump on a block approximately 6 inches above the base of the pump tank. When a polyethylene pump tank is used; place the pump on the stainless steel extendible pump bracket provided and suspend from bracket holder such that the pump is approximately 10 inches above the bottom of the sump.

7.2 Glue a length of PVC pump pipe into the fitting at the top of the pump. Install the required fittings (check valve, union, ball valve, etc... as required by the design). Note; in most cases a 2 inch forced main is specified so a bushing ($1^1/_2$ inch x 2 inch) may be required to connect the internal pump tank piping to the pump.

In some cases, the force main may be designed to drain back and a drain back hole will be required above the check valve. Install an air vent hole when required (built-in in some pumps) and an anti-siphon hole if the module grid is lower than the liquid level in the pump tank.

7.3 Install the 2 inch forced main in the previously excavated trench from the pump tank to the modules. Backfill trench once the line is correctly installed and connected. Be careful not to damage the installed force main line with heavy vehicle activity.

8.0 Electrical Connections

8.1 Select a location for the electrical control panel/junction box near the pump tank. Connect the pump cable and float switches to the control panel/electrical junction box. See design for float settings (and timer settings when a control panel is specified).

8.2 Excavate a trench for underground cable between power source and the control panel/electrical junction box.

8.3 Place electrical power cable(s) in the trench; leave un-stretched in bottom of trench. Connect each cable with corresponding cable coming from the pump tank in the electrical junction box or wire per wiring diagram if a control panel is specified. At a minimum, the cable between the pump tank and the control panel/junction box should be in conduit. Backfill trench once the cables are correctly installed and connected.

8.4 Connect the electrical power cable(s) to an independent electrical power supply of the specified voltage (usually 115 volts), terminating in a socket or junction box protected by an A.M.C.B. as required (usually 20 amps).

If a duplex control panel or high head pump is required the voltage and amperage requirements may increase.

8.5 All electrical work should be done by a licensed electrician.

9.0 Site Restoration

9.1 Backfill around modules to a height just under the lid of the modules. Backfill should be suitable, loose, workable material (not sand). Compact backfill sufficiently to counteract settlement.

9.2 Grade the backfill to existing ground level on a slope no steeper than 1:1. Backfill should be graded to prevent infiltration of surface water and provide positive drainage away from the drainfield. Ensure a 6 inch minimum cover over drainfield stone. Final layer (6 inches) of fill material should be suitable topsoil capable of supporting vegetative growth.

9.3 Grass seed and straw the sloped backfill area and trench excavation lines with suitable indigenous variety. In some cases, sodding for immediate stabilization may be specified.

9.4 Provide erosion protection as required per plan.

PRETREATED PUMP CONVETIONAL SYSTEM FOR WASTEWATER TREATMENT

Owner's name: Bob Council **Phone (H)**
Mailing address: 11743 Trailsend Lane **(W)** (704) 895-0911
Huntersville, NC 28078

System location: Ramah Oaks Lot 2

Tax Map #: **Parcel**: **Township**: **County**: Mecklenburg
Source of Wastewater Flow: 4 bedroom house
Estimated Daily Wastewater Production: 480 gallons
System Flow: 33 gallons/minute

DESIGN PARAMETERS

Drainfield size: 405 linear feet
Depth of gravel in trench: 3 ft
Trench depth: 4'

Loading rate: 0.4 gpd/ft^2
Gravel size: 3, 4, 5, 57 or 6 ASTM D-448
Trench width: 3'

Septic tank size: 1500 gal
Supply line length: 80'
Supply line diameter: 2"
Supply line pressure rating: sch 40

Pump tank size: 1000 gal
Pump tank dimensions: 48" lq. depth
Approx. pump tank drawdown: 2"
Dosing volume: 40 gallons per dose; dose 12 times per day

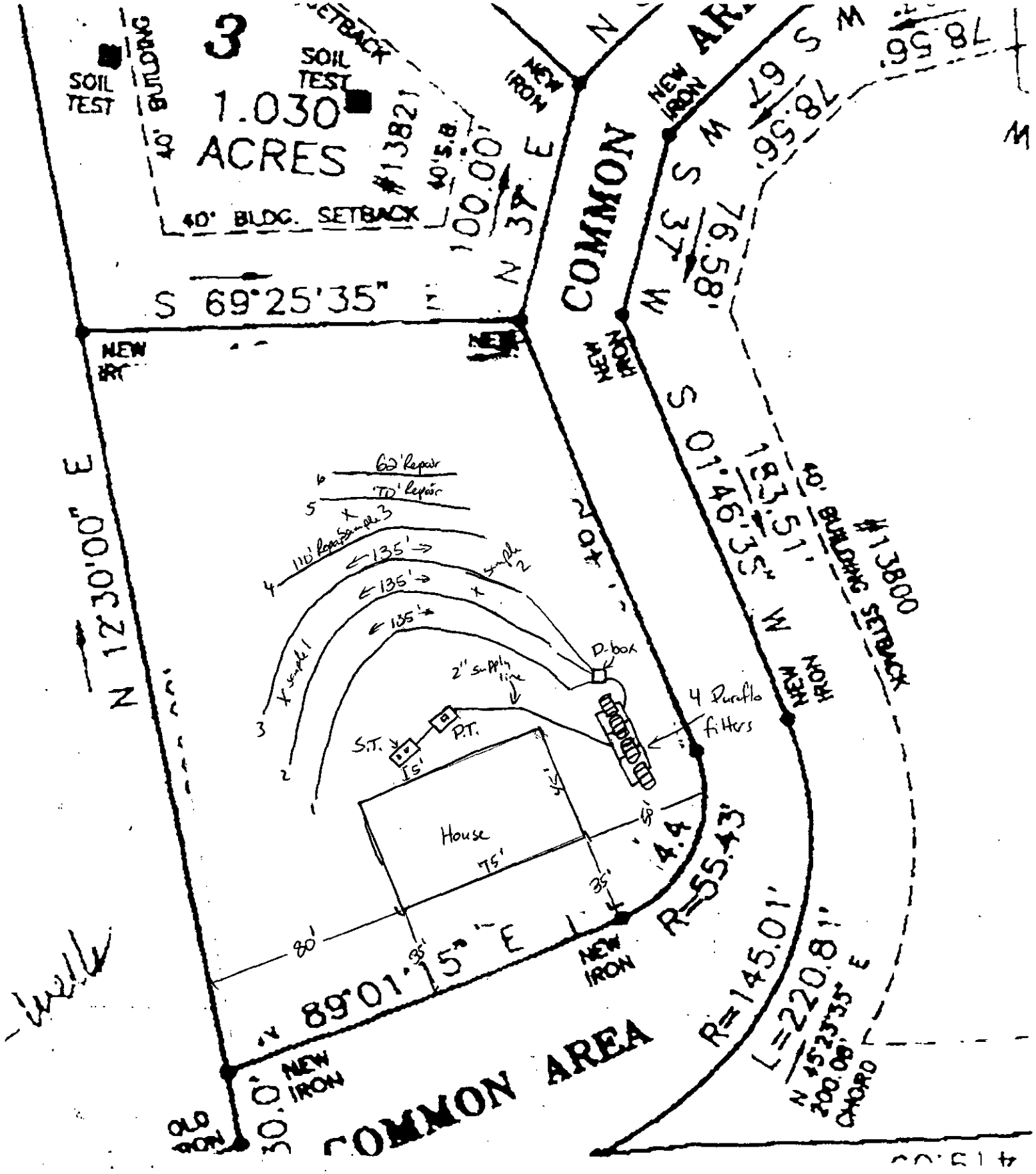
Threaded union: in tank
Gate valves: 1 in tank

Elevation head: 8.5'
Friction head: 13.5'
Pressure head: 2'
Total dynamic head: 24'

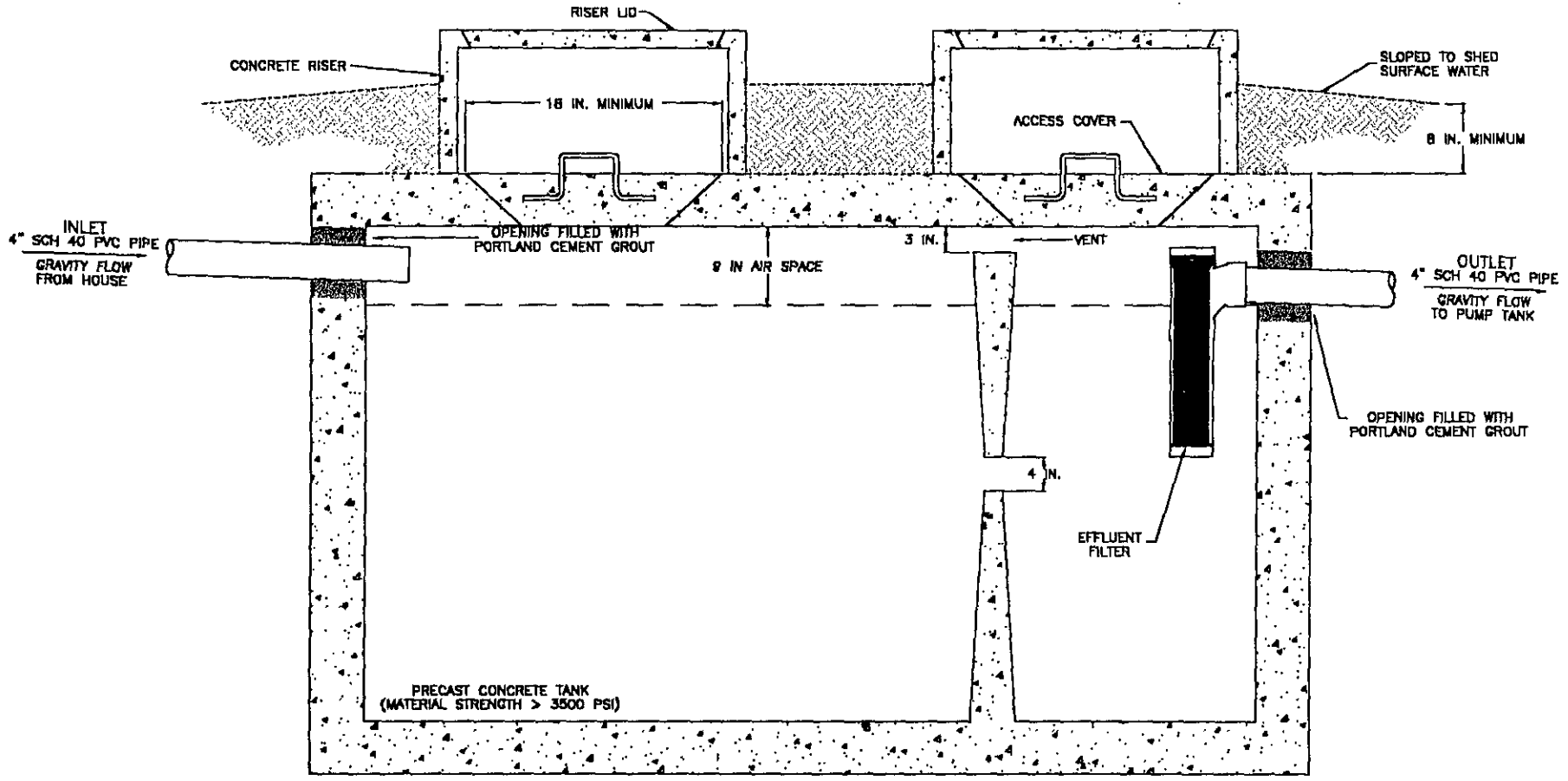
Check valves: 1 in tank
Anti-siphon hole: if needed
Recommended high water alarm: Rhombus panel and floats, or approved equal with programmable timer and alarm

Recommended Pump: Goulds effluent pump, model 3885, 1/3 HP pump, or approved equal

Additional Comments:



Approximate Site Plan



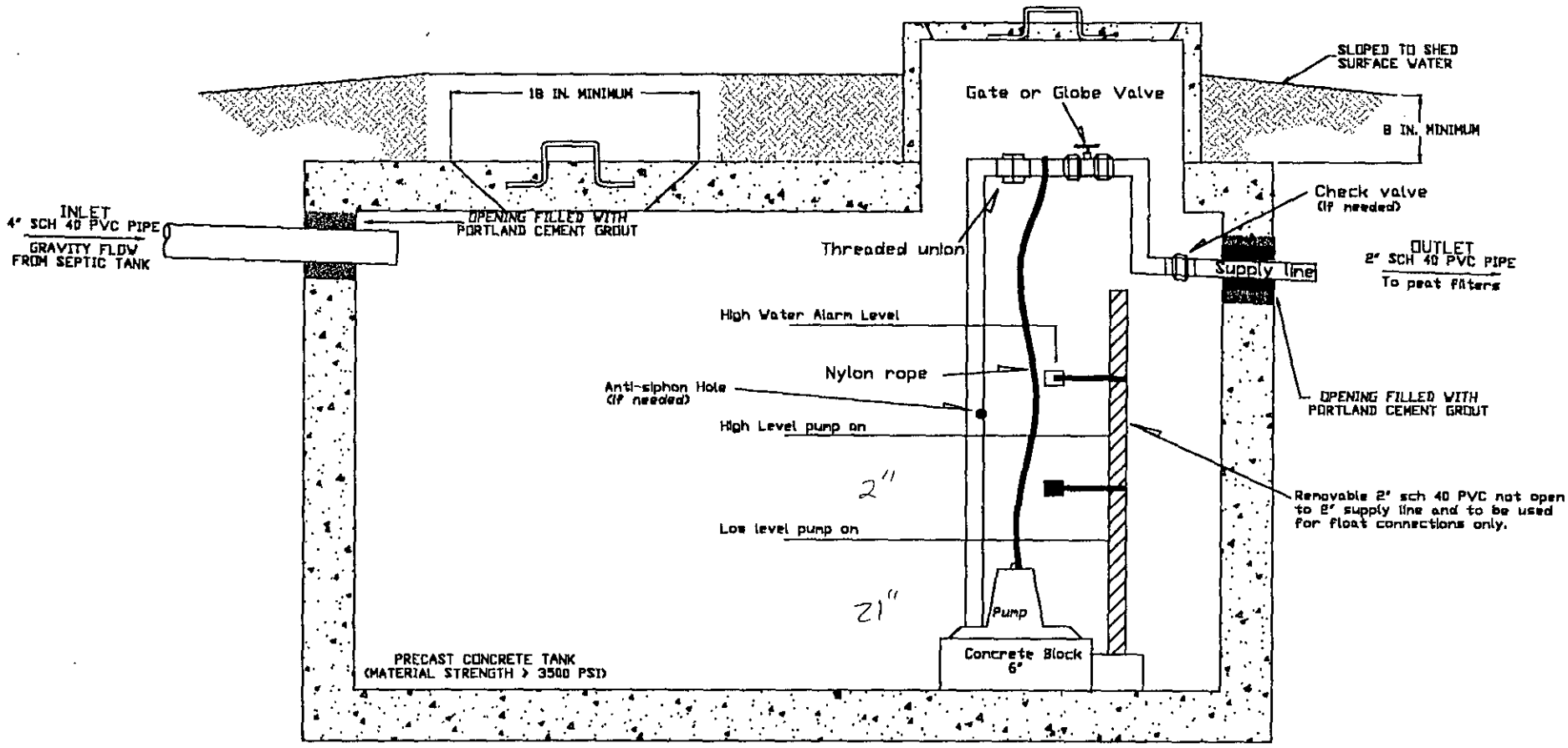
1,500 GALLON SEPTIC TANK

SHEET 1 of 1

JOB NO. 0000	PROJECT NAME:
PROJECT MGR. XX	SHEET TITLE: SEPTIC TANK DIAGRAM
SCALE NTS	

S&EC

Soil & Environmental Consultants, Inc.
344 West Millbrook Road ■ Raleigh, North Carolina 27609 ■ (919) 846-5900 ■ Fax (919) 846-9407



1,000 GALLON PUMP TANK

SHEET 1 OF 1

JOB NO.	PROJECT NAME
PROJECT MGR.	
SCALE NTS	SHEET TITLE: PUMP TANK DIAGRAM

S&EC

Soil & Environmental Consultants, Inc.
344 West Millbrook Road ▪ Raleigh, North Carolina 27609 ▪ (919) 846-2000 ▪ Fax (919) 846-9467

client: Bob Council
project: Ramah Oaks
project #: 2-1249
location: Ramah Oaks Subdivision
lot #: Lot 2
system type: Conventional System, with pretreatment

LINE #	FLAG COLOR	ROD READING	RELATIVE ELEVATION (FT)	LINE LENGTH (FT)	WILL UTILIZE AS
1	red	4.1	98.5	152	135' system
2	yellow	4.7	97.9	156	135' system
3	orange	5.25	97.35	139	135' system
4	blue	6.1	96.5	110	repair
5	red	6.75	95.85	70	repair
6	yellow	7.65	94.95	62	repair
	Tanks	2.6	100		

TOTAL LINE LENGTH **689** ft.

4 Bedroom house

System: 405 linear ft LTAR ~ 0.4 gpd/ft^2

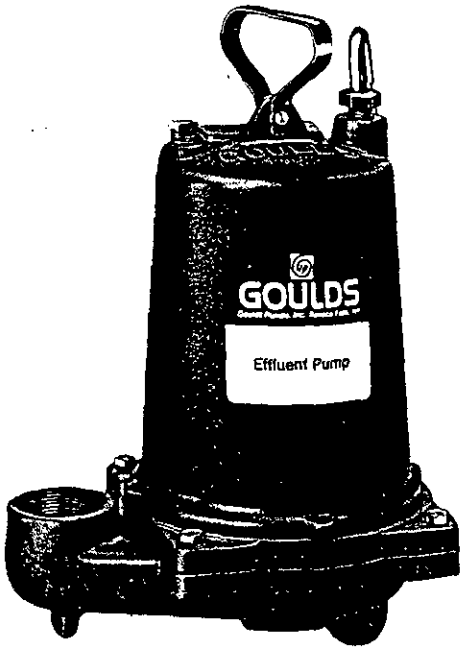
Repair: 242+ linear ft LTAR 0.4 gpd/ft^3

Goulds

Submersible Effluent Pumps

MODEL

3885



APPLICATIONS

Specifically designed for the following uses:

- Homes
- Farms
- Trailer Courts
- Motels
- Schools
- Hospitals
- Industry
- Effluent Systems

SPECIFICATIONS

Pump:

- Solids Handling Capabilities: ¾" Maximum
- Discharge Size: 2" NPT
- Capacities: Up to 114 GPM
- Total Heads: Up to 123 Feet TDH
- Mechanical Seal: Carbon-Rotary Seat/Ceramic-Stationary Seat 300 Series Stainless Steel Metal Parts BUNA-N Elastomers
- Temperature: 160°F (71°C) Maximum
- Fasteners: 300 Series Stainless Steel
- Capable of Running Dry Without Damage to Components

Motor:

- Single Phase: ⅓ HP, 115 or 230 Volt 60Hz, 1750 RPM
  ½ HP, 115 V, 60 Hz, 3500 RPM
  ½ HP thru 1½ HP 230 V, 60 Hz, 3500 RPM
  Built-in Overload with Automatic Reset
  Class B Insulation
- Three Phase: ½ HP thru 1½ HP 208/230 V, 460 V, 60 Hz, 3500 RPM
  Class B Insulation, Overload Protection must be Provided in Starter Unit.
- Shaft: Threaded, 400 Series Stainless Steel.
- Bearings: Ball Bearings Upper and Lower
- Power Cord: 15 Foot Standard Length (Optional Lengths Available)
  Single Phase: ⅓ and ½ HP-16/3 SJTO with three prong plug.
  ¾ thru 1½ HP-14/3 STO with Bare Leads
  Three Phase: ½ thru 1½ HP-14/4 STO with Bare Leads
  On CSA Listed Models — 20' Length SJTW and STW are Standard.

FEATURES

Impeller: Cast iron, semi-open, non-clog with pump-out vanes for mechanical seal protection. Balanced for smooth operation. Bronze impeller available as an option.

Casing: Cast iron volute type for maximum efficiency. 2" NPT discharge adaptable for slide rail systems.

Mechanical Seal: Ceramic vs carbon sealing faces. Stainless steel metal parts, BUNA-N elastomers.

Shaft: Corrosion-resistant stainless steel. Threaded design. Locknut on three phase models to guard against component damage on accidental reverse rotation.

Motor: Fully submerged in high-grade turbine oil for lubrication and efficient heat transfer.

Designed for Continuous Operation: Pump ratings are within the motor manufacturer's recommended working limits, can be operated continuously without damage.

Bearings: Upper and lower heavy duty ball bearing construction.

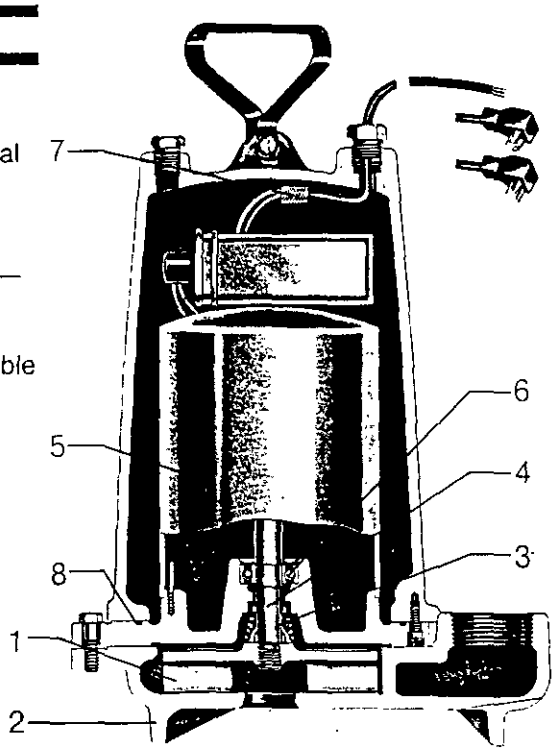
Power Cable: Severe duty rated, oil and water resistant. Epoxy seal on motor-end provides secondary moisture barrier in case of outer jacket damage and to prevent oil wicking.

O-Ring: Assures positive sealing against contaminants and oil leakage.

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FEATURES

1. Impeller
2. Casing
3. Mechanical Seal
4. Shaft
5. Motor
6. Bearings — Upper & Lower
7. Power Cable
8. O-Ring



Goulds Submersible Effluent Pumps

MODEL

3885

MODELS

Series	HP	Volts	Phase	Max. Amps.	RPM	Solids	Weight (Lbs.)
WE0311L		115		9.4			
WE0312L	1/3	230		4.7	1750		56
WE0311M		115	1	9.4			
WE0312M		230		4.7			
WE0511H		115		13.0			
WE0512H		230		6.5			
WE0532H		208/230	3	3.4			
WE0534H	1/2	460		1.7			60
WE0511HH		115	1	13.0			
WE0512HH		230		6.5			
WE0532HH		208/230	3	3.3			
WE0534HH		460		1.7		3/4"	
WE0712H		230	1	9.0			
WE0732H	3/4	208/230	3	5.4	3500		
WE0734H		460		2.7			70
WE1012H		230	1	11.6			
WE1032H	1	208/230	3	6.4			
WE1034H		460		3.2			
WE1512H		230	1	13.3			
WE1532H		208/230	3	9.2			
WE1534H	1-1/2	460		4.6			80
WE1512HH		230	1	13.3			
WE1532HH		208/230	3	9.2			
WE1534HH		460		4.6			

PERFORMANCE RATINGS

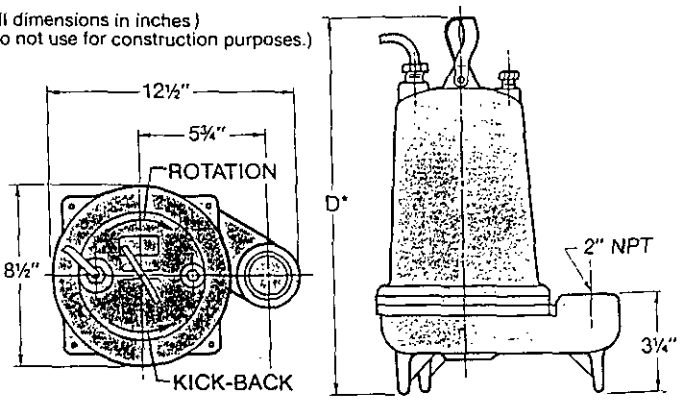
In gallons per minute

Series No.	WE0311L WE0312L	WE0311M WE0312M	WE0511H WE0512H WE0532H WE0534H	WE0712H WE0732H WE0734H	WE1012H WE1032H WE1034H	WE1512H WE1532H WE1534H	WE0511HH WE0512HH WE0532HH WE0534HH	WE1512HH WE1532HH WE1534HH
HP	1/3	1/3	1/2	3/4	1	1 1/2	1/2	1 1/2
RPM	1750	1750	3500	3500	3500	3500	3500	3500
5	100	70	80	90	106	114	60	—
10	80	65	76	87	102	111	55	83
15	60	57	71	83	98	108	52	73
20	36	45	65	78	94	104	48	77
25		26	59	73	89	100	42	68
30			50	67	84	96	39	72
35			40	61	79	91	34	63
40			26	52	72	86	30	66
45			10	43	64	79	23	58
50				30	54	72	18	60
55				17	42	63	12	52
60				6	28	53	3	54
65					16	40		45
70					5	26		47
75						14		37
80						4		40
90								33
100								24
110								15
120								4

Total Head — Feet of Water

DIMENSIONS

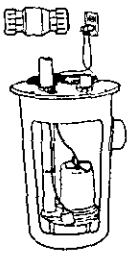
(All dimensions in inches)
(Do not use for construction purposes.)



D* 1/3, 1/2, 3/4 and 1 HP = 15" except for model WE0712H & WE1012H = 18"; 1½ HP = 18"

EFFLUENT EJECTOR SYSTEM

Effluent ejector system offers ease of ordering and installation. A *single ordering number* specifies a complete system designed for most residential and commercial sump and effluent pump applications.



Package Includes:

Submersible Effluent Pump, WE0311L, 12L or WE0311M, 12M, WE0511HH, 12HH
Mercury Level Control Switch A2-5 (115 V), A2-6 (230 V)
Basin A7-1801S
Basin Cover A8-1822
Check Valve A9-2P
Order No.: SWE0311L, SWE0312L, SWE0311M, SWE0312M, SWE0511HH, SWE0512HH.

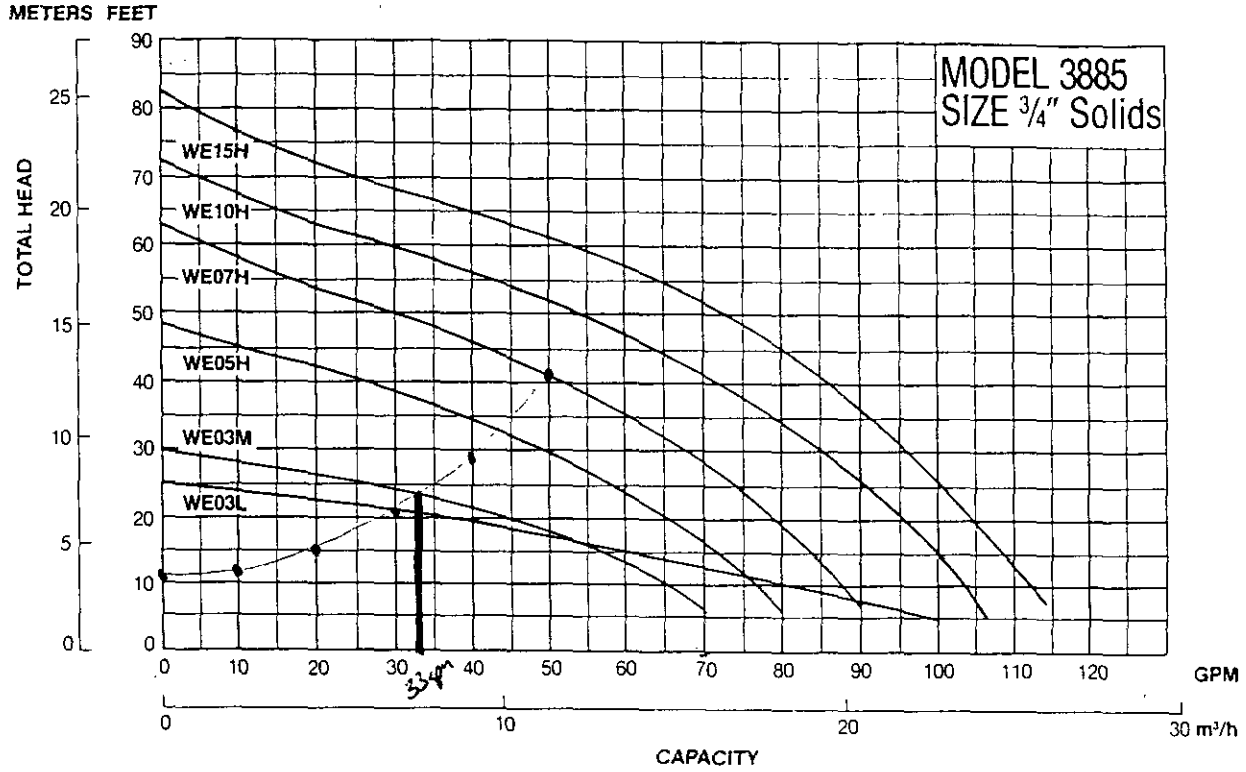
Available Certifications: Canadian Standards Association
Pennsylvania Bureau of Mines for non-face applications — BOTE 91.

SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE.

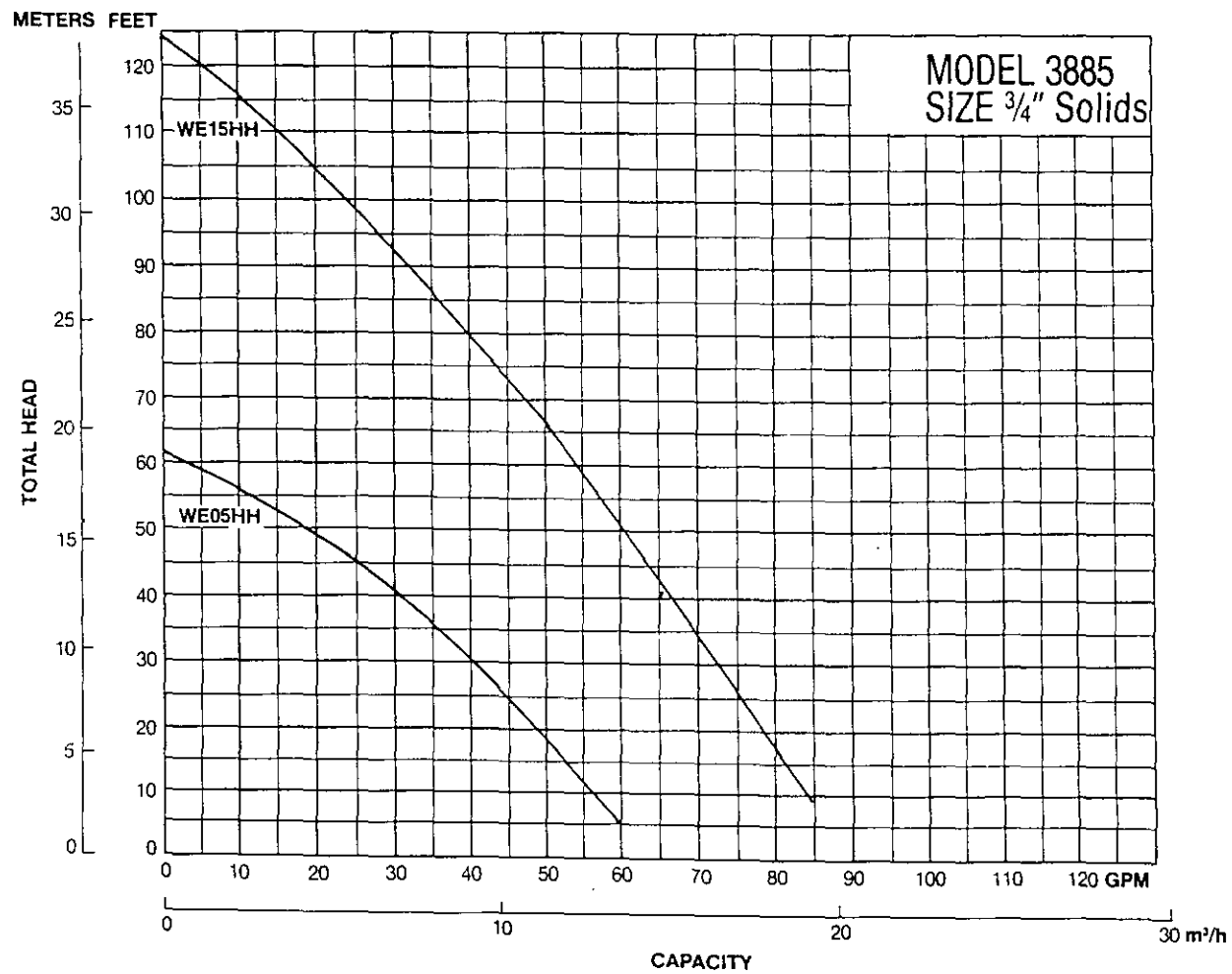
PRINTED IN U.S.A.

Performance Curves

Submersible Effluent Pumps



GOULDS PUMPS, INC.
SENECA FALLS, NEW YORK 13148



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Effective July, 1985

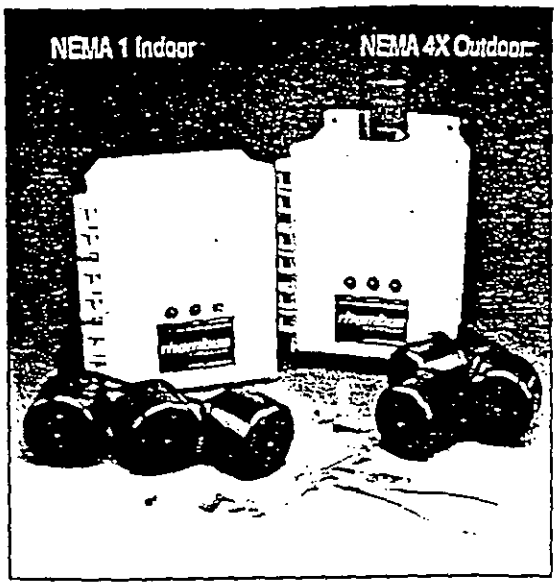
rhombus™
TECHNOLOGY

SINGLE-PHASE SIMPLEX
Motor Contactor Control
TYPE 112

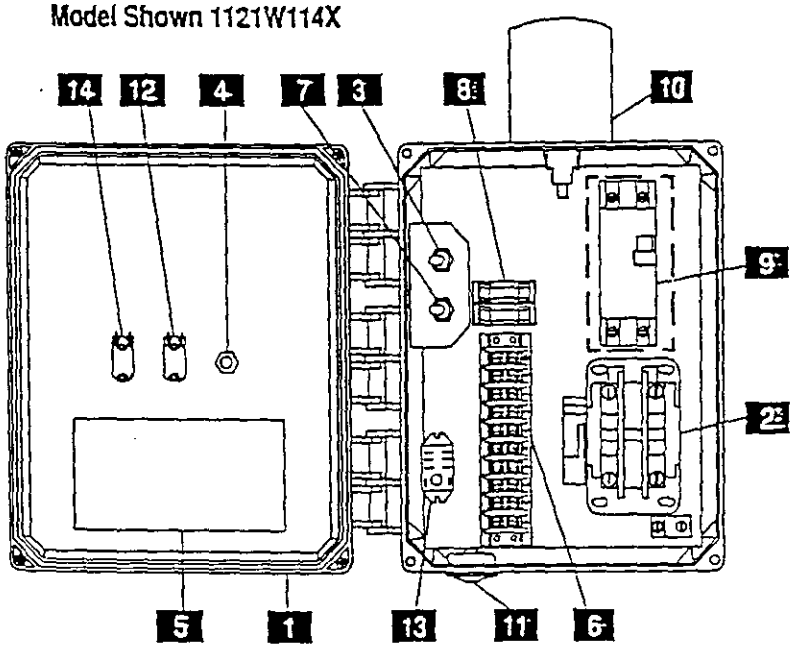
Type 112 control panels are single-phase, simplex pump control systems.

The Rhombus Type 112 control panel provides residential and commercial customers with a reliable means of controlling one 120V, 208V, or 230V single-phase pump in water and sewage installations. 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. Common applications include pump chambers, sump pump basins, irrigation systems, and lift stations.

Type 112 control panels have a dual safety certification for the United States and Canada.



Model Shown 1121W114X



TYPE 112 FEATURES

Float Switches (optional) - complete package assures quality of entire control/alarm system.
UL Labeled - ENTIRE control system (panel and switches) meets and/or exceeds industry standards for safety.
Installation Instructions - complete step-by-step instructions are included for easy installation.
2 YEAR LIMITED WARRANTY - ensures commitment to customer satisfaction.

1 Enclosure - comes with removable mounting flanges. Choice of Nema 1 - engineered thermoplastic for indoor use, or Nema 4X - weathertight engineered thermoplastic for outdoor use.

2 Magnetic Motor Contactor - controls the pump by switching both electrical lines.

3 HOA Switch - offers manual control of the pump.

4 Green Pump Run Indicator Light

5 Schematic/Wiring Diagram

6 Terminal Block

7 Control ON/OFF Switch

8 Control and Alarm Fuses

9 Circuit Breaker (optional) - provides pump disconnect.

ALARM PACKAGE (OPTIONAL)

10 Alarm Beacon - large red light provides 360° visual check of alarm condition.

11 Alarm Horn - loud horn provides audio warning of alarm condition.

12 Horn Silence Switch - exterior switch allows alarm horn to be silenced.

13 Horn Silence Relay - automatically resets alarm after alarm condition has been resolved.

14 Test Switch - exterior switch allows testing of horn and light to

TYPE 112 FEATURES

All Type 112 control panels include a 10" x 8" enclosure, 120V control circuit, 120/208/230V pump circuit, magnetic motor contactor, pump run light, HOA switch, terminal block, fuses, and control on/off switch.

MODEL NUMBER ORDERING INFORMATION

See sample at bottom of page to help complete your model number.

112	☐	☐	1	☐	☐	☐	☐

TYPE 112

ALARM PACKAGE
- 0 - selected options or no alarm package
- 1 - alarm package-includes silence & test switches, red light, horn, and alarm float

ENCLOSURE RATING
- I - Indoor (NEMA 1)
- W - Weatherproof (NEMA 4X)

STARTING DEVICE
- 1 - magnetic motor contactor

PUMP FULL LOAD AMPS

If pumps do not have integral overload protection, *you must specify overloads as an option.*
- 0 - 0-15 FLA
- 1 - 15-20 FLA
- 2 - 20-25 FLA
- 3 - 25-30 FLA
- 4 - 30-40 FLA
- 5 - 40-50 FLA

PUMP DISCONNECT
- 0 - no pump disconnect
- 1 - pull-out with safety deadfront
- 2 - through door fused (fuses not included)
- 3 - through door non-fused
- 4 - circuit breaker

FLOAT SWITCH APPLICATION

Two 20' pipe clamp floats are standard. For alternate float switches see the option pages. Designate H or L for all floats ordered.
- H - high level pump down/normally open
- L - low level pump up/normally closed
- X - no alarm or control floats

OPTIONS AVAILABLE - Select the options your application requires, then refer to the option pages. The option pages will provide details and specific numbers needed to complete your model number. Panels ordered with an option or multiple options may require larger enclosure sizes.

Please call the factory if you need help building your model number.

OPTIONS

SEE OPTION PAGES FOR MODEL NUMBERS

- ☐ Alarm Beacon
- ☐ Alarm Bell
- ☐ Alarm Horn
- ☐ Alternate Beacon Color
- ☐ Red Beacon With Guard
- ☐ Flasher
- ☐ Manual Alarm Reset
- ☐ High and Low Alarm Indicators
- ☐ Auxiliary Contacts
- ☐ Low Level Cutout (redundant off)
- ☐ Pump Failure Indicator
- ☐ Seal Failure Indicator
- ☐ Thermal Cutout
- ☐ Thermal Cutout Indicator
- ☐ Power-On Indicator
- ☐ Anti-Condensation Heater
- ☐ Elapsed Time Meter
- ☐ Event (Cycle) Counter
- ☐ Remote Devices
- ☐ Pump Control Timer
- ☐ Delay Timer
- ☐ Deadfront
- ☐ Lockable Latch
- ☐ Pilot Breaker
- ☐ Lightning Arrestor
- ☐ Surge Protection
- ☐ Overload Protection
- ☐ Overload Reset Through Door
- ☐ GFI Convenience Receptacle
- ☐ Main Disconnect
- ☐ Alternate Float Switches

Subject to change without notice.

rhombus™ TECHNOLOGY

RHOMBUS TECHNOLOGY
P.O. Box 1619 • County Rd 6
Detroit Lakes MN 56502 USA
218-847-4786 • Fax 218-847-4801

a division of S.J. Electro Systems, Inc.

1003345B • Printed in USA

SAMPLE: MODEL #1121W114H3B15CE

112	1	W	1	1	4	H	3B	15CE

TYPE

ALARM PACKAGE

ENCLOSURE RATING

STARTING DEVICE

PUMP FULL LOAD AMPS

PILOT BREAKERS
Control Breaker
Alarm Breaker

ALARM ACCESSORIES

Puraflo®

PEAT BIOFILTER *for Wastewater Treatment*

OPERATION & MAINTENANCE REFERENCE MATERIAL

For Single Family Systems

A. HOMEOWNER INFORMATION

Operation

The **Puraflo®** peat biofilter is a passive biological treatment system and as such there are no mechanical parts with the exception of the automatic pump and controls which dose the treatment modules. To assure the efficient operation of the **Puraflo®** system, it is important that the septic tank is well maintained and sludge carryover is avoided. Fire ants should be kept out of the treatment modules as the nests will allow the wastewater to short circuit or flow through without treatment. The measures recommended for a standard septic tank drainfield adsorption system also apply to the **Puraflo®** system which works on the same basic principles.

Maintenance Recommendations

Maintenance of the **Puraflo®** system itself is minimal and primarily involves the pump and alarm assembly. In the event of the alarm being activated, Bord na Móna typically request the installer/system operator to carry out routine maintenance as a matter of urgency (within 24 to 48 hours). To ensure optimum performance of the **Puraflo®** system, the following practices are recommended:

1. **Septic Tank**
   A well maintained septic tank is essential for most onsite treatment systems as the septic tank provides the first step in wastewater treatment. During a tank retention time of a day or more, the heavier solids settle to the bottom forming a sludge layer while the lighter solids, greases and oils float to the top to form a scum layer. The anaerobic conditions created in the septic tank by the scum layer allow anaerobic and facultative micro-organisms to break down (feed on) and reduce the sludge and scum volume. In this manner approximately 40 percent of sludge and scum volume can be reduced; however, the remaining solids accumulate in the tank and must be pumped out on a regular basis.

   The septic tank should be inspected every one to two years, depending on use, and desludged as required. The effluent filter installed with the **Puraflo®** system should be cleaned at the time of inspection. The inspection/desludging should be carried out by a certified septic tank contractor and should not be attempted by the homeowner.

   The septic tank should be desludged when the depth of sludge is greater than 1.5 feet. In a typical home, a sludge depth of 1.5 feet accumulates over two to three years. The importance of desludging can not be over-emphasized since the **Puraflo®** system is designed to treat effluent from a well functioning septic tank where a significant portion of insoluble solids have been allowed to settle out.

   A filter is installed on the septic tank outlet pipe to prevent the carryover of solids to the treatment system. If septic tank maintenance recommendations and practices are not followed and in particular, if large objects are disposed into the septic tank, the filter will clog causing wastewater to backup into the house.

2. **Pump Alarm**
   The indoor pump alarm should be checked on a monthly basis by briefly pushing the test switch on the alarm. This activates the audio alarm buzzer and visual alarm light for a short period before it reverts to its automatic position. If a control panel with outdoor alarm is used, there may not be an indoor alarm (outdoor panel may or may not have a test switch).

3. **Electrical Circuit Panel**
   In the event of an electrical storm or power failure, the circuit-breaker switches on the electrical lines feeding the **Puraflo®** pump and alarm should be checked to see if they tripped to the "off" position. If a circuit breaker switch is tripped, the power supply to the alarm/pump should be restored as soon as possible.

4. ***Puraflo® Modules***
   No objects should be placed on top of the system as imposed loads can adversely effect the distribution and hence the performance of the system. Ideally, the modules should be camouflaged with plants and small shrubs; however, no soil or other obstruction should be placed within four inches from the top of the module where air is drawn into the system. Gaps between modules should remain covered with the cover plates provided to prevent accidents or damage to the system.

Homeowner Problem Checklist

DETECTION	CAUSE	ACTION
Experience slow flush but electrics are in good working order	1. Unacceptable level of solids in septic tank	1. Pump out septic tank and clean effluent filter
	2. Effluent filter blocked or matured (clogged naturally over time)	2. Pump out septic tank and clean effluent filter
Alarm sounds continuously and effluent level rises steadily in the pump tank - this can eventually lead to slow flush caused by sewage backing up and could eventually cause effluent to pond at the septic or pump tank	1. Pump failure due to circuit breaker switch being tripped to the off position by an electrical storm or power surge	1. Conserve water usage, reset circuit breaker and test the alarm - if the problem recurs call for maintenance
	2. Pump fails due to faulty system electrics or pump itself is faulty	2. Conserve water usage and call for maintenance
Alarm sounds periodically but resets itself (indicating that the pump is still operating)	1. High water usage above design capacity activates the alarm float switch	1. Reduce water usage to range within the design capacity -
Some alarms may not auto-reset themselves in which case it will not be possible to distinguish between an intermittent and continuos problem	2. Leaking plumbing fixtures	2. Repair leaking plumbing fixtures
	3. Leaking pump or septic tank	3. Repair leaks in septic or pump tank
	4. Broken timer or incorrect timer settings.	4. Conserve water usage and call for maintenance.
No alarm warning - effluent level rises continuously in the pump tank potentially leading to slow flush and/or effluent ponding around septic or pump tank	1. Pump and alarm failure due to circuit breaker switches being tripped to the off position by an electrical storm, power surge or power failure	1. Reset circuit breaker and test the alarm - if the problem recurs call for maintenance
	2. Pump and alarm fail concurrently due to faulty system electrics	2. Conserve water usage and call for maintenance

To ensure optimum performance of the **Puraflo®** Peat Biofilter, the following Do's and Don'ts should be followed:

DO

- Conserve water to reduce the amount of wastewater that must be treated and disposed
- Repair any leaking faucets and toilets (very important)
- Maintain grass/vegetation around modules to prevent soil erosion (plants, shrubs and decking can also be used to enhance the look of the system)
- Keep ant nests out of the treatment modules by dosing externally with yard insecticides if necessary
- Only discharge biodegradable wastes into the system
- Divert down spouts and other surface water away from your drainfield
- Keep your septic tank cover accessible for tank inspections and pumping
- Have your septic tank pumped regularly and checked for leaks and cracks
- Have the effluent filter hosed down when the septic tank is being desludged
- Call a professional when you have problems
- Compost your garbage or put it in the trash
- Test the pump alarm occasionally (as applicable) by briefly pushing the test switch on the alarm
- In the event of the alarm sounding after electrical storms or power failure, check if electrical circuit-breakers tripped off by first turning them off and the turn them back on again

DON'T

- Flush excessive amounts of grease, oil or fat into your septic system
- Dump excessive amounts of disinfectants or detergents (normal amounts will not harm the system)
- Allow storm water into your septic system (storm water drains should not be connected to the septic tank)
- Use additives (septic tank additives should not be introduced into the septic tank for grease reduction, stimulation of biological activity or other purpose)
- Use a garbage grinder
- Flush cigarettes, tea bags, sanitary napkins, tampons, disposable diapers, condoms and other non-biodegradable products capable of blocking pipes or filters into your system
- Dump solvents, oils, paints, thinners, pesticides or poisons down the drain which can disrupt the treatment process and contaminate the groundwater
- Dig in your drainfield or build anything permanent over it
- Plant anything over your drainfield except grass
- Drive over your drainfield or compact the soil in any way
- Attempt any homeowner maintenance to the septic tank, electrical controls or treatment modules
- Place heavy objects on top of the treatment modules
- Bury or cover the modules with soil as the treatment quality will suffer when vent holes are blocked

FEE: 100.00 CK#8043

DATE: 5-19-99 JLL

APPLICATION FOR IMPROVEMENT PERMIT
FOR RESIDENTIAL SITE
INDIVIDUAL WATER AND WASTEWATER
SYSTEMS PROGRAM

[ ] CRT

TYPE APPLICATION: X NEW SYSTEM __ EXPANSION/ ALTERATION OF EXISTING SYSTEM __ REPAIR OF EXISTING SYSTEM

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

FILE #: 09895

PROPERTY INFORMATION (FROM ENGINEERING FORM) FOR JOB LOCATION: 011.26L.27

TAX/PARCEL NUMBER: PO 011-151-18

STREET ADDRESS: ~~14520 BUCK FARMS RD~~ 13735 Ramah Oaks Ln

SUBDIVISION OR MOBILE HOME PARK NAME: RAMAH OAKS

LOT NUMBER: 2

TYPE OF BUILDING (CHECK ONE):

__ SINGLE MOBILE HOME(S)
__ DOUBLE WIDE (D)
X HOUSE (H)
__ MODULAR HOME (M)
__ MULTIPLE FAMILY (U)
__ OTHER (O)

TOWNSHIP (CHECK ONE):

__ 0 MECKLENBURG
__ 1 CHARLOTTE
__ 2 DAVIDSON
__ 3 CORNELIUS
__ 4 PINEVILLE
__ 5 MATTHEWS
X 6 HUNTERSVILLE
__ 7 MINT HILL

HEATED SQUARE FOOTAGE: 5000

NUMBER OF BEDROOMS: 4

NUMBER OF OCCUPANTS:

CLOSING DATE_____

FOUNDATION FOR RESIDENCE:

__ WITHOUT BASEMENT
__ ON SLAB
X CRAWL SPACE
__ WITH BASEMENT /PLUMBING
__ WITH BASEMENT /NO PLUMBING

IF EXPANSION/ALTERATION OF EXISTING SYSTEM, DESCRIBE THE PROPOSED BUILDING ADDITION:

WILL THERE BE A HOME BUSINESS IN THE RESIDENCE: __ YES X NO TYPE: _____

WATER SUPPLY (CHECK ONE):

__ COMMUNITY (C)
__ MUNICIPAL (M)
X PRIVATE WELL (P)
__ SHARED WELL (S)
__ OTHER 'SPRINGS' (O)

IF ANY OF THE FOLLOWING ARE LOCATED ON THE PROPERTY, PLEASE SHOW LOCATION ON PLAT:

BURIED CABLES, LANDFILLS, STUMPHOLES __ YES X NO
EXISTING WASTEWATER SYSTEMS __ YES X NO
EASTMENTS OR RIGHT-OF-WAYS __ YES X NO
WELL, SPRINGS OR WATERLINES __ YES X NO
DESIGNATED WETLANDS __ YES X NO

PROPERTY OWNER:

NAME: COUNCIL ROBERT T
(LAST) (FIRST) (MI)

ADDRESS: 14520 BUCK FARMS RD

CITY: HUNTERSVILLE STATE: NC ZIP: 28078

DAYTIME PHONE: 704 895-0911

LEGAL AGENT FOR PROPERTY OWNER, IF APPLICABLE:

NAME:
(LAST) (FIRST) (MI)

DAYTIME PHONE: ( ) -

WHAT DATE WAS THE PROPERTY ORIGINALLY DEEDED AND RECORDED? _____

An Improvement Permit is subject to suspension or revocation if site plans or the intended use change or if information submitted in this application is falsified or changed. The undersigned, owner, or legal agent for the owner, of the property described above as the "Job Location" has read the foregoing application, acknowledges that the contents of same are true, and authorizes agents of the Mecklenburg County Health Department to enter onto the property for the purpose of processing this request.

SIGNED: [signature] DATE: 5/19/99

MECKLENBURG COUNTY HEALTH DEPARTMENT
ENVIRONMENTAL HEALTH DIVISION
c/o HAL MARSHALL CTR., SUITE 211, 700 N. TRYON ST., CHARLOTTE, N.C. 28202., (704) 336-5102

Attachment 1

.1950 Location of Sanitary Sewage Systems

(c) Every sanitary sewage treatment and disposal system shall be located at least the minimum horizontal distance from the following:

(1)	any private water supply source including a well or spring	100 feet
(2)	any public water supply source	100 feet
(3)	streams classified as WS-I	100 feet
(4)	water classified as S.A.	100 feet from mean high water mark
(5)	Other coastal waters	50 feet from mean high water mark
(6)	any other stream, canal, marsh, or other surface waters	50 feet
(7)	any Class I or Class II reservoir	100 feet from normal pool elevation
(8)	any permanent storm water retention pond	50 feet from flood pool elevation
(9)	any other lake or pond	50 feet from normal pool elevation
(10)	any building foundation	5 feet
(11)	any basement	15 feet
(12)	any property line	10 feet
(13)	top of slope of embankments or cuts of 2 feet or more vertical height	15 feet
(14)	any water line	10 feet
(15)	drainage systems:	
	(A) Interceptor drains, foundation drains and storm water diversions	
	(i) upslope	10 feet
	(ii) sideslope	15 feet
	(iii) downslope	25 feet
	(B) Groundwater lowering ditched and devices	25 feet
(16)	any swimming pool	15 feet
(17)	any other nitrification field (except repair area)	20 feet

(b) Ground absorption, sewage treatment and disposal systems may be located closer than 100 feet from a private well supply, except springs and uncased wells located downslope and used as a source of drinking water, repairs, space limitations and other site-planning considerations but shall be located the maximum feasible distance and, in no case, less than 50 feet.

(c) Nitrification fields and repair areas shall not be located under paved areas or areas subject to vehicular traffic. If effluent is to be conveyed under areas subject to vehicular traffic, ductile iron or its equivalent pipe shall be used. However, pipe specified in Rule .1955 (e) may be used if a minimum of 30 inches of compacted cover is provided over the pipe.

Note: Systems over 3000 GPD or an individual nitrification fields with a capacity of 1500 GPD or more have more restrictive setback requirements, see .1950 (a) (17) (d) for specifics.