

Bureau of Environmental Health  
 7178 Gateway Drive Columbia, MD 21046  
 (410) 313-2640 Fax (410) 313-2648  
 TDD (410) 313-2323 Toll Free 1-866-313-6300  
 website: www.hchealth.org

Maura J. Rossman, M.D., Health Officer

RECEIPT DATE: 6/9/14

**ONSITE SEWAGE DISPOSAL SYSTEM**

P 546397

INSTALLATION

APPROVAL

DATE: 1/9/2015

**PERMIT**

A Repair

**REPAIR**

PROPERTY ADDRESS: 12930 Route 144

SUBDIVISION: \_\_\_\_\_ LOT: \_\_\_\_\_ TAX ID: 03-294080

CONTRACTOR: Eddie Harrison EMAIL: \_\_\_\_\_

CONTRACTOR ADDRESS: \_\_\_\_\_ PHONE: (410) 952-4614

PROPERTY OWNER: John Thomas Ridgely EMAIL: \_\_\_\_\_

OWNER ADDRESS: \_\_\_\_\_ PHONE: (301) 440-5440

SEPTIC TANK SIZE (GALLONS): Existing

PUMP CHAMBER CAPACITY (GALLONS): N/a (future) STATIC HEAD (FEET): N/a

NUMBER OF BEDROOMS: \_\_\_\_\_ HOUSE SQ. FT. N/a APPLICATION RATE: \_\_\_\_\_

DISTRIBUTION SYSTEM: GRAVITY FED  LOW PRESSURE DOSED

TRENCHES:	LINEAR FEET REQUIRED: _____	INLET DEPTH: _____
	TRENCH WIDTH: _____	MAXIMUM BOTTOM DEPTH: _____
	MINIMUM SPACE BETWEEN TRENCHES: _____	EFFECTIVE AREA BEGINNING DEPTH: _____
LOCATION:		
NOTES:		

ISSUED BY: \_\_\_\_\_ ISSUE DATE: \_\_\_\_\_ EXPIRATION DATE: \_\_\_\_\_

- NOTE: CONTRACTOR MUST SCHEDULE A PRE-CONSTRUCTION INSPECTION PRIOR TO BEGINNING ANY INSTALLATION
- NOTE: CONTRACTOR MUST SCHEDULE AN INSPECTION AND GAIN APPROVAL OF ALL COMPONENTS PRIOR TO COVERING
- NOTE: STONE MUST BE APPROVED BY HEALTH DEPARTMENT AND GRAVEL TICKET MUST BE AVAILABLE FOR REVIEW.
- NOTE: WATERTIGHT SEPTIC TANKS REQUIRED
- NOTE: ALL PARTS OF SEPTIC SYSTEM SHALL BE AT LEAST 100 FEET DOWNGRADIENT FROM ANY WATER WELL
- NOTE: MANHOLE RISERS REQUIRED ON ALL SEPTIC TANKS AND PUMP CHAMBERS
- NOTE: AN ELECTRICAL PERMIT IS REQUIRED FOR INSTALLATION OF ANY ELECTRICAL COMPONENTS OF THE SYSTEM

**NEITHER THE HOWARD COUNTY COUNCIL NOR THE HEALTH DEPARTMENT IS RESPONSIBLE FOR THE SUCCESSFUL OPERATION OF ANY SYSTEM.  
 PERMITTEE RESPONSIBLE FOR OBTAINING FINAL APPROVAL ON THIS PERMIT.  
 CALL 410-313-1771 TO SCHEDULE INSPECTIONS.**

NOT TO SCALE

sand and plowed area. Installer is covering plowed area with sand. Couldn't see area before it was plowed. Soil looks dry enough. (BB)

10/28/2014 Laterals installed and covered with gravel. Didn't get chance to inspect them. (BB)

10/29/2014 Installer covered gravel with fabric. Covering entire plowed area with a loam. (BB)

11/25/2014 Pump line installed from pump tank to manifold. (BB)

See As-Built Drawing On Separate Sheet

12/12/2014 House connection made. Received BAT unit approval from Norweco inspector. (BB)

1/9/2015 Met Steve Krieg (MDE), Jay Ridgely (Homeowner) and Eddie Harrison (Septic Contractor) on site to do a pump test of the mound. Pump and alarm worked. Eddie had adjusted the gate valve so that there was 2.5' of head in the turn-up. Steve and I gave Eddie/Jay our approval of the septic system. (BB)

ROAD NAME

PRE-CONSTRUCTION:

6/19/2014 Two potential areas found for repair system. Area directly behind house may be suitable for a drip system. Area downhill of garage might be O.K. for a sand mound. Other wooded parts of property may be usable but there is too much brush to check suitability. Going to tell homeowner to get a consultant. (BB) 6/27/2014

INSTALLATION:

Met Steve Krieg on site to go over possibilities. Steve gave homeowner numbers for consultants. (BB) 7/1/2014 Met with Steve Krieg and Tom Ashton on site and did partial layout. (BB) 10/13/2014 Met on site with installer and Steve Krieg. Plowed area measured and laid out on contour. Area dry enough for plowing. Check valve removed from plan and tank locations moved uphill out of depression. (BB) 10/27/2014 Installer put down

TRENCH/DRAINFIELD DATA

WIDTH INLET BOTTOM

NUMBER OF TRENCHES  
TOTAL LENGTH  
ABSORPTION AREA  
DISTRIBUTION BOX LEVEL  
DISTRIBUTION BOX BAFFLE  
DISTRIBUTION BOX PORT

SEPTIC TANK DATA

SEPTIC TANK I LEVEL Yes  
MANUFACTURER Baker River Norweco  
CAPACITY 1,300 GAL  
SEAM LOC Top  
TANK LID DEPTH 0.5'-2'  
BAFFLES None  
BAFFLE FILTER N/A  
MANHOLE LOC Front, Middle + Rear  
6" PORT LOC None  
WATERTIGHT TEST No  
SLOTTED N/A  
DATE ON LID 10/29/2014

PUMP/SEPTIC TANK LEVEL Yes  
MANUFACTURER Babylon  
CAPACITY 1,000 GAL  
SEAM LOC Top  
TANK LID DEPTH 0.5'-1.5'  
BAFFLES No  
BAFFLE FILTER No  
MANHOLE LOC Front + Rear  
6" PORT LOC None  
WATERTIGHT TEST No  
SLOTTED No  
DATE ON LID 10/20/2014

FINAL INSPECTOR

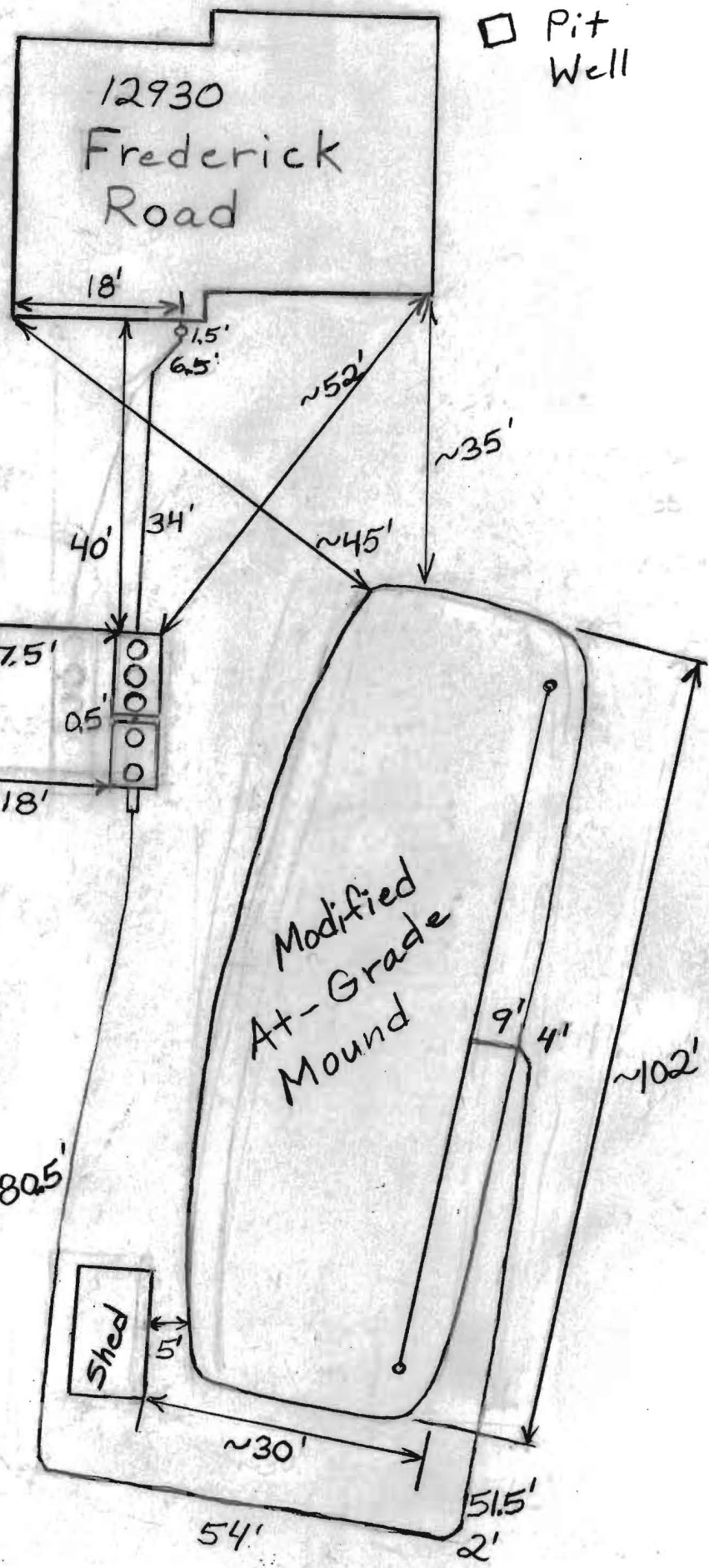
B. Baper, S. Krieg

DATE OF APPROVAL

1/9/2015

□ Pit Well

12930  
Frederick  
Road



Storage  
Building

Modified  
At-Grade  
Mound

Shed

80.5'

~102'

54'

51.5'  
2'

~30'

9'  
4'

17.5'

18'

0.5'

40'

34'

~52'

~35'

~45'

18'

1.5'  
6.5'

# Back River Pre-Cast, LLC

PO BOX 329  
Glyndon, MD 21071  
Phone # 410-833-3394  
Fax # 410-833-4116

## Letter of Certification

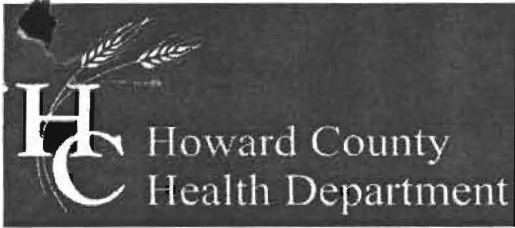
This is to certify that the Norweco Singulair TNT 600 GPD Septic Tank installed at 12930 RT.144, West Friendship, MD 21794 installed on December 17, 2014 was installed according to the manufacture's specifications.

Installer: Eddie Harrison



---

MATTHEW GECKLE  
Vice-President



**Bureau of Environmental Health**

000131

8930 Stanford Boulevard, Columbia, MD 21045

Main: 410-313-2640 | Fax: 410-313-2648

TDD 410-313-2323 | Toll Free 1-866-313-6300

www.hchealth.org

Facebook: www.facebook.com/hocohealth

Twitter: HowardCoHealthDep

**Maura J. Rossman, M.D., Health Officer**

**OPERATION AND MAINTENANCE AGREEMENT  
FOR AN ON-SITE SEWAGE DISPOSAL SYSTEM  
HAVING AN ADVANCED PRE-TREATMENT SYSTEM**

THIS AGREEMENT is made this 1st day of 8/2014, among \_\_\_\_\_  
John Ridgely, hereinafter  
collectively referred to as "Owner", and the Howard County Health Department hereinafter  
referred to as the "County".

WHEREAS, Owner is the owner or contract owner of a parcel of land located at 12930  
Route 144, West Friendship, MD 21794, in the 3rd Election  
District of Howard County, Maryland, and the deed to same is recorded or shall be recorded  
among the Land Records of Howard County, Maryland in Liber 12771 Folio 228.

WHEREAS, The Lot is suitable for the installation of a conventional on-site sewage disposal  
system with an advanced pre-treatment system, utilizing best available technology to perform  
nitrogen reduction, in accordance with the Code of Maryland Regulations 26.04.02.07, effective  
January 1, 2013. The pre-treatment device being installed is Norweco.

NOW, THEREFORE, the parties hereto agree as follows:

A. Owner hereby grants to the County the right to enter upon the Lot at any reasonable time for  
access to the system to make periodic inspections and the Owner agrees to provide any  
information and data in Owner's possession reasonably requested and needed by the County to  
develop accurate and thorough test results.

B. Owner acknowledges and agrees that neither the County nor any of its agents or employees,  
either officially or individually, underwrites the operation of any system approved by them.

C. The Owner will devote reasonable care and effort to the operation and maintenance of the  
system in perpetuity or until a public sewer connection is made so that a system malfunction is  
not the result of poor maintenance, faulty operation, or neglect.

D. The Owner agrees to enter into a contract reasonably acceptable to the Owner and the County  
with a private entity to operate and maintain on a regularly scheduled basis an approved  
advanced pre-treatment system. The owner shall supply a copy of the contract to the County  
when it is renewed or altered.

E. This agreement shall run with the land and upon Owner's taking title to the Lot shall bind the  
Owner, their heirs, successors, and assigns to the provisions of the agreement as long as the  
property is in existence and after installation of the system. Owner further agrees that they shall

inform in writing any subsequent purchaser or lessee of the Lot that the system shall require maintenance or other attention. Upon taking title to the Lot, the Owner agrees to cause this agreement to be recorded in the Land Records of Howard County and assure that it becomes part of the Deed for the subject property in order that prospective buyers may be aware of the special conditions affecting this property.

F. This agreement shall not be construed to limit any authority of the County to protect the public health, safety or comfort or to issue any other orders to take any other action which is now or may hereafter be within its authority.

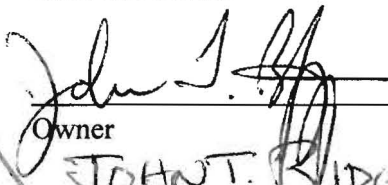
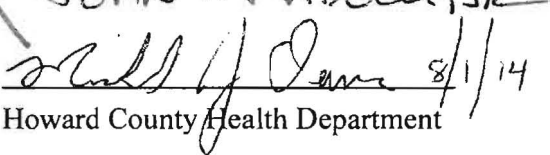
G. This agreement may be voided at any time at the discretion of the County.

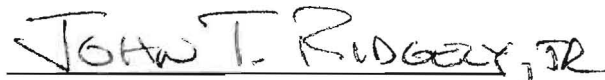
H. This agreement contains the entire agreement and understanding between the County and the Owner. There are no additional terms other than as contained in this agreement. This agreement may not be modified, except in writing signed by each of the parties or by their authorized representatives.

I. The laws of the State of Maryland govern the provisions of all transactions pursuant to this agreement.

J. Owner acknowledges and agrees that interior renovations to increase the number of bedrooms or an increase in living space shall not be permitted without approval from the County.

IN WITNESS WHEREOF, the parties have signed and sealed this agreement on the date indicated above.

 7/31/14  
 Owner Date  
 JOHN T. RIDGELEY, JR.  
 8/1/14  
 Howard County Health Department

  
 Owner Date

LR - Agreement 20.00  
 Recording Fee  
 Grantor/Grantee Name: Ridgely  
 Reference/Control #: 131  
 LR - Agreement 40.00  
 Surcharge  
 SubTotal: 60.00  
 Total: 120.00  
 08/05/2014 11:06 CC13-TR  
 #3123357 CC0503 -  
 Howard Co  
 Columbia/CC05.03.01 -  
 Register 01

C

AGREEMENT AND EASEMENT FOR  
INSTALLATION OF AN INNOVATIVE OR ALTERNATIVE  
ON-SITE SEWAGE DISPOSAL SYSTEM WITH THE USE OF  
BEST AVAILABLE TECHNOLOGY THROUGH  
BAY RESTORATION FUNDS

090130

THIS AGREEMENT is made this 1st day of August 2014, by

John Ridgely, hereinafter referred to as "Owners", the Howard County Health Department hereinafter collectively referred to as the "County", and the Department of the Environment, hereinafter referred to as the "Department".

WHEREAS, Owners owns a tract of land located on 12930 Route 144, West Friendship, MD in 217 the 3rd Election District of Howard County, Maryland, and the deed to same is recorded among the Land Records of Howard County, Maryland, in Columbia, MD, and in Liber 12771 Folio 228.

WHEREAS, Owner's land is improved and the existing means of sewage disposal has been found to be prejudicial to the environment and/or public health.

WHEREAS, Owner's land is unsuitable for the installation of a conventional on-site sewage disposal system and the owners have requested the Department's approval to install an innovative or alternative on-site sewage disposal system.

WHEREAS, Owners understand that participation in the Bay Restoration Fund and the innovative and alternative program is voluntary.

NOW, THEREFORE, the parties hereto agree as follows:

A. The property is currently improved with a 3 bedroom single family residence served by an on-site sewage disposal system.

B. The Owners agree that the County will approve no future additions, expansions of use for, or changes of use for any building on the property that involve increased flow to the on-site sewage disposal system.

OFFICE OF THE REGISTER OF DEEDS  
HARRISBURG, MARYLAND  
COMMUNICATIONS SECTION  
RECEIVED - 1-10-01  
NOTARY PUBLIC  
MONTGOMERY COUNTY, MARYLAND  
10000 BERRY AVE. SUITE 200  
BETHESDA, MARYLAND 20814  
410-330-7300

C. The Owners wish to replace the existing on-site sewage disposal system: and soil evaluation has revealed that a conventional on-site system is not possible. The Owners, through their Agents, Tom Ashton have proposed the use of an innovative or alternative on-site sewage disposal system.

D. Owners must install and maintain a water meter on the incoming side of the water system or an event counter and an elapsed time meter on the sewage pumping system must be installed during installation.

E. Owners hereby grant to the Department and the County the right to enter upon the property at any reasonable time for access to the system to make periodic inspections and the Owners agrees to provide any information and data requested and needed by the Department to develop accurate and thorough test results.

F. Owners acknowledge and agree that the proposed BAT and innovative/alternative system is experimental and that his or her participation is voluntary. Owners agree that there shall be no liability on the part of the County or Department to the Owners if this BAT or innovative/alternative system fails, and that the County and the Department do not warrant or guarantee that the system will adequately or properly function.

G. Owners acknowledge and agree that an MDE certified and manufacturer-approved installer will install the best available technology (BAT) system.

H. Owners acknowledge and agree that an MDE and manufacturer certified service provider will provide for Operation and Maintenance of the BAT for a period of 5 years as a condition of sale of the BAT. After the initial 5-year period, an Operation and Maintenance service contract with an MDE and manufacturer certified service provider is required to be maintained in perpetuity by the property owners.

I. Owners acknowledge and agrees that the manufacturer appointed Operation and Maintenance provider will have access to the BAT system at all times.

J. Owners acknowledge and agree that neither the County nor the Department nor any of its agents or employees, either officially or individually, underwrites the operation of any system approved by them.

K. The Owners will devote such care and effort to the maintenance of the whole system so that a system malfunction is not the result of poor maintenance, faulty operation, or neglect.

L. The Canaan Valley Institute agrees to grant 100% toward the cost of installation of the BAT System, and financial responsibility is limited to this amount. Operating costs will be at the Owner's expense.

M. Owners acknowledge in the event the total BRF project cost is greater than \$25,000 the proposal will have to be approved by the Maryland State Board of Public Works.

N. The Owners must install the BAT system according to the manufacturer recommended plans and specifications approved by the County and MDE.

O. The Owners agree and acknowledge that if installation deviates substantially from the approved plans or changes such that performance of the system is compromised or reduced, BRF funding will not be provided.

P. The Owners agree, that, should the system be determined by the County or the Department to pose a threat to the public health, safety or comfort, the County or the Department may order any necessary changes or corrections and the Owners agree to pay for all such changes or corrections. System modifications may include requirements for holding of sewage waste in tanks and regular pumping from the holding tanks. Upon the County or Department's request, the Owner agrees to enter into a contract acceptable to the County or Department to allow and pay a private entity to pump on a regularly scheduled basis an approved holding tank system.

Q. The Owner agrees to contact both the Water Management Administration, On-Site Systems Division of the Wastewater Permits Program and the County at least forty-eight (48) hours prior to system

installation, so that the Department may lay out the system in the field with the contractor. The Owners must install this system according to the plans and specifications approved by the Department and any changes required by the Department as a result of the field layout. If installation deviates substantially from the approved plans or changes such that experimental data will be compromised or reduced, the Owners agree to pay for all necessary corrections.

R. This agreement shall run with the land and binds the Owner, his heirs, successors, assigns Owners further agree that he shall inform in writing any purchaser or lessee of the property that the system may require maintenance or other attention. The Owners agree to record this agreement in the land records of Howard County.

S. This agreement shall not be construed to limit any authority of the County or Department to protect the public health, safety or comfort or to issue any other orders to take any other action which is now or may hereafter be within its authority.

T. This agreement may be voided at the discretion of the Department if the system construction is not completed within six (6) months of the effective date of this agreement.

U. This agreement contains the entire agreement and understanding between the County and the Owners and the Department. There are no additional terms other than as contained in this agreement. This agreement may not be modified except in writing signed by each of the parties or by their authorized representatives.

V. The laws of the State of Maryland govern the provisions of all transactions pursuant to this agreement.

IN WITNESS WHEREOF, the parties have signed and sealed this agreement on the date indicated

above.

DATE: 7/31/14

[Signature]  
Owner

DATE: \_\_\_\_\_

JOHN T. RIDGEY, JR  
Owner

DATE: 7/2/2014

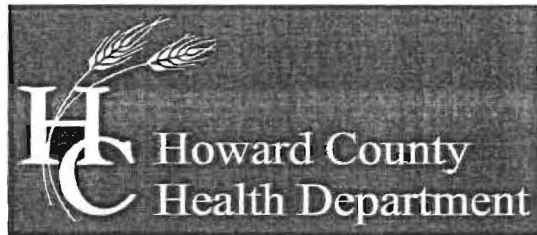
[Signature]  
Barry Glotfelty, R.S., Division Chief  
Onsite Systems Division, WWPP  
Maryland Department of the Environment

DATE: 8/1/14

[Signature]  
For Bert Nixon, R.S., Director  
Bureau of Environmental Health  
Howard County Health Department

PAYMENT OF TAXES  
NOT NECESSARY  
[Signature]  
DIRECTOR OF FINANCE OF HOWARD COUNTY

LR - Agreement 20.00  
Recording Fee 20.00  
Grantor/Grantee Name:  
Ridgey  
Reference/Control #: 130  
LR - Agreement 40.00  
Surcharge 40.00  
Subtotal: 80.00  
Total: 120.00  
08/05/2014 11:06  
CC13-TR  
#312357 CC0503 -  
Howard Co  
Columbia/CC05.03.01 -  
Register 01



## Bureau of Environmental Health

8930 Stanford Boulevard, Columbia, MD 21045

Main: 410-313-2640 | Fax: 410-313-2648

TDD 410-313-2323 | Toll Free 1-866-313-6300

[www.hchealth.org](http://www.hchealth.org)

Facebook: [www.facebook.com/hocohealth](https://www.facebook.com/hocohealth)

Twitter: HowardCoHealthDep

Maura J. Rossman, M.D., Health Officer

August 20, 2014

John Ridgely  
12930 Route 144  
West Friendship, MD 21794

RE: **Variance Request**  
**12930 Route 144**  
**West Friendship, MD 21794**

Dear Mr. Ridgely,

The Health Department has requested a variance on your behalf for the above referenced property. A variance is required to allow the new On Site Disposal System (OSDS) to be located less than the required setback distance of 100 feet to a private well water supply located on your property. You've requested the distance of approximately 63 feet be granted between the new mound system and your water well.

The Maryland Department of the Environment (MDE) has accepted our recommendation for approval, and approved the variance request to allow for reduced setbacks specified in COMAR 26.04.02 to an OSDS subject to the following condition(s):

- **The property will be served by an advanced pretreatment unit that removes nitrogen (BAT), followed by a pump chamber to a timed dosed modified mound dispersal system. State regulation requires you to continuously maintain an Operation and Maintenance service contract (after the initial Bay Restoration Fund's 5 year manufacturer's service contract has expired), with an MDE and vendor approved certified service provider. If the property should be sold, this information along with any recorded agreements, must be disclosed.**

If you have any questions regarding this letter, please contact me at the above address or by calling (410)313-1771.

Sincerely,

A handwritten signature in black ink, appearing to read 'Jeff Williams'.

Jeff Williams, L.E.H.S.  
Howard County Bureau of Environmental Health

Cc: Steven R. Krieg, R.S.  
Maryland Department of the Environment



**MARYLAND DEPARTMENT OF THE ENVIRONMENT**

1800 Washington Boulevard • Baltimore MD 21230

410-537-3000 • 1-800-633-6101 • www.mde.maryland.gov

Martin O'Malley  
Governor

Robert M. Summers, Ph.D.  
Secretary

Anthony G. Brown  
Lieutenant Governor

August 4, 2014

Mr. Bert Nixon, Director  
Howard County Health Department  
Bureau of Environmental Health  
8930 Stanford Blvd  
Columbia, MD 21045

**RE: *Design Plan Approval – Innovative Modified Mound with Norweco Pretreatment***  
**12930 Frederick Road**  
**West Friendship, MD 21794**

Dear Mr. Nixon:

At the request of your staff, I have assisted in the site evaluation, co-review and approval of the design plans last dated 7/24/2014 prepared by Tom Ashton, REHS and CPSS for the system described above. Please consider these plans approved. Any changes or clarifications to the plan will be discussed at the required preconstruction meeting and must be approved jointly by Tom Ashton, your field inspector and myself.

**Prior to septic permit issuance and the start of any system construction, the combined BRF/Innovative agreement/easement must be completed and signed by all parties, recorded in the land records and returned to your office and to my attention. The owner must also have a variance approved to site the new tanks and system less than 100 feet from the existing well. This variance requires my approval and will be granted upon your favorable recommendation.**

**In order to install one of these systems, a potential contractor must be an MDE BAT certified installer and certified by the pretreatment unit distributor in addition to being a certified and experienced sand mound installer. Demonstration that the installer has taken the MDE sand mound installer certification will be required.**

I must be present for the pre-construction meeting during which a field layout will be performed by the designer, the BAT distributor, and the installer. I will also make periodic inspections of the system installation and must be present for the final pressure test. If you have any questions or comments please call me at (410) 537-3680.

Sincerely,

Steven R. Krieg, REHS/RS  
Regional Consultant,  
On-Site Systems Division  
Wastewater Permits Program

Cc: Mike Davis, Jeff Williams, Brian Baker, Tom Ashton, Jay Ridgely, File



Jay Ridgely



**SeptiCheck™**  
**On-Site Waste System Evaluation for:**

12930 Route 144  
West Friendship, MD 21794 •  
U.S. Inspect Job Number: UQ51615N

**Client Information**

Name: Muhammad Mahmood Phone: (301) 346-9361  
Access: Rebecca Hall Phone: (301) 259-1070

**Real Estate Agent Information**

Name: Rebecca Hall Agency: Redfin

**Supplier Information**

Name: Home Land Septic Consulting, LLC Technician: Eric Garrett  
Street: 308 Liberty Rd Phone: 410-972-1231  
C, S, Z: Baltimore, MD 21221

**Inspection Information**

Inspection Date: 5/21/2014 Dwelling Status: Unoccupied  
Inspection Time: 16:00 Dwelling Age: Unknown

**On-Site Waste System Profile**

System Type: 1000 Gallon Septic Tank with an Absorption Area  
System Age: Unknown  
System Location:  
Maintenance Notes:

**Evaluation Findings**

Condition of Tank: Acceptable  
Condition of Absorption Area: See Note

**Evaluation Recommendation**

- The tank was not pumped at the time of the inspection.
- The back baffle is missing and must be replaced as the top layer so solids is escaping the septic tank.
- The septic tank is 10 inches below grade with no access at grade.
- There are 3 snake lines after the septic tank, about 50-75 apart that run deep in the woods. Dye was introduced into the septic tank to determine if the snake lines attached to the septic system. Dye was found in

the 1st and 2nd snake line. There was water backing up in the 2<sup>nd</sup> and no water was viewed flowing in the 3rd snake line. Indicating there is a clog of some kind. ~50 feet after the 3rd snake line there is a stream. Due to the clog and the 2nd snake line inceptor was unable to verify if the septic system discharges directly in the stream, but it appears as it does.

- The house was unoccupied at the time of the inspection. When a property is unoccupied, the liquid waste within the system has time to dissipate into the soil. This may mask problems when the system volumes return to normal, allowing the system to function apparently correctly for a short time period (1-6 months) before evidence of a system failure becomes noticeable. U.S. Inspect can not guarantee the accuracy of the evaluation when a property is unoccupied.



# MARYLAND DEPARTMENT OF THE ENVIRONMENT

1800 Washington Boulevard • Baltimore MD 21230

410-537-3000 • 1-800-633-6101 • [www.mde.maryland.gov](http://www.mde.maryland.gov)

Martin O'Malley  
Governor

Robert M. Summers, Ph.D.  
Secretary

Anthony G. Brown  
Lieutenant Governor

June 30, 2014

Mr. Bert Nixon, Director  
Howard County Health Department  
Bureau of Environmental Health  
8930 Stanford Blvd  
Columbia, MD 21045

RE: **Onsite Repair Evaluation and Recommendation for Ridgely Property  
12930 Route 144, West Friendship, MD 21794**

Dear Mr. Nixon:

At the request of your office, I have reviewed the site evaluation data conducted by Brian Baker and Robert Bricker and further evaluated the site during a subsequent field visit on June 27<sup>th</sup>, 2014 with Brian Baker and the property owner (Mr. Ridgely). Upon field evaluation, the soils on the property are not suitable for a conventional septic system and a non conventional septic system will be required for proper long term functioning and to treat the sewage adequately.

According to permitted records, the existing system is a gravity bed over 30 years old. The non conventional soil and site conditions on this property eliminate the possibility of ever increasing living space or square footage that would result in the potential for increased wastewater flow from the existing dwelling. As you know, most septic systems if properly sited, designed, installed and maintained may last an average of 20 years before additional drainfields (the soil absorption portion of the system) is required to be replaced.

The proper solution for this facility is for the detailed design, permitting and installation of a new non conventional system. The following sections summarize requirements necessary for proceeding with the project:

### **Water Conservation**

Because of the limitations of the soil, the property owner's ability to employ water conserving measures will be a critical factor affecting the performance of the system or any septic system. The lowest water using flush toilets should be considered and water conserving front loading washing machines are available and should be used. Low flow shower heads and faucet flow restrictors should also be installed.

### **Advanced Pretreatment**

Advanced pretreatment with a BAT unit will be required due to the soil conditions and site characteristics. Employing advanced pretreatment on septic tank effluent is beneficial from the standpoint of enhancing the performance of the soil absorption component (dispersal system), reducing a portion of the bacteria and viruses found in the sewage, and extending the life of the dispersal system. There are a variety of technologies available and methods for providing advanced pretreatment of septic effluent including aerobic pretreatment units and other media filters such as: fabric biofilters, single pass/recirculating sand filters, and peat filters.

The BAT unit may be eligible for partial or full grant funding through the Bay Restoration Fund administered through the Canaan Valley Institute. The property owner's designer may have preferences for a specific BAT unit to complement the soil absorption system selected. BAT units eligible for grants from the Bay Restoration Fund usually must be field verified units and are listed on MDE's website.

### **Pretreatment Tank(s), Pump Chamber(s) and Effluent Distribution**

Since a BAT unit will be required for the new system, the pretreatment tank size may vary depending on the design of the pretreatment unit selected and may comprise only of one tank of a smaller size (aka trash tank) prior to the pretreatment unit/tank. The pretreatment unit itself may incorporate the tankage required for the settling of solids usually provided by a septic tank.

The system will likely need to be pumped and pressurized, so a separate pump chamber will also be required. Timed dosing is also required so the pump chamber must be of adequate volume. Devices to measure flows must be incorporated into the system design. These could include an event counter and elapsed time indicator for the pumping system

A 24 hour standard watertight inspection will be conducted to evaluate all tanks for water tightness. The test will be in accordance with the National Precast Concrete Association's (NPCA) BMP manual and follow ASTM C1227 testing procedures. Tanks that are not watertight are subject to rejection. I will be on site to assist your staff with this procedure.

### **Design Plans and Specifications**

It will be required that a qualified, private professional design consultant be retained by the property owner to provide final plans and design specifications for the new system. Qualified designers are typically Professional Engineers, Certified or Licensed Professional Soil Scientists, or Registered Sanitarians/Environmental Health Specialists. Regardless of who designs the system, they must demonstrate to me that they have adequate experience in designing innovative on-site systems or obtaining plan approval and a permit to install the new system, may become difficult. The designer must field verify all elevations and stake out the proposed system prior to submitting a design. Initially, one set of plans must be submitted to your office from the designer and a duplicate set to my attention for co-review/approval.

### **Innovative or Alternative Agreement and Easement**

An Innovative or Alternative Agreement and Easement must be signed by all parties, recorded in the land records and returned to the local Approving Authority and MDE before permits to construct can be issued. The Agreement and Easement establishes the regulatory conditions associated with the project.

A combined BRF and Innovative or Alternative Agreement is available and preferred if a BRF grant funded system is employed.

**Installer Certification**

In order to install one of these systems, a potential contractor should have MDE's sand mound installer certification and must have MDE's BAT Installer certification. In addition, the chosen installer must also be certified as an installer by the authorized pretreatment vendor and be approved by the designer.

**Operation and Maintenance**

Most traditional conventional gravity fed systems require the owner to perform some form of routine maintenance to maintain and prolong system life (Typically tank pumping every 2-5 years and daily water conservation measures). Systems with additional complexity such as those that require pumps, electricity, pressure distribution piping, etc.) will obviously require the owner to perform some additional maintenance at an increased frequency to make sure the system continues to properly operate and last as long as possible.

Advanced pretreatment units such as BAT units and pressure dosed systems also require proper service and maintenance. After the first five years of the BAT unit installation, the homeowner is required by regulation and is responsible for maintaining a service contract with an MDE and vendor approved certified service provider to maintain their own system. Failure to properly maintain these systems will result in system failure and reduced property value.

I have copied the property owner. As with all alternative or innovative systems, I am available for technical guidance and project support/management. If you have any questions regarding this matter please contact me.

Sincerely,

*Steven R. Krieg, R.S*

Steven R. Krieg, REHS/RS  
Regional Consultant  
Onsite Systems Division

cc: Mike Davis  
Jeff Williams  
Brian Baker  
John "Jay" Ridgely  
File

## PRE CONSTRUCTION SITE PREPARATION

Site has undergone recent evaluation with deep pits. Prior to system construction, thoroughly rake soil on surface to mounded areas over pits with garden rake. Repeat with leaf rake. Be sure to rake all material not over the pit area to the mounded area exposing the existing turf. Remove mounded soil over pits with flat blade shovel leaving <6" mounded over the pit. Lightly tamp. The purpose is to remove the soil from the recent pit excavation for the natural ground surface.

## CONSTRUCTION PROCEDURES

NOTE: IT IS VERY IMPORTANT THAT THE AREA BE SCARIFIED AND COVERED WITH SAND AS SOON AS POSSIBLE, WITHIN A SINGLE DAY TO PROTECT THE AREA. NOTE THAT THE AREA IS LIGHTLY SANDFILLED, SCARIFIED, THEN SANDED AGAIN AS DETAILED BELOW.

1. Check the moisture content of the soil to a depth of 18 inches. Smearing and compacting wet soil will result in reducing the infiltration capacity of the soil. Proper soil moisture content can be determined by rolling a soil sample between the hands. If it rolls into a 1/4-inch wire, the site is too wet to prepare. If it crumbles, site preparation can proceed. If the site is too wet to prepare, do not proceed until it dries.

2. Lay out the distribution cell area on the site so that the upslope edge of the effective distribution cell (the graveled area) is level or on a contour line (points of equal elevation).

3. For components in open areas, measure the average ground elevation along the up slope edge of the distribution cell. For components on uneven sites (rough terrain), plow the surface, before the average ground elevation along the up slope edge of the distribution cell is measured. Note that the entire component area (L x W) is plowed.

4. Determine where the force main from the dosing chamber will connect to the distribution system in the distribution cell. As site conditions allow, the supply line is to have a uniform slope from the pump to the lateral. Place the pipe either before (preferred) or after plowing. In most cases the force main will enter from the upper center of the bed. The trench width should be as narrow as possible. If the force main is to be installed in the down slope area, the trench for the force main may not be wider than 12 inches. Extend the pipe 12" above the ground surface, cover or cap.

5. Cut trees as close as possible to the ground surface and leave stumps, remove surface boulders that can be easily rolled off, remove vegetation over 6 inches long by mowing and removing cut vegetation. Turf sites should be cut as low as possible with trimmer, rake remove grass from site. Recommend final clearing with a leaf blower. **DONOT REMOVE THE SOD.** Place 3 - 4" of sand (SEE SPECIFICATION) over entire area (100' x 21', includes 1' upslope from gravel bed). Prepare the site by plowing the surface soil perpendicular to the direction of the slope, and to a depth of 7-8 inches so as to eliminate any surface mat that could impede the vertical flow of liquid into the in situ soil. Plow with a chisel plow is done along contours. Chisel plowing is the preferred method especially in fine textured soils. Rototilling or other means that pulverize the soil is not acceptable. ANY ALTERNATIVE METHODS OF SCARIFICATION IS SUBJECT TO DESIGNER (AND REGULATORY) APPROVAL. The important point is that an uncompacted rough, unsmearred surface be left. The soil clods will likely protrude through the sand,

Cover the entire area with sand. Additional sand required to level the area where the aggregate is to be placed (6' width). Place sand on site as soon as possible to protect from rain.

6. Immediately and carefully apply of at least 6 inches of aggregate (SEE SPECIFICATION) in the aggregate area. Shape the aggregate to obtain a uniform minimum depth of at least 6 inches above the sanded area ("A"). All vehicular traffic is prohibited on the plowed area. Vehicle traffic is also prohibited for 15 ft. down slope and 10 ft. on both sides. If it rains after the plowing is completed, wait until the soil dries out before continuing construction, and contact the local inspector for a determination on the damage done by rainfall.

Place the effluent distribution lateral(s) on the aggregate. Connect the lateral(s) using the needed connections and piping to the force main pipe from the dosing chamber. Lay the effluent distribution lateral(s) level, with the perforations down. All orifices to have orifice shields. The first and last holes are to be installed "up"; the remaining holes are to be oriented down. Drill holes straight with new, sharp drill bit.

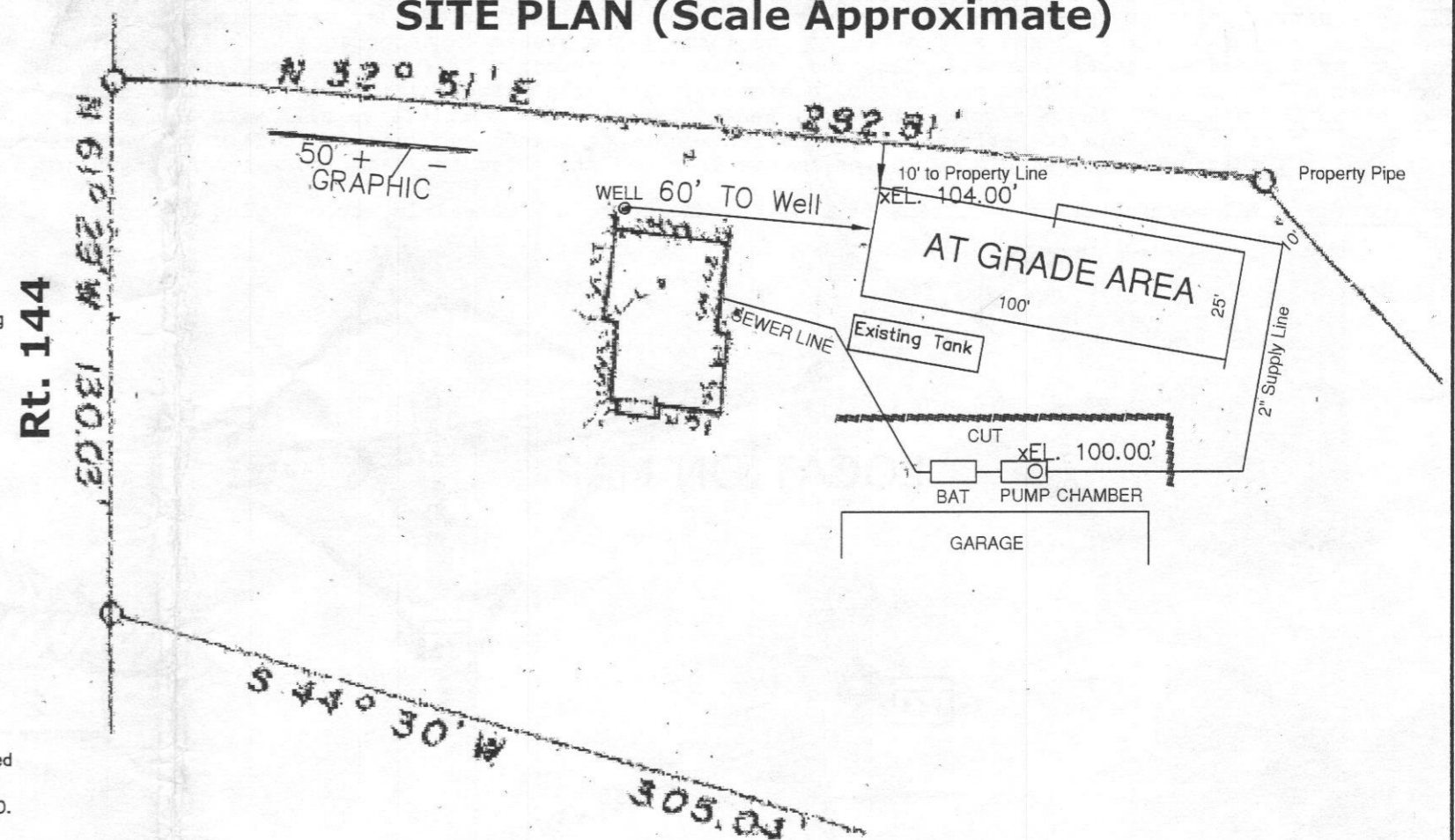
8. Place at least 2 inches of aggregate over the lateral(s).

9. Place thin geotextile, light spun filter fabric, over the aggregate to act as a silt barrier.

10. Carefully place soil cover material on top of the geotextile fabric and extend the soil cover to the boundaries of the overall area. Make sure the area beneath the soil extending beyond the sanded area is tilled prior to the placement of the topsoil as to tie the topsoil into the existing soil. Cover material to be clean, uniform and loamy free of organic matter, sticks, clay balls etc. No silty or clayey materials.

11. Complete final grading to divert surface water drainage away from the at-grade, paying attention to upslope surface water. Lime, fertilize, sod or seed with native grasses. Over seed in Fall, cut high.

## SITE PLAN (Scale Approximate)



Verify condition of existing SEWER line. If not Schedule 40 PVC, replacement highly recommended.

Existing tanks to be abandoned in accordance with County requirements.

Install BAT and dose tank as shallow as possible.

Verify property line. Site absorption bed on contour carefully as upslope as possible. Minimum distance to property line 10', including backslope beveled to divert surface water.

NO ACTIVITY ON ABSORPTION AREA OTHER THAN AS MINIMUM TO INSTALL.

<b>Tom W. Ashton R.E.H.S.</b>		
P.O. Box 220 Bluemont VA 20135 540-454-4672		
PROJECT NAME :	7/15/14	
12930 Frederick Rd. West Friendship, MD 21794		REV 7/24/14
COUNTY : Howard Maryland	TITLE : SITE LAYOUT PLAN	
DESIGNED BY: Tom W. Ashton R.E.H.S.		SHEET: 2 OF 9

**NOTES TO CONTRACTOR:**

**General:** This On Site Sewage Treatment and Dispersal system is to be installed according to the following specifications. These plans are to be accompanied by a current valid Health Department permit prior to construction. The exact location of all utilities must be determined prior to construction and any required setbacks adhered. The contractor is responsible to be familiar with the system design and install the system in accordance with the requirements of the Department of Health, Maryland Department of the Environment (MDE,) local County ordinances, local standard practices, and is to be properly licensed and certified as may be required by the appropriate state and local agencies Contractor to be an experienced MDE Sandmound certified contractor, preferably with drip dispersal installation experience.

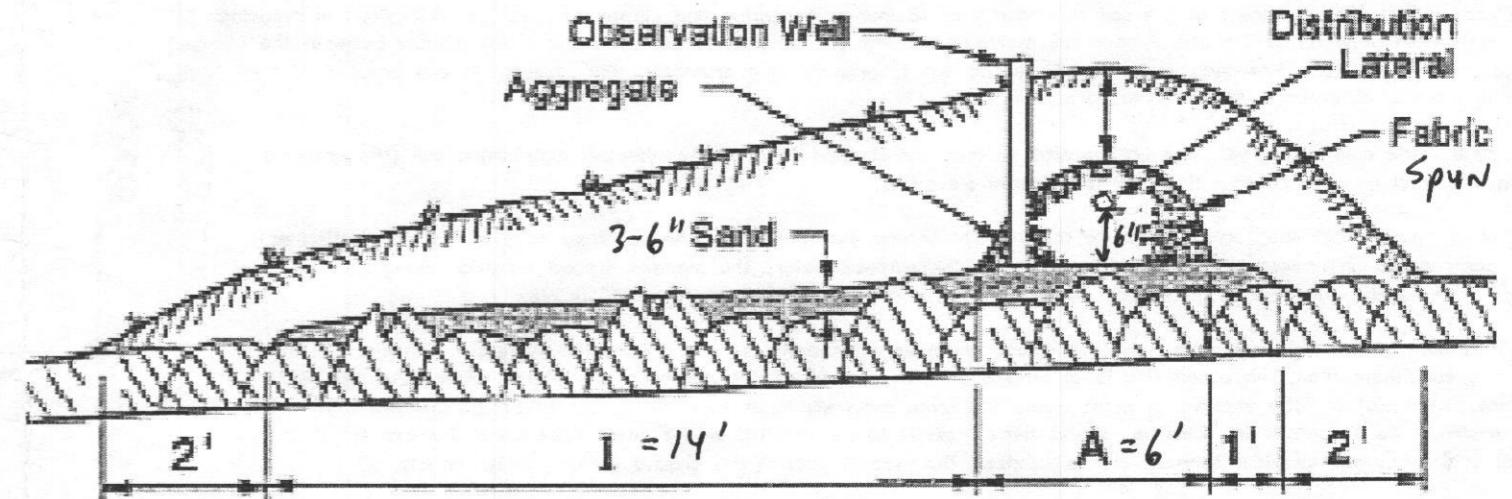
**Pre construction meeting:** Maybe required by local Health Department / MDE. Please call with any questions.

The contractor is responsible to perform a pre construction recognizance and / or stakeout prior to construction to verify the design and to plan the construction process. The area of the absorption system plus a 15' perimeter is to be protected from any and all activity prior to construction.

**Specification:** All manufacturers requirements must be adhered to and materials accompanying specific components to be retained and kept with this package for future owner reference.



DESIGNED BY: Tom W. Ashton R.E.H.S 540-454-4672



## ADVANCED PRETREATMENT to "MODIFIED MOUND" AT-GRADE DISPOSAL BED

**NOTE:**

System design is best attempt to provide a sewage disposal system to an existing house.

Owner acknowledges and agrees that the proposed innovative/alternative system is experimental and that his or her participation is voluntary. Owner agrees that there shall be no liability assigned to evaluator / designer if this innovative/alternative system fails, and that evaluator / designer do not warrant or guarantee that the system will adequately or properly function. Owner acknowledges and agrees that a MDE certified and manufacturer-approved installer will install the best available technology (BAT). The "Modified Mound" at grade system is to be installed by an experienced MDE certified Sand Mound installer.

**SCOPE:** Household Sewage will flow by gravity through a pretreatment unit, then to a dispersal equalization pump tank. From the pump tank the effluent dispersed to an At-Grade aggregate bed by a pressure distribution lateral.

As a condition of their permit, owner acknowledges and agrees the manufacturer will provide for Operation and Maintenance of the as a condition of sale of the BAT (5 years). After the 5-year period the Operation and Maintenance the BAT contract is to be further extended. The property owner is required to to continuously maintain an Operation and Maintenance contract during the lifetime of the system. A MDE approved operator is required.

**NOTE:**  
System design is best attempt to correct an existing sewage disposal system malfunction. Evaluator / Designer assume no liability as to the future performance of the system.

**CONTENTS:**

- Page 1 . . . . . Cover Sheet
- Page 2 . . . . . Site Layout Plan
- Page 3 . . . . . At-Grade Details
- Page 4 . . . . . Pump Tank / Hydraulic Profile / Panel
- Page 5 . . . . . NORWECO Pretreatment
- Page 6 . . . . . System Design
- Page 7 . . . . . General Notes
- Page 8 . . . . . Operation
- Page 9 . . . . . Additional Information

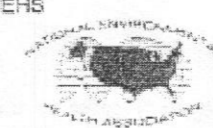
Co-reviewed by: MDE's ON-SITE SYSTEMS DIVISION & COUNTY Approving Authority  
 Project Name/Address: \_\_\_\_\_  
 Date Design Plan Approved: 8/1/14  
 Regional Consultant: Stern R. King REHS/RS  
 Local Approving Authority: \_\_\_\_\_  
The On-Site Systems Division must be notified at least 48 hours in advance prior to anticipated system installation so that a pre-installation field layout can be conducted. System installation is not to proceed until a final field layout has been conducted/approved by county and MDE.  
 Date/s of Pre-installation layout meeting: \_\_\_\_\_  
 Date Pre-installation layout approved: \_\_\_\_\_  
 Approved By: \_\_\_\_\_

Credential Identification Card for: REHS/RS

Credential ID Number: 83255

Cred. Since: 08/09/1995

Thomas W. Ashton, CPSS, REHS  
 12526 Foggy Bottom Rd  
 Bluemont, VA 20135-1838



*Tom Ashton*

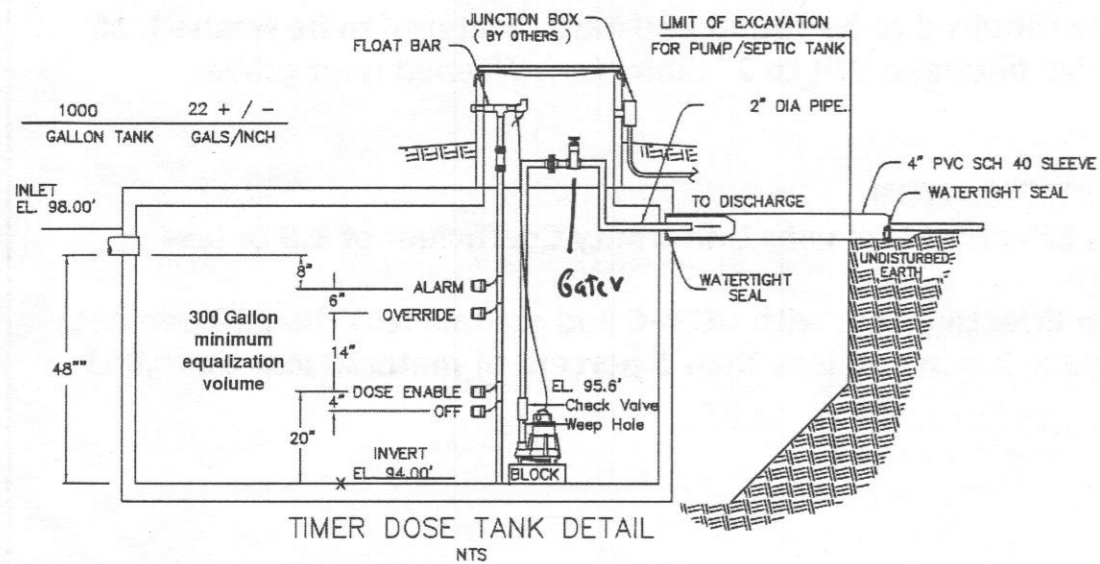
**Tom W. Ashton R.E.H.S.**  
 P.O. Box 220 Bluemont VA 20135 540-454-4672

PROJECT NAME :	12930 Frederick Rd. West Friendship, MD 21794	7/15/14 REV 7/24/14
COUNTY :	Howard Maryland	TITLE : COVER SHEET AT- GRADE DESIGN

DESIGNED BY: Tom W. Ashton R.E.H.S 540-454-4672

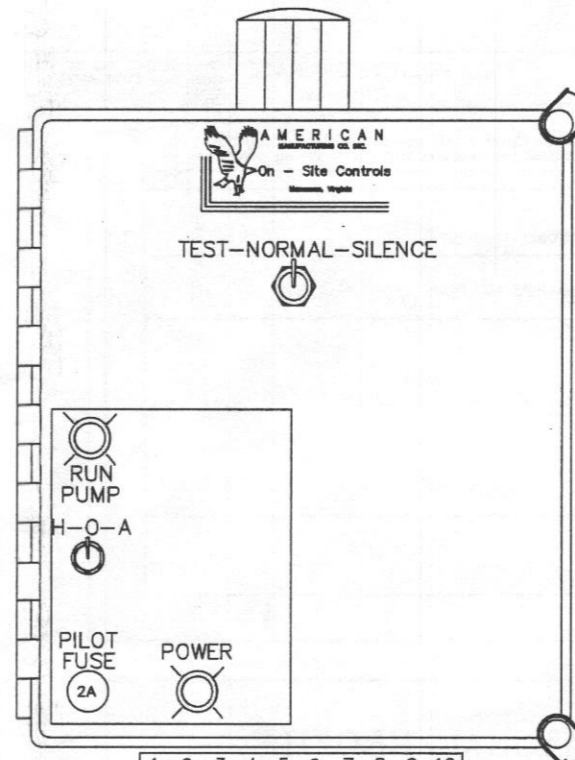
NTS SHEET: 1 OF 9

# TANK PROFILE / FLOAT SETTINGS



POWER SUPPLY  
115/230 VOLTS  
1PH / 60HZ  
PUMP  
CONTROL SUPPLY  
115 VOLTS ONLY  
NEUTRAL

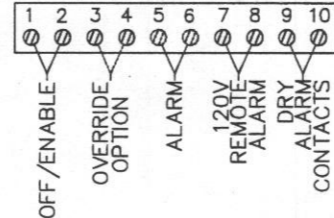
Panel to be mounted  
out door with  
breakers, elapsed  
time meter, and  
event counter on  
pump and override.



## TIMER CONTROL SEQUENCE OF OPERATION

The pump control panel shall be equipped with four float switches to control the timed doses to be discharged. The water level must be high enough to overcome the "Redundant Off" (Bottom) float in order for the pump to be permitted to run. When the water level rises high enough to overcome the "Dose Enable" (second) float and the time clock is in a pump enable mode, the control will wait for the programmed rest time and then activate the pump. The pump shall continue to run for the length of time as programmed on the pump run timer, and shall then shut off. The pump shall remain off until the rest time clock enters a new pump enable mode, at which time the pump shall activate (as long as the "Dose Enable" float is still up) and will run until the pump run timer finishes timing out. This process shall continue until the water level drops below the "Dose Enable" float and the pump run timer has timed out.

ITEM	MODEL	DESCRIPTION
SEQ-B4196P	SEQAB124-ACEFILL	Simplex Control w/ NEMA 4X Enclosure, Auto Reset Alarm, Breaker, 120/240V Pump, Counter, ETM, Redundant Low Level Off



The control system shall be equipped with a timer override circuit to manage peak flows and excess water use. If the water level continues to rise enough to overcome the "Timer Override" (third) float and the override selector switch is on, the pump shall be activated, regardless of the time clock position. The pump will continue to run until deactivated by the override circuit, at which time the pump will shut off and the normal pumping cycle shall resume. If the water level continues to rise enough to overcome the "High Level" (fourth) float, the audio/visual alarm shall activate until silenced by pressing the Test-Normal-Silence switch to the silence position. The alarm circuit shall automatically reset when the "High Level" float returns to its normal position.

Panel & Pump  
T/A Jones Pump Service  
410-836-9206 office  
410-836-9367 fax

**Ray Area Environmental**  
**Dwayne Jones**  
manager@jonespumpservice.com

### TIMER SETTING

With pump chamber gate valve fully open, pressurize system. Determine operating head. Design operating head 2.5'. Adjust with gate valve to 2.5' of head. Turn off pump.

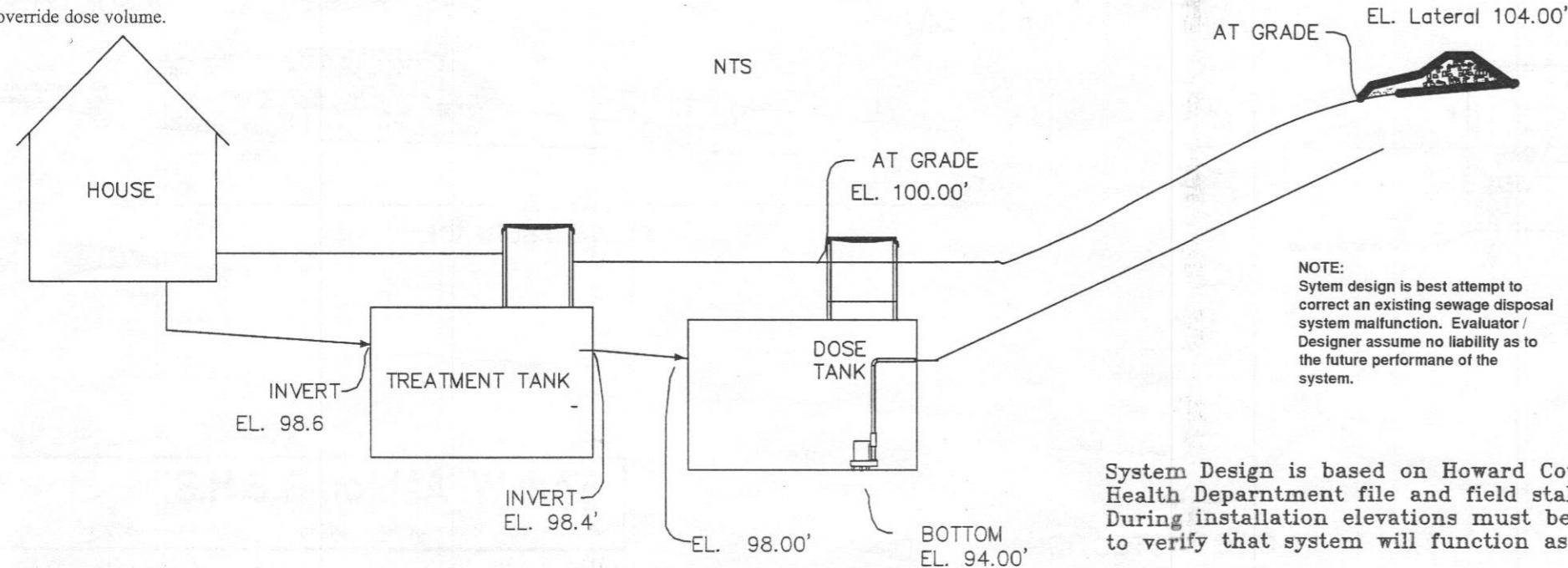
Wait 1/2 hour. Determine exact volume of tank in gallons per inch. With network fully drained, measure elevation of water in tank. Turn on pump for 5 minutes. Immediately after pump shut off measure the elevation of the water in tank. Calculated inches drawn down, determine the volume pumped, and divide by the number of minutes to determine the GPM operating flow of the system.

Divide DOSE VOLUME of 30 Gallons by the operating GPM and set pump run timer.

Set rest time at 3.2 hours.

All floats wide angle, tether at a minimum 3".

Verify override dose volume.



NOTE:  
System design is best attempt to correct an existing sewage disposal system malfunction. Evaluator / Designer assume no liability as to the future performance of the system.

System Design is based on Howard County Health Department file and field stake out. During installation elevations must be checked to verify that system will function as designed.

ALL TANKS TO BE TOP SEAMED  
INSTALL TANKS AS SHALLOW AS POSSIBLE.  
DIVERT ALL HOUSE ROOF, DRIVE, AND SUMP DRAINAGE AWAY FROM ALL SYSTEM COMPONENTS.  
A 24 standard watertight inspection to be conducted to evaluate all tanks for water tightness. The test will be in accordance with the National Precast Association's (NPCA) BMP Manual and follow ASTM C1227 testing procedures. Tanks that are not watertight are subject to rejection.

## Tom W. Ashton R.E.H.S.

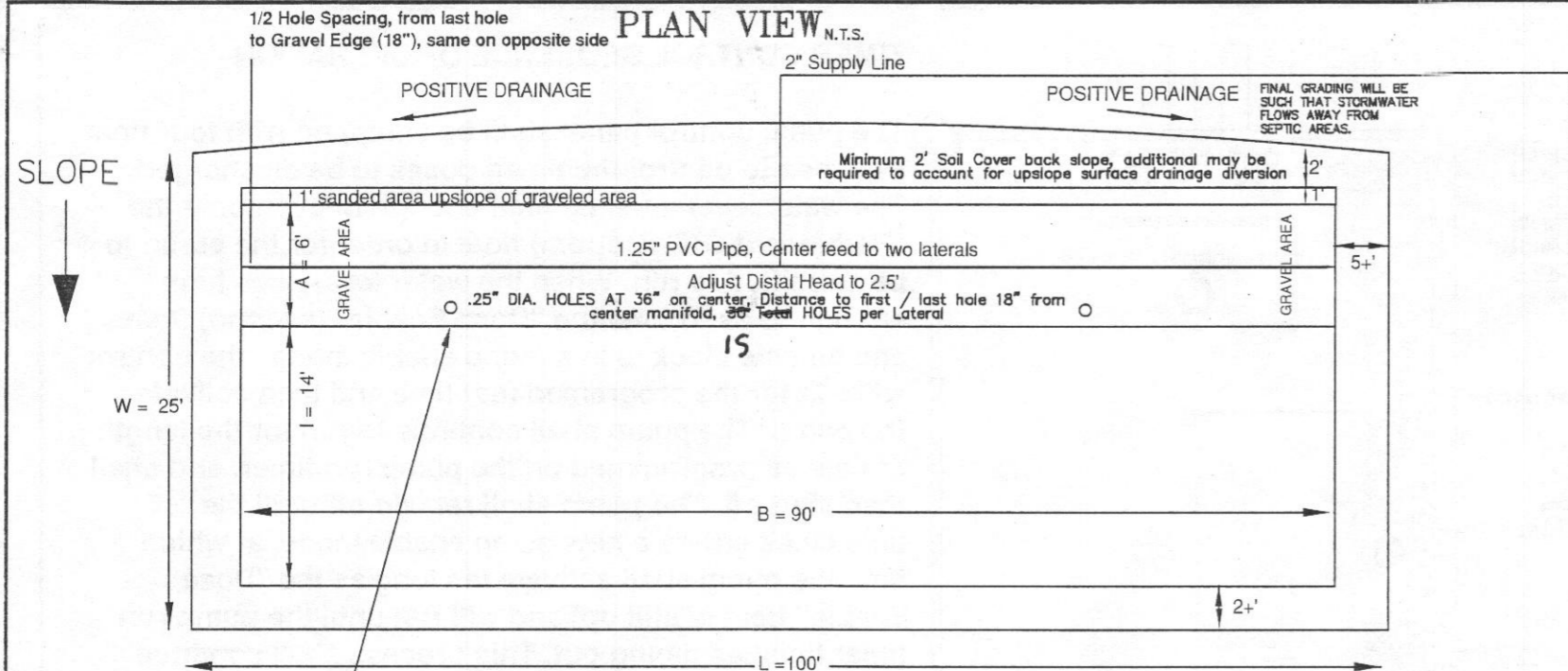
P.O. Box 220 Bluemont VA 20135 540-454-4672

PROJECT NAME :  
12930 Frederick Rd.  
West Friendship, MD  
21794

COUNTY : Howard  
Maryland

7/15/14  
REV 7/24/14

TITLE :  
PUMP TANK  
HYDRAULIC PROFILE

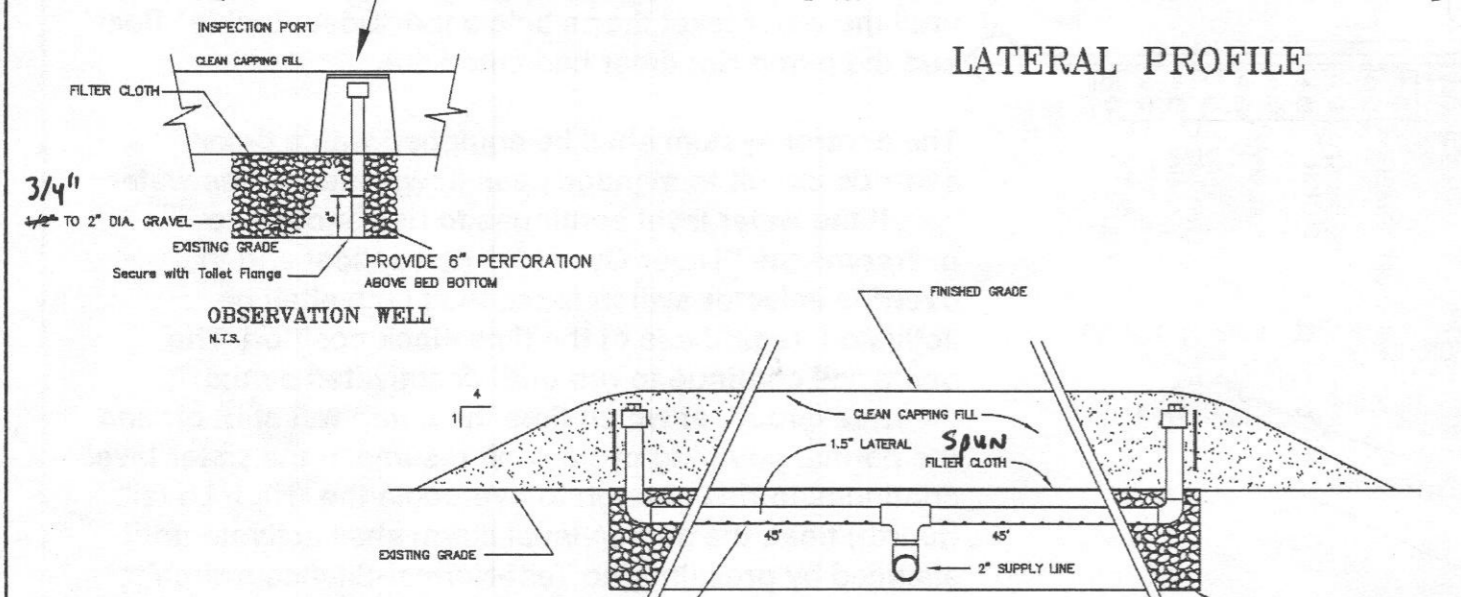


**AGGREGATE REQUIREMENTS**

Aggregate required to be sound and hard. Material to be washed, of uniform size between 3/4 to 2" diameter. Washed river gravel required.

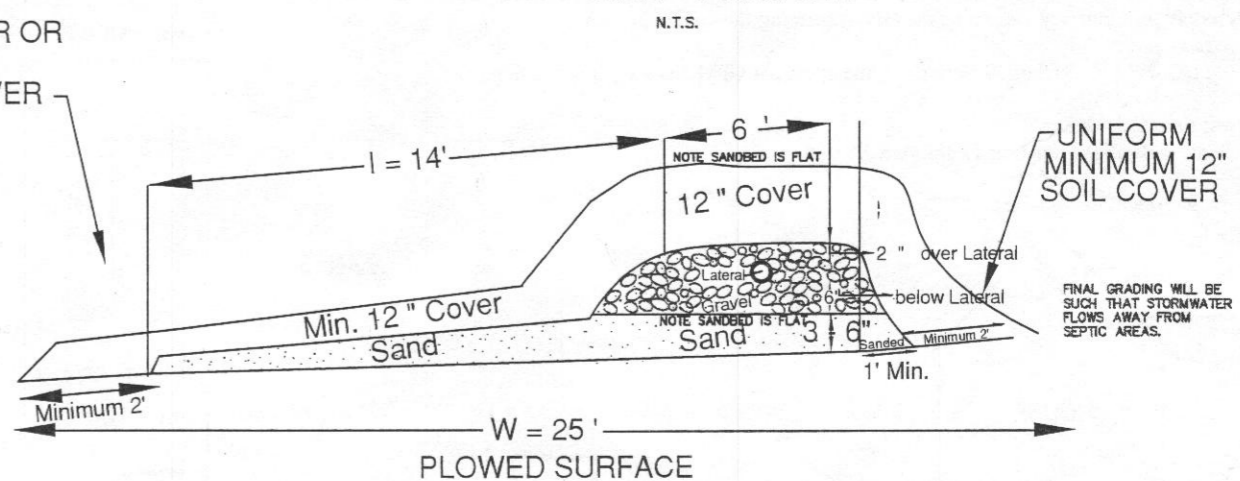
**SAND SPECIFICATION**

25-.5 mm Effective Size with Uniformity Coefficient of 3.5 or less  
 OR  
 .15-.3 mm Effective Size with UC 4-6 and contain less than 20 percent of material > 2 mm and less than 5 percent of material less than .053 mm



OTHER AGGRESSIVE  
 SOD LAYER OR  
 TURF COVER

**BED PROFILE**



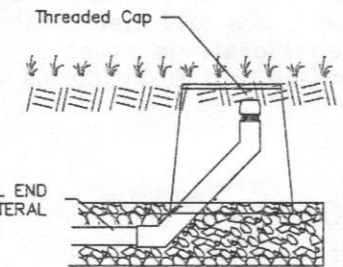
**LATERAL PROFILE**

N.T.S.

**CLARIFY**

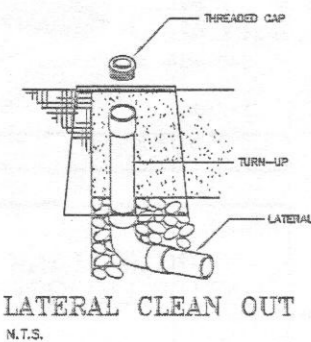
**ORRIFICE SHIELDS**

INSTALL ORRIFICE SHIELDS ON ALL ORRIFICES AFTER PRESSURIZATION



**SITE PROTECTION**

Absorption Area to be protective from any and all activity plus 15' perimeter. Minimal activity only to install system. **NO ACTIVITY ON DOWN SLOPE AREA**



<b>Tom W. Ashton R.E.H.S.</b>	
P.O. Box 220 Bluemont VA 20135	540-454-4672
PROJECT NAME : 12930 Frederick Rd. West Friendship, MD 21794	7/15/14 REV 7/24/14
COUNTY : Howard Maryland	TITLE : SYSTEM DETAILS TREATMENT SCHEMATIC
File:	SCALE : NTS SHEET 3 OF 9

Soil Characteristics			Hydraulic Linear Loading Rate												
			Slope												
			Basal Load Rate			0-4%			5-9%			>10%			
Texture	Structure	Grade	>30 BOD	<30 BOD	Infiltration Distance			Infiltration Distance			Infiltration Distance			Row	
COS, S, LCOS, LS	OSG		0.8	1.6	4.0	5.0	6.0	5.0	6.0	7.0	6.0	7.0	8.0	8.0	1
FS, VFS, LFS, LVFS	OSG		0.4	1.0	3.5	4.5	5.5	4.0	5.0	6.0	5.0	6.0	7.0	7.0	2
CSL, SL	0 massive		0.2	0.6	3.0	3.5	4.0	3.6	4.1	4.6	5.0	6.0	7.0	7.0	3
	PL	1	0.2	0.5	3.0	3.5	4.0	3.6	4.1	4.6	5.0	6.0	7.0	7.0	4
		2,3	0.0	0.0	-	-	-	-	-	-	-	-	-	-	5
	PR/BK /GR	1	0.4	0.7	3.5	4.5	5.5	4.0	5.0	6.0	5.0	6.0	7.0	7.0	6
FSL, VFSL	0 massive		0.2	0.5	2.0	2.3	2.6	2.4	2.7	3.0	2.7	3.2	3.7	8	
	PL	1,2,3	0.0	0.0	-	-	-	-	-	-	-	-	-	9	
	PR/BK /GR	1	0.2	0.6	3.0	3.5	4.0	3.3	3.8	4.3	3.6	4.1	4.6	10	
		2,3	0.4	0.8	3.3	3.8	4.3	3.6	4.1	4.6	3.9	4.4	4.9	11	
L	0 massive		0.2	0.5	2.0	2.3	2.6	2.4	2.7	3.0	2.7	3.2	3.7	12	
	PL	1,2,3	0.0	0.0	-	-	-	-	-	-	-	-	-	13	
	PR/BK /GR	1	0.4	0.6	3.0	3.5	4.0	3.3	3.8	4.3	3.6	4.1	4.6	14	
		2,3	0.6	0.8	3.3	3.8	4.3	3.6	4.1	4.6	3.9	4.4	4.9	15	
SIL	0 massive		0.0	0.2	-	-	-	-	-	-	-	-	-	16	
	PL	1,2,3	0.0	0.0	-	-	-	-	-	-	-	-	-	17	
	PR/BK /GR	1	0.4	0.6	2.4	2.7	3.0	2.7	3.0	3.3	3.0	3.5	4.0	18	
		2,3	0.6	0.8	2.7	3.0	3.3	3.0	3.5	4.0	3.3	3.8	4.3	19	
SCL, CL, SICL	0 massive		0.0	0.0	-	-	-	-	-	-	-	-	-	20	
	PL	1,2,3	0.0	0.0	-	-	-	-	-	-	-	-	-	21	
	PR/BK /GR	1	0.2	0.3	2.0	2.5	3.0	2.2	2.7	3.2	2.4	2.9	3.4	22	
		2,3	0.4	0.6	2.4	2.9	3.4	2.7	3.0	3.3	3.0	3.5	4.0	23	
SC, C, SIC	0 massive		0.0	0.0	-	-	-	-	-	-	-	-	-	24	
	PL	1,2,3	0.0	0.0	-	-	-	-	-	-	-	-	-	25	
	PR/BK /GR	1	0.0	0.0	-	-	-	-	-	-	-	-	-	26	
		2,3	0.2	0.3	2.0	2.5	3.0	2.2	2.7	3.2	2.4	2.9	3.4	27	
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	

## BASAL LOADING RATE

450 GPD / (( "B" x ("A" + "I") )) = .25 Gallons per Ft<sup>2</sup> per day

## LANDSCAPE LINEAR LOADING RATE

System Length, Two 40' Beds "L" = 100'

Peak 450 GPD / 100' = 4.5 Gal. / Lin. Ft. per Day Equalized / Time Dose Average

225 GPD / 100' = 2.25 Gal. per Lin. Ft. per Day

## LOW PRESSURE DISTRIBUTION DESIGN

NOTE: System design is best attempt to correct an existing sewage disposal system malfunction. Evaluator / Designer assume no liability as to the future performance of the system.

System Flow  
 2.5" hole = 1.18 GPM @ 2.5' of Head  
 One 1.5" Lateral, 30 holes x 1.18 GPM = 35.5 or 36 GPM

Total Dynamic Head  
 Two Inch Pipe Pump Station  
 Equivalent Length of 2" pump Station Fittings 50'  
 Additional incidental fittings + 15'  
 Total equivalent length of pipe 65'

Friction Loss of 2" pipe at 36 GPM = 3.44 / 100'  
 Floss of Pipe / Fittings (.65 X 3.44) = 2.13'

Lateral  
 Friction Loss of 1.25" pipe at 18 or GPM (average) = 4.64' / 100'  
 Floss of 90' of 1.25" lateral at 18 GPM (.9 x 4.64) = 4.2'

Supply Line  
 Equivalent Length Supply Line Run and Fittings 250'

Friction Loss of 2" pipe at 36 GPM = 3.44' / 100'  
 Floss of Pipe / Fittings (2.5 X 3.44) = 8.6'

### Total Dynamic Head for System

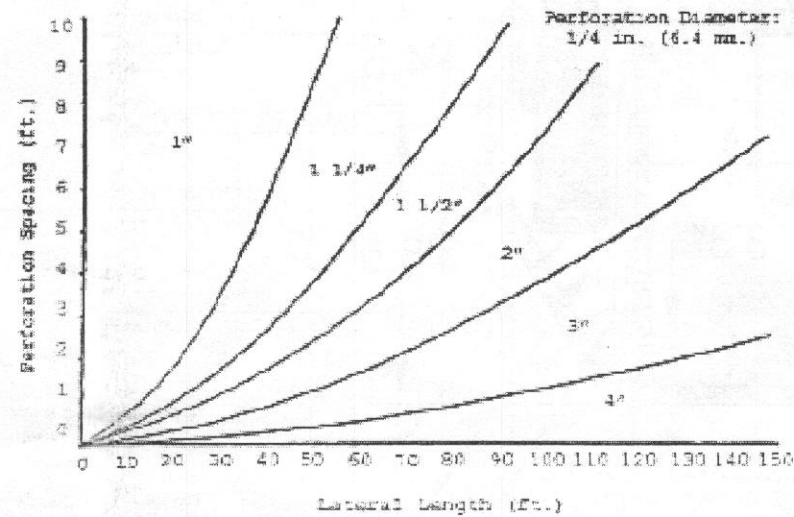
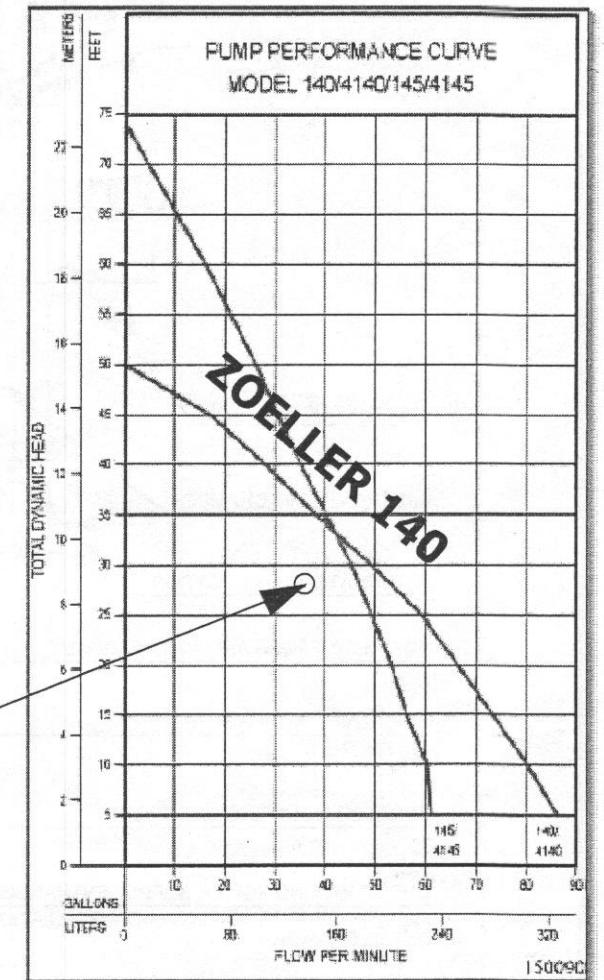
Floss 2" pump Station 2.13'  
 Supply Line 8.6'  
 Floss Lateral 4.2'  
 Pressure Head 2.5'  
 Static Lift from "OFF" float at to lateral + 10.0'

System TDH 27.43' head @ 36 GPM

Residual Head at 36 GPM approximately 10'

DOSE VOLUME  
 1.25" pipe has volume of .064 gallons per linear foot  
 90' lateral x .064 = 5.76 gallons  
 5 x 5.76 gallons = 28.8 gallons use 30 gallon dose  
 225 GPD average flow / 30 gallons per dose = 7.5 doses per day every 3.2 hours.  
 30 Gallons Dose Volume / 36 GPM System Flow = .83 minute (50 sec) pump run time

Panel & Pump  
 T/A Jones Pump Service  
 410-836-9206 office  
 410-836-9367 fax



Minimum lateral diameter for plastic pipe (C<sub>d</sub> = 130) versus perforation spacing and lateral length for 1/4 in. Diameter Perforations (WEL, 1981)

Tom W. Ashton R.E.H.S.

P.O. Box 220 Bluemont VA 20135 540-454-4672

PROJECT NAME :  
 12930 Frederick Rd.  
 West Friendship, MD  
 21794

7/15/14  
 REV 7/24/14

COUNTY : Howard  
 Maryland

TITLE :  
 System Design

Soil Characteristics			Hydraulic Linear Loading Rate											
			Slope											
			Basal Load Rate			0-4%			5-9%			>10%		
Texture	Structure	Grade	>30 BOD	<30 BOD	Infiltration Distance			Infiltration Distance			Infiltration Distance			Row
COS, S, LCOS, LS	OSG		0.8	1.6	4.0	5.0	6.0	5.0	6.0	7.0	6.0	7.0	8.0	1
FS, VFS, LFS, LVFS	OSG		0.4	1.0	3.5	4.5	5.5	4.0	5.0	6.0	5.0	6.0	7.0	2
CSL, SL	0 massive		0.2	0.6	3.0	3.5	4.0	3.6	4.1	4.6	5.0	6.0	7.0	3
	PL	1	0.2	0.5	3.0	3.5	4.0	3.6	4.1	4.6	5.0	6.0	7.0	4
		2,3	0.0	0.0	-	-	-	-	-	-	-	-	-	5
	PR/BK /GR	1	0.4	0.7	3.5	4.5	5.5	4.0	5.0	6.0	5.0	6.0	7.0	6
FSL, VFSL	0 massive		0.2	0.5	2.0	2.3	2.6	2.4	2.7	3.0	2.7	3.2	3.7	8
	PL	1,2,3	0.0	0.0	-	-	-	-	-	-	-	-	-	9
	PR/BK /GR	1	0.2	0.6	3.0	3.5	4.0	3.3	3.8	4.3	3.6	4.1	4.6	10
		2,3	0.4	0.8	3.3	3.8	4.3	3.6	4.1	4.6	3.9	4.4	4.9	11
L	0 massive		0.2	0.5	2.0	2.3	2.6	2.4	2.7	3.0	2.7	3.2	3.7	12
	PL	1,2,3	0.0	0.0	-	-	-	-	-	-	-	-	-	13
	PR/BK /GR	1	0.4	0.6	3.0	3.5	4.0	3.3	3.8	4.3	3.6	4.1	4.6	14
		2,3	0.6	0.8	3.3	3.8	4.3	3.6	4.1	4.6	3.9	4.4	4.9	15
SIL	0 massive		0.0	0.2	-	-	-	-	-	-	-	-	-	16
	PL	1,2,3	0.0	0.0	-	-	-	-	-	-	-	-	-	17
	PR/BK /GR	1	0.4	0.6	2.4	2.7	3.0	2.7	3.0	3.3	3.0	3.5	4.0	18
		2,3	0.6	0.8	2.7	3.0	3.3	3.0	3.5	4.0	3.3	3.8	4.3	19
SCL, CL, SICL	0 massive		0.0	0.0	-	-	-	-	-	-	-	-	-	20
	PL	1,2,3	0.0	0.0	-	-	-	-	-	-	-	-	-	21
	PR/BK /GR	1	0.2	0.3	2.0	2.5	3.0	2.2	2.7	3.2	2.4	2.9	3.4	22
		2,3	0.4	0.6	2.4	2.9	3.4	2.7	3.0	3.3	3.0	3.5	4.0	23
SC, C, SIC	0 massive		0.0	0.0	-	-	-	-	-	-	-	-	-	24
	PL	1,2,3	0.0	0.0	-	-	-	-	-	-	-	-	-	25
	PR/BK /GR	1	0.0	0.0	-	-	-	-	-	-	-	-	-	26
		2,3	0.2	0.3	2.0	2.5	3.0	2.2	2.7	3.2	2.4	2.9	3.4	27
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O

## BASAL LOADING RATE

$450 \text{ GPD} / ((\text{"B"} \times (\text{"A"} + \text{"I"}))) = .25 \text{ Gallons per Ft}^2 \text{ per day}$

## LANDSCAPE LINEAR LOADING RATE

System Length, Two 40' Beds "L"=100'

Peak  $450 \text{ GPD} / 100' = 4.5 \text{ Gal. / Lin. Ft. per Day}$   
Equalized / Time Dose Average

$225 \text{ GPD} / 100' = 2.25 \text{ Gal. per Lin. Ft. per Day}$

## LOW PRESSURE DISTRIBUTION DESIGN

NOTE: System design is best attempt to correct an existing sewage disposal system malfunction. Evaluator / Designer assume no liability as to the future performance of the system.

System Flow  
2.5" hole = 1.18 GPM @ 2.5' of Head  
One 1.5" Lateral, 30 holes x 1.18 GPM = 35.5 or 36 GPM

Total Dynamic Head  
Two Inch Pipe Pump Station  
Equivalent Length of 2" pump Station Fittings 50'  
Additional incidental fittings + 15'  
Total equivalent length of pipe 65'

Friction Loss of 2" pipe at 36 GPM = 3.44 / 100'  
Loss of Pipe / Fittings (.65 X 3.44) = 2.13'

Lateral  
Friction Loss of 1.25" pipe at 18 or GPM (average) = 4.64' / 100'  
Loss of 90' of 1.25" lateral at 18 GPM (.9 x 4.64) = 4.2'

Supply Line  
Equivalent Length Supply Line Run and Fittings 250'

Friction Loss of 2" pipe at 36 GPM = 3.44' / 100'  
Loss of Pipe / Fittings (2.5 X 3.44) = 8.6'

### Total Dynamic Head for System

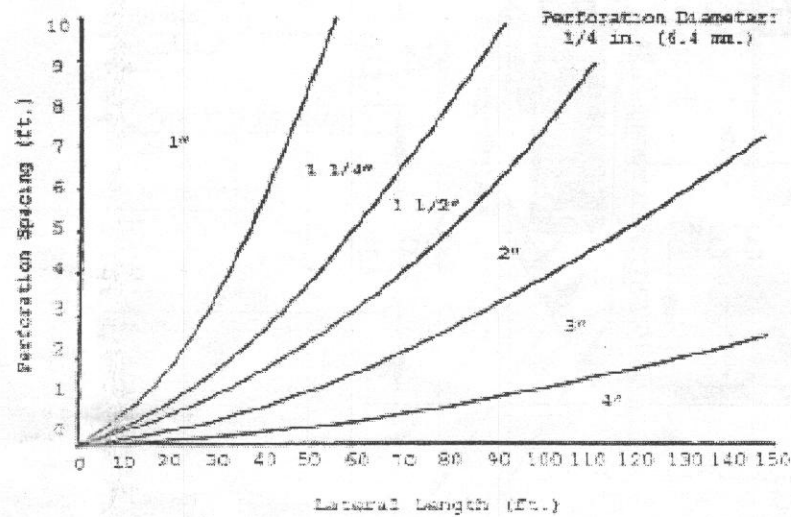
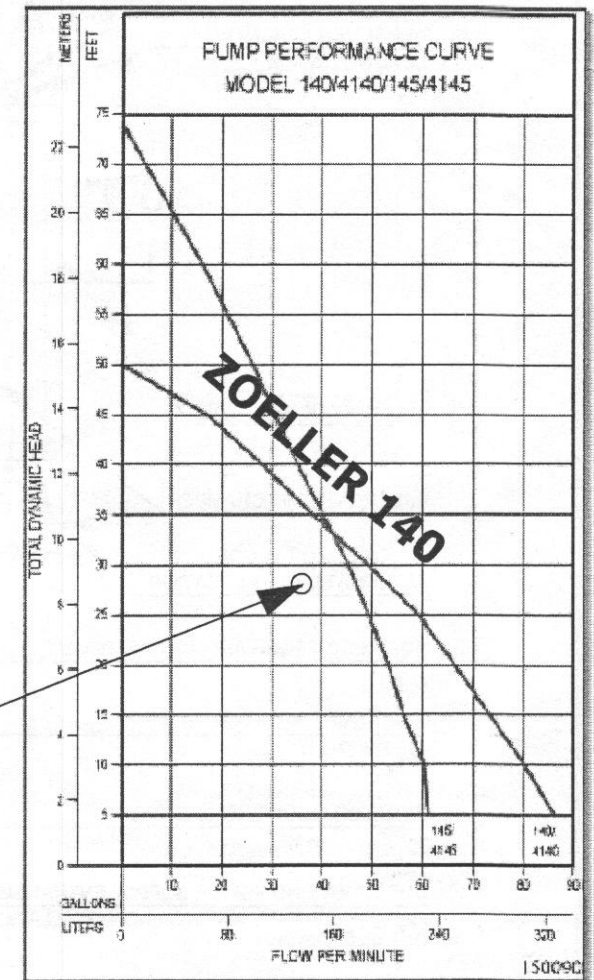
Floss 2" pump Station 2.13'  
Supply Line 8.6'  
Floss Lateral 4.2'  
Pressure Head 2.5'  
Static Lift from "OFF" float at to lateral + 10.0'

System TDH 27.43' head @ 36 GPM

Residual Head at 36 GPM approximately 10'

DOSE VOLUME  
1.25" pipe has volume of .064 gallons per linear foot  
90' lateral x .064 = 5.76 gallons  
5 x 5.76 gallons = 28.8 gallons use 30 gallon dose  
225 GPD average flow / 30 gallons per dose = 7.5 doses per day every 3.2 hours.  
30 Gallons Dose Volume / 36 GPM System Flow = .83 minute (50 sec) pump run time

Panel & Pump  
T/A Jones Pump Service  
410-836-9206 office  
410-836-9367 fax



Minimum lateral diameter for plastic pipe (C<sub>d</sub> = 150) versus perforation spacing and lateral length for 1/4 in. Diameter Perforations (WEL, 1981)

Tom W. Ashton R.E.H.S.

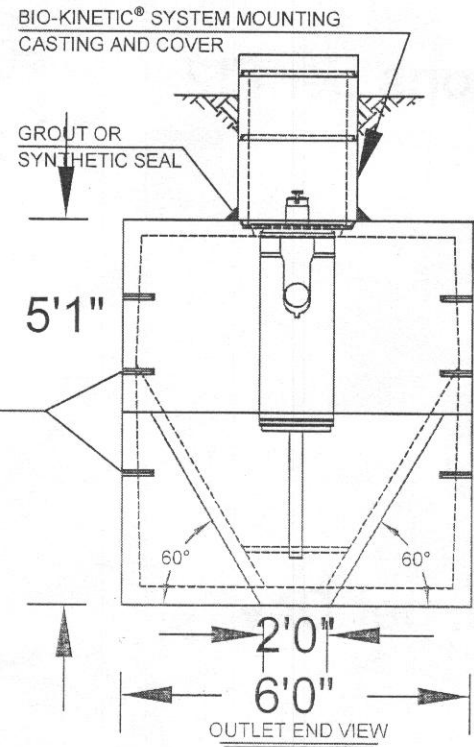
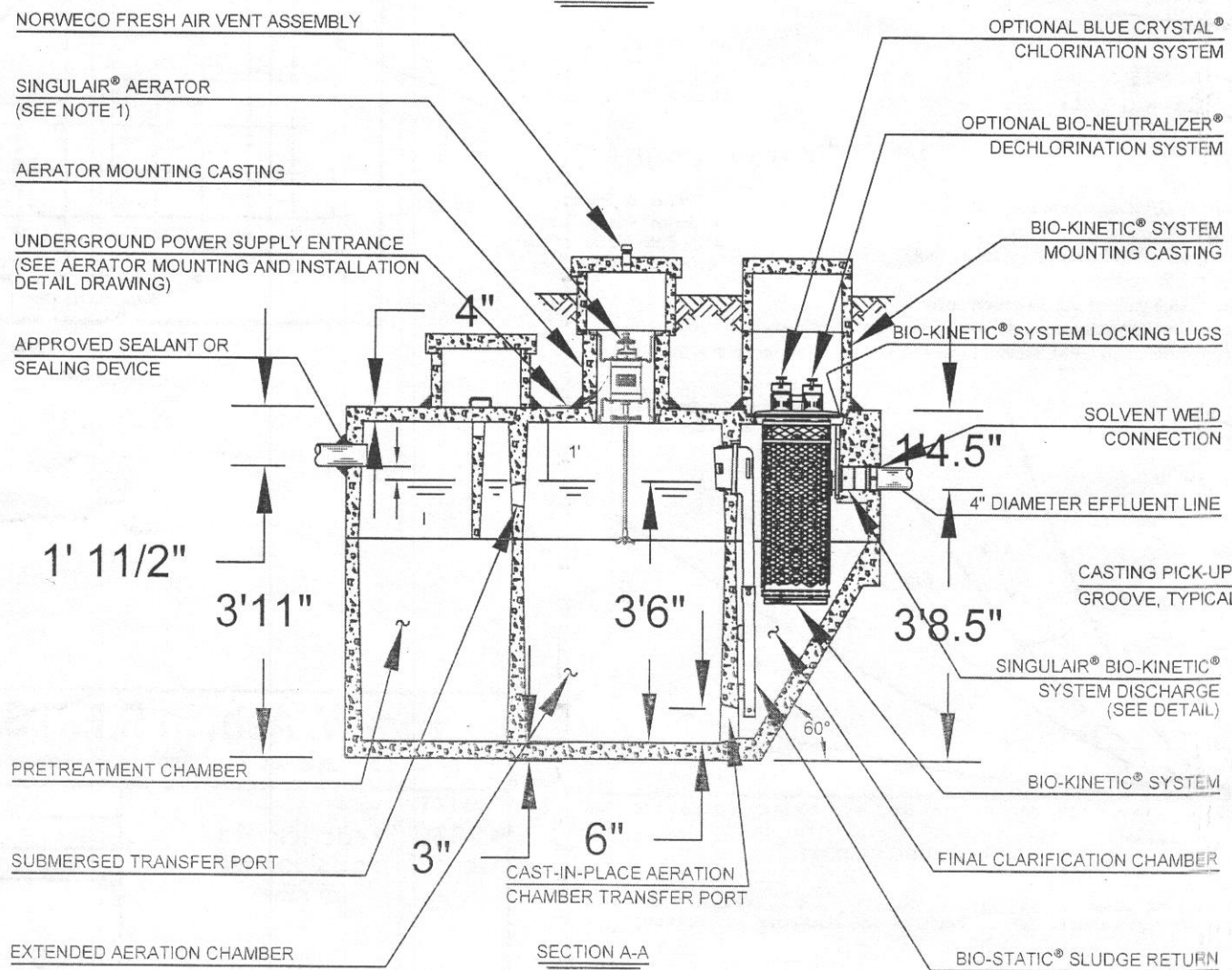
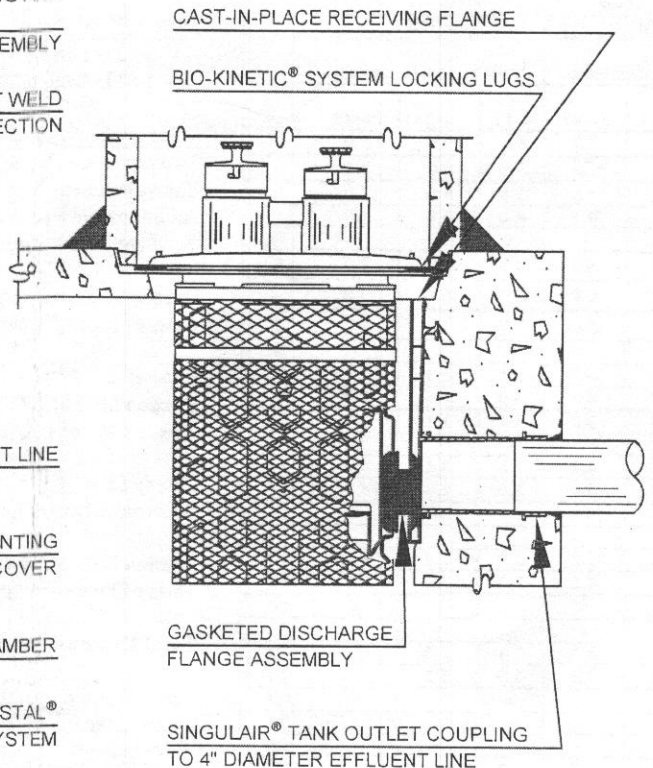
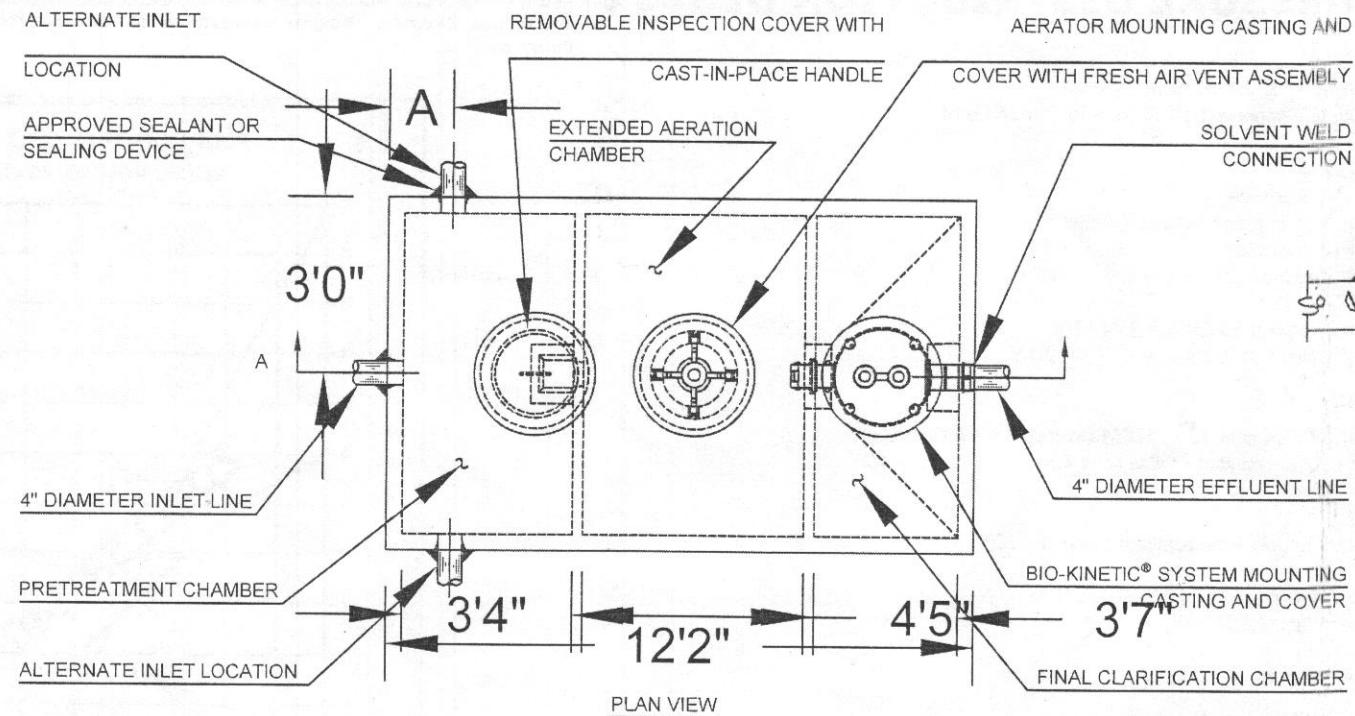
P.O. Box 220 Bluemont VA 20135 540-454-4672

PROJECT NAME :  
12930 Frederick Rd.  
West Friendship, MD  
21794

COUNTY : Howard  
Maryland

7/15/14  
REV 7/24/14

TITLE :  
System Design



NOTE: TOTAL SYSTEM CAPACITY: 1,300 GALLONS  
 RATED CAPACITY: 500 GALLONS PER DAY

<b>Tom W. Ashton R.E.H.S.</b>	
P.O. Box 220 Bluemont VA 20135 540-454-4672	
PROJECT NAME : Moore	7/15/14
12930 Frederick Rd.	
West Friendship, MD	
21794	
COUNTY : Howard	TITLE :
Maryland	NORWECO Details
DESIGNED BY: Tom W. Ashton R.E.H.S.	SHEET: 5 OF 9

## HOMEOWNER OPERATION and MAINTENANCE

The homeowner is the owner of the onsite system and is ultimately responsible for its proper use / operation and acceptable performance. It is recommended that the owner be familiar with this design package, and the components of the system. The owner is required to operate, monitor, and maintain the system as outlined below.

Remember, improper contact with sewage and electricity may be fatally hazardous.

All materials accompanying specific components such as the Treatment Unit, pump, and control panel are to be retained and kept with this package.

### System Overview / Sequence of Operation

Household sewage enters the Treatment Unit by way of a standard gravity sewer line. The treatment system is sized to treat the maximum daily flow (600 gallons per day). The dosing chamber contains a pump that is activated by floats within the pump chamber. The pump and floats have grade access by way of a riser. There are three floats, with the lowest float being the pump off float. When the effluent level rises to the second float, the pump will activate and evacuate the chamber, dosing the drainfield until the lower, "off" float terminates the cycle. A third, upper most float, located above the "on" float will sound in the event of pump, float switch, or control system failure. A minimum of 25 % of maximum daily emergency flow storage is provided above this float. If this alarm sounds call the installation contractor or a plumber.

In addition to the dose chamber floats and pumps, the pumping system includes a control panel. The panel provides for manual operation of the pump, and testing of the alarm. An audiovisual high water alarm is encompassed in the panel.

A pressurized pump delivery line deposits the effluent to low pressure distribution system (LPD) within an above ground gravel bed. The LPD system consists of pressure control valves followed by a supply manifold with the leach line distribution laterals branching to the graveled trenches. These dosing laterals are 1.25" in diameter with a specified size and number of holes. By design, when the pump activates the effluent is distributed equally throughout the length of all the trenches.

### General Use Guidelines

The drainfield system is a biological treatment system that utilizes natural process to renovate and recycle wastewater into the environment. When properly used and maintained the system will give many years of service with little or no impact on the public health and environment. Further, more efficient aerobic (with oxygen) treatment takes place within the drainfield at the soil interface and the unsaturated zone below.

As a biological treatment system, care should be taken with what is disposed into the system. Inorganic material such as feminine hygiene material, disposable diapers, plastics, synthetic rubber products, contraceptives, cigarettes, cat litter, and medications are not to be disposed into the system. Other materials that have a resistance to ready biologic treatment such as laundry lint, hair (cat feces), coffee grounds, and grease should be limited and should only enter the system incidentally. Common household chemicals such as drain cleaner, disinfectants, and bleach should not effect the system when used in the quantities and frequencies recommended by the manufacturer. Under no circumstances are paints, solvents, pesticides / herbicides, petroleum products, kitty litter, and other similar materials to enter the system.

The system may become hydraulically overloaded and fail if abused through overuse, excessive peak use (laundry day), plumbing fixture leakage, or surface water is alstem will give many years of service with little or no impact on the public health and plowed to enter the system. Footer drains, sump pump discharges, water treatment backwash, air conditioner condensation discharges, swimming pools, and other non sewage flows are not to be disposed into the system. Surface, drive, and roof water should be directed away from the drainfield, and the finished grade should promote good surface drainage without ponding of water near the drainfield.

The drainfield area should receive only the most passive use. There should be no activity during wet periods. The area is not to be used for parking, material storage, intense recreation or any other activity that may cause compaction or erosion. Compaction will limit the oxygen exchange with the surface, compromising the treatment capacity of the drainlines, and may cause premature clogging of the soil.

The drainfield area should be maintained in an aggressive turf cover, cut to a moderate to long length. Do not plant maple, weeping willow, sycamore, cottonwood, locust, mimosa, bamboo or other hydrophilic trees and shrubs on or within 50' of drainfield. These and other known hydrophilic plants may enter and clog the systems. Do not mulch over system.

### Required Operational Monitoring and Maintenance

Following are the minimum monitoring and maintenance procedures and frequencies. A log of activity should be maintained. Refer to manufacture's recommendations for additional information on specific components. Note sewage and electricity may be fatally hazardous. Contact installation contractor, plumber, pumper, or electrician for specialized maintenance or repair.

#### Every 6 months

\*\* Inspect pump chamber access risers interiors for signs of surface water infiltration.

\*\* Visually inspect pump chamber for loose or tangled floats, solids etc.

\*\* At pump control panel manually test the alarm and manual pump override.

\*\* Inspect condition of valve box and distal end pipe housings.

\*\* Walkover drainfield area and inspect for ponding and moist areas. If noted, cause could be from hydraulic overload (plumbing leaks, overuse, infiltration), or broken or clogged pipe. System flushing frequency may be indicated.

#### Every Year

\*\* Inspect the sludge level in the pump chamber. This may be performed with the use of a "sludge judge" or by a licensed septic tank pumper.

### Lateral Flushing

The distal end of the distribution laterals have grade access for periodic testing and flushing. The frequency of lateral flushing will typically depend primarily upon the use of the system. Yearly flushing should be assumed. Pump run times to evacuate the chamber vary with each design. Contact the Health Department, septic tank pumper, contractor, or other service provider for acceptable flushing procedures.

## OPERATION, MAINTENANCE AND PERFORMANCE MONITORING

### Owner is Responsible

The property owner is responsible for the operation and maintenance of the system. The county, department or service provider may make periodic inspections of the system components, checking for surface discharge, and ponded effluent levels in the observation pipes, etc. The owner or owner's agent is required to submit necessary maintenance reports to the governmental unit or designated agent.

### Routine and preventative maintenance aspects

1. Treatment and dose tanks along with related mechanical components are to be inspected routinely and maintained when necessary in accordance with the management plan.

2. Inspections of the at-grade component are required at least once every three years. These inspections include checking the liquid levels in the observation pipes and examination for any seepage around the component.

3. Traffic, except for lawn maintenance, on the at-grade component is not permitted to avoid frost penetration in winter and to minimize compaction during other times.

stem will give many years of service with little or no impact on the public health and p4. A good water conservation plan within the house or establishment will help assure that the at-grade component will not be overloaded.

**NOTE:**  
Sytem design is best attempt to correct an existing sewage disposal system malfunction. Evaluator / Designer assume no liability as to the future performane of the system.

## Tom W. Ashton R.E.H.S

P.O. Box 220 Bluemont VA 20135 540-454-4672

PROJECT NAME :	7/15/14
12930 Frederick Rd. West Friendship, MD 21794	TITLE :
COUNTY : Howard Maryland	General Operation

DESIGNED BY: Tom W. Ashton R.E.H.S

SHEET: 8 of 9

**SPECIFICATIONS**

**ITEM 1: Building Sewer**

**Materials**

The building sewer is to be constructed with 4" Schedule 40 PVC pipe. The fall is to be greater than 1.25" in 10'. The minimum depth is 18". To be constructed in accordance with manufactures specifications regarding preparation (sanding and primer) and gluing (chemical fusion) requirements. Joining of pipes of different sizes and or material shall be accomplished by the use of a manufactured adapter specifically designed for that purpose. Maintain the run as straight as possible. Ells (if absolutely necessary) are not to exceed 45 degrees.

**Cleanouts**

A cleanout is to be recommended to installed a minimum of 5' from the structure with additional cleanouts every 50' as necessary. The cleanouts are to be installed in the direction of the sewage flow.

**Bedding and support**

The entire length of the sewer line (as well as the conveyance and forced main) is to be bedded uniformly on natural, in place soil or on suitable material (gravel, sand, rock dust) packed over in place soil to provide uniform support along the length. Where the line crosses filled areas, the line is to be properly, firmly place on solid, natural ground for 2 feet at either end. Where the sewer line crosses the angular open space around the septic tank hole, the space is to be properly supported.

**Backfilling**

The trench is to be backfilled with suitable material free of large stones and clumps of earth. The fill is to be firmly tamped during the backfilling process to prevent movement of the sewer.

**ITEM 2: Pretreatment Systems**

**Treatment Tank**

All tanks to be installed as shallow as possible, out of low areas, isolated from surface drainage sources including drive, road, and gutters, and by methods to minimize and preferably eliminate water infiltration. "Top Seam" tanks are required.

**Placement**

The tank is to be installed level onto a minimum of 6" of sand or fine gravel. The top of the tank is to be as close to the ground surface as possible to prevent infiltration. No more than 6-8" cover is advised.

**Backfilling**

Backfilling is to be performed in layers with sufficient tamping to avoid settling. Backfill material is to be free of large stones and debris.

**ITEM 3 Conveyance to Pump Chamber.**

The conveyance system from the treatment tank is to be constructed of 4" Schedule 40 PVC pipe. The line is to be constructed, bedded, supported (as necessary), and back filled as outlined under Item 1, Building Sewer above.

**ITEM 4: Pump Station**

**Pump chamber** (Refer to Attachment)

A minimum 1000 gallon pump chamber (top seam) is required. The pump chamber is to be placed and backfilled as outlined in Item 2 above. The pump chamber will have an access manhole terminating above the ground surface. A minimum width dimension of 24" with a shoe box cover is required. The crock is to be adequately sealed with waterstop to eliminate any surface water infiltration. Sweep and fill all tanks with water to prevent floatation.

**Pump**

**PLACE PUMP ON 4" BLOCK**

The site conditions and LPD design require a open face centrifugal pump rated for sewage effluent that will deliver 36 gallons per minute against 27.5 feet of head. This represents a vertical (elevation) separation of 10 feet from the off float to the distribution lateral. The "run" would be approximately 250 feet of 2 inch pipe. ~~The pump is to be set on the bottom of the tank.~~ The recommended pump is a Zoeller 140 or equivalent. See Attachment.

**Piping, Fittings** (Refer to Attachment)

The pump chamber force main is to be constructed of 2" pressure rated Schedule 40 PVC pipe. All joints and fittings are to be of the pressure type (PW) and assembled in accordance with manufacturers specifications. From the pump a one eighth inch hole is drilled 2" above the low water level (lowest float switch) followed by a quick disconnect coupling. A cam lock, union, or other suitable coupling is required. A Schedule 80 union is preferred. Assemble as detailed to provide for removal of pump without dewatering wet well. A brass check valve is installed in a vertical position followed by a gate shut off valve. Where the forced main leaves the chamber seal with water stop.

**ITEM 5: Pump Controls**

All electrical work is to be performed by an electrician in accordance with manufacturers specifications. Float switches are to be utilized for the pump off (low water), pump on, override (if applicable) and high water alarm controls. Place the floats so they are not affected by flow entering the pump chamber. The wiring junction box located on the outside of the pump station is to carry a NEMA 3R rating. All below ground wiring is to run to the house through conduit. Carefully pull standard wire, no UF wire in conduit.

The control panel must contain a audiovisual high water alarm indicators. A Control and Alarm Panel produced by American Manufacturing is required. It is very important that the control box be matched for the make and model of pump.

**ITEM 6: Force Main**

A 2" force main is required. The main is to be constructed with pressure rated materials and fittings (PW) in accordance with manufacturers specifications. The main is to be constructed, bedded, supported, and back filled as stated in Item 1 above. The minimum depth is to be below frost line, typically 24-30". Where the main leaves the pump chamber it is to be secured and bridged as stated in Item 1 above. Where the forced main turns at 45 degrees or greater, a thrust block is to be constructed. The joint is to be encased in concrete for one foot either side of the turn.

**ITEM 7: Distribution System**

The distribution system is to be constructed of pressure rated Schedule 40 PVC pipe and fittings (PW).

**Pressure percolation lines** The absorption system consists of one lateral flowing from the center. The lateral is to be 1.25" in diameter. The lateral are to be installed flat in the horizontal center of the trench and maintain a straight alignment on contour. All laterals are to be fitted with a vertical riser and threaded cap extending to the ground surface. The 90 degree turn is to be accomplished by the use of two 45 degree fittings enabling ease of use as a cleanout. House in a minimum 6" meter housing with snap lid at surface. The lateral turnup is to be bedded within the housing with gravel, extending 2 inches above the gravel surface. The hole size is .25". The lateral is to be placed in a straight line along the longitudinal axis of the pipe with the holes facing vertically down. **Note that the first, and last holes are to be pointed vertically up (four total).** These holes will act as a vent allowing the laterals to charge quickly and drain freely when the pump turns off. The number and spacing of the holes, and distance to the first hole for each lateral are specified. Holes to be drilled burr free, straight with a sharp bit. Orifice shields to be installed on all holes.

**Gravel** The gravel is to be uniform, clean (washed), and recommended to be between .5 to .2" in size. The minimum amount of gravel under a lateral is 6". The lateral has a minimum of 2" gravel cover.

**Lateral ends** All lateral ends are to be fitted with a threaded end cap and brought to the surface as described above.

**Inspection risers** A vertical riser is to be provided at the end of the lateral to set the pressure head at startup and to verify during operational inspection. With the system pressurized, the valve will be adjusted until the water level is at the specified head elevation (pressure). Once adjusted and prior to back filling, the risers are to be removed and the lateral fitted with a threaded cap to the ground surface, housed as described above.

**Cover and backfilling** The entire distribution system is to be backfilled and graded to provide a **minimum of 12" cover over the gravel laterals.** All backfill material is to be free of large stones and debris. Final grade to be slightly mounded (turtle back) to divert surface runoff off and away from the site. Establish a lawn cover as soon as possible.

NOTE:  
System design is best attempt to correct an existing sewage disposal system malfunction. Evaluator / Designer assume no liability as to the future performane of the system.

LATERAL  
.25" DIA. HOLES AT 36" O.C.  
Distance to first / last hole 18"  
30 Total HOLES per Lateral  
2.5' Head

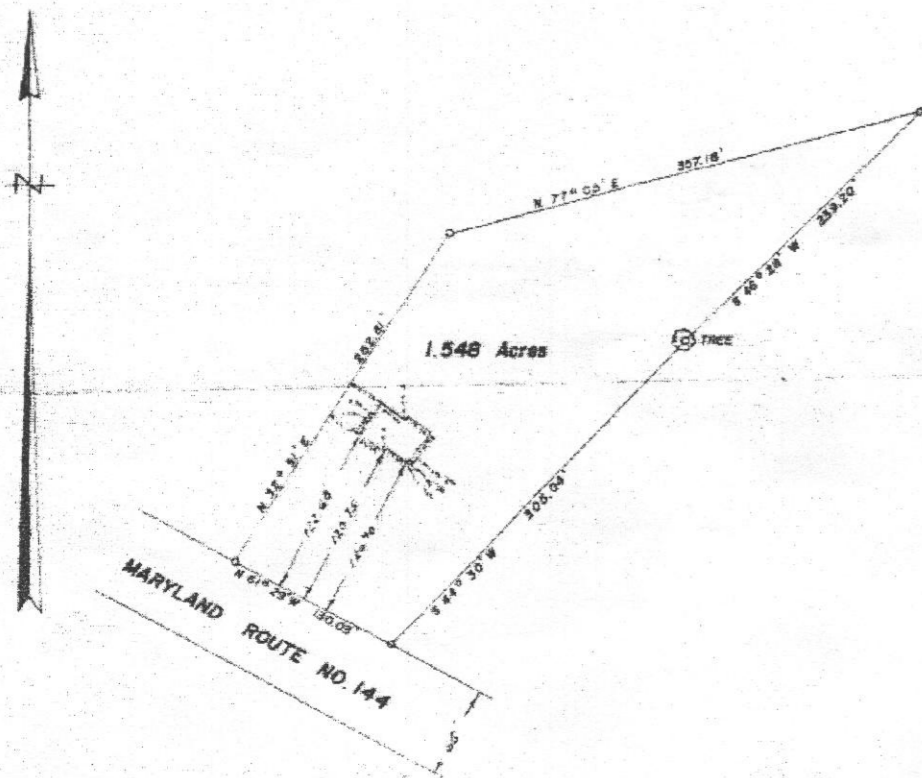
**Tom W. Ashton R.E.H.S**

P.O. Box 220 Bluemont VA 20135 540-454-4672

PROJECT NAME :	7/15/14
12930 Frederick Rd. West Friendship, MD 21794	REV 7/24/14
COUNTY : Howard Maryland	TITLE :  General Notes

DESIGNED BY: Tom W. Ashton R.E.H.S

SHEET: 7 OF 9



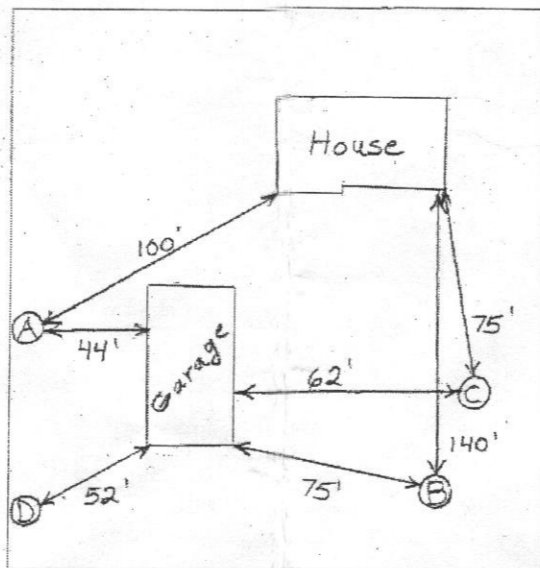
LOCATION SURVEY  
FOR  
JOHN T. RIDGELY  
THIRD ELECTION DISTRICT OF HOWARD COUNTY  
WEST FRIENDSHIP, MARYLAND  
SCALE: 1 IN. = 100 FT. AUGUST 13, 1962

ENGINEERS CERTIFICATE

I, hereby certify that the improvement shown hereon, has been located by a transit-tape survey and there are no encroachments

*Claude M. Skinner Jr.*  
Claude M. Skinner Jr. Reg. Engineer & Land Surveyor No. 2237

- AP 546397
- 1.5'-2' (A) Topsoil
  - Red Br Sa Cl Loam
  - 3' Hard Bottom
  - 9" (B) Topsoil Br Loam
  - Moderately Dense Sa Cl Loam
  - 18" Dense Red Sa Cl Loam
  - 4' Moderately Dense Sa Cl Loam
  - 9' >50% Rock Hard Bottom
  - 10' (C) Br Loam
  - Dense Sa Cl Loam
  - 3' Dense Sa Cl Loam - Sa Loam Mixture
  - 4'-7' >50% Rock
  - 8.5' Hard Bottom

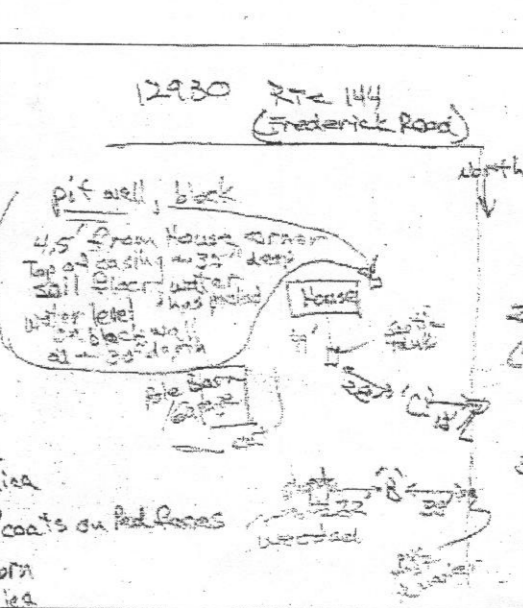


DATE	TEST #	DEPTH	START	BREAK 1" DRCP	STOP 2" DRCP	TIME OF 2ND INCH	PIPH
6/19/64	A	3'	Visual	Hard Bottom			H
	B	63"/10"	11:03	1:22	Pulled Almost to Second Pit		F
		8"					
		17"					
		19"					
	C	10"/85"					

REMARKS  
SANITARIAN B. Baker BACKHOE Egles OTHERS \_\_\_\_\_  
TEST HOLES USED IN SGA \_\_\_\_\_ AVG. PERC TIME \_\_\_\_\_ SQ. FT/HR \_\_\_\_\_  
TRENCH WIDTH \_\_\_\_\_ INLET DEPTH \_\_\_\_\_ MAX. BOT DEPTH \_\_\_\_\_ EFFECTIVE SAW \_\_\_\_\_

- (D) Br Sa Cl Loam - Loam 12-16'
- Moderately Dense to Dense Sa Cl Loam 2'-3'
- Saprolite and ~30% Rock Hard Bottom 5.5'

- (8) dk brn L. 2 ft x 2 ft block some mica slightly sticky
- brn L. 1 ft x 1 ft ss, mica
- vel-red L. ymsbk few mica
- vel-red L.
- imp. -> 3msbk common mica
- ss, clay skins, com. black coats on ped faces
- vel-red & pale brn ss, mica
- imp. -> 2msbk
- 66" channels appear to increase (concentric near platy structure)
- 75" vcher 1/1s grey & pale brn black coats on rock
- 10'



DATE	TEST #	DEPTH	START	BREAK 1" DRCP	STOP 2" DRCP	TIME OF 2ND INCH	PIPH
	B	5'-22"				max. 0.3 gpd/ft	
	C	5'-31"				max. 0.3 gpd/ft	

REMARKS  
SANITARIAN B. Baker BACKHOE Egles OTHERS Brian Baker  
TEST HOLES USED IN SGA \_\_\_\_\_ AVG. PERC TIME \_\_\_\_\_ SQ. FT/HR \_\_\_\_\_  
TRENCH WIDTH \_\_\_\_\_ INLET DEPTH \_\_\_\_\_ MAX. BOT DEPTH \_\_\_\_\_ EFFECTIVE SAW \_\_\_\_\_

- (C) dk brn L. 2 ft x 2 ft block some mica
- brn L. 2 ft x 2 ft block some mica
- brn L. 2 ft x 2 ft block some mica
- ss
- vel-red L. (some ss)
- imp. -> 3msbk common mica
- 11" ss
- vel-red & pale brn
- ss, mica
- imp. -> 2msbk
- 66" channels appear to increase (concentric near platy structure)
- 75" vcher 1/1s grey & pale brn black coats on rock
- 10'

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PROJECT NAME : \_\_\_\_\_ 7/15/14

12930 Frederick Rd. West Friendship, MD 21794

COUNTY : Howard Maryland

TITLE : Additional Information