

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

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

RECEIPT DATE: 7-17-19 **ONSITE SEWAGE DISPOSAL SYSTEM** P 565556

APPROVAL DATE: 11/14/19 ST **PERMIT: CONSTRUCTION** A _____

PROPERTY ADDRESS: 2141 MILLERS MILL ROAD, COOKSVILLE, MD 21723

SUBDIVISION: PRINCETON MILL LOT: 3 TAX ID: 04-596593

CONTRACTOR: FREEDOM SEPTIC EMAIL: _____

CONTRACTOR ADDRESS: _____ PHONE: _____

CONTRACTOR CERTIFIED FOR BAT INSTALLATION: MDE MANUFACTURER:

PROPERTY OWNER: RAINMAKER DEVELOPMENT, INC EMAIL: sarterburn@therainmakergroup.co

OWNER ADDRESS: 6755 BUSINESS PARKWAY, SUITE 103, ELK RIDGE, MD 21075 PHONE: (410)379-5956

BAT UNIT MODEL: NORWECO TNTLP 750 PUMP SIZE: 0.5 PUMP TANK CAPACITY: 2000

OPERATION & MAINTENANCE AGREEMENT DATE SIGNED: _____ DATE RECORDED: _____

DISTRIBUTION SYSTEM: GRAVITY PRESSURE DOSED BEDROOMS: 6 APPLICATION RATE: 1.2

TRENCHES:	LINEAR FEET REQUIRED: <u>158</u>	INLET DEPTH: <u>2.0</u>
	TRENCH WIDTH: <u>3</u>	MAXIMUM BOTTOM DEPTH: <u>8.0</u>
	MINIMUM SPACE BETWEEN TRENCHES: <u>10</u>	EFFECTIVE AREA BEGINNING DEPTH: <u>5.0</u>

LOCATION: **PER APPROVED SITE PLAN. SEWAGE DISPOSAL AREA AND BAT UNIT LOCATION MUST BE STAKED BY LICENSED SURVEYOR PRIOR TO PRE-CONSTRUCTION INSPECTION.**

NOTES: ZOELLER BN163 (0.5 hp) PUMP, or performance equivalent

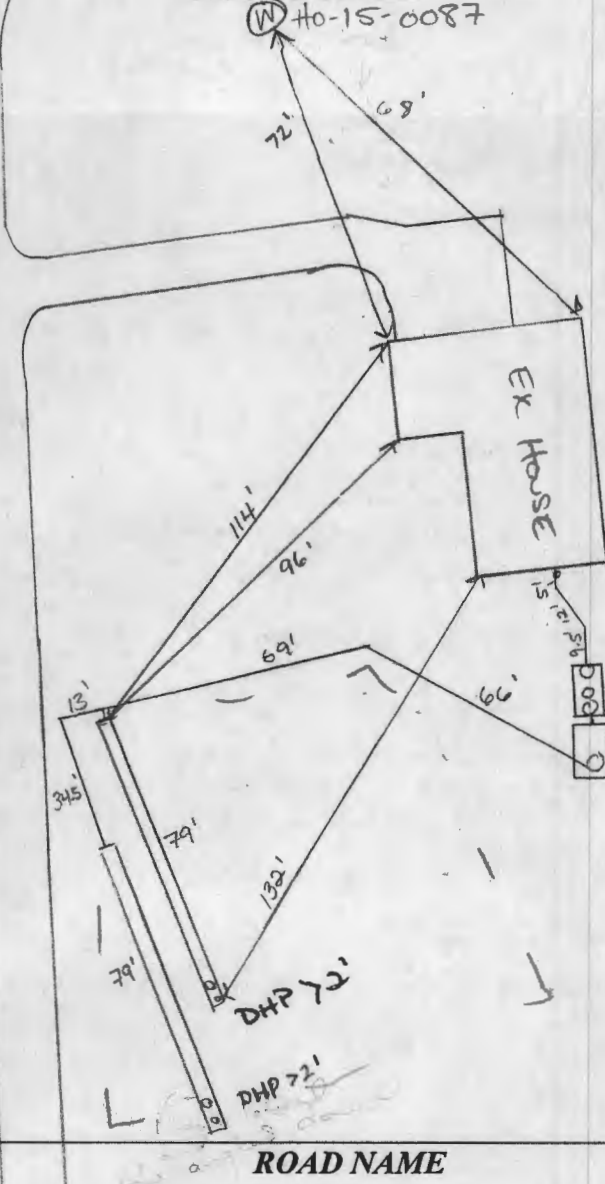
ISSUED BY: R BRICKER ISSUE DATE: 7-17-19 EXPIRATION DATE: 7-17-20

- 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
 ELECTRICAL PERMIT ISSUED E 19003227
- NOTE: AN INDIVIDUAL CERTIFIED BY MDE AND THE MANUFACTURER FOR BAT INSTALLATION MUST BE PRESENT AT ALL TIMES DURING BAT INSTALLATION.
- NOTE: MDE RECOMMENDS SEPTIC TANKS, BAT, AND OTHER PRETREATMENT UNITS BE PUMPED AT A FREQUENCY ADEQUATE TO ENSURE THAT SOLIDS ARE NOT DISCHARGED TO THE DISPOSAL AREA

**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

W #0-15-0087



ROAD NAME

TRENCH/DRAINFIELD DATA

WIDTH	INLET	BOTTOM
3'	2'	8'

NUMBER OF TRENCHES 2

TOTAL LENGTH 158 F

ABSORPTION AREA 468 SF + SIDE WALK

DISTRIBUTION BOX LEVEL ---

DISTRIBUTION BOX BAFFLE ---

DISTRIBUTION BOX PORT ---

L.P.D.

SEPTIC TANK DATA

SEPTIC TANK 1 LEVEL YES

MANUFACTURER BACKRIVER

CAPACITY INTL P 750 GAL

SEAM LOC TOP

TANK LID DEPTH 4 1/2 - 3 (u)

BAFFLES YES BAT

BAFFLE FILTER MID

MANHOLE LOC FRONT/MID/BAC

6" PORT LOC ---

WATERTIGHT TEST ---

SLOTTED ---

DATE ON LID 06/27/2019

NORWECO

PUMP/SEPTIC TANK LEVEL YES

MANUFACTURER BABYLON

CAPACITY 2000 GAL

SEAM LOC TOP

TANK LID DEPTH 4 1/2 - 2 (u)

BAFFLES ---

BAFFLE FILTER ---

MANHOLE LOC F BACK

6" PORT LOC ---

WATERTIGHT TEST ---

SLOTTED ---

DATE ON LID 07/15/19

PRE CONSTRUCTION:

08/02/2019 TANK AND SDA STAKED. TANK ok TO SHIFT DOWN HILL TO AVOID TREE. TRENCHES NOT STAKED. REINSPECTION TRENCH LAYOUT. OPEN TRENCH FOR LATERAL OR

* 08/16/2019 CONFIRM CONTOUR AND DESIGN OF TRENCHES. OK TO START. (P)

INSTALLATION: 08/16/2019 SHC SEWER LINE AND SEPTIC TANK SET. (PM) PUMP TANK SET. * (P) 8/19/2019 FORCE MAIN INSTALLED LOWER TRENCH IN CONSTRUCTION. CONTRACTOR OPTED NOT TO HAVE OPEN INSP FOR LATERAL OR AFACE. OK TO ASSUME RISK UNTIL PUMP TEST. (PM) LOWER TRENCH COMPLETE COVER OBS PERFORATIONS ABOVE AGGREGATE. (P) 08/20/2019

UPPER TRENCH COMPLETE. TRENCH DESIGN WAS APPROVED. W/O HALF HOLE SPACE BETWEEN LATERAL AND END OF TRENCH. REINSPECT P/A. (P) (PM) ELBOW PRIFICE CALLED OUT AND NOT TOWARD END OF TRENCH. (P) 11/14/19 P/A and BAT passed. Alarm in basement, separate

FINAL INSPECTOR Austin Thomas DATE OF APPROVAL 11/14/19

breakers. Distal head pressure >2'. (P)



BACK RIVER PRE-CAST, LLC
 PO BOX 329
 GLYNDON, MD 21071
 PH# 410-833-3394

NORWECO CERTIFICATION

PROPERTY OWNER: RAINMAKER DEVELOPMENT, LLC	INSTALLATION COMPANY: FREEDOM SEPTIC
ADDRESS: 2141 MILLERS MILL RD.	CERTIFIED INSTALLER: DAN FARROW
CITY, ZIPCODE & COUNTY: COOKSVILLE, 21723, HOWARD	PERMIT#
SIZE OF SYSTEM INSTALLED:	DATE INSTALLED: 08-16-2019
600 GPD CONCRETE	START-UP DATE: 12-13-2019
NUMBER OF BEDROOMS:	DATE OF FINAL INSPECTION:
TYPE OF INSTALLATION: NEW	DATE OF ELECTRICAL INSPECTION:
ELECTRICAL WIRING PER ELECTRICAL INSTRUCTIONS: YES	TANK LEVEL: YES
HT. OF CONTROL PANEL ABOVE FINAL GRADE: 44"	BURIAL DEPTH OF TANK: 36"
SYSTEM WIRED ON A 15-AMP DEDICATED CIRCUIT WITH STD. BREAKER: YES	RISERS 4" - 6" ABOVE GRADE: NO
LENGTH(S) OF UF WIRE PAST LAST AERATION RTISER(S): 12"	VENTED LID(S) ON AERATION CHAMBER(S): YES
FEMALE PLUG(S) WIRED TO UF WIRE: YES	ANY GROUND SETTLING AROUND TANK: NO
CONDUIT(S) ENTERING AERATION RISER MADE WITH A WATERTIGHT CONNECTION: YES	
ISTHE INSIDE OF THE CONDUIT ENTERING THE CONTROL PANEL(S) AND AERATION RISER(S) SEALED WITH DUCT SEAL: YES	

ON 2ND PAGE MAKE A ROUGH SKETCH OF THE HOUSE ,WHERE THE SYSTEM IS LOCATED, WHERE THE CONTROL PANEL IS LOCATED , WHERE THE FRONT OF THE IS AND DIRECTIONS TO THE PROPERTY.

DIRECTIONS CAN START A FEW STREETS AWAY

EXAMPLE: RT. X LEFT ONTO XX STREET RIGHT ONTO PRIVATE DRIVEWAY 5TH HOUSE OF THE LEFT.

I certify that the Norweco Singulair TNT Wastewater Treatment System was installed according to the manufacture's specifications.

Matthew Geckle

December 13, 2019

Signature of BRP Representative

Vice-President

Date

2141 Minerva Mill ~~AD~~

Clerk of the Circuit Court for
Howard County
Land Records/Licensing

6095 Marshalee Drive
Suite 120
Elkridge, MD 21075
410-313-5850

LR - Agreement Recording Fee
1x 20.00 20.00

Name: Rainmaker Devel
Ref: 45

LR - Agreement Surcharge
1x 40.00 40.00

SubTotal: 60.00
Total: 60.00

REV-Check-BOA 60.00
Number : 2515

12/12/2019 11:54 CC17-DH
#13117009/396/109
Thank you for visiting us today!

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 12TH day of DECEMBER 2019, among RAINMAKER DEVELOPMENT, LLC, 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 2141 MILERS MILK RD, COOKSVILLE, MD, in the 4TH Election District of Howard County, Maryland, and the deed and subdivision plat of the property is recorded among the Land Records of Howard County, Maryland, Tax Map # 1A, Block # 11A, Parcel # 3, Deed Reference # 14511/00162 and Tax Account # 04-596593 ("the Property").

WHEREAS, The Property 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 November 24, 2016. The pre-treatment device being installed is NORWECO TINTLP-750.

NOW, THEREFORE, the parties hereto agree as follows:

- A. Owner hereby grants to the County the right to enter upon the Property at any reasonable time with prior notice 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.
- 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 Property 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 Property that the system shall require maintenance or other attention. Upon taking title to the Property, 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.

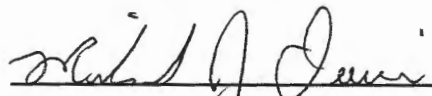
G. This agreement may be voided at any time at the discretion of the County.

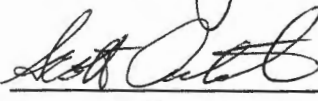
H. This agreement contains the entire agreement and understanding between the County and the Owner. There are no additional terms other than as contained in this agreement. This agreement may not be modified, except in writing signed by each of the parties or by their authorized representatives.

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 this agreement on the date indicated above.


Howard County Health Department

 12/12/19
Owner #1 Signature Date

SCOTT A. TERBURN
Owner #1 Print Name

Owner #2 Signature Date

Owner #2 Print Name

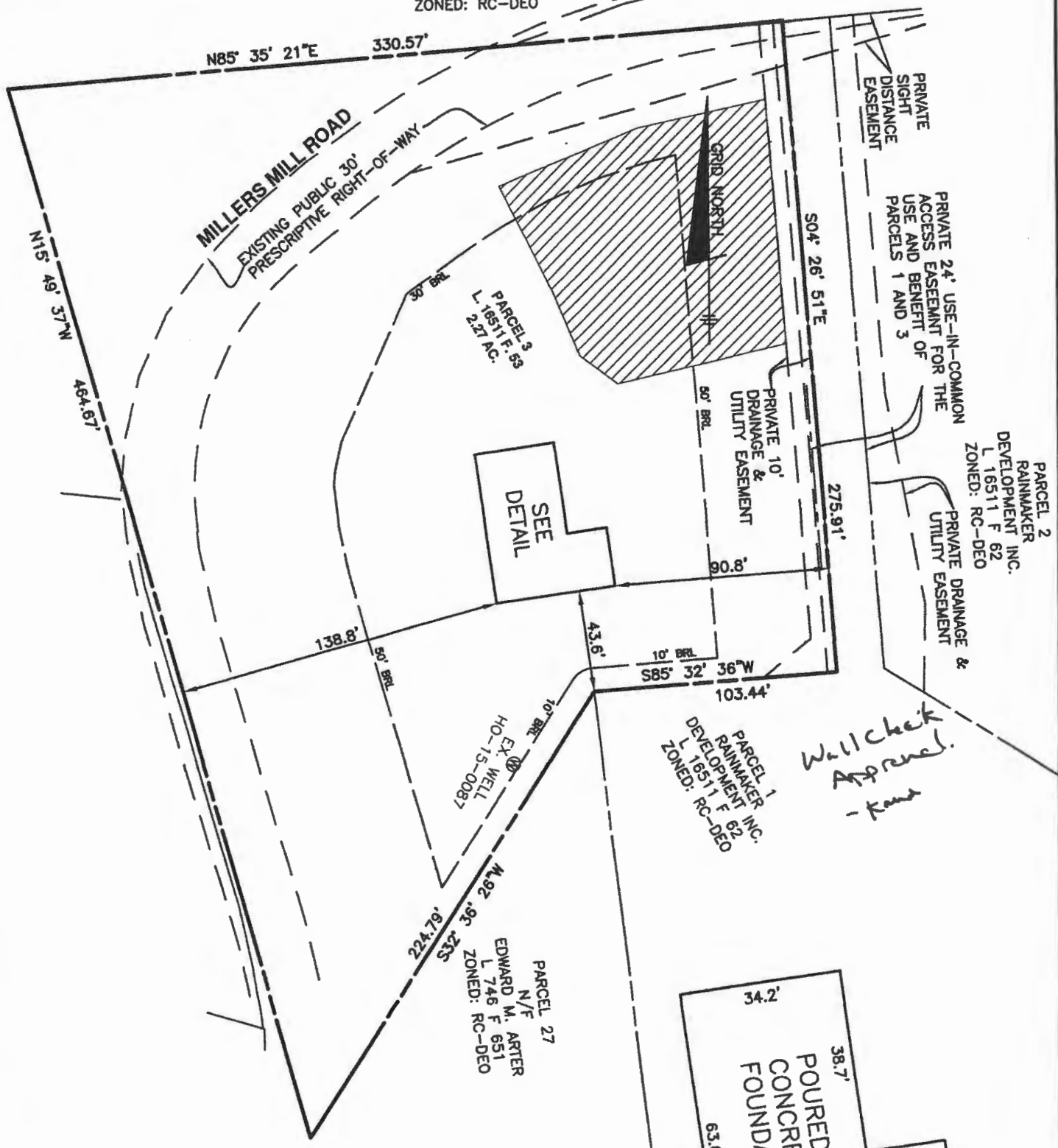
Buyer #1 Signature Date

Buyer #2 Signature Date

Buyer #1 Print Name

Buyer #2 Print Name

PARCEL 113
ANTONIO V. SMITH
L 4048 F 364
ZONED: RC-DEO



SURVEYOR'S CERTIFICATE

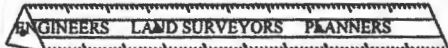
I HEREBY CERTIFY THAT THESE DOCUMENTS, WERE PREPARED BY ME OR UNDER MY RESPONSIBLE CHARGE, AND THAT I AM A DULY LICENSED PROFESSIONAL LAND SURVEYOR UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 21320, EXPIRATION DATE 1-7-2021 AND TO THE BEST OF MY PROFESSIONAL KNOWLEDGE, INFORMATION AND BELIEF, THAT THE DIMENSIONS OF THE BUILDING WALLS SHOWN HEREON ARE CORRECT; THAT THEY ARE BASED ON A FIELD RUN SURVEY PERFORMED BY BENCHMARK ENGINEERING, INC. ON 05/23/2019.

Donald A. Mason
DONALD A. MASON
PROFESSIONAL LAND SURVEYOR
MARYLAND REG. No. 21320



FEMA FIRM No. 24027C0045D
ZONE: X
DATED: 11/6/2013

BENCHMARK



ENGINEERING, INC.

8480 BALTIMORE NATIONAL PIKE SUITE 315
ELLICOTT CITY, MARYLAND 21043
(P) 410-485-8105 A (F) 410-485-8844

WWW.BEI-CMLENGINEERING.COM

TOP OF FOUNDATION WALL = 578.3'
OFFSET DIMENSIONS TO PROPERTY LINES ARE ± 0.1'

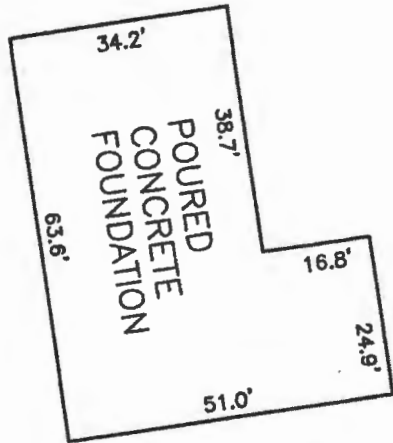
WALL CHECK

**MILLERS MILL ROAD
PARCEL 3
TAX MAP 14 GRID 4 PARCEL 76
LIBER 16511 FOLIO 62
2141 MILLERS MILL ROAD**

4TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
SCALE: 1" = 60' DATE: 05/29/2019

FIELD OBS. BY DH
COMP. BY EWF
DRAWN BY EWF

FOUNDATION DETAIL
SCALE: 1" = 30'





HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
3430 Courthouse Drive ■ Ellicott City, Maryland 21043 ■ 410-313-2350

Marsha S. McLaughlin, Director

www.howardcountymd.gov

FAX 410-313-3467

TDD 410-313-2323

March 12, 2009

Clarence and Alberta McCullough
2101 Millers Mill Road
Cooksville, Maryland 21723-9407

RE: 2101 Millers Mill Road; Three Lots
Tax Map 14, Grid 4, Parcel 76
(the "Property")

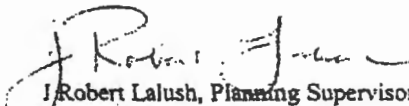
Dear Clarence and Alberta McCullough:

I am writing in response to your recent request regarding the Property referenced above. You asked whether the Property consists of three legal "buildable lots". You submitted several deeds as documentation for the creation of the Property. This Division has evaluated the materials you submitted, and we have concluded that the approximately eight acre Property was created well prior to the establishment of zoning or subdivision regulations in Howard County as originally referenced in three deeds recorded in 1883, 1900, and 1899, and more recently referenced with the recording of a deed in Liber 364 Folio 713 on February 27, 1961, and a deed in Liber 1869 Folio 189 on August 16, 1988. All the noted deeds clearly describe three lots making up the total eight acres; the first being approximately four acres, the second being approximately two acres, and the third also being approximately two acres. Based on this conclusion, we consider the Property to have three valid lots, each of which this Division will grant authorization on a building permit for a single-family detached dwelling, but only if the dwellings fully comply with the current bulk regulations for the RC District.

Section 16.155.(a)(2)(ii) of the Subdivision and Land Development Regulations states that lots in recorded subdivisions created before February 7, 1976 are exempt from site development plan requirements unless more than 5,000 square feet of disturbance is proposed and the lots have not been reconfigured or merged through the recordation of a plat recorded on or after February 7, 1976.

The three lots may still be subject to access or plan approval requirements before a building permit may be issued. The three lots are still subject to all Bureau of Environmental Health requirements concerning well and septic. A building permit application for a single-family detached dwelling on the Property will not be given zoning authorization unless a copy of this letter is submitted with the application. If you have additional questions, please contact me at 410-313-4344 or at blalush@howardcountymd.gov.

Sincerely,


J. Robert Lalush, Planning Supervisor
Division of Public Service
and Zoning Administration

GLB/JRL:jrl

cc: Annette Merson



HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

3430 Courthouse Drive

Ellicott City, Maryland 21043

410-313-2350

Voice/Relay

Valdis Lazdins, Director

FAX 410-313-3467

September 14, 2015

Scott Arterburn
6755 Business Parkway
Elkridge, MD 21075

RE: WP-16-015, Princeton Mill

Dear Mr. Arterburn:

The Director of the Department of Planning and Zoning considered your request for a waiver from the Howard County Subdivision and Land Development Regulations.

As of the date of this letter, the Planning Director **approved** your request to waive **Section 16.147, 16.1205(a)(7), 119(g), and 16.120(b)(4)(iii)**. **Section 16.147** states that the Final Subdivision Plan is the culmination of the subdivision process and shall include all information necessary to comply with the Subsections of Section 16.147. **Section 16.1205(a)(7)** requires that State champion trees, trees 75% of the diameter of state champion trees, and trees 30" in diameter or larger are considered priority for on-site retention and protection in the County. **Section 16.119(g)** states that Streets and highways shall provide the additional rights-of-way in accordance with the Design Manual or the requirements of the State Highway Administration

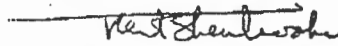
Approval is subject to the following conditions:

1. Approval of this waiver is for the reconfiguration of three adjoining deed parcels under the same ownership as described in Deed, Liber 1869 Folio 189, dated August 2, 1988 and described as the First, Second, and Third Parcels. No other parcels are being endorsed and no additional parcels are to be created. The reconfigured areas for Parcel 1 shall maintain a minimum of 3 Acres, Parcel 2 shall maintain a minimum of 2.02 Acres, and Parcel 3 shall maintain a minimum of 2.12 Acres Pursuant to Section 16.102(c)(3) of the Howard County Subdivision Regulations.
2. Parcels 1, 2, and 3 will be reconfigured by utilization of the adjoinder deed and merger process. The "Adjoinder Deeds" shall be recorded in the Land Records of Howard County, MD within 120 days of the date of this waiver approval (**on or before January 12, 2016**).
3. A recorded copy of the "Adjoinder Deed" shall be submitted to this Department for file retention purposes within 140 days of the date of this waiver approval (**on or before February 1, 2016**).
4. The Adjoinder Deeds shall reference this waiver petition file number, WP-16-015 and the DPZ approval Date. The addition of this reference helps anyone who may be reviewing the deed to readily determine that the adjoinder deeds were done with the acknowledgement of the Department of Planning and Zoning.
5. Simplified ECP plans shall be submitted to the Department of Planning and Zoning showing the corrected parcel layouts and proposed site features that were discussed in this waiver petition prior to building permit application.
6. Two (2) 2.5"-3" caliper, native shade trees as mitigation for the single 33" Black Oak removed on the property shall be placed along the western side of Parcel 3 between the proposed house and Millers Mill Road.

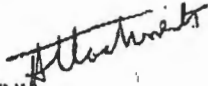
Indicate this waiver petition file number, request, section of the regulations, action, conditions of approval, and date on all related plats, and site development plans, and building permits. This requested waiver will remain valid for one year from the date of this letter or as long as the grading plans remain in active processing.

If you have any questions, please contact Nick Haines at (410) 313-4333 or email at nhaines@howardcountymd.gov.

Sincerely,

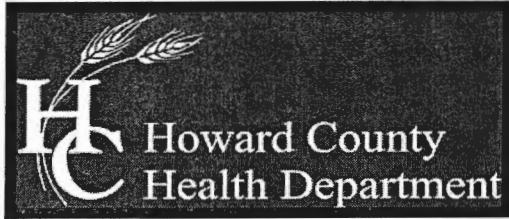


Kent Sheubrooks, Chief
Division of Land Development



KS/NH

cc: Research
DED
Real Estate Services
Benchmark Engineering



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

Facebook: www.facebook.com/hocohealth

Twitter: HowardCoHealthDep

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

SEWAGE DISPOSAL SYSTEM SPECIFICATIONS WORKSHEET

Address: 2101 Millers Mill

Subdivision: Lot: 3

Initial system: Application rate: 0.8 Effective area beginning depth: 5 Bottom maximum depth: 8
1st Replacement: Application rate: 0.8 Effective area beginning depth: 5 Bottom maximum depth: 8
2nd Replacement: Application rate: Effective area beginning depth: Bottom maximum depth:

Design Flow = 150 gallons per day per bedroom

Design flow ÷ application rate = square footage of drainfield required

Linear length of trench required = drainfield square footage x sidewall reduction percentage ÷ trench width

Sidewall reduction credit formula:

(W + 2) / (W + 1 + 2D) x 100 = Percent of length of standard trench where W=trench width and D= depth between effective area beginning depth and trench bottom.

Standard design requirements:

- All trenches must be equal length unless low pressure dosed
All trenches must be on contour
Minimum trench spacing: 10' for all trenches utilizing sidewall reduction credit. Additional spacing may be necessary for any trench using over 3.5' of effective sidewall. In those cases, the spacing formula is 2D + W up to a maximum spacing of 18'.
Minimum trench spacing for trenches with no sidewall credit (bottom area only) is 6' for a 2' wide trench and 9' for a 3' wide trench (spacing is measured edge to edge)
Maximum trench length is 100'
Maximum pipe depth is 4'

Additional requirements:

★ LPD system required

Approved: [Signature] Date: 3/4/16

DEPARTMENT OF PLANNING AND ZONING
DEVELOPMENT ENGINEERING DIVISION

RECEIVED
August 26, 2015

AUG 27 2015

Division of Land Development
Department of Planning & Zoning

TO: Kent Sheubrooks, Chief
Division of Land Development

FROM: Chad Edmondson, Chief *CE*
Development Engineering Division

Project Engineer: Nicole Ming Yan

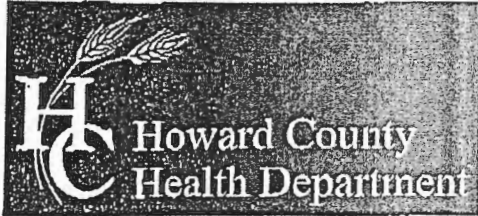
RE: DP&Z File #: WP-16-015

Princeton Mill

After review of the submitted information requesting waiver of the Subdivision and Land Development Regulations, Section 16.1205(a), which requires that state champion trees, trees 75% of the diameter of state champion trees, trees 30" or larger and specimen trees should be retained; Section 16.119 (g), which requires that streets and highways shall require a minimum right of way; Section 16.120(b)(4)(iii), which requires that residential lots shall be designed to be usable; and Section 16.147, which requires submission and approval of Final Plan and Final Plat for transfer and conveyance of portion of a property to be merged with the adjoining property, this Division recommends these requests be **APPROVED** subject to:

1. Resubmit the Sight Distance Plan with plan view in correct scale. Also, match the slope in computation with that on the profile.
2. Record the Public Sight Distance & Utility Easement plat in 8.5"x11" letter size exhibit through Real Estate Division using 504 Format;
3. On Building Permit of Parcel 1, show the floodplain on site plan per DFIRM.

H:\Nicole Yan\COMMENTS\WAIVERS\WP-16-15



Bureau of Environmental Health

8930 Stanford Boulevard, Columbia, MD 21045

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TDD 410-313-2923 | Toll Free 1-866-313-6300

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Facebook: www.facebook.com/hocohealth

Twitter: [HowardCoHealthDep](https://twitter.com/HowardCoHealthDep)

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

MEMORANDUM

TO: Kent Sheubrooks, Chief
Division of Land Development

FROM: Jeff Williams *JW*
Program Supervisor, Well & Septic Program
Bureau of Environmental Health

DATE: August 18, 2015

RE: WP-16-015

The Health Department has reviewed the above referenced waiver petition and has no objection provided that the new parcel lines match those of the most recently approved perc certification plan. Also, please note that the sewage disposal area on parcel 3 is not approved for use until the Health Department has approved the well construction at the neighboring property at 2210 Miller Mill Road.

HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
Division of Land Development

DATE: August 4, 2015

DPZ File No. WP-16-015

Department of Planning and Zoning

- 1 Transportation Planning
- 1 Resource Conservation (Historic/Ag Pres)
- Public Service and Zoning Administration
- 1 Research
- Address Coordinator

- 1 Comprehensive & Community Planning
- 2 Development Engineering Division
- Other
- 2 File

Agencies

- Soil Conservation District
- 1 Department of Inspections, Licenses & Permits
- 1 Department of Fire and Rescue Services
- 1 State Highway Administration
- 1 Health Department
- 1 Public School System
- 1 Recreation and Parks
- WSSC (Non-Residential Only)
- MD Aviation Administration

- Tax Assessment
- Verizon
- BGE
- Cable TV
- Police
- MTA
- Finance
- 1 DPW, Real Estate Services
- DPW, Construction and Inspection
- DPW, Bureau of Utilities

RE: Princeton Mill

ENCLOSED FOR YOUR Signature Approval Review & Comments Files

THE ENCLOSED Original Pre-Packaged Plan Set

<u>Plans</u>	<u># of Plans</u>
<input type="checkbox"/> Sketch Plan	<input type="checkbox"/>
<input type="checkbox"/> Prel Equiv Sketch Plan	<input type="checkbox"/>
<input type="checkbox"/> Preliminary Plan	<input type="checkbox"/>
<input type="checkbox"/> Final Plat/Plat of Easement/RE Plat	<input type="checkbox"/>
<input type="checkbox"/> Final Constr Plans (RDS)	<input type="checkbox"/>
<input type="checkbox"/> Final Development Plan	<input type="checkbox"/>
<input type="checkbox"/> Site Development Plan	<input type="checkbox"/>
<input type="checkbox"/> Landscape Plan/Supplemental Plan	<input type="checkbox"/>
<input type="checkbox"/> Grading Plan	<input type="checkbox"/>
<input type="checkbox"/> House Type Revision/Walk-Thru Red-Line	<input type="checkbox"/>
<input type="checkbox"/> Water and Sewer Plan	<input type="checkbox"/>

<u>Supplemental Documents</u>
<input type="checkbox"/> Wetlands Report
<input type="checkbox"/> Soils/Topo Map/Drain Area Map
<input type="checkbox"/> FSD/FCP/Worksheet and Application
<input type="checkbox"/> Declaration of Intent (Forest Cons)
<input type="checkbox"/> Drainage and/or Computation/Pond Safety Comps
<input type="checkbox"/> Preliminary Road Profiles
<input type="checkbox"/> APFO Roads Test/Mitigation Plan/Traffic Study
<input type="checkbox"/> Noise Study
<input type="checkbox"/> Sight Distance Analysis/Speed Flow Study
<input type="checkbox"/> Floodplain Study
<input type="checkbox"/> Stormwater Management Comps/Geo-Tech Report
<input type="checkbox"/> Industrial Waste Survey (DPW)
<input type="checkbox"/> Road Poster Form Letter
<input checked="" type="checkbox"/> Justification Letter
<input type="checkbox"/> Perc Plat
<input type="checkbox"/> Scenic Road Exhibits
<input type="checkbox"/> Deeds
<input type="checkbox"/> Photographs
<input type="checkbox"/> Retaining Wall Comps/Details
<input type="checkbox"/> Poster/Community or HDC Meeting Information
<input type="checkbox"/> Route 1 Details/Summary

<u>Applications</u>	<u># of Applications</u>
<u>15</u> Waiver Petition Applic/Exhibit	<u>15</u>
<input type="checkbox"/> Planning Board Application	<input type="checkbox"/>
<input type="checkbox"/> ASDP/CSDP Application	<input type="checkbox"/>
<input type="checkbox"/> DED Application/Checklist	<input type="checkbox"/>
<input type="checkbox"/> DED Fee Receipt/Deeds/Cost Estimate	<input type="checkbox"/>
<input type="checkbox"/> Overall Scaled Composite	<input type="checkbox"/>
<input type="checkbox"/> Water & Sewer Plans	<input type="checkbox"/>
<input type="checkbox"/> List of Street Names	<input type="checkbox"/>

WAS: Received Tentatively Approved Recorded
 Received and Revised Approved On August 4, 2015

COMMENTS: _____ Due- 17 Working Days: 8/27/15

Check, initial and return to the Department of Planning and Zoning if plan is approved with no comments.

DPZ STAFF INITIALS: JW

Bricker, Robert

From: Bricker, Robert
Sent: Thursday, March 24, 2016 2:11 PM
To: John Carney (jcarney@bei-civilengineering.com)
Subject: Princeton Mill Parcel 3

John,
I have reviewed the BAT plan for Parcel 3. I have no comments at this time. Approval of the BAT Plan may be granted when a formal building permit is received and the floor plans reviewed.

ROBERT BRICKER, REHS/R.S., L.E.H.S.
ENVIRONMENTAL SANITARIAN II
BUREAU OF ENVIRONMENTAL HEALTH, WELL AND SEPTIC PROGRAM
8930 STANFORD BLVD., COLUMBIA, MD 21045

Phone: Desk, 410-313-2691; Program, 410-313-1771; Bureau, 410-313-1774
Fax: 410-313-2648

E-mail: rbricker@howardcountymd.gov

Bricker, Robert

From: Bricker, Robert
Sent: Thursday, March 24, 2016 2:09 PM
To: 'tarterburn@therainmakergroup.com'
Subject: Princeton Mill Parcel 3

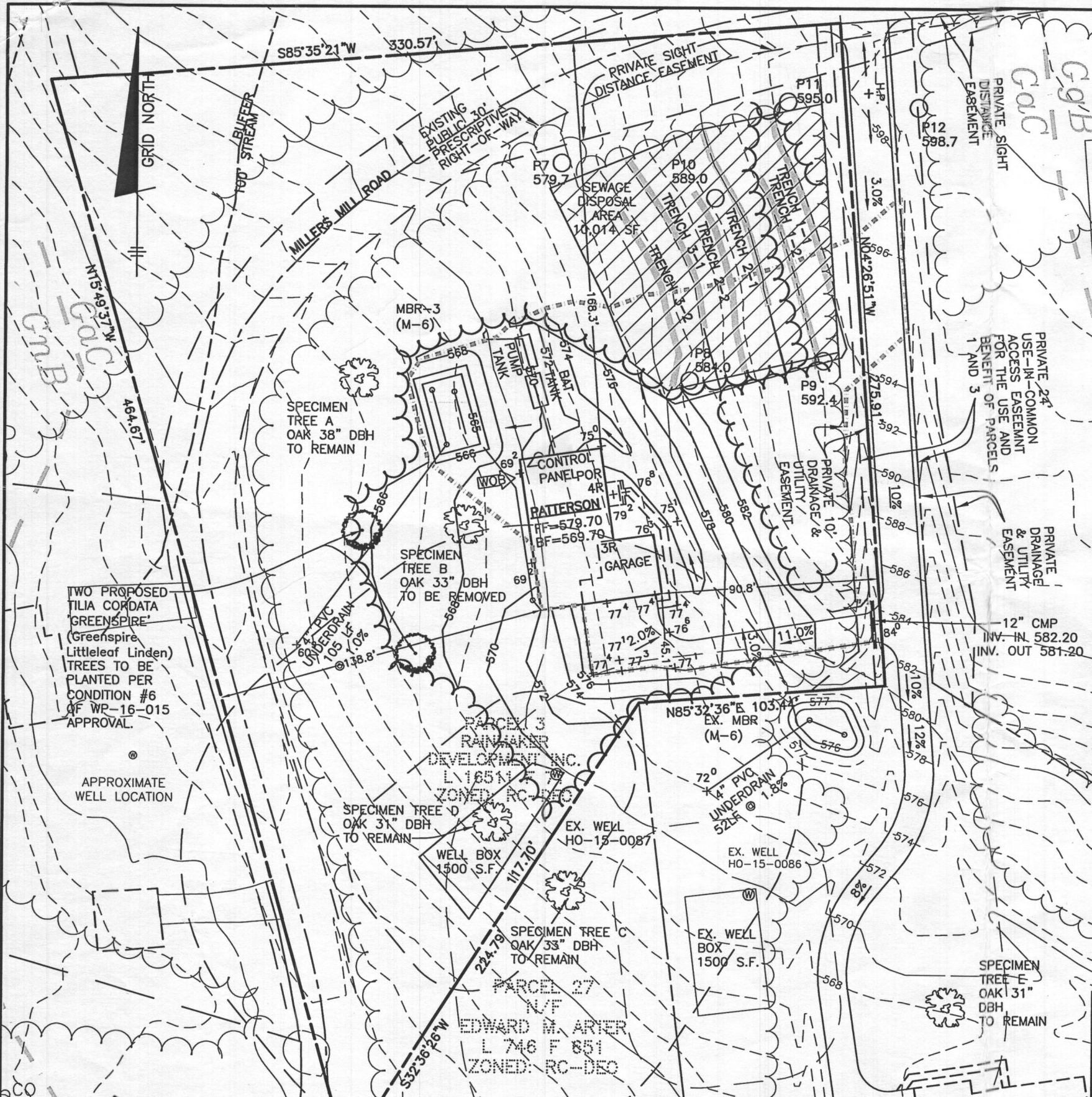
Mr. Tarterburn,

I have reviewed the BAT plan submitted for Princeton Mill Parcel 3 and have no comment at this time. Approval for the plan may be granted when a formal Building Permit is submitted. A review of floor plans is required by the Health Department. If you have floor plans for proposed construction on Parcel 3, you may submit them to me (by Email) as a PDF, or deliver hard copies to my attention at the Bureau of Environmental Health desk.

ROBERT BRICKER, REHS/R.S., L.E.H.S.
ENVIRONMENTAL SANITARIAN II
BUREAU OF ENVIRONMENTAL HEALTH, WELL AND SEPTIC PROGRAM
8930 STANFORD BLVD., COLUMBIA, MD 21045

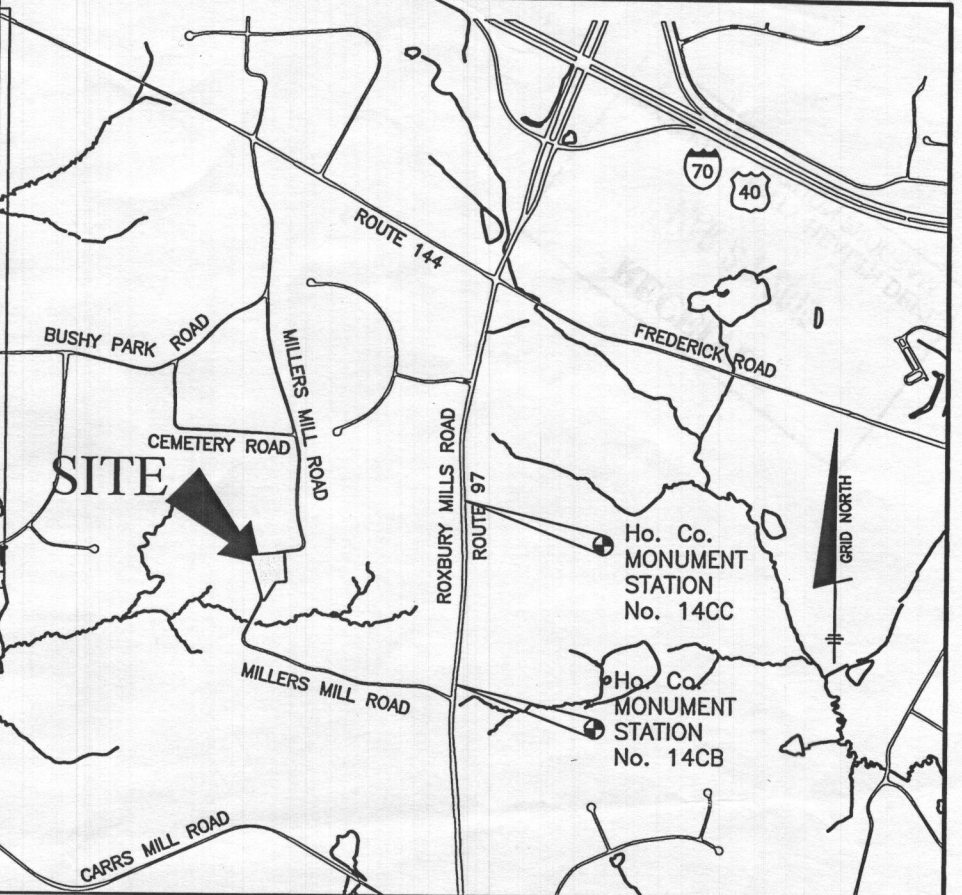
Phone: Desk, 410-313-2691; Program, 410-313-1771; Bureau, 410-313-1774
Fax: 410-313-2648

E-mail: rbricker@howardcountymd.gov



LEGEND

SOILS CLASSIFICATION	GgC
SOILS DELINEATION	---
PROPOSED CONTOURS	---
EXISTING CONTOURS	---480--- ---478---
EXISTING WOODS LINE	~~~~~
PROPOSED WOODS LINE	~~~~~
PROPOSED STRUCTURE	[]
EXISTING STRUCTURE	[]
EXISTING WELL	⊙
EXISTING SEWAGE DISPOSAL AREA	[]
PERCOLATION TEST PASSED	P# 0 ELEV.



BUILDING PERMIT PLAN NOTES:

1. THE LOT SHOWN HEREON WAS RECORDED IN LIBER 16511 AT FOLIO 00071. REFER TO THE TITLE FOR LOT DIMENSIONS, LOT AREAS, ALL EASEMENTS AND CONDITIONS.
2. SEDIMENT AND EROSION CONTROLS WERE APPROVED BY HOWARD COUNTY CONSERVATION DISTRICT UNDER A GRADING PLAN AND MODIFIED FOR THIS SPECIFIC HOUSE.
3. TOPOGRAPHY SHOWN HEREON IS TAKEN FROM THE APPROVED ROAD CONSTRUCTION PLANS AND TOPOGRAPHIC INFORMATION PROVIDED BY BENCHMARK ENGINEERING, INC., ON OR ABOUT NOVEMBER, 2015.
4. ALL SEDIMENT AND EROSION CONTROL FEATURES USED ON THIS SITE SHALL COMPLY WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL.
5. ALL DRAINAGE AND STORMWATER MANAGEMENT FEATURES USED ON THIS SITE MUST COMPLY WITH THE APPROVED ROAD CONSTRUCTION PLANS EXCEPT AS WAIVED.
6. THE EXISTING WELL SHOWN ON THIS PLAN, HO-15-0087, HAS BEEN FIELD LOCATED BY BENCHMARK ENGINEERING, INC., AND IS ACCURATELY SHOWN.
7. THERE ARE NO EXISTING WELLS OR SEPTIC SYSTEMS WITHIN 100' OF THIS PROJECT'S BOUNDARY EXCEPT AS NOTED.
8. ANY CHANGES TO A PRIVATE SEWAGE DISPOSAL AREA OR WELL BOX SHALL REQUIRE A REVISED PERCOLATION CERTIFICATION PLAN.
9. STORMWATER MANAGEMENT FOR THIS LOT WAS DESIGNED TO BE PROVIDED BY A MICRO-BIORETENTION FACILITY (MDE M-6)
10. A DRIVEWAY CULVERT IS EXISTING FOR THIS LOT.
11. MICRO-BIORETENTION FACILITIES SHOULD HAVE EITHER 4" OR 6" ROOF LEADERS DEPENDING ON THE SIZE OF THE ROOFTOP AREA.
12. THE BAT TANK WILL BE NORWECO MODEL TNTLP-750GPD TANK AND THE PUMP TANK WILL HAVE A 2000 GALLON ONE COMPARTMENT TANK.

ADC MAP 17 - GRID A2
 VICINITY MAP
 SCALE: 1" = 2000'
 Approved for System Plan
 Howard County Health Department
 NORWECO TNTLP-750
 with 2000-gal Pump tank
 and Zoeller BK103 (0.5hp) pump
 R. Brualer 4/5/2019
 THIS PLAN IS FOR SEPTIC DESIGN ONLY Date

BENCHMARK
 ENGINEERS LAND SURVEYORS PLANNERS
ENGINEERING, INC.
 8480 BALTIMORE NATIONAL PIKE SUITE 315
 ELLICOTT CITY, MARYLAND 21043
 (P) 410-465-6105 (F) 410-465-6644
 WWW.BEI-CMLENGINEERING.COM

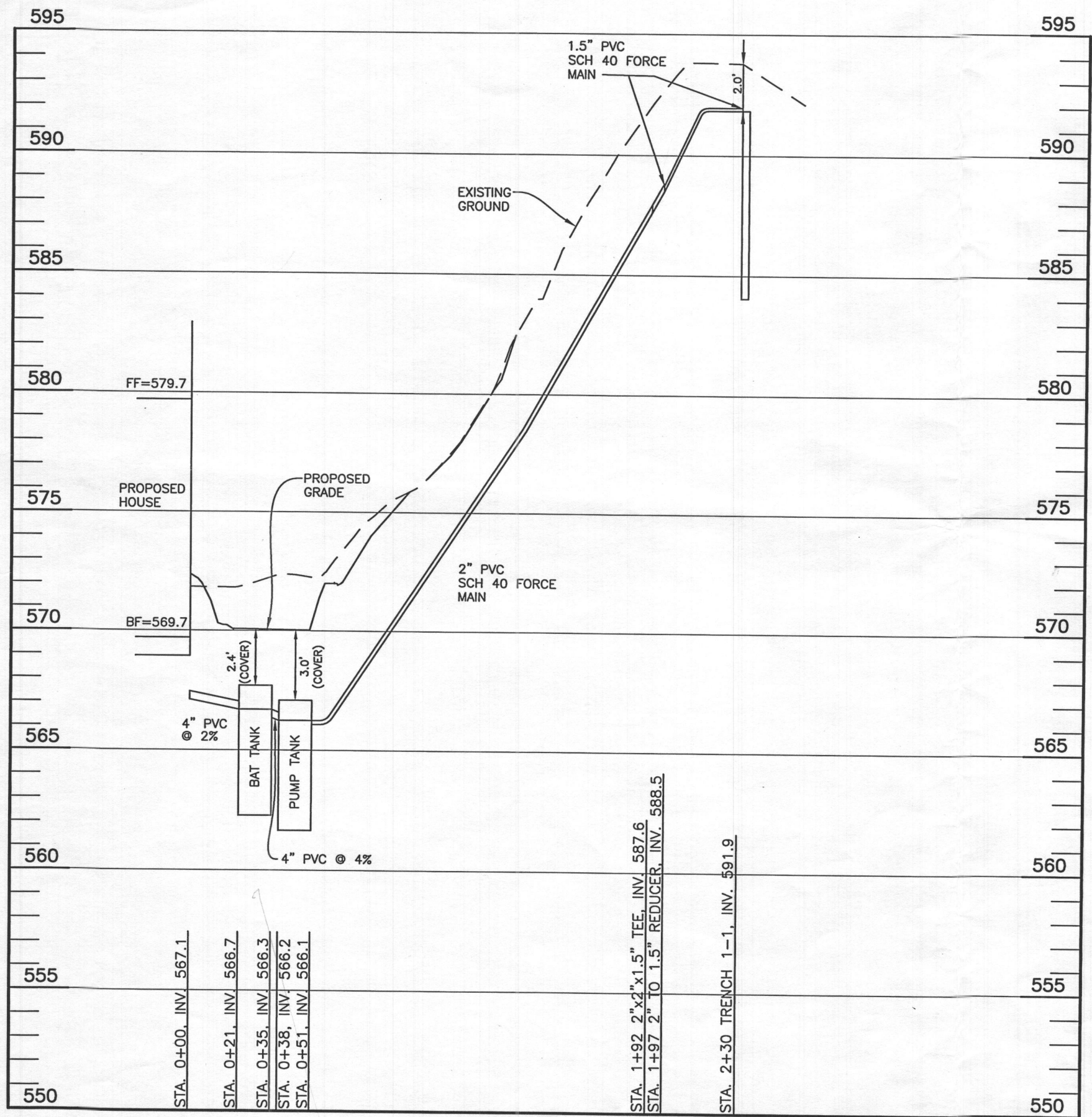
PLAN VIEW
 1" = 50'

OWNER/BUILDER:
 RAINMAKER DEVELOPMENT, INC.
 6755 BUSINESS PARKWAY,
 SUITE 103
 ELK RIDGE, MARYLAND 21075
 443-829-9222

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 45577, Expiration Date 06-08-2020.

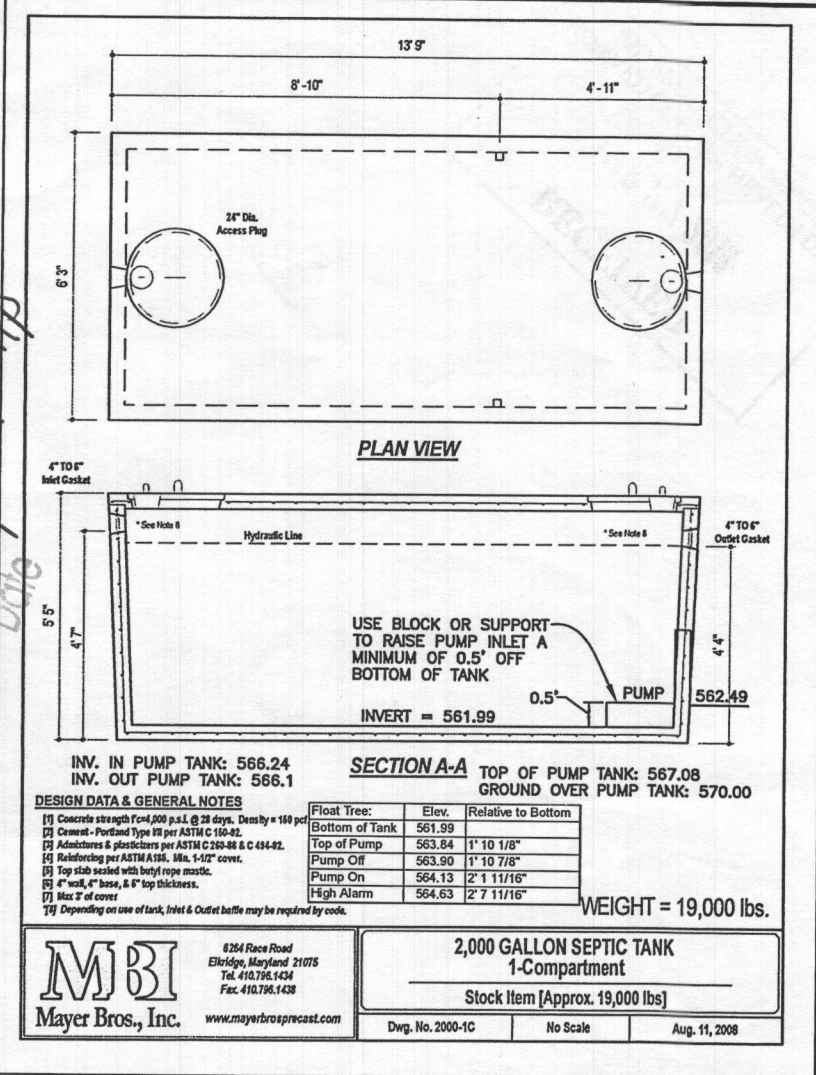
3/26/19

PROJECT:		MILLERS MILL ROAD PARCEL 3	
LOCATION:		TAX MAP: 14, GRID: 4, PARCEL: 76 ZONED: RC-DEO 2141 MILLERS MILL RD CLARKSVILLE, MD 21723 FOURTH ELECTION DISTRICT, HOWARD COUNTY, MD, TAX ID #596593	
TITLE:		BAT SITE PLAN	
HOUSE TYPE:		PATTERSON	
DATE:	MARCH, 2019	PROJECT NO.	2696
SCALE:	AS SHOWN	DRAWING	1 OF 4



PARCEL 3 OSDS PROFILE
SCALE: 1"=50' HORIZ., 1"=5' VERT.

Approved Septic System Plan
Howard County Health Department
NORWECO TMT LP
w/ 2000 gpm pump and 750
Boettler DN 163 (6.5 hp) pump
4/5/2019
Date



INV. IN PUMP TANK: 566.24
INV. OUT PUMP TANK: 566.1

SECTION A-A TOP OF PUMP TANK: 567.08
GROUND OVER PUMP TANK: 570.00

DESIGN DATA & GENERAL NOTES

	Float Tree:	Elev.	Relative to Bottom
(1) Concrete strength Fc=4,000 p.s.i. @ 28 days. Density = 149 pcf	Bottom of Tank	561.99	
(2) Cement - Portland Type II per ASTM C 150-82	Top of Pump	563.84	1' 10 1/8"
(3) Admixtures & plasticizers per ASTM C 266-88 & C 494-82	Pump Off	563.90	1' 10 7/8"
(4) Reinforcing per ASTM A 198. Min. 1-1/2" cover.	Pump On	564.13	2' 1 11/16"
(5) Top slab sealed with butyl rope mastic.	High Alarm	564.63	2' 7 11/16"
(6) 4" wall, 4" base, & 6" top thickness.			
(7) Max 3' of cover			

WEIGHT = 19,000 lbs.

MAYER BROS., INC. 6254 Race Road, Elkridge, Maryland 21075, Tel. 410.796.1434, Fax. 410.796.1438, www.mayerbrosprecast.com

2,000 GALLON SEPTIC TANK 1-Compartment
Stock Item [Approx. 19,000 lbs]
Dwg. No. 2000-1C No Scale Aug. 11, 2008

SEE MANUFACTURERS SPECIFICATIONS FOR DETAILS. WWW.MAYERPRECAST.COM EQUIVALENT FROM OTHER MANUFACTURERS CAN BE SUBSTITUTED.

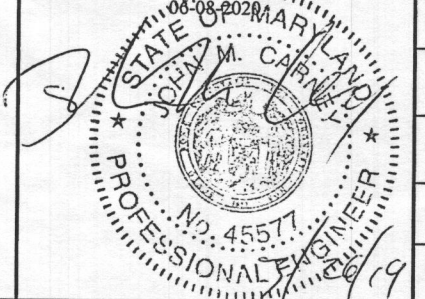
OWNER/BUILDER:
RAINMAKER DEVELOPMENT, INC.
6755 BUSINESS PARKWAY,
SUITE 103
ELKRIDGE, MARYLAND 21075
443-829-9222

SIGNATURE AND SEAL ARE FOR SEPTIC PROFILE AND CALCULATIONS ONLY, TANK AND DETAILS WERE NOT DESIGNED OR REVIEWED BY THE ENGINEER:

BENCHMARK
ENGINEERS LAND SURVEYORS PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE SUITE 315
ELLCOTT CITY, MARYLAND 21043
(P) 410-465-6105 (F) 410-465-6644
WWW.BEI-CIVILENGINEERING.COM

THIS PLAN IS FOR SEPTIC DESIGN ONLY

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 45577, Expiration Date: 08-08-2028



PROJECT:	MILLERS MILL ROAD PARCEL 3	
LOCATION:	TAX MAP: 14, GRID: 4, PARCEL: 76 ZONED: RC-DEO 2141 MILLERS MILL RD CLARKSVILLE, MD 21723 FOURTH ELECTION DISTRICT, HOWARD COUNTY, MD, TAX ID #596593	
TITLE:	BAT SITE PLAN	
HOUSE TYPE:	PATTERSON - ELEVATION	
DATE:	MARCH, 2019	PROJECT NO. 2696
SCALE:	AS SHOWN	DRAWING 2 OF 4

Design Calculations

Design Input:		Calculations:	
Capacity requirements			
number of lots	1	Max. Daily Flow	750 gpd
bedrooms per lot	5	Average Daily Flow	375 gpd
use rate per bedroom	150 gpd	Maximum Daily Flow	0.52 gpm
		Average Daily Flow	0.26 gpm

Drainfield Requirements			
Application Rate	0.8 gpd/sq ft	Standard Trench Length	312.5 ft
Trench width	3 ft	Deep Trench Conversion Factor	50.00 %
trench gravel depth	3 ft	Deep Trench Length for MDF	156.25 ft
number of trenches	2	total trench length for 100% capacity	156.25 ft
trench spacing center-center	13 ft	individual trench length	79 ft
		Approx. Lateral Length	75.00 ft

Tanks and Capacities			
BAT tank	1,500 gallons	minimum req. area	1875 sf
2nd settling tank	NA gallons	req. capacity (1125+(0.75*MDF))	1687.5 gal.
Equalization Tank	NA gallons	design settling capacity	NA gal.
pump tank size	2,000 gallons	min. pump tank capacity (ADF)	486 gal.

Distribution system			
number of cells	1	Total Number of Pumps	1
trenches first system	2	laterals served by pump	2
lateral length per pump	158 ft	Vol./100 ft 1.5" PVC	10.6 gal.
ID 1.5" PVC SCH 40	1.754 inches	Vol. of laterals served	16.7 gal.
Max. Manifold length	155 ft	Vol./100 ft 2.0" PVC	17.4 gal.
ID 2.0" PVC SCH 40	2.173 inches	Max. Main volume	27.0 gal.

Static Hydraulic Profile			
Ground Elev. At BAT tank	570.00 ft	Tank #1 effluent elev	566.37 ft
Tank #1 invert in Cover	566.70 ft		
Tank #1 top	567.70 ft	okay	
Fall in tanks	0.33 ft	Pump Tank effluent elev	566.24 ft
Fall between tanks	0.13 ft	Invert of pump tank	561.99 ft
Ground Elev. at pump tank	570.00 ft		
Pump Tank invert in inv. into pump tank to top	566.24 ft		
Pump Tank top	0.84 ft	Pump Elevation	562.49 ft
Pump Block Height	567.08 ft	okay	
Height of Intake	0.50 ft	pump intake elev.	563.29 ft
Highest lateral	0.79 ft		
	591.90 ft	Cell 1	

Perforation Design:			
Size of Perforation	1/4 inches	Distal Pressure =	3.0 ft
Design Separation	5.00 ft	Flow	1.28 gpm
Use Perforations	16	Perforations per Lateral	15.80
Perforations per field	32	Perforation Actual Spacing	4.94 ft
		Flow rate	40.84 gpm

Dosing volume, flow rates and Pressures			
lateral flow rate per pump	40.84 gpm	Static Head	28.00 ft Cell 1
Friction (C) for PVC	150	Friction Head	7.65 ft Cell 1
Miscellaneous Losses	0 ft	Distal Head	3 ft
Estimated Run Time	3.00 Min.	Max. Total Dynamic Head	38.65 ft
Cells in simultaneous use	1	Estimated Dose (5xLateral+1xMain) Vol.	110.71 gal.
Pump tank Volume	45.49 Gal/in	Min. Runtime	3.10 min.
1/6 Max. Daily Flow	125 gal.	Minimum Dose Volume > 1/6 flow	126.61 gal.
		Average Doses	2.96 per day

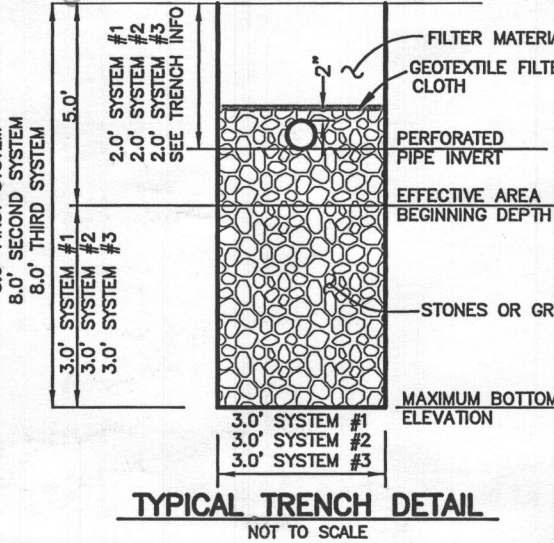
Tank and Float Design:			
Ground over Tank =	570.00 ft	Inside Tank Dimensions	
Top of Tank =	567.08 ft	Height =	4.67 ft
Invert of Tank =	561.99 ft	Width =	5.58 ft
Pump Block =	0.50 ft	Length =	13.08 ft
Water End and Motor =	1.34 ft	Number of Tanks =	1
per Mayer Brothers Precast			

minimum Pump off =	563.84 ft		
Pump Off Float =	563.90 ft		
Dose =	16.93 cf		
Area of Pit	72.99 sf	Use one 2,000 gallon pump tank	
Pump on dist. =	0.23 ft		
Pump on Elev. =	564.13 ft		
Distance between Pump on and Highwater Alarm =	0.5 ft		
Highwater Alarm Elevation =	564.63 ft		
High Water Alarm to inlet =	1.61		
Volume Above Alarm Float to Inlet =	117.37 cf or	877.92 gallons	
One Day Flow =	750.00 gallons	okay	

Pump Function:			
Performance =	41.41 gpm		
Head of Water =	38.65 feet of head		
Pump Selection:			
Zoeller Pump BN163	0.5 horse power	115 Volts	Single Phase

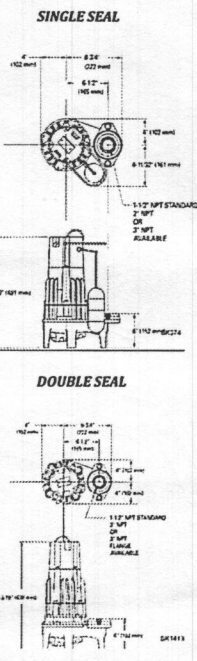
Approved Septic System Plan

Howard County Health Department
 calculations OK
 USE BN163 (0.5hp) pump
 R. Bricker
 Signature
 4/5/2019
 Date



Trusted. Tested. Tough.[™]
 Zoeller PUMP COMPANY
 TECHNICAL DATA SHEET
 HIGH HEAD FLOW - MATE SERIES
 Models 161/4161, 163/4163, 165/4165 Submersible Effluent Pumps

PRODUCT SPECIFICATIONS	
MOTOR	Horse Power: 1/2 (161/4161, 163/4163) or 1 (165/4165)
	Voltage: 115-575
	Phase: 1 or 3 Ph
	Hertz: 60 Hz
	RPM: 3450
	Type: Permanent split capacitor or 3 Ph
	Insulation: Class B
	Amps: 2.4 - 15.5
	Operation: Automatic or nonautomatic
	Auto On/Off Points: 15-3/4" (400 mm) / 5-1/4" (133 mm)
	Discharge Size: 1-1/2" NPT (optional 2" or 3" flange)
	Solids Handling: 3/4" (19 mm) spherical solids
	Cord Length: 20' (6 m) standard
	Cord Type: 1 Ph: UL listed 3-wire neoprene cord and plug or 3 Ph: 4-wire with no plug
	Max. Head: 86.5' (26 m)
	Max. Flow Rate: 100 GPM (379 LPM)
	Max. Operating Temp.: 130 °F (54 °C)
	Cooling: Oil filled
	Motor Protection: Auto reset thermal overload (1 Ph)
	Upper Bearing: Ball bearing
	Lower Bearing: Ball bearing
	Mechanical Seals: Carbon and ceramic
	Impeller Type: Non-clogging vortex
	Impeller: Bronze
	Hardware: Stainless steel
	Motor Shaft: SAE 1117 carbon steel or 416 stainless steel*
	Gasket: Neoprene square ring and gasket
MATERIALS	



TOTAL DYNAMIC HEAD FLOW PER MINUTE				
MODELS	161/4161	163/4163	165/4165	
Feet	Gal.	Liters	Gal.	Liters
5	1.5	100	379	61
10	3.0	93	352	60
15	4.6	86	326	60
20	6.1	79	299	59
25	7.6	71	267	57
30	9.1	62	235	55
40	12.2	45	170	46
50	15.2	20	76	33
60	18.3	-	-	15
70	21.3	-	-	8
80	24.4	-	-	3
Shut-off Head:	58 ft. (17.1 m)	68 ft. (20.1 m)	86.5 ft. (26.4 m)	

		MODEL COMPARISON					CERTIFICATIONS				
Model	Seal	Mode	Volts	Ph	Amps	HP	Lbs	Kg	Simplex	Duplex	
M161	Single	Auto	115	1	15.0	1/2	60	80	36	1	UL and cCSAus (2)
N161	Single	Non	115	1	15.0	1/2	60	80	36	2 or 3 & 5	4 & 5 CSA (1)
N4161	Double	Non	115	1	15.5	1/2	60	87	39	3 & 5	4 & 5 UL and cCSAus (2)
BN161	Single	Auto	115	1	15.0	1/2	60	84	28	-	CSA
D161	Single	Auto	230	1	7.5	1/2	60	80	36	1	UL and cCSAus
E161 / E4161	Single / Double	Non	230	1	7.5	1/2	60	80 / 87	36 / 39	2 or 3 & 5	4 & 5 UL and cCSAus (2)
* H161	Single	Auto	230	1	8.0	1/2	60	80	36	1	cCSAus
* J161 / J4161	Single / Double	Non	200	1	8.8	1/2	60	80 / 87	36 / 39	2 or 3 & 5	4 & 5 cCSAus
* J161 / J4161	Single / Double	Non	200	3	6.4	1/2	60	80 / 87	36 / 39	3 & 5	4 & 5 UL and cCSAus
* F161 / F4161	Single / Double	Non	230	3	5.2	1/2	60	80 / 87	36 / 39	3 & 5	4 & 5 UL and cCSAus
* G161 / G4161	Single / Double	Non	460	3	2.9	1/2	60	80 / 87	36 / 39	3 & 5	4 & 5 UL and cCSAus
* BA161/BA4161	Single / Double	Non	575	3	2.4	1/2	60	80 / 87	36 / 39	3 & 5	4 & 5 cCSAus
BE161	Single	Auto	230	1	7.5	1/2	60	84	28	-	UL and cCSAus
M163	Single	Auto	115	1	15.0	1/2	60	80	36	1	UL and cCSAus (2)
N163 / N4163	Single / Double	Non	115	1	15.0	1/2	60	80 / 87	36 / 39	2 or 3 & 5	4 & 5 UL and cCSAus (2)
* H163	Single	Auto	115	1	15.0	1/2	60	84	28	-	CSA
D163	Single	Auto	230	1	7.5	1/2	60	80	36	1	UL and cCSAus
E163 / E4163	Single / Double	Non	230	1	7.5	1/2	60	80 / 87	36 / 39	2 or 3 & 5	4 & 5 UL and cCSAus
* H163	Single	Auto	200	1	8.5	1/2	60	80	36	1	cCSAus
* J163 / J4163	Single / Double	Non	200	1	8.5	1/2	60	80 / 87	36 / 39	2 or 3 & 5	4 & 5 cCSAus
* F163 / F4163	Single / Double	Non	230	3	6.0	1/2	60	80 / 87	36 / 39	3 & 5	4 & 5 UL and cCSAus
* G163 / G4163	Single / Double	Non	460	3	2.9	1/2	60	80 / 87	36 / 39	3 & 5	4 & 5 UL and cCSAus
* BA163/BA4163	Single / Double	Non	575	3	2.4	1/2	60	80 / 87	36 / 39	3 & 5	4 & 5 cCSAus
BE163	Single	Auto	230	1	7.5	1/2	60	84	28	-	UL and cCSAus
D165	Single	Auto	230	1	10.2	1	60	80	36	1	UL and cCSAus
E165 / E4165	Single / Double	Non	230	1	10.2	1	60	80 / 87	36 / 39	2 or 3 & 5	4 & 5 UL and cCSAus
* H165	Single	Auto	200	1	12.6	1	60	80	36	1	cCSAus
* J165 / J4165	Single / Double	Non	200	1	12.6	1	60	80 / 87	36 / 39	2 or 3 & 5	4 & 5 cCSAus
* J165 / J4165	Single / Double	Non	200	3	7.5	1	60	80 / 87	36 / 39	3 & 5	4 & 5 UL and cCSAus
* F165 / F4165	Single / Double	Non	230	3	7.4	1	60	80 / 87	36 / 39	3 & 5	4 & 5 UL and cCSAus
* G165 / G4165	Single / Double	Non	460	3	3.7	1	60	80 / 87	36 / 39	3 & 5	4 & 5 UL and cCSAus
* BA165/BA4165	Single / Double	Non	575	3	3.0	1	60	80 / 87	36 / 39	3 & 5	4 & 5 cCSAus
BE165	Single	Auto	230	1	10.2	1	60	84	28	-	UL and cCSAus

* Single seal models are built with a carbon steel motor shaft, and double seal models are built with a stainless steel motor shaft.
 All Class 3 cast iron construction.
 NOTE: The sizing of effluent systems normally requires variable level float(s) controls and properly sized basins to achieve required pumping cycles or dosing timers with nonautomatic pumps.
 NOTE: See model comparison chart for specific details.

SELECTION GUIDE	
1.	Integral float operated mechanical switch, no external control required.
2.	For automatic use single piggyback variable level float switch or double piggyback variable level float switch. Refer to FM077.
3.	See FM1228 for correct model of simplex control panel.
4.	See FM0712 for correct model of duplex control panel.
5.	Variable level control switch 10-0743 used as a control activator, specify simplex (3) float or duplex (4) float system. Refer to FM0526.

CAUTION All installation of controls, protection devices and wiring should be done by a qualified licensed electrician. All electrical and safety codes should be followed including the most recent National Electrical Code (NEC) and the Occupational Safety and Health Act (OSHA).
 © Copyright 2017 Zoeller Co. All rights reserved.
 502-778-2731 | 800-928-7867 | 3649 Cane Run Road | Louisville, KY 40211-1961 | www.zoeller.com

Lateral Pressure Calculations																			
Cell	Trench	Pipe Elev.	Beginning Manifold Loss	Gate Valve	Manifold Bends 45D	Manifold Length	Manifold velocity	Manifold Thru Tees	Delta Loss Manifold	Total Manifold Loss	Lateral 90 degree side tee loss	Sudden Reduction Loss	Lateral Bends 45 deg. Loss	Lateral Length to first perf. Loss	Lateral Loss Summation	Total Loss to First Perf.	Total Design Head (ft)	Lateral Pressure Head (ft)	Flow per Lateral (gpm)
1	2	590.1	0.00	0	4	150	40.8	0	4.53	4.53	0.08	0.01	0.00	0.16	0.24	4.77	33.97	4.8	20.99
	1	591.9	4.53	0	0	5	20.4	1	0.05	4.58	0.00	0.02	0.15	0.89	1.06	5.64	36.64	3.0	20.42

Trench and Lateral Design														
Cell	Trench	Pipe Inv. Elev.	Trench Bottom Elev.	Highest Ground Over	Lowest Ground Over	Lateral Pressure Head (ft)	Approx. Lateral Length (ft)	Number of Perforations	Perforation Diameter (in.)	Flow per Perforation (gpm)	Flow per Lateral (gpm)	Flow Differential		
1	1	591.9	585.9	593.9	593.9	3.00	75	16	1/4	1.28	20.42	0.0%		
	2	590.1	584.1	592.1	592.1	4.80	75	13	1/4	1.61	20.99	2.8%		

Perforation Design									
Cell	Trench	Number of Perforations	Manifold to Trench (ft)	Trench Length (ft)	Perforation Spacing (ft)	Dist. Manifold to First Perf. (ft)	Dist. First/Last Perf. to Trench Edge	Lateral Length (ft)	Perforation Diameter (in.)
1	1	16	32.0	79	4.94	34.47	2.47	108.53	1/4
	2	13	3.0	79	6.08	6.04	3.04	78.96	1/4

Perforation Design									
Cell	Trench	Number of Perforations	Manifold to Trench (ft)</						

SCAN TO
JEFF
BE PLAN

Friction Head
main

Friction Head = Head loss due to pipe friction
2.0" pipe = 155 feet

45° bends	4 loss for manifold bend	16.0 feet	per table 4.3
Str. Coupling	1 loss for straight tee	2.0 feet	per table 4.3
90 deg. Side tee	0 loss for tee bend	0.0 feet	per table 4.3 for smaller pipe
Sudden reduction	1 loss for reduction	1.0 feet	per Crane Co. technical paper
45° bends	2 loss for lateral bend	6.0 feet	per table 4.3
Gate Valve	0 loss for valve	0.0 feet	per table 4.3

Equivalent Manifold Length: 173.0 feet Friction loss = 4.72 feet
1.5" lateral 32 feet Friction loss = 2.93 feet
Equivalent lateral Length = 114.00 feet
Total Friction Head = 7.65

Size Pump Chamber

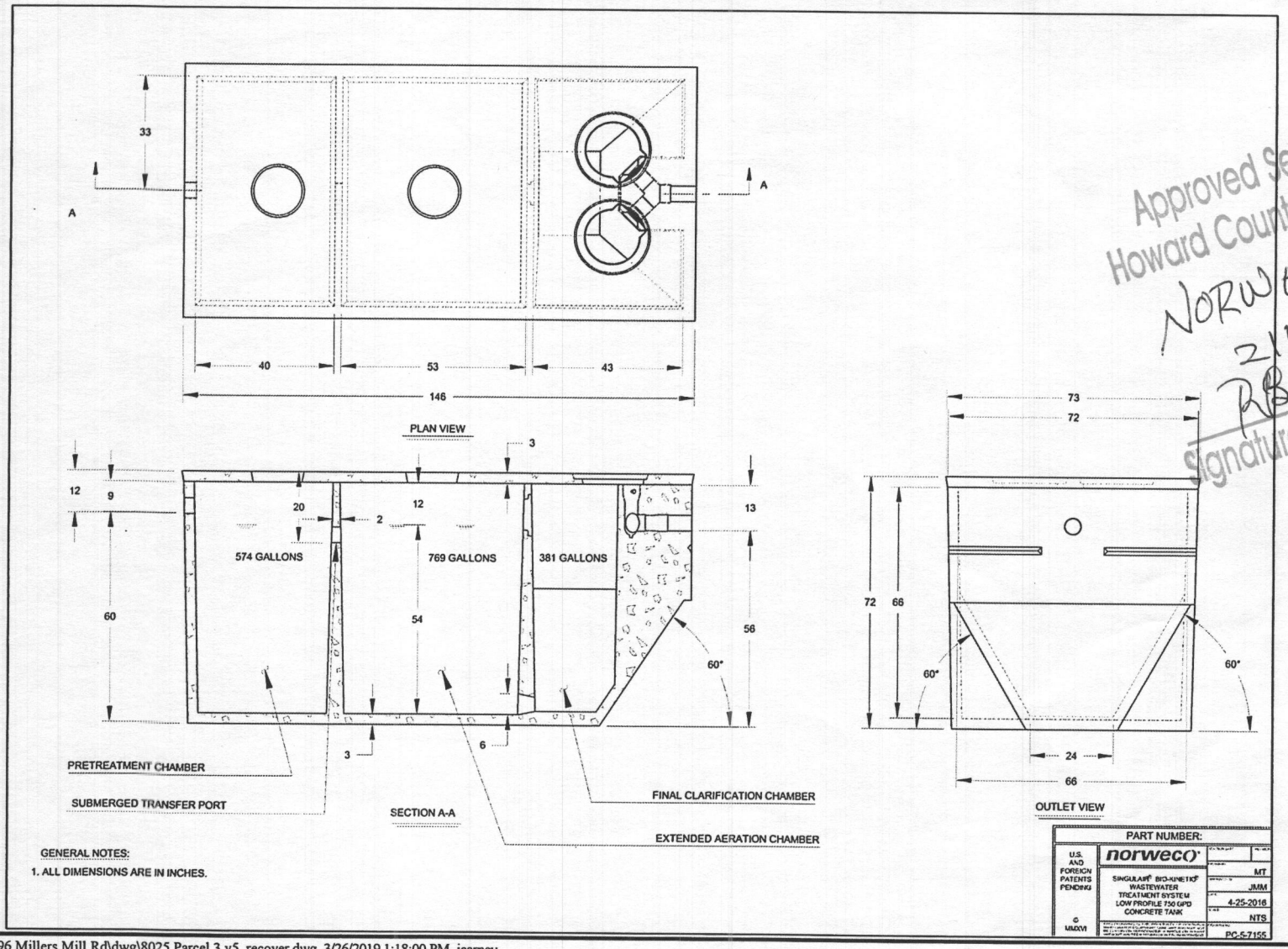
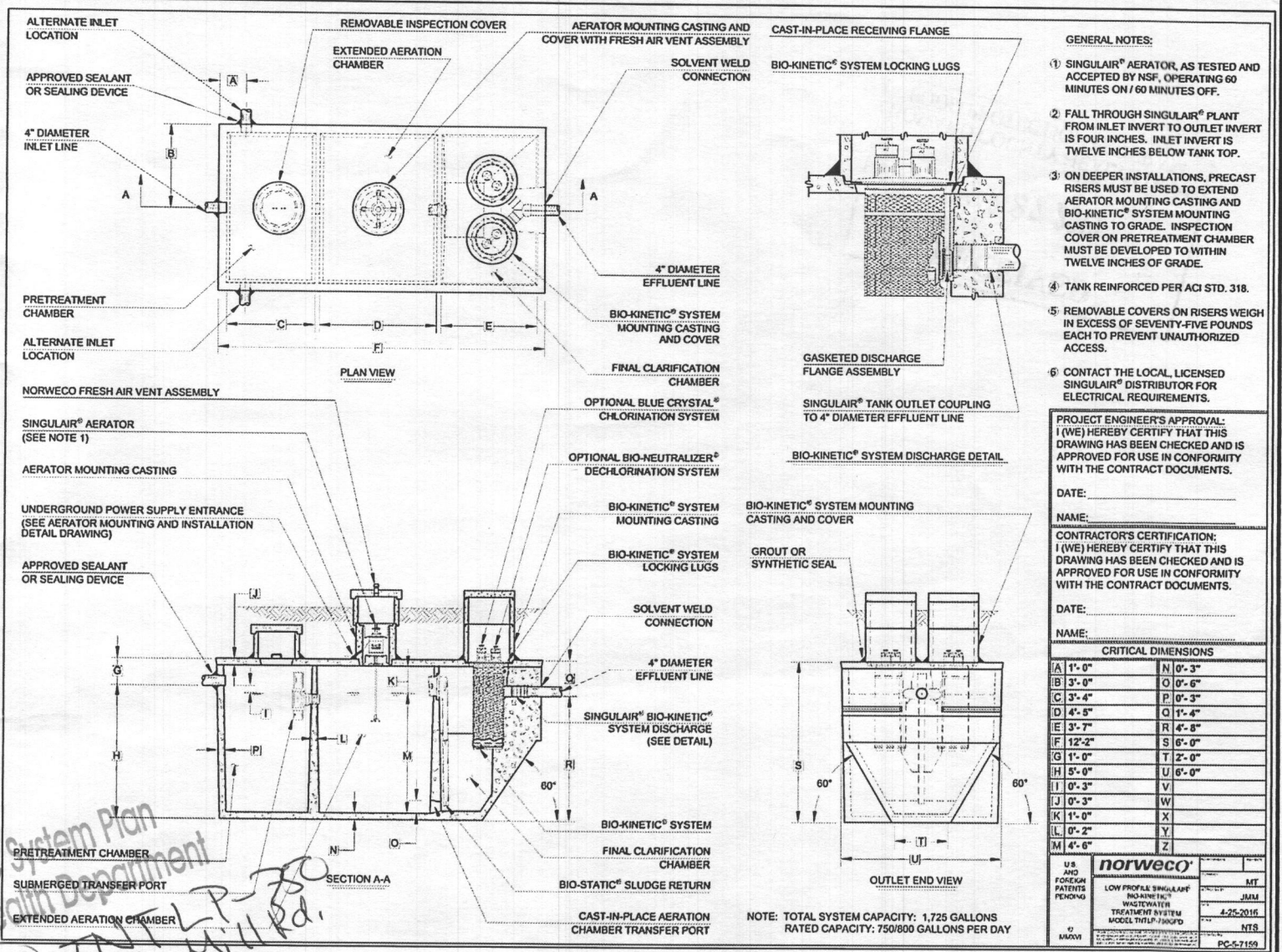
Pump chamber must be able to hold one dose and one day design flow
One day Capacity = 750 gallons
Dose = 110.71 gallons
Totals = 860.71 gallons

Use one 2,000 gallon pump tank (Tanks size per Health Department Septic Specifications Worksheet was 1,500 gallons)

Tank Dimensions:		Exterior		Interior	
Length:	13.75 feet	Length:	13.08 feet	Walls:	0.33 feet
Width:	6.25 feet	Width:	5.58 feet	Bottom:	0.33 feet
Height:	5.42 feet	Height:	4.67 feet	Top:	0.42 feet
Area:	72.99 sf	Invert to Volume to Inlet:	309.95 cf	Inlet:	4.25 feet
		Gallons per cubic foot:	7.48	Invert to Tank Gallons per inch per tank:	45.49
				Invert to Outlet:	4.00 feet

Required BAT Site Plan Notes

- Any change to the locations or depths to any components must be approved by the engineer and the Howard County Health Department prior to installation. A revised sit plan may be required.
- The maximum depth of the BAT shall be per the manufacturer's specification, 3.0'.
- The blower may not be located further from the tank than the manufacturer's specifications, 75'.
- The BAT system shall be maintained and operated for the life of the system.
- The BAT shall be operated by and maintained by a certified service provider.
- Within one month of installation, a person installing the BAT system shall report to the Maryland Department of the Environment (MDE) in a manner acceptable to MDE, the address and date of completion of the BAT installation and the type of BAT installed.
- Electrical work for the BAT installation must be performed by a licensed electrician.
- An agreement and Easement must be completed and signed by all applicable parties, and recorded in Land Records of Howard County.
- The Health Department requires documentation for the start-up certification from the manufacturer prior to final approval of the installation.



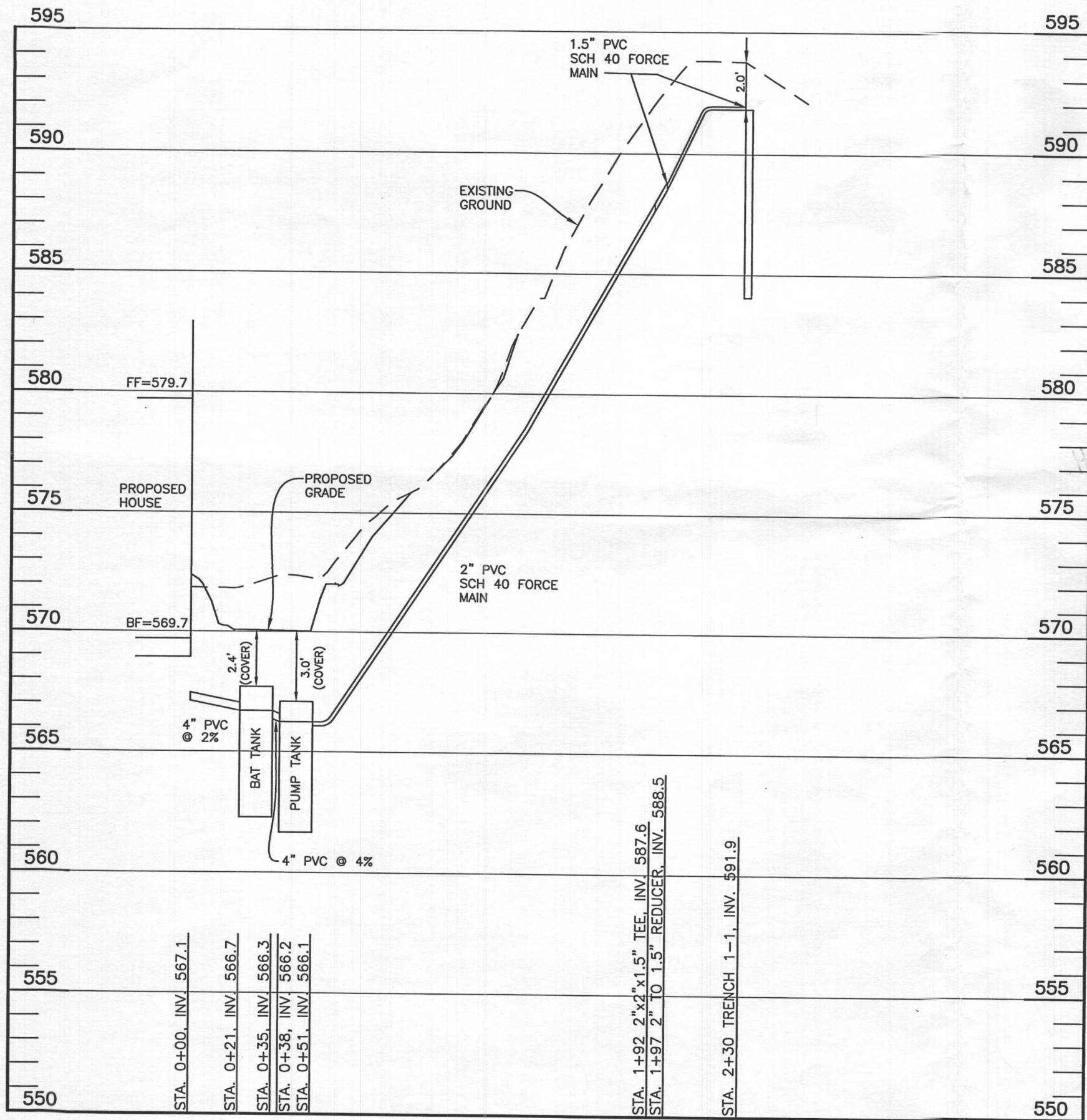
Approved Septic System Plan
Howard County Health Department
NORWECO TANK P-750
2141 Miller's Mill Rd.
R. Bieler
4/5/2019

SEE MANUFACTURERS SPECIFICATIONS FOR DETAILS.
WWW.MAYERPRECAST.COM
EQUIVALENT FROM OTHER MANUFACTURERS CAN BE SUBSTITUTED.

THIS PLAN IS FOR SEPTIC DESIGN ONLY

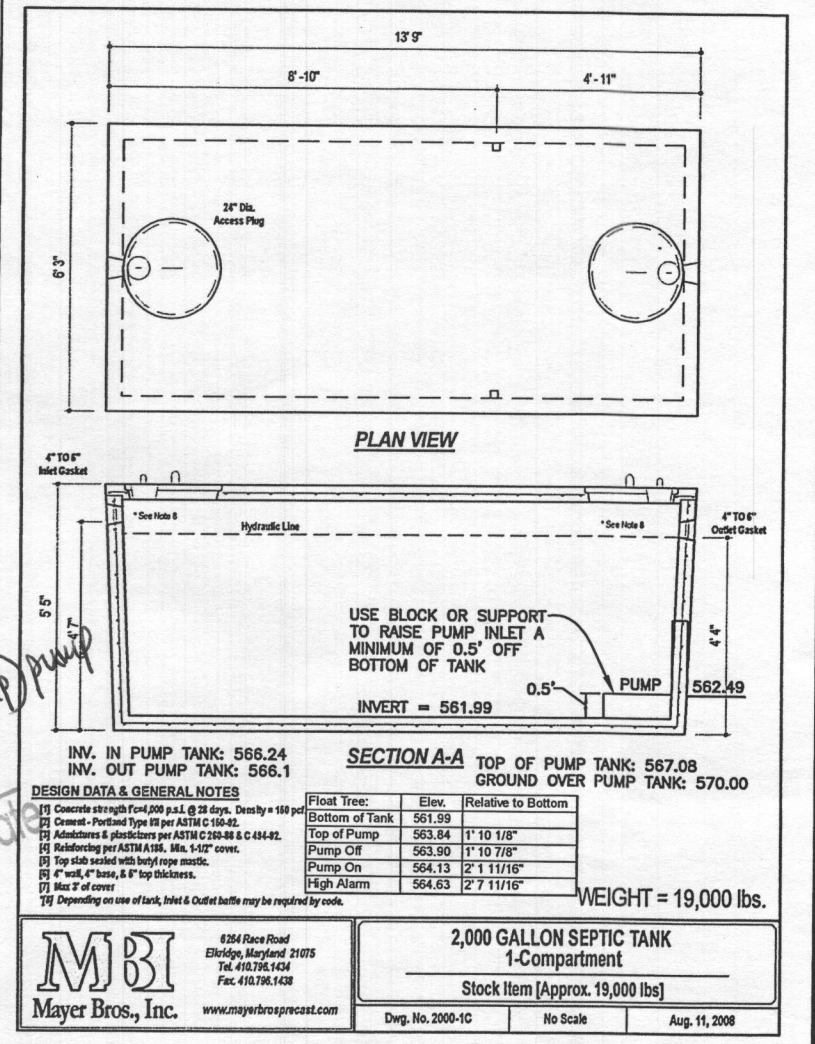
BENCHMARK
ENGINEERS LAND SURVEYORS PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE SUITE 315
ELLCOTT CITY, MARYLAND 21043
(P) 410-465-6105 (F) 410-465-6644
WWW.BEI-CIVILENGINEERING.COM

PROJECT:	MILLERS MILL ROAD PARCEL 3		
LOCATION:	TAX MAP: 14, GRID: 4, PARCEL: 76 ZONED: RC-DEO 2141 MILLERS MILL RD CLARKSVILLE, MD 21723 FOURTH ELECTION DISTRICT, HOWARD COUNTY, MD, TAX ID #596593		
TITLE:	BAT SITE PLAN		
HOUSE TYPE:	PATTERSON - ELEVATION		
DATE:	MARCH, 2019	PROJECT NO.	2696
SCALE:	AS SHOWN	DRAWING	4 OF 4



PARCEL 3 OSDS PROFILE
SCALE: 1"=50' HORIZ., 1"=5' VERT.

Approved Septic System Plan
Howard County Health Department
NORWECO 750
w/ 2000-gal Pump Tank
A Zoller BM63 (5hp) pump
B. B. B. 4/5/2019
Signature



DESIGN DATA & GENERAL NOTES

- Concrete strength $f'c=4,000$ p.s.i. @ 28 days. Density = 149 pcf.
- Concrete - Portland Type III per ASTM C 150-02.
- Reinforcing steel per ASTM A 618, Min. 1-1/2" cover.
- Reinforcing per ASTM A 118, Min. 1-1/2" cover.
- Top slab sealed with butyl rope mastic.
- 4" wall, 4" base, & 6" top thickness.
- Max 3" of cover.
- Depending on use of tank, Inlet & Outlet baffles may be required by code.

Item	Elev. (Relative to Bottom)
Float Tree:	
Bottom of Tank	561.99
Top of Pump	563.84
Pump Off	563.90
Pump On	564.13
High Alarm	564.63

WEIGHT = 19,000 lbs.

2,000 GALLON SEPTIC TANK
1-Compartment
Stock Item [Approx. 19,000 lbs]

Mayer Bros, Inc. 6264 Race Road, Ellicott City, MD 21075
Tel: 410.796.1434 Fax: 410.796.1438 www.mayerbrosprecast.com

Dwg. No. 2000-1C No Scale Aug. 11, 2008

SEE MANUFACTURERS SPECIFICATIONS FOR DETAILS. WWW.MAYERPRECAST.COM EQUIVALENT FROM OTHER MANUFACTURERS CAN BE SUBSTITUTED.

OWNER/BUILDER:
RAINMAKER DEVELOPMENT, INC.
6755 BUSINESS PARKWAY,
SUITE 103
ELKRIDGE, MARYLAND 21075
443-829-9222

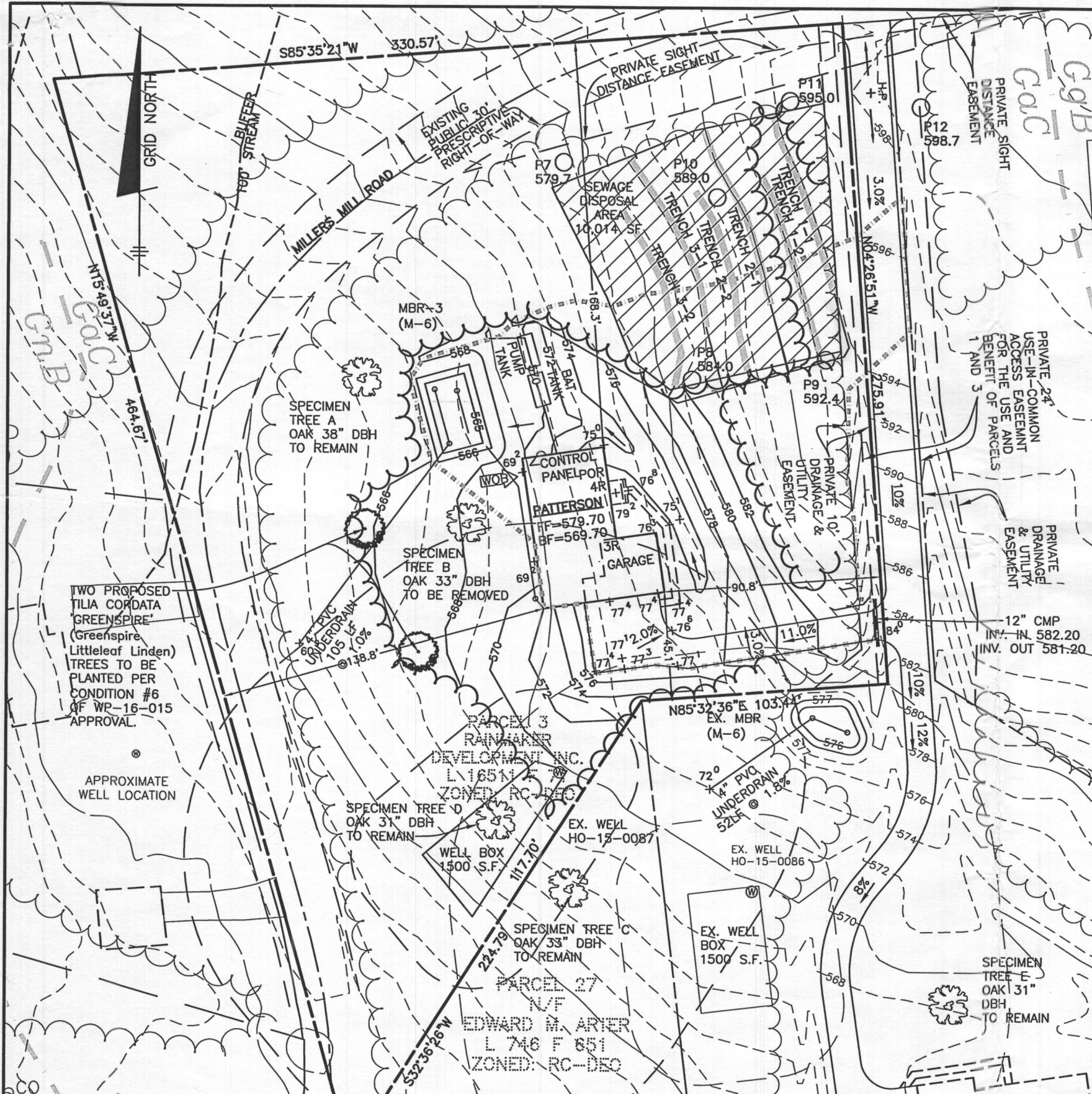
BENCHMARK
ENGINEERS LAND SURVEYORS PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE SUITE 315
ELLCOTT CITY, MARYLAND 21043
(P) 410-465-6105 (F) 410-465-6644
WWW.BEI-CIVILENGINEERING.COM

THIS PLAN IS FOR SEPTIC DESIGN ONLY

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 45577, Expiration Date: 08-08-2028

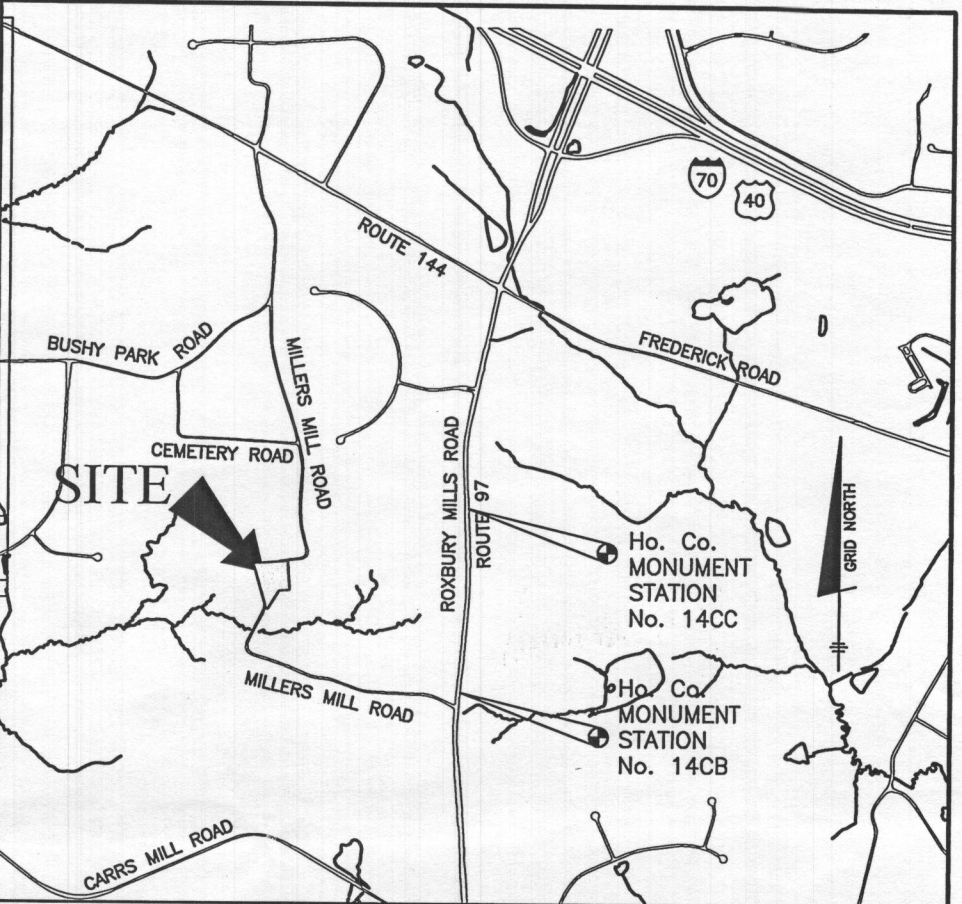


PROJECT:	MILLERS MILL ROAD PARCEL 3	
LOCATION:	TAX MAP: 14, GRID: 4, PARCEL: 76 ZONED: RC-DEO 2141 MILLERS MILL RD CLARKSVILLE, MD 21723 FOURTH ELECTION DISTRICT, HOWARD COUNTY, MD, TAX ID #596593	
TITLE:	BAT SITE PLAN	
HOUSE TYPE:	PATTERSON - ELEVATION	
DATE:	MARCH, 2019	PROJECT NO. 2696
SCALE:	AS SHOWN	DRAWING 2 OF 4



LEGEND

SOILS CLASSIFICATION	GgC
SOILS DELINEATION	---
PROPOSED CONTOURS	—
EXISTING CONTOURS	- - -
EXISTING WOODS LINE	~ ~ ~
PROPOSED WOODS LINE	~ ~ ~
PROPOSED STRUCTURE	[]
EXISTING STRUCTURE	[]
EXISTING WELL	⊙
EXISTING SEWAGE DISPOSAL AREA	[]
PERCOLATION TEST PASSED	P# / ELEV.



BUILDING PERMIT PLAN NOTES:

1. THE LOT SHOWN HEREON WAS RECORDED IN LIBER 16511 AT FOLIO 00071. REFER TO THE TITLE FOR LOT DIMENSIONS, LOT AREAS, ALL EASEMENTS AND CONDITIONS.
2. SEDIMENT AND EROSION CONTROLS WERE APPROVED BY HOWARD SOIL CONSERVATION DISTRICT UNDER A GRADING PLAN AND MODIFIED FOR THIS SPECIFIC HOUSE.
3. TOPOGRAPHY SHOWN HEREON IS TAKEN FROM THE APPROVED ROAD CONSTRUCTION PLANS AND TOPOGRAPHIC INFORMATION PROVIDED BY BENCHMARK ENGINEERING, INC., ON OR ABOUT NOVEMBER, 2015.
4. ALL SEDIMENT AND EROSION CONTROL FEATURES USED ON THIS SITE SHALL COMPLY WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL.
5. ALL DRAINAGE AND STORMWATER MANAGEMENT FEATURES USED ON THIS SITE MUST COMPLY WITH THE APPROVED ROAD CONSTRUCTION PLANS EXCEPT AS WAIVED.
6. THE EXISTING WELL SHOWN ON THIS PLAN, HO-15-0087, HAS BEEN FIELD LOCATED BY BENCHMARK ENGINEERING, INC., AND IS ACCURATELY SHOWN.
7. THERE ARE NO EXISTING WELLS OR SEPTIC SYSTEMS WITHIN 100' OF THIS PROJECT'S BOUNDARY EXCEPT AS NOTED.
8. ANY CHANGES TO A PRIVATE SEWAGE DISPOSAL AREA OR WELL BOX SHALL REQUIRE A REVISED PERCOLATION CERTIFICATION PLAN.
9. STORMWATER MANAGEMENT FOR THIS LOT WAS DESIGNED TO BE PROVIDED BY A MICRO-BIORETENTION FACILITY (MDE M-6)
10. A DRIVEWAY CULVERT IS EXISTING FOR THIS LOT.
11. MICRO-BIORETENTION FACILITIES SHOULD HAVE EITHER 4" OR 6" ROOF LEADERS DEPENDING ON THE SIZE OF THE ROOFTOP AREA.
12. THE BAT TANK WILL BE NORWECO MODEL TNTLP-750GPD TANK AND THE PUMP TANK WILL HAVE A 2000 GALLON ONE COMPARTMENT TANK.

ADC MAP 17 - GRID A2
VICINITY MAP
SCALE: 1" = 2000'

*Approved Septic System Plan
Howard County Health Department
NORWECO TNTLP-750
w/ 2000 gal Pump Tank
\$2000 - BN163 (9.5hp) Pump
THIS PLAN IS FOR 4/5/2019
SEPTIC DESIGN ONLY*

BENCHMARK
ENGINEERS LAND SURVEYORS PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE SUITE 315
ELLCOTT CITY, MARYLAND 21043
(P) 410-465-6105 (F) 410-465-6644
WWW.BEI-CMLENGINEERING.COM

PLAN VIEW
1" = 50'

OWNER/BUILDER:
RAINMAKER DEVELOPMENT, INC.
6755 BUSINESS PARKWAY,
SUITE 103
ELKRIDGE, MARYLAND 21075
443-829-9222

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 45577, Expiration Date: 06-08-2020.



PROJECT: MILLERS MILL ROAD PARCEL 3	
LOCATION: TAX MAP: 14, GRID: 4, PARCEL: 76 ZONED: RC-DEO 2141 MILLERS MILL RD CLARKSVILLE, MD 21723 FOURTH ELECTION DISTRICT, HOWARD COUNTY, MD, TAX ID #596593	
TITLE: BAT SITE PLAN	
HOUSE TYPE: PATTERSON	
DATE: MARCH, 2019	PROJECT NO. 2696
SCALE: AS SHOWN	DRAWING 1 OF 4

Friction Head main

Friction Head = Head loss due to pipe friction
2.0" pipe = 155 feet

45° bends	4 loss for manifold bend	16.0 feet	per table 4.3
Str. Coupling	1 loss for straight tee	2.0 feet	per table 4.3
90 deg. Side tee	0 loss for tee bend	0.0 feet	per table 4.3 for smaller pipe
Sudden reduction	1 loss for reduction	1.0 feet	per Crane Co. technical paper
45° bends	2 loss for lateral bend	6.0 feet	per table 4.3
Gate Valve	0 loss for valve	0.0 feet	per table 4.3

Equivalent Manifold Length = 173.0 feet Friction loss = 4.72 feet

1.5" lateral Equivalent lateral Length = 114.00 feet Friction loss = 2.93 feet

Total Friction Head = 7.65

Size Pump Chamber

Pump chamber must be able to hold one dose and one day design flow
One day Capacity = 750 gallons
Dose = 110.71 gallons
Totals = 860.71 gallons

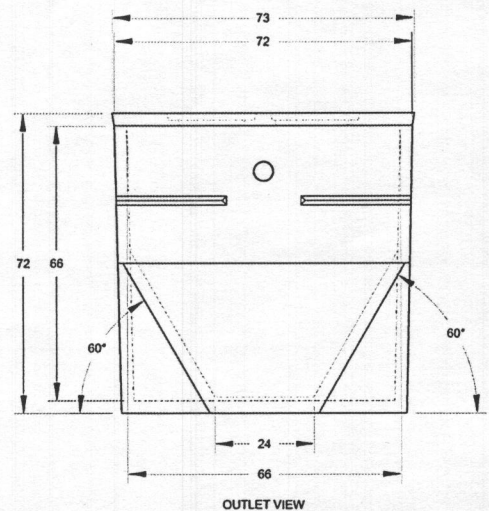
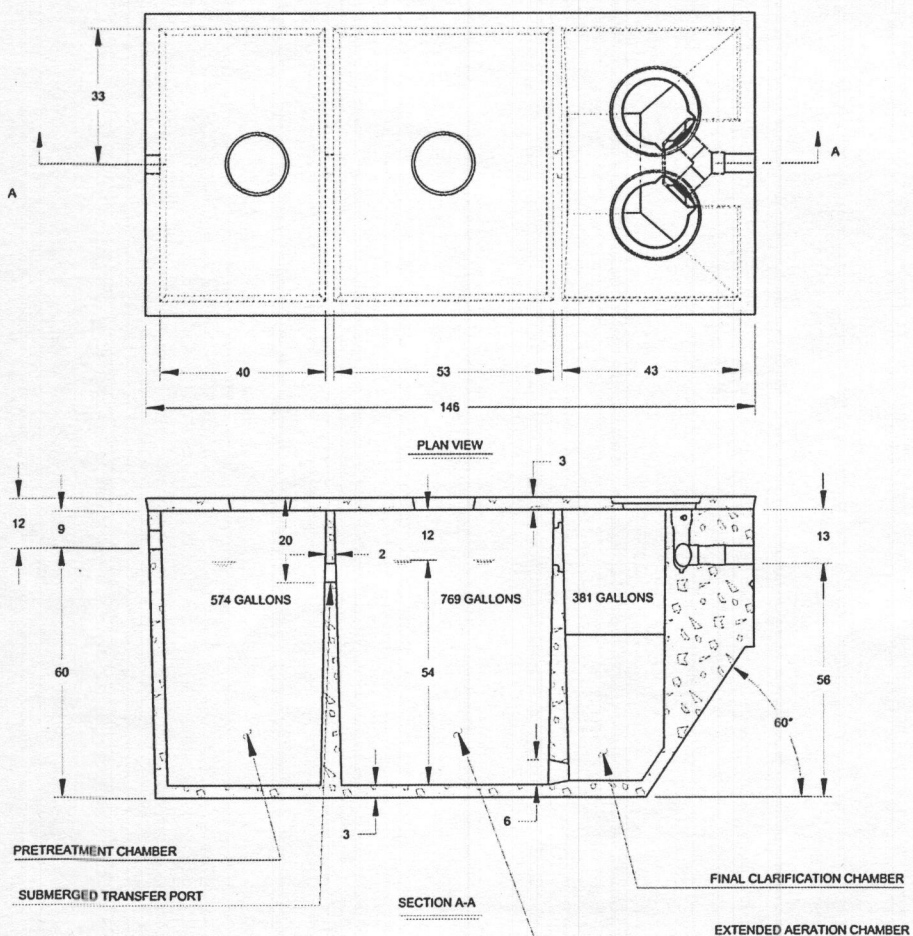
Use one 2,000 gallon pump tank (Tanks size per Health Department Septic Specifications Worksheet was 1,500 gallons)

Tank Dimensions:		Exterior	Interior	Walls:	Bottom:
Length:	13.75 feet	Length:	13.08 feet	0.33 feet	0.33 feet
Width:	6.25 feet	Width:	5.58 feet	0.33 feet	0.33 feet
Height:	5.42 feet	Height:	4.67 feet	Top: 0.42 feet	
		Area:	72.99 sf	Invert to	
		Volume to Inlet	309.95 cf	Inlet:	4.25 feet
		Gallons per cubic foot:	7.48		
		Tank Gallons per inch per tank:	45.49	Invert to	
				Outlet:	4.00 feet

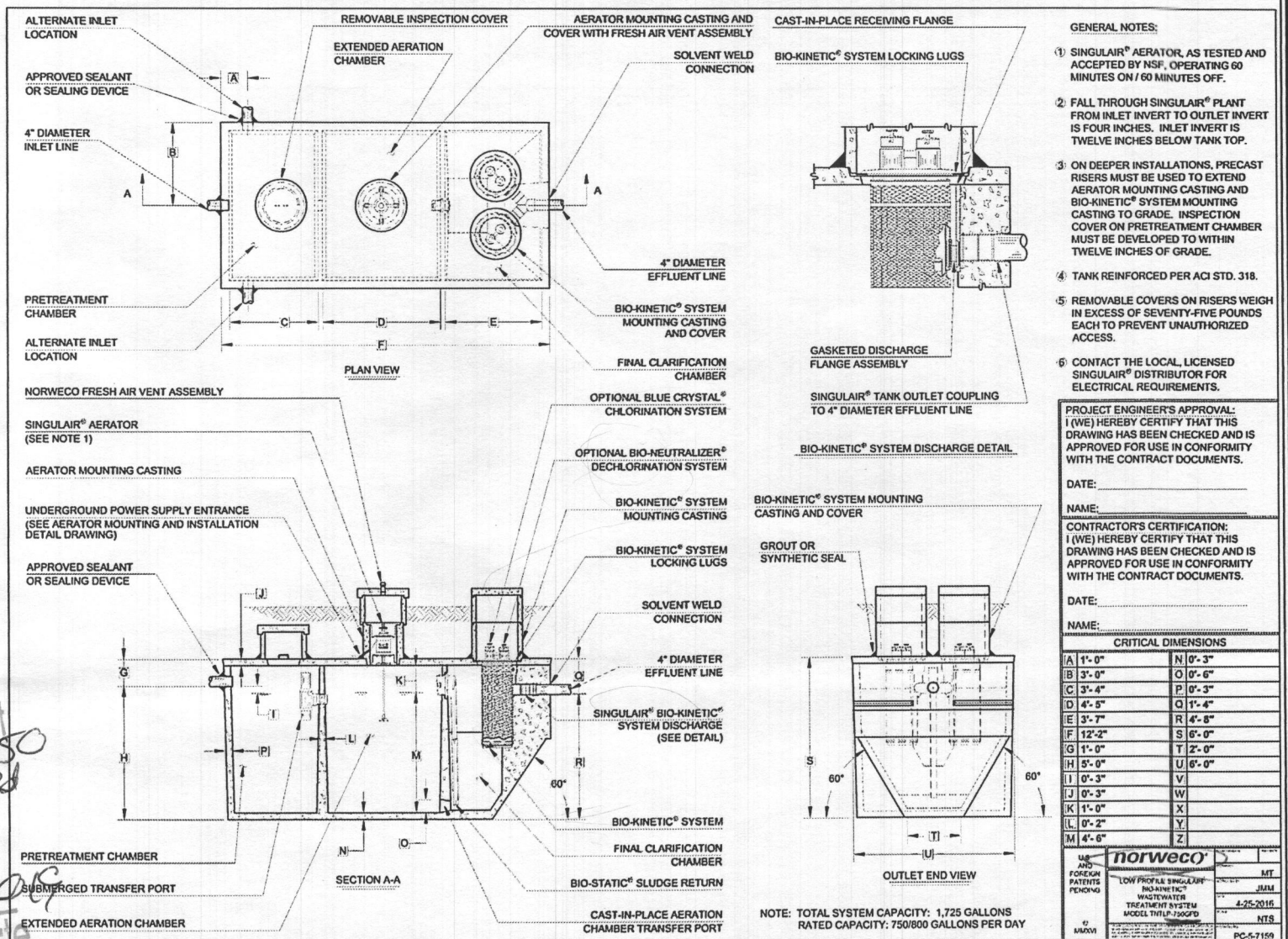
Required BAT Site Plan Notes

- Any change to the locations or depths to any components must be approved by the engineer and the Howard County Health Department prior to installation. A revised sit plan may be required.
- The maximum depth of the BAT shall be per the manufacturer's specification, 3.0'.
- The blower may not be located further from the tank than the manufacturer's specifications, 75'.
- The BAT system shall be maintained and operated for the life of the system.
- The BAT shall be operated by and maintained by a certified service provider.
- Within one month of installation, a person installing the BAT system shall report to the Maryland Department of the Environment (MDE) in a manner acceptable to MDE, the address and date of completion of the BAT installation and the type of BAT installed.
- Electrical work for the BAT installation must be performed by a licensed electrician.
- An agreement and Easement must be completed and signed by all applicable parties, and recorded in Land Records of Howard County.
- The Health Department requires documentation for the start-up certification from the manufacturer prior to final approval of the installation.

*Approved Septic System Plan
Howard County Health Department
NORWECO TWTLP-250
2141 Miller's Mill Rd
P. Black
3/15/2019
Signature*



PART NUMBER:	
norweco	MT
SINGULAR [®] BIO-KINETIC [®] WASTEWATER TREATMENT SYSTEM LOW PROFILE 750 GPD CONCRETE TANK	JMM 4-25-2016 NTS
U.S. AND FOREIGN PATENTS PENDING	PC-5-7155



- GENERAL NOTES:**
- SINGULAR[®] AERATOR, AS TESTED AND ACCEPTED BY NSF, OPERATING 60 MINUTES ON / 60 MINUTES OFF.
 - FALL THROUGH SINGULAR[®] PLANT FROM INLET INVERT TO OUTLET INVERT IS FOUR INCHES. INLET INVERT IS TWELVE INCHES BELOW TANK TOP.
 - ON DEEPER INSTALLATIONS, PRECAST RISERS MUST BE USED TO EXTEND AERATOR MOUNTING CASTING AND BIO-KINETIC[®] SYSTEM MOUNTING CASTING TO GRADE. INSPECTION COVER ON PRETREATMENT CHAMBER MUST BE DEVELOPED TO WITHIN TWELVE INCHES OF GRADE.
 - TANK REINFORCED PER ACI STD. 318.
 - REMOVABLE COVERS ON RISERS WEIGH IN EXCESS OF SEVENTY-FIVE POUNDS EACH TO PREVENT UNAUTHORIZED ACCESS.
 - CONTACT THE LOCAL, LICENSED SINGULAR[®] DISTRIBUTOR FOR ELECTRICAL REQUIREMENTS.

PROJECT ENGINEER'S APPROVAL:
I (WE) HEREBY CERTIFY THAT THIS DRAWING HAS BEEN CHECKED AND IS APPROVED FOR USE IN CONFORMITY WITH THE CONTRACT DOCUMENTS.
DATE: _____
NAME: _____

CONTRACTOR'S CERTIFICATION:
I (WE) HEREBY CERTIFY THAT THIS DRAWING HAS BEEN CHECKED AND IS APPROVED FOR USE IN CONFORMITY WITH THE CONTRACT DOCUMENTS.
DATE: _____
NAME: _____

CRITICAL DIMENSIONS	
A 1'-0"	N 0'-3"
B 3'-0"	O 0'-6"
C 3'-4"	P 0'-3"
D 4'-5"	Q 1'-4"
E 3'-7"	R 4'-8"
F 12'-2"	S 0'-0"
G 1'-0"	T 2'-0"
H 5'-0"	U 0'-0"
I 0'-3"	V
J 0'-3"	W
K 1'-0"	X
L 0'-2"	Y
M 4'-6"	Z

OWNER/BUILDER:
RAINMAKER DEVELOPMENT, INC.
6755 BUSINESS PARKWAY,
SUITE 103
ELKRIDGE, MARYLAND 21075
443-829-9222

SIGNATURE AND SEAL ARE FOR SEPTIC PROFILE AND CALCULATIONS ONLY, TANK AND DETAILS WERE NOT DESIGNED OR REVIEWED BY THE ENGINEER:

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 45577, Expiration Date: 06-08-2020.



SEE MANUFACTURERS SPECIFICATIONS FOR DETAILS.
WWW.MAYERPRECAST.COM
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THIS PLAN IS FOR SEPTIC DESIGN ONLY

BENCHMARK ENGINEERS, LAND SURVEYORS, PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE SUITE 315
ELLCOTT CITY, MARYLAND 21043
(P) 410-465-6105 (F) 410-465-6644
WWW.BEI-CVLENGINEERING.COM

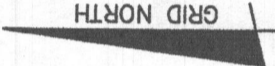
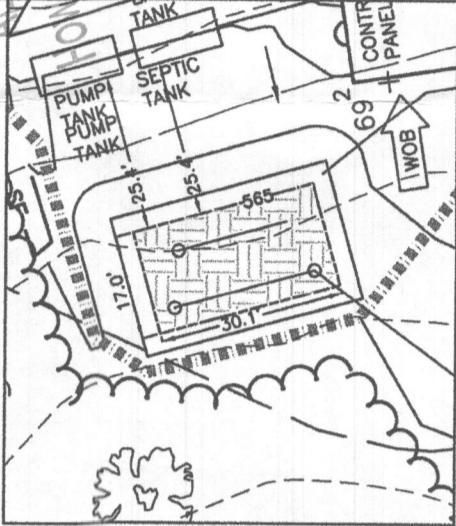
PROJECT:	MILLERS MILL ROAD PARCEL 3	
LOCATION:	TAX MAP: 14, GRID: 4, PARCEL: 76 ZONED: RC-DEO 2141 MILLERS MILL RD CLARKSVILLE, MD 21723 FOURTH ELECTION DISTRICT, HOWARD COUNTY, MD, TAX ID #596593	
TITLE:	BAT SITE PLAN	
HOUSE TYPE:	PATTERSON - ELEVATION	
DATE:	MARCH, 2019	PROJECT NO. 2696
SCALE:	AS SHOWN	DRAWING 4 OF 4

BUILDING PERMIT PLAN NOTES:

1. THE LOT SHOWN HEREON WAS RECORDED IN LIBER 16511 AT FOLIO 00071. REFER TO THE TITLE FOR LOT DIMENSIONS, LOT AREAS, ALL EASEMENTS AND CONDITIONS.
2. SEDIMENT AND EROSION CONTROLS WERE APPROVED BY HOWARD SOIL CONSERVATION DISTRICT UNDER A GRADING PLAN AND MODIFIED FOR THIS SPECIFIC HOUSE.
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8. ANY CHANGES TO A PRIVATE SEWAGE EASEMENT OR WELL BOX SHALL REQUIRE A REVISED PERCOLATION CERTIFICATION PLAN.
9. STORMWATER MANAGEMENT FOR THIS LOT WAS DESIGNED TO BE PROVIDED BY A MICRO-BIORETENTION FACILITY (MDE M-6)
10. A DRIVEWAY CULVERT IS EXISTING FOR THIS LOT.
11. MICRO-BIORETENTION FACILITIES SHOULD HAVE EITHER 4" OR 6" ROOF LEADERS DEPENDING ON THE SIZE OF THE ROOFTOP AREA.
12. THE SEPTIC TANK WILL BE A 2000 GALLON TWO COMPARTMENT TANK AND THE PUMP TANK WILL HAVE A 2000 GALLON ONE COMPARTMENT TANK.

LEGEND

GgC	SOILS CLASSIFICATION
---	SOILS DELINEATION
---	PROPOSED CONTOURS
---	EXISTING CONTOURS
---	EXISTING WOODS LINE
---	PROPOSED WOODS LINE
---	PROPOSED STRUCTURE
---	EXISTING STRUCTURE
---	EXISTING WELL
---	PROPOSED SEWAGE DISPOSAL AREA
---	EXISTING SEWAGE DISPOSAL AREA
---	SWM DRAINAGE AREA
---	PERCOLATION TEST PASSED
---	LIMIT OF DISTURBANCE
P# O	ELEV.

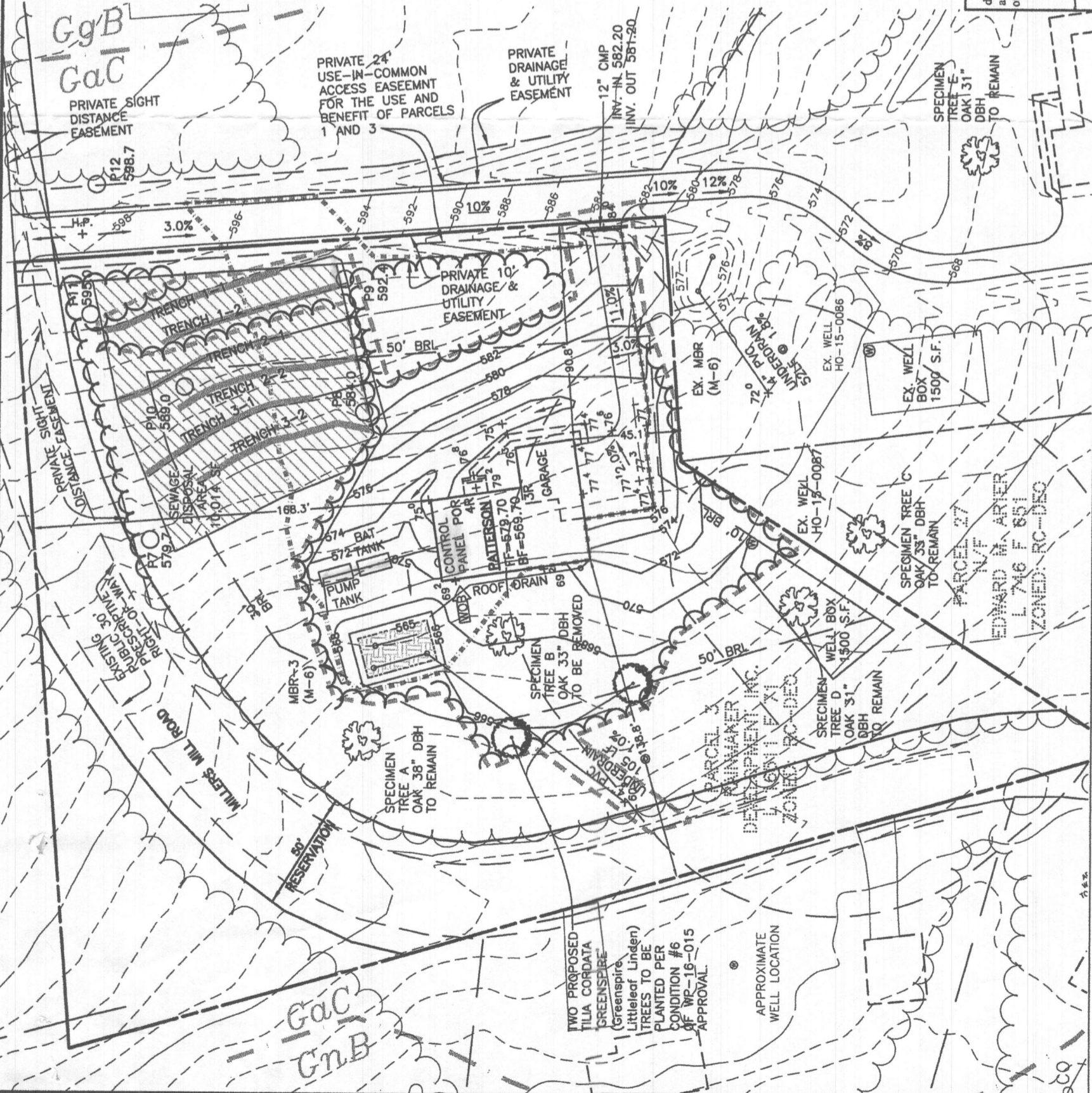


PLAN VIEW
1" = 50'

BENCHMARK
ENGINEERS & LAND SURVEYORS & PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE SUITE 315
ELLICOTT CITY, MARYLAND 21043
(P) 410-465-6105 (F) 410-465-6844
WWW.BE-CMLENGINEERING.COM

PROJECT: MILLERS MILL ROAD
PARCEL 3
LOCATION: TAX MAP: 14, GRID: 4, PARCEL: 76 ZONED: RC-DEO
2141 MILLERS MILL RD
CLARKSVILLE, MD 21723
TITLE: BUILDING PERMIT PLAN
HOUSE TYPE: PATTERSON
DATE: DECEMBER, 2018
SCALE: AS SHOWN

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 45577, Expiration date 06-09-2020.



SWM SUMMARY TABLE

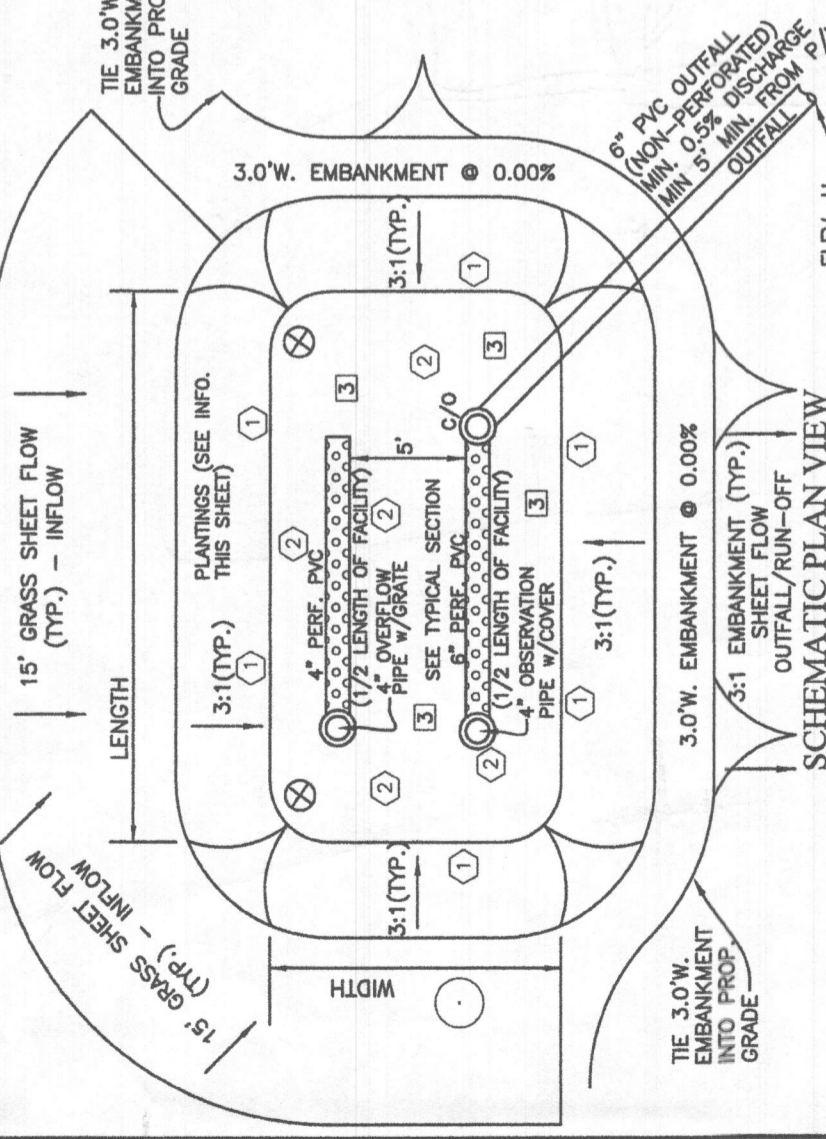
D.A.	MDE Type	Total DA	Impervious Area	Qe	Volume		ESDv Test	REV
					Required	Provided		
MBR-3 (M-6)		25,110	4,891	0.27	502	512	PASS	169,9840
Totals		25,110	4,891		502	512		169,9840

ESDv for the dry wells was taken from the dimensions provided on F-12-004

ON-LOT BIORETENTION DIMENSIONS

FACILITY	A	B	C	D	E	F	G	H	LENGTH	WIDTH	FILTER (A _F)	PLANTINGS	LINER
MBR-3	566.00	565.00	564.75	562.75	562.42	561.75	560.92	560.90	30.1	17.0	512	① 114 ② 114 ③ 57	NO

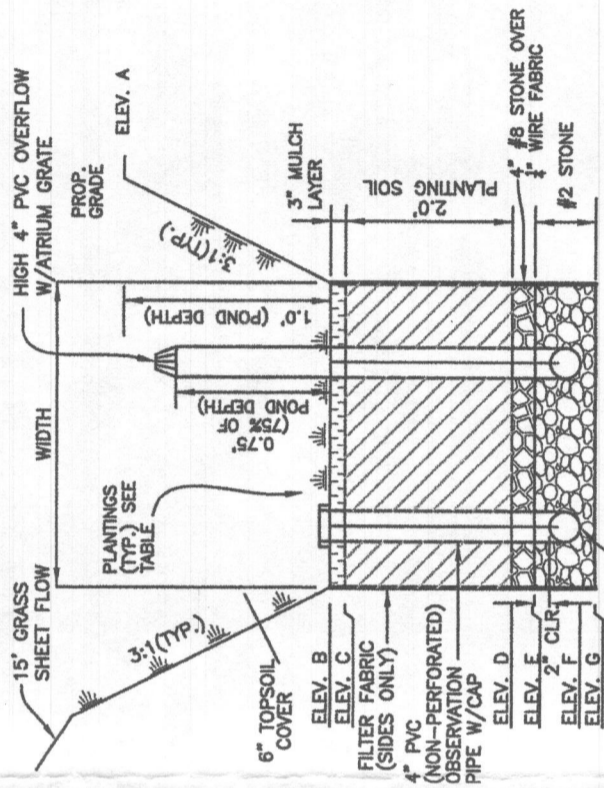
ADDITIONAL 2 SHRUBS
+ 1 TREE PER MBR



NOTE: IMPERMEABLE LINER REQUIRED WHEN FACILITY IS INSTALLED IN THE 100' WELL RADIUS. THIS LINING SHOULD INCLUDE ENTIRE SIDES AND BOTTOM OF THE EXCAVATION AND EXTEND TO TOP OF EMBANKMENT. LINING ON SIDE SLOPES SHALL BE BELOW A MINIMUM OF 6\"/>

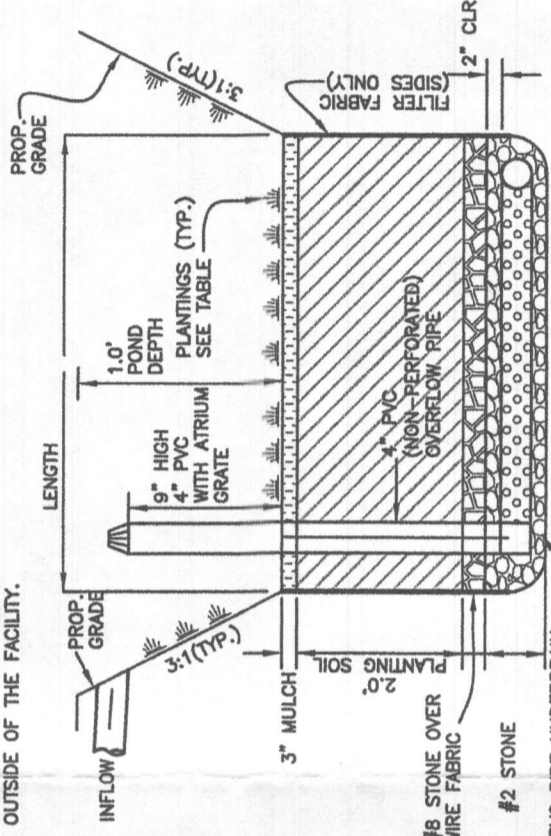
MATERIALS & SPECIFICATIONS FOR MICRO-BIORETENTION

MATERIAL	SPECIFICATION	SIZE	NOTES:
PLANTINGS	SEE APPENDIX A; TABLE A.4	N/A	PLANTINGS ARE SITE SPECIFIC
PLANTING SOIL (2.0' TO 4.0' DEEP)	LOAMY SAND 60-65% COMPOST 35-40% OR SANDY LOAM 30% COARSE SAND 30% & COMPOST 40%	N/A	USDA SOIL TYPES: LOAMY SAND OR SANDY LOAM; CLAY CONTENT <5%
ORGANIC CONTENT	MIN 10% BY DRY WEIGHT	N/A	
MULCH	ASTM D 2974	N/A	AGED 6 MONTHS, MINIMUM, NO PINE OR WOOD CHIPS
GEOTEXTILE (CLASS "C")	SHREDDED HARDWOOD	N/A	PE TYPE 1 NONWOVEN
GEOTEXTILE (1/4" WIRE MESH)		1/4" WIRE MESH	
UNDERDRAIN GRAVEL	AASHTO M-43	NO. 57 OR NO. 60.375	
UNDERDRAIN PIPING	F756, TYPE PS28 OR AASHTO M-278	4" TO 6" RIGID SCH.40 PVC, SDR35 OR HDPE	3/8" PERF. @ 6" O/C, 4 HOLES PER ROW; MINIMUM OF 3" OF GRAVEL OVER PIPES. NOT NECESSARY UNDERNEATH PIPES. PIPE SHALL BE WRAPPED WITH 1/4-INCH GALVANIZED HARDWARE CLOTH
IMPERVIOUS LINER	ASTM-D-4833 (THICKNESS) 1,100 LB. ELONGATION 200% ASTM-D-624 (TEAR RESISTANCE - 150 LB./IN) ASTM-D-471 (WATER ADSORPTION: +8 TO -2% MASS)	30 MIL THICK	LINER TO BE ULTRAVIOLET RESISTANT. A GEOTEXTILE FABRIC SHOULD BE USED TO PROTECT THE LINER FROM PUNCTURE.
GEOTEXTILE (BELOW IMPERV. LINER)	ASTM-D-4833 (PUNCTURE STRENGTH 125LB) ASTM-D-4832 (TENSILE STRENGTH 500 LB.)		



TYPICAL PROFILE

6" PVC PIPE UNDERDRAIN COLLECTION SYSTEM. PERFORATE PIPE @ 0.0% WITHIN AREA OF FACILITY, CHANGING TO 0.5% SLOPE OUTSIDE OF THE FACILITY.



TYPICAL SECTION

MICRO-BIORETENTION DETAILS

NOT TO SCALE

MICROBIORETENTION PLANTING SCHEDULE

- (PLANTING SPECIES AND DENSITY CAN BE CHANGED OR SUBSTITUTED BY A LANDSCAPE ARCHITECT OR QUALIFIED DESIGNER)
- ① IRIS FULVA (COPPER IRIS) (1 PER SY)
 - ② LOBELIA CARDINALIS (CARDINAL FLOWER) (1 PER SY)
 - ③ RUDBECKIA SUBTOMENTOSA (SWEET CONEFLOWER) (1 PER 2 SY)
 - ⊗ CALLUNA VULGARIS (HEATHER) (1 PER FACILITY)
 - ACER GINNALA (ARMOUR MAPLE) (1 PER FACILITY)

MICROBIORETENTION PLANTING DATA

1. PLANTINGS WITHIN THE PONDING AREA OF THE FACILITY ARE TO BE OF A MEDIUM TO HIGH WATER TOLERANCE
2. PLANTINGS ALONG THE PERIMETER (BERM) AREA OF THE FACILITY ARE TO BE OF A LOW TO MEDIUM WATER TOLERANCE
3. AVOID PLANTINGS WITH EXCESSIVE ROOT MASS IN POND AREA OF THE RAIN GARDEN NEAR O.B. PIPE AND UNDERDRAIN.

OPERATION AND MAINTENANCE SCHEDULE FOR MICRO-BIORETENTION (M-6)

FOR THE OPERATION AND MAINTENANCE OBLIGATIONS AND SCHEDULE, REFER TO THE DECLARATION OF COVENANTS RECORDED AMONG THE LAND RECORDS OF HOWARD COUNTY MARYLAND FOR THIS LOT.

OWNER/BUILDER:
RAINMAKER DEVELOPMENT, INC.
6755 BUSINESS PARKWAY,
SUITE 103
ELKRIDGE, MARYLAND 21075
443-829-9222

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 45517 (Exp. 06/09) Date: 06-08-2020.



BENCHMARK ENGINEERING, INC.
ENGINEERS & LAND SURVEYORS & PLANNERS
8480 BALTIMORE NATIONAL PIKE SUITE 315
ELLCOTT CITY, MARYLAND 21043
(P) 410-465-6105 (F) 410-465-6644
WWW.BEI-CVLENGINEERING.COM

PROJECT:	MILLERS MILL ROAD PARCEL 3
LOCATION:	TAX MAP: 14, GRID: 4, PARCEL: 76 ZONED: RC-DEO 2141 MILLERS MILL RD CLARKSVILLE, MD 21723
TITLE:	FOURTH ELECTION DISTRICT, HOWARD COUNTY, MD, TAX ID #596593 BUILDING PERMIT PLAN
HOUSE TYPE:	PATTERSON - ELEVATION
DATE:	DECEMBER, 2018
SCALE:	AS SHOWN
	PROJECT NO. 2696
	DRAWING 2 OF 2