

**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](http://www.facebook.com/hocohealth)

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

RECEIPT DATE: 11-30-16 **ONSITE SEWAGE DISPOSAL SYSTEM** P 559853-A

APPROVAL DATE: \_\_\_\_\_ **PERMIT: CONSTRUCTION** A \_\_\_\_\_

PROPERTY ADDRESS: 12014 Catherine Close Road

SUBDIVISION: Greenberry LOT: 10 TAX ID: 05-598673

CONTRACTOR: South Carroll Backhoe EMAIL: sbackhoe@comcast.net

CONTRACTOR ADDRESS: 4410 Salem Bottom Road, Westminster, MD 21157 PHONE: 410-596-3618

CONTRACTOR CERTIFIED FOR BAT INSTALLATION:  MDE  MANUFACTURER:

PROPERTY OWNER: NVR Inc. EMAIL: tfaris@nvrinc.com

OWNER ADDRESS: 9720 Patuxent Woods Road PHONE: 410-379-5956

BAT UNIT MODEL: Hoot 600 BNR PUMP SIZE: 0.3 PUMP TANK CAPACITY: 750 Gal

OPERATION & MAINTENANCE AGREEMENT DATE SIGNED: 10/14/16 DATE RECORDED: 10/19/16

DISTRIBUTION SYSTEM:  GRAVITY  PRESSURE DOSED BEDROOMS: 5 APPLICATION RATE: 1.2

TRENCHES:	LINEAR FEET REQUIRED: <u>142</u>	INLET DEPTH: <u>4</u>
	TRENCH WIDTH: <u>3</u>	MAXIMUM BOTTOM DEPTH: <u>7</u>
	MINIMUM SPACE BETWEEN TRENCHES: <u>10</u>	EFFECTIVE AREA BEGINNING DEPTH: <u>5</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:		

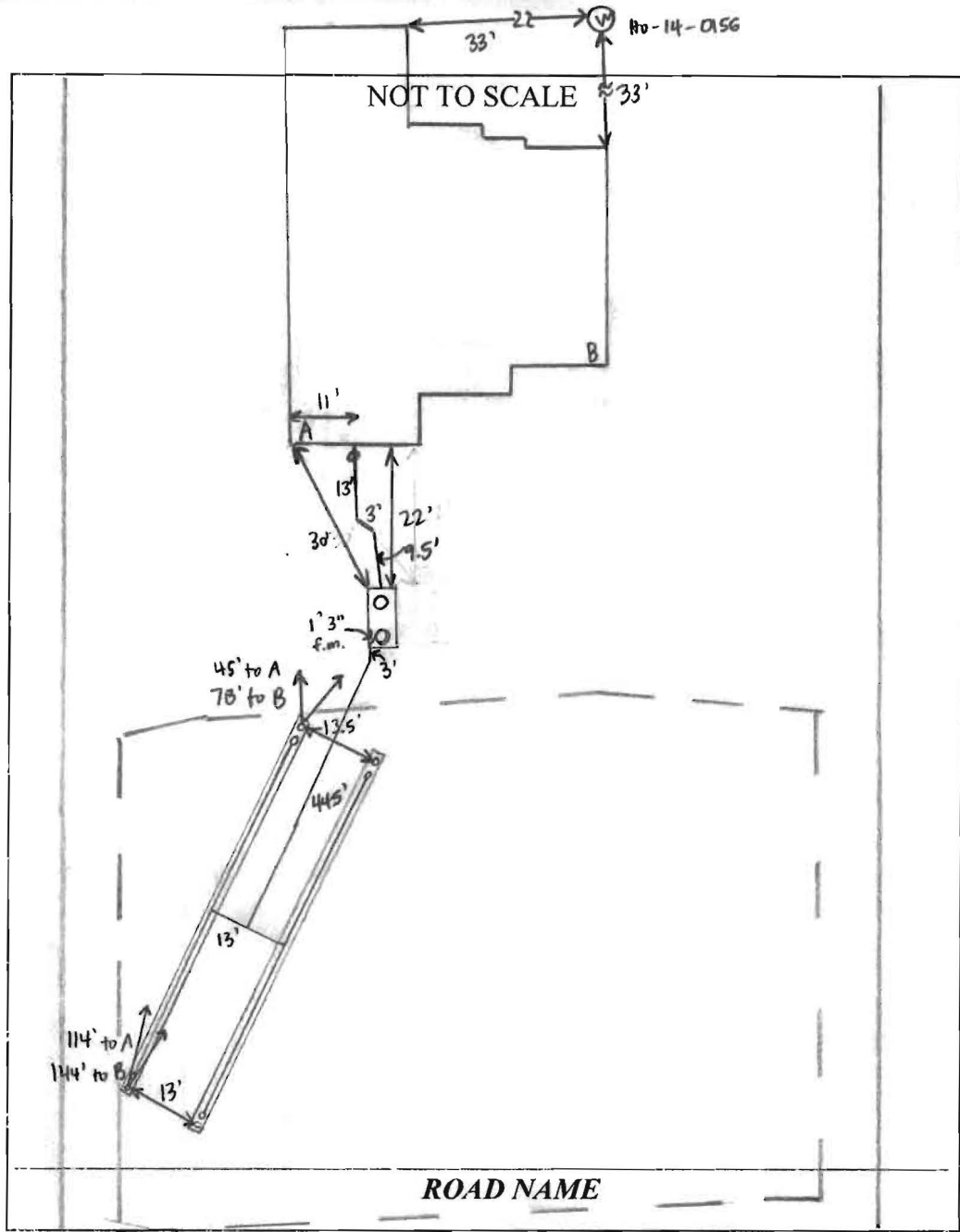
ISSUED BY: Robert Bricker ISSUE DATE: 11/30/16 EXPIRATION DATE: 11/30/17

- 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 16006740
- 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.



TRENCH/DRAINFIELD DATA		
WIDTH	INLET	BOTTOM
3'	4'	7'
NUMBER OF TRENCHES		2
TOTAL LENGTH		144'
ABSORPTION AREA		432' + SIDEWALL
DISTRIBUTION BOX LEVEL		---
DISTRIBUTION BOX BAFFLE		---
DISTRIBUTION BOX PORT		---

SEPTIC TANK DATA	
SEPTIC TANK I LEVEL	YES
MANUFACTURER	MAYER BROS. / HOOT
CAPACITY	1500 GAL
SEAM LOC	TOP
TANK LID DEPTH	3'
BAFFLES	YES
BAFFLE FILTER	NO
MANHOLE LOC	FRONT + REAR
6" PORT LOC	NONE
WATERTIGHT TEST	NO
SLOTTED	NO
DATE ON LID	---

PUMP/SEPTIC TANK LEVEL	
MANUFACTURER	---
CAPACITY	--- GAL
SEAM LOC	---
TANK LID DEPTH	---
BAFFLES	---
BAFFLE FILTER	---
MANHOLE LOC	---
6" PORT LOC	---
WATERTIGHT TEST	---
SLOTTED	---
DATE ON LID	---

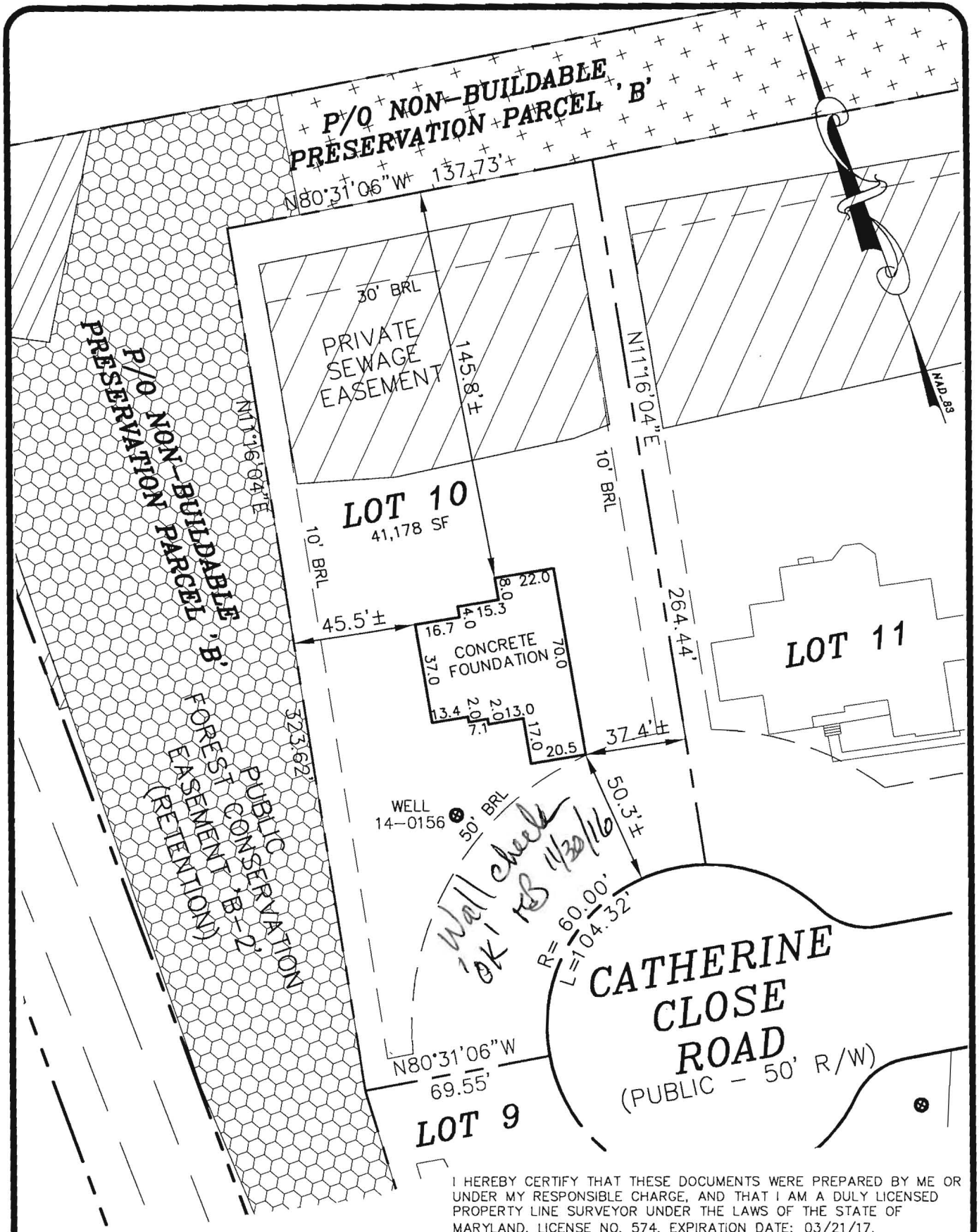
**PRE-CONSTRUCTION:**

12/2/16 Met S. Carroll on site for layout. All SDA corners, lateral, and tank stake present. Shot contour at ends of lateral - ends closest to house 8-10" lower than ends farthest from house. Move ends up SDA to bring difference closer to 6". (SC)  
 1/6/17 SDA + laterals restaked after tree removal. Shot contour and adjusted end stakes uphill 3.5' to get 6" difference between trench start + end. (SC)

**INSTALLATION:**

12/2/16 Tank set. (SC) 1/6/17 TI dug + left open. 3' wide, 7' bottom. (SC)  
 1/9/17 TI has pipe + stone installed - 4" to stone S. Carroll not working - equipment frozen to ground. (SC) 1/11/17 S. Carroll installing lateral in T2. 3' wide trench, 4' inlet. Holes drilled 4' apart, no burrs in holes. (SC) 1/17/17 House connection made, force main connected. Need BAT startup certification and pump + alarm test. (SC) 3/1/17 on site for pump + alarm and Hoot startup. Pump alarm sounds, pump pumps to laterals - 2.5-3' lateral head heights. Hoot alarm sounds. Need 4" caps on lateral turn-ups. (SC)  
 3/8/17 BAT startup certification received. (SC)

FINAL INSPECTOR \_\_\_\_\_ DATE OF APPROVAL \_\_\_\_\_



I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED BY ME OR UNDER MY RESPONSIBLE CHARGE, AND THAT I AM A DULY LICENSED PROPERTY LINE SURVEYOR UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 574, EXPIRATION DATE: 03/21/17.

ADDRESS: 12014 CATHERINE CLOSE ROAD  
TOP OF WALL ELEV. = 551.6±  
FIRST FLOOR ELEV. = N/A

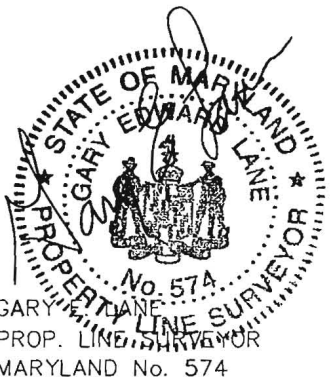
THE INFORMATION SHOWN HAS BEEN ESTABLISHED BY CURRENT ACCEPTABLE SURVEY PROCEDURES AND FROM AVAILABLE RECORD INFORMATION. THIS DRAWING IS TO BE USED FOR TITLE TRANSFER FINANCING, OR REFINANCING ONLY AND IS NOT TO BE USED FOR THE ESTABLISHMENT OF PROPERTY LINES, LOCATION OF FENCES, GARAGES, BUILDINGS, OR OTHER EXISTING OR FUTURE IMPROVEMENTS.

**LOT 10**  
**GREENBERRY**

PLATS 23453-23461  
ELECTION DISTRICT No. 5  
HOWARD COUNTY, MARYLAND

**MILDENBERG  
BOENDER, & ASSOC., INC.**

Engineers Planners Surveyors  
7350-B Grace Drive, Columbia, MD 21044  
(410) 997-0296 Balt. (410) 997-0298 Fax.



FOUNDATION	DATE: 11/21/16	FINAL LOCATION	DATE: N/A
DRAWN BY: MES	CHECKED BY: GEL	SCALE: 1"=50'	
PROJECT NO.: 15-005	LOCATION DRAWING		



**MAYER BROS., INC.**

*Precast Concrete Products*  
6264 Race Rd. Elkridge, MD 21075

## Letter of Satisfaction Hoot System Installation

Address of Property: 12014 Catherine Close Rd.  
Clarksville, MD, 21029

Date of Final Inspection: 3/1/17

Installer: South Carroll Backhoe Service

Hoot Technician/Inspector: M. Ne Sample

I hereby certify that the Hoot system installed at the property listed above has been installed according to proper Hoot installation practices. I have also verified the startup of the system and it is in proper working order.

Sincerely,

N. Michael Dwyer  
Name of Inspector  
Mayer Bros., Inc.

PH: 410-796-1434

**WBE**

FX: 410-796-1438

[www.mayerbrosprecast.com](http://www.mayerbrosprecast.com)

Grease Interceptors, Grease Solutions, Aerobic Treatment Units, Septic Tanks, Holding Tanks, Storm Water Structures, Hydroceptors, Bench Barrier, Water Meter Vaults, Sectional Valve Vaults, Top Slabs, Curb Heads, Curb Bumpers, Custom Precast Products

## Bricker, Robert

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**From:** Hikmat <jhikmat@hotmail.com>  
**Sent:** Tuesday, August 11, 2015 12:16 PM  
**To:** Bricker, Robert  
**Subject:** Re: Greenberry Plat

Thanks for the heads up

We will provide low pressure system for lot 10

Glad you brought it up now

Thanks

Sent from my iPhone

On Aug 11, 2015, at 12:06 PM, Bricker, Robert <[RBricker@howardcountymd.gov](mailto:RBricker@howardcountymd.gov)> wrote:

OK. I'm asking because of the potential for a downgrade well which will cause us to require an LPD system for Lot 10.

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**From:** Hikmat [<mailto:jhikmat@hotmail.com>]  
**Sent:** Tuesday, August 11, 2015 12:05 PM  
**To:** Bricker, Robert  
**Subject:** Re: Greenberry Plat

Of course

Too busy with the original 25 lots

Thanks

Sent from my iPhone

On Aug 11, 2015, at 11:41 AM, Bricker, Robert <[RBricker@howardcountymd.gov](mailto:RBricker@howardcountymd.gov)> wrote:

Will there be another proposal for Lot 26 and/or Lot 27 as previously explored?

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**From:** Jacob Hikmat [<mailto:jhikmat@hotmail.com>]  
**Sent:** Tuesday, August 11, 2015 11:16 AM  
**To:** Bricker, Robert  
**Subject:** RE: Greenberry Plat

My hero of the month two months in a row.

Thanks

R. Jacob Hikmat, P.E.  
President  
Mildenberg, Boender and Associates, Inc.  
7350 Grace Drive, Suite B  
Columbia, MD 21044  
(410) 997-0296  
(443) 538-9547 (Cell)

---

From: [RBricker@howardcountymd.gov](mailto:RBricker@howardcountymd.gov)  
To: [jhikmat@hotmail.com](mailto:jhikmat@hotmail.com)  
CC: [pfendlay@howardcountymd.gov](mailto:pfendlay@howardcountymd.gov)  
Subject: RE: Greenberry Plat  
Date: Tue, 11 Aug 2015 15:02:53 +0000

Greenberry plat is signed. The courier has already been here today, so it should go back to DPZ tomorrow.  
Robert Bricker, REHS/R.S., L.E.H.S.

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**From:** Jacob Hikmat [<mailto:jhikmat@hotmail.com>]  
**Sent:** Tuesday, August 11, 2015 8:56 AM  
**To:** Bricker, Robert  
**Subject:** Greenberry Plat

Robert

Good morning.

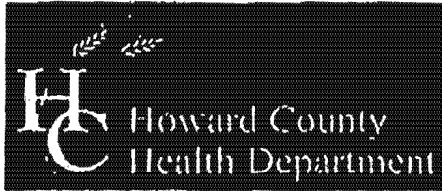
Could you please let me when you expect the record plat to be signed off by your office?

I am getting lots of pressure from the landowners and the builder an contractor. Of course, i turn around and pressure you, sorry.

Thanks

R. Jacob Hikmat, P.E.  
President  
Mildenberg, Boender and Associates, Inc.  
7350 Grace Drive, Suite B

Lot 10



Bureau of Environmental Health

8930 Stanford Boulevard, Columbia, MD 21045
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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 14th day of October 2016, among LEE JAE UK, PAK GI YOUNG AND NVR, Inc., hereinafter collectively referred to as "Owner", and the Howard County Health Department hereinafter referred to as the "County".

12014 CATHERINE CLOSE RD. CLARKSVILLE MD, 21029

WHEREAS, Owner is the owner or contract owner of a parcel of land located at 12014 CATHERINE CLOSE RD. in the 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 Folio PLAT # 23453

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 HOOT 600

NOW, THEREFORE, the parties hereto agree as follows:

20 10 16

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

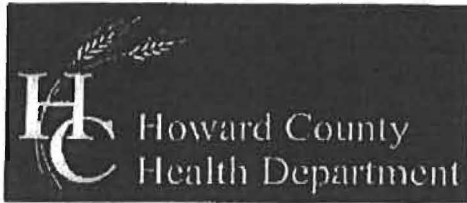
JW 8/9/2014

151

Print Date: 9/29/2016

LR - Agreement 20.00
Recording Fee 20.00
Grantor/Grantee Name:
NVR
Reference/Control #:
151
LR - Agreement 40.00
Surcharge 40.00
SubTotal: 80.00
Total: 120.00
10/19/2016 01:15 CC13-100
07137587 CC0550 -
Howard Co
Columbia/COMS 03.05 -
Register 05

Lot 10



Bureau of Environmental Health

8930 Stanford Boulevard, Columbia, MD 21045  
Main: 410-319-2640 | Fax: 410-313 2648  
TDD 410-319-2323 | Toll Free 1-866-313-6300  
www.hchealth.org

Facebook: www.facebook.com/hpcohealth  
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 14<sup>th</sup> day of October, 2014, among LEE, JAE UK, PAKER Gi You,  
AND NVR, Inc., hereinafter collectively referred to as "Owner", and the Howard County Health Department hereinafter referred to as the "County".

2014 CATHERINE CLOSE RD.  
CLARKSVILLE  
MD, 21029

WHEREAS, Owner is the owner or contract owner of a parcel of land located at CATHERINE CLOSE RD., in the 1 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            Folio           . PLAT # 23453

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 HOOT 600.

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

JW 8/8/2014

151

Print Date: 9/29/2016

LR - Agreement  
Recording Fee 20.00  
Grantor/Grantee Name:  
NVR  
Reference/Control #: 151  
LR - Agreement  
Surcharge 40.00  
SubTotal: 60.00  
Total: 120.00  
10/19/2016 01:15  
#7137587 008503 - C013-MH  
Howard Co  
Columbia/CO05.03.05 -  
Register 05

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.

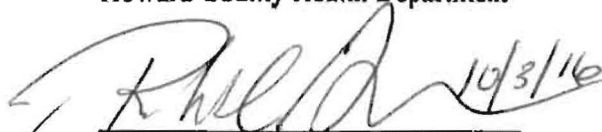
H. This agreement contains the entire agreement and understanding between the County and the Owner. There are no additional terms other than as contained in this agreement. This agreement may not be modified, except in writing signed by each of the parties or by their authorized representatives.

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

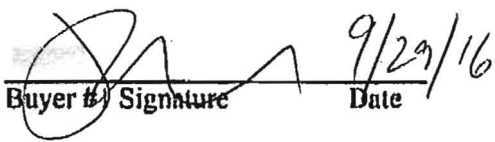
J. Owner acknowledges and agrees that interior renovations to increase the number of bedrooms or an increase in living space shall not be permitted without approval from the County.

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

  
\_\_\_\_\_  
Howard County Health Department

  
\_\_\_\_\_  
Owner #1 Signature                      Date  
Robert C. Grothmann, NV  
Owner #1 Print Name

\_\_\_\_\_  
Owner #2 Signature                      Date  
\_\_\_\_\_  
Owner #2 Print Name

  
\_\_\_\_\_  
Buyer #1 Signature                      Date

  
\_\_\_\_\_  
Buyer #2 Signature                      Date

JAE UK LEE  
\_\_\_\_\_  
Buyer #1 Print Name

GI YOUNG PAEK  
\_\_\_\_\_  
Buyer #2 Print Name

JW 8/8/2014

**SOILS TABLE (WITHIN LOD)**

SYMBOL	RATING	NAME	K FACTOR
GgB	(B)	GLENELO LOAM, 3-8% SLOPES.	.20

**PRIMARY TRENCH DATA**

TRENCH	EX. GROUND ELEVATION	INVERT ELEVATION	BOTTOM OF TRENCH EL.
1	544.00	540.00	537.00
2	543.50	539.50	536.50

**SEPTIC TRENCH SIZING**

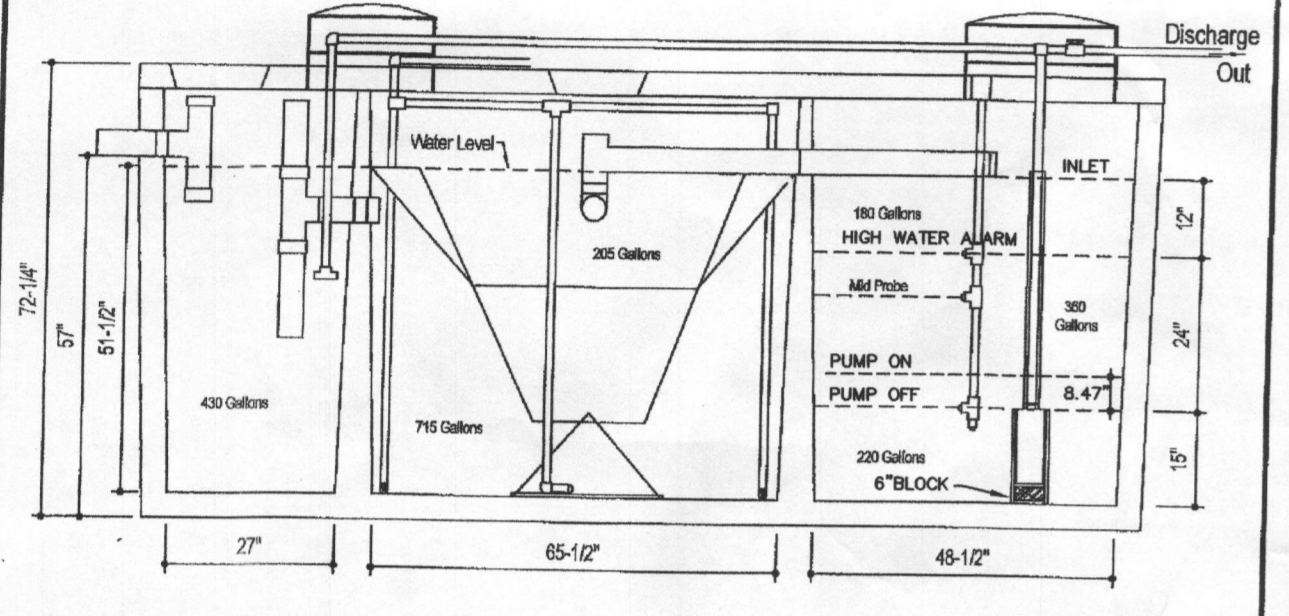
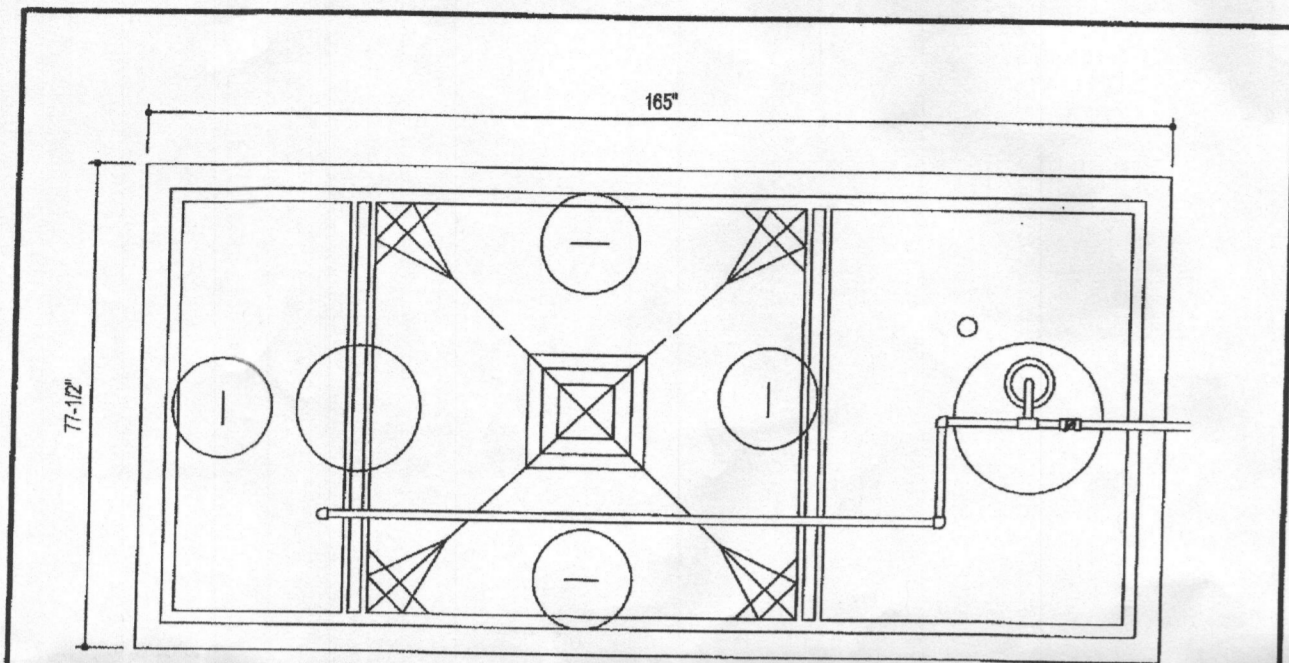
SYSTEM	APPLICATION RATE (GPD / SF)	MAXIMUM FLOW RATE (GPD)	AREA OF REQUIRED TRENCH (SF)	TRENCH WIDTH (FT)	LENGTH OF TRENCH (LF)	EFFECTIVE DEPTH BEGINS (FT)	TRENCH DEPTH (FT)	TRENCH REDUCTION FACTOR**	ADJUSTED LENGTH OF REQUIRED TRENCH (LF)	MINIMUM TRENCH SPACING (FT)	PROVIDED TRENCH LENGTH (FT)
PRIMARY	1.2	750	625	3	208.3	5.0	2.0	0.62	129.2	10.0	142
SECONDARY	1.2	750	625	3	208.3	5.0	2.0	0.62	129.2	10.0	130
TERTIARY	0.8	750	937.5	3	312.5	5.0	2.5	0.55	172.0	10.0	172

**LOW PRESSURE DOSING SYSTEM - INITIAL INSTALLATION**

TRENCH	GROUND ELEVATION	PIPE INV. ELEVATION	TRENCH LENGTH (FT)	LATERAL LENGTH (FT)	PERFORATION DIAMETER (IN)	PRESSURE HEAD (FT)	PERFORMANCE FLOW RATE (GMP)	PERFORMANCE SPACING (FT)	NUMBER OF PERFORATIONS	TRENCH FLOW RATE (GPM)
1	544.00	540.00	70.0	66.5	5/16	2.0	1.63	3.5	20	32.60
2	543.50	539.50	72.0	72.0	5/16	2.5	1.82	4.0	18	32.76

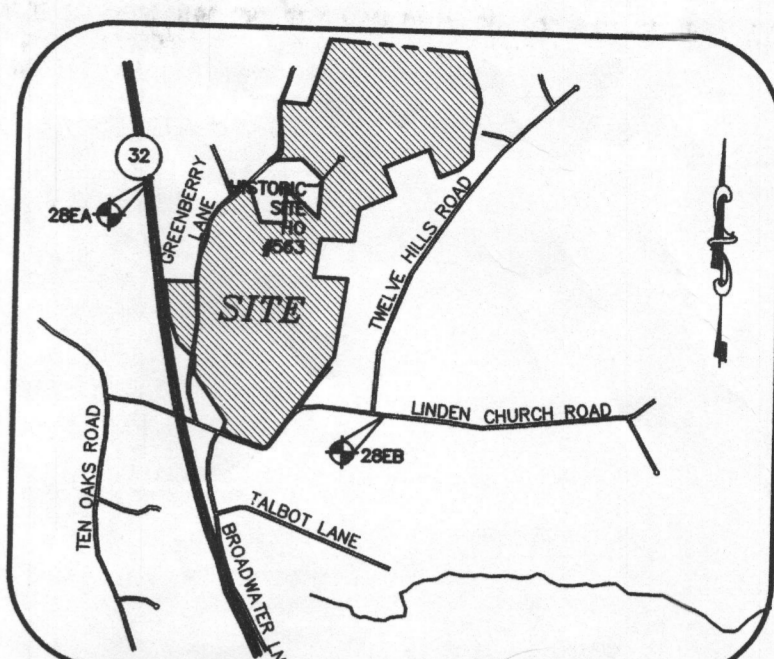
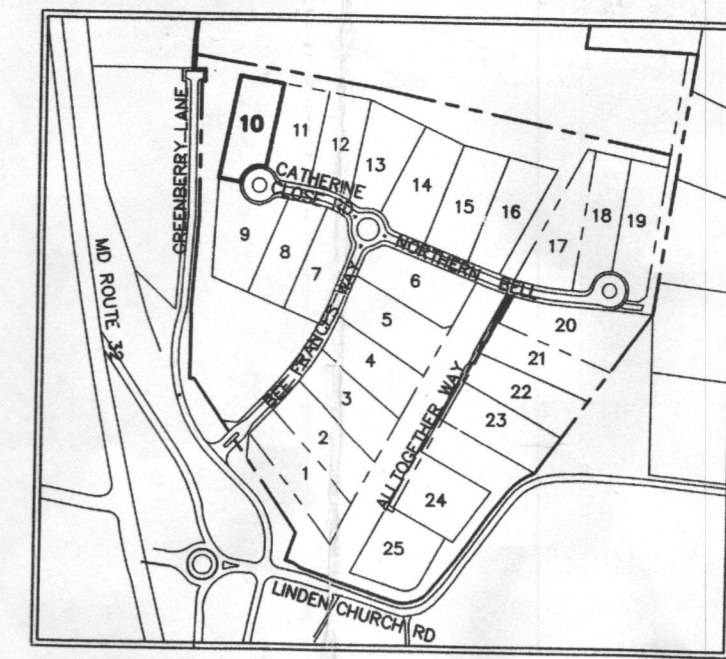
**ON-SITE SEWAGE DISPOSAL SYSTEM:**

RESIDENTIAL SYSTEM DESIGN: HOOT 600 BNR  
 5 BEDROOM HOUSE (LIVING AREA = 3,500 SQ.FT.)  
 150 X 5 = 750 GPD  
 APPLICATION RATE = 1.2 GPD/SQ.FT.  
 DESIGN FLOW + APPLICATION RATE = SQ.FT. OF TRENCH REQUIRED  
 750 + 1.2 = 625 SQ.FT.  
 SQ.FT. REQUIRED + WIDTH OF TRENCH = LENGTH OF TRENCH  
 625 + 3.0' = 208.3 FT  
 USE 24" OF GRAVEL BELOW DRAIN PIPE  
 208.3 X 0.62 = 129.1  
 USE TWO (2) 62' LONG TRENCHES  
 A MINIMUM OF 10' BETWEEN TRENCHES UTILIZING SIDEWALL REDUCTION CREDIT.  
 MINIMUM TANK CAPACITY = 600 GALLONS  
 PUMP: GOULDS MODEL WE03M



**DESIGN DATA & GENERAL NOTES**  
 1. Concrete strength Fc=4,000 p.s.i., @ 28 days, Density = 150 pcf.  
 2. Cement - Portland Type III per ASTM C 150-92.  
 3. Reinforcing - #4 rebar per ASTM A 618-98 & C 408-92.  
 4. Fabricating per ASTM A 165, Min. 1/2" cover.

**Mayer Brothers, Inc.**  
 600 GPD BNR SYSTEM  
 H-600 BNR  
 with 750 GALLON PUMP CHAMBER  
 Dwg. No. Hoot Form #1 No Scale March 19, 2009



**LOCATION PLAN**  
SCALE: 1"=600'

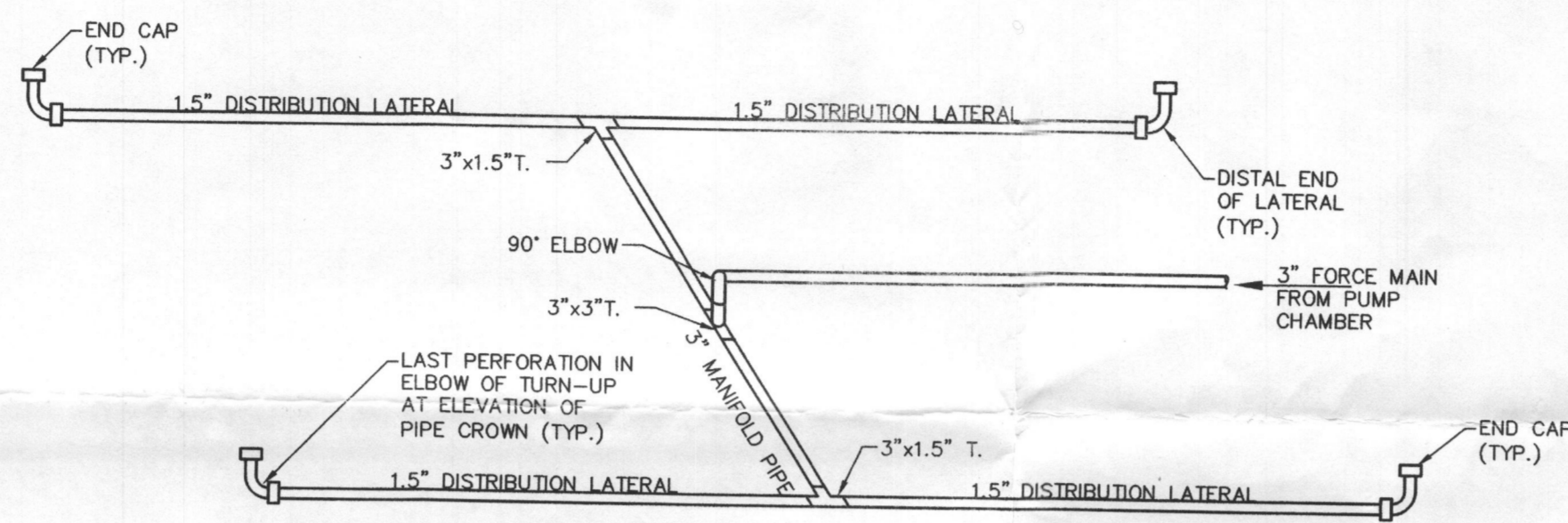
**VICINITY MAP**  
SCALE: 1"=2000'  
ADC MAP 24 GRID F6

**GENERAL NOTES:**

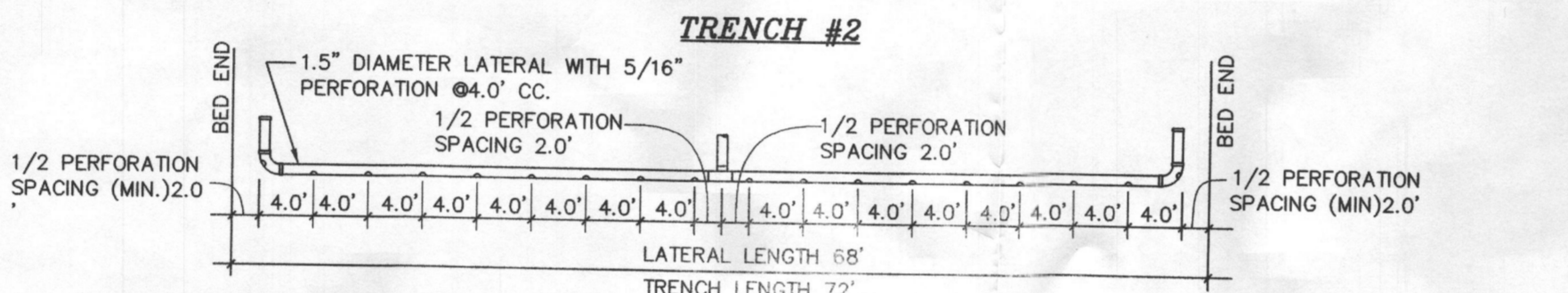
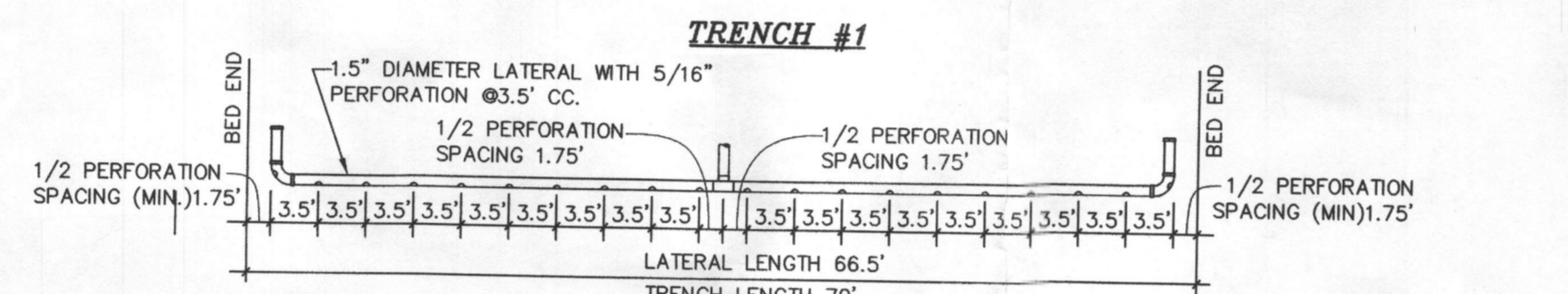
- THE SUBJECT PROPERTY IS ZONED RR-DEO PER THE OCTOBER 6, 2013 COMPREHENSIVE ZONING PLAN.
- TAX MAP: 28  
GRID: 9 PARCEL: 48  
LOT: 10  
DEED REFERENCE: LIBER 5891 FOLIO 307  
ELECTION DISTRICT: FIFTH  
ZONING: RR-DEO  
AREA: 41,178 S.F.  
D.P.F. FILES: COP-13-025, SP-13-010, F-14-095, GP-15-081  
2' TOPOGRAPHY FOR THE DEVELOPED AREAS IS BASED ON AERIAL SURVEY FLOWN BY WINGS TOPOGRAPHY INC. ON OR ABOUT MARCH 2007.  
PRIVATE WELL AND SEPTIC WILL BE UTILIZED.  
SOILS DATA BASED ON THE USDA SOIL SURVEY OF HOWARD COUNTY, MD, DATED MAY, 2008.
- THIS AREA DESIGNATES A PRIVATE SEWAGE DISPOSAL AREA OF AT LEAST 10,000 SQ. FT. AS REQUIRED BY THE MARYLAND STATE DEPARTMENT OF ENVIRONMENT FOR INDIVIDUAL SEWAGE DISPOSAL IMPROVEMENTS AVAILABLE, THESE AREAS SHALL BECOME NULL AND VOID UPON CONNECTION TO A PUBLIC SEWAGE SYSTEM. THE COUNTY HEALTH OFFICER SHALL HAVE THE AUTHORITY TO GRANT ADJUSTMENTS TO THE PRIVATE SEWAGE DISPOSAL AREA. RECORDATION OF A MODIFIED SEWAGE AREA SHALL NOT BE NECESSARY. CERTIFICATION PLAN.
- EXISTING WELLS, SEPTIC SYSTEMS, AND SEWAGE DISPOSAL AREAS WITHIN 100' OF THE PROPERTY AND THOSE WELLS WITHIN 200' DOWN GRADIENT OF EXISTING OR PROPOSED SEPTIC SYSTEMS OR SEWAGE DISPOSAL AREAS HAVE BEEN SHOWN.

**BEST AVAILABLE TECHNOLOGY (BAT) SITE PLAN NOTES**

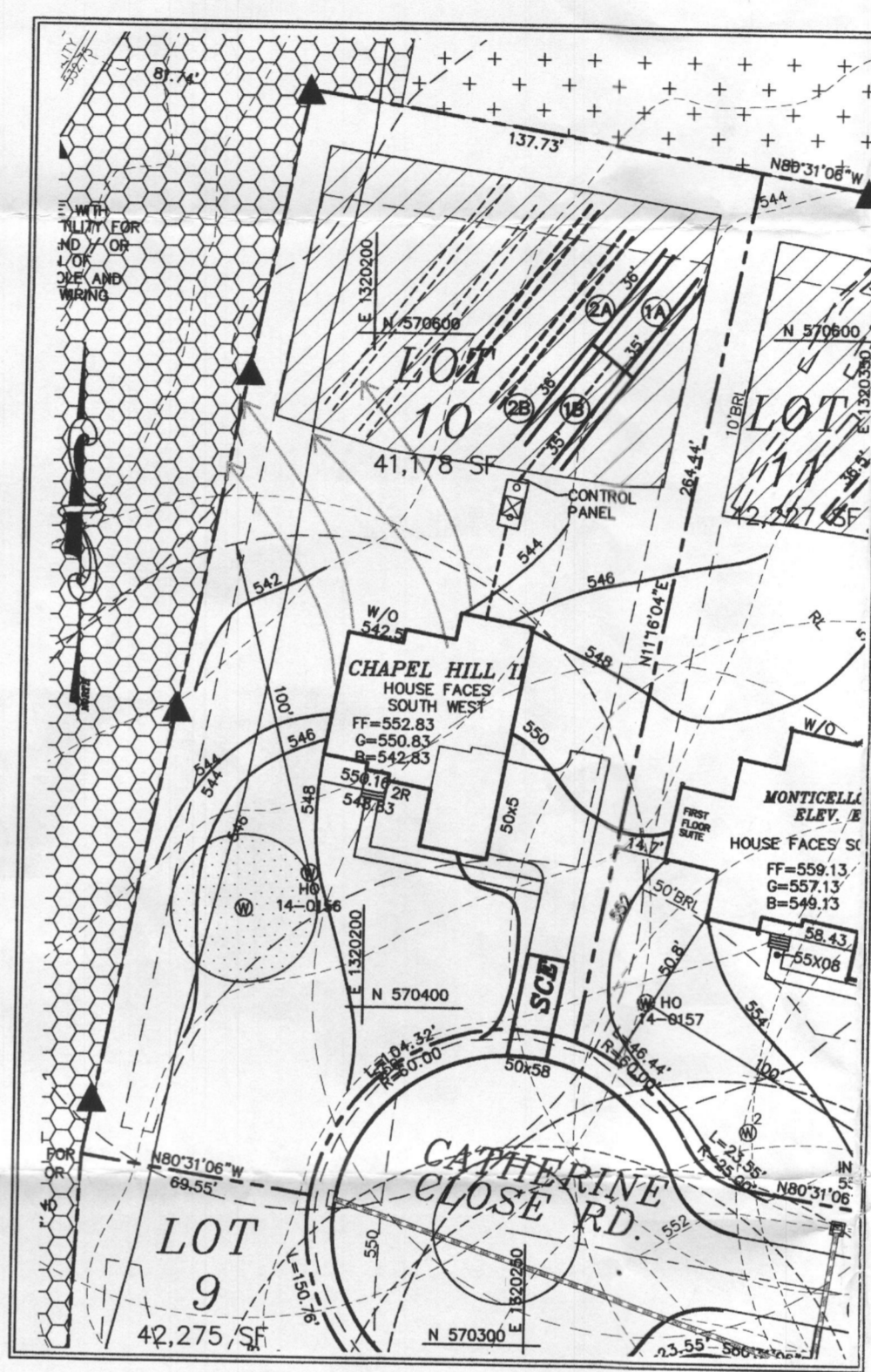
- ANY CHANGE TO THE LOCATIONS OR DEPTHS TO ANY COMPONENTS MUST BE APPROVED BY THE ENGINEER AND THE HOWARD COUNTY HEALTH DEPARTMENT PRIOR TO INSTALLATION. A REVISED SITE PLAN MAY BE REQUIRED.
- THE MAXIMUM DEPTH OF THE BAT PER THE MANUFACTURER'S SPECIFICATION IS 3.0' FEET.
- THE BLOWER MAY NOT BE LOCATED MORE THAN 100 FEET FROM THE TANK BASED ON MANUFACTURER'S SPECIFICATIONS.
- 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 (1) 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 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 THE 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.



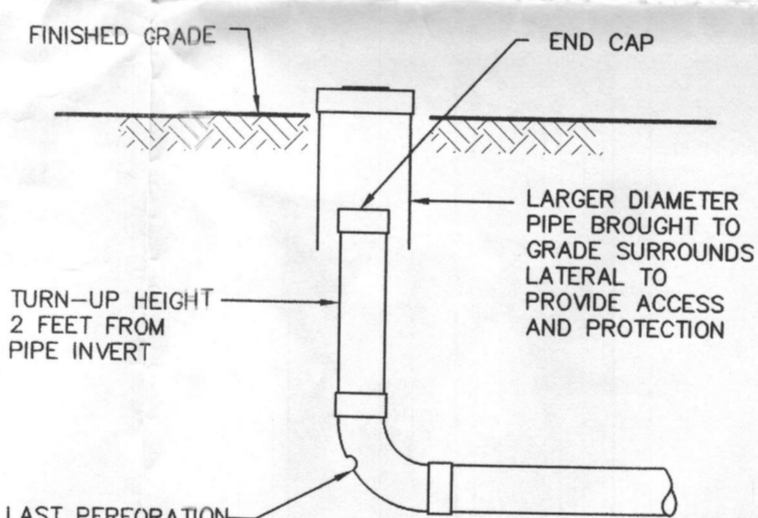
**CENTER FEED MANIFOLD DISTRIBUTION NETWORK SCHEMATIC**  
NOT TO SCALE



**CENTER FEED LAYOUT**  
NOT TO SCALE

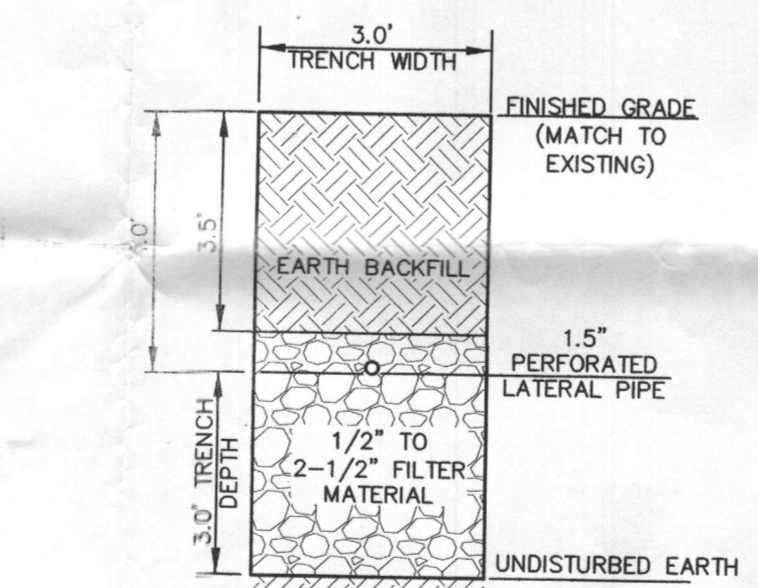


**GRAPHIC SCALE**  
1 inch = 50 feet



**TURN-UP DETAIL**  
NOT TO SCALE

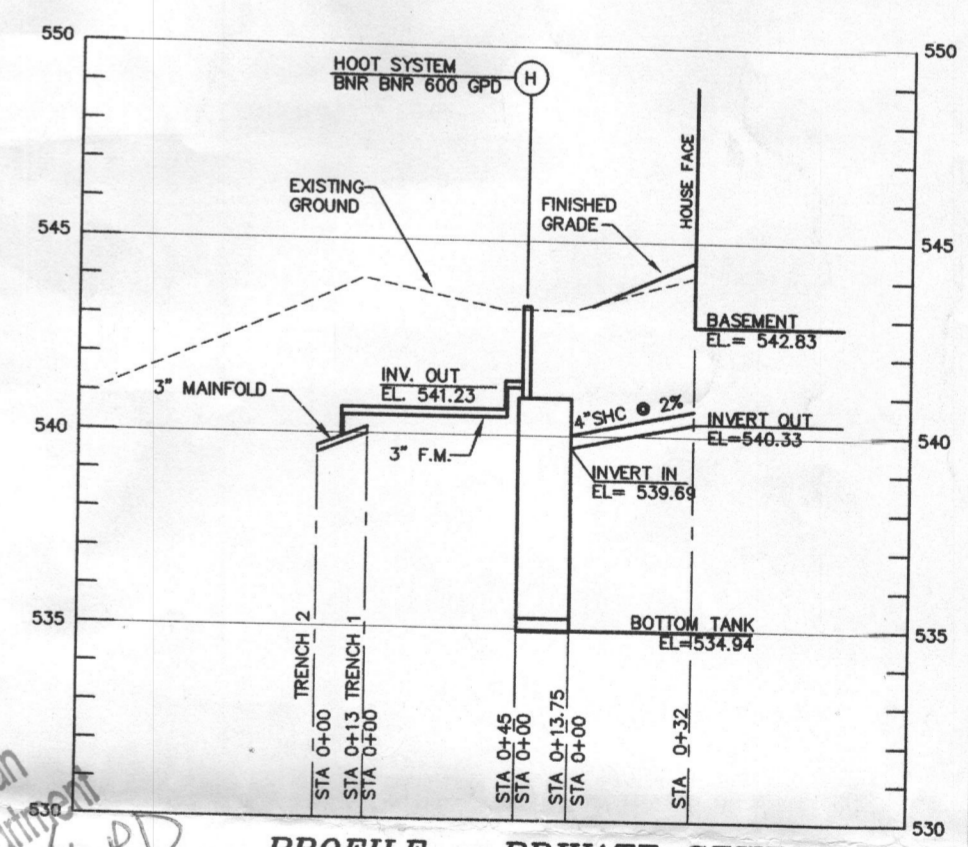
NOTE: PLACE AN OBSERVATION PIPE IN THE GRAVEL BED AT DISTAL END OF EACH TRENCH SEGMENT



**TRENCH DETAIL**  
NOT TO SCALE

**LOW PRESSURE DOSING SYSTEM**

NO. OF BEDROOMS: 5  
 TRENCH LENGTH: TRENCH #1 = 70' (42' PER LATERAL), TRENCH #2 = 72' (44' PER LATERAL)  
 FLOW METHOD: GRAVITY TO TANK  
 MANIFOLD TYPE: CENTER FEED MANIFOLD  
 HOLE DIAMETER: 3/8"  
 HOLE SPACING: LATERAL #1A = 3.5' (FIGURE 4.4), LATERAL #1B = 3.5', LATERAL #2A = 4.0', LATERAL #2B = 4.0', LATERAL #1A = 32.75', LATERAL #1B = 32.75', LATERAL #2A = 34.00', LATERAL #2B = 34.00'  
 HOLES NO./LATERAL: LATERAL #1A = 10 (STARTING 1.75' FROM MANIFOLD), LATERAL #1B = 10 (STARTING 1.75' FROM MANIFOLD), LATERAL #2A = 9 (STARTING 2.0' FROM MANIFOLD), LATERAL #2B = 9 (STARTING 2.0' FROM MANIFOLD)  
 LATERAL DIAMETER: 1.5" (FIGURE 4.4)  
 PRESSURE HEAD: LATERAL #1A AND #1B = 2.0', LATERAL #2A AND #2B = 2.5'  
 ORIFICE DISCHARGE: LATERAL #1A AND #1B = 1.63 GPM, LATERAL #2A AND #2B = 1.82 GPM  
 LATERAL DISCHARGE: (NO. OF HOLES x ORIFICE DISCHARGE)  
 LATERAL #1A = 16.30, LATERAL #1B = 16.30, LATERAL #2A = 16.38, LATERAL #2B = 16.38  
 SYSTEM DISCHARGE: 65.36  
 MINIMUM DOSE: 6 DISCHARGES PER DAY  
 VOLUME PER DISCHARGE (750/6) 125 GAL > 93.27 GAL  
 TOTAL HEAD: DYNAMIC HEAD+STATIC HEAD+OPERATING HEAD  
 DYNAMIC HEAD: 1.75 (5x90' ELBOW, 10' PER FITTING=50' OF PIPE)+3x90" TEE, 15' PER FITTING=45' OF PIPE 95'(TABLE 4.4)  
 F. M. FRICTION LOSS: 0.43 (TABLE 4.4)  
 MANIFOLD FRICTION LOSS: 0.12 (TABLE 4.4)  
 FITTINGS FRICTION LOSS: 1.75 (5x90' ELBOW, 10' PER FITTING=50' OF PIPE)+3x90" TEE, 15' PER FITTING=45' OF PIPE 95'(TABLE 4.4)  
 LATERAL SAFETY FACTOR: 1.5'  
 STATIC HEAD: 4.71'  
 DISTAL HEAD: 2.0'  
 TOTAL DYNAMIC HEAD: 10.51' (0.43+0.12+1.75+1.54+4.71+2.0)  
 USE GOULDS PUMP WE03M



**PROFILE - PRIVATE SEWER**  
SCALE: 1"=50' HOR, 1"=5' VER

**BAT SYSTEM CHART**

DESCRIPTION	ELEVATION
FINISHED GRADE AT SEPTIC TANK	543.25
INVERT INTO TANK	539.69
EXTERIOR BOTTOM OF TANK	534.94
INTERIOR BOTTOM OF TANK	535.27
PUMP OFF	536.52
PUMP ON	537.23
HIGH WATER ALARM	538.52
WATER LEVEL	539.52
INVERT OUT OF TANK	541.23
FINISHED GRADE AT TRENCH #1	544.00
INVERT INTO TRENCH #1	540.00
FINISHED GRADE AT TRENCH #2	543.50
INVERT INTO TRENCH #2	539.50
TOTAL DYNAMIC HEAD	10.051'
DOSED VOLUME	125 GAL
PUMP RUNTIME	1.7 MIN.

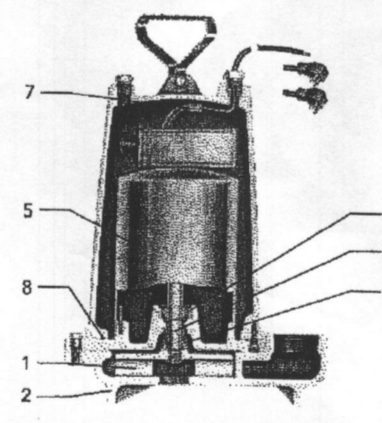
**Wastewater**  
**Goulds Water Technology**  
 Applications specifically designed for the following uses:  
 • Homes, Farms, Trailer Courts, Motels, Schools, Hospitals, Industry, Effluent Systems  
 • 1 1/2 HP and larger units have bare lead cord ends.  
**Three phase (60 Hz):**  
 • Class 10 overload protection must be provided in separately ordered starter unit.  
 • STOW power cords all have bare lead cord ends.  
 • Designed for Continuous Operation: Pump ratings are within the motor manufacturer's recommended working limits, can be operated continuously without damage when fully submerged.  
 • Bearings: Upper and lower heavy duty ball bearing construction.  
 • Power Cable: Severe duty rated, oil and water resistant. Epoxy seal on motor end provides secondary moisture barrier in case of outer jacket damage and to prevent oil wicking. Standard cord is 20'. Optional lengths are available.  
 • O-ring: Assures positive sealing against contaminants and oil leakage.  
**AGENCY LISTINGS**  
 Tested to UL 778 and CSA 22.2 108 Standards. By Canadian Standards Association File #E39549

**PERFORMANCE RATINGS (gallons per minute)**

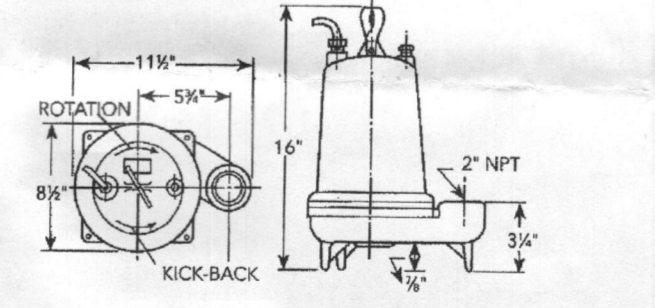
Order No.	HP	1750	1750	3500	3500	3500	3500	3500	3500
5	86	-	-	-	-	-	-	-	-
10	70	43	78	94	-	-	-	58	95
15	52	32	60	83	98	123	149	190	136
20	37	35	46	63	98	117	145	187	133
25	5	15	48	74	94	117	145	187	133
30	-	-	35	67	88	110	140	183	130
35	-	-	22	57	82	103	135	180	126
40	-	-	-	45	74	95	130	171	121
45	-	-	-	35	64	86	125	174	116
50	-	-	-	25	53	77	-	70	110
55	-	-	-	40	67	-	-	66	103
60	-	-	-	30	56	-	-	63	96
65	-	-	-	20	45	-	-	58	89
70	-	-	-	-	35	-	-	55	81
75	-	-	-	-	25	-	-	51	74
80	-	-	-	-	-	-	-	47	66
90	-	-	-	-	-	-	-	37	49
100	-	-	-	-	-	-	-	28	30

**COMPONENTS**

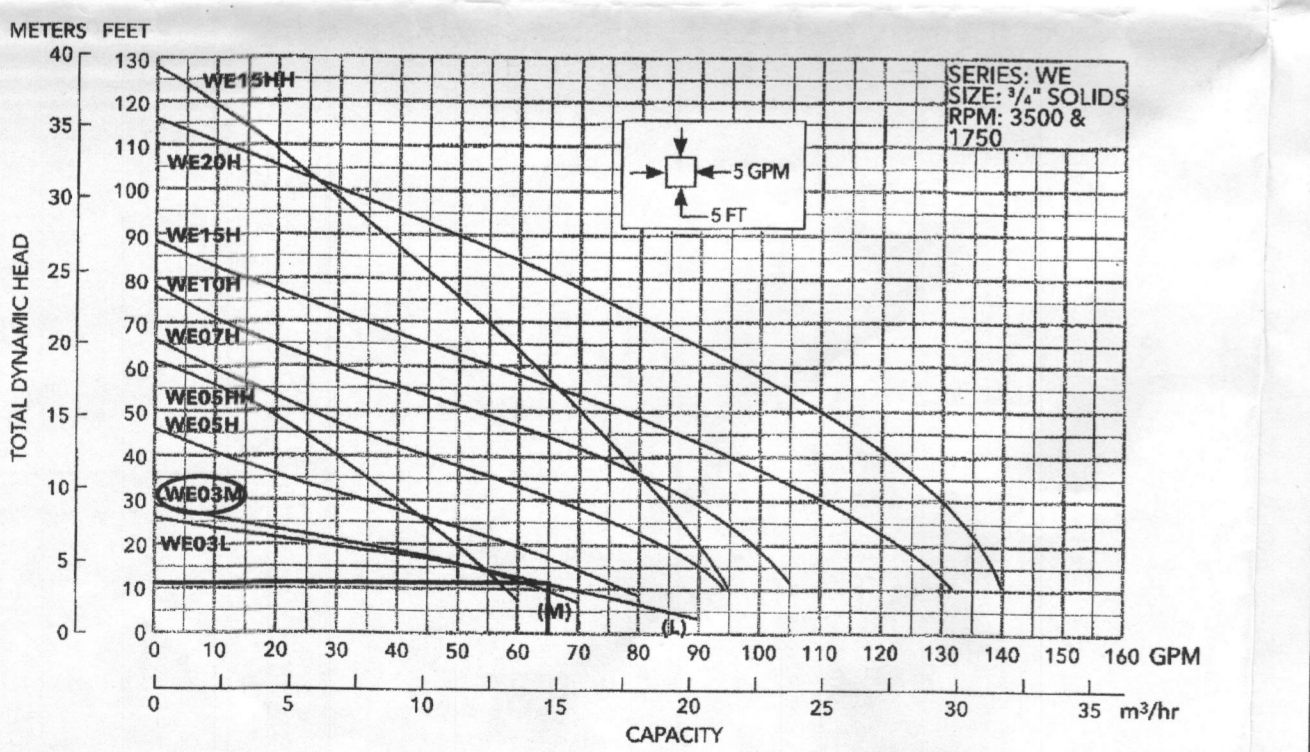
Item No.	Description
1	Impeller
2	Casting
3	Mechanical Seal
4	Motor Shaft
5	Motor
6	Ball Bearings
7	Power Cable
8	Casting O-Ring



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



**xylem**  
 Let's Solve Water  
 Xylem, Inc.  
 2881 East Bayard Street Ext., Suite A  
 Seneca Falls, NY 13148  
 Phone: (866) 325-4210  
 Fax: (866) 322-5977  
 www.xylem.com/brands/gouldswatertechnology  
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**WELL CERTIFICATION:**  
 THE EXISTING WELL, TAG NO. HO-14-0156, HAS BEEN FIELD LOCATED AND IS ACCURATELY SHOWN

STATE OF MARYLAND  
 R. JACOB HIKMAT  
 PROFESSIONAL ENGINEER  
 NO. 17942  
 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. 17942, EXP. DATE 09/03/2018.  
 DATE: 10/25/18  
 R. JACOB HIKMAT, P.E.

Project	15-005	date	OCT 2016
Illustration	MMM	engineering	MMM
REVISION/ISSUED TO	MMM	approval	RJH
DATE SUBMITTED		SCALE	1"=50'

NO.	description	revisions

12014 CATHERINE CLOSE ROAD, CLARKSVILLE MD  
**GREENBERRY LOT 10**  
 FIFTH ELECTION DISTRICT  
 HOWARD COUNTY  
 SITE PLAN FOR BAT INSTALLATION

**MILDENBERG, BOENDER & ASSOC., INC.**  
 Engineers Planners Surveyors  
 7850-B Grace Drive, Columbia, Maryland 21044  
 (410) 997-0298 Fax  
 (410) 997-0298 Fax