

OSE/PE Report for
Construction Permit [☐] Certification Letter [X] Subdivision Approval [☐]

Property Location:

911 Address: _____ . City: _____ .

Lot _____ . Section _____ . Subdivision _____ .

GPIN or Tax Map # TM 7-8B . Health Dept. ID # _____ .

Latitude _____ . Longitude _____ .

Applicant or Client Mailing Address:

Name: Lori Foster .Street: 820 Ridgeview Road .City: Brightwood . State: Va. . Zip Code: 22715 .

Prepared by:

OSE Name Thomas A. Warby . License # 1940-001009 .Address 13235 Matts Ln .City Culpeper . State Virginia . Zip Code 22701 .P. E. Name Thomas A. Warby . License # 0402018466 .Address 13235 Matts Ln .City Culpeper . State Virginia . Zip Code 22701 .Date of Report November 21, 2023

Date of Revision #1 _____ .

OSE/PE Job Number C2016 .

Date of Revision #2 _____ .

Contents/Index of this report:

Certification Page . Soil Report/Profiles . Well Specifications .Application Page . Abbreviated Design . BioCoir Specifications .Site Location Map . Design Calculations . Pump Design .San Survey/Site Dev Plan. Construction Spec. Page . _____ .

Certification Statement(s)

I hereby certify that the evaluations and/or designs contained herein were conducted in accordance with the Sewage Handling and Disposal Regulations (12 VAC5-610), the Private Well Regulations (12 VAC5-630), and all other applicable laws, regulations and policies implemented by the Virginia Department of Health. I further certify that I currently possess any professional license required by the laws and regulations of the Commonwealth that have been duly issued by the applicable agency charged with licensure to perform the work contained herein.

[☐] The work attached to this cover page has been conducted under an exemption to the practice of engineering, specifically the exemption in Code of Virginia Section 54.1-402.A.11

I recommend that a (select one) construction permit [☐] certification letter [X] subdivision approval [☐] be (select one) approved [X] denied [☐]

OSE/PE Signature Thomas A. Warby 11-21-23

Commonwealth of VirginiaApplication for: ☒ Sewage System ☒ Water SupplyHealth Department ID # _____
Due Date _____

Owner Lori Foster
 Mailing Address 820 Ridgeview Road
Brightwood, VA 22715
 Agent Mr. Thomas A. Warby
 Mailing Address 13235 Matts Ln
Culpeper, VA 22701
 Site Address _____

Phone (540) 272-2898
 Phone _____
 Fax (540) 727-2342
 Phone (540) 937-6623
 Phone _____
 Fax (540) 937-6624
 Email _____

Directions to Property: From Madison take Rte 231 North. Left on 670. Right on Weakley Hollow Rd. Left on Chad Berry Lane. The lot is on the left.

Subdivision _____ Section _____ Block _____ Lot _____
 Tax Map 7-8B Other Property Identification _____
 Dimension/Acreage of Property 3.099 Acres

Sewage System (New Construction)

Construction permits are valid for 18-months. Owners are advised to apply for a construction permit if they intend to build within 18 months of completing this application. Certification letters do not expire, may be recorded in the land records, and transfer with a property sale. For which are you applying?

☒ Certification Letter ☐ Construction Permit ☐ Subdivision Approval

Sewage System (Existing Construction)

Check all that apply: ☐ Repair ☐ Modification ☐ Expansion ☐ Replacement ☐ Upgrade
 Do you wish to apply for a betterment loan eligibility letter? _____. If yes, there is a \$50.00 fee for determination of eligibility.

Sewage System (New or Existing Construction)

☒ Single Family Home (Number of Bedrooms 3) ☐ Multi-Family Dwelling (Total Number of Bedrooms) _____
☐ Other (describe) _____
 Basement? Yes Walk-out Basement? Yes Fixtures in Basement? Yes
 Conditional permit desired? No If yes, which conditions do you want?
☐ Reduced water flow ☐ Limited occupancy ☐ Intermittent or seasonal use
☐ Seasonal or temporary use not to exceed 1 year.
 Type of System: Pretreated Traditional Septic System

Water Supply

Will the water supply be Public or Private? Private Is the water supply Existing or Proposed? Proposed
 If proposed, is this a replacement well? No Will the old well be abandoned? N/A
 Will any buildings within 50' of the proposed well be termite treated? No
 Type of Well: 3C

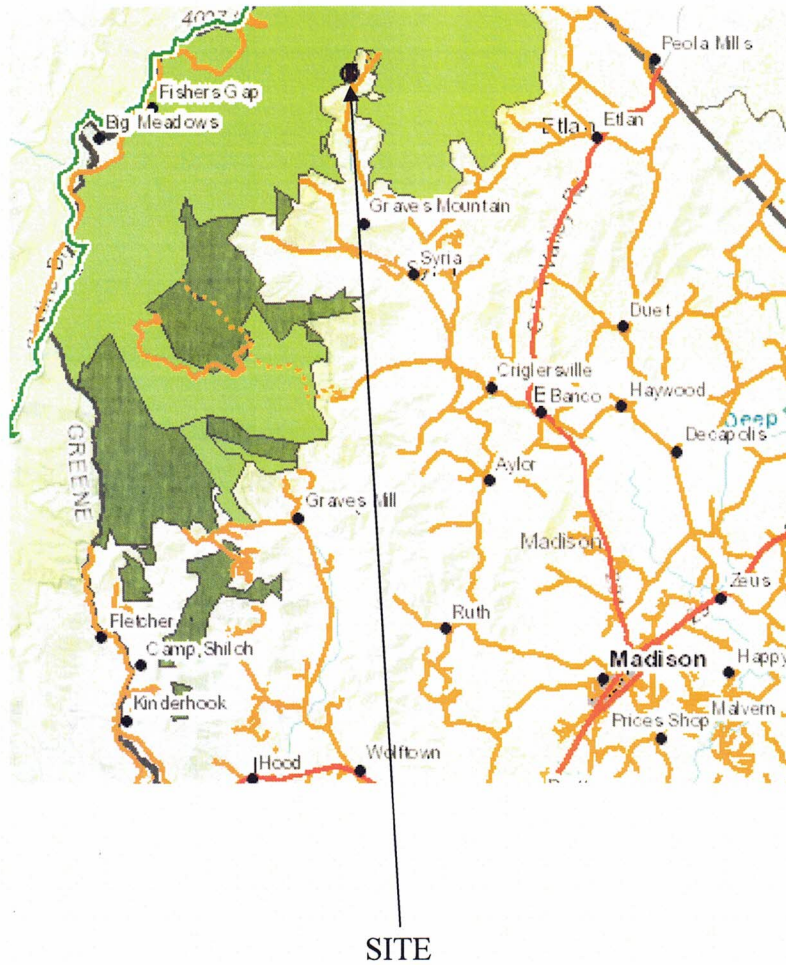
All Applicants

Is this property indeed to serve as your (owners) principal place of residence? ☐ Yes ☒ No
 All applications must be accompanied by private sector evaluations and designs, unless a petition for VDH services is approved. Is a Petition for Service form attached? ☐ Yes ☒ No

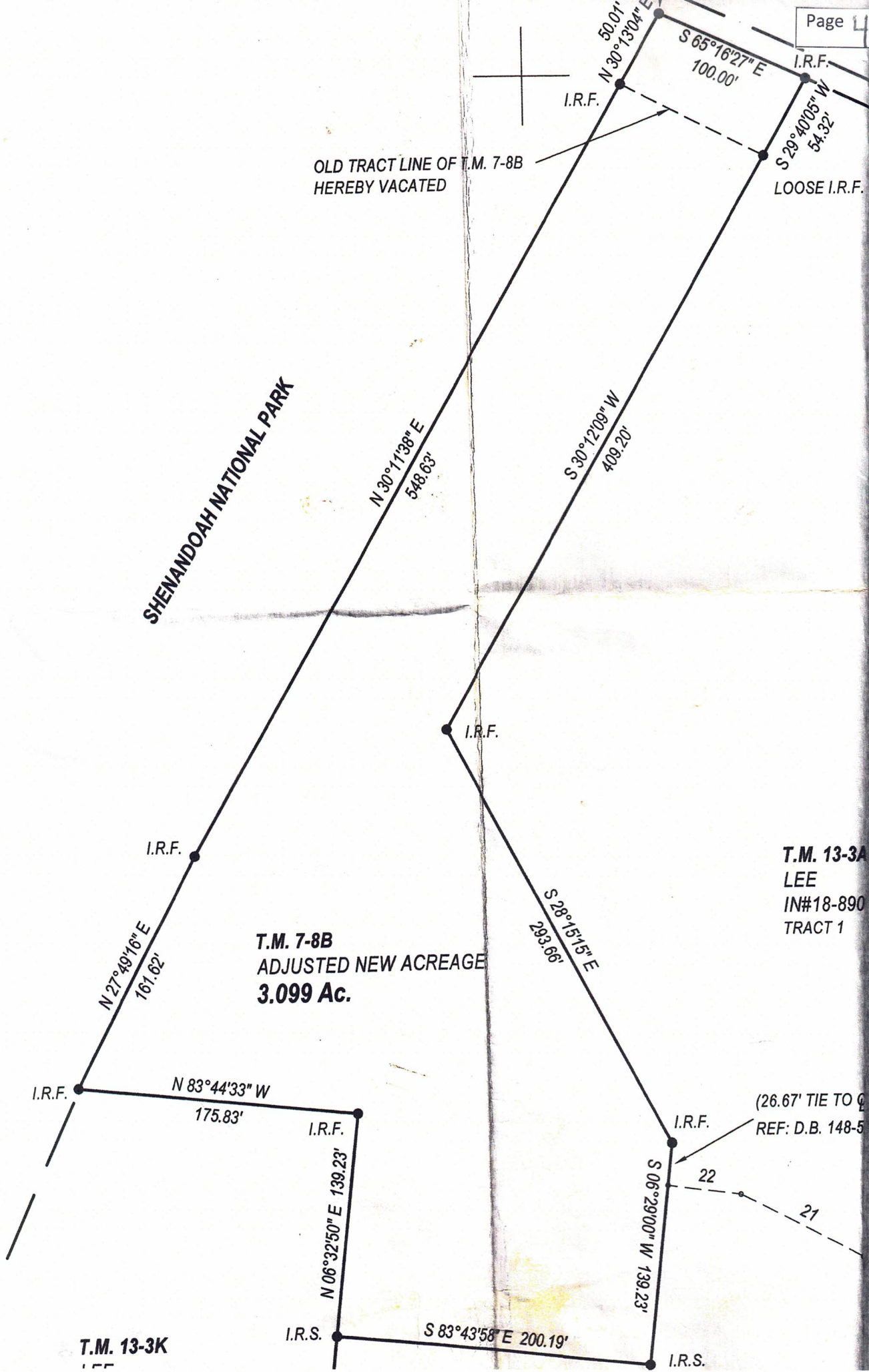
Note: For sewage systems, a plat of the property may be required and a site sketch is always expected. For water supplies, a plat of the property is not required and a site sketch is always expected. The site sketch should show your property lines, actual and/or proposed buildings and the desired location of your well and/or sewage system. Your property lines, building location and the proposed well and sewage system sites must be clearly marked and sufficiently visible to see the topography.

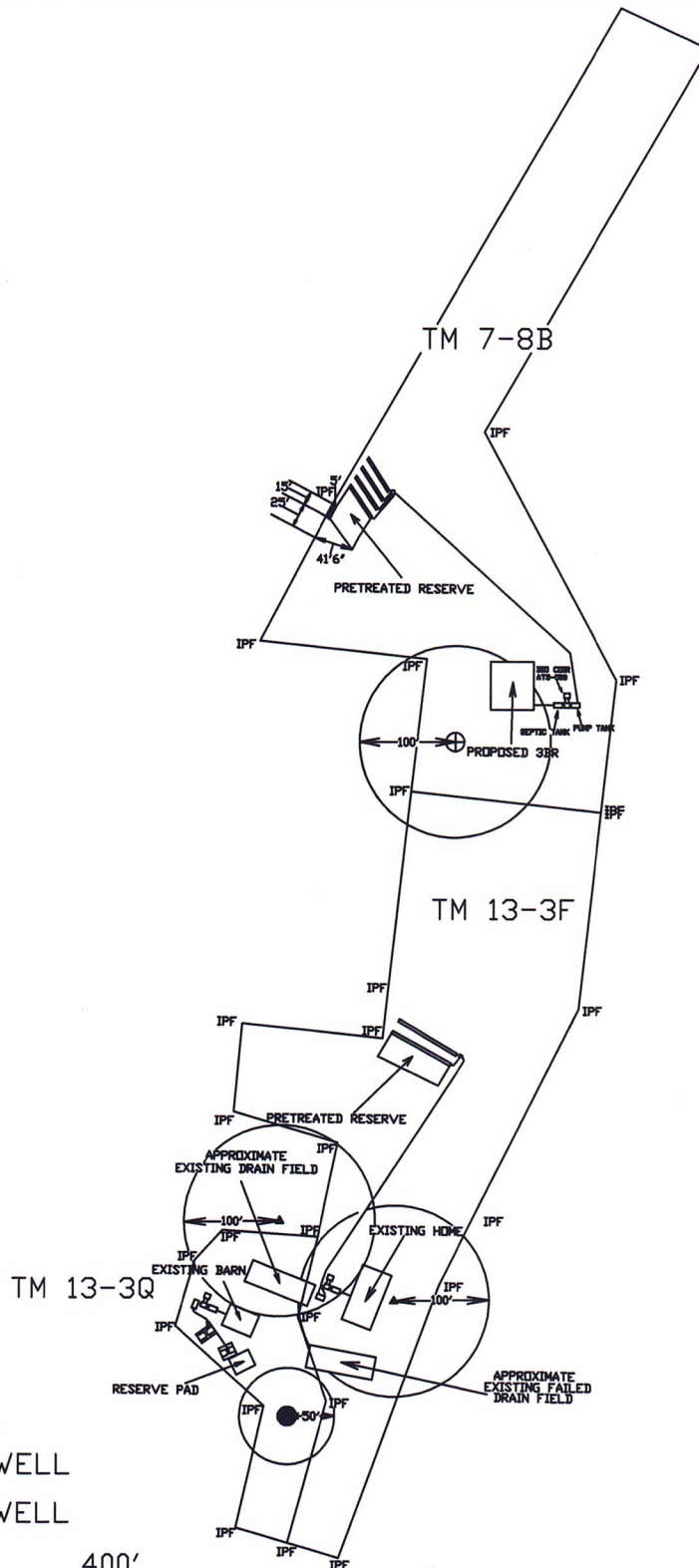
I give permission to the Virginia Department of Health to enter onto the property during normal business hours for the purpose of processing this application and to perform quality assurance checks of evaluations and designs until an operation permit is approved.

Signature of Owner/Agent_____
Date



SITE LOCATION MAP
TM 7-8B
MADISON COUNTY, VIRGINIA
CMW PROJECT NO. C2016





CMW SOIL CONSULTANTS, LLC
13235 MATTS LANE
CULPEPER, VIRGINIA 22701
TEL: (540) 937-6623
FAX: (540) 937-6624

DATE: 11-21-23

SCALE: 1" = 200'

DRWN: JDT

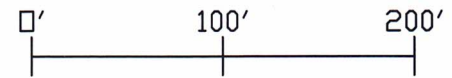
C2016

SANITARY SURVEY
TM 7-8B - MADISON COUNTY, VIRGINIA

DWG. NO:



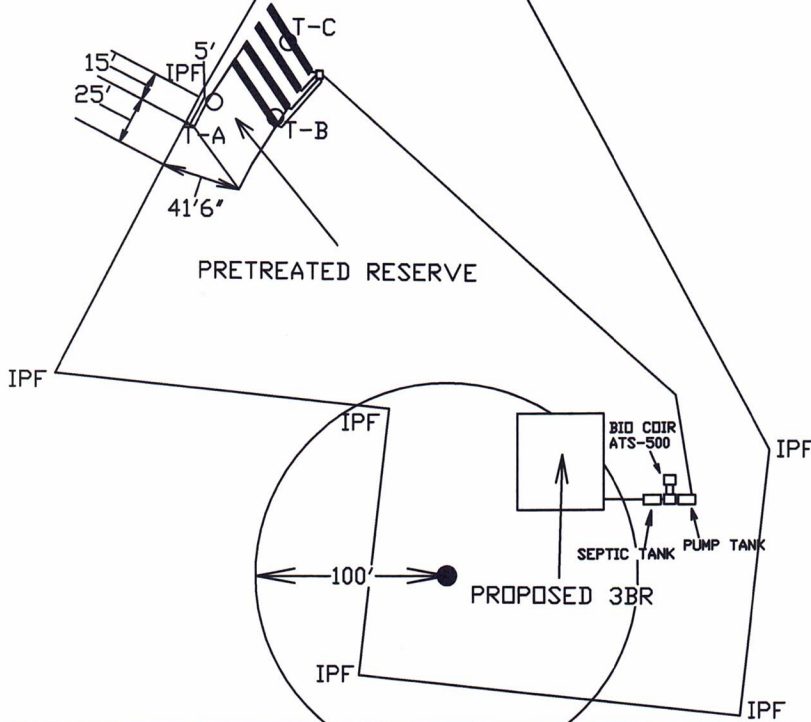
- PROPOSED 3C WELL
- CMW HAND AUGER BORING



TM 7-8B

IPF

PRETREATED RESERVE



NOTES:

1. THE SEPTIC SYSTEM CONSISTS OF A PRETREATED TRADITIONAL DRAIN FIELD OF 3 LINES, 40' LONG, 3' WIDE, 11' CENTER TO CENTER, INSTALLED 36" DEEP. EZ FLOW OR GRAVEL CAN BE USED IN THE DRAIN FIELD BUT NO REDUCTION WILL BE ALLOWED.
2. PRETREATMENT PROVIDED BY A BIO COIR ATS500.
3. FENCE OFF THE DRAIN FIELD AREA DURING CONSTRUCTION. USE EROSION CONTROL METHODS AS REQUIRED BY THE COUNTY.
4. KEEP ALL UNDERGROUND UTILITIES AT LEAST 10' FROM THE DRAIN FIELD.
5. INSTALLATION IS TO BE DONE IN DRY CONDITIONS ONLY.
6. IF NEEDED THE RESERVE IS TO BE INSTALLED AT 29"

CMW SOIL CONSULTANTS, LLC
 13235 MATTS LANE
 CULPEPER, VIRGINIA 22701
 TEL: (540) 937-6623
 FAX: (540) 937-6624

DATE: 11-21-23

SCALE: 1" = 100'

DRWN: JDT

C2016

SITE DEVELOPMENT PLAN
 TM 7-8B - MADISON COUNTY, VIRGINIA

DWG. NO:

VDH Use Only

Health Department ID#: _____

Due Date: _____

Site and Soil Evaluation Report

(For certification letters and subdivisions)

General InformationDate: November 21, 2023.Madison County Health DepartmentApplicant: Lori Foster.Telephone Number: (540) 272-2898.Address: 820 Ridgeview Road Brightwood, VA 22715.Owner: Same. Address: Same.Location: TM 7-8B; Madison County, VA.

Subdivision: _____ Block/Section _____ Lot _____.

Soil Information Summary

1. Position in landscape satisfactory? X yes ___ no Describe: Side slope.
2. Slope 24-26 %
3. Depth to rock/impervious strata Max. 41"(RES) Min. _____ None X(PRI).
4. Free water present? ___ yes X no Range in inches N/A.
5. Depth to seasonal water table (gray mottling or gray color):
____ inches (primary) ____ inches (reserve)
6. Soil percolation rate estimated: Yes X Texture group [X] I [X] II [] III [] IV
No ___ Estimated rate 30 min/in.
7. Percolation test performed: Yes ___ Number of percolation test holes ____.
No X Depth of percolation test holes ____.
Average percolation rate ____ mpi.

Name and title of evaluator: Thomas A. Warby, OSE, P.E..Signature: Thomas A. Warby.**Department Use**

___ Site approved: Drainfield trench bottoms to be placed at ____ (inches) depth at site designated on permit.

___ Site disapproved: (check all that apply)

1. ___ Position in landscape subject to flooding or periodic saturation.
2. ___ Insufficient depth of suitable soil over hard rock.
3. ___ Insufficient depth of suitable soil to seasonal water table.
4. ___ Rates of absorption too slow.
5. ___ Insufficient area of acceptable soil for required drainfield, and/or Reserve Area.
6. ___ Proposed system too close to well.
7. ___ Other (Specify) _____.

SOIL EVALUATION REPORTDate of Evaluation: November 21, 2023.Property ID: TM 7-8B; Madison County, Virginia.

Where the local health department conducts the soil evaluation, the location of profile holes may be shown on the schematic drawing on the construction permit of the sketch submitted with the application. If soil evaluations are conducted by a private soil scientist, location of profile holes and sketch of the area investigated, including all structural features (i.e. sewage disposal systems, wells, etc.) within 100' of site (See section 4) and reserve site shall be shown on the reserve side of this page or prepared on a separate page and attached to this form.

☒ See application sketch ☐ See construction permit ☐ See sketch on reverse side or page attached to this form.

<u>Hole</u>	<u>Horizon</u>	<u>Depth, in.</u>	<u>Soil Description</u>	<u>Group</u>
T-A	A	0-3	10YR2/2 very dark brown sandy loam	2
	E	3-7	10YR3/3 dark brown sandy loam	2
	Bt	7-31	10YR5/8 yellowish brown sandy loam	2
	C	31-41	10YR4/4 dark yellowish brown, 10YR5/6 yellowish brown and white parent sandy loam	2
T-B	A	0-3	10YR2/2 very dark brown sandy loam	2
	E	3-7	10YR3/3 dark brown sandy loam	2
	Bt	7-19	10YR6/4 light yellowish brown sandy loam	2
	C	19-60	10YR5/8 loamy sand with 10YR6/4 light yellowish brown, 5YR5/6 yellowish red and white (parent) colors	1
T-C	A	0-2	10YR3/2 very dark grayish brown sandy loam	2
	E	2-6	10YR4/4 dark yellowish brown sandy loam	2
	Bt	6-14	10YR5/6 yellowish brown sandy loam	2
	C	14-60	10YR4/6 dark yellowish brown, 10YR6/6 brownish yellow, 7.5YR5/6 strong brown, 10YR6/4 light yellowish brown, 5YR4/6 yellowish red and white (parent) sandy loam	2

Abbreviated Design Form

This form is for use with gravity, pump to gravity, enhanced flow, and low pressure distribution (LPD) sewage system designs and when applying for a certification letter or subdivision approval.

This abbreviated design covers the ☒ primary and reserve, ☐ only the primary area, ☐ only the reserve area for TM 7-8B; Madison County, Va.

Design basis

Total length of available area: 40' Total width of available area: 80'
 Estimated Perc. Rate: 30 at 36 in. (depth) Number of bedrooms (or GPD): 3 (450)
 Conveyance method¹: pump Distribution method²: D Box
 Dispersal system basis³: Table 5.5 of SHDR LGMI required? No
 Effluent quality required: Advanced Secondary (Primary, Secondary, Advanced Secondary)
 Square feet per bedroom: 150/1.41=106.38 Total trench bottom area required: 318 (636*)
*with 100% reserve
¹Gravity, pump, siphon
²Enhanced flow, LPD or Drip Dispersal
³Table 5.4 of SHDR or identify the GMP used

Area Calculations

Number of trenches: 4 (Note if pad is used) Length of pad or trenches: 40'
 Width of pad or trenches: 3' Center to center spacing: 11'
 Reserve required?: Yes Percent reserve area required: 100%
 Total width of absorption area required: 36' Total trench bottom area provided: 480(PRI)*
*360(RES)
 The required width is calculated by multiplying the center to center spacing by one less than the number of trenches and adding one trench width plus any required reserve area. If the topography is not uniform across the length of the site, the trenches will need to flare apart on one end to maintain contour. When this occurs, it is necessary to use a center to center spacing that accounts for the flair or the installer will not be able to fit the system within the approved area. It is perfectly acceptable to have more area available, especially up and down the slope, than is required.

Design Calculations

Property ID: _____ TM 7-8B; Madison County, Va. _____.

Flow Type of use (residential, etc.) <u>residential</u> . No. of bedrooms: <u>3</u> . No. of employees: <u>N/A</u> . Square Footage of building space: _____ . Daily flow (peak design) in GPD: <u>450</u> .	Show Calculations Here ¹
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Treatment No. of septic tanks: <u>1</u> . Size of septic tank(s): <u>1000</u> . Pretreatment required? <input checked="" type="checkbox"/> yes ___ no If yes, specify type of treatment device: <u>BioCoir ATS500</u> .	Show Calculations Here ¹
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Absorption area design Soil Texture Group: <u>1,2</u> . Reserve area required: <input checked="" type="checkbox"/> yes ___ no ___ 50% <input checked="" type="checkbox"/> 100% ___ other Specify other _____ .	If pump system, enhanced flow, or LPD show calculations here or on a separate sheet. (dosing volume, head, pump design, etc.)
---	--

Water Supply Class of well: <u>3C</u> . Describe (bored, drilled): <u>drilled</u> . Distance between septic tank(s) and well: <u>50'</u> . Distance between absorption area and well: <u>100'</u> .
--

¹ Information and calculations required for commercial and/or conditional use applications only.

System SpecificationsProperty ID: TM 7-8B; Madison County, Va.

Applicant Information Name: <u>Lori Foster</u> Address: <u>820 Ridgeview Road</u> <u>Brightwood, VA 22715</u>	Phone: <u>(540) 272-2898</u>
Location Information Tax Map No. <u>TM 7-8B</u> GPIN No. _____ Directions <u>From Madison take Rte 231 north</u> <u>Left on 670. Right on Weakley Hollow Rd.</u> <u>Left on Chad Berry Lane. The lot is on the left</u>	Property address _____ _____ Subdivision _____ Section _____ Block _____ Lot ____
General Information System Type <u>Pretreated Drainfield</u> (e.g. septic tank, drainfield) Type of property <u>residential</u> (e.g. commercial, residential, etc.) Conditions _____	Number of bedrooms <u>3</u> Daily flow <u>450</u> (gpd)
Sewer Line Scheduled 40 PVC, 4" ____ or equivalent (add check or describe equivalent below) _____	Septic Tank – Inlet/Outlet Structure Capacity: <u>1000</u> gallons 2 nd septic tank <u>N/A</u> gallons Per the 2000 Sewage Handling & Disposal Regulations, Check which option chosen: Septic tank with inspection port <u>X</u> Septic tank with effluent filter ____ Reduced maintenance septic tank ____
Conveyance line/force main Information Method <u>pump</u> (e.g. gravity, pumping, dosing siphon) If pumping, attach Pump Spec Sheet Material <u>Sch 40 PVC</u> Pipe diameter <u>2"</u> Slope of pipe _____ (in inches)	Distribution box Information No. of boxes <u>1</u> No. of outlets <u>4</u> Surge or splitter box required: Yes ____ No <u>X</u> D-box to be bedded in concrete
Header line Information 1500 pound crush strength Yes <u>X</u> Minimum slope is 2"/100 ft. Yes <u>X</u>	Percolation line Information/Absorption Area Center to center spacing <u>11+</u> ft. Required spacing <u>11</u> ft. Installation Depth <u>36</u> inches Aggregate depth <u>EZ FLOW or gravel</u> inches No. of Laterals <u>4</u> Lateral length <u>40</u> ft. Lateral bottom slope <u>0.8-1.6</u> inches Lateral width <u>36</u> inches

Applicant Information

Phone: (540) 272-2898.

Brightwood, VA 22715

Lot ____.

Minimum Grouting Depth: 20 ft.

The well may be moved 35' in any direction from the point shown on the drawing, as long as the above setbacks are maintained.

Residential Strength Waste Table

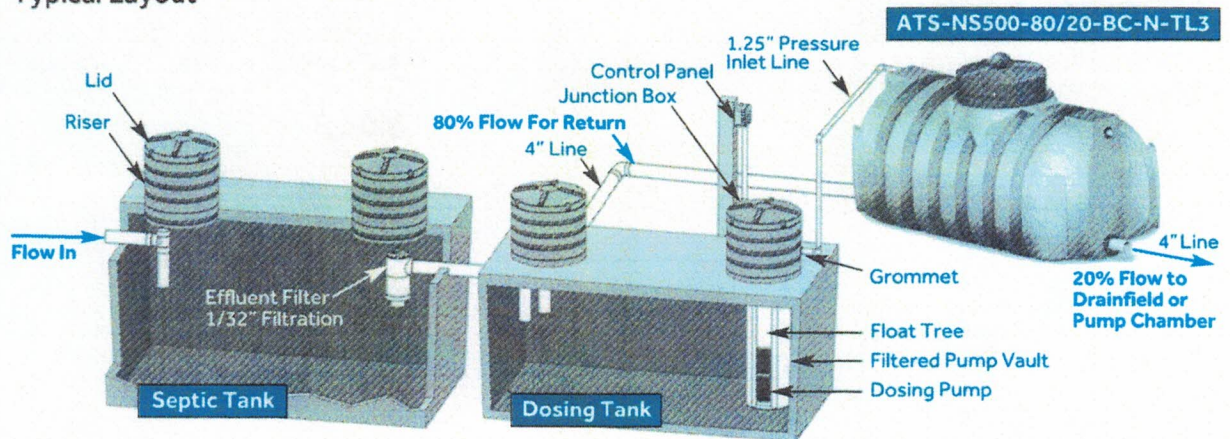
Constituents	Pretreated ¹ Max	Primary Treated ²		
		30-day Avg	7-day Max	30-day Max
CBOD ₅ mg/L	≤ 300	150	200	300
TSS mg/L	≤ 350	75	100	150
TN mg/L	≤ 60	60	75	120
FOG mg/L	≤ 30	20	25	25
pH	6.0 to 9.0	6.0 to 9.0		

¹ Pretreated: Raw wastewater prior to entering the septic tank.

² Primary treated: Effluent at the discharge of the septic tank.

Note: This is Anua's definition of pretreated/primary treated residential wastewater. If the wastewater exceeds these parameters, treatment goals may not be achieved and may require additional treatment.

Typical Layout



Step 1 Information Gathering

Design Flow (GPD)	Number of Bedrooms	Number of Occupants

Note: Average flow (GPD) is defined as 60% of design flow for 150 GPD per bedroom and 75% of design flow for 120 GPD per bedroom.

Step 2 Size the Septic Tank and Dosing Tank

Model Number	Bedrooms	Flow Rating (GPD)	Septic Tank Minimum Size (Gal)	Dosing Tank Minimum Size (Gal)
ATS-NS500-BC-N-TL3	4	600	1000	500
ATS-NS750-BC-N-TL3	5	750	1250	625
ATS-NS1000-BC-N-TL3	6	900	1500	750
ATS-NS500-80/20-BC-N-TL3	4	600	1000	500
ATS-NS750-80/20-BC-N-TL3	5	750	1250	625
ATS-NS1000-80/20-BC-N-TL3	6	900	1500	750

Step 3 Select an Effluent Filter

Models with 1/32" filtration

- Lifetime Filter LT9-1/32
- Zabel A300
- Polylok PL-625
- BEST GF10-32

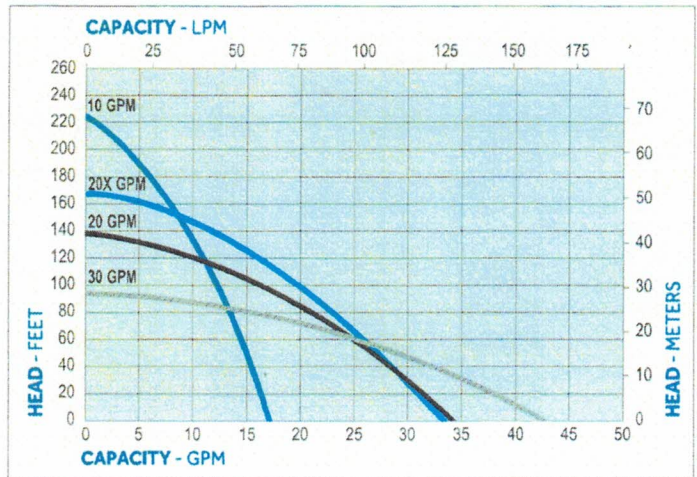
Step 4 Select a Filtered Pump Vault

Available models with heights

Model Number	Height
FPV-H50-4	50"
FPV-H56-4	56"
FPV-H62-4	62"
FPV-H68-4	68"
STF-NV06-30	30"

Step 5 Verify Dosing Pump Based on TDH

Model Number	Total Spray Nozzles
ATS-NS500-BC-N-TL3	3
ATS-NS750-BC-N-TL3	4
ATS-NS1000-BC-N-TL3	4
ATS-NS500-80/20-BC-N-TL3	3
ATS-NS750-80/20-BC-N-TL3	4
ATS-NS1000-80/20-BC-N-TL3	4



Note 1: TF14 spray nozzles = ~2.9 GPM @ 5 PSI and ~3.4 GPM @ 8 PSI

Note 2: The standard model pump is Little Giant C1 20gpm, 115V model. (see pump curve above)

Step 6 Select Treatment Pod per the Engineering and Technical Specifications Sheet for Virginia TL-3

Step 7 Verify Other Components Included in Standard Package

- 1.25" discharge assembly
- Junction box
- Control panel
- Float switches

Step 8 Select Any Optional Components

- Access risers
- Access lids
- Tank adapters with mounting hardware
- Tank/riser sealant or adhesive
- Rubber grommets

HYDRAULIC CALCULATIONS
TM 7-8B
MADISON COUNTY, VIRGINIA

I. Septic Tank Size:

Daily Flow - 450 GPD
Detention Time - 48 HR.
Recommend - 1000 Gal.

II. Pump Tank Float Settings (1000 Gal. Pump Tank from Nice):

Tank Properties:

Liquid Depth - 54"

Gallons per inch - 22.52

Low Water Cut Off Float Level - 24" (To keep fluid above the pump)

Required Storage above Alarm Float (1/4 day storage) = $1/4(450) = 112.5$ Gallons

Alarm Float set 10 inches below invert of pump pipe out of tank provides $10"(22.52 \text{ Gal./in.}) = 225.2 \text{ Gal.}$

III. Pump Sizing and Specifications:

Static Lift (2' above bottom of tank to the distribution box) 31.65'

Assume flow of 40 gallons per minute (3.82 feet/sec. for 2" pipe)

Friction Head Loss

305 feet of 2" dia. pipe

Assume 50' extra for minor losses

Friction coefficient = 3.1/100 feet of pipe

Friction Head Loss = $(3.55)(3.1) = 11.005$

Total Head Loss = Static Lift + Friction Head Loss = $31.65 + 11.005 = 42.655$

Use Zoeller Model 163 Pump (see attached pump curve)

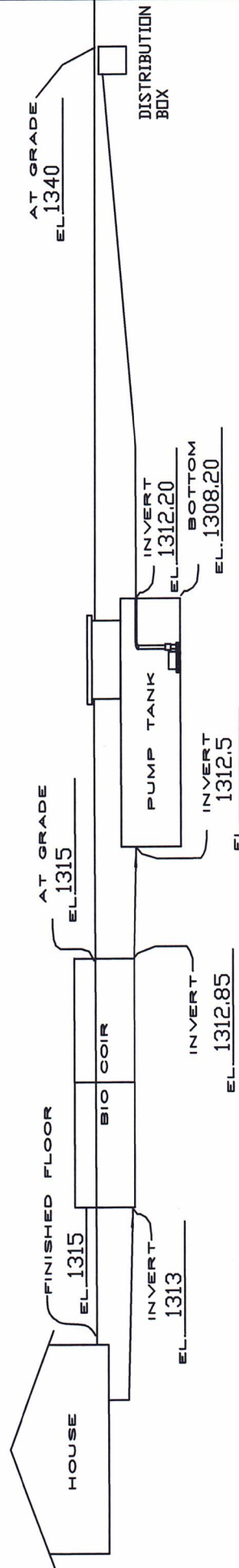
Pump Specifications - See Attached Drawings for Control Panel, Float and Alarm Details. Pump controls to be housed in NEMA 4X weatherproof enclosure. Alarm to be located within the house.

IV. Dosing Requirements $(0.25 \text{ to } 1)(\text{daily flow}) = 112.5 \text{ to } 450 \text{ gal/dose}$

10" draw down provides $(10")(22.52 \text{ gal/in.}) = 225.2 \text{ gal/dose}$

HYDRAULIC PROFILE

Note: Elevations are approximate and not intended to be exact.



CMW SOIL CONSULTANTS, LLC
13235 MATTS LANE
CULPEPER, VIRGINIA 22701
TEL: (540) 937-6623
FAX: (540) 937-6624

DATE: 11-21-23

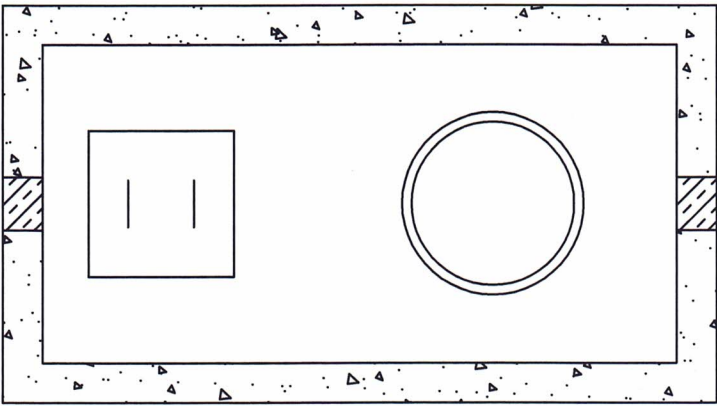
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DRWN: JDT C2016

HYDRAULIC PROFILE
TM 7-8B - MADISON COUNTY, VIRGINIA

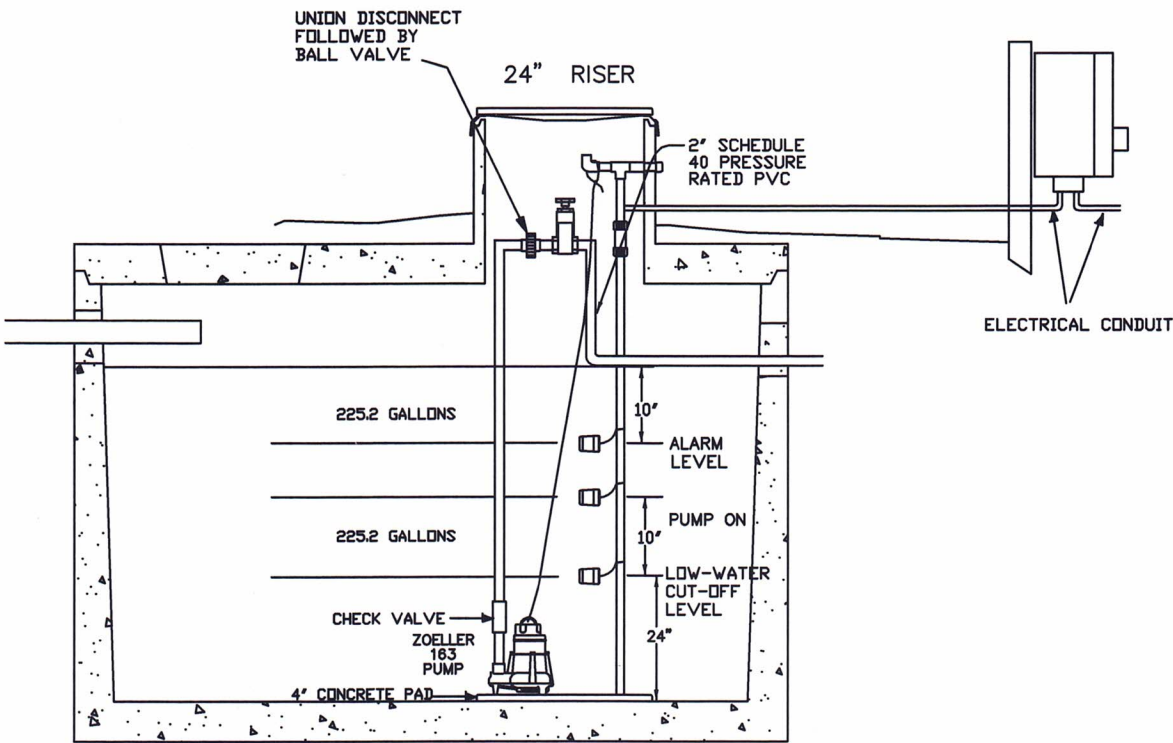
DWG. NO:

PUMP TANK - 1000 GAL FROM NIXON
(22.52 GAL/INCH)



PLAN VIEW

Simplex Control Panel with Alarm. The pump and alarm are to be wired on separate breakers.



SECTION VIEW

NOT TO SCALE

CMW SOIL CONSULTANTS, LLC
13235 MATTS LANE
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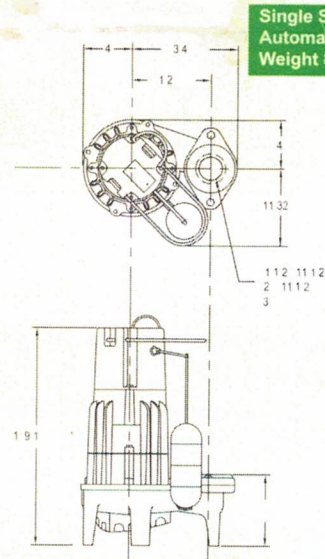
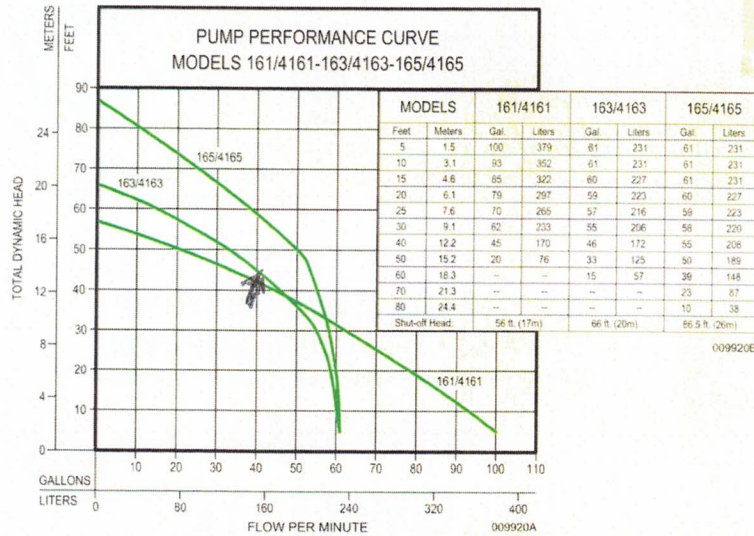
SCALE: NTS

DRWN: JDT

C2016

PUMP TANK DETAILS
TM 7-8B - MADISON COUNTY, VIRGINIA

DWG. NO:



Standard all models - 20 ft. cord - 1/2 HP

161 MODELS	4161 MODELS	Control Selection						Listings	
Single Seal	Double Seal	Volts	Ph	Mode	Amps	Simplex	Duplex	CSA	UL
M161	-----	115	1	Auto	15.5	1	-----	Y	Y
N161	N4161	115	1	Non	15.5	2 or 3 & 5	4 & 5	Y	Y ⁽¹⁾
D161	-----	230	1	Auto	7.5	1	-----	Y	Y
E161	E4161	230	1	Non	7.5	2 or 3 & 5	4 & 5	Y	Y
* H161	-----	200-208	1	Auto	8.8	1	-----	Y	N
* I161	* I4161	200-208	1	Non	8.8	2 or 3 & 5	4 & 5	Y	N
* J161	* J4161	200-208	3	Non	6.4	3 & 5	4 & 5	Y	Y
* F161	* F4161	230	3	Non	5.2	3 & 5	4 & 5	Y	Y
* G161	* G4161	460	3	Non	2.9	3 & 5	4 & 5	Y	Y

Standard all models - 20 ft. cord - 1/2 HP

163 MODELS	4163 MODELS	Control Selection						Listings	
Single Seal	Double Seal	Volts	Ph	Mode	Amps	Simplex	Duplex	CSA	UL
M163	-----	115	1	Auto	15.0	1	-----	Y	Y
N163	N4163	115	1	Non	15.0	2 or 3 & 5	4 & 5	Y	Y ⁽¹⁾
D163	-----	230	1	Auto	7.5	1	-----	Y	Y
E163	E4163	230	1	Non	7.5	2 or 3 & 5	4 & 5	Y	Y
* H163	-----	200-208	1	Auto	8.5	1	-----	Y	N
* I163	* I4163	200-208	1	Non	8.5	2 or 3 & 5	4 & 5	Y	N
* J163	* J4163	200-208	3	Non	6.0	3 & 5	4 & 5	Y	Y
* F163	* F4163	230	3	Non	4.8	3 & 5	4 & 5	Y	Y
* G163	* G4163	460	3	Non	2.9	3 & 5	4 & 5	Y	Y

Standard all models - 20 ft. cord - 1 HP

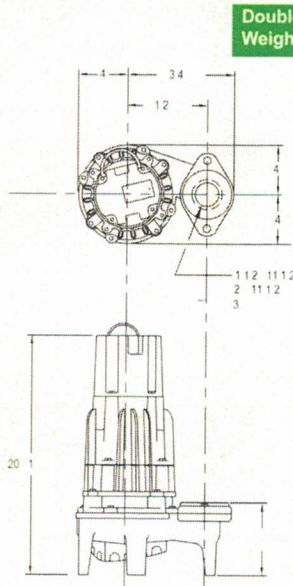
165 MODELS	4165 MODELS	Control Selection						Listings	
Single Seal	Double Seal	Volts	Ph	Mode	Amps	Simplex	Duplex	CSA	UL
D165	-----	230	1	Auto	10.2	1	-----	Y	Y
E165	E4165	230	1	Non	10.2	2 or 3 & 5	4 & 5	Y	Y
* H165	-----	200-208	1	Auto	12.6	1	-----	Y	N
* I165	* I4165	200-208	1	Non	12.6	2 or 3 & 5	4 & 5	Y	N
* J165	* J4165	200-208	3	Non	7.5	3 & 5	4 & 5	Y	Y
* F165	* F4165	230	3	Non	7.4	3 & 5	4 & 5	Y	Y
* G165	* G4165	460	3	Non	3.7	3 & 5	4 & 5	Y	Y
* BA165	* BA4165	575	3	Non	3.0	3 & 5	4 & 5	N	N

* No Molded Plug

⁽¹⁾ UL Listed unit available with 20 Amp plug.

For information on additional Zoeller products refer to catalog on Piggyback Variable Level Float Switches, FM0477; Electrical Alternator, FM0486; Mechanical Alternator, FM0495; Alarm Package, FM0732; and Sump/Sewage Basins, FM0487.

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 Electric Code (NEC) and the Occupational Safety and Health Act (OSHA).



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 FM0477.
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 10-0225 used as control activator, specify simplex (3) float or duplex (3) or (4) float system.

RESERVE POWERED DESIGN

For unusual conditions a reserve safety factor is engineered into the design of every Zoeller pump.

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