

GEOPHYTA

Home Septic System Site Evaluation And Replacement System Design

For:

Larry & Phyllis Hamons (WPCLF)

4673 S. T.R. 197
Attica, OH 44807

Property Location:

4673 S. T.R. 197
Attica, OH 44807

Venice Township, Seneca County

SYSTEM TYPE:

NPDES SYBR-AER FT-1400 Series W/ UV Disinfection & Reaeration

Nathan Wright (Soil Scientist)
Seth V. Layne (Designer)

Geophyta, Inc.
2685 C.R. 254
Vickery, OH 43464

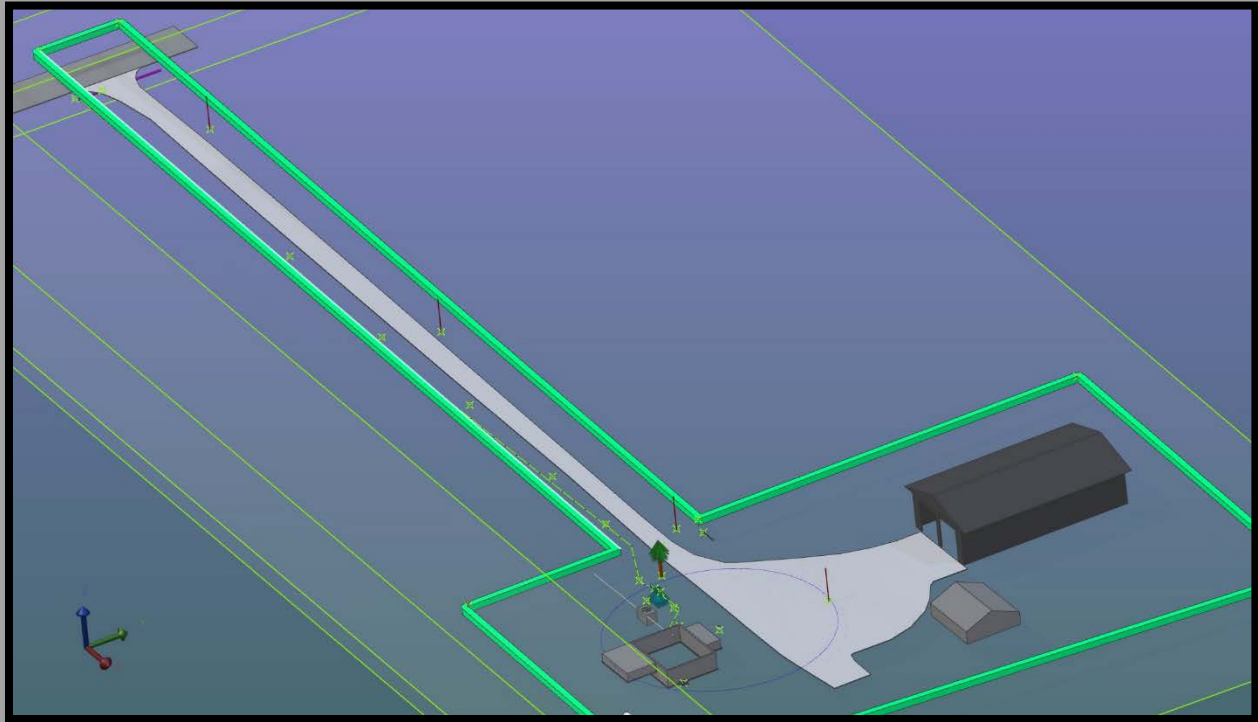
419-547-8538

March 30, 2022

APPROVED

By Matt Beckman at 3:11 pm, Apr 04, 2022

◇ The Hamons Residence ◇



1. Disclaimer

2. Info Sheet

3. Soil Report (2X Total)

4. Layout Map

5. Internal Plumbing Diagram

6. 3D CAD Layout

7. Top CAD Layout

8. Elevation CAD Layout

9. Component Detail Prints (18 Total)

10. Bill of Materials

11. Operation & Maintenance (4 Total)

To The Homeowner:

A septic system is designed based on all the information you provide and Geophyta Inc collects at the site. It must be accurate. This information includes local soil limits and topography, plus existing and future locations of your home, number of bedrooms, out buildings, driveways, drinking water wells, ponds, septic systems, and property lines. Geophyta Inc. relies on this information to construct detailed design drawings that must meet local health department regulations before installation.

Any design changes required by the local health department to meet existing regulations are the responsibility of Geophyta Inc.

Any information changes made by you after the initial site inspection are your responsibility and will result in additional charges to you above the original quote for services. These charges may include additional site inspection work, system redesign, and resubmitted drawings.

To The Installer:

The registered installer of this septic system design is responsible for preparing an “as-built” record, as stated in the Ohio Administrative Code Chapter 3701-29-09, Par. F (p.32) of the “Sewage Treatment System Rules,” Ohio Department of Health, January 1, 2015. Additionally, the installer is responsible for measuring and recording distal pressure head and float switch settings as baseline measures for future operation and maintenance of any pressure distribution system (3701-29-15, Appendix B, Par. VI(p.93) of above referenced rules.

If the installer requests “as-built” record creation from Geophyta Inc., additional charges will be billed to the installer by Geophyta Inc. and must be arranged prior to installation.

Geophyta Inc. must assume that any registered installer has the knowledge, equipment, ability, and experience to properly layout, install, and create as-built drawings for any septic system design approved by a local board of health. This includes the ability to read detailed design prints with an associated bill of materials. For this reason, any Geophyta Inc project supervision prior to or during installation will be billed to the installer.

Any product substitution made by the installer that is not specifically permitted in the design prints may result in Health Dept. disapproval and will result in additional re-design costs billed to the installer.

HSTS Site/Soil Evaluation Information Sheet, Geophyta, Inc.

Customer:

Name:	Larry Hamons
Address:	4673 S. Township Rd. 197
City, State:	Attica, Oh. 44807
Home Phone:	419-426-1304
Cell Phone:	567-224-4167
Email:	lphamons@frontier.com

Property:

Parcel #:	
Current Owner:	Same
Address:	Same
City, State, Zip:	Same
Lot Size:	
Right of Ways?	
Easements?	

Existing or Proposed or Lot Split: (circle one)

House Size: Rooms	3 bedrooms		electric:	overhead or buried
House Dim.w/Garage:	ft.xft.		phone:	overhead; buried; n/a
Garage Size:	cars, ft.xft.		gas :	natural propane n/a
Water Source:	well; public; cistern		garden/hot tub:	yes no
Water Softener:	no yes			
Outbuildings:	no yes size:		geothermal heat/cooling system	no; yes: (horizontal or vertical)
Pond:	no yes, size:			
System Type:	new or replacement		Sump pump:	no yes
Replacement Reason:	failed; addition; n/a		Discharge where?	tile

Comments:

I agree that the above information is accurate and can be used by Geophyta, Inc. to prepare a site/soil evaluation for septic system suitability. The site/soils report is for information purposes to be used by a designer and your local health department. This report does not guarantee build ability of a lot or approval of any septic system design. This is not a property boundary survey.

Larry Hamons

Customer Signature

3/11/2022

Date

Site and Soil Evaluation for Sewage Treatment and Dispersal

County: Seneca
 Township / Sec.: Venice
 Property Address: 4673 S. TR 197
 OR Location: Attica, OH 44807
 Applicant Name: Larry & Phyllis Hamons
 Address: 4673 S. TR 197
Attica, OH 44807
 Phone #: 567-224-4167
 Lot #: _____
 Test Hole #: A
 Latitude/Longitude: 82°50'26.079"W 41°3'24.079"N
 Method: _____ Pit _____ Auger X Probe; 1 1/4" dia.

Land Use / Vegetation: Residential Turf
 Landform: Glacial Till Plain
 Position on Landform: Shoulder Slope
 Percent Slope: 5-6
 Shape of Slope: Concave-Linear
 Approximate Soil Type: Blount SiL

 Date: 11-Mar-22
 Evaluator: Nathan Wright
Geophyta, Inc.
2685 C.R. 254
Vickery, OH 43464
 Phone#: 419-547-8538

Control #: 22 - SEN - 10A - 64



Certification #: 19395

Signature: *Nathan Wright*

Soil Profile		Estimating Soil Saturation			Estimating Soil Permeability							Other Soil Features
		Munsell Color (hue, value, chroma)			Texture			Structure				
Horizon	Depth (inches)	Matrix Color	Redoximorphic Features		Class	Approx. % Clay	Approx. % Fragments	Grade	Size	Type (shape)	Consistence	
			Concentrations	Depletions								
A1	0.0 - 3.5	10YR 3/3	none	none	SiL	15	0	1-weak	medium	gr	friable	
A2	3.5 - 8.0	10YR 3/3	2% 7.5YR 4/6	5% 10YR 4/1	SiL	15	0	1-weak	medium	gr	friable	
Btg	8.0 - 23.0	10YR 6/2	15% 10YR 4/4	matrix	SiL	25	5	1-weak	coarse	sbk	firm	
C	23.0 - 48.0	10YR 4/4	none	15% 10YR 5/2	SiCL	30	10	1-weak	coarse	sbk	firm	

Limiting Conditions	Depth to (in.)	Descriptive Notes	Remarks / Risk Factors: No Tyler Values; PSWT < 8 inches
Perched Seasonal Water Table	3.5	Restricted in A1-C	Very high failure risk for on-site absorption.
Apparent Water Table	>48		Very high failure risk due to upslope water addition.
Highly Permeable Material	>48		Very high failure risk due to weak soil structure.
Bedrock	>60	By Tile Probe	
Other Restrictive Layer	>48		

Note : The evaluation shall include a complete site plan or site drawing including all requirements in paragraphs (B)(1) through (B)(4) of OAC 3701-29-08.

Landforms
Upland*
Terrace
Flood Plain
Lake Pain
Beach Ridge
*Includes glacial till plain and end moraine

Position on Landform
Depression
Flat
Knoll
Crest
Hillslope
Footslope

Shape of Slope
Convex
Concave
Linear
Complex

Horizon Nomenclature			
Master Horizons		Horizon Suffixes	Horizon Modifiers
O	Predominantly organic matter (litter & humus)	a	
A	Mineral, organic matter (humus) accumulation, loss of Fe, Al, clay	b	Buried genetic horizon
E	Mineral, loss of Si, Fe, Al, clay, organic matter	d	Densic layer (physically root restrictive)
B	Subsurface accumulation of clay, Fe, Al, Si, humus; sesquioxides; loss of CaCO ₃ ; subsurface soil structure	e	Moderately decomposed organic matter
C	Little or no pedogenic alteration, unconsolidated earthy material, soft bedrock	g	Strong gley
R	Hard bedrock	i	Slightly decomposed organic matter
		p	Plow layer or artificial disturbance
		r	Weathered or soft bedrock
		t	Illuvial accumulation of silicate clay
		w	Weak color or structure within B
		x	Fragipan characteristics
			Numerical Prefixes: Used to denote lithologic discontinuities.
			Numerical Suffixes: Used to denote subdivisions within a master horizon.

Soil Texture			
Texture Class Abbreviations		Textural Class Modifiers	
Course Sand	cos	Gravelly	GR
Sand	s	Fine Gravelly	FGR
Fine Sand	fs	Medium Gravelly	MGR
Very Fine Sand	vfs	Coarse Gravelly	CGR
Loamy Coarse Sand	lcos	Very Gravelly	VGR
Loamy Sand	ls	Extremely Gravelly	XGR
Loamy Fine Sand	lfs	Cobbly	CB
Loamy Very Fine Sand	lvfs	Very Cobbly	VCB
Coarse Sandy Loam	cosl	Extremely Cobbly	XCB
Sandy Loam	sl	Stony	ST
Fine Sandy Loam	fsl	Very Stony	VST
Very Fine Sandy Loam	vfsl	Extremely Stony	XST
Loam	l	Bouldery	BY
Silt Loam	sil	Very Bouldery	VBY
Silt	si	Extremely Bouldery	XBY
Sandy Clay Loam	scl	Channery	CN
Clay Loam	cl	Very Channery	VCN
Silty Clay Loam	sicl	Extremely Channery	XCN
Sandy Clay	sc	Flaggy	FL
Silty Clay	sic	Very Flaggy	VFL
Clay	c	Extremely Flaggy	XFL

*Estimate approximate clay percentage within 5 percent

Soil Structure					
Grade		Size		Type (Shape)	
Structureless	0	Very Fine	vf	Granular	gr
Weak	1	Fine	f	Angular Blocky	abk
Moderate	2	Medium	m	Subangular Blocky	sbk
Strong	3	Coarse	co	Platy	pl
		Very Coarse	vc	Prismatic	pr
		Extr. Coarse	ec	Columnar	cpr
		Very Thin*	vn	Single Grain	sg
		Thin*	tn	Massive	m
		Thick*	tk	Cloddy	CDY
		Very Thick*	vk		

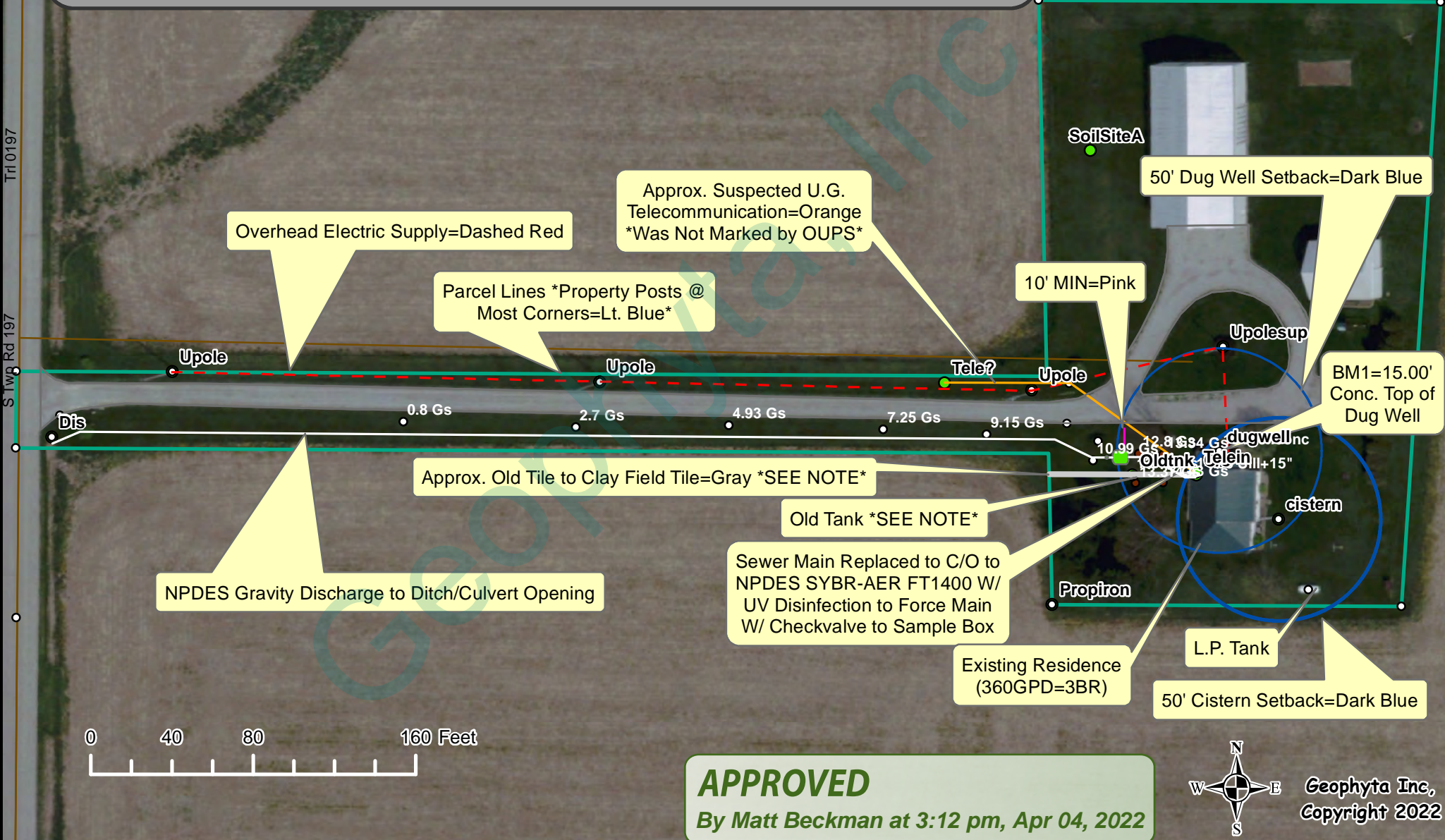
* The sizes Very Thin, Thin, Thick, and Very Thick, are used when describing platy structure only. Substitute thin for fine, and thick for coarse when describing platy structure.

Moist Consistence	
Loose	l
Very Friable	vfr
Friable	fr
Firm	fi
Very Firm	vfi
Extremely Firm	efi

For a more detailed explanation on describing and sampling soils, please refer to the "Field Book for Describing and Sampling Soils" Schoeneberger, P.J., Wysocki, D.A., Benham, E.C., and Broderson, W.D. (editors) 2002. Field book for describing and sampling soils, version 2.0. Natural Resources Conservation Service, USDA, National Soil Survey Center, Lincoln, NE.

HSTS Replacement Layout - 4673 S. T.R. 197

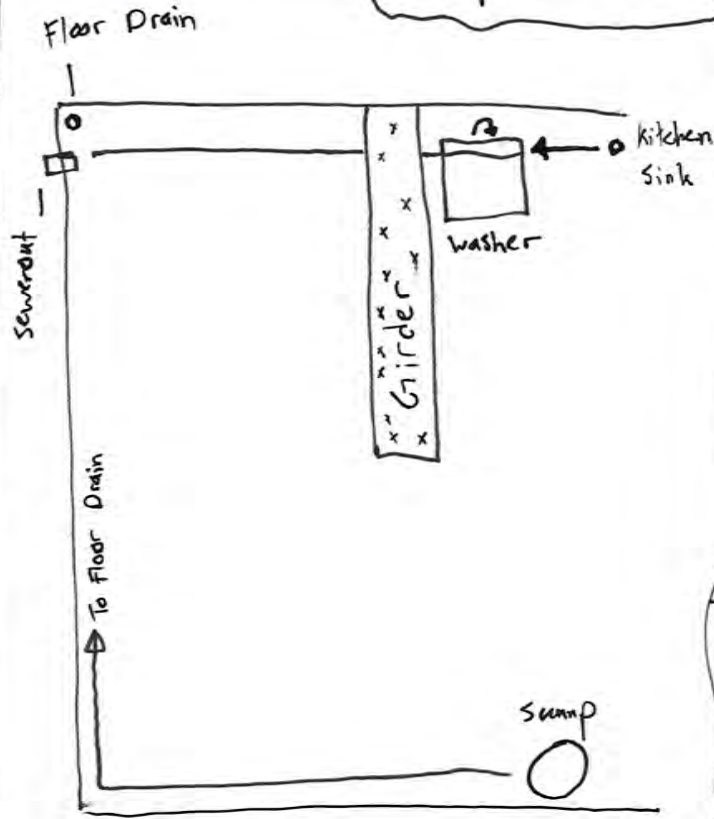
- Installer, Pump, Crush & Backfill Old Tank.
- Installer, Watch For Floor Drain Tile. This Tile Has Sump Pump Draining Into it. Tile May Connect to Old Sewer Main & Into Septic Tank. If True, This Line Needs to be Reconnected to Old Clay Field Tile or Connected to NPDES Discharge Line After Treatment Unit.
- U.G. Telecommunication Supply Was Not Marked by OUPS, Exact Location to N.W. Corner of House is Unknown. Homeowner Believes Line Runs Along North Side of Driveway.
- Internal Plumbing is Needed. Please Review Sheet in Design Package For Details.



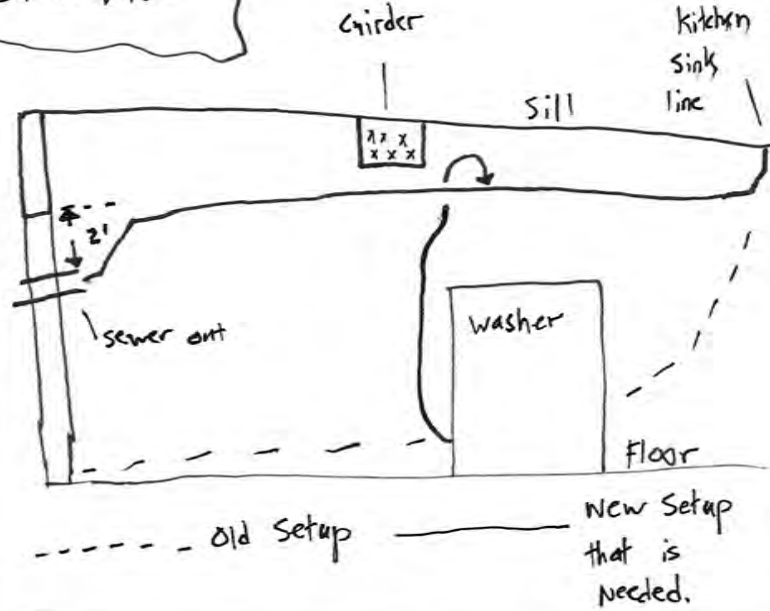
APPROVED
 By Matt Beckman at 3:12 pm, Apr 04, 2022

4673 S. T.R. 197

Top View



Side View



- Washer needs redirected to sewer and kitchen sink drain.
- Existing setup goes to floor drain.
- New kitchen sink drain needs to pass under girder, then to sewer main and in front of sub panel.

NOTES

APPROVED

By Matt Beckman at 3:12 pm, Apr 04, 2022

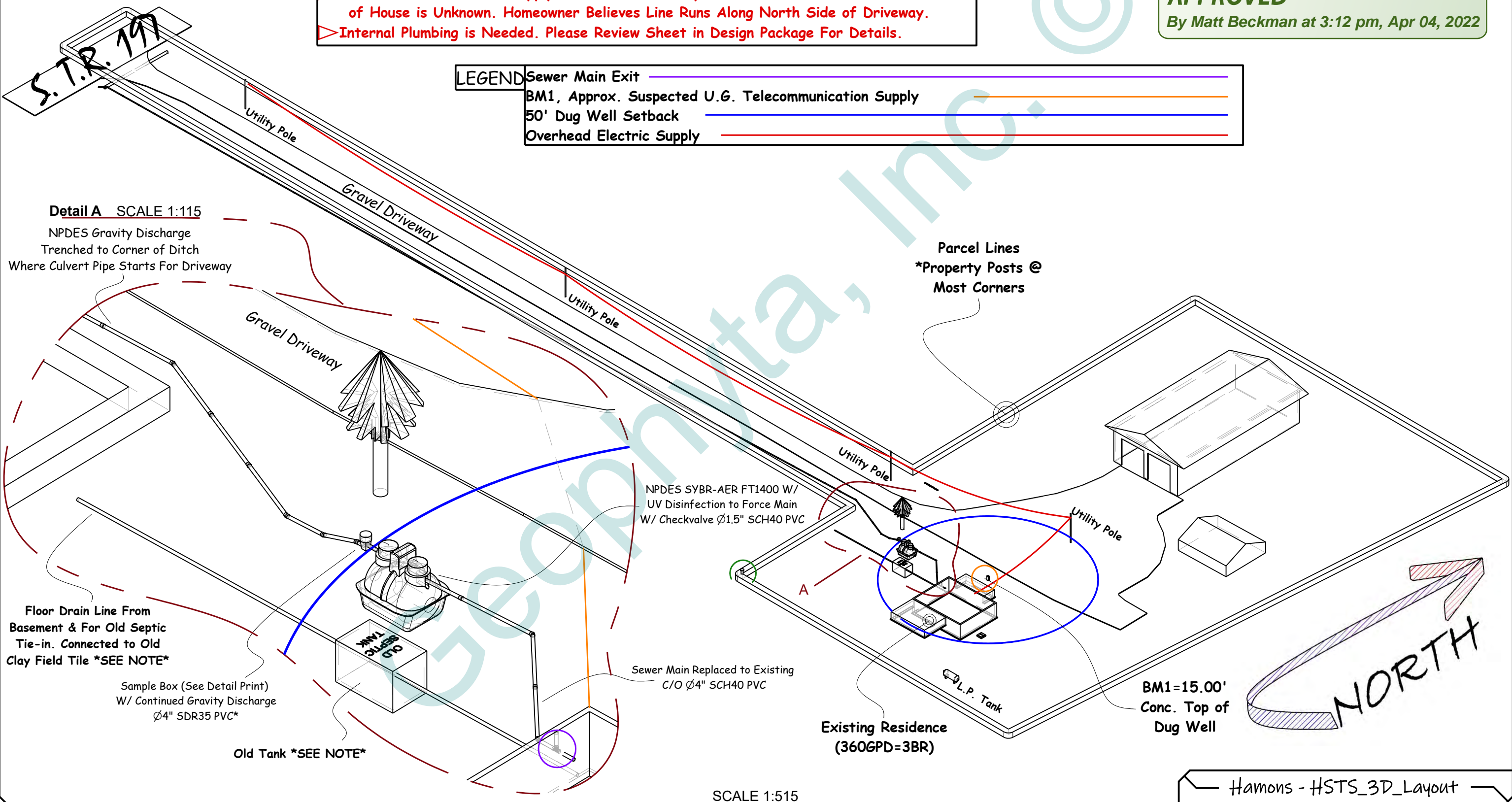
- NOTES**
- ▶ Installer, Pump, Crush & Backfill Old Tank.
 - ▶ Installer, Watch For Floor Drain Tile. This Tile Has Sump Pump Draining Into it. Tile May Connect to Old Sewer Main & Into Septic Tank. If True, This Line Needs to be Reconnected to Old Clay Field Tile or Connected to NPDES Discharge Line After Treatment Unit.
 - ▶ U.G. Telecommunication Supply Was Not Marked by OUPS, Exact Location to N.W. Corner of House is Unknown. Homeowner Believes Line Runs Along North Side of Driveway.
 - ▶ Internal Plumbing is Needed. Please Review Sheet in Design Package For Details.

DESIGNER: SETH V. LAYNE, GEOPHYTA INC. 30.MAR.22

APPROVED
By Matt Beckman at 3:12 pm, Apr 04, 2022

LEGEND

Sewer Main Exit	
BM1, Approx. Suspected U.G. Telecommunication Supply	
50' Dug Well Setback	
Overhead Electric Supply	



Detail A SCALE 1:115
NPDES Gravity Discharge
Trenched to Corner of Ditch
Where Culvert Pipe Starts For Driveway

Floor Drain Line From
Basement & For Old Septic
Tie-in. Connected to Old
Clay Field Tile *SEE NOTE*

Sample Box (See Detail Print)
W/ Continued Gravity Discharge
Ø4" SDR35 PVC*

Old Tank *SEE NOTE*

NPDES SYBR-AER FT1400 W/
UV Disinfection to Force Main
W/ Checkvalve Ø1.5" SCH40 PVC

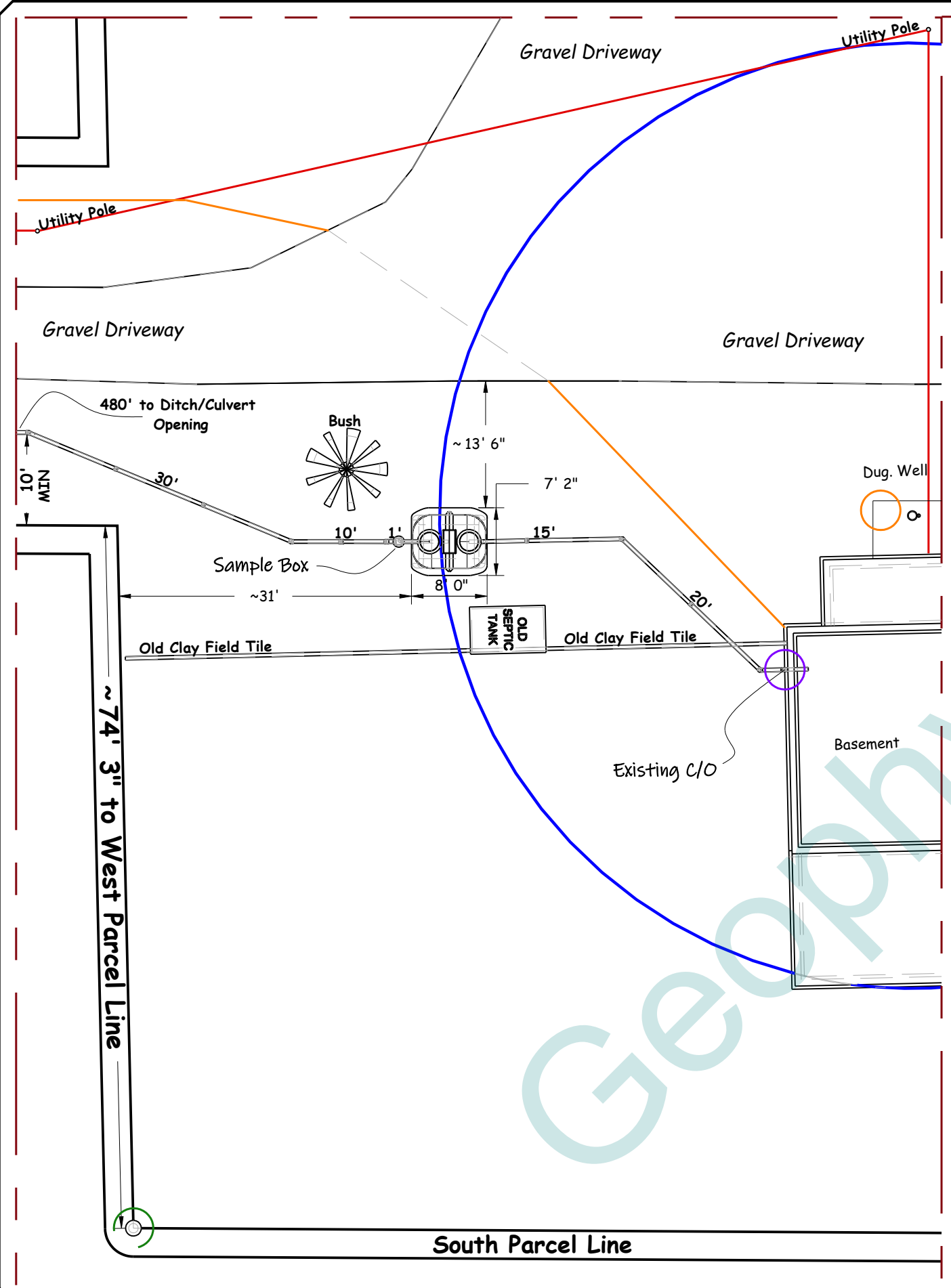
Sewer Main Replaced to Existing
C/O Ø4" SCH40 PVC

Existing Residence
(3606PD=3BR)

BM1=15.00'
Conc. Top of
Dug Well

SCALE 1:515

Hamons - HSTS_3D_Layout

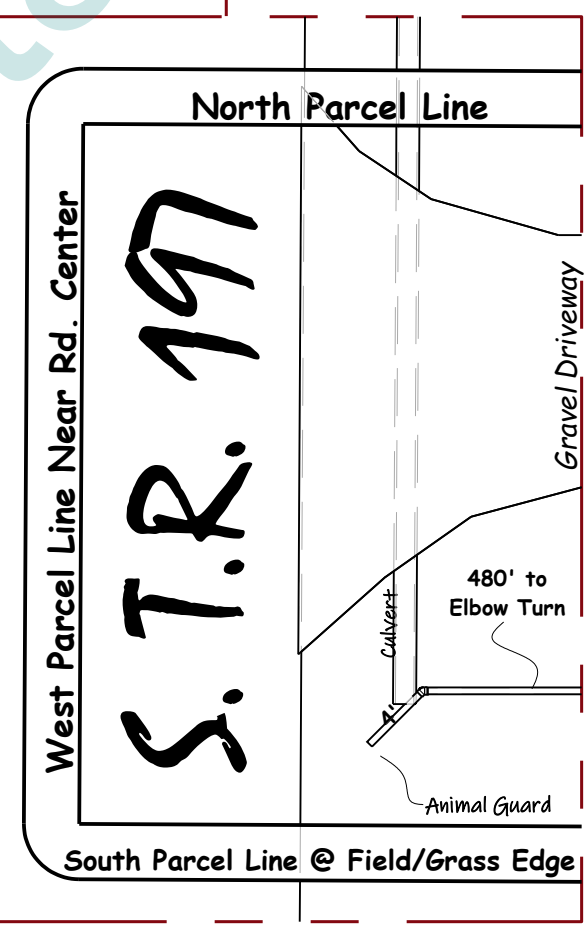


Detail A SCALE 1:165



SCALE 1:1300

Detail B SCALE 1:125

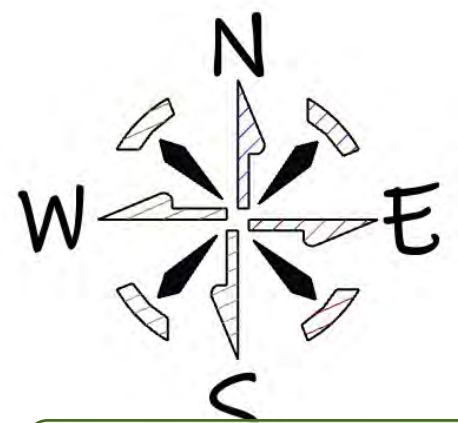


NOTES

- Discharge Length May Vary Slightly to Ditch/Culvert Opening.
- If Sanitarian Wants Tankage Exactly 50 FEET From Dug Well, Then Bush May Need to be Removed.

LEGEND

- Sewer Main Exit
- BM1, Approx. Suspected U.G. Telecommunication Supply
- 50' Dug Well Setback
- Overhead Electric Supply





APPROVED
 By Matt Beckman at 3:13 pm, Apr 04, 2022

West Parcel Line Near Rd. Center
S.T.R. 197
 South Parcel Line @ Field/Grass Edge

NOTES

NPDES Discharge Has Approx. 13 Feet of Fall to Discharge Point Starting From Sample Box.

LEGEND

Native Soil Surface 
Zero Elevation Reference 

DESIGNER: SETH V. LAYNE, GEOPHYTA INC.

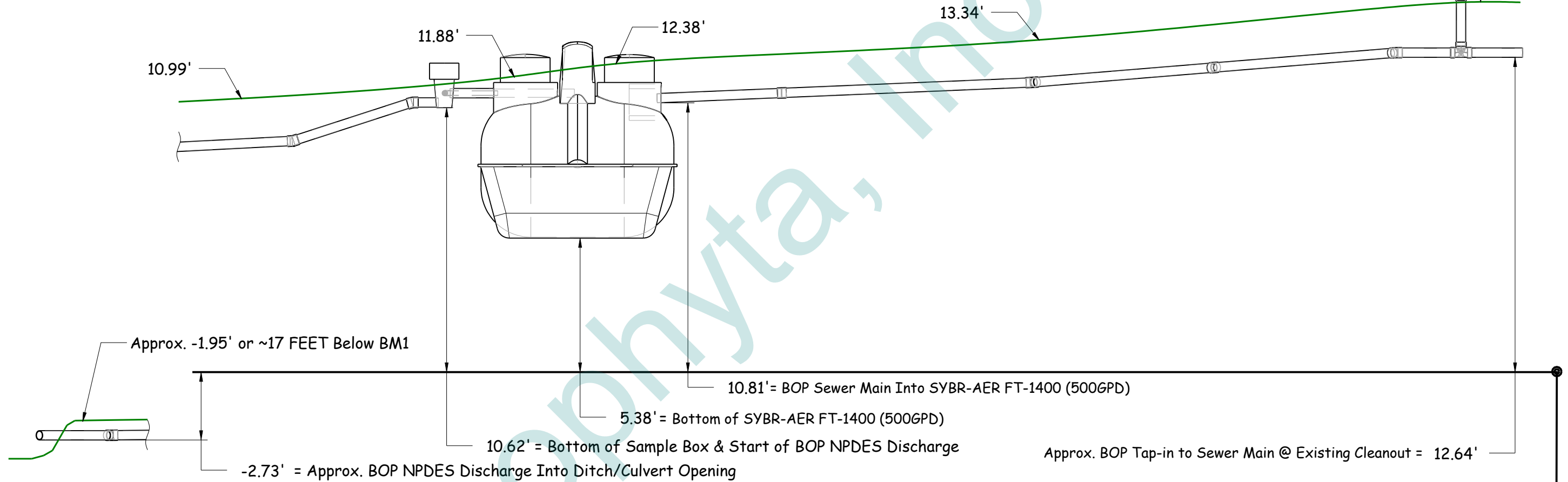
30.MAR.22

ELEVATION VIEW - SOUTH TO NORTH



ALL ELEVATION VALUES POINTING TO SURFACE ARE OF NATIVE SOIL GRADE UNLESS OTHERWISE STATED

14.85' *Sewer TOP Tap-in Approx. 26" Below Grade*



APPROVED

By Matt Beckman at 3:13 pm, Apr 04, 2022

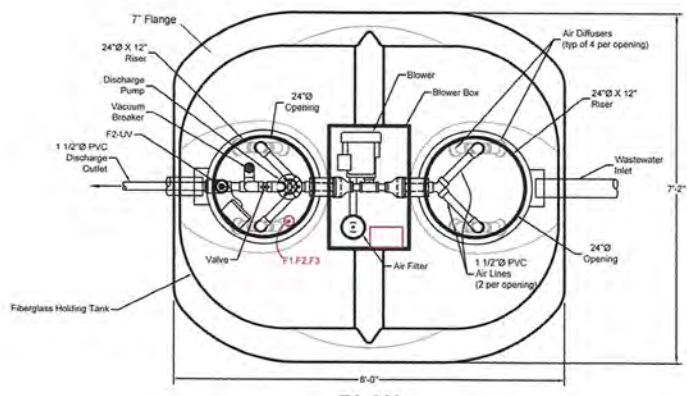
ZERO ELEVATION REFERENCE
BM1=15.00' Concrete Top of Dug Well
(See Layout Map)

SCALE 1:50

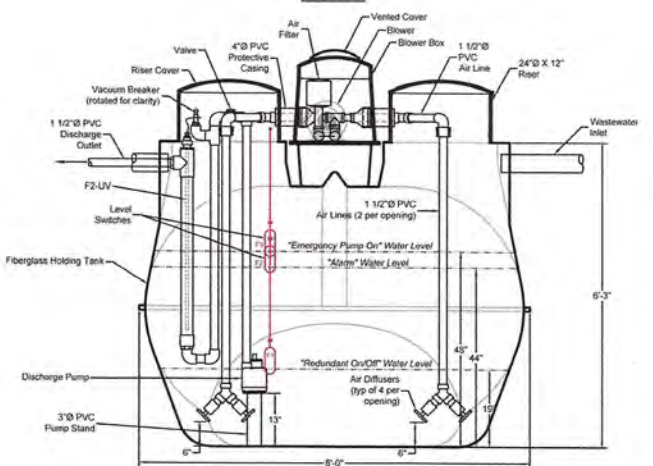
Hamons - HSTS_Elevation

FT-1400 - 500 GPD

SYBR-AER FT-1400 SERIES	
MATERIALS	FIBERGLASS
TOTAL CAPACITY	1410 GAL
LENGTH	96 INCHES
WIDTH	86 INCHES
TOTAL HEIGHT	97 INCHES
MAN WAYS	(2) 24 INCH DIA
COMPARTMENTS	ONE
INLET INVERT	57-70 INCHES
OUTLET INVERT	67.5 INCHES
MAXIMUM COVER	24 INCHES
MAXIMUM PIPE DIAMETER	4 INCHES
WEIGHT	600 LBS
DISPLACED WEIGHT (Assuming Saturated Conditions)	8706 LBS
BUOYANCY FORCE	8106 LBS



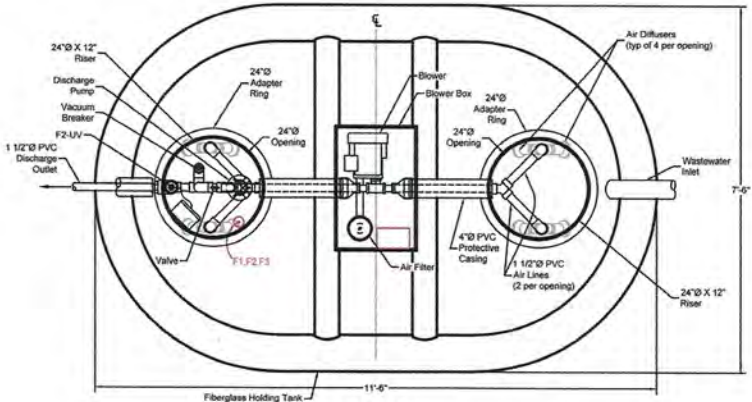
PLAN



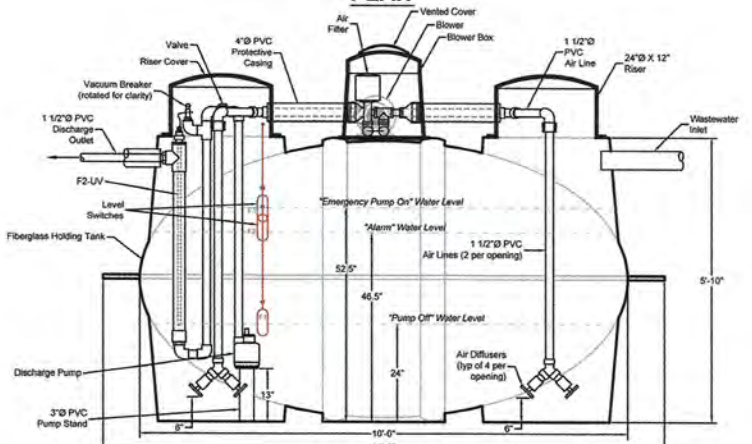
ELEVATION

FT-1800 - 600 GPD

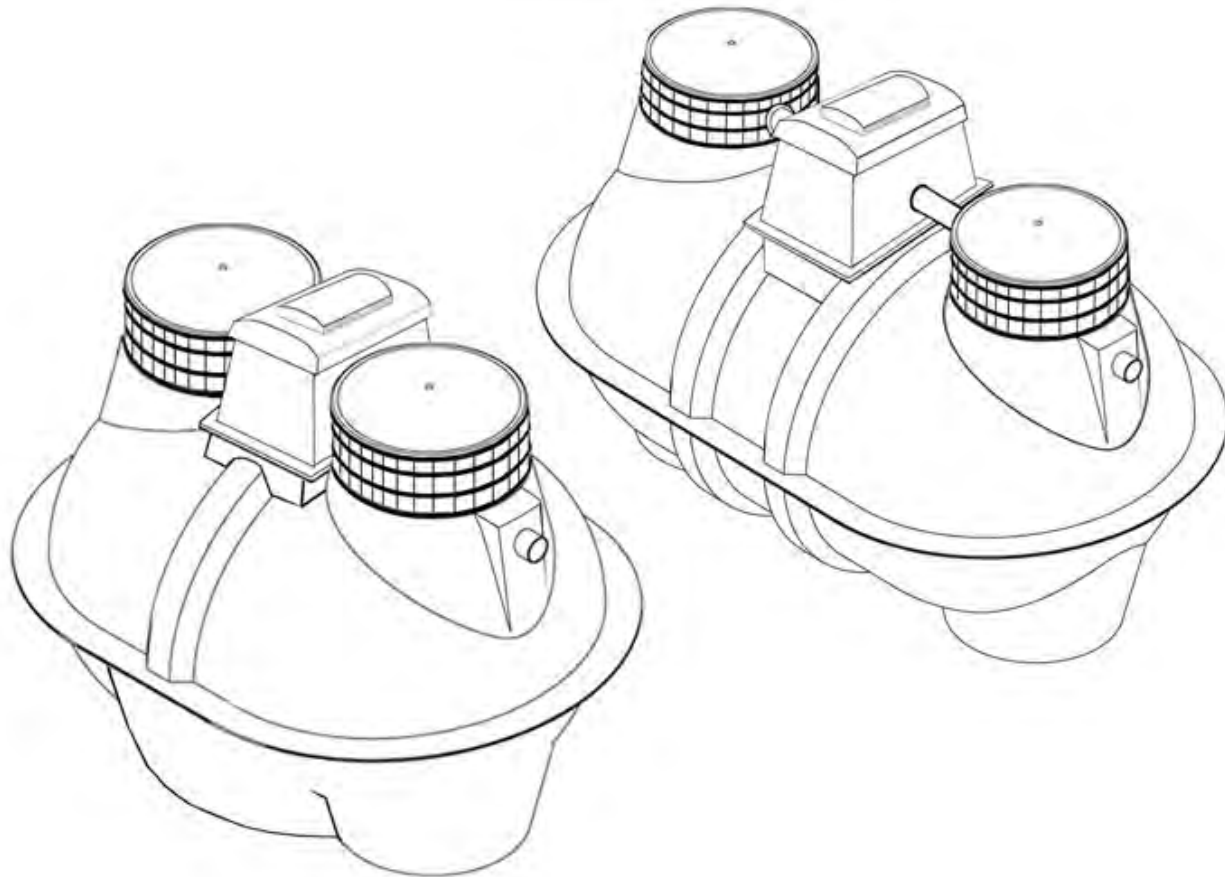
SYBR-AER FT-1800 SERIES	
MATERIALS	FIBERGLASS
TOTAL CAPACITY	1800 GAL
LENGTH	138 INCHES
WIDTH	90 INCHES
TOTAL HEIGHT	90 INCHES
MAN WAYS	(2) 24 INCH DIA
COMPARTMENTS	ONE
INLET INVERT	65 INCHES
OUTLET INVERT	65 INCHES
MAXIMUM COVER	24 INCHES
MAXIMUM PIPE DIAMETER	4 INCHES
WEIGHT	900 LBS
DISPLACED WEIGHT (Assuming Saturated Conditions)	14989 LBS
BUOYANCY FORCE	14089 LBS



PLAN



ELEVATION



PROCEDURES FOR ASSEMBLY AND INSTALLATION

[500-800 GPD SYBR-AER FT SERIES]

SBR WASTEWATER TECHNOLOGIES INC.

1501 COMMERCE CENTER DRIVE

FRANKLIN, OHIO

TEL: 937-790-4149

FAX: 937-790-4150

WWW.SBRWW.COM

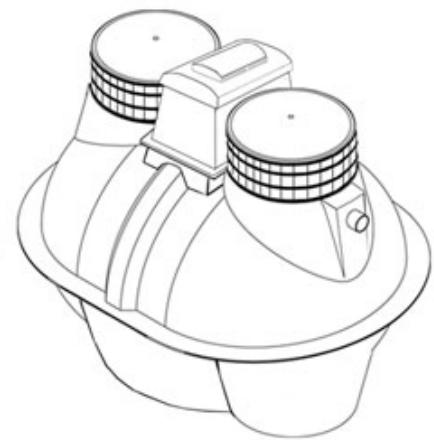
Thank you for purchasing the Sybr-Aer advanced wastewater treatment system. The following will provide step-by-step installation instructions.

The SYBR-AER FT series comes with all components factory installed for ease of installation. The Unit is also pre-wired and comes with 100' of direct burial 12 conductor wire (If your application requires a longer run of wire please let us know at time of order).

The SYBR-AER FT series comes with or without disinfection depending on your application. The following instructions address both versions.

The SYBR-AER FT Series contains:

- Vented fiberglass blower enclosure with electrical terminal box, cord grips, gel coated cover and exterior tamper proof latches
- (2) 24" diameter risers with pre-installed air manifolds, (2) covers (1) with vent
- (1) float tree, float clamps, and (3) floats
- (1) blower with galvanized fittings, air filter, and mission couplings
- (1) discharge pump with quick disconnect fittings, vacuum breaker, and pedestal
- Engineered diffusers
- 1 1/2" air drops with quick disconnect fittings
- Outdoor alarm with logic control module, individual circuit breakers for service disconnect, and a battery back-up incase of power outage
- 100' twelve-conductor direct burial wire
- conduit with a sweep for control panel
- Fiberglass tank with lifting eyelits
- (F2-UV disinfection system if you are using disinfection)



SYBR-AER FT SERIES INSTRUCTIONS

The installation must comply with all state and local regulations.

SITE PREPARATION

LOCATION

The site plan should show the desired location of the waste treatment plant and the location of the effluent disposal system. **CAUTION:** Check to make sure the site plan accurately reflects the conditions actually existing at the site and that all required set-backs (i.e., to wells, property lines, etc.) are being met.

GRADE AND GROUND COUNTOUR

Position the waste treatment plant so that surface water and effluent will drain to a lower grade under all known conditions.

COVER EXPOSURE

The access covers must be exposed at all times to permit the system to function properly and to allow for routine maintenance.

BUILDING SEWER LINE

Carefully check all elevations to insure that the building sewer will have the proper fall [slope] to meet the inlet of the **SYBR-AER** and maintain the grade requirements to insure proper exposure of the cover. The elevation of the outlet should also be checked to insure proper elevation of the effluent disposal system.

EXCAVATION PREPARATION

Clear an area at least two [2] feet larger than the dimensions of the tank, which is to be installed.

Determine the required depth of the excavation based upon the elevation of the invert of the inlet sewer line or the elevation of the finished grade.

NOTE: Riser needs are built into the tank. There is 13 inches of adjustment built into the tank. Locate the proper elevation and drill a 5" inlet hole on the flat section of the tank and install the supplied 4" gasket seal



Excavate a hole approximately two (2) feet wider than the perimeter of the plant.

NOTE:

If the final elevations will not allow for the proper installation of the SYBR-AER, a lift station can be installed upstream.

Care should be taken to not dig too large (or too deep) of a hole. If the hole is dug too deep, fill in the bottom of the excavation with a minimum of 6" of sand, pea gravel or crushed stone to the required bottom depth. **This material should be well compacted to prevent settling of the tank when it is filled with water.**

OFF-LOADING AND UNPACKING

The SYBR-AER FT Series comes with four lifting eyelits to lift the tank.

NOTE: Be sure to use all four lifting eyelits for safety when moving the tank and that your lifting harness is long enough not to pinch the blower housing.

Caution: Unit is top heavy move with care.

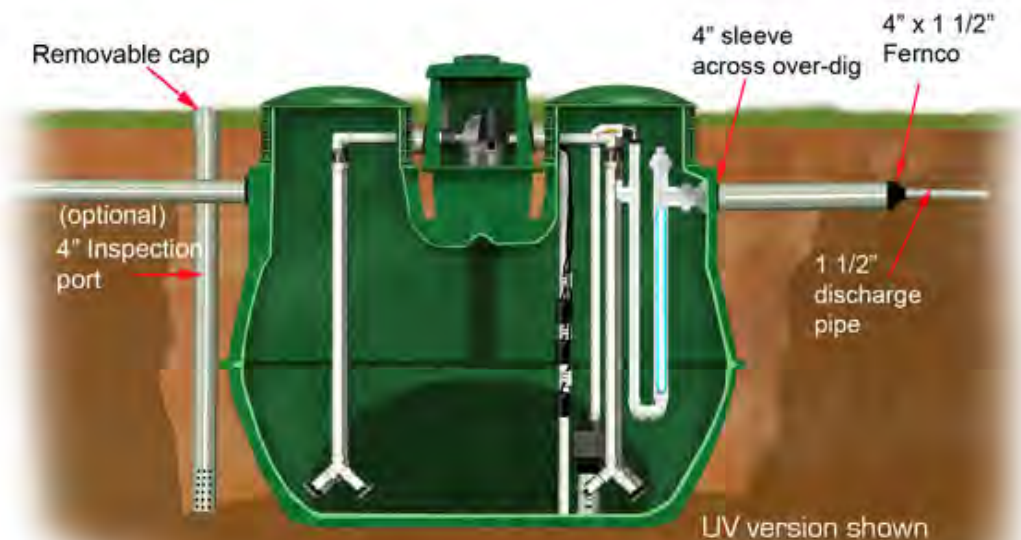


BACKFILLING

Once the tank is set and leveled start filling the tank with water and begin backfilling with friable material up to the inlet. Firmly insert the inlet pipe into the tank. (pipe lube recommended)

CAUTION: To prevent any damage to the inlet or outlet pipes due to settling or backfilling, make sure that both inlet and outlet pipes are set on undisturbed or firmly-packed fill material prior to final backfilling procedures.





Once you have slid the discharge pipe through the protective sleeve [4" piece of pipe long enough to span across the overdig] and connected it to the pump line, install the supplied 4"x 1 1/2" Fernco on the end of the 4" pipe in the trench to prevent ground water from entering the pipe. The protective sleeve provides protection during backfilling and eliminates the chance of sheering off the pipe if the tank settles.

NOTE: In areas where there is suspected high ground water install a 4" inspection port next to the unit to check for the presence of ground water before pumping.

ELECTRICAL

NOTE: SBC4080UV Control Panel requires 2 dedicated circuits to power the panel (with UV)
 SBC4060 Control Panel requires 1 dedicated circuit to power the panel (without UV)

All the components for the SYBR-AER are pre-installed and pre-wired so no need to make any electrical connections at the tank. Run the 100' of direct burial cable supplied to the location you want to mount the control panel.

Use care and drill control panel box for 1" conduit. (Make sure you do not drill into the terminal strip in the bottom of the panel.) Mount the control panel with the supplied hardware and install the supplied conduit and sweep.

Feed the 12 wire through the conduit and into the panel.





The control panel is clearly labeled and utilizes terminal blocks so no need for wirenuts.

Wiring color code is listed on backside of control panel access door,

SBC 4060 (NON UV)

SOLID RED TO BLOWER POWER
 RED W/STRIPE TO BLOWER NUETRAL
 SOLID BLACK TO PUMP POWER
 BLACK W/STRIPE TO PUMP NUETRAL
 SOLID YELLOW TO E.P.C. FLOAT POWER
 YELLOW W/STRIPE TO E.P.C. FLOAT NUETRAL
 SOLID ORANGE TO HIGH WATER FLOAT POWER
 ORANGE W/STRIPE TO HIGH WATER NUETRAL
 SOLID BROWN TO GROUND BAR
 BROWN W/STRIPE TO GROUND BAR

* 2-BLUE WIRES NOT USED

SBC 4080UV (WITH UV)

SOLID BLUE TO UV POWER
 BLUE W/STRIPE TO UV NEUTRAL
 SOLID RED TO BLOWER POWER
 RED W/STRIPE TO BLOWER NUETRAL
 SOLID BLACK TO PUMP POWER
 BLACK W/STRIPE TO PUMP NUETRAL
 SOLID YELLOW TO E.P.C. FLOAT POWER
 YELLOW W/STRIPE TO E.P.C. FLOAT NUETRAL
 SOLID ORANGE TO HIGH WATER FLOAT POWER
 ORANGE W/STRIPE TO HIGH WATER NUETRAL
 SOLID BROWN TO GROUND BAR
 BROWN W/STRIPE TO GROUND BAR

Remove the discharge side lid and unhook and raise the float tree up out of the tank and cut the shipping tape off of the floats. (**Floats are taped to float tree for shipping purposes and failure to remove tape will prevent system from operating properly**)



Once all connections are made power can be supplied to the panel. Turn on all the Breakers, Press and hold the test button to activate the alarm.



Top Float is the E.P.C. Float
Middle Float is the Highwater Float
Bottom Float is the Redundant ON/OFF Float

[Low alarm is an optional alarm it is designed for a float to be set low so that when the tank pumps out if it is still up it will go into a latching alarm to alert you it didn't pump out enough]

Raise the highwater float and make sure alarm sounds. With the blower running raise the E.P.C. float and make sure the blower shuts off. Raise the Redundant ON/OFF float and flip the manual pump run switch in the panel and make sure the pump runs.

NOTE: The E.P.C. will shut the blower off and start a 1 hour settling cycle then run the pump. To clear this alarm once you activated the float shut the power breaker off to clear the alarm condition then turn back on



Turn the Blower Breaker off and make sure the alarm activates then turn breaker back on. If the system has enough water in it you can let it run or turn it off until you are finished with the installation.

Once everything has been tested and operational install lids and continue backfilling. Final Grade should be contoured so that surface water drains away from the unit.

Note: Once you have tested the alarm zero out all alarm counters. This can be done by cycling through each alarm screen (A button) and pressing the minus button and holding for 3 seconds (till counter shows all zeroes)



The following instructions are for units with Ultraviolet Light.

The quartz tube is shipped inside the UV housing. Loosen the large union and remove quartz tube to remove protective packaging.

Note: Failure to remove packaging from the quartz tube will prevent proper operation and will not allow the system to discharge properly.



The UV Bulb is transported in a tube taped to the float tree. Carefully cut the tube free from the float tree and open to remove bulb.

NOTE: Care should be taken to not touch the glass of the bulb if you are not wearing gloves. Oil from your skin can create hot spots on the bulb and shorten the life of the bulb.



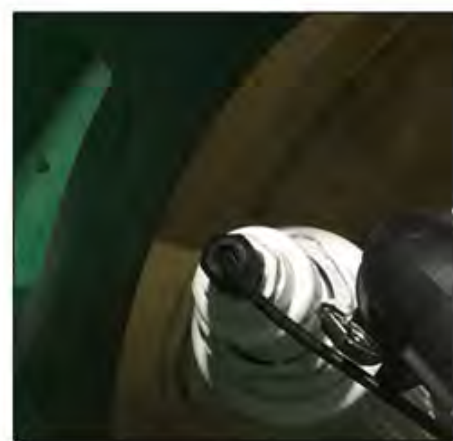
Once the packaging has been removed re-install the quartz tube and tighten down the Large union



Plug the UV Whip (chord) onto the uv bulb and lower into the quartz tube



Tighten down the small union



The UV is designed to treat up to 14 gallons a minute. Adjust the flow with the supplied ballvalve to the correct flow. No more than 14 GPM no less than 10 GPM.



Once the UV light is hooked up turn the UV breaker on. Flip the sample mode switch this shuts the blower off and turns the UV on you should see the current switch on the left in the panel light up red when the UV comes on as well as listed on the operating screen of the logic module. Shut the UV Light breaker off and the alarm should sound turn the breaker back on and clear the alarm .Once this is verified turn the sample mode switch off this puts it back into normal operation



NOTE: Blower will not operate if sample switch is left in the ON position.

The control panel is programmed to turn the UV light on when the Blower turns off and goes into settle mode at midnight. In normal operation the UV light is only on 4 hours a day. If the system goes into a highwater situation and the homeowner continues to use water and triggers the E.P.C. float the blower will turn off and turn the UV light on for a 1 hour settle mode and then pump the excess water out.

The control panel is failsafed in the event of a blower or UV light failure the pump is locked out and will not discharge until the alarm condition has been cleared.

CAUTION: Do not look at UV Light when it is on can damage eyes.



POST AERATION/SAMPLING (IF REQUIRED)

Re-aeration is achieved by spraying effluent against a surface when pumped effluent is drawn from the tank. The effluent pump discharges through a removable perforated fitting with (8)1/4" holes into a standard 16"x16"x14" Tuf-Tite polyethylene distribution box prior to discharge. The vigorous spraying provides sufficient agitation to raise the dissolved oxygen level to almost saturated concentrations

Samples can be collected in the same box by removing the spray head and adjusting the flow so you can collect a free flowing sample

SAMPLING

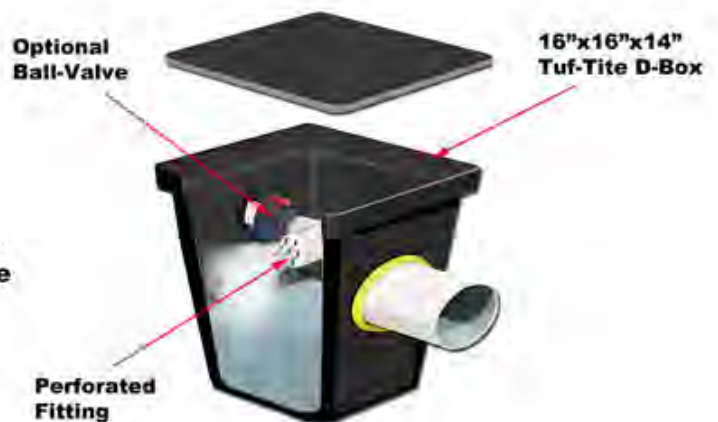


With UV Disinfection

Systems utilizing UV disinfection already have an adjusted flow slow enough to collect a free flowing sample

Without UV Disinfection

An optional 1 1/2" ball valve or gate valve can be installed in the discharge line in order to slow the flow enough to take a free flowing sample



Once the installation is complete be sure to give the property owner the owners manual, explain the Do's and Dont's, and fill out and send in the installation report

Recommended SYBR-AER Installation Check List

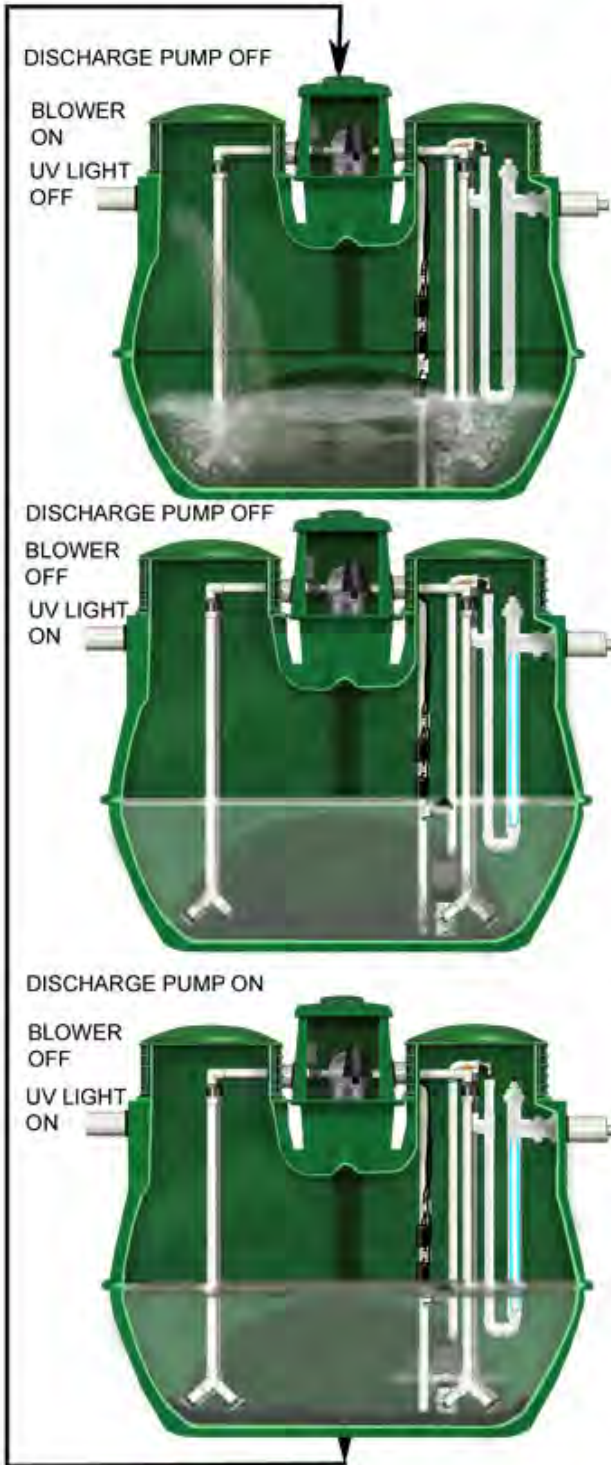
Date:	Installer:
Permit:	Site Address:
Property ID:	Site City and State:

Item		Item	
Administrative Issues		Excavation and Installation	
Permit On Site	Yes No	Level Excavation	Yes No
Site Protected from Traffic	Yes No	Bedding Stone Used if rocks present	Yes No
Benchmark and Baseline	Yes No	Correct Excavation Elevation	Yes No
		Level Installation	Yes No
		Backfill is clean and friable and compacted	Yes No
Electrical Installation		Grade runs away from access lids	Yes No
Required power supplied	Yes No	Inlet and Outlet Pipes Connected	Yes No
All terminals tightened down	Yes No	Treatment Tank Filled (at least 19")	Yes No
Alarm Installed Per Code	Yes No	Access lids accessible	Yes No
Alarm Tested and Functioning	Yes No	Internal Components	Yes No
		Blower Installed and Operating	Yes No
Final		Airline drop legs Installed	Yes No
Installation Conforms to Approved Plans	Yes No	Pump and pump pipe Installed	Yes No
Explained Do's & Don'ts with property owner	Yes No	UV Light installed and operating (if present)	Yes No
		Alarm counters zeroed out	Yes No
		Lids Installed and Secured	Yes No
		Service contact info provided	Yes No
		Owner's manual left with property owner	Yes No

Note: On the backside, make a sketch of the installation noting differences between the plan and actual installation.

Comments and Notes:

NORMAL OPERATING CYCLE WITH UV
 (Non UV same operation minus the UV)



AERATION CYCLE:

DURATION: 20 HOURS
 NORMAL HOURS: 4:00 a.m.-12:00 a.m.

BLOWER: ON DISCHARGE PUMP OFF
 UV: OFF

Description: Aerobic waste treatment occurs during the aeration cycle. Air from the diffusers keeps solids in suspension. This cycle is programmed to occur at normal times of highest water usage.

SETTLING CYCLE:

DURATION: 3 HOURS
 NORMAL HOURS: 12:00 a.m.-3:00 a.m..

BLOWER: OFF DISCHARGE PUMP OFF
 UV: ON

Description: Sludge settles to the bottom of the tank during this cycle. The settling cycle starts when the aeration cycle ends. The settling cycle is programmed to occur during normal times of lowest water usage. When the blower shuts off the UV light turns on.

PUMP OUT CYCLE:

MAXIMUM DURATION 1 HOUR
 NORMAL START TIME: 3:00 a.m..

BLOWER: OFF DISCHARGE PUMP ON
 UV: ON

Description: treated wastewater is pumped through the UV and out of the tank during the pump out cycle. The pump comes on at the end of the settling cycle and runs until the water level in the tank drops to a depth of 19inches from the bottom of the tank. At this depth a level switch stops the pump.

One hour after the start of the pump cycle, a new aeration cycle begins. The UV light turns off and the blower starts up again.. The entire process is repeated every 24 hours.

Service Policy

During your initial two-year warranty, an authorized service representative will inspect your unit at six-month intervals and make necessary adjustments to the system. The only exception is for the replacement of "out of warranty" and "physically abused" parts or abuse to the treatment and dispersal components and devices, such as pre-tanks, drain fields, pump station, and the like.

In the event a problem arises or service is required, refer to the unit's data plate (located on the alarm and access lid) or the service label for instructions on contacting your closest service provider. Occasional pumping is required, due to the accumulation of solids. The pumping cost may not be covered under your maintenance and service program. If you need parts or service, please contact the factory for the name of the service provider nearest you. The owner shall be notified in writing by the service provider about improper system operations that cannot be remedied at the time of the inspection.

Before the initial two-year warranty expires, your service provider will notify you in writing, that an extended service agreement may be purchased. This extended service agreement will have terms, conditions, and limitations comparable to the initial agreement. If the service provider does not provide extended service agreements, the service provider will refer you to an authorized service provider who provides extended service agreements. You may also contact the factory for assistance in locating an authorized service provider.

Items not covered under warranty that will generate service charges for your residential SYBR-AER wastewater treatment equipment.

1. Use of unauthorized component parts in your SYBR-AER unit.
2. Repairs made by other than factory trained and authorized personnel.
3. Failure to maintain proper electric power to the SYBR-AER unit.
4. High water alarms due to clear water discharges including, but not limited to, backwash from water treatment systems, water softeners, swimming pools, footing drain sump pumps, down spouts, hot tubs, dehumidifiers, air conditioners, and leaking plumbing fixtures.
5. Discharge into the SYBR-AER unit of non-biodegradable materials such as paints, grease, or any other materials that are toxic.
6. Emergency service calls for alarms due to items 1 thru 5 above in addition to the following:
 - a. Water usage that exceeds the total daily flow for which your aerobic plant is rated
 - b. The septic system becoming flooded during periods of heavy rainfall.

Listed above are some of the most common items that are not covered by warranty. Specific items not herein listed. Also, please note that the warranty covers parts only. Labor will be billed at the rate in effect at time of service.



Sampling Instructions for the SYBR-AER

With the SYBR-AER being an SBR (Sequential Batch Reactor) the question arises as to the proper protocol for sampling the SYBR-AER system, particularly those that incorporate disinfection and/or re-aeration. These instructions address these questions by providing an approach that, if followed, should yield data that accurately reflect the performance of the treatment system.

Sampling is part of a process for documenting successful system operation. Sampling is a team effort that includes the homeowner, manufacturer's local representative, regulators and laboratory staff.

The SYBR-AER is programmed to discharge between 3 - 4 a.m. which is not practical for taking a sample. So the control panel has a built in sample mode.

When it is time to take a sample notify the homeowner and schedule a date and time to collect the sample.

Have the homeowner on the selected date and time go out to the control panel and turn the sample mode switch ON in the panel. This will shut the blower off without sounding the alarm, and it will turn the UV light on.

After a minimum of 3 hours (maximum 5 hours) settling time from the scheduled activation time you can collect the sample. (Have the homeowner refrain from using large amounts of water during this time)

Collect the sample by opening the sample port and unscrewing the spray head in the sample port..

If the system is utilizing UV disinfection the pump flow has already been adjusted down slow enough to collect a free-flowing sample. If not utilizing UV there should be a ball or gate valve installed in the sampling box to slow the flow so you can collect a free-flowing sample. Go to the control panel and turn on the manual pump run switch which will turn the pump on. Allow piping to flush for at least 30 seconds before collecting a sample.



Collect CBOD, TSS, and ammonia first then sterilize the piping before collecting fecal coliform or E. Coli samples. Sterilize piping by wiping the pipe down with bleach.

Once the sample has been collected turn off the manual pump run switch. Screw the spray head back on the pipe in the sample port. Turn pump back on let any trapped air bleed out of the line, once it is spraying consistently back in the box take your Dissolved Oxygen reading.

Once you have taken a reading put the lid back on the sample port. Turn the manual pump run switch off then turn the sample mode switch off. This will put the SYBR-AER back into it's normal operating program.

Sampling Tips

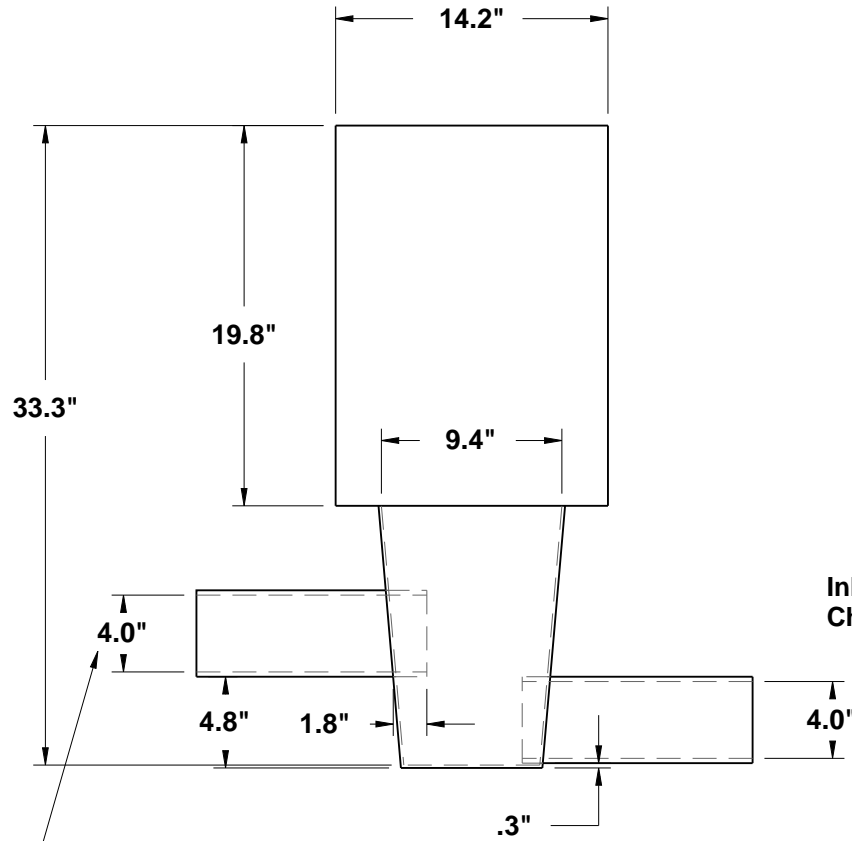
- Understand and follow all applicable OSHA and safety standards. Wear protective gear, including gloves and eye protection. Keep hands below shoulders. Disinfect after sampling.
- Calibrate instruments. Different approaches can be used to take measurements. Be sure that electronic instruments are properly calibrated. Chemicals should be "fresh" and appropriate for the measurements to be undertaken.
- Refrain from using large amounts of water during the settle mode.
- Collect samples from cleared, piping or appurtenances. Remove items that may have been deposited and do not reflect effluent as it is discharged from the system.
- Collect only free-flowing samples.
- Sterilize piping and appurtenances before collecting fecal coliform or E. Coli samples. Bacterial samples are the most sensitive of all samples. Extreme care must be excercised in collecting bacterial samples as contamination can easily occur.
- Keep notes related to sampling events and note items that may have a bearing on the results. Record the time the unit was put into settling mode and what time the sample was collected.



REVISIONS

ZONE	REV	DESCRIPTION	DATE	APPROVED
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Drawn By Nathan Wright, Geophyta Inc. 31-Dec-15



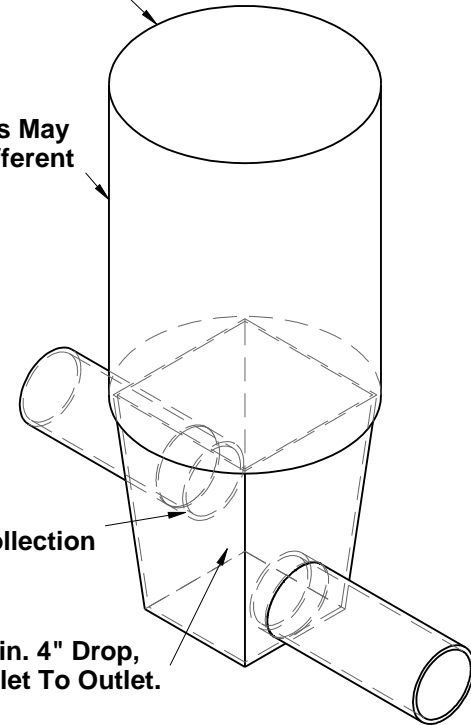
Pipe Diameter Will Range From 1.5" - 4.0" Dia. See BOM For Actual

PolyLok 12" D-Box With 3 - 6inch Risers And Lid

More Or Less Risers May Be Required For Different Installation Depths. See Actual BOM.

Inlet Must Extend Into Chamber For Sample Collection

Min. 4" Drop, Inlet To Outlet.



APPROVED

By Matt Beckman at 3:13 pm, Apr 04, 2022

SIZE A	FSCM NO.	DWG NO.	REV
SCALE 1:10	Free Falling Sampling Port - NPDES		SHEET



Bill Of Materials - 4673 S. T.R. 197, HSTS Replacement - NPDES SYBR-AER FT-1400 Series W/ UV Disinfection & Reaeration

Quantity	Part Name	Section	Comment
2	SCH40PVC4inchCoupler	Sewer Main Replaced to Existing C/O Total Length of Pipe = ~35' MUST BE SCH40 PVC	See Design
2	SCH40PVC4inch45DegreeEll		
1	SCH40PVC4inchpipe5ft.		
3	SCH40PVC4inchpipe10ft.		
1	NPDES ATU	NPDES Tank W/ Included Assembly	SYBR-AER FT-1400 (500GPD) (See Installation Page 1)
-	All Included Assembly Parts & Included Wiring		
1	SCH40PVC1.5inchCheckValve		Vent Hole Between Valve @ Pump (Prevent Airlock)
1	SCH40PVC1.5inchBallValve		Regulate Flow Through UV Lamp
1	SCH40PVC1.5inchQuickDisconnect		Top of Gooseneck (Allow Pump Removal/Replacement)
1	UV Disinfection Lamp		SBC 4080UV (See Detail Print)
1	SCH40PVC1.5inchpipe2ft.	Sample Box	Connect to SYBR-AER Tank
1	PolyLok 12" D-Box or Equiv.		
1	SCH40PVC1.5inch Perf. Cap For Reaeration Requirement		
1	SCH40PVC4inchpipe2ft.		Sleeve Across Overdig For Tank
49	SCH40PVC4inchCoupler	NPDES Discharge to Ditch/Culvert Opening Total Length of Pipe = ~525' MUST BE SDR35 PVC or Equiv.	See Design & Length May Vary
2	SCH40PVC4inch15DegreeEll		
2	SCH40PVC4inch22.5DegreeEll		
1	SCH40PVC4inch45DegreeEll		
1	SCH40PVC4inchpipe1ft.		
1	SCH40PVC4inchpipe4ft.		
2	SCH40PVC4inchpipe5ft.		
51	SCH40PVC4inchpipe10ft.		

Additional Notes

Installer, Pump, Crush & Backfill Old Tank.

Installer, Watch For Floor Drain Tile. This Tile Has Sump Pump Draining Into it. Tile May Connect to Old Sewer Main & Into Septic Tank. If True, This Line Needs to be Reconnected to Old Clay Field Tile or Connected to NPDES Discharge Line After Treatment Unit.

U.G. Telecommunication Supply Was Not Marked by OUPS, Exact Location to N.W. Corner of House is Unknown. Homeowner Believes Line Runs Along North Side of Driveway.

Internal Plumbing is Needed. Please Review Sheet in Design Package For Details.

~	Geofabric Over SYBR-AER Tank	Assist in Buoyancy Force	~100 ft.^2 Fabric (Installer Preference)
-	Grass Seed	2 lbs./1000 ft.^2 K. Bluegrass	Over Tankage & Piping *Responsibility of Homeowner Due to Continued Settling of Backfill*
-	Straw Mulch For Grass Establishment	Homeowner's Choice	
-	Grass Establishment Fertilizer	10 lbs. 20-10-10/1000 ft.^2	

Call OUPS before you dig.

Installer substitution of materials not specified in this Bill Of Materials may void Health Dept. approval of this design and will result in a re-design fee and is the sole responsibility of the installer.

Design Prints Take Precedence Over This Bill of Materials. This is a best estimate of materials required and is provided as a convenience to installers. This BOM is not required for design approval.

Operation and Maintenance Procedures

Home Septic Treatment Systems With Processing Through An Aeration Treatment Unit, Disinfection, And Effluent Discharge

Home septic treatment systems are biologically based systems. They rely on both anaerobic and aerobic microorganisms to process human waste. These systems may utilize processing, storage, and pumping tanks. Also, the processed effluent may be disinfected before discharge to a storm drain, ditch, or stream. In some cases, a soil absorption component, the leachfield, also processes, treats, and disperses septic effluent. Any abuse of this biological treatment system will result in less efficient sewage treatment and early failure of your new system.

Improper operation and/or maintenance of your home septic treatment system will result in its failure.

Geophyta, Inc. strongly recommends that a homeowner hire a professional service provider to inspect and maintain your system. Your county health department has a list of registered service providers. Make sure that your service provider has septic tank and leachfield maintenance experience.

1) Homeowner Responsibility:

- a) The system owner is responsible for the continuous operation and maintenance of this home septic treatment system
- b) Your county health department may require third-party inspection and maintenance of your home septic treatment system.
- c) Home Interior Design & Appliance Selection:
 - i) Install water conserving fixtures such as low flow shower heads, low flow toilets, and front loading washers.
 - ii) Space out water use throughout the day and week. Avoid doing all laundry in one day.
 - iii) Repair all water leaking fixtures.
 - iv) Eliminate garbage disposals, or limit their use. Collect food scraps with sink strainers for disposal as trash or for composting; this includes coffee grounds.
 - v) DO NOT pipe sump pump output into your sewer line.
- d) Home Landscaping Limitations:
 - i) Do not pipe roof downspouts or any other rainwater drainage into the septic or dose tanks.
 - ii) Divert all downspouts or other rainwater drainage away from your entire septic system.
 - iii) Divert all downspouts or other rainwater drainage away from the leachfield area.

- iv) Do not drive or park cars, boats, heavy equipment, or other vehicles on or near septic system tanks and leachfield areas.
- v) Do not add additional soil fill on or near the leachfield. This will limit air movement into the soil needed for effluent treatment and may cause system failure.
- vi) Limit lawnmower traffic on the leachfield when soil is excessively wet.
- vii) Do not plant any deep rooted plants on top of or near your leachfield soil absorption area.
- e) Home Resident Responsibilities:
 - i) Only flush or drain bio-degradable human waste, toilet paper, laundry and dish and personal care soaps, and water into your home septic treatment system.
 - ii) Severely limit disposal of food fats, oils, and greases. These will clog your system.
 - iii) Do not flush or drain undiluted bleach, cleansers, or drain cleaners.
 - iv) Do not flush any non-biodegradable items. For example, plastic items.
 - v) Do not flush or drain motor oils, greases, anti-freezes, cleaners, etc.
 - vi) Do not flush cat litter.
 - vii) Do not flush paper towels, facial tissue, cigarette butts, disposable diapers, sanitary napkins, tampons, or condoms.
 - viii) Do not flush prescription or over-the-counter drugs. Antibiotics and cancer treatment drugs are very harmful to your home septic treatment system.
 - ix) Do not dump solvents like dry cleaning fluid, pesticides, photographic chemicals, paint thinner down the drain.
 - x) Don't use septic tank additives, unless health department approved.
 - xi) Don't drain a hot tub or large amounts of water into your septic system.
- f) Home Improvement/Expansion:
 - i) Contact your county sanitarian before adding new driveways, decks, patios, pools, and outbuildings not identified on your original layout plan to make sure all setback distances from your septic system tanks and mound are met.
 - ii) Contact your county sanitarian before adding bedrooms and/or increasing your home occupancy. This may overload your septic system. Septic system expansion may be required to prevent failure.
- g) Homeowner Cautions:
 - i) **DO NOT ENTER TANKS WITHOUT PROPER SAFETY EQUIPMENT.** Septic and dose tanks contain noxious and deadly gases.
 - ii) Pump or dose tanks and control boxes contain electrical components. **ELECTRICAL SHOCK HAZARD CAN EXIST WITH IMPROPERLY WIRED OR FAILING COMPONENTS.**
 - iii) Always keep tank fall guards in place, except for the time needed to replace components when safety equipment is present.
 - iv) Always replace and secure septic and dose tank lids after completing any inspection.
 - v) Any disconnection or removal of filters, screens, floats, alarms, and/or control panels will result in system failure.
 - vi) Contact your county sanitarian for allowed homeowner maintenance and repair of your septic system.

2) Inspection & Maintenance Requirements:

- a) Perform inspection & maintenance **every six months**.
- b) Review Baseline Operation and Maintenance Data:
 - i) The installer of your system set and recorded all float/liquid level heights, pump down times, cycles per day, and distal head pressures required in the design specifications.
 - ii) Review all previous six month inspection data.
- c) Identify any house additions, patios, pools, ponds, driveways, outbuildings, etc. added since the last inspection that may impact the home septic treatment system. Draw a sketch of these differences.
- d) Inspect the house sewer main two-way cleanout tee bottom:
 - i) Check for clogging.
 - ii) Check for continuous clear water flows from the home.
- e) Evaluate Aeration Treatment Tank & Pump Tank:
 - i) Measure sludge and scum depths; pump tank when cumulative thickness is 1/3 of the tank depth.
 - ii) Look for signs of clogging and tank damage.
 - iii) Look for signs of tank and riser leakage.
 - iv) Clean & inspect any tank outlet filter.
 - v) Make sure lids are securely attached to risers.
- f) Evaluate Pump/Dose Tank & Pumping Equipment:
 - i) Measure sludge and scum depths; pump tank when septic tank is pumped.
 - ii) Look for signs of clogging and tank damage.
 - iii) Look for signs of tank and riser leakage.
 - iv) Inspect and assure proper functioning of floats or other liquid level controls.
 - v) Clean and inspect dose pump outlet filter. May not be present in some designs.
 - vi) Inspect and assure proper condition and functioning of the effluent pump.
 - vii) Make sure lids are securely attached to risers.
- g) Evaluate Drain Fields:
 - i) Inspect all leachfield soil inspection tubes for surface condition, surface color, and depth of ponded effluent, if present.
 - ii) Look for surfacing effluent.
 - iii) Look for excessively moist soil around leachfield area.
 - iv) Identify appropriate vegetative cover.
 - v) Look for surface disturbances, compaction, abnormal settling, and erosion.
 - vi) Identify any deep rooted vegetation recently planted near the leachfield area.
- h) Switch leachfield resting trench in D-box:
 - i) Determine a rotation sequence for closing off flow to the resting trench/trenches.
 - ii) Open the previously rested leach trench.
 - iii) Close the next trench in sequence for resting.
- i) Measure Pump Run Time and/or Drawdown:
 - i) For demand dosed systems, verify original design effluent drawdown depth.

- ii) For time dosed systems, verify original design pump run time.
- iii) For systems with a cycle counter or run time meter, record the current values.
- j) Test Alarms:
 - i) Evaluate proper function of low liquid level alarm.
 - ii) Evaluate proper function of high liquid level alarm and warning light.

3) Findings & Repairs:

- a) All findings during inspection and maintenance must be recorded.
- b) Any system adjustments must be recorded.
- c) Any system deficiencies, worn out components, and/or damage must be repaired to return your septic system to a properly functioning state.
- d) All repairs must be recorded.