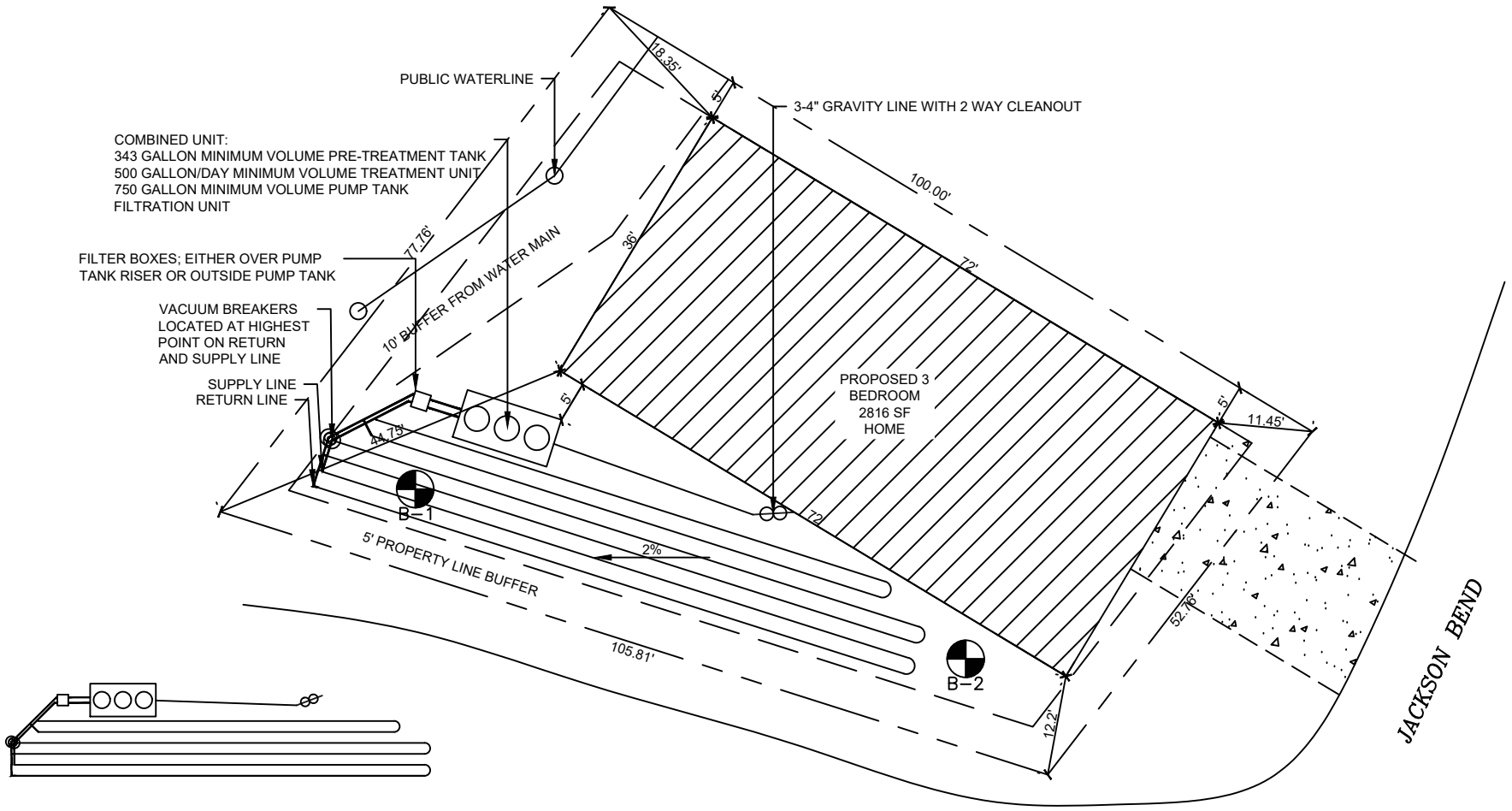


DESIGN PARAMETERS:
FACILITY: 3-BEDROOM 2,816 SF
SOIL CLASSIFICATION: IB
DAILY FLOW RATE: 300 GPD
LOADING RATE: .38 GPD/SF
ABSORPTIVE AREA REQUIRED: 790 SF
ABSORPTIVE AREA DESIGNED: 878 SF
EMITTER LINE SPACING: 2'
EMITTER LINE REQUIRED: 395 LF
EMITTER LINE DESIGNED: 439 LF

N

0 20 30

SCALE: 1" = 20

PLATE #1

STATE OF TEXAS
JEFF DURAND
4956
REGISTERED
PROFESSIONAL SANITARIAN

4560 JACKSON BEND

GRANBURY, TX

JEFF DURAND RS 4956 05/10/2023

The Septic Designer, LLC
Jeff DURAND RS
Professional Sanitarian

10 Twin Lakes Ct. Unit A
Arlington, TX 76016
Phone (817) 964-9636

DESIGN CRITERIA FOR AN ON-SITE SEWAGE FACILITY (OSSF) SYSTEM

PRESSURE EMMITTER WITH SECONDARY TREATMENT

Date: 05/11/2023
Site Location: 4560 Jackson Bend Ct.
County: Hood
Prepared for: Axon Development, Inc.

To Whom It May Concern:

This letter and attachments will serve as the design document for the installation of a proposed On-Site Sewage Facility (OSSF) at the above referenced site. Prior to system installation, this report shall be submitted to the Hood County Health Department for review and permitting.

Recommendations contained herein are representative of those presented in the Texas Commission on Environmental Quality (TCEQ) document *Title 30, Texas Administrative Code, Chapter 285*, On-Site Sewage Facilities (Effective December 29, 2016). A copy of *Title 30 TAC Chapter 285* is available from the TCEQ, Austin, Texas.

This design is representative of the current "State of the Art" in effluent disposal system design. It should function within normal limits and expectations without causing significant threat or harm to existing water supply systems, the public health or the threat of pollution or nuisance conditions. However, due to the vagaries of both nature and man, no warranty of this design performance is expressed or implied.

Approximate location of the 2816 total square foot residence (four-bedroom design equivalent) is shown on the System Layout (Plate # 1). "Water saving devices" either are installed or are to be installed in this structure, reducing the estimated daily flow from 360 gallons/day to 300 gallons/day.

The area proposed for effluent is relatively open. Site slope in the proposed disposal area is 2%. Property is supplied with public water supply.

A **Site Evaluation** was conducted as recommended in §285.30 (Site Evaluation of the aforementioned *Title 30 TAC Chapter 285*) and is included as Plate #1A.

Based upon this data the site may be deemed suitable for the installation of a treated drip emitter discharge disposal system.

The following paragraphs will address the requirements of *Title 30 TAC Chapter 285* as previously cited.

DESIGN PARAMETERS

Daily Flow – 300 gallons/day
Number of Bedrooms – 3
Square Feet Living Area – 2,816 sq.ft (4 Bedroom Design Equivalent)
Pre-Treatment tank – 343 gallon chamber minimum
Aerobic Tank – 500 GPD Proprietary, listed on the TCEQ list of approved systems
Pump Tank – 750 gallon chamber minimum
Chlorinator – stackable – free flowing tablets or Liquid (Not Required)
Soil Evaluation – Class IB soil
Effluent Loading Rate - .38 gal/sq. ft/day (Class IB Soil)
Actual Loading Rate - .38 gal/sq. ft/day
Required Disposal Area – 790 Sq.ft
Designed Disposal Area – 860 Sq.ft
Emitter Tubing – Geo-Flow WasteFlow PC, WFPC-16-2-24, or equivalent)
Emitter Line Spacing – 24 inches c-c – all lines looped installed at 12" in depth
# of Zones - 1 Zone
Length of Emitter Tubing – 430 linear feet
Number of Emitters – 215 emitters at 4 sq.ft of area per emitter - 215 X 0.53 gal/hr = 113.95 gph/60 = 1.9 gpm
Daily Pump Time – 300 gpd/1.9 gpm = 158 minutes minimum required pump time after stable pressure is achieved
Timer – 15.48 minutes every 2:08 hours:mins
Dosing Volume – 10 doses @ 30 gallons
Pump – ½ H.P Submersible "Sta-Rite or Equivalent 20 GPM"
Optional pump vault screen
Supply/Manifold/Backwash Lines – 1" PVC SCH 40
Filter Location – Located in Pump Tank or box outside Pump Tank
Filter – 1 to 2 – 1" Disc Filters in parallel – 100 micron Mesh) or Tuff Tiger filter assembly
Pressure Gauge Location on Supply Line – On outlet side of filter on supply line
Pressure – set for 30 PSI on supply side on drip field
Maximum Length of any single drip lateral - < 535 ft
Vacuum Breakers – Installed on highest elevations in supply and return lines
Flush Velocity – 2 ft/sec at 30 psi on inlet side of drip field
Pressure Gauge Locations on Return Line – Ball valves and pressure gauge at pump tank and trash tank used to backwash drip field and to monitor pressure

MATERIALS AND EQUIPMENT

Elimination of Tank Flotation – In accordance with *Title 30 TAC Chapter 285*, §285.31(c)(2) tank flotation of the ATU is to be prevented by the combination of their empty weight and effluent content exceeding the buoyant force acting upon them when submerged.

Existing OSSF - Any existing OSSF may be abandoned in place. Any existing tanks abandoned during construction shall be dealt with in accordance with §285.36 of the aforementioned *Title 30 TAC Chapter 285.*

Water Meters – In order that water use may be verified, the residence shall be equipped with a dedicated water meter. If an irrigation system is to be used it shall be supplied through a separate meter.

Prevention of Unauthorized Access to On-Site Sewage Facilities (OSSF's) - The methods and materials employed to prevent unauthorized access to this proposed OSSF shall comply with *Title 30 TAC Chapter 285 §285.38.*

Tank Waterproofing, Risers, Backfill Around Tanks - Tanks shall be waterproofed. Risers shall be provided on the tank tops to permit access for tank pumping or pump maintenance/replacement. A minimum of four (4) inches of sand, sandy loam, clay loam or pea gravel, free of rock larger than 0.5" diameter shall be placed under and around all tanks. Class IV soils and gravel larger than 0.5" diameter shall not be used as backfill material.

Pump and Alarm System - The pump may be for either submersible or non-submersible type, capable of producing a *minimum* flow of 20 gallons/minute at 40 psi. Pump controls shall include an automatic, water level activated pump control switch, a high-water alarm/pump activation system and a manual override switch. The alarm system shall be on a separate electrical circuit than the pump, shall be connected to a placarded warning device (audio and visual) located in a prominent place near the residence area and shall be capable of detecting and, issuing an alert for the following conditions:

1. Pump Failure
2. Pump tank High Water condition
3. Aerobic Unit aerator/compressor failure.

The alarm switch shall be set in the pump tank in order to provide a small emergency capacity (> 1/3 the daily effluent flow) until system repair is affected.

Control Panel / Pump Timer – A Control Panel shall govern pump operation. This Control Panel shall contain a timer that will govern pump-on activation/duration operation times for treated effluent dosing as specified above.

Pipes, Fittings and Connections – With the exception of the emitter line, Schedule 40 PVC pipe shall be used in the installation. *All distribution piping, fittings, valve cover boxes and sprinkler tops shall be permanently colored purple in order to identify the system as a reclaimed water system.* A union connection should be installed in the supply line to provide for pump maintenance/replacement. 1-inch SCH 40 PVC should be used in order to provide adequate pressure. If supply line crosses any water line, the crossing shall be sleeved 10 feet past the crossing. All emitter line connections shall be made with "barb" or compression type connections.

Electrical Wiring - All wiring shall conform to *Title 30 TAC Chapter 285 (cf §285.34 (c)).*

Water Softener - If so equipped the residence water softener must comply with *Title 30 TAC Chapter 285 §285.37*. In accordance with this paragraph, the water softener drain line must bypass the treatment system and connect directly to the pump tank.

Private Water Line – 10 feet separation of water and sewer line except at the connection to the structure unless water line is sleeved. If OSSF irrigation lines must cross the private water line, the purple irrigation line shall be installed one foot below the private water line and the purple pipe shall be sleeved with SCH 40 PVC to ten feet on each side of the crossing point.

Pipe from Building to Pre-Treatment Tank - 3" or 4" SDR 26 PVC pipe or stronger for the sewer line from the structure to the first tank. The slope of the pipe shall be no less than 1/8-inch fall per foot of pipe. A two-way cleanout plug must be provided between the sewer stub out and the treatment tank. An additional cleanout plug shall be provided every 100 feet on long runs of pipe and within five feet of 90-degree bends. Pipe that crosses drainage easements shall be sleeved with American Society for Testing and Materials (ATSM) Schedule 40 pipe; the pipes shall be buried at least one foot below the surface or buried less than one foot and encased in concrete.

SAFE DISTANCE SETBACKS:

Drip Emitter Tubing and Piping to Property Lines	5 Feet
Drip Emitter Tubing to Public Water Line	10 Feet

SYSTEM INSTALLATION/OPERATIONAL CHECK

1. The system shall be located approximately as shown on *Plate #1*. Slight system realignment (+/- 5 feet) is allowable to accommodate site topography. A two feet (minimum) separation of Pressure Emitter Lines shall be maintained.

2. Install the *Supply Manifold* approximately as shown on *Plate #1*. Slight system realignment (+/- 10 feet) is allowable to accommodate site topography.

3. Install the emitter lines at a depth of approximately 6 to 8 inches minimum (12 inches preferred) from expected finished grade of top soil. Emitter Line c-c spacing shall be approximately two (2) feet. The line may be installed by means of hand trenching, oscillating or vibrating plow, trenching machine or backhoe.

4. Connect the emitter lines to the *Supply Manifold* and *Flush Manifold* by means of "tees" and compression adapters.

5. Fill the *Pump Tank* with fresh water and install the pump.

6. Turn on the pump. Check that water flows from each Emitter Line. Flush the system for approximately 5 minutes. Shut off the pump and protect the ends of the Emitter Lines from the intrusion of foreign material.

7. Install the *Flush Manifold* approximately as shown on *Plate #1*. *Flush Manifold* depth shall be approximately 12 inches.

8. As was done with the Supply Manifold, connect the emitter lines to the *Flush Manifold* by means of "tees" and compression adapters.

9. Install the *Air/Vacuum Breakers* (Relief Valves) at the ends of the *Supply* and *Flush Manifolds if needed*, approximately as shown on *Plate #1*.

10. Connect the Flush Return Line back to the *Pre-Treatment Tank and Pump Tank*, open the flush valve and turn on the pump and check for leaks.

11. Install/connect the Pump Controls and Alarm System in the *Pump Tank*. Install and set the Pump Timer and float levels.

12. Grade the site to prevent the accumulation of rainfall and control drainage across the site.

13. Sod/seed with an appropriate grass to aid in effluent transpiration and to control site erosion.

SYSTEM MAINTENANCE/TESTING REQUIREMENTS

The *Aerobic System* shall be inspected every three months for system compliance with effluent standards as set forth in *Title 30 TAC Chapter 285 Section 285.32(e).*

The operation and settings of the system shall be checked annually (minimum) or as required to insure effective system operation.

The following procedures are required *(at specified intervals).*

1. Remove, inspect and clean or replace the disc filters as specified by the Filtration Unit manufacturer.
2. Open the Manual Flush Valve. Manually activate the Pump. Flush the system for five minutes *(every six months).*
3. Remove and clean the Air/Vacuum Breakers (Relief Valves) *(every six months).*
4. Manually operate the emergency alarm switch to verify alarm activation *(every four months).*
5. Sludge accumulation in the tanks should be monitored and pumped as required. *(yearly)*

ADDITIONAL REQUIREMENTS

1. No vehicular traffic shall be allowed on the system.

2. No sprinkler system shall be installed in the system limits.
3. No subsurface construction shall be permitted within the system limits. Puncturing of the OSSF lines may possibly result.
4. If problems with excessive wetness or surfacing effluent over the drip lines occurs well after grass is established, and soil is settled in, modifications to the system may be required. The most common problem that results in surfacing or excessive wetness over the drip field is using more water in the house than designed for. A typical residential design is only for an average of 60 gallons per person per day and the number of people in a house is designed for 1 more person than the number of bedrooms in a house. For example, a three bedroom house is designed for 4 people to live in the home.

REQUESTED VARIANCES

None

CHANGED CONDITION

In the event that construction activities reveal any conditions which might call the validity of these recommendations into question or require a re-positioning of any significant OSSF component, this office shall be notified so that the conditions may be evaluated as to their effect upon this design. In the event that any significant changes are required, it may be necessary that further field work/engineering work be performed and an ADDENDUM to this proposal issued.

I trust that this design will meet the requirements of your site. If you have any questions, or if I may be of further service, please call.

Sincerely,

Jeff Durand, RS

SITE / SOIL EVALUATION

FOR: AXON DEVELOPMENT, INC.	DATE: 04/28/2023
SITE: 4560 JACKSON BEND CT.	COUNTY: HOOD

SUITABLE FOR CONVENTIONAL SEPTIC	YES

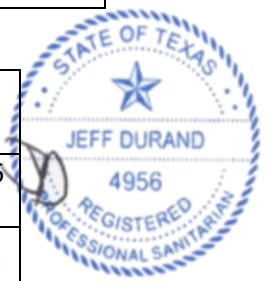
Test Hole #1

DEPTH	TEXTURAL CLASS	MOTTLES/ WATER TABLE	RESTRICTIVE HORIZON	SUITABILITY
0-4”	CLASS IB BROWN LOAMY SAND	NO	NO	SUITABLE
4” – 48”	CLASS IB TAN LOAMY SAND	NO	NO	SUITABLE
48”-60”	CLASS II SANDY LOAM	NO	NO	SUITABLE

Test Hole #2

DEPTH	TEXTURAL CLASS	MOTTLES/ WATER TABLE	RESTRICTIVE HORIZON	SUITABILITY
0-6”	CLASS IB BROWN LOAMY SAND	NO	NO	SUITABLE
6” – 52”	CLASS IB TAN LOAMY SAND	NO	NO	SUITABLE
52”-60”	CLASS II SANDY LOAM	NO	NO	SUITABLE

PRESENCE OF HUNDRED YEAR FLOOD PLAIN	NO
PRESENCE OF NEARBY POND, STREAMS, DRAINAGE WAYS	NO
PRESENCE OF WATER WELL	NO



ATTESTED BY:	Jeff Durand	
JEFF DURAND RS, SE THE SEPTIC DESIGNER, LLC	10 TWIN LAKES CT. UNIT A	ARLINGTON, TX 76016
RS # 4956	SE # OS0035120	THESEPTICDESIGNER@GMAIL.COM PLATE #1A

Hood County Environmental Health

ON-SITE SEWAGE FACILITY
TECHNICAL INFORMATION FOR PERMIT

Professional design required?: Yes ☒ No ☐ If yes, professional design attached: ☒ Yes ☐ No

Site Address 4560 JACKSON BEND CT.

TYPE AND SIZE OF PIPING FROM: (EXAMPLE: 4" SCH 40 PVC)

Stub out to treatment tank: 3" or 4" SCH 40 PVC

Treatment tank to disposal system: 1" SCH 40 PVC

I. DAILY WASTEWATER USAGE RATE: Q= 300 **(gallons/day)**

Water saving devices: ☒ Yes ☐ No

II. TREATMENT UNIT:

A. ☐ SEPTIC TANK ☑ AEROBIC:

- Tank dimensions: _____ • Liquid depth (bottom of tank to outlet): _____
- Size proposed: _____ • Manufacturer: _____
- Model #: _____
- Size required: 500 GPD ATU • Size proposed: 500 GPD ATU
- Pretreatment tank: ☒ Yes SIZE: 343 MIN (gal) ☐ No
- Pump/Lift Tank: ☒ Yes SIZE: 500 MIN (gal) ☐ No

B. Other: ☐ Yes ☒ No (If yes, attach description)

III. DISPOSAL SYSTEM:

Disposal Type: DRIP EMITTERS

Manufacturer and Model: GEO-FLOW WASTE FLOW PC - .5 GPH

- Area required: 790 (square feet) • Area proposed: 860 (square feet)

IV. ADDITIONAL INFORMATION:

(Note – This information must be attached for review to be completed.)

A. Site Evaluation **B.** Planning Materials

DO NOT BEGIN CONSTRUCTION PRIOR TO OBTAINING AUTHORIZATION TO CONSTRUCT.
UNAUTHORIZED CONSTRUCTION CAN RESULT IN CIVIL AND/OR ADMINISTRATIVE PENALTIES.

SIGNATURE OF INSTALLER OR DESIGNER: Jeff Durand **DATE:** 05/11/2023

If you have questions on how to fill out this form or about the on-site sewage facilities, please contact us at 817-579-3288.

STATE OF TEXAS
JEFF DURAND
4956
REGISTERED
PROFESSIONAL SANITARIAN

201 W. Bridge Street • Granbury, Texas 76048
Phone (817) 579-3288 • Fax (817) 579-3268