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Lower Colorado River Authority
Post Office Box 220 Austin, Texas 78767 • (512) 473-3216

90-DAY AUTHORIZATION TO CONSTRUCT AN ON-SITE SEWAGE FACILITY
Permit #: 4389

Location: 15971 BOOTH CIRCLE, VOLENTE TX 78641

Permit Date: 11/18/2013

LAKE TRAVIS #3 Block; Lot: 2

Phone: (512) 477-8925

Owner: BROWN, LORELEI B

Mailing address: 1014 SPENCE STREET AUSTIN TX 78702

This serves to notify all persons that the on-site sewage facility (OSSF) application, related technical data, and the appropriate fee have been received by LCRA from the property owner. The application has been reviewed for technical and administrative consideration against standards set forth by LCRA. The permit may have some special provisions attached that are very important to note. Approval is hereby granted for the construction as shown on the submitted plans.

ANY MODIFICATIONS TO SUBMITTED PLANS REQUIRE APPROVAL BY LCRA PRIOR TO INSTALLATION.

All on-site sewage systems must be installed by a Texas Commission on Environmental Quality licensed Installer. An owner installing his/her own system is exempt from this requirement. However, the owner must obtain applicable requirements from LCRA before beginning construction. It is the owner's responsibility to verify that an installer is licensed by the TCEQ prior to allowing the system installation.

Temporary erosion controls must be established prior to beginning construction of the OSSF as required by the LCRA Highland Lakes Watershed Ordinance. Please call 1-800-776-5272, extension 2324 or visit www.lcra.org/water/watershedmanagement.html for more information.

The existing OSSF is in violation of the Highland Lakes OSSF Rules. As a result, this authorization to construct is only valid for 90 days from the issue date. If a final inspection has not been performed and approval given within 90 days of issue, enforcement action to gain compliance will be taken.

You or your installer must contact LCRA 24 hours prior to completion in order to arrange the required facility inspection(s). To schedule an inspection, call 1-800-776-5272, Ext. 4091 or local to Austin using (512) 473-4091. Please note that calling for an inspection from a cell phone may not be received clearly or at all. Inspections requested earlier in the day will be given a scheduling priority over those called in later in the day.

Should you have any questions, please call us at 1-800-776-5272, extension 3216. By referencing the permit/license number, you will help us assist you more efficiently.

Danny Sims DeLeedy
Agency Official

11-18-2013
Date

Special Provisions

Permit #: 4389

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- 1 This permit is issued for a 4 bedroom residence having no more than 3500 square feet of heated living area, with an average daily flow of 300 gallons per day. The guest quarters can not have a kitchen or kitchennete. A mini fridge is acceptable.

 - 2 A minimum of 3450 square feet of ET bed is required. A minimum 20-mil PVC liner is required to cover the entire bottom and sidewalls of the beds. The total square footage must be divided into two alternating beds of approximately equal size.

 - 3 Septic tanks buried more than 12 inches below ground shall have risers over the port openings which extend from the tank surface to no more than six inches below the ground. Risers must be permanently fastened to the tank lid or cast into the tank and the connection must be watertight. Risers must be fitted with removable watertight caps and protected against unauthorized intrusions. Acceptable protective measures include: a padlock, a cover that can be removed with tools or a cover having a minimum net weight of 65 pounds set into a recess of the tank lid. Risers must be able to withstand the pressures created by the surrounding soil. Risers and caps exposed to sunlight must have ultraviolet light protection. A secondary plug, cap, or other suitable restraint system that shall be provided below the riser cap to prevent tank entry if the cap is unknowingly damaged or removed.

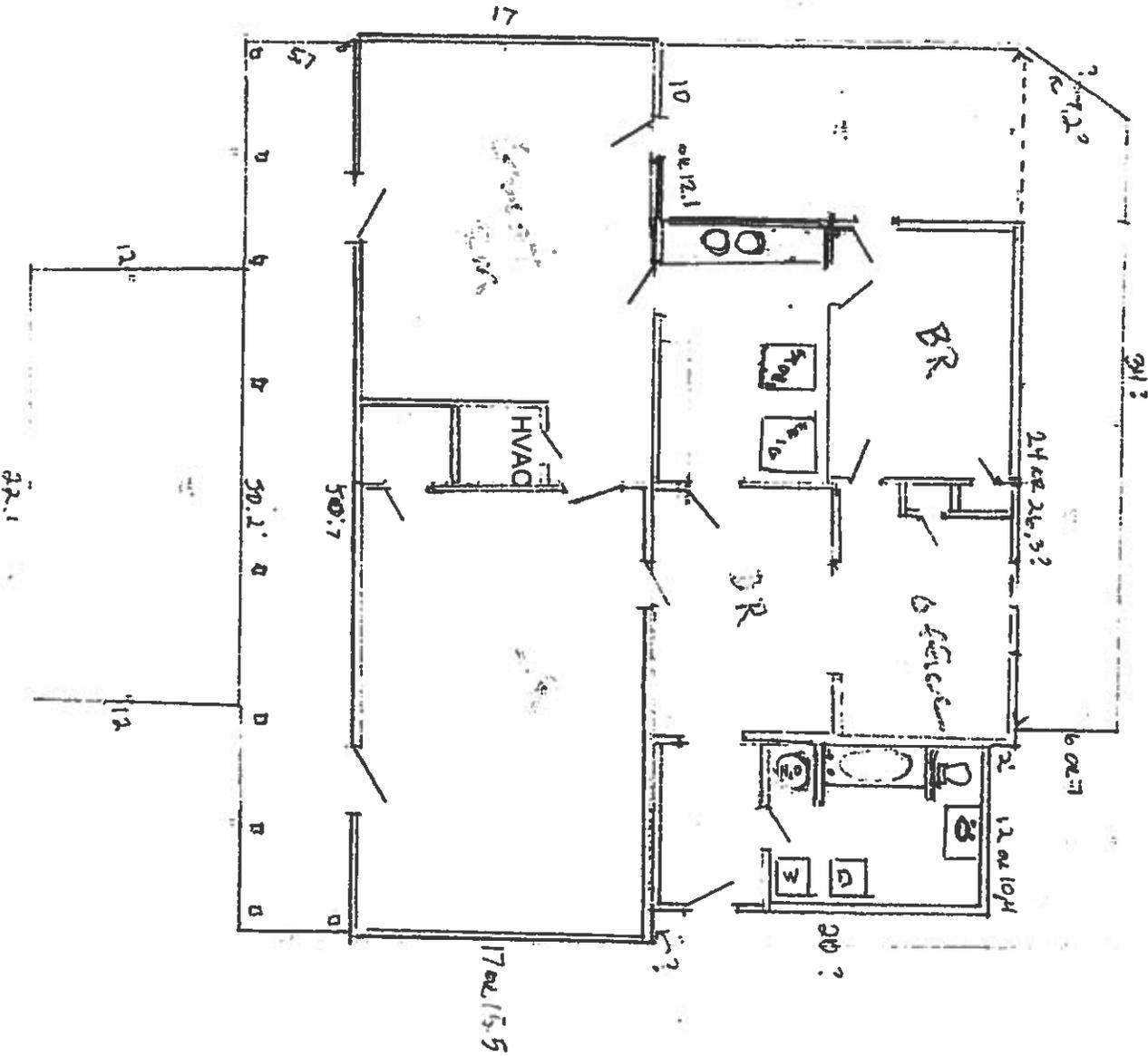
 - 4 With the exception of septic tanks, all inspection and cleanout ports shall have risers over the port openings which extend to the ground surface. Risers must be permanently fastened to the tank lid or cast into the tank and the connection must be watertight. Acceptable protective measures include: a padlock, a cover that can be removed with tools or a cover having a minimum net weight of 65 pounds set into a recess of the tank lid. Risers must be able to withstand the pressures created by the surrounding soil. Risers and caps exposed to sunlight must have ultraviolet light protection. A secondary plug, cap, or other suitable restraint system shall be provided below the riser cap to prevent tank entry if the cap is unknowingly damaged or removed.

 - 5 The existing tank(s) must be properly abandoned. The tank(s) shall have the wastewater removed by a waste transporter, holding a current registration with the Texas Commission on Environmental Quality (TCEQ) and backfilled to ground level with fill material which is free of organic and construction debris. A copy of the pump manifest must be submitted to LCRA prior to final approval.

 - 6 The bottom of the OSSF drainfield must be installed above the 691' MSL contour of Lake Travis.

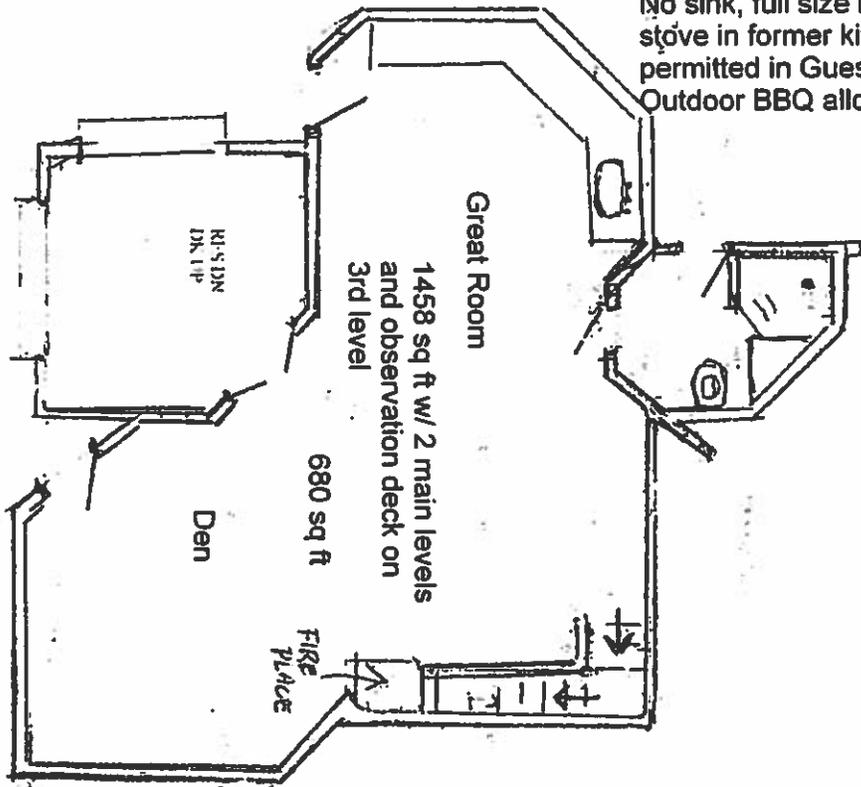
 - 7 The OSSF has been designed by John Fox RS. The original plans, dated 10-4-2013, and revised plans dated 11-14-2013, must be followed with the addition of the provisions listed above.

1650 sq ft

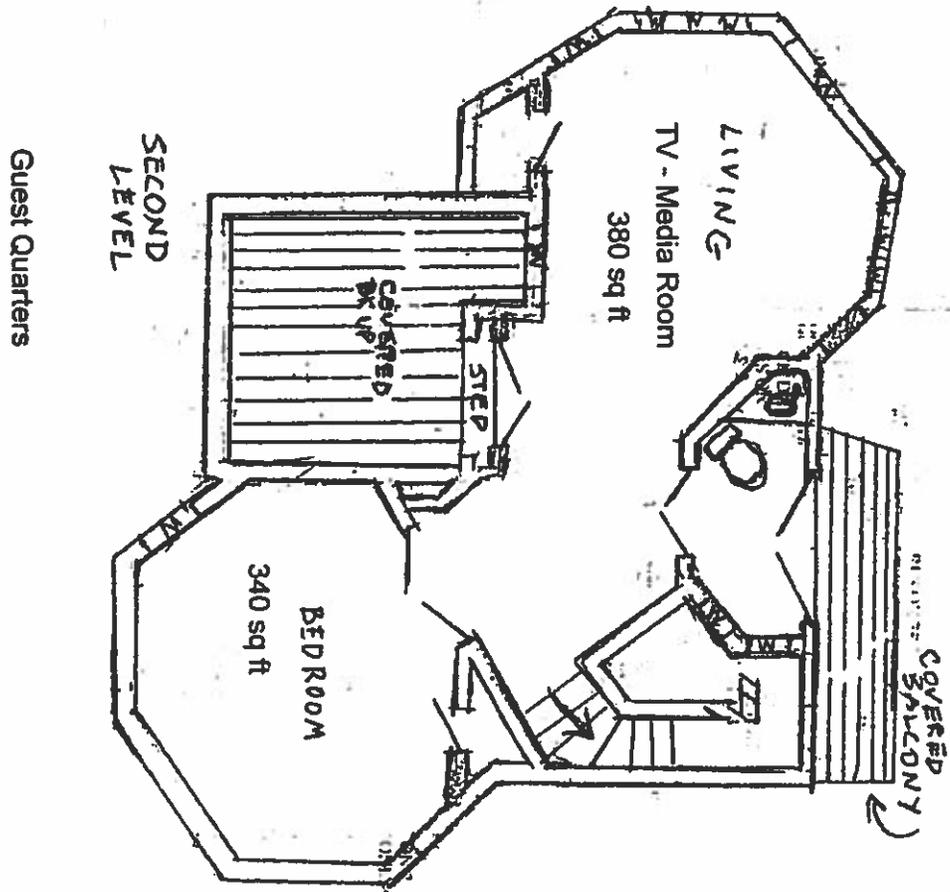


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GROUND
FLOOR
Guest Quarters



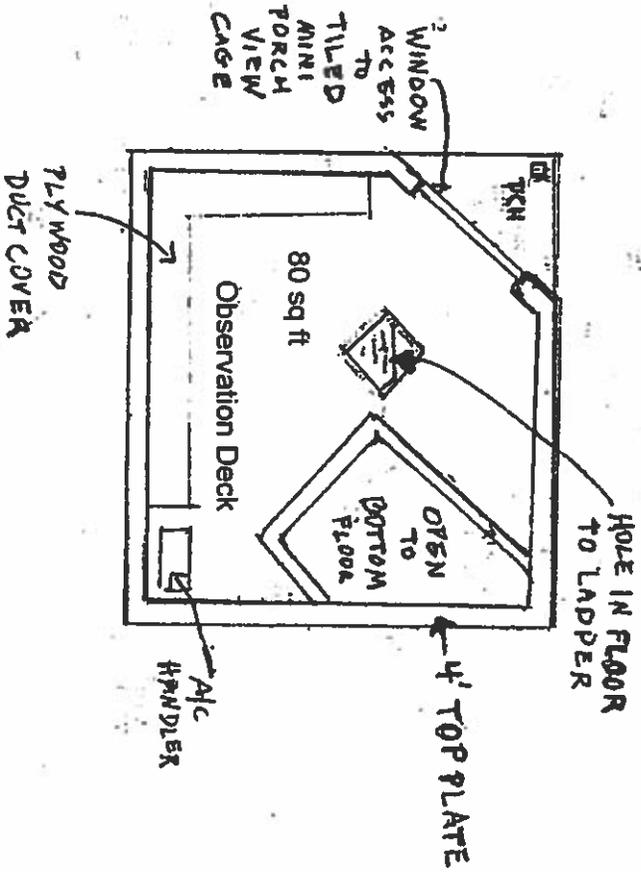
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TOP LEVEL
LOFT

Guest Quarters



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Pump Basin
 Use Infiltrator TMS40 - 540 Gallon Pump Tank Single pump Use RJR demand control box or equal.

Place at location of existing tanks
 Existing Tanks to be removed and taken to land fill. Disposal ticket needed.
 Use a 1/3 HP Liberty Low head solids pump
 Place anchors in block and secure tank with stainless tiedown straps

Boyancy Calculations

Weight gallons of displaced fluids
 8.35 lbs/gal * 540 = 4509 lbs boyancy - weight of tank, residual liquid & weight of pumps and plumbing
 4509 - (230# Tank, pumps, plumbing and 1060 # for 127 gal residual liquid) = 3219 lbs

3219 / 145 = 22.2 cu ft of concrete @ 145 #'s / cu ft counter weight to prevent tank from floating.

Tank will be secured on this concrete block with stainless steel cable and anchor D-rings
 Pour ' x 4' x 8" Pad with 22.2 cu ft of concrete with anchor rings to set tank

Use 6x6x6 wire reinforcement in pad.

2" Schedule 40 supply line from TMS40 to septic tank

TDH Requirements

Total Head - For 50 running foot of line 2" Purple Sch-40 PVC Pipe

1) Pipe Friction head Loss = $(0.45) * (50/100) = 0.22$

2) Elevation Head = pump to end of manifold 6

Total Dynamic Head = EH + FH + Pressure head 6.22
 Head calculations

Pump elevation	6'				
Pipe Loss	0.22				
TDH	6.22	x	2.31 =		14.4 gpm

14.4 gpm @ 6.22' TDH

Pump Requirement

Demand

Dosing
 Use ETI 201 Control Panel with separately wired pump and alarm

Set alarm on 21" 198 gallons + 300 gallon reserve = 498

Working zone 15" - 21" 71 gallons

Set pump off 15" 127 gallons in tank

Alarms: Audible and Visual High Water Alarm

Use 2" Sch 40 PVC from pump tank to 1250 gallon septic tank

Field construction
 (See Cross Sections)

Excavate bed area level 12" - 16" - Use 4" sand to bed 20 ml liner
 Install liner and windrow 4" of 1/2" - 2" uniform gravel 4 ft On Center before installing laterals.
 Install 3" Sch 40 PVC perforaid laterals on top of gravel and mound each lateral with 6" of gravel.
 Cover gravel and laterals with geotabric - backfill with 6" - 12" sandy loam - mound top to divert rain water



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Backfill with class II sandy loam and slightly compact backfill between windrows.

Place a random inspection well on each bed.

Use Valterra 3" Gate Valve, FIPT x Slip, PVC or equal (available at Grainger)

I HAVE PERFORMED A THOROUGH INVESTIGATION BEING A REGISTERED PROFESSIONAL SANITARIAN AND SITE EVALUATOR IN ACCORDANCE WITH 30 TAC §285, SUBCHAPTER D AND THIS SYSTEM WHEN OPERATED ACCORDING TO THE OPERATOR'S MANUAL WILL NOT CAUSE HEALTH ISSUES.

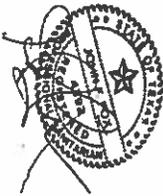
No potable water lines are within 10 ft of the irrigation area.
Flood Plain exists on property



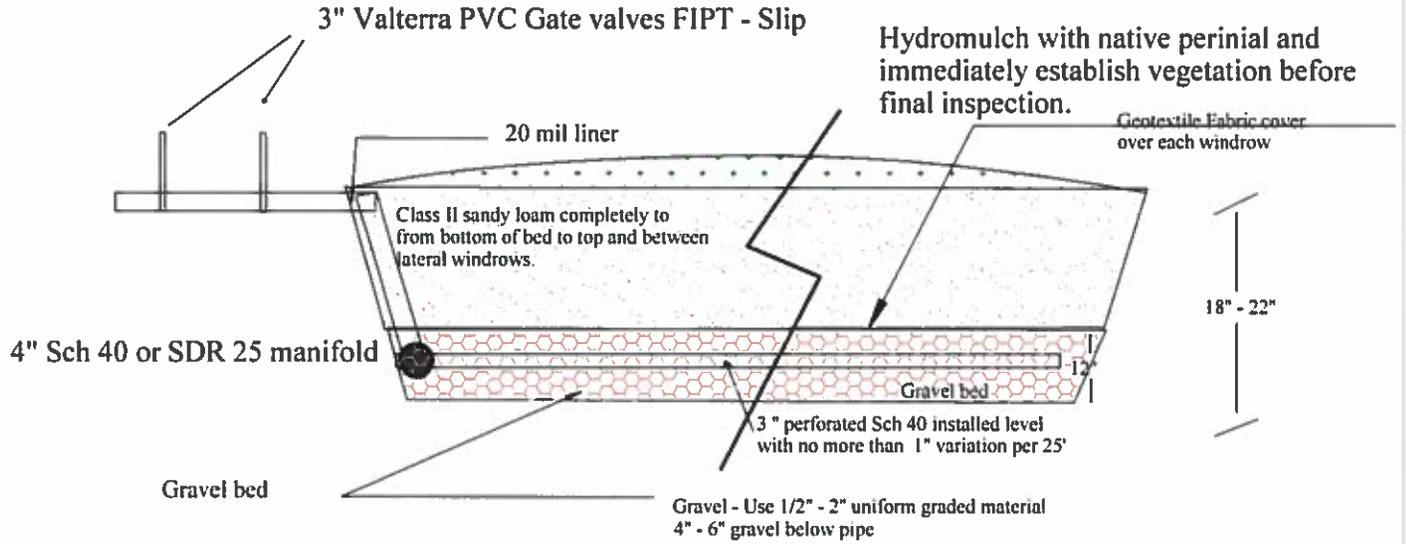
J. F. Fox, R.S.#4392, S.E. 29066

11/7/2013

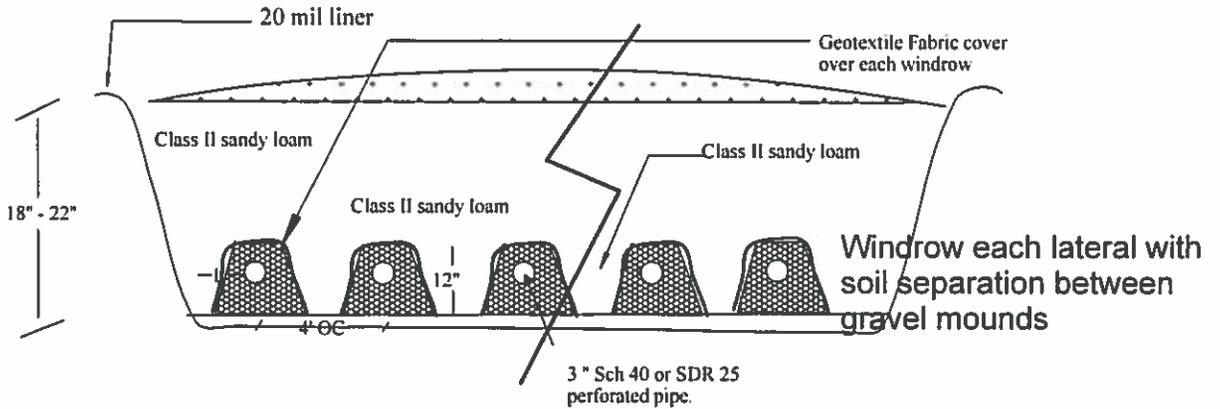
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ET Cross section of drainfield



Hydromulch with native perinial and immediately establish vegetation before final inspection.



Not to Scale

Liner required.



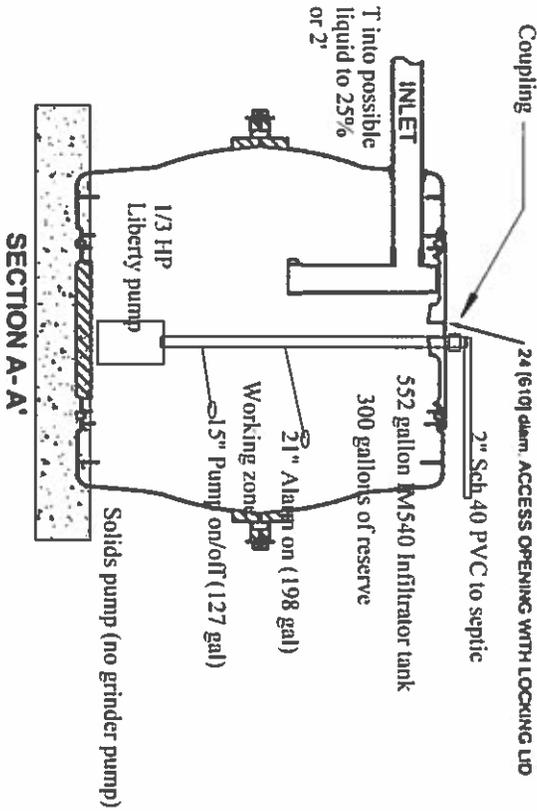
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IM-SERIES TANK NOMINAL VOLUME CHART

Height	Total Liquid Volume in Tank at Indicated Height			
	64.92	Libra	Galons	Libra
1	2	3	1.1	3
2	5	8	3.0	1.3
3	6	14	5.3	2.9
4	10	21	8.0	4.8
5	13	29	10.9	6.9
6	15	37	14.1	8.6
7	18	46	17.7	10.7
8	20	55	20.7	12.9
9	22	64	24.3	15.2
10	25	74	27.9	17.5
11	28	84	31.7	20.0
12	30	94	35.6	22.5
13	33	105	39.6	25.1
14	36	116	43.7	27.7
15	38	127	48.0	30.3
16	40	138	52.3	33.0
17	43	150	56.9	35.7
18	46	161	61.1	38.4
19	48	173	65.6	41.1
20	50	186	70.2	43.8
21	52	199	74.9	46.5
22	54	210	79.9	49.3
23	56	223	84.3	52.1
24	58	235	89.1	54.9
25	60	248	94.0	57.7
26	62	261	99.0	60.5
27	64	274	103.8	63.3

¹ Height measured from dimensional inside surface of bottom of compartment in tank.

TM-540 Infiltrator Pump Tank



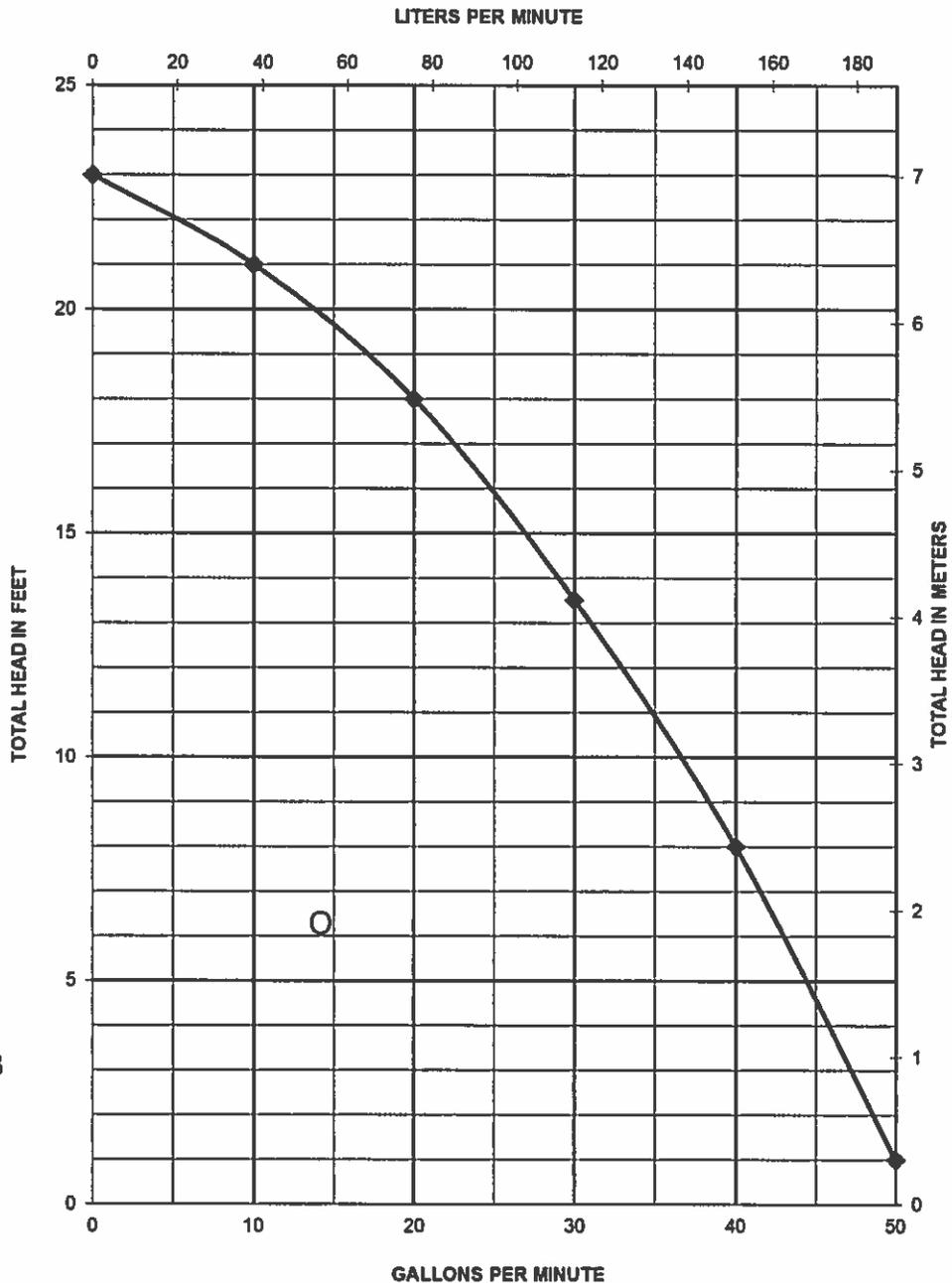
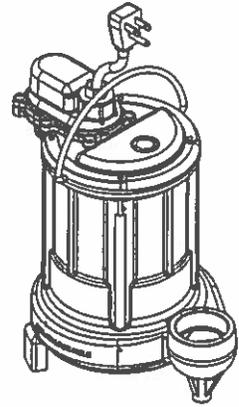
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IM-540	
Total Capacity	552 gal (2089 L)
Length	64.9" (1648 mm)
Width	61.7" (1567 mm)
Height	54.6" (1387 mm)
Maximum Bural Depth	48" (1219 mm)
Minimum Bural Depth	6" (152 mm)
Maximum Pipe Diameter	4" (100 mm)
Weight	169 lbs (77 kg)

Liberty Pumps

Pump Specifications

250 Series Submersible Sump / Effluent Pump



11/7/13

OSSF Site and Design Report

Date: 11/14/13

Applicant Information:

Name: Lorelei Brown
 Address: 1014 Spence St
 City: Austin
 Zip Code: 78702 Phone: 512.507.1947

Site Evaluator Information:

Name: John F Fox, R.S., S.E. 29066
 Address: 5808 Lakeside Trl
 City: Austin State: TX
 Zip Code: 78734 Phone: (512) 789-5048

Property Location:

Lot: 2 Subd. Lake Travis Subd #3
 Legal: 162203
 Street Address: 15969 & 15971 Booth Circle
 City: Village of Volente State: TX
 Zip Code: 78641 Phone:

Installer Information:

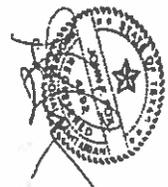
Name:
 Address:
 City: Austin State: TX
 Zip Code: 78734 Phone:

Additional Info:

Topography:

Presence of 100 Yr Flood Zone	Slope within proposed disposal area	<u>X</u>	<u> </u>	<u> </u>	<u> </u>
Existing or proposed well within 150'	Yes	<u> </u>	No	<u> </u>	<u> </u>
Presence of ponds, streams	Yes	<u>X</u>	No	<u> </u>	<u> </u>
Ground water in test holes	Yes	<u> </u>	No	<u>X</u>	<u> </u>
Central Sewer within 500'	Yes	<u> </u>	No	<u>X</u>	<u> </u>
Served by Public Water Supply	Yes	<u> </u>	No	<u>X</u>	<u> </u>
Gradient Less than 10 degrees	Yes	<u>X</u>	No	<u> </u>	<u> </u>

Design Calculations for Lined ET :



Water Saving Plumbing Fixtures? Mandatory

Residential: Single family residence and a bedroom guest house w/less than 4 bedrooms and less than 3500 sq ft
 Number of Bedrooms OSSF sized to accommodate 4 and 3108 Sq. Ft Living Area

Main house 1650 sq ft Guest house is 1458 sq ft 300 gpd Space for 302 gpd at site.

Guest house may only have a mini fridge, no food prep type sink or full size refrigerator.
 no cooking equipment (stove, microwave, etc) Outdoor BBQ allowed

SCH-40 4" Line to Tank from house Septic Tank

If one of the structures becomes commercial a new permit must be obtained.
 Use 2 chamber 1250 2 chamber tank (existing)
 Set tank elevation to gravity flow to ET Bed (allow 1/8" per foot ta Mound over tank as needed.)

1.60/.14 = sq ft required for ET Beds (2 equal size)
 1.6 * O / .14 = 3450 sq ft
 O = 3450 * .14 / 1.6
 O = 301.875 2 ea 1725 sq ft ET beds provided with limited space
 3450 sq ft provided for maximum daily load of 302 gpd

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Soil Evaluation

Class III Soil N/A

Pump Basin
Use Infiltrator TM540 - 540 Gallon Pump Tank

Single pump

Use RJR demand control box or equal.

Place at location of existing tanks

Existing Tanks to be removed and taken to land fill.

Disposal ticket needed.

Use a 1/3 HP Liberty Low head solids pump

Place anchors in block and secure tank with stainless tie down straps

Boyancy Calculations

Weight gallons of displaced fluids

8.35 lbs/gal * 540 = 4509 lbs boyancy - weight of tank, residual liquid & weight of pumps and plumbing
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14.4 gpm @ 6.22' TDH

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Use ETI 201 Control Panel with separately wired pump and alarm

Set alarm on 21" 198 gallons + 300 gallon reserve = 498

Working zone - Pump on 18" 161 gallons

Set pump off 15" 127 gallons in tank

Alarms: Audible and Visual High Water Alarm

Use 2" Sch 40 PVC from pump tank to 1250 gallon septic tank

Field construction

Excavate bed area level 12" - 16" - Use 4" sand to bed 20 ml liner

Barrier must be constructed if ET Bed is above the original grade.

If Bed can be excavated to 22" _ No Barrier is required.

Verify type of barrier that will be installed or not needed with designer.



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(See Cross Sections)

Install liner and windrow 4" of 1/2" - 2" uniform gravel 4 ft On Center before installing laterals.
Install 3" Sch 40 PVC perforated laterals on top of gravel and mound each lateral with 6" of gravel.
Cover gravel and laterals with geolabnc - backfill with 6" - 12" sandy loam - mound top to divert rain water
Backfill with class II sandy loam and slightly compact backfill between windrows.

Place a random inspection well on each bed.
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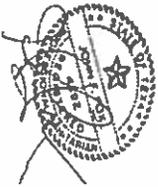
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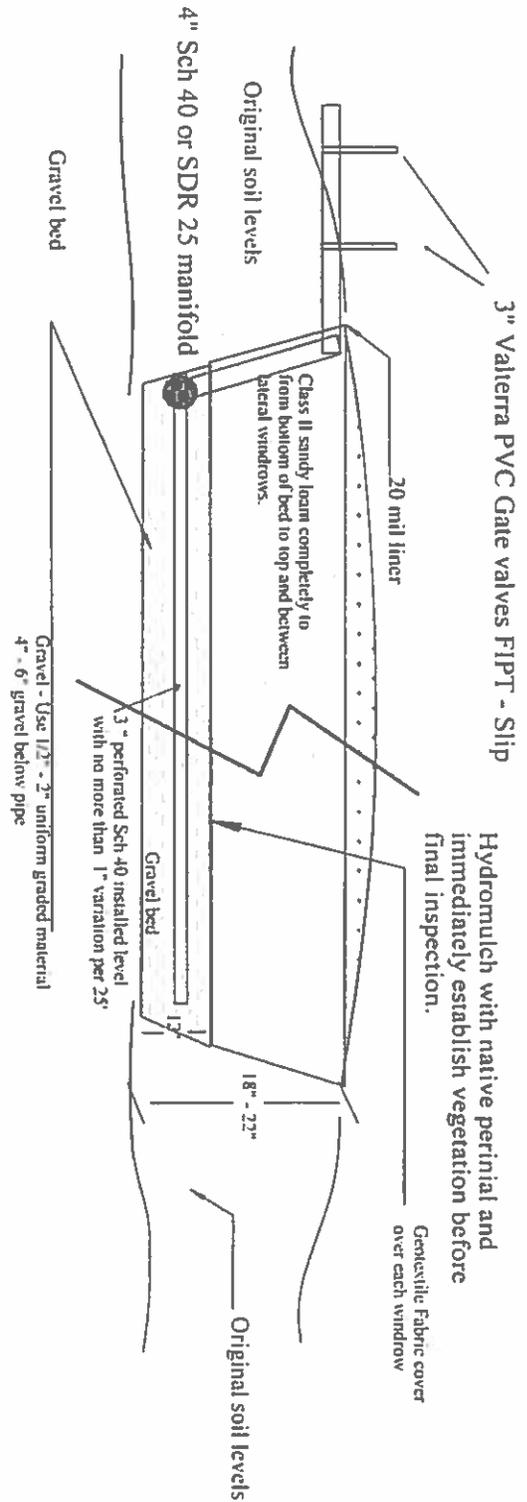


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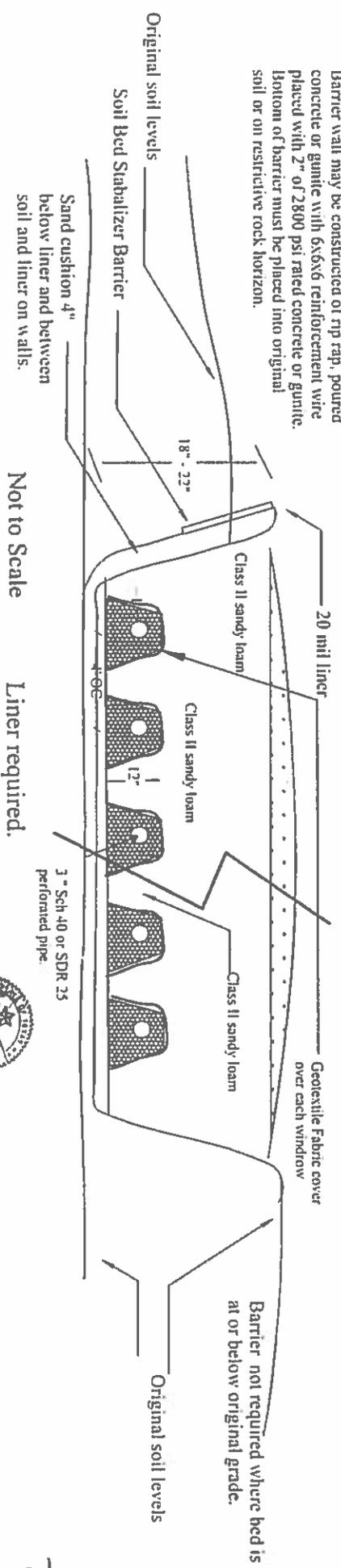


ET Cross section of drainfield



Bed must be at or below original grade. If above grade a permanent barrier must be constructed & approx 4" of sand placed between the barrier wall and the liner.

Barrier wall may be constructed of rip rap, poured concrete or gunite with 6x6x6 reinforcement wire placed with 2" of 2800 psi rated concrete or gunite. Bottom of barrier must be placed into original soil or on restrictive rock horizon.



Hydromulch with native perinial and immediately establish vegetation before final inspection.

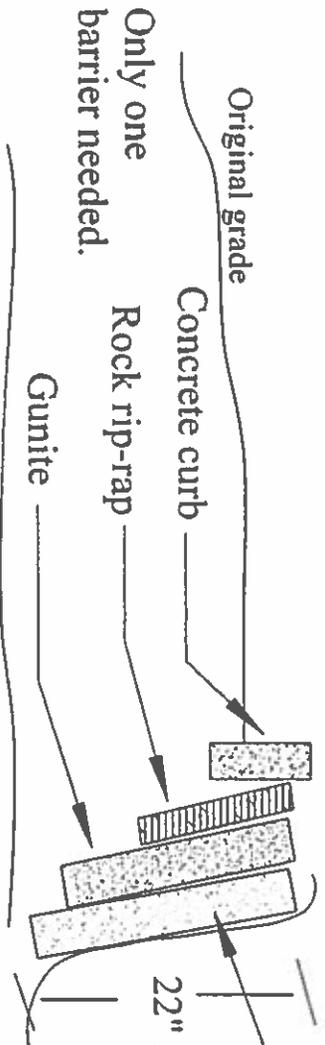


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Typical Barrier for ET Bed

NTS



Only one barrier needed.

Barrier must extend to top of ET Bed or Original soil must extend to top of Bed without a Barrier containment.

4" Sand between soil, barrier and/or bottom of Bed.
22" Minimum depth with sand layer.
Bed must be level w/1" variation / 25' & no more than 3" overall.



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