LAYOUT 8/12/08 INSP 4 _____

INSP 2 8/13/08 INSP 5 _____

INSP 3 8/15/08 INSP 6 _____

ISSUE DATE: 8/5/2008

PERMIT

P 525214

APPROVAL DATE: 8/18/08

A 527937

TAX ID# 05-362318

ON-SITE SEWAGE DISPOSAL SYSTEM
HOWARD COUNTY HEALTH DEPARTMENT
BUREAU OF ENVIRONMENTAL HEALTH

Fogle's Septic Clean IS PERMITTED TO INSTALL ☒ ALTER ☐

ADDRESS: 580 Obrecht road, Sykesville PHONE NUMBER: 410-795-5670

SUBDIVISION: Oyekan Property LOT NUMBER: 4

ADDRESS: 7145 Brooks Road PROPERTY OWNER: Omololu Oyekan

SEPTIC TANK CAPACITY (GALLONS): 2000 OUTLET BAFFLE FILTER REQUIRED ☒

PUMP CHAMBER CAPACITY (GALLONS): ~~2000~~ 2250 COMPARTMENTED TANK REQUIRED ☒

NUMBER OF BEDROOMS: 6

SQUARE FEET PER BEDROOM: _____

LINEAR FEET OF TRENCH REQUIRED: 380 LF

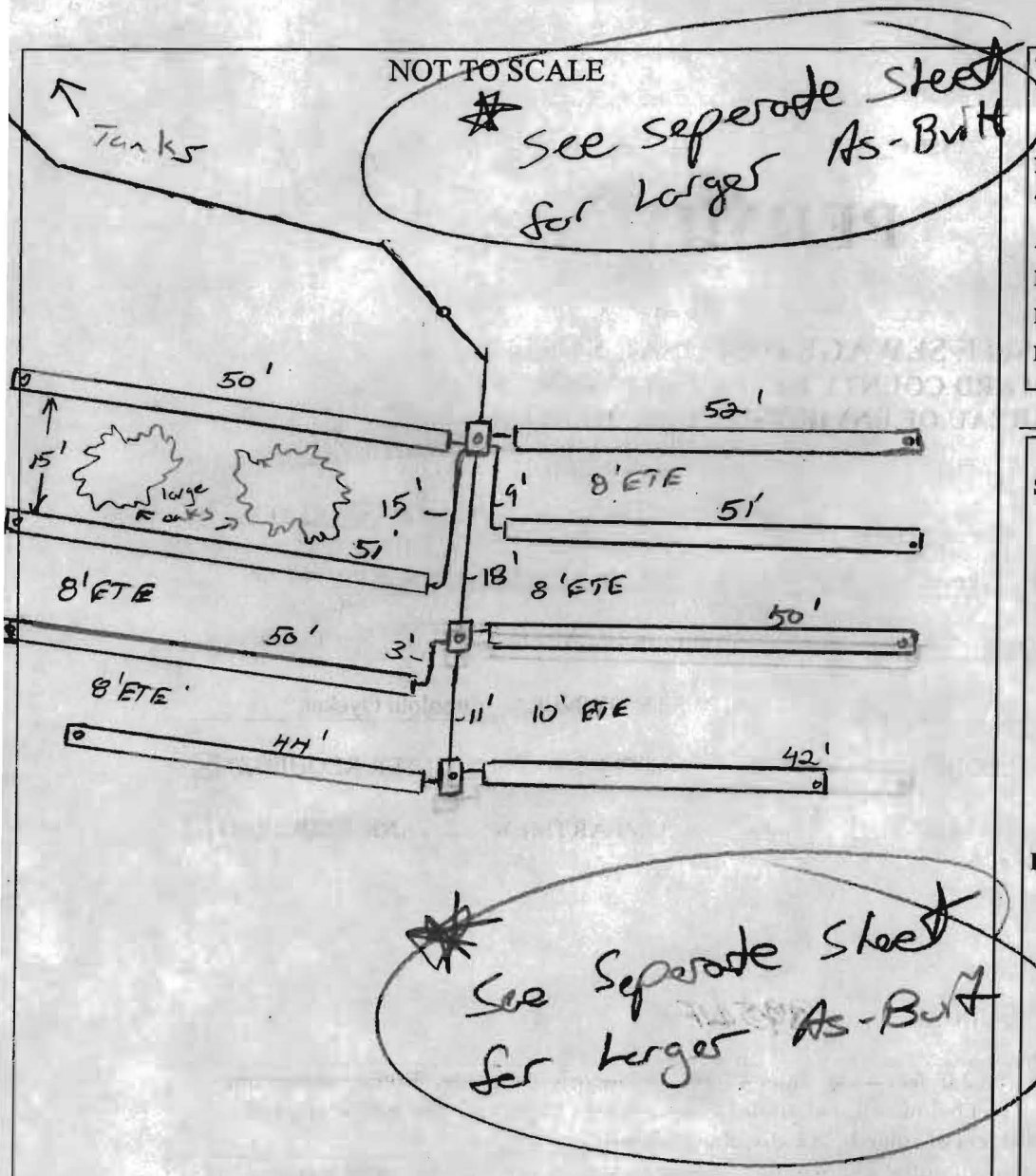
TRENCHES:	Trench to be 2.0 feet wide. Inlet 4.0 feet below original grade. Bottom maximum depth 9.0 feet below original grade. Effective area begins at feet below original grade. 5.0 feet of stone below distribution pipe.
LOCATION:	Contractor will utilize either a 2 or 3 dist. box system to accomidate a total of 8 trenches that are to be installed. 6x50' trenches and 2x40' trenches are to be installed on contour. Dbox's to be place @ the center of the trenches. Leveler's are to be installed and leveled per health department. Maintain a min 1% fall on all plumbing after D. box's
NOTES:	SDA needs to be staked per approved revised Perc. Cert. plan. prior to Layout. Initial System is for conventional trenches (one system only). Repair systems 1 and 2 are Approved Sand Mounds & will need a pump. 2250g pump tank already installed. See Perc Cert Dated 8/4/08 and approved sand mound specs dated 8/5/08.

PLANS APPROVED: Kevin Wolf DATE: 8/5/2008

NOTE: PERMIT VOID AFTER 2 YEARS
NOTE: CONTRACTOR RESPONSIBLE FOR SCHEDULING A PRE-CONSTRUCTION INSPECTION FOR ALL INSTALLATIONS
NOTE: WATERTIGHT SEPTIC TANKS REQUIRED
NOTE: ALL PARTS OF SEPTIC SYSTEM SHALL BE 100 FEET FROM ANY WATER WELL
NOTE: MANHOLE RISERS REQUIRED ON ALL SEPTIC TANKS AND PUMP CHAMBERS UNLESS SPECIFICALLY AUTHORIZED

NEITHER THE HOWARD COUNTY COUNCIL NOR THE HEALTH DEPARTMENT IS RESPONSIBLE FOR THE SUCCESSFUL OPERATION OF ANY SYSTEM
PERMITTEE RESPONSIBLE FOR OBTAINING FINAL APPROVAL ON THIS PERMIT
CALL 410-313-2640 FOR INSPECTION OF SEPTIC SYSTEM

NOT TO SCALE



TRENCH/DRAINFIELD DATA

WIDTH	INLET	BOTTOM
2'	4	9'

NUMBER OF TRENCHES 8
TOTAL LENGTH 389'
ABSORPTION AREA 778' ±SW
DISTRIBUTION BOX LEVEL All Leveled
DISTRIBUTION BOX BAFFLE Yes (α B)
DISTRIBUTION BOX PORT Yes (α 2)

SEPTIC TANK DATA

SEPTIC TANK 1 LEVEL Yes
MANUFACTURER Mayes Bros
CAPACITY 2000 GAL
SEAM LOC Top
TANK LID DEPTH 2'
BAFFLES Yes
BAFFLE FILTER Yes (8")
MANHOLE LOC Front/Rear
6" PORT LOC none
WATERTIGHT TEST —
SLOTTED Yes

PUMP/SEPTIC TANK LEVEL Yes
MANUFACTURER Mayes Bros
CAPACITY 2,250 GAL
SEAM LOC Top
TANK LID DEPTH 2'
BAFFLES Front/Rear
BAFFLE FILTER no
MANHOLE LOC Rear
6" PORT LOC none
WATERTIGHT TEST —
SLOTTED single compartment

PRE-CONSTRUCTION
8/12/08 Tanks set from previous installation. Run gravity line from tank to D box w/ c/o's every 60'. Utilize 3 D box's for an even distribution of 6 x 50' trenches on contour and 2 x 40' trenches using both directions. Keep system 25' removed from 25% slopes. (KW) 8/13/08 Top 2 D box's

INSTALLATION set w/ 3 x 50' trenches complete. OK to continue. (KW)
8/15/08 Third D box set, other 3 x 50' trenches Completed. Make sure contractor uses stone under each D box w/ trenches on supply pipe (KW) 8/18/08 Last 2 trenches installed. D box's leveled at all same. OK to backfill gently around D box's.

FINAL INSPECTOR K. Vail DATE OF APPROVAL 8/18/08

INNOVA, LTD
INNOVATIVE WASTEWATER TREATMENT SYSTEMS
P.O. BOX 363, NEW WINDSOR, MD 21776
(410) 875-9370 Office
(410) 635-2883 Fax
H. Dale Gray, Principal

WASTEWATER DISPOSAL SYSTEM

Approved Septic System Plan
Howard County Health Department
Signature 8/5/08 Date

Re. HCHD File A522089

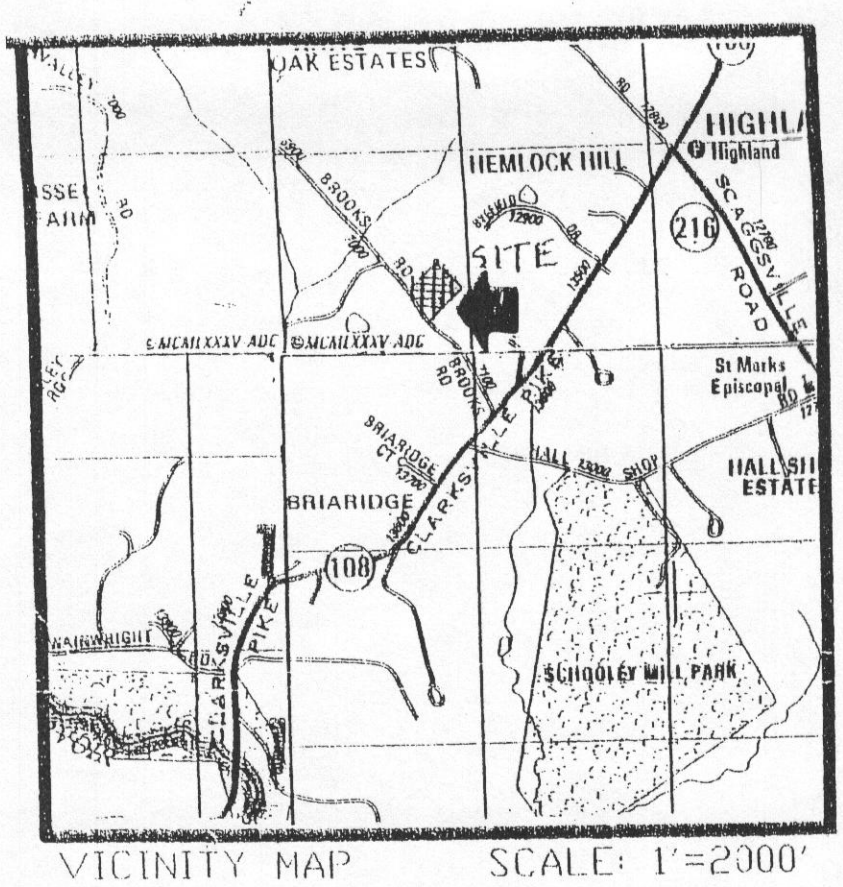
6/24/08

Project Title: Mr. Omalalu James Oyekan

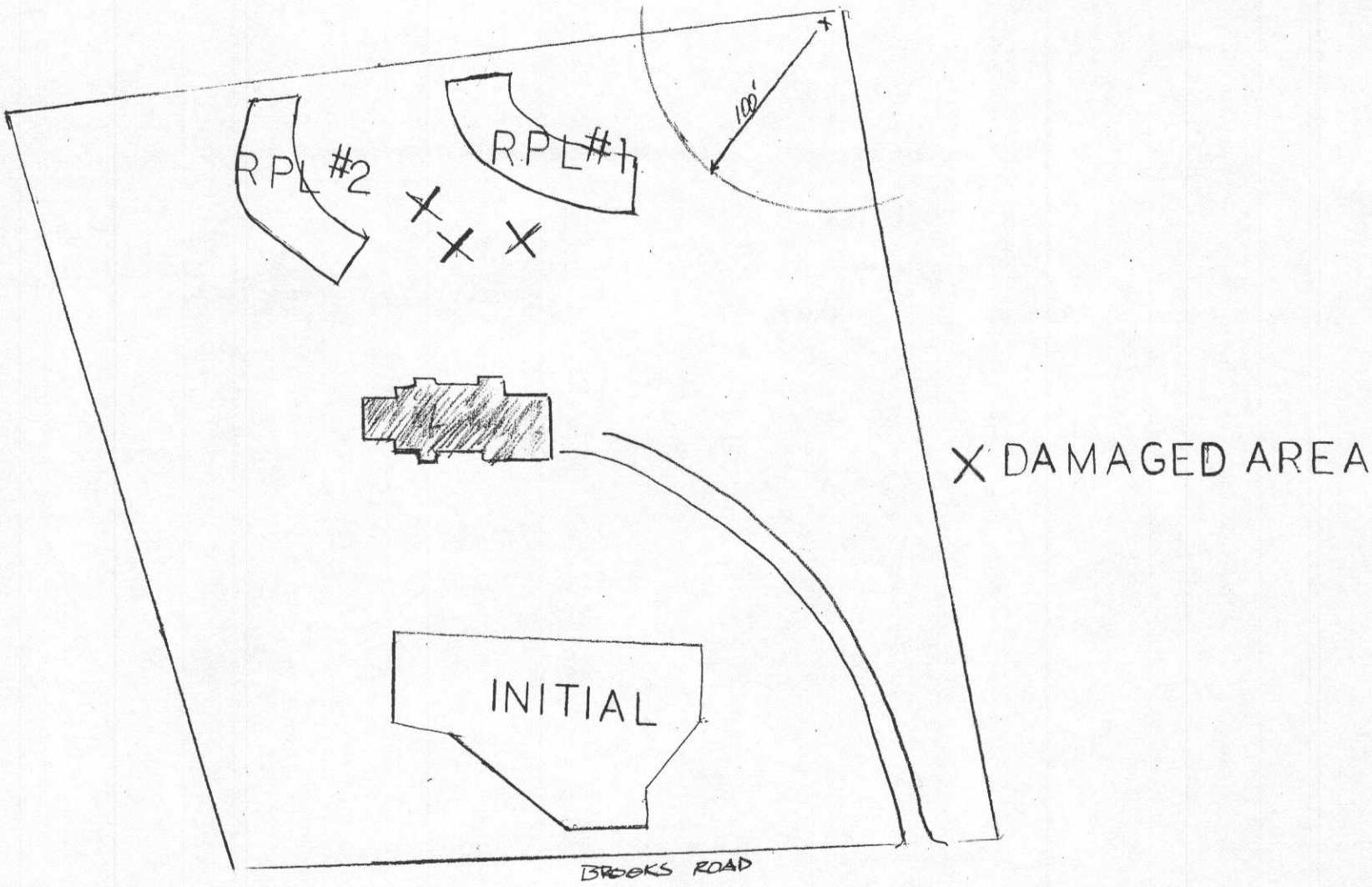
Address: 7145 Brooks Rd, Highland MD 20777

WASTEWATER DISPOSAL SYSTEM
OYEKAN PROPERTY, RAYMOND MORGAN SUBDIVISION LOT 4
7145 BROOKS ROAD
HIGHLAND, MARYLAND
JUNE 2008

CONTENTS



VICINITY MAP SCALE: 1'=2000'



Design for: **Oyekan Property**
7145 Brooks Road, Howard County, Md.
Tax Map 40, Parcel #254, Raymond Morgan Subdivision Lot 4

REVISION - JUNE 2008

The site wastewater plan, approved June 2006 was compromised before it could be installed, by encroachment of incorrectly located landscaping work. As a result, the approved disposal area was declared invalid by HCBEH [Howard County Bureau of Environmental Health]. Additional disposal area was declared necessary to validate the site's 900 gallon/day wastewater Design Flow. Two Sand Mound replacement areas had been rendered unfit, and further testing on the property (4/30/2008) was conducted to supplant them. Additional disposal area (s) was found in the form of a deep trench field **now designated as the Initial Disposal Field**, and a replacement area Sand Mound **designated as RPL #2.** The Sand Mound designated previously, as Initial, on the approval of June 2006 is **now designated RPL #1.**

Testing April 30, 2008 located two field areas, see Plan View drawing. Prior consultation with Mr. Barrry Glotfelty, MDE Regional Sanitarian, and HCBEH, advocated a repositioning of the [former Initial] RPL #1 basal area more upslope from the graded (30% +slope) terrace to ensure correct functioning of that sand mound, should the replacement ever be required. The reorientation is accomplished by this revision.

The three fields which constitute the SDA (Septic Disposal Area) provide an aggregate of 21,000ft^2 of disposal area [Initial:11,400ft^2, RPl#1:4,840ft^2, RPl#2 4,760ft^2]

The 2000 gal. Septic Tank, and 2500 gal. Pump Tank were installed subsequent to the previous plan approval. The forcemain to the previous SDA(Initial field) had not been installed (2008), but has been re- routed to the 2008, Initial (deep trench) Disposal Field. The deep trench field is dosed by pump demand to a distribution box which gravity feeds the four trenches of the field. A six event /24 hrs. regime will require an 150 gallon effluent volume per dose.

When it is decided to shut down the Initial Field and dose to a replacement sand mound it will be necessary to change out the effluent pump originally installed to a pump with greater capacity

(James) Oyekan
7145 Brooks Rd, Highland MD

Sheet Title:
WASTEWATER
SYSTEM
PLAN

Sheet#
WWT-1
1 of 10 Sheets

6/24/08
Scale: 1" = "

INNOVA, LTD
INNOVATIVE WASTEWATER TREATMENT SYSTEMS
P.O. BOX 363, NEW WINDSOR, MD 21776
(410) 875-9370 Office
(410) 635-2883 Fax
H. Dale Gray, Principal

Percolation Certification Testing (Revised)
April 30, 2008
7145 Brooks Road
Highland Maryland

Ref. Prior Certification Tri-County Surveys, INC. report, 9/9/05

Sand Mound Testing - April 2008 - property, upper left quadrant

SM #8 /08 --passed:(23.8 minutes/inch @ 15" depth) + 60% rock @ 6'
SM #9 /08 --passed:(51.7 minutes/inch @ 19" depth) + 50% rock @ 4'
SM #10 /08--passed:(20 minutes/inch @ 13" depth) hard bottom @ 5'
@ < 60 minutes/inch, testing qualifies area for conventional sand mound sizing

Conventional Trench Testing - April 2008 - property, upper left quadrant

TT 10 -- **Failed:** 75% rock @ 3'

TT 11-- stopped test (rock)

TT 12 -- **Failed:** 75% rock @ 1'

TT 13 -- **Failed:** 50% rock @ 8"

Deep Trench Tests (minutes/inch rate) - lower left quadrant (house/ front)

Test (Point)	Depth/Time (pipe)	(trench floor)	Depth/Time (4' saturation zone)	Pass/ Fail
Test A	5.5' >30 min.	12'	–	F
	6.5' >30 min.	12'	–	F
	7.0' >30 min.	12'	–	F
	–	–	16' checked @ +2 min/in	P
Test B	5.5' :10 min/in.	9'	13' checked @ + 2 min.	P (all)
Test C	6.5' :>30 min/in.	9'	–	F
	7.5' :20 min/in.	9'	–	P
	–	9'	13' checked @ +2 min/in	P
Test D	7.5' :20 min/in.	10'	14' checked @ +2 min/in	P(all)
Test E	7.7' :22 min/in.	11'	15' checked @ + 2 min.	P (all)

Per HCBEH, avg. Perc Rate:18 minutes/inch [0.6 gpd/ft^2 loading rate]

(James) Oyekan
7145 Brooks Rd, Highland MI

Sheet Title:
WASTEWATER
SYSTEM
PLAN

Sheet#
WWT-1
2 of 10 Sheets

6.12408
Scale: 1" =

INNOVA, LTD
INNOVATIVE WASTEWATER TREATMENT SYSTEMS
P.O. BOX 363, NEW WINDSOR, MD 21776
(410) 875-9370 Office
(410) 635-2883 Fax
H. Dale Gray, Principal

INITIAL DISPOSAL FIELD

Deep Trench Configuration (New, Tested April 2008) [see Test results Page 2]
Perc. Rate :18 minutes/inch [loading rate = 0.6 gal./day/ft²]
Stone Depth: 3.1ft, average depth below delivery pipe

Note: Test 'C' pipe depth was satisfactorily tested at 7.5' but provided a reduced stone depth figure of 1.5'. To avoid this reduced stone depth value, a minimum separation distance of 25' from 'C' to any trench structure was maintained.

Tile Field (TF) length required: 900 gpd/flow ÷ 0.6 gpd/loading rate = 1500 ft² trench bottom
or 1500 ft² ÷ 2' trench width = 750' linear length

DEEP TRENCH (DT) CONFIGURATION

$\frac{w+2}{w+1+2d}$ = % equivalent of Tile Field length needed

$\frac{2+2}{2+1+2x3.1} = \frac{4}{9.2}$ = 43.4% say 43%, thus 750 ln. ft (TF) x 43% = **323 ln ft DT required**

REPLACEMENT DISPOSAL FIELDS (RPL) [Sand Mounds] #1 AND #2

RPL #1 (approved June 2006) Alternative Sand Media
Sand Mound Test (SM #1, #2, & #3) Results for RPL #1 were validated by the Perc Certification of Sept. 9, 2005. The Disposal Bed of this Mound lies along the 485' Elev. contour. The Mound Basal area has been relocated up the 8% sloped contour, several feet as the result of applying the field run survey data of JBA & Assoc. to the approved Plan of 6/2006. Basal area relocation of several feet does increase separation from the steeper, adjacent landscaped slopes (+ 25%) whose proximity had been of concern to MDE.

RPL #2 (New, Tested April 2008) Alternative Sand Media [see test results Page 2]
Sand Mound Tests (SM #8, #9, & #10) locate the Disposal Bed of this Mound along the 472' Elev. contour

7145 BROOKS ROAD
SM REPLACEMENT #2
SLOPE 11%

TABLE 3.1

EQUATIONS FOR CALCULATING SAND MOUND DIMENSIONS

Absorption bed ft.² (A × B) = $\frac{900\ GPD}{1.0\ gpd/ft.^2}$ Design flow = 900 ft.² (ALTERNATIVE SAND MEDIA)

Bed length (B) = 90 ft. (21 ft. to 101 ft. dependent on site)

Bed width (A) = $\frac{\text{Bed}}{B}$ $\frac{900\ ft.^2}{900\ ft.}$ = 10 ft. (~~15~~ 10 ft. or less)

Upslope sand fill depth (D) = 48 in. − Z in. = 24 in. (12 in. min.)

Downslope sand fill depth (E) = [12 A × % slope] + D in. = 37.2 in.

Cap + topsoil at bed center (H) = 18 in.
Cap + topsoil at bed edge (G) = 12 in.
Total Bed Depth (F) = 10 in.

Sideslope setback (K) = $\frac{[(D + E)}{2}$ + 28 in.] × 3 = 176 in. (14'8")

Upslope setback (J) = (22 in. + D) × 3 × upslope corr. factor (.785) = 108 in. (9')

Downslope setback (I) = (22 in. + E) × 3 × downslope corr. factor (1.50) = 266 in. (22' 2")

Total Width of Mound (W) = 12A + J + I = 494 in. (41' 2")

Total Length of Mound (L) = 12B + K + K = 1432 in. (119' 4")

✓ ADDITIONAL DATA [if required]
Basal Area [Ft²] required: design flow (gpd) / Soil perc. rate (loading rate) $\frac{900\ ft^2}{0.6\ GPD/ft^2}$ = 1500 ft²
Basal Area provided:
Slope:[Bed width+downslope setback] X Bed length (10' + 21.75') × 90' = 2858 ft²
~~Level: Mound length X width~~
ADEQUATE

SM REPLACEMENT #1
SLOPE 8%

TABLE 3.1

EQUATIONS FOR CALCULATING SAND MOUND DIMENSIONS

Absorption bed ft.² (A × B) = $\frac{900\ GPD}{1.0\ gpd/ft.^2}$ Design flow = 900 ft.² (ALTERNATIVE SAND MEDIA)

Bed length (B) = 92.3 ft. (21 ft. to 101 ft. dependent on site)

Bed width (A) = $\frac{\text{Bed}}{B}$ $\frac{900\ ft.^2}{92.3\ ft.}$ = 9.75 ft. (10 ft. or less)

Upslope sand fill depth (D) = 48 in. − Z in. = 24 in. (12 in. min.)

Downslope sand fill depth (E) = [12 A × % slope] + D in. = 33.36 in.

Cap + topsoil at bed center (H) = 18 in.
Cap + topsoil at bed edge (G) = 12 in.
Total Bed Depth (F) = 10 in.

Sideslope setback (K) = $\frac{[(D + E)}{2}$ + 28 in.] × 3 = 170.04 in. (14'2")

Upslope setback (J) = (22 in. + D) × 3 × upslope corr. factor (.80) = 133 in. (11')

Downslope setback (I) = (22 in. + E) × 3 × downslope corr. factor (1.32) = 219 in. (18' 3")

Total Width of Mound (W) = 12A + J + I = 469 in. (39')

Total Length of Mound (L) = 12B + K + K = 1448 in. (120' 8")

✓ ADDITIONAL DATA [if required]
Basal Area [Ft²] required: design flow (gpd) / Soil perc. rate (loading rate) $\frac{900\ GAL.}{0.6\ GAL/ft^2}$ = 1500 ft²
Basal Area provided:
Slope:[Bed width+downslope setback] X Bed length [9.75' + 18.25'] × 92.3' = 2584
~~Level: Mound length X width~~
AREA PROVIDED IS ADEQUATE

(James) Oyekan
7145 Brooks Rd, Highland MD

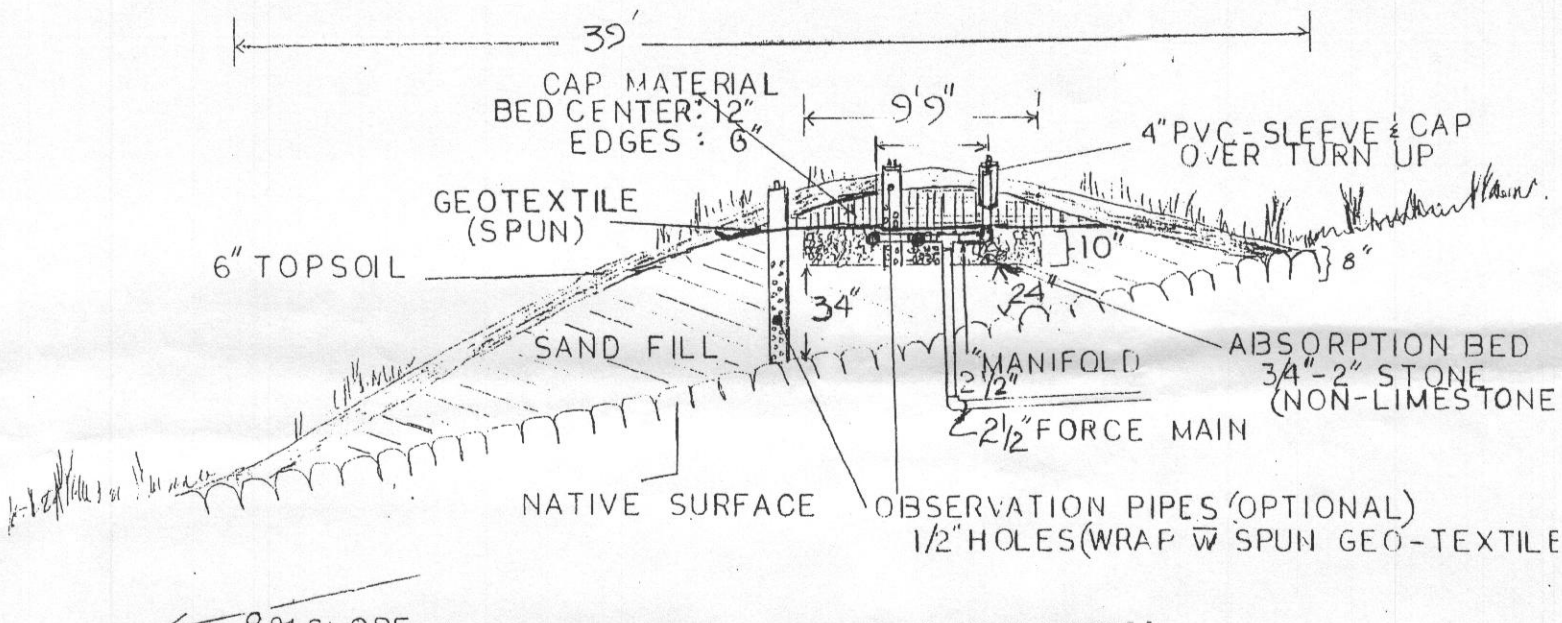
Sheet Title:
WASTEWATER SYSTEM PLAN

Sheet #
WWT-1
3 of 10 Sheets

Scale: 1" = ''

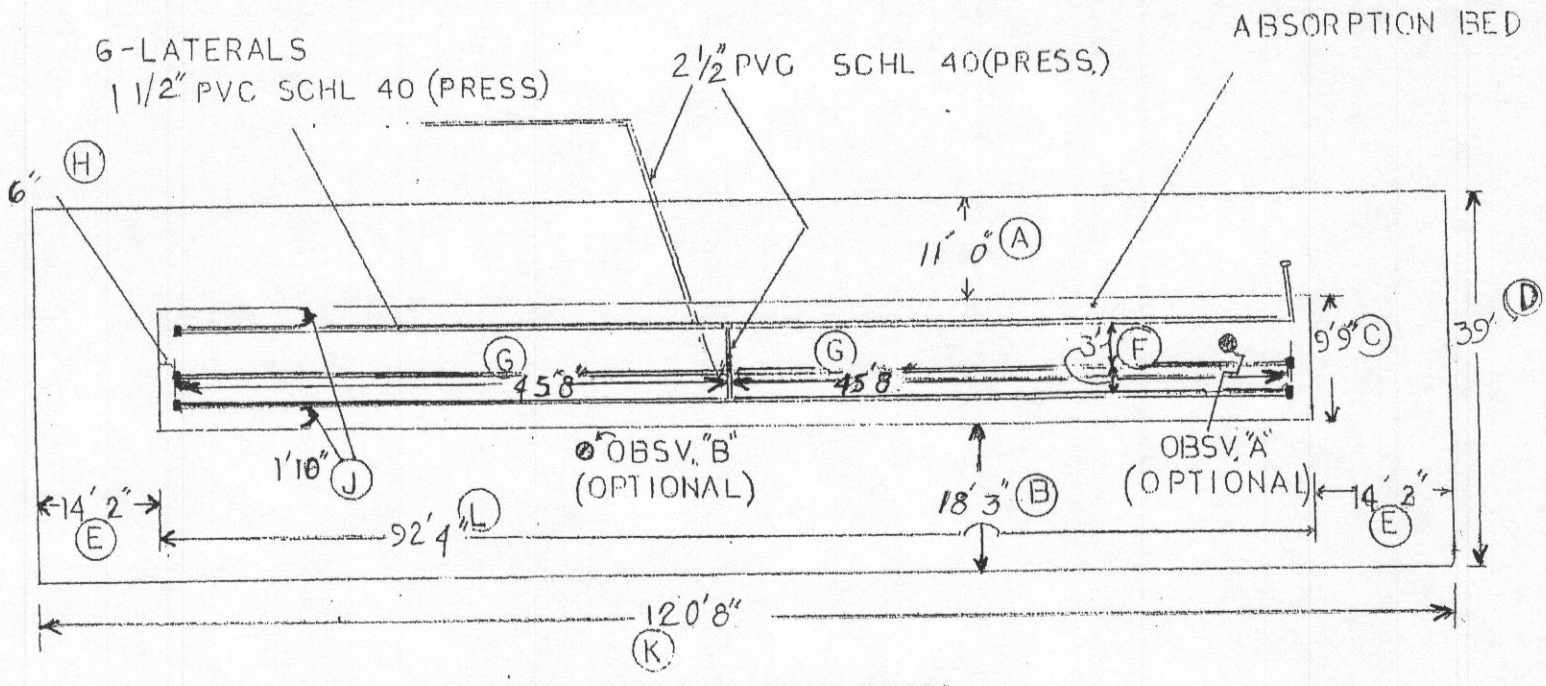
INNOVA, LTD
INNOVATIVE WASTEWATER TREATMENT SYSTEMS
P.O. BOX 363, NEW WINDSOR, MD 21776
(410) 875-9370 Office
(410) 635-2883 Fax
H. Dale Gray, Principal

DEEP TRENCH PROFILE



RPL #1 MOUND PROFILE VIEW

Scale as shown



RPL #1 MOUND PLAN VIEW

Scale as shown

(A)	UPSLOPE SETBACK	(F)	DISTRIBUTION LATERAL SEPARATION
(B)	DOWNSLOPE SETBACK	(G)	LATERAL LENGTH
(C)	ABSORPTION BED WIDTH	(H)	BED ENDS (PIPE) SETBACK
(D)	MOUND WIDTH	(J)	BED SIDES (PIPE) SETBACK
(E)	SIDESLOPE SETBACK	(K)	MOUND LENGTH
		(L)	ABSORPTION BED LENGTH

(James) Oyekan
7145 Brooks Rd, Highland MD

Sheet Title:
WASTEWATER SYSTEM PLAN

Sheet# WWT-1
4 of 10 Sheets

6/24/08
Scale: 1" = AS SHOWN

INNOVA, LTD
INNOVATIVE WASTEWATER TREATMENT SYSTEMS
P.O. BOX 363, NEW WINDSOR, MD 21776
(410) 875-9370 Office
(410) 635-2883 Fax
H. Dale Gray, Principal

WASTEWATER SUPPLY TO DISPOSAL

Wastewater will be delivered to the Initial Disposal Field by pump to efficiently distribute to the deep trench field structure.

FLOW ASSUMPTION: Seven Hour Day (2hr. Morning, 1 hr. Afternoon, and 4 hr Evening)
900 gpd/ 7 hr. Period = 420 minutes - hence, 900 gpd÷420 minutes = 2.2 gpm
2.2 gpm X the peaking factor 4 = 8.8 gpm, anticipated peak flow
8.8 gpm X flow factor of 110% = **9.57 gpm projected maximum flow rate**

DOSE ASSUMPTION:
6 Dose Demand Profile: 900 gal.÷ 6 events = 150 gal./event

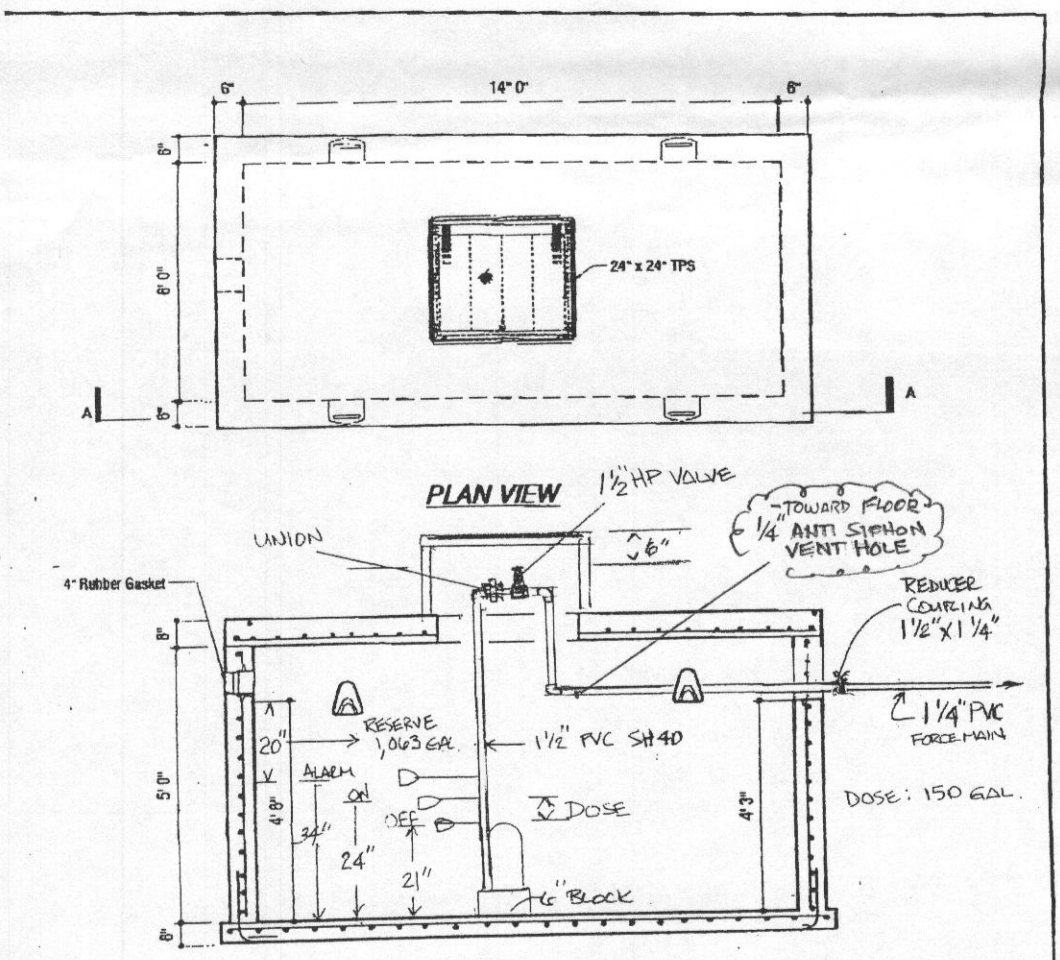
TOTAL DYNAMIC HEAD [TDH]:
Static Lift /Pump to Discharge Point ('D' Box Inlet):Off 445', Inlet 433.5' [11.5' elev]
Friction Head 1 1/4" Sh 40, PVC @10 gpm = 1.55'/100' pipe ft.
Velocity: = 2.21 FPS

Pipe -189' 1 1/4" Sh40 PVC : 1.89X1.55			= 2.9'
Fittings	10 cpls @1.2	= 12	
	1 Gate valve (1 1/2")	= 0.8	
	2 - 90°ells @4	= 8	
	20.8 pipe feet		= 0.31
		.....	3.27'elev
Operating Head.....			2.0 ' elev
		Total Dynamic Head	[6.23']

PUMP SELECTION (0 TDH / 63 gpm)

The selected Pump, Gould Model 3871 (EP05) has a light work load to serve the INITIAL Wastewater Disposal Field, however that pump could not serve RPL #1, or #2 Field locations. The major concern is to maintain sufficient pumping velocities in order to keep pipe walls scoured, and free of debris (FPS: 2.21 considered adequate velocity).

PUMP RUN TIME @ approx 63 gpm, an 150 gallon dose will require approximately two minutes and thirty seconds per event, or total of fourteen minutes per day.



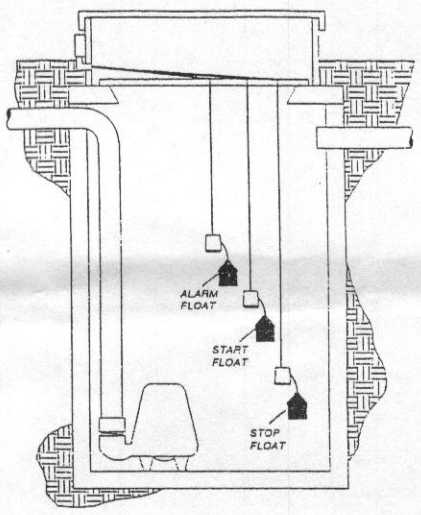
DESIGN DATA & GENERAL NOTES
[1] Concrete strength f'c=5,000 p.s.i. @ 28 days. Density = 150 pct.
[2] Cement - Portland Type VII per ASTM C 150-92.
[3] Admixtures & plasticizers per ASTM C 260-86 & C 494-92.
[4] Reinforcing per ASTM A615, Grade 60, domestic. Min. 1-1/2" cover.
[5] Top slab sealed on jobsite with botyl rope mastic.
[6] Concrete is Air Entrained.

MBI Mayer Bros., Inc.	6264 Race Road, Elkridge, Maryland 21075, Tel. 410.796.1434, Fax. 410.796.1438, www.mayerbrosprecast.com	2500 Gallon Non-Traffic Tank KDAR — INNOVA, LTD.	
		Dwg. No. M757	No Scale / June 6, 2006

rhombus™ TECHNOLOGY

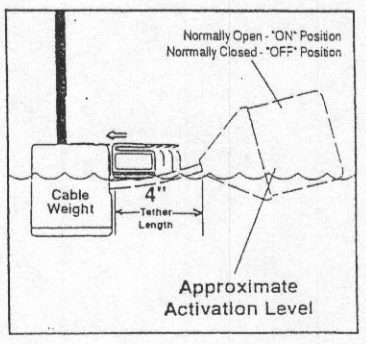
INSTALLATION INSTRUCTIONS - Page 2
Control switches with external weights

Figure 1 - Three Float Installation



Float installation shown is for a high level (pump down) system. To install a low level (pump up) system, stop float should be mounted at upper level, and a start float mounted at lower level. Start float remains as shown above. Wire connections to terminal strip are the same for a high or low level system.

Figure 2



MANUAL TESTING *(To simulate simplex operation sequence).*

For ease of installation and safety reasons, we recommend manual testing of float switch operation prior to attaching floats to discharge pipe in the pump chamber.

1. *Make sure all float switches are in off position. SEE FIGURE 2.*
2. *Turn on power source. The control panel control switch should be on and the HOA switch should be in automatic position.*
3. *Tip stop float to on position.*
4. *While stop float remains tipped, tip start float to on position. At this point the pump and pump run light will turn on.*
5. *Return start float to off position. Return stop float to off position. Pump and pump run indicator light will now be off.*
6. *To test alarm operation, tip alarm float to on position. The red light and horn should be activated.*

NOTE: UNIT SHOULD BE PERIODICALLY TESTED TO INSURE PROPER OPERATION.

Mounting Control Switches

CAUTION: Do not begin installation in pump chamber until all power source circuit breakers have been turned off. For added safety also turn off the control switch and the HOA switch. Failure to turn off power could result in serious or fatal electrical shock.

Cable Weight (Figure 2)

1. *Lay cable in weight channel.*
2. *Align clip with weight groove and slide towards cable.*
3. *Snap clip snugly up to cable, manually moving clip to the tightest possible position.*
4. *Wire cable leads directly into control device.*
5. *Suspend unit at desired activation level. See Figure*

Float Switch Specifications:

Sensor Float® control switch. HOUSING: 3.38 in. (8.58 cm.) diameter x 4.55 in. (11.56 cm.) long, high impact resistant, non-corrosive PVC plastic for use in liquids up to 140° F (60°C). CABLE: 16 gauge, 2 conductor S.'OW-A (UL), SJOW (CSA) water resistant Neoprene.

IISIWE Printed in USA

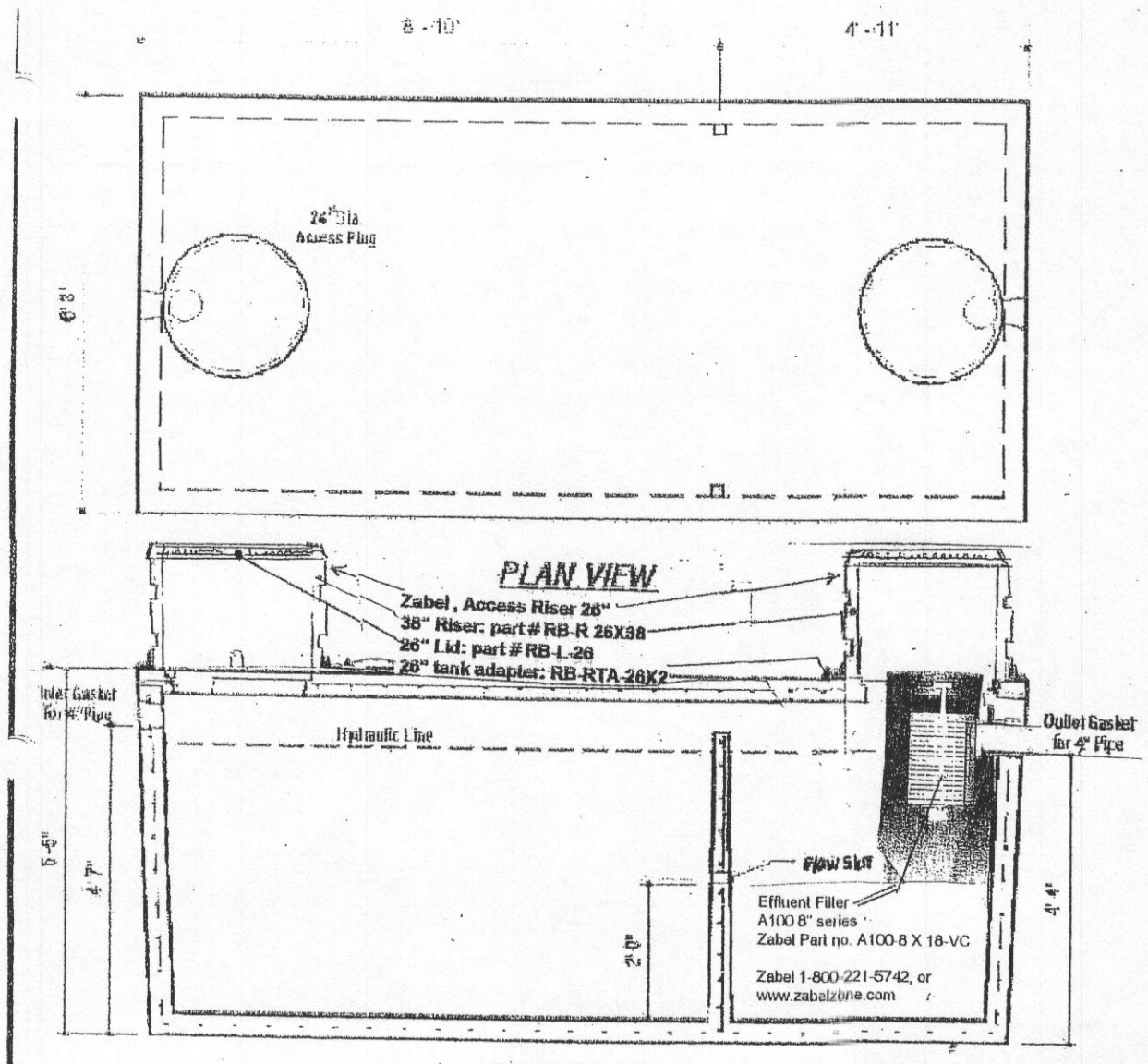
(James)Oyekan
7145 Brooks Rd, Highland MD

Sheet Title:
WASTEWATER SYSTEM PLAN

Sheet#
WWT-1
5 of 10 Sheets

6/24/08
Scale: 1" = 1'

INNOVA, LTD
INNOVATIVE WASTEWATER TREATMENT SYSTEMS
P.O. BOX 363, NEW WINDSOR, MD 21776
(410) 875-9370 Office
(410) 635-2883 Fax
H. Dale Gray, Principal



DESIGN DATA & GENERAL NOTES

[1] Concrete strength f'c = 4,000 p.s.i. @ 28 days. Density = 150 pcf.
[2] Cement - Portland Type III per ASTM C 150-92.
[3] Admixtures & plasticizers per ASTM C 260-86 & C 494-92.
[4] Reinforcing per ASTM A 185. Min. 1 1/2" cover.
[5] Top slab sealed with butyl rope mastic.
[6] 4" wall, 4" base, & 5" top thickness.

MBI
8264 Race Road
Hanover, Maryland 21076
tel. 410.796.7494
fax. 410.796.1436

2,000 GALLON SEPTIC TANK
2-Compartment
Stock Item [Approx. 19,900 lbs]

COMPONENT ELEVATIONS
REVISION - JUNE 2008

Est. Surface Elevation	Element	Elevation
451.0'	**House Exit**	449.0'
451.0'	**2000 Gal Septic Tank** (S/T).	
	Top	449.4'
	Inlet	448.6'
	Outlet	448.35
	Base	444.35'
451.0'	**2500 Gal Pump Tank** (PT) .	
	Top	449.5'
	Inlet	448.0
	Base	443.5
	Discharge	448.0'-450.0'
	Force Main [F/M] (3' burial)	
451.0'	Discharge	448.0'- 450.0'
438.0'	Turn	435.5'
435.0'	DBOX (inlet)	433.5'
	(outlets)	433.33' (2" drop)

Initial Mound - Bed Manifold/Laterals

481.5'	Turn up	480.0'
	Manifold	484.33'
481.5'	Mound **Apex**	486.0'

Est. Surface Elevation	Element		Elevation(s)
	TRENCHES		**(deep / 2'wide)**
435.5'	T1	430.0' (pipe)	426.5' (floor)
432.0'	T2	426.5' (pipe)	423.4 (floor)
429.5'	T3	422.0' (pipe)	419.5 (floor)
425.0'	T4	417.5' (pipe)	414.0 (floor)
	#1 REPLACEMENT MOUND		
484.5'	F/M turnup		482.5'
484.5'	Distribution.Manifold		486.83'
484.5'	Mound Apex		488.96'

(James) Oyekan
7145 Brooks Rd, Highland MD

Sheet Title:
WASTEWATER SYSTEM PLAN

Sheet#
WWT-1
6 of 10 Sheets

6/24/08
Scale: 1" = —"

INNOVA, LTD
INNOVATIVE WASTEWATER TREATMENT SYSTEMS
P.O. BOX 363, NEW WINDSOR, MD 21776
(410) 875-9370 Office
(410) 635-2883 Fax
H. Dale Gray, Principal

Zabel A100 Residential and Commercial Septic Tank Effluent Filter

Why do septic tanks need an A100 Zabel Filter?

Homes, schools, churches, shopping centers, apartment and rental properties all have two things in common: Extremely high wastewater peak rates and no way to predict what the users of those septic systems are likely to put down their toilets and drains. Every year thousands of drain fields fail and under go expensive repairs because they are clogged with solids that got out of an unfiltered tank.

What does an A100 Zabel Filter do?

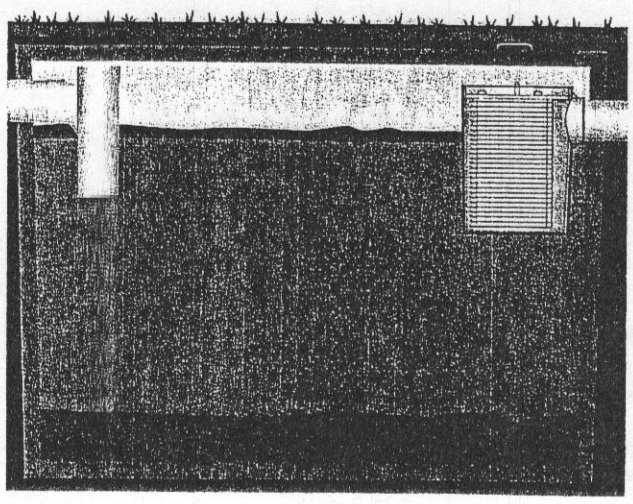
The A100 filter removes up to 90% of the solids and 45% of the BOD_5 from the waste stream. The Zabel A100 Residential and Commercial Effluent Filter removes all solids larger that 1/16" and protects the drain field from clogging with solids.

How often does the A100 Zabel Filter need Servicing?

The filter is virtually self cleaning. Anaerobic organisms on the filter discs partially digest lodged particles causing them to lose their buoyancy and fall to the bottom of the tank. In a standard residential installation the filter only needs to be cleaned when the tank is normally serviced. In commercial installations servicing will depend on the flow rate and solids loading characteristics of the wastewater.

What is the difference between a filter and a screen?

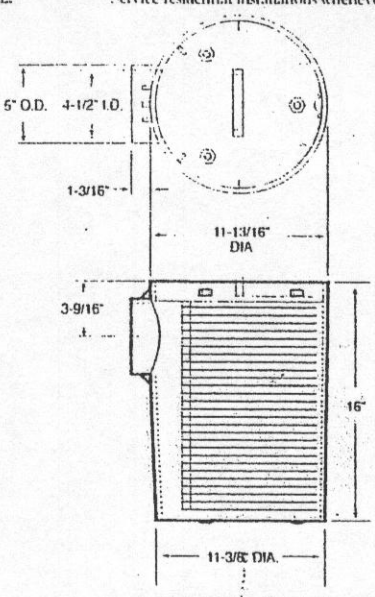
The larger filtration area of screens (usually five to eight times the size of filters) and the larger screen openings (1/8 inch for screens versus 1/16 inch for filters) are required because screens tend to plug easily and collapse. Zabel's exclusive patented disc dam design provides 198 lineal feet of filtration in a compact package16 inches high and less than 12 inches in diameter making it the easiest filter on the market to install and service without sacrificing its ability to remove solids from the waste stream.



Call 1-800-221-5742 or Fax (502) 267-8801 for further information.

SPECIFICATIONS

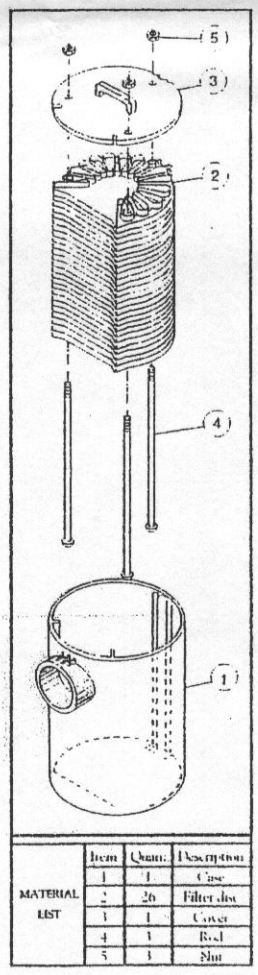
APPLICATIONS:	The A100 is used in residential and commercial septic systems. It is effective in multi-family housing, rental property, schools, offices and every where wastewater has high suspended solids content.
FLOW RATE:	1,000 gpd per filter. Install two or more filters in a PVC or concrete manifold to achieve flows of 6,000 gpd or more. Check with Zabel for details.
FILTRATION:	The 26 Disc Dams @ 1/16 inch provide 198 lineal feet of filtration.
INSTALLATION:	The filter may be installed inside the tank or installed in a Zabel Container Assembly outside the septic tank.
SERVICE:	Service residential installations whenever you pump the tank.



Material Specifications

Cases, Lids, Reducers	Rigid Vinyl PVC 87371
Discs	High Impact Polystyrene
Rod, Nuts	High Density Polyethylene

U.S. Patent No. 4,710,295



	Item	Quan.	Description
MATERIAL LIST	1	1	Case
	2	26	Filter disc
	3	1	Cover
	4	1	Rod
	5	3	Nut

Call 1-800-221-5742 or Fax (502) 267-8801 for further information.

Table 1
How the Filter Works

- The filter first stills the water exiting the Tank by forcing the effluent over a horizontal Weir. This prevents solids carried by wastewaters or gases from exiting the tank as in tanks with a conventional tee. Contained within the filter are over 61 lineal feet of weir dams.
- Second, the opening between each weir dam is only 1/16 of an inch. Solids any larger than 1/16 of an inch are trapped within the filter and tend to fall back to the bottom of the tank.
- Finally, microorganisms grow on the edges of the weir. The microorganisms not only reduce the size of the opening for solid particles exiting the tank, but they also tend to digest the solids passing over the weir, further treating the effluent.

James Oyekan
7145 Brooks Rd, Highland

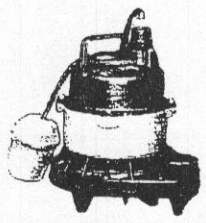
Sheet Title:
WASTEWATER SYSTEM PLAN

Sheet#
WWT-
7 of 10 Shee

6/24/08
1" = —

INNOVA, LTD
INNOVATIVE WASTEWATER TREATMENT SYSTEMS
P.O. BOX 363, NEW WINDSOR, MD 21776
(410) 875-9370 Office
(410) 635-2883 Fax

GOULDS PUMPS



Submersible Effluent Pump

MODEL 3871

EP04 & EP05 Series

APPLICATIONS

Specifically designed for the following uses:

- Effluent systems
- Homes
- Farms
- Heavy duty sump
- Water transfer
- Dewatering

SPECIFICATIONS

- Solids handling capability: ¾" maximum.
- Capacities: up to 60 GPM.
- Total heads: up to 31 feet.
- Discharge size: 1¼" NPT.
- Mechanical seal: carbon-rotary/ceramic-stationary, BUNA-N elastomers.
- Temperature: 104°F (40°C) continuous 140°F (60°C) intermittent.
- Fasteners: 300 series stainless steel.
- Capable of running dry without damage to components.

Motor:

- EP04 Single phase: 0.4 HP, 115 or 230 V, 60 Hz, 1550 RPM, built in overload with automatic reset.
- EP05 Single phase: 0.5 HP, 115 V or 230V, 60 Hz, 1550 RPM, built in overload with automatic reset.
- Power cord: 10 foot standard length, 16/3 SJTW with three prong grounding plug. Optional 20 foot length, 16/3 SJTW with three prong grounding plug (standard on EP05).
- Fully submerged in high grade turbine oil for lubrication and efficient heat transfer.

Available for automatic and manual operation. Automatic models include Mechanical Float Switch assembled and preset at the factory.

FEATURES

■ **EP04 Impeller:** Thermoplastic semi-open design with pump out vanes for mechanical seal protection.

■ **EP05 Impeller:** Thermoplastic enclosed design for improved performance.

■ **Casing and Base:** Rugged thermoplastic design provides superior strength and corrosion resistance.

■ **Motor Housing:** Cast iron for efficient heat transfer, strength, and durability.

■ **Motor Cover:** Thermoplastic cover with integral handle and float switch attachment points.

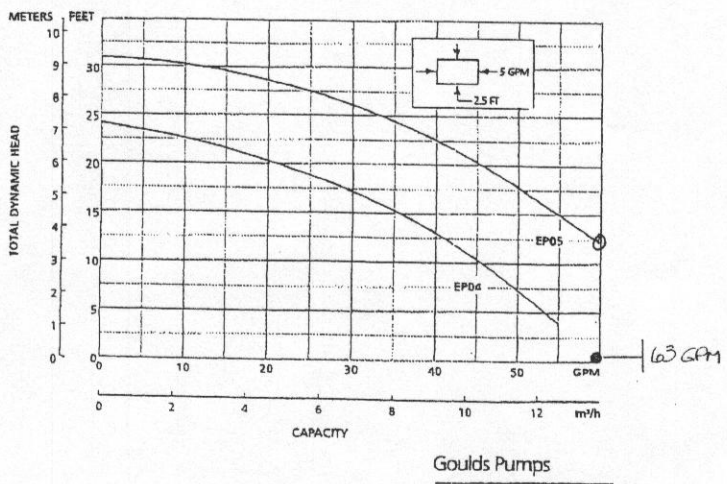
■ **Power Cable:** Severe duty rated oil and water resistant.

■ **Bearings:** Upper and lower heavy duty ball bearing construction.

AGENCY LISTING

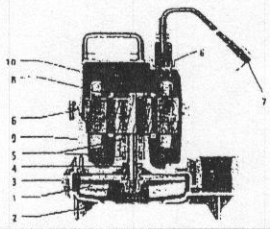
CSA Canadian Standards Association File # LR38549

Goulds Pumps is ISO 9001 Registered.



Goulds Pumps
ITT Industries

GOULDS PUMPS



Submersible Effluent Pump

MODEL 3871

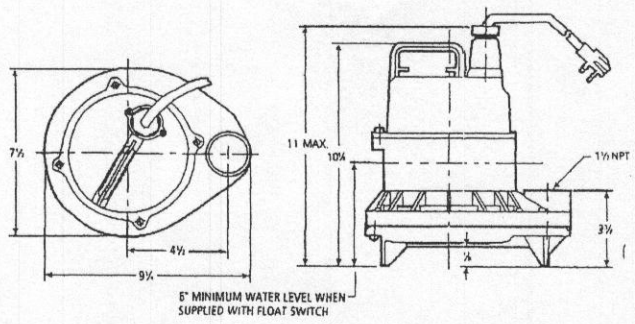
EP04 & EP05 Series

COMPONENTS

Item No.	Description
1	Impeller
2	Base
3	Pump Casing
4	Mechanical Seal
5	Ball Bearings
6	O-Rings
7	Power Cord
8	Oil Filled Motor
9	Motor Housing/ Stator Assembly
10	Motor Cover

DIMENSIONS

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



PERFORMANCE RATINGS

Total Head (ft. of water)	Gallons Per Minute	
	EP04	EP05
5	53	–
10	48	62
15	36	55
20	21	46
25	0	33
30	–	11

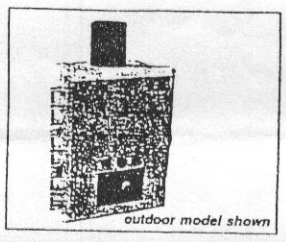
MODEL INFORMATION

Order No.	HP	Volts	Amps	Minimum Circuit Breaker	Phase	Float Switch Style	Cord Length	Discharge Connection	Minimum On Level	Minimum Off Level	Minimum Basin Diameter	Maximum Solids Size	Shipping Weight lbs/kg
EP0411	.4	115	12	20	1	Plug / No Switch	10'	1½"	Manual	Manual	15"	¾"	20 / 9.1
EP0411A						Piggyback / Wide-Angle	10'	1½"	12"	6"	15"		21 / 9.5
EP0411F						Plug / No Switch	20'	1½"	Manual	Manual	15"		20 / 9.1
EP0411AC						Piggyback / Wide-Angle	20'	1½"	12"	6"	15"		21 / 9.5
EP0412		230	6	10		Plug / No Switch	10'	1½"	Manual	Manual	15"		20 / 9.1
EP0412F						Plug / No Switch	20'	1½"	Manual	Manual	15"		20 / 9.1
EP0511F	.5	115	13	20		Plug / No Switch	10'	1½"	Manual	Manual	15"		22 / 10
EP0511AC						Piggyback / Wide-Angle	20'	1½"	12"	6"	15"		23 / 10.4
EP0512F		230	6.5	10		Plug / No Switch	20'	1½"	Manual	Manual	15"		22 / 10

ORDER #: 1121W104H + OPTIONS 8A, 8C, 10E (COUNTER, EV TIMER, LOCKING LID)

MODEL 112 control panels

single-phase, simplex motor contactor control. (230V, SINGLE Ø)



outdoor model shown

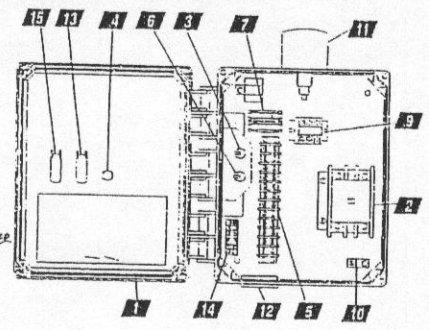
APPLICATIONS

The Model 112 control panel provides residential and commercial customers with a reliable means of controlling one 120, 208, or 230 VAC single-phase pump in water and sewage installations. Two control switches activate a magnetic motor contactor to turn the pump on and off. If an alarm condition occurs, an additional alarm switch activates the audio/visual alarm system. Common applications include pump chambers, sump pump basins, irrigation systems, and lift stations.

FEATURES

- Entire control system (panel and switches) is UL Labeled to meet and/or exceed industry safety standards
- Dual safety certification for the United States and Canada
- Package includes float switches (optional)
- Complete, step-by-step installation instructions included
- Two-year limited warranty

Model Shown 1121W114X



1. Enclosure measures 10 x 8 x 4 inches (25.4 X 20.32 X 10.16 cm) with removable mounting flanges. Choice of NEMA 1 (engineered thermoplastic for indoor use), or NEMA 4X (ultraviolet stabilized thermoplastic for outdoor use).
2. Magnetic Motor Contactor controls pump by switching both electrical lines
3. HOA Switch for manual pump control
4. Green Pump Run Indicator Light
5. Float Switch Terminal Block (3 Float System) SOFT / STEP / HIGH WATER ALARM
6. Control ON/OFF Switch
7. Control and Alarm Fuses
8. Circuit Breaker (optional) provides pump disconnect (not shown)
9. Input Power Terminal Block
10. Ground Lug

NOTE: SEPARATE 120V CKT (SOURCE) REQ'D FOR ALARM

ALARM PACKAGE (OPTIONAL) ✓

11. Red Alarm Beacon provides 360° visual check of alarm condition
12. Alarm Horn provides audio warning of alarm condition (83 to 85 decibel rating)
13. Exterior Horn Silence Switch allows alarm horn to be silenced
14. Horn Silence Relay automatically resets alarm after alarm condition has been resolved
15. Exterior Alarm Test Switch allows for testing of horn and light to ensure proper operation of alarm system

SIE Rhombus CONTROLS

rhombus™ TECHNOLOGY

TYPE 112 INSTALLATION INSTRUCTIONS

Single Phase Simplex Control Panel

CAUTION:

Rhombus cannot be responsible for damages caused by the faulty or negligent installation of this control. We recommend that you engage the services of a competent plumber, electrician or qualified service person to install this product in accordance with the national and local electrical codes.

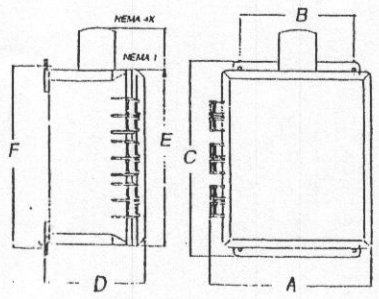
All conduit running from the sump or tank to the control panel must be sealed with conduit sealant to prevent moisture or gases from entering the panel. Nema 1 enclosures are for indoor use primarily to provide a degree of protection against contact with enclosed equipment. Cable connectors are not required to be liquid tight in Nema 1 enclosures. Do not use Nema 1 enclosures if subjected to rain, spleshing water, or hose directed water. Nema 4X enclosures are for indoor or outdoor use primarily to provide a degree of protection against corrosion, windblown dust and rain, splashing water, and hose directed water. Cable connectors must be liquid tight in Nema 4X enclosures.

MOUNTING AND WIRING CONTROL PANEL

1. *Determine mounting locations for control panels. If distance exceeds the length of either the float switch cables or the pump power cables, splicing will be required. For outdoor or wet installation we recommend the use of a junction box with liquid tight connectors (S. J. Electro System's Model JB70) to make required connections. (When using conduit refer to enclosed conduit connector sheet, and be sure to use conduit sealant to prevent moisture or gases from entering the panel.)*
2. *On the control panel, determine the "power in" location (from the building power supply). Check local codes and schematic for power circuit requirements.*

   CAUTION: BE SURE THE POWER SUPPLY VOLTAGE AND PHASE ARE THE SAME AS THE PUMP MOTORS BEING INSTALLED. IF IN DOUBT, SEE THE PUMP IDENTIFICATION PLATE FOR VOLTAGE/PHASE REQUIREMENTS.
3. *On the control panel, determine the location of the pump power cables, and the float switch cables.*
4. *Drill proper size holes for connection to panel.*

   CAUTION: IF USING CONDUIT, BE SURE THAT THE CONDUIT BEING USED IS OF ADEQUATE SIZE TO PULL THE PUMP AND SWITCH CABLES THROUGH. RECOMMENDED MINIMUM 1¼" FOR SIMPLEX APPLICATIONS.
5. *Mount control panel (mounting devices are furnished with control panel).*
   a. *NEMA 4X mounting flange kit included in the box.*
   b. *NEMA 1 mounting feet are installed on enclosure, rotate feet to desired position.*
6. *Attach cable connectors and/or conduit connectors to control panel.*



FOR INSTALLATION WITHOUT A SPLICE GO TO STEP 12. FOR INSTALLATIONS REQUIRING A SPLICE FOLLOW STEP 7 - 11.

CAUTION: AT THIS POINT, TURN OFF ALL POWER SOURCES.

7. *Determine location for mounting junction box according to local code requirements. Do not mount the Junction Box inside the sump or basin.*
8. *Run the conduit or connectors to junction box and drill the junction box as required to make the proper connections. Attach the conduit or connections to the junction box.*
9. *Mount junction box to proper support*
10. *Pull pump power cables and float switch cables through connectors into junction box. Identify and label each wire before pulling through conduit into control panel. Make necessary wire splice connections at junction box.*
11. *Firmly tighten all fittings on junction box.*
12. *If a junction box is not required, pull pump cables and float switch cables through connectors/conduit into control panel.*
13. *Attach pump cables and float switch cables to the proper numbered terminals. SEE WIRING DIAGRAM INSIDE CONTROL PANEL.*

    CAUTION: IF FLOAT SWITCH CABLES ARE NOT WIRED IN THE PROPER ORDER, THE PUMP SYSTEM WILL NOT FUNCTION PROPERLY.
14. *Connect "power in" conductors to proper terminals. (SEE WIRING DIAGRAM)*

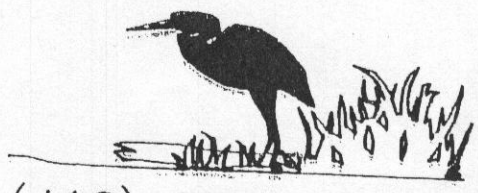
	NEMA 1	NEMA 4X
A	9⅜"	9⅜"
B	6¼"	6"
C	12¼"	11¾"
D	7¼"	7¼"
E	10½"	13½"
F	11¾"	10¾"

(James) Oyekan
7145 Brooks Rd, Highland MD

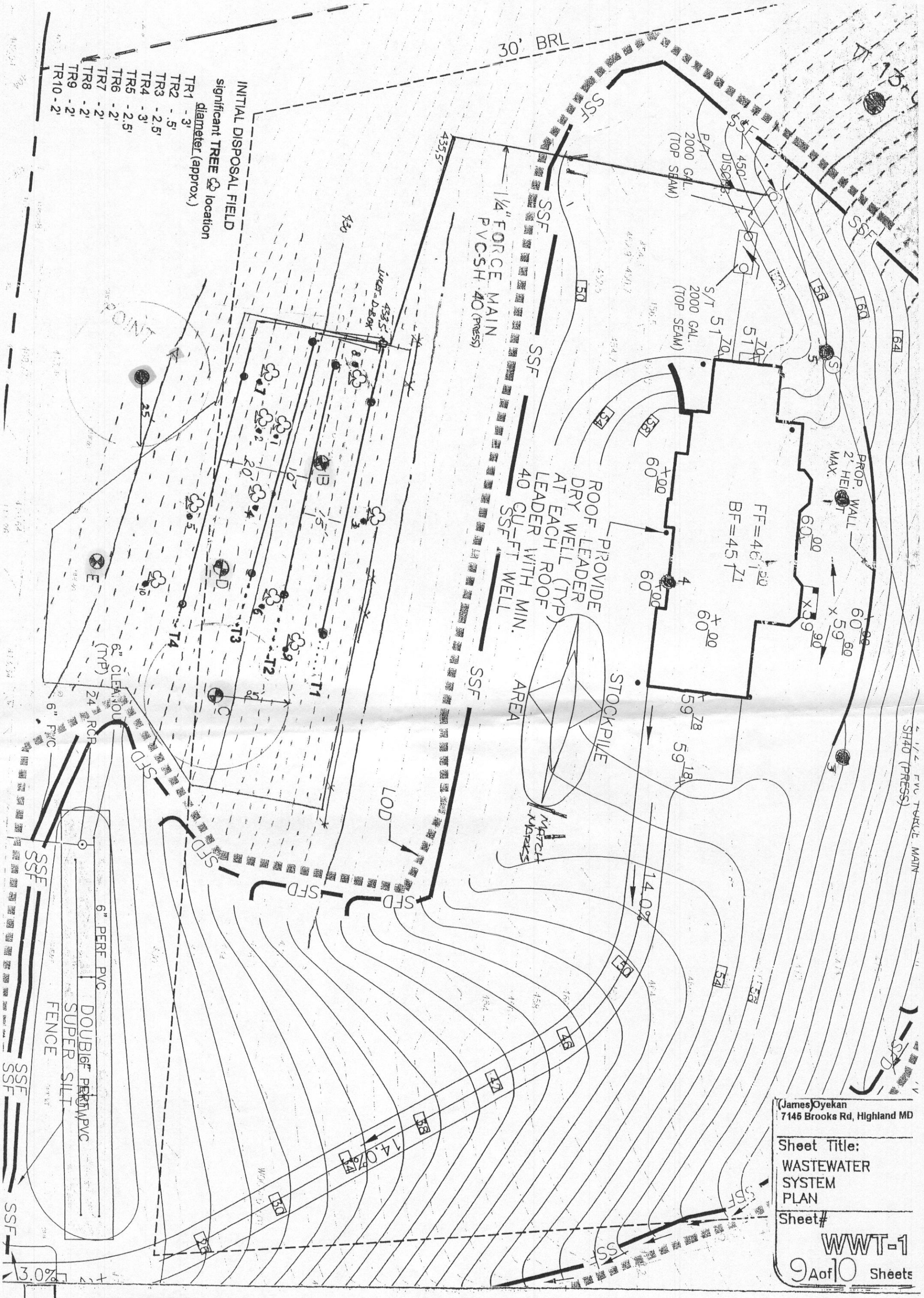
Sheet Title:
WASTEWATER SYSTEM PLAN

Sheet#
WWT-1
8 of 10 Sheets

Scale: 1" = —"



INNOVA, LTD
INNOVATIVE WASTEWATER TREATMENT SYSTEMS
P.O. BOX 363, NEW WINDSOR, MD 21776
(410) 875-9370 Office
(410) 635-2883 Fax
H. Dale Grav. Principal



(James) Oyekan
7145 Brooks Rd, Highland MD

Sheet Title:
WASTEWATER SYSTEM PLAN

Sheet#
WWT-1
9A of 10 Sheets

DATE 6/24/08
SCALE: 1" = 30'

INNOVA, LTD
INNOVATIVE WASTEWATER TREATMENT SYSTEMS
P.O. BOX 363, NEW WINDSOR, MD 21776
(410) 875-9370 Office
(410) 635-2883 Fax
H. Dale Gray, Principal

RPL#2

RPL#1

PRIMARY PROP. WELL LOCATION

60' BRL

SUPER FENCE DIVERSION

SFD

LOD

2 1/2" PVC FORCE MAIN SH40 (PRESS) (FUTURE)

PROP. WALL 2' HEIGHT MAX.

FF=461.50

450' DISCHG

P/T 2000 GAL. (TOP SEAM)

S/T 2000 GAL. (TOP SEAM)

MATCH MARKS

DATE 6/24/08

SCALE: 1" = 30'

(James) Oyekan
7145 Brooks Rd, Highland MD

Sheet Title:
WASTEWATER SYSTEM PLAN

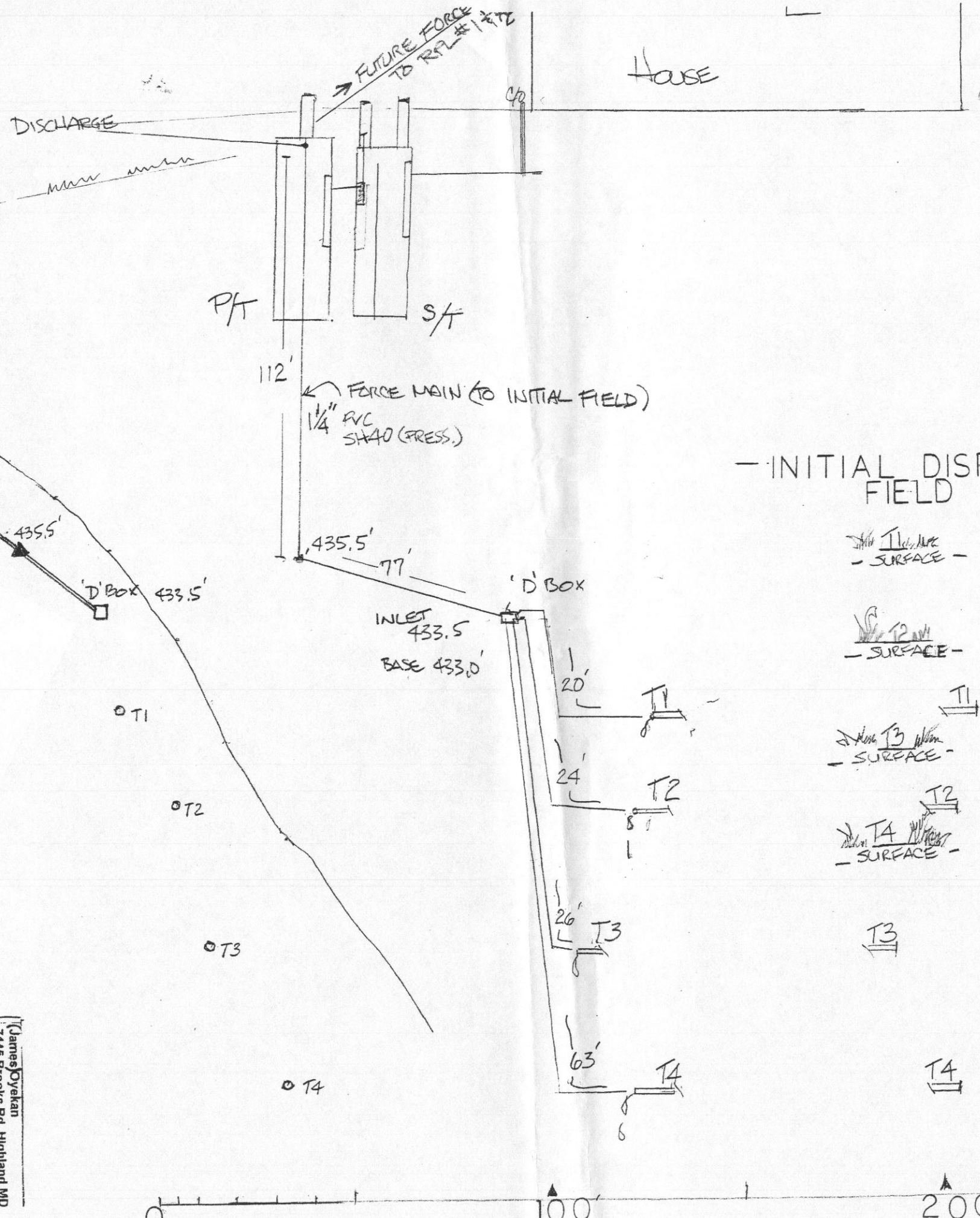
Sheet# WWT-1

9B of 10 Sheets

INNOVA, LTD
INNOVATIVE WASTEWATER TREATMENT SYSTEMS
P.O. BOX 363, NEW WINDSOR, MD 21776
(410) 875-9370 Office
(410) 635-2883 Fax
H. Dale Gray, Principal

1" = AS SHOWN 6/24/08

INNOVATIVE, LTD
INNOVATIVE WASTEWATER TREATMENT SYSTEMS
P.O. BOX 363, NEW WINDSOR, MD 21776
(410) 875-9370 Office
(410) 635-2883 Fax



PROFILE VIEW

SCALE
VERT.: 1" = 4'
HORIZ.: 1" = 30'

— INITIAL DISPOSAL — FIELD

T1 SURFACE
T2 SURFACE
T3 SURFACE
T4 SURFACE

T1 TRENCH FLOOR
T2 TRENCH FLOOR
T3 TRENCH FLOOR
T4 TRENCH FLOOR

455
450
445
440
435
430
425
420
415

James Oyekan
7146 Brooke Rd. Highland MD

Sheet Title:
WASTEWATER SYSTEM PLAN

Sheet#
WWT-1
10 of 10 Sheets