

LAYOUT _____ INSP 4 _____
INSP 2 _____ INSP 5 _____
INSP 3 _____ INSP 6 _____

ISSUE DATE: 11/18/2008

PERMIT

P 530224

APPROVAL DATE: _____

A _____

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

FOGLE'S SEPTIC CLEAN, INC. _____ IS PERMITTED TO INSTALL ☒ ALTER ☐

ADDRESS: 580 OBRECHT ROAD, SYKESVILLE 21784 PHONE NUMBER: 410-795-5670

SUBDIVISION: A.E. MULLINIX ROAD PROPERTY LOT NUMBER: 1

ADDRESS: 16780 A.E. MULINIX ROAD PROPERTY OWNER: KDDC LAND COMPANY LLC

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

PUMP CHAMBER CAPACITY (GALLONS): 1500 COMPARTMENTED TANK REQUIRED ☐

NUMBER OF BEDROOMS: 5

LOCATION:	(1) Sand mound to be installed; see Plans for Sand Mound (approved 3/10/2008). (2) At Layout Inspection, 'Fill' must be removed from the sand mound site nearest to the house. (3) The slope of the 'Fill' must be shaped so that concentrated runoff is diverted away from the sand mound, the septic tank and the pump tank.
NOTES:	(1) All three Sand mound sites are to be staked. (2) Heavy equipment and vehicles with pneumatic tires are not allowed onto, or downhill of, the sand mound sites. (3) The installation contractor provides a transit during Layout Inspection. (4) An Environmental Sanitarian must be on location to confirm elevations during the removal of 'Fill' materials.

PLANS APPROVED: SARA SAPPINGTON/ROBERT BRICKER DATE: 11/18/2008

NOTES: PERMIT VOID AFTER 2 YEARS

CONTRACTOR IS RESPONSIBLE FOR SCHEDULING A PRE-CONSTRUCTION INSPECTION FOR ALL INSTALLATIONS
WATERTIGHT SEPTIC TANKS REQUIRED
ALL PARTS OF SEPTIC SYSTEM SHALL BE 100 FEET FROM ANY WATER WELL UNLESS SPECIFICALLY AUTHORIZED
MANHOLE RISERS REQUIRED ON ALL SEPTIC TANKS AND PUMP CHAMBERS UNLESS SPECIFICALLY AUTHORIZED
CONTRACTOR RESPONSIBLE FOR COMPLIANCE WITH APPLICABLE REGULATIONS, GUIDELINES AND THE TERMS OF THIS PERMIT

**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 410-313-1771 FOR INSPECTION OF SEPTIC SYSTEM**

NOT TO SCALE

See As-Built Drawing
On Separate Sheet

7/6/09-Tested one cell of bed but ran
out of water, Alarm working. (BB)

7/7/09-Both cells of bed have 2' of
head at all turnups. Still need more
topsoil on top middle part of bed
that is closest to house. (BB)

ROAD

SEPTIC TANK DATA

SEPTIC TANK 1 LEVEL Yes

CAPACITY 2000 GAL

SEAM LOC Top

TANK LID DEPTH 1-2'

BAFFLES Yes

BAFFLE FILTER Need

MANHOLE LOC Front+Rear

6" PORT LOC None

WATERTIGHT TEST No

PUMP TANK LEVEL Yes

CAPACITY 1500 GAL

SEAM LOC Top

TANK LID DEPTH 0.5'-1.5'

BAFFLES Front

BAFFLE FILTER No

MANHOLE LOC Front+Rear

6" PORT LOC None

WATERTIGHT TEST No

SAND MOUND DATA

BED LENGTH 63'

BED WIDTH 14'

BED AREA 882 SQ FT

MOUND LENGTH 89'

MOUND WIDTH 36'

MOUND AREA 3,204

BASAL AREA 1,654 SQ FT

PRE-CONSTRUCTION 5/13/09 Marked mound corners as per plan.

Unable to get level contour across bottom of

INSTALLATION mound because of small swale in mound

area. Will curve mound upward in swale area to

improve contour as best possible. Set tanks near where

shown on plan. Need to check sand and mound condition

before starting. (BB) 6/2/09 Soil just dry enough in

wettest parts of mound area to flow. Sand within

mound specs. O.K. to start. (BB) 6/3/09 Sand put on

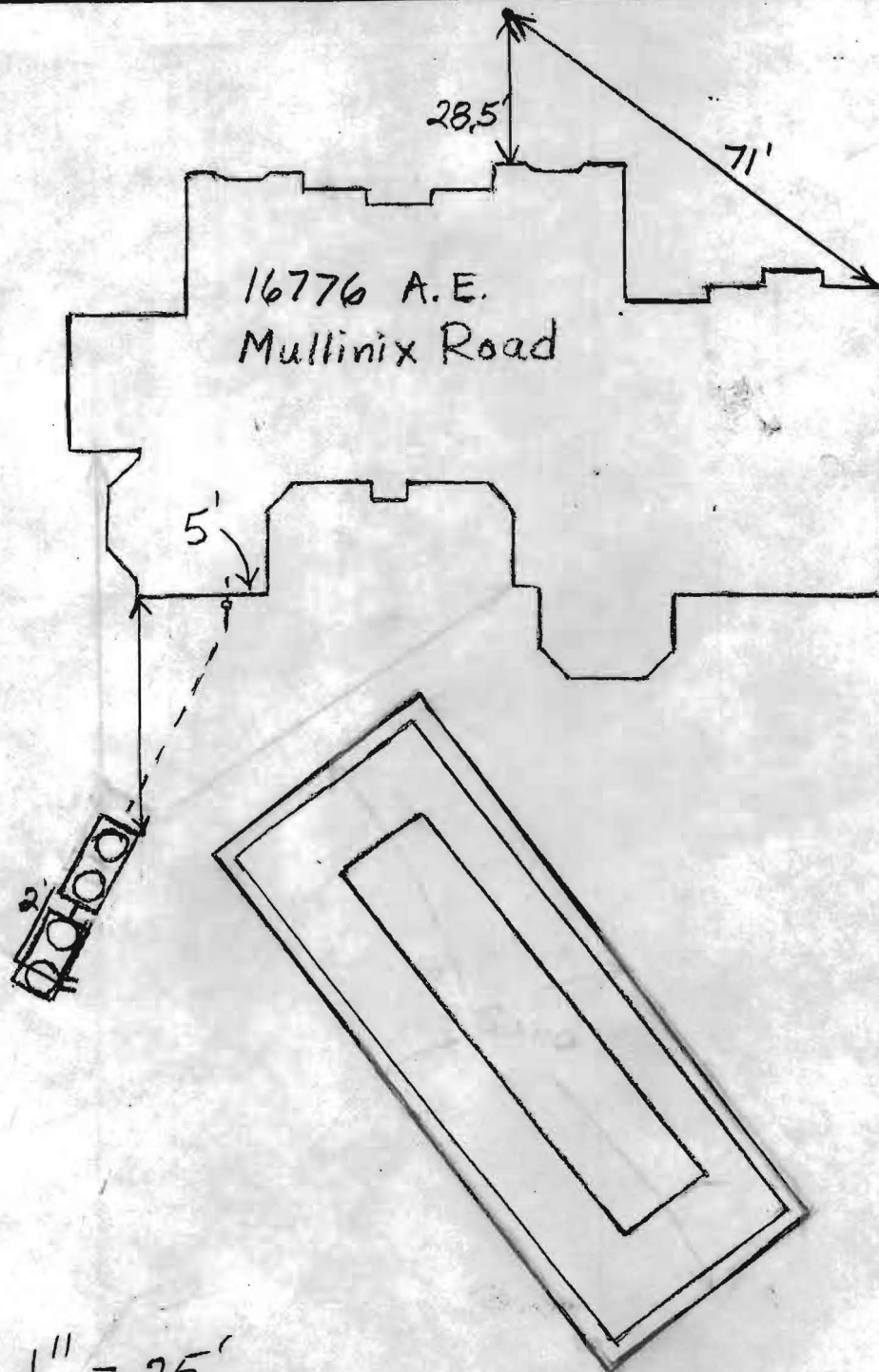
mound area. Bed ready for gravel. (BB) 6/9/09 Contractor

FINAL INSPECTOR _____ DATE OF APPROVAL _____

started covering bed. (BB) 6/10/09 Bed covered with topsoil

but still need more soil on top center of bed. (BB)

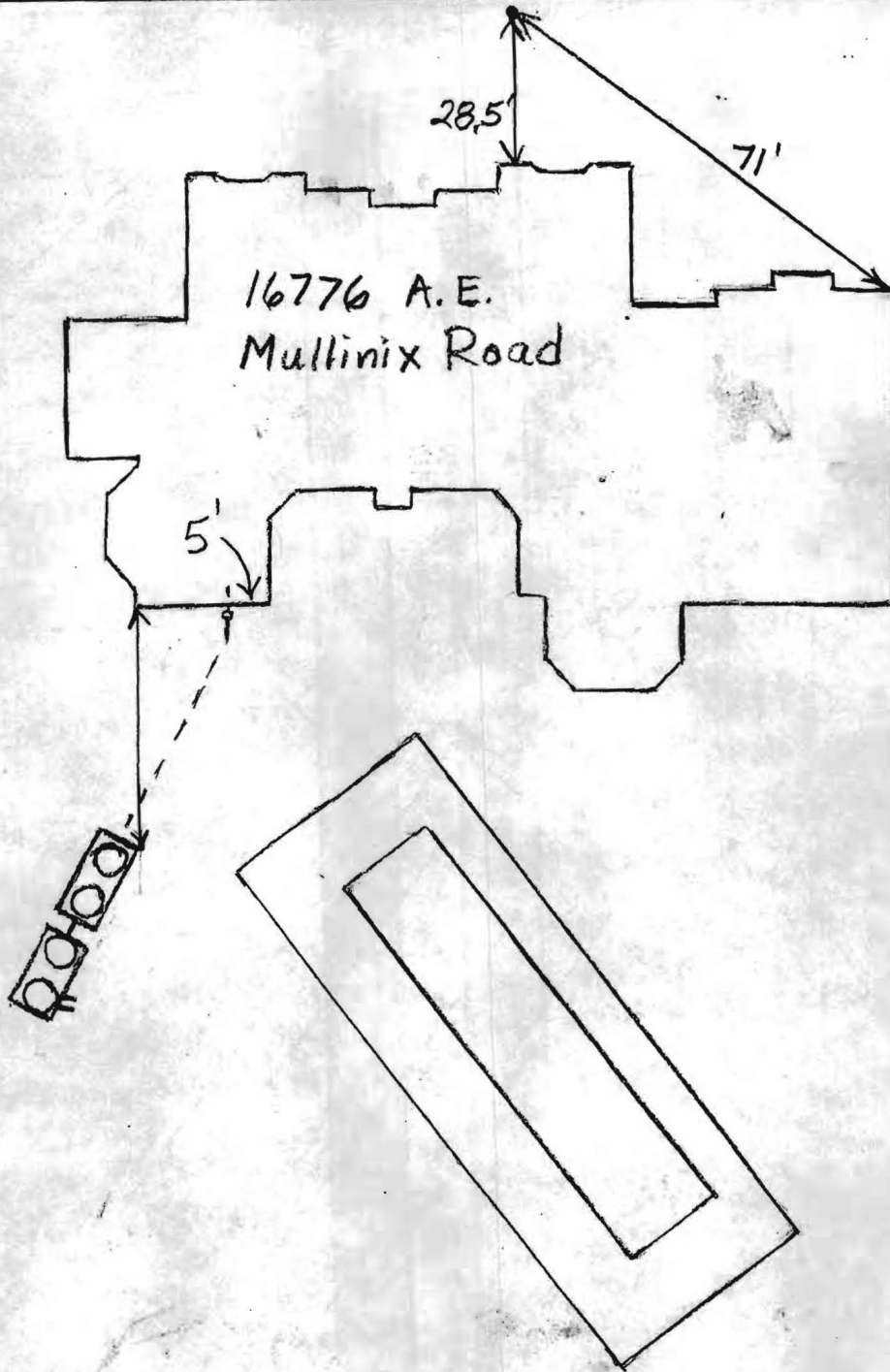
H0-95-0185



NOT TO SCALE

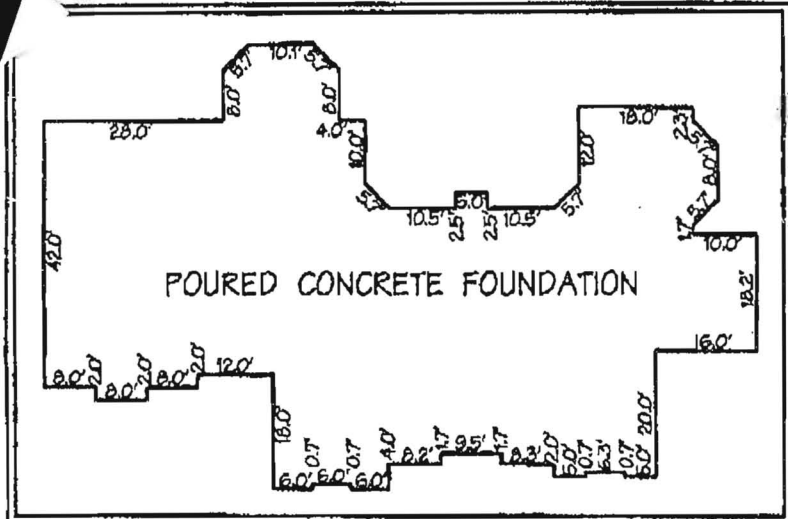
1" = 25'

H0-95-0185



NOT TO SCALE

MARYLAND COORDINATE SYSTEM



INSET
SCALE: 1" = 30'

PRESERVATION PARCEL "A"
(BUILDABLE)

16780

10,000 SqFt
PRIVATE SEPTIC
EASEMENT

SEE INSET

PRESERVATION PARCEL "A"
(BUILDABLE)

FOREST CONSERVATION
EASEMENT

PRESERVATION PARCEL "A"
(BUILDABLE)

EXISTING FIRST FLOOR= 617.01
PROPOSED FIRST FLOOR= 618.2

NOTES

This plat is of benefit to a consumer only insofar as it is required by a lender or a title insurance company or its agent in connection with a contemplated transfer, financing, or refinancing. This plat is not to be relied upon for the establishment of property corners or the location of fences, garages, buildings or other existing or future improvements; and
This plat does not provide for the accurate identification of property boundary lines, but such identification may not be required for the transfer of title or securing financing or refinancing.
The accuracy of the apparent setback dimensions from the property lines to the improvements is within 1 foot of being greater than or less than the dimension shown.
The subject property lies within Flood Zone "C", (Areas of Minimal Flooding) as shown on Flood Insurance Rate Map No. 240010 0360 B, dated March 2, 1981.



16780 A E MULLINIX ROAD SURVEYOR'S CERTIFICATE

I hereby certify that I have surveyed the property shown hereon for the purpose of locating the improvements only and the improvements are located as shown. Exact property corners have not been established or set.

Michael D. Martin 0/14/08
Michael D. Martin, Professional Land Surveyor
Maryland Registration No. 21234

LOCATION FOUNDATION DRAWING A. E. MULLINIX ROAD PROPERTY LOT 1

4th ELECTION DISTRICT

HOWARD COUNTY, MARYLAND

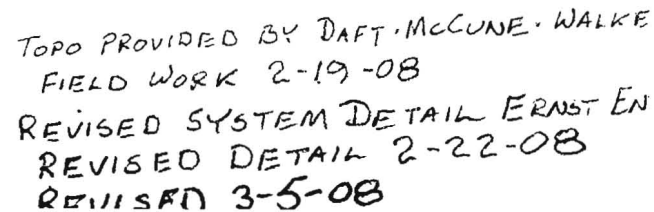


Daft - McCune - Walker, Inc.

A Team of Land Planners,
Landscape Architects,
Engineers, Surveyors &
Environmental Professionals
300 East Potomac Avenue
Towson, Maryland 21206
(410) 296-3388
Fax 206-4705

Field Crew: LH/JH Scale: 1" = 50' Date: 8/11/2008
Drawn by: 1" = 50' Checked by: Job No.: 04034.5

Date _____



Ernst Environmental Services, Inc.
1907 Midland Road
Baltimore, MD 21222
(410)288-5081

ON-SITE SEWAGE DISPOSAL SYSTEM

USING

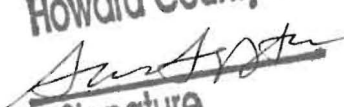
**Conventional Sand Mounds
With
Alternating Dosed Sub Mains**

Engineering Detail and Construction Specifications

For

**KDDC Land Company
16776 A. E. Mullinix Road**

**Tax Map 7 Parcel 506
Howard County**

Approved Septic System Plan
Howard County Health Department

Signature 3/10/08
Date

11 January 2008
Revised 23 February 2008

Ernst Environmental Services, Inc.
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Summary of Sewage Disposal System Design
FOR
16776 A.E. Mullinix Road

This system is designed to serve a five (5) bedroom house being built on unimproved existing lots of record. Soil test approved construction under conventional sand mound standards of the State of Maryland

Ernst Environmental Services, Inc. has verified the topographic gradients and orientation of the initial system during an on site visit to the property. Both the initial system area and replacement system areas must be fenced off in the field to preserve soil suitability, prior to building permit approval.

The area of initial system installation is partially wooded and trees within the area must be removed by sawing stumps as close as possible to existing grade. Heavy logging equipment should not be used to minimize soil compaction and stumps should not be removed.

The septic tank, pump station and force main should be installed as designated on the site plan and staked in the field. Tanks specified in the design are available from Babylon Vault of New Windsor, MD. No substitution of the tanks can be made without prior approval of Ernst Environmental Services, Inc.

A Zabel Model 1800 Effluent filter is specified to be installed in the outlet baffle of the second compartment of the two compartment septic tank.

As the mound installation area is partially wooded, plowing should be provided by chisel ripping the soils as provided in Mound Construction Procedures.

Note that design specifies turn ups at the end of each field lateral. A detail is provided of turn up finishing detail.

The design specifies a Model 3885 Goulds Submersible Effluent Pump Order No. WE0712H and Pump Control/Alarm with SJE Rhombus IFS Simplex panel. A remote alarm is to be provided within the house.

An alternating set of two sub mains have been designed for the system because areas provided for the mound installations did not provide enough length to width ratio for an optimum linear loading rate. Alternating flow control will be provided by a 2 zone K-Rain Valve Model 6402 mounted in the man way of the pump chamber. The K-Rain valve will allow for a single pump and simplex pump control system. A $\frac{1}{4}$ in pressure

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release orifice to be drilled at the bottom of discharge loop of each of 2 force mains off of K Rain Valve. See Pump Tank detail.

Mound Construction Procedures

GENERAL

Proper construction is extremely important if the sand mound is to function as designed. Installation of a sand mound system is prohibited when soils are frozen. Construction of the mound should not occur if the soil is wet. Compaction and puddling of the soil in the location of the mound and down slope should be avoided. Soil is too wet for construction of the mound if a sample, taken anywhere within the uppermost eight inches, when rolled between the hands forms a wire. If the sample crumbles, the soil is dry enough for construction to proceed.

EQUIPMENT

The following special equipment is recommended:

1. A small track-type tractor with blade for placing and spreading the sand fill.
2. A cordless drill for drilling holes in the pipe on-site.
3. A moldboard or chisel plow for plowing the soil within the perimeter of the mound. A rototiller may only be used on structure less soils with USDA sand textures.
4. A rod and level for determining bed elevations slope on pipes, outlet elevation of septic tank, slope of site, etc.

MATERIALS

The following specifications are required:

1. Sand fill material must be approved by the local Approving Authority prior to hauling to site. Sand fill shall have an effective size between 0.25mm and 0.5mm with a uniformity coefficient of 3.5 or less. A copy of the receipt from the sand supplier showing the company name, phone number, date, and product name will be required.
2. Aggregate shall be clean aggregate free of fines and between $\frac{3}{4}$ and 2 inches in diameter. **Only silica sand may be used.** Crushed limestone should not be used.
3. Geotextile fabric shall be of a type approved by the Approving Authority.
4. Cap material shall be soil relatively free of coarse fragments and preferably a loam, silt loam, or finer texture.

TANK INSTALLATION AND SITE PREPARATION

1. Locate and rope-off the entire sewage disposal area to prevent damage to the area during other construction activity on the site. Vehicular traffic over the disposal area should be prohibited to avoid soil compaction.
2. Install septic tank(s) and pumping chamber(s) and pump as shown on the drawings. **Septic Tank and Pump Chamber to be top seam tanks as specified.** Access risers should terminate 6 inches above finished grade. **Call for inspection.**
3. Stake out the mound perimeters in their proper orientation as shown in the drawings. Reference stakes offset from the mound corner stakes are recommended. Locate the

upslope edge of the absorption bed within the mound and determine the ground elevation at the highest location. Reference this elevation to a benchmark for future use. This is necessary to determine the bottom elevation of the absorption bed.

4. Excess vegetation should be cut and removed. Trees should be cut at ground level and stumps left in place.
5. Determine the location where the force main from the pumping chamber will connect to the distribution network manifold within the mound.
6. Install the force main from the pumping chamber to the proper location within the mound. Pipe should be laid with uniform slope back to the chamber so that it drains after dosing. Cut and stub off pipe one foot below existing grade within the proposed perimeter of the initial mound. Back fill trench and compact to prevent seepage along the trench.
7. Plow the soil within the perimeter of the mound to a depth of about eight inches, if the soil is not too wet. Moldboard or chisel plows may be used. Plowing should be done along the contour, throwing soil upslope when using a two bottom or larger Moldboard plow. In wooded areas with stumps, roughening the surface to a depth of four to six inches with backhoe teeth with extensions may be satisfactory. However, all work should be done from the upslope or sides of the mound if at all possible. Rototilling may be used only on soils with USDA textures of sand. After plowing, all foot and vehicular traffic shall be kept off the plowed area.

FILL PLACEMENT

1. Relocate and extend the force main several feet above the ground surface.
2. Place the approved sand fill material on the upslope edge(s) of the plowed area. Keep delivery trucks off the plowed area. Minimize traffic on the downslope side. Fill should be placed and spread immediately after plowing. Move the fill material into place using a small track-type tractor with a blade. Work from the end and upslope side. Always keep a minimum of six inches of material beneath the tracks of the tractor to minimize compaction of the natural soil. The fill material should be worked in this manner until the height of the fill reaches the elevation of the top of the absorption bed.
3. With the blade of the tractor, form the absorption bed. Hand level the bottom of the bed and check it for proper elevation. The bed should be level for proper functioning of the mound. **Call for inspection.**
4. Shape the sides of the sand fill to design slope (i.e., 3:1 or flatter).

BED AND DISTRIBUTION NETWORK

1. Carefully place the coarse aggregate in the bed. Do not create ruts in the bottom of the bed. Level the aggregate to a minimum depth of six inches.
2. The distribution network is assembled in place setting the manifold to ensure draining the laterals between doses. The laterals should be laid level with the holes directed downward. **Call for inspection.** Test the pumping chamber and distribution network with clean water.
3. Place additional aggregate to a depth of at least two inches over the crown of the pipe.

4. Place the approved geotextile fabric over the aggregate bed. The fabric may extend beyond the bed over the sand fill.

COVER MATERIAL

1. Place a finer textured soil material such as sandy clay loam, clay loam, silt loam, or loam on top of the fabric over the bed. The minimum depth of this cap shall be six inches at the outer edges of the bed and 12 inches along the center.
2. Place a minimum of six inches of good quality topsoil over the entire mound surface including side slopes. **Call for final inspection.**

VEGETATION

1. Fertilize, lime, seed, and mulch the entire surface of the mound. Grass mixtures adapted to the area should be used.
2. Consult the county extension agent or Soil Conservation Service for recommendations.

PUMP, PUMP CONTROL and ALARM SPECIAL NOTES

1. Pump and pump alarm to be on separate electrical circuits.
2. Pump control and external alarm to be in N.E.M.A. approved waterproof housing mounted on post near pump chamber.
3. All pump connections to be approved waterproof design.
4. Pump controls to include elapsed time meter and event counter.
5. A remote high water alarm to be provided in kitchen area of house

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KDDC LAND CO
16776 A. E. Mullinix Road

CALCULATIONS OF SAND MOUND DIMENSIONS

GIVEN:

5 BEDROOMS PROPOSED HOUSE
WATER SUPPLY – UNCONFINED AQUIFER WELL
SEWAGE DISPOSAL – CONVENTIONAL MOUND
SOIL LOADING RATE 0.75 GAL/FT²/DAY
SAND LOADING RATE 1.0 GAL/FT²/DAY
1 FT MIN SAND FILL

FIELD DETERMINED SLOPE INITIAL INSTALLATION AREA = 5 %

THEREFORE

DESIGN FLOW = 5 BEDROOMS X 150 GAL/BEDROOM/DAY
= 750 GAL/DAY ✓

ABSORPTION BED AREA = (DESIGN FLOW)/
(DESIGN SAND INFILTRATION RATE)
= (750 GALS/DAY)/(1.0 GALS /FT²/DAY)
= 750 FT² ✓

BED WIDTH (A) = 12 FT (A)

BED LENGTH (B) = ABSORPTION BED AREA (FT²) / BED WIDTH (FT)
= 750 FT² / 12 FT = 62.5 FT ✓

UPSLOPE SAND FILL DEPTH (D) = 12 IN (PER HOWARD COUNTY HEALTH)

DOWNSLOPE SAND FILL DEPTH (E) = [12A x % SLOPE] + D IN
= [12(12) x ⁵/₁₀₀] + 12
= 19.2 IN ✓

DOWNSLOPE SETBACK (I) = (22 IN + E) x 3 x DOWNSLOPE CORR. FACT.
= (22 IN + 19.2) x 3 x (1.18)
= (41.2) X 3X 1.18
= 145.85 IN ~ 12.2 FT ✓

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SAND: MOUND CALCULATIONS (CONT.)

$$\begin{aligned}\text{UPSLOPE SETBACK (J)} &= (22 \text{ IN} + D) \times 3 \times \text{UPSLOPE CORR. FACT.} \\ &= (22 + 12) \times 3 \times 0.88 \\ &= 89.76 \text{ IN} \sim 7.5 \text{ FT} \checkmark\end{aligned}$$

$$\begin{aligned}\text{SIDESLOPE SETBACK (K)} &= [((\text{UPSLOPE} + \text{DOWNSLOPE}) \text{ SAND} \\ \text{DEPTH})/2 + 28 \text{ IN}] \times 3 \\ &= [(12 + 19.2)/2 + 28 \text{ IN}] \times 3 \\ &= 130.8 \text{ IN} \sim 11 \text{ FT} \checkmark\end{aligned}$$

$$\begin{aligned}\text{TOTAL LENGTH OF MOUND (L)} &= 62.5 \text{ FT} + 2(11 \text{ FT}) \\ &= 84.5 \text{ FT} \checkmark\end{aligned}$$

$$\begin{aligned}\text{TOTAL WIDTH OF MOUND (W)} &= 7.5 \text{ FT} + 12 \text{ FT} + 12.2 \text{ FT} \\ &= 31.7 \text{ FT} \checkmark\end{aligned}$$

BASAL LOADING REQUIREMENT

$$\begin{aligned}\text{BASAL AREA REQUIRED} &= (750 \text{ GAL/DAY}) / (0.75 \text{ GAL.FT}^2/\text{DAY}) \\ &= 1000 \text{ FT}^2 \checkmark\end{aligned}$$

$$\begin{aligned}\text{BASAL AREA PROVIDED} &= (A + I) \times B \\ &= (12 \text{ FT} + 12.2 \text{ FT}) \times 62.5 \text{ FT} \\ &= 1512.5 \text{ FT}^2 \checkmark\end{aligned}$$

NO ADDITIONAL BASAL AREA NEEDED

$$\begin{array}{r} 7.5 \\ 12.2 \\ \hline 12 \\ 31.7 \end{array}$$

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Look ok?

KDDC LAND CO
16776 A. E. Mullinix Road

DISTRIBUTION NETWORK DESIGN

BED IS DISGNEED TO BE 12 FT WIDE BY 62.5 FT LONG.
FOUR LATERALS WILL BE USED ON THREE (3) FT. CENTERS .
TO REDUCE EFFECTIVE LINEAR LOADING RATE AND TO INCREASE
DOSING FREQUENCY, THE LATERALS WILL BE ALTERNATELY
DOSED IN SETS OF TWO (2)
SEE LATERAL FABRICATION DETAIL

$$\begin{aligned}\text{NUMBER OF PERFORATIONS} &= (0.5 \times \text{BED LENGTH}) / \\ &\quad (\text{PERFORATION SPACING}) \\ &= (0.5 \times 62.5 \text{ FT}) / 3.5 \text{ FT} \\ &= 8.93\end{aligned}$$

USE 9
 $9 = (0.5 \times 62.5 \text{ FT}) / \text{PERFORATIONS SPACING (ADJ)}$
ADJUSTED PERFORATIONS SPACING = 3.47 FT (3FT 5 $\frac{1}{2}$ IN)

How many
perforations per
lateral?
1.775

ELECT TO USE $\frac{5}{16}$ PERFORATIONS

FROM TABLE 4.1 OF MD SAND MOUND DESIGN MANUAL
USE 1 $\frac{1}{4}$ IN DIAM PIPE FOR LATERAL

TURN UPS TO BE PROVIDED ON EACH LATERAL END

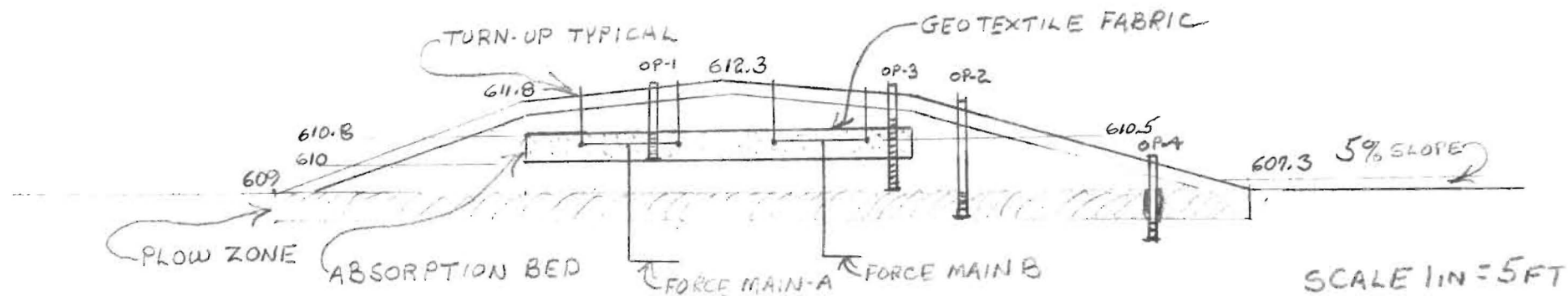
LAST PERFORATION TO BE PLACED IN 90° ELL AT ELEVATION OF
TOP OF LATERAL (SEE TURN UP DETAIL)

MANIFOLD AND FORCE MAIN TO BE 3 IN. DIAMETER

31.25

29.5

16776 A.E. MULLINIX ROAD SAND MOUND CROSS SECTION



OBSERVATION PIPE DETAIL

OP-1A

OP-2A

OP-3A

OP-4

NOTE:

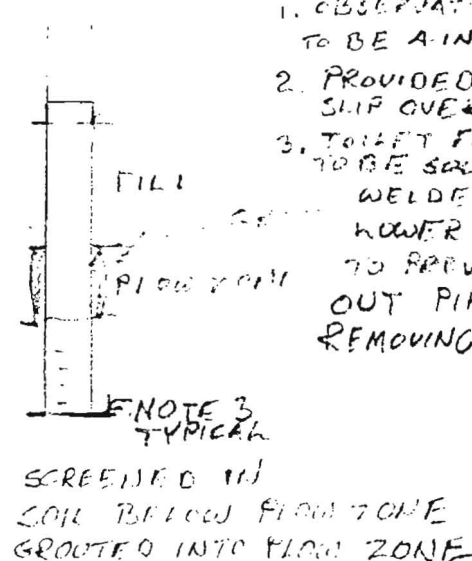
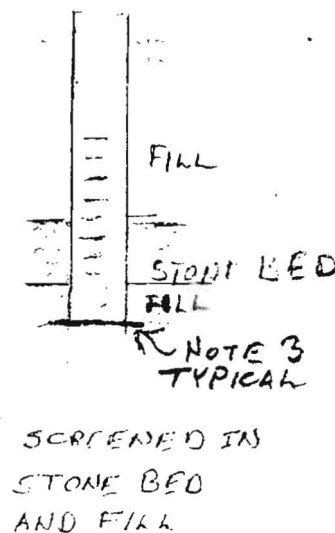
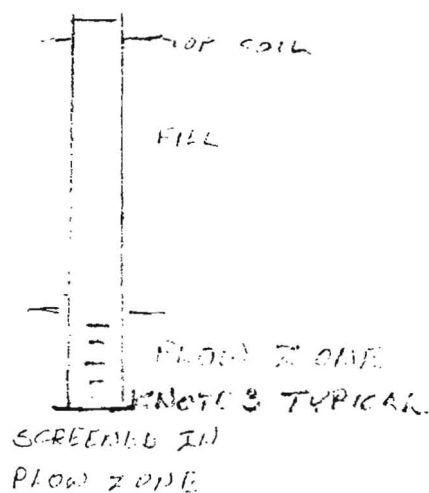
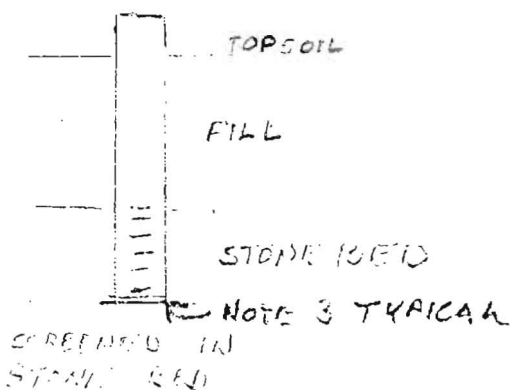
1. OBSERVATION PIPES
TO BE 4 IN PVC

2. PROVIDED WITH
SLIP OVER CAP

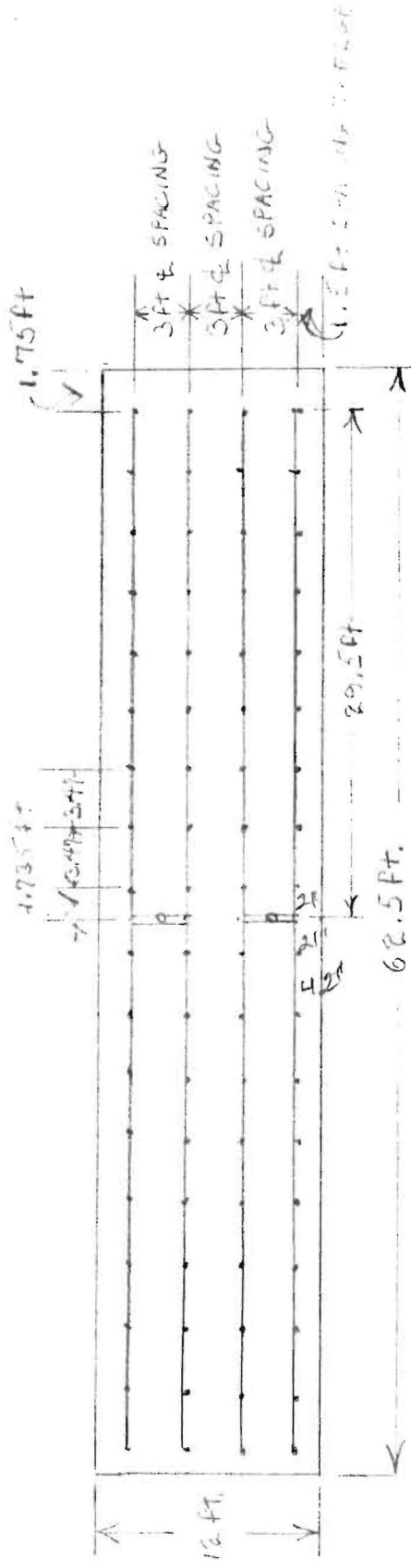
3. TOILET FLANGE
TO BE SOLVENT
WELDED TO

LOWER END

TO PREVENT POLLING
OUT PIPE WHEN
REMOVING CAP



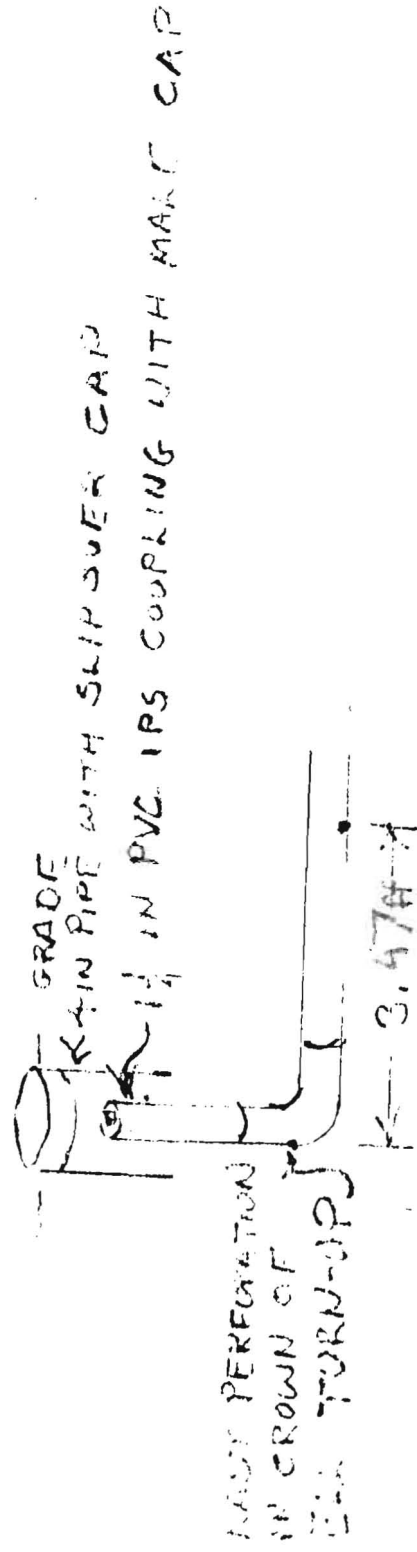
LATERAL FABRICATION DETAIL



NOTES:

1. PRESSURE RATED PIPE AND FITTINGS REQUIRED
2. TURN-UPS AT EACH END OF LATERAL. SEE TURN-UP DETAIL.
3. FORCE MAIN & MANIFOLD 3 IN SCH 40 PVC
4. LATERALS 1 1/4 IN SCH 40 PVC
5. ALL ORIFICES 5/16 IN DIAMETER ON 3.47 FT CENTERS

TURN-UP DETAIL



MEMBER N. C. B. V. A.

MEMBER P. C. B. V. A.

Babylon

VAULT

SINCE 1930

PHONE:

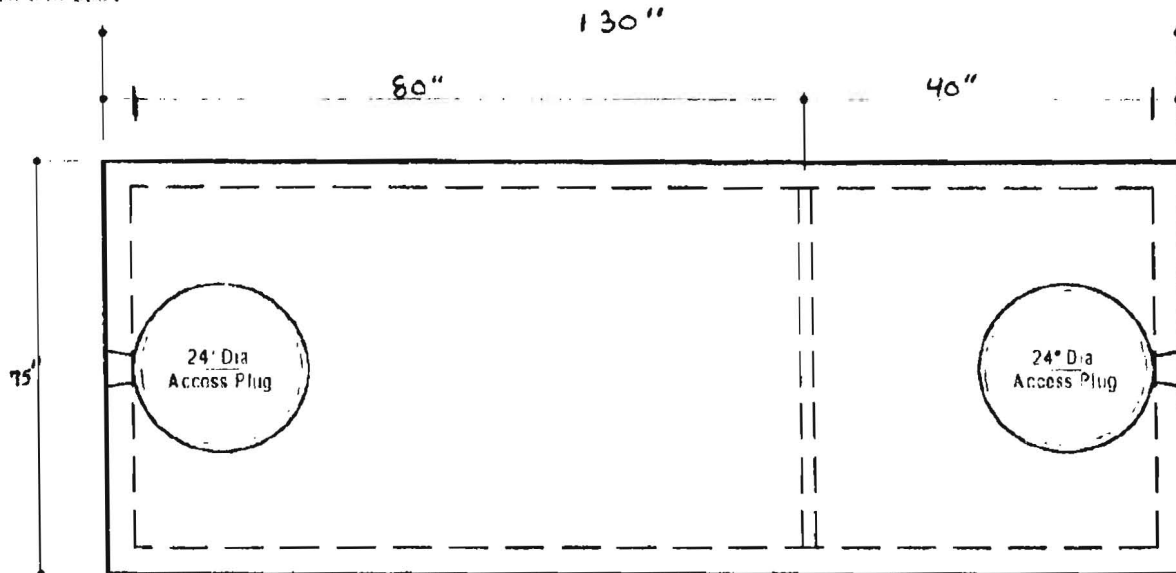
410-848-0393

FAX:

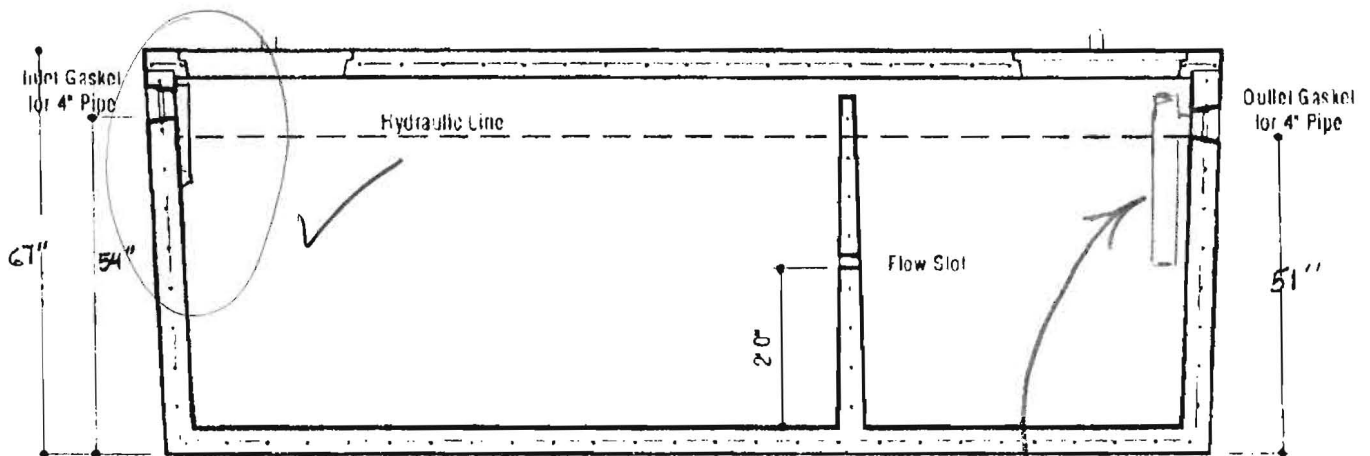
410-848-3551

Burial Vaults - Septic Tanks
2000 GALLON Two Compartment

925 WAKEFIELD VALLEY ROAD
NEW WINDSOR, MD 21776



TOP VIEW



SIDE VIEW

Design Data + General Info

- (1) Concrete strength f'_c = 6000 psi @ 28 days
- (2) Cement Portland Type 1/II per ASTM C 150-92
- (3) Admixtures - Plasticizers per ASTM C 260.86 + C 494-92
- (4) Reinforcing per ASTM A185 min 1-1/2" cover
- (5) Top SLAB SEALED with Butyl TAPE
- (6) 4" walls, bottom, top
- (7) INLET BAFFLE TO BE PROVIDED BY INSTALLATION CONTRACTOR

ZABEL FILTER
MODEL 1800



Zabel A1800™ Series

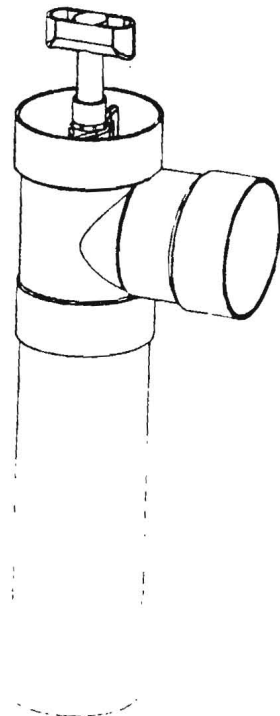
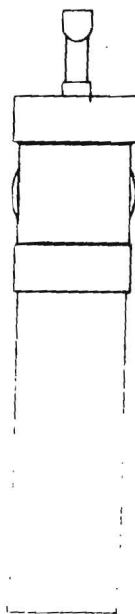
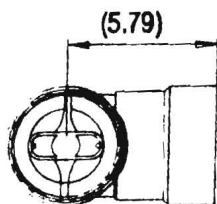
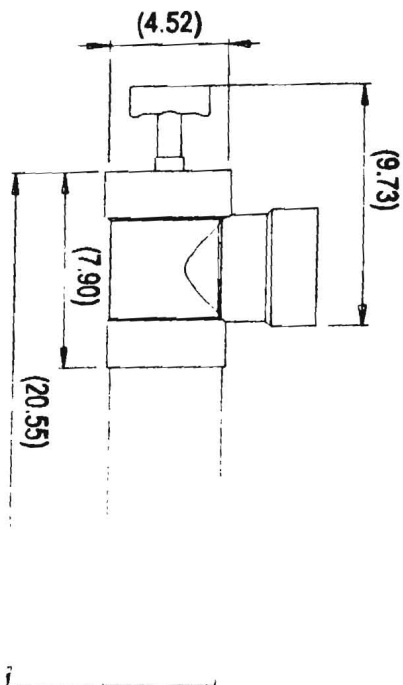
Description

The Zabel® A1800™ Series filter is the choice for single-family residential applications. The cartridge type filter easily slides into any 4" sanitary tee baffle to provide optimal drainfield protection. By reducing TSS and forcing routine homeowner maintenance of the filter and septic tank the A1800™ Series filter is the best insurance available to provide long drainfield life.

[+ Ordering Information](#) [➔ Request a Quote](#) [➔ Related Products](#)

Features

- 1/16" Filtration
- Available lengths 18" & 22"
- Available with built-in secondary 1/2" filtration, reducing large solids from entering.
- A1800 is the Filter and sanitary tee baffle, A1801 is the filter cartridge only
- Can fit into any 4" sanitary tee baffle
- A1800 Comes standard with the PL-68 sanitary tee baffle
- Optional Versa-Tee Baffle with SDR 35 or SDR 40 available for an additional cost on the A1800
- Accepts SmartFilter switch for use with filter alarms.
- Accepts Optional 4" Handle extension kit



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KDDC LAND CO
16776 A. E. Mullinix Road

DOSE DESIGN (EACH OF TWO SUBSETS)

LENGTH OF FORCE MAIN 70 FT OF 3 IN DIAM PIPE
LENGTH OF MANIFOLD 3 FT OF 3 IN DIAM PIPE

LENGTH OF LATERALS (1 1/4 DIAM PIPE)

A = 59 FT

B = 59 FT

TOTAL LATERAL LENGTH = 118 FT

$$(0.5 \times 62.5) - (0.5 \times 3.5) = 29.5$$
$$\frac{29.5 \times 4}{11.8}$$

VOLUME OF FORCE MAIN & MANIFOLD = (70 FT + 3 FT) X 0.384 GAL/FT
= 73 FT X 0.384 GAL/FT
= 28 GALS ✓

VOLUME OF LATERALS = (118 FT) X 0.078 GAL/FT
= 9.2 GALS ✓

DOSE = VOL. OF FORCE MAIN + MANIFOLD + 5(VOL OF LATERALS)
= 28 GALS + 5(9.2 GALS)
= 74 GALS ✓

DESIGN FLOW = 750 GAL/DAY

1/6-DESIGN FLOW = 125 GAL ✓

WITH ALTERNATING DOSING DIVIDE BY 2 = 62.5 GAL

THEREFORE ELECT TO USE 75 GALS DOSE

MINIMUM DISCHARGE RATE

MINIMUM DISCHARGE RATE

= TOTAL NUMBER ⁵/₁₆ PERFORATION X 1.63 GPM

= 2 LATERALS X ((18 PERFORATIONS)/LATERAL) X 1.639 GPM

= 59 GPM

4 total
subsets

875 gallons?
capac
of pump tank

618 - F.F. 618.2

16776 A. E. MULLINIX ROAD

HYDRAULIC PROFILE

ON SITE SEWAGE DISPOSAL SYSTEM

616 -

614 -

612 -

610 -

608 -

606 -

604 -

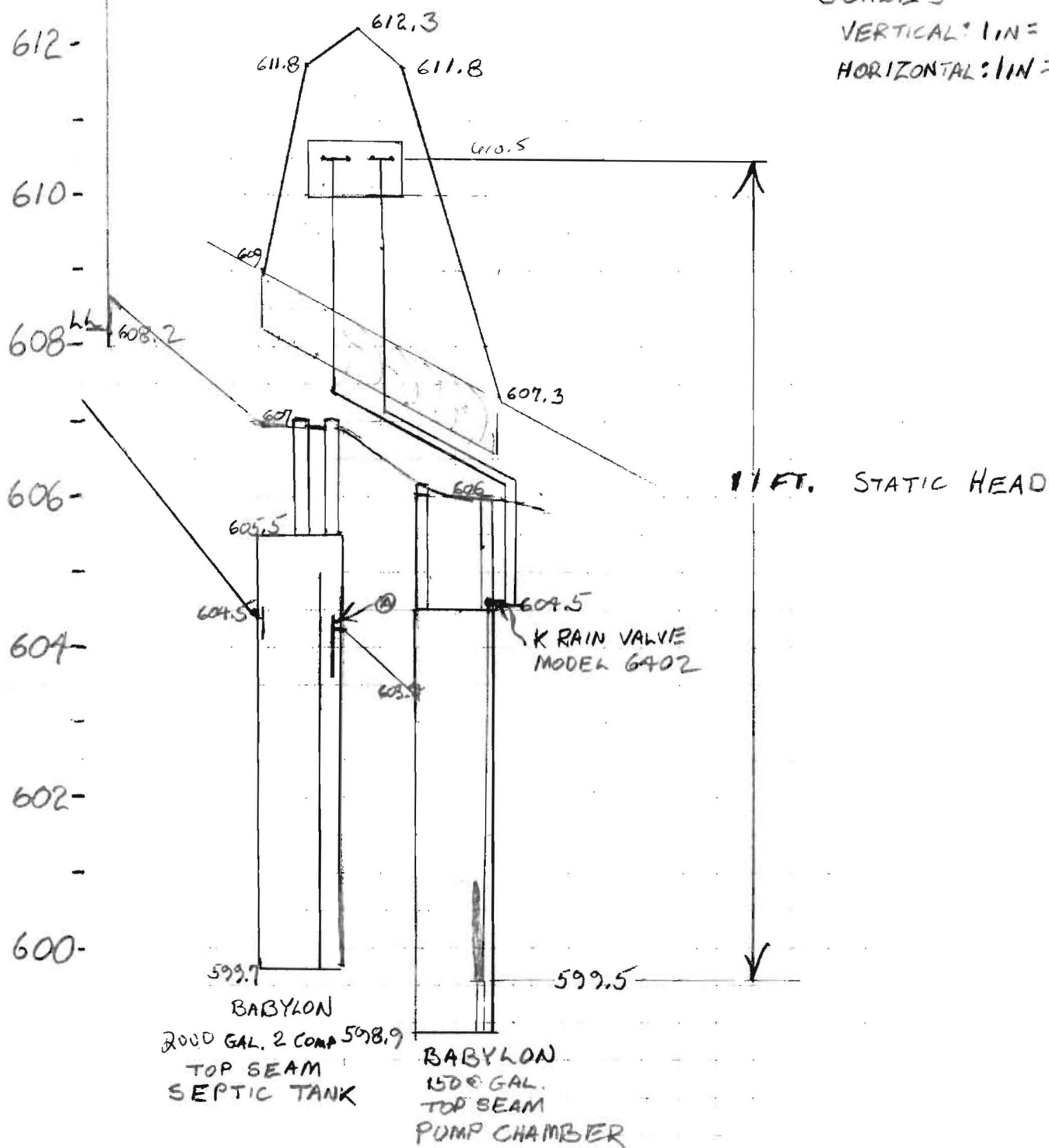
602 -

600 -

SCALES

VERTICAL: 1 IN = 2 FT

HORIZONTAL: 1 IN = 20 FT.



A - ZABEL MODEL 1800 EFFLUENT FILTER

Ernst Environmental Services, Inc.
1907 Midland Road
Baltimore, MD 21222
(410)288-5081

KDDC LAND CO
16776 A. E. Mullinix Road

PUMPING REQUIREMENTS

TOTAL DYNAMIC HEAD (TDH) = STATIC + FRICTION + DISTAL HEAD

STATIC HEAD = 11 FT (FROM HYDRAULIC PROFILE)

FRICTION LOSS

*this is the
we discharge
of pump?*

(3" FM + MANIFOLD)	73 FT
2 - 90°ells (10 per)	20 FT
4 tees (3 per)	12 FT
4 couplings (3 per)	12 FT
1 gate (2 per)	<u>2 FT</u>
	119 FT @ .93 FT/100 FT
	= 1.11 FT

K-RAIN VALUE @ 60 GPM 11.55 FT

FRICTION HEAD = 1.11 FT + 11.55 FT
= 12.7 FT

DISTAL HEAD = 2 FT (MD DESIGN STANDARD)

TOTAL DYNAMIC HEAD = 11 FT + 12.7 FT + 2 FT
= 25.7 FT

MINIMUM DISCHARGE RATE = 59 GPM

USE GOULDS MODEL 3885 SUBMERSIBLE EFFLUENT
PUMP ORDER NO WE0712H
¾ Hp 230v 10 AMPS
(SEE ATTACHED PUMP CURVE)



ITT

Wastewater

Goulds Pumps

WE Series Model 3885

Submersible Effluent Pump

PROSURANCE AVAILABLE FOR
RESIDENTIAL APPLICATIONS.



FEATURES

- **Impeller:** Cast iron, semi-open, non-clog with pump-out vanes for mechanical seal protection. Balanced for smooth operation. Silicon bronze impeller available as an option.
- **Casing:** Cast iron volute type for maximum efficiency. 2" NPT discharge.
- **Mechanical Seal:** Silicon Carbide vs. Silicon Carbide sealing faces. Stainless steel metal parts, BUNA-N elastomers.
- **Shaft:** Corrosion-resistant, stainless steel. Threaded design. Locknut on all models to guard against component damage on accidental reverse rotation.
- **Fasteners:** 300 series stainless steel.
- Capable of running dry without damage to components.
- Designed for continuous operation when fully submerged.



Goulds Pumps is a brand of ITT
Residential and Commercial Water.

www.goulds.com

Engineered for life



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GOULDS PUMPS Wastewater

MODELS

Order Number	HP	Phase	Volts	RPM	Impeller Diameter (in.)	Maximum Amps	Locked Rotor Amps	KVA Code	Full Load Efficiency %	Resistance		Power Cable Size	Weight (lbs.)
										Start	Line-Line		
WE0311L	0.33	1	115	1750	5.38	10.7	30.0	M	54	11.9	1.7	16/3	56
WE0318L			208			6.8	19.5	K	51	9.1	4.2		
WE0312L			230			4.9	14.1	L	53	14.5	8.0		
WE0311M			115			10.7	30.0	M	54	11.9	1.7		
WE0318M			208			6.8	19.5	K	51	9.1	4.2		
WE0312M			230			4.9	14.1	L	53	14.5	8.0		
WE0511H	0.5	1	115	3450	3.56	14.5	46.0	M	54	7.5	1.0	14/3	60
WE0518H			208			8.1	31.0	K	68	9.7	2.4	16/3	60
WE0512H			230			7.3	34.5	M	53	9.6	4.0	14/4	60
WE0538H		3	200		3.56	4.9	22.6	R	68	NA	3.8		
WE0532H			230			3.3	18.8	R	70	NA	5.8		
WE0534H			460			1.7	9.4	R	70	NA	23.2		
WE0537H			575			1.4	7.5	R	62	NA	35.3		
WE0511HH		1	115		3.88	14.5	46.0	M	54	7.5	1.0	14/3	60
WE0518HH			208			8.1	31.0	K	68	9.7	2.4	16/3	60
WE0512HH			230			7.3	34.5	M	53	9.6	4.0	14/4	60
WE0538HH		3	200			4.9	22.6	R	68	NA	3.8		
WE0532HH			230			3.6	18.8	R	70	NA	5.8		
WE0534HH			460			1.8	9.4	R	70	NA	23.2		
WE0537HH			575			1.5	7.5	R	62	NA	35.3		
WE0718H	0.75	1	208	3450	4.06	11.0	31.0	K	68	9.7	2.4	14/3	70
WE0712H			230			10.0	27.5	J	65	12.2	2.7	14/4	70
WE0738H		3	200			6.2	20.6	L	64	NA	5.7		
WE0732H			230			5.4	15.7	K	68	NA	8.6		
WE0734H			460			2.7	7.9	K	68	NA	34.2		
WE0737H			575			2.2	9.9	L	78	NA	26.5		
WE1018H	1	1	208	3450	4.44	14.0	59.0	K	68	9.3	1.1	14/3	70
WE1012H			230			12.5	36.2	J	69	10.3	2.1	14/4	70
WE1038H		3	200			8.1	37.6	M	77	NA	2.7		
WE1032H			230			7.0	24.1	L	79	NA	4.1		
WE1034H			460			3.5	12.1	L	79	NA	16.2		
WE1037H			575			2.8	9.9	L	78	NA	26.5		
WE1518H	1.5	1	208	3450	4.56	17.5	59.0	K	68	9.3	1.1	14/3	80
WE1512H			230			15.7	50.0	H	68	11.3	1.6	14/4	80
WE1538H		3	200			10.6	40.6	K	79	NA	1.9		
WE1532H			230			9.2	31.7	K	78	NA	2.9		
WE1534H			460			4.6	15.9	K	78	NA	11.4		
WE1537H			575			3.7	13.1	K	75	NA	16.9		
WE1518HH		1	208		5.50	17.5	59.0	K	68	9.3	1.1	14/3	80
WE1512HH			230			15.7	50.0	H	68	11.3	1.6	14/4	80
WE1538HH		3	200			10.6	40.6	K	79	NA	1.9		
WE1532HH			230			9.2	31.7	K	78	NA	2.9		
WE1534HH			460			4.6	15.9	K	78	NA	11.4		
WE1537HH			575			3.7	13.1	K	75	NA	16.9		
WE2012H	2	3	230	3450	5.38	18.0	49.6	F	78	3.2	1.2	14/3	83
WE2038H			200			12.0	42.4	K	78	NA	1.7	14/4	83
WE2032H			230			11.6	42.4	K	78	NA	1.7		
WE2034H			460			5.8	21.2	K	78	NA	6.6		
WE2037H			575			4.7	16.3	L	78	NA	10.5		



ITT

GOULDS PUMPS Wastewater

APPLICATIONS

Specifically designed for the following uses:

- Homes, Farms, Trailer Courts, Motels, Schools, Hospitals, Industry, Effluent Systems

SPECIFICATIONS

Pump

- Solids handling capabilities: $\frac{3}{4}$ " maximum.
- Discharge size: 2" NPT.
- Capacities: up to 140 GPM.
- Total heads: up to 128 feet TDH.
- Temperature: 104°F (40°C) continuous, 140°F (60°C) intermittent.
- See order numbers on reverse side for specific HP, voltage, phase and RPM's available.

MOTORS

- Fully submerged in high-grade turbine oil for lubrication and efficient heat transfer.
- Class B insulation on $\frac{1}{3}$ -1½ HP models.
- Class F insulation on 2 HP models.

Single phase (60 Hz):

- Capacitor start motors for maximum starting torque.
- Built-in overload with automatic reset.
- SJTOW or STOW severe duty oil and water resistant power cords.

- $\frac{1}{3}$ – 1 HP models have NEMA three prong grounding plugs.
- 1½ HP and larger units have bare lead cord ends.

Three phase (60 Hz):

- Class 10 overload protection must be provided in separately ordered starter unit.
- STOW power cords all have bare lead cord ends.

■ **Designed for Continuous Operation:** Pump ratings are within the motor manufacturer's recommended working limits, can be operated continuously without damage when fully submerged.

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

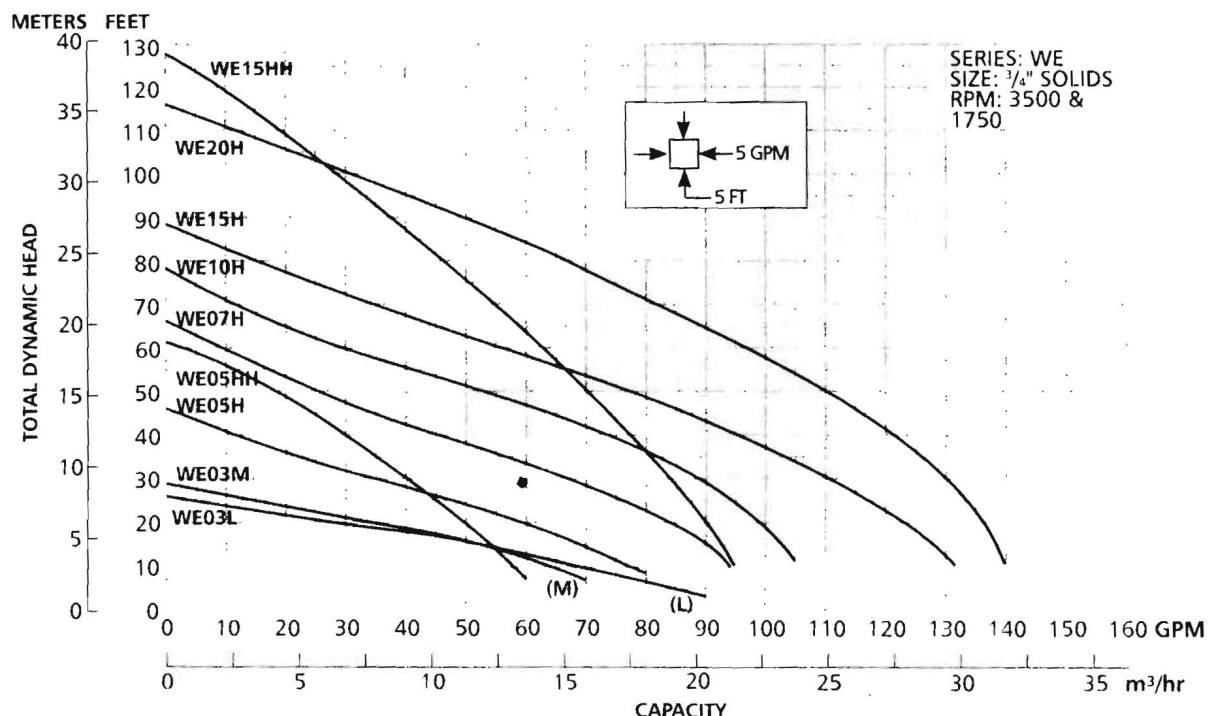
■ **Power Cable:** Severe duty rated, oil and water resistant. Epoxy seal on motor end provides secondary moisture barrier in case of outer jacket damage and to prevent oil wicking. Standard cord is 20'. Optional lengths are available.

■ **O-ring:** Assures positive sealing against contaminants and oil leakage.

AGENCY LISTINGS



Tested to UL 778 and CSA 22.2 108 Standards
By Canadian Standards Association File #LR38549
Goulds Pumps is ISO 9001 Registered.





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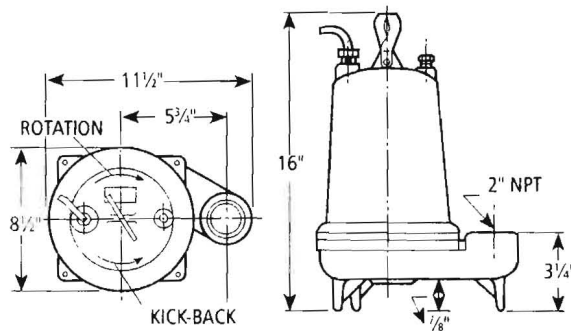
Wastewater

PERFORMANCE RATINGS (gallons per minute)

Order No.	WE03L	WE03M	WE05H	WE07H	WE10H	WE15H	WE05HH	WE15HH	WE20H
HP	1/3	1/3	1/2	3/4	1	1 1/2	1/2	1 1/2	2
RPM	1750	1750	3500	3500	3500	3500	3500	3500	3500
5	86	—	—	—	—	—	—	—	—
10	70	63	78	94	—	—	58	95	—
15	52	52	70	90	103	128	53	93	138
20	27	35	60	83	98	123	49	90	136
25	—	—	48	76	94	117	45	87	133
30	—	—	35	67	88	110	40	83	130
35	—	—	22	57	82	103	35	80	126
40	—	—	—	45	74	95	30	77	121
45	—	—	—	35	64	86	25	74	116
50	—	—	—	25	53	77	—	70	110
55	—	—	—	—	40	67	—	66	103
60	—	—	—	—	30	56	—	63	96
65	—	—	—	—	20	45	—	58	89
70	—	—	—	—	—	35	—	55	81
75	—	—	—	—	—	25	—	51	74
80	—	—	—	—	—	—	—	47	66
90	—	—	—	—	—	—	—	37	49
100	—	—	—	—	—	—	—	28	30

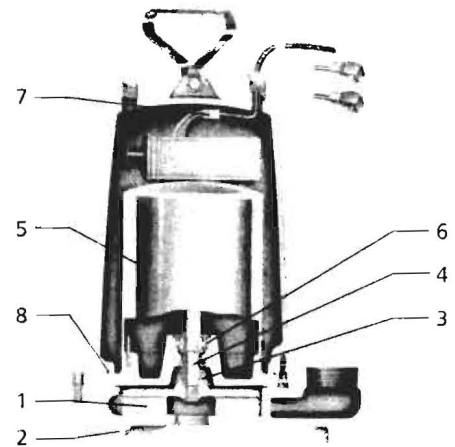
DIMENSIONS

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



COMPONENTS

Item No.	Description
1	Impeller
2	Casing
3	Mechanical Seal
4	Motor Shaft
5	Motor
6	Ball Bearings
7	Power Cable
8	Casing O-Ring



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SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE.

B3885 July, 2006

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Engineered for life

Ernst Environmental Services, Inc.
1907 Midland Road
Baltimore, MD 21222
(410)288-5081

KDDC LAND CO
16776 A. E. Mullinix Road

PUMP CHAMBER FLOAT SET CALCULATIONS

NOTE: CALCULATIONS ARE BASED ON THE USE OF 1500 GALLON SINGLE COMPARTMENT TOP SEAM SEPTIC OR PUMP TANK MANUFACTURED BY BABYLON VAULT OF NEW WINDSOR, MD. NO SUBSTITUTIONS CAN BE MADE WITHOUT PRIOR REVIEW AND APPROVAL OF ERNST ENVIRONMENTAL SERVICES, INC.

GIVEN:

DOSE (D) = 75 GALLONS
DESIGN FLOW (R) = 750 GALLONS/DAY
1 GALLON = 231 IN³

CROSS SECTIONAL AREA (a) = LENGTH X WIDTH
= 122 IN X 71 IN
= 8662 IN²

THEREFORE:

VERTICAL DISTANCE PUMP ON/PUMP OFF (d)
 $d = (D \times (231 \text{ IN}^3/\text{GALLON}))/a$
 $= (75 \text{ GAL} \times (231 \text{ IN}^3/\text{GALLON}))/8662 \text{ IN}^2$
 $= 2.00 \text{ IN}$ - *up starts at 2 in*
USE 2 IN

VERTICAL DISTANCE HIGH WATER ALARM TO PUMP CHAMBER INLET (F)

$F = (R \times (231 \text{ IN}^3/\text{GALLON}))/a$
 $= 750 \text{ GALLON} \times (231 \text{ IN}^3/\text{GALLON})/8662 \text{ IN}^2$
 $F = 20.00 \text{ IN}$
USE 20 IN

SEE ATTACHED PUMP STATION DETAIL

Babylon

SINCE 1930

PHONE:

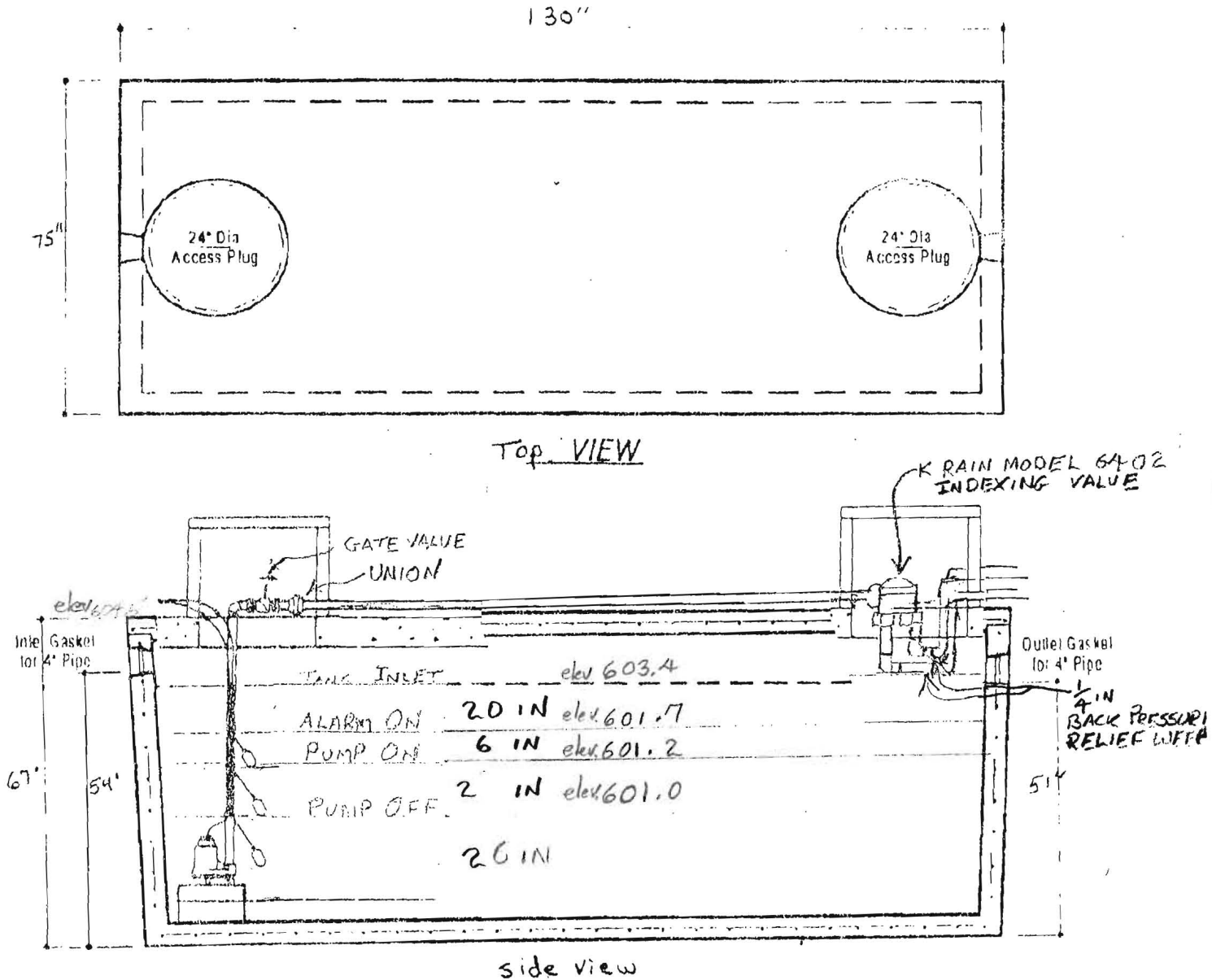
410-848-0393

FAX:

410-848-3551

Burial Vaults - Septic Tanks

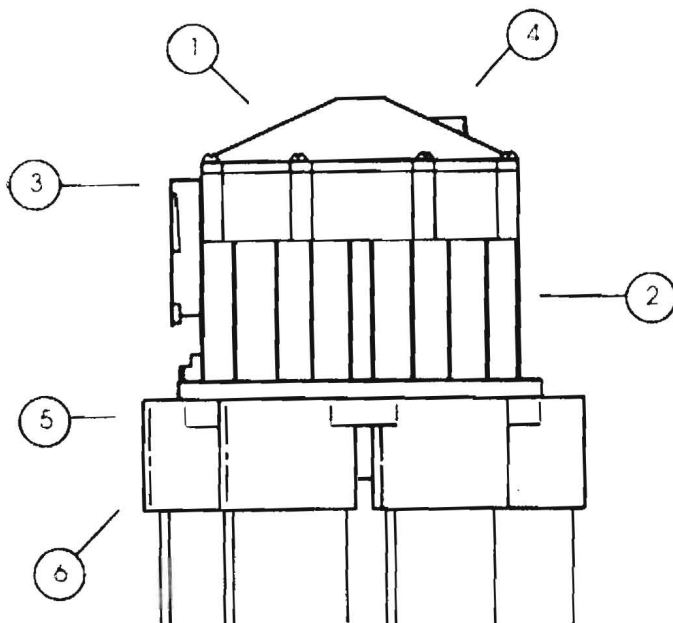
1500 gallon septic or pump TANK

925 WAKEFIELD VALLEY ROAD
NEW WINDSOR, MD 21776

Design Data & General INFO.

- (1) Concrete STRENGTHS = 6000 PSI @ 28 DAYS
- (2) Cement PORTLAND Type I/II 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 inch cover
- (5) Top SLAB SEALED WITH Butyl TAPE
- (6) 4" walls, bottom, top

PUMP STATION DETAIL
16776 A.E. MULLINIX ROAD

HYDROTEK® 6000**VALVE FUNCTIONS**

1. Valve Top: A high strength metal die cast top which is secured to the valve body by eight stainless steel screws.

2. Valve Body: A high strength metal die cast housing.

3. Inlet: Female 1 ½" NPT inlet for connection to water source.

4. Vacuum Breaker Port: Used to prevent back-siphon of water to source.

5. Valve Bottom: High strength ABS plastic bottom which is secured to valve body with 6 stainless steel screws.

6. Outlets: Allows for slip and glue connection to 1 ½" PVC pipe.

CAM REPLACEMENT INSTRUCTIONS

Replacement cams are available to increase or decrease the number of outlets to be used on the HYDROTEK® 6000 Series Valve

6400 Series four outlet valves have interchangeable cams for two, three or four zone operation.

6600 series six outlet valves have interchangeable cams for five or six zone operation.

To replace cam, first remove valve top by removing eight valve top retaining screws. Remove two cam retaining screws which hold cam on the underside of the valve

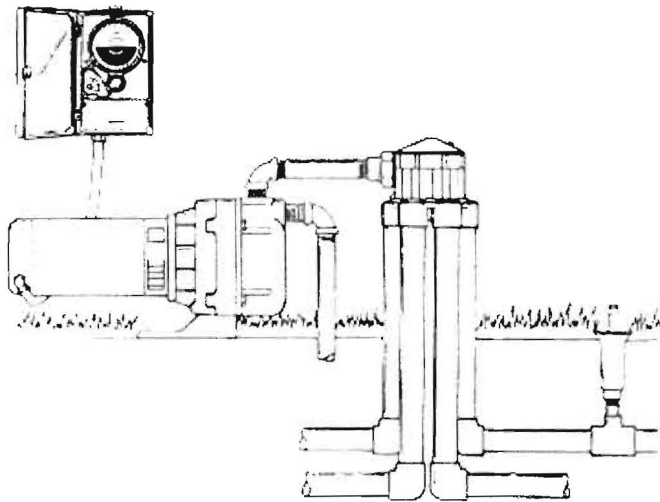
top.

Insert replacement cam into valve top, ensuring that the wide notch on cam is aligned with notch on valve top, and secure with two cam retaining screws.

Replace top, ensuring body seal is in place.

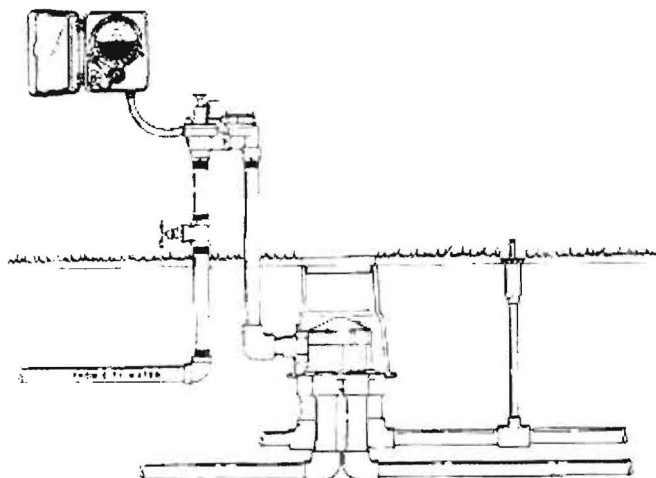
VALVE APPLICATIONS

Pump Fed application



For direct pump - fed installations, the HYDROTEK® 6000 Series Valve is directly connected to the discharge side of the pump and is cycled from one zone to the next by turning the pump off and on . Install the valve as close to the pump as possible and ensure suction line to the pump has a proper check valve installed and all joints are completely sealed.

In-line Valve Application



For high flow city water supplied installations using an in-line valve, ensure the HYDROTEK® Valve is installed as close to the in-line valve as possible. The 6000 Series Valve may be mounted below ground in a valve box (do not direct bury). Ensure backflow prevention is in compliance with local codes.

VALVE INSTALLATION

Prior to installation of HYDROTEK® 6000 Series Valve, make sure that the system is designed using adequate pipe sizes and control valves to ensure maximum performance of the valve.

For installation with large terrain elevations, or applications with high lift requirements such as overhead systems in greenhouses, the valve should be installed at the highest point in the system, or check-valves should be installed near the valve in the elevated lines to prevent the back-flow of water from the higher locations to the lower zones.

When connecting the lines to the valve outlets, ensure that the correct cam is installed. See diagram for proper zone hookup of outlets.

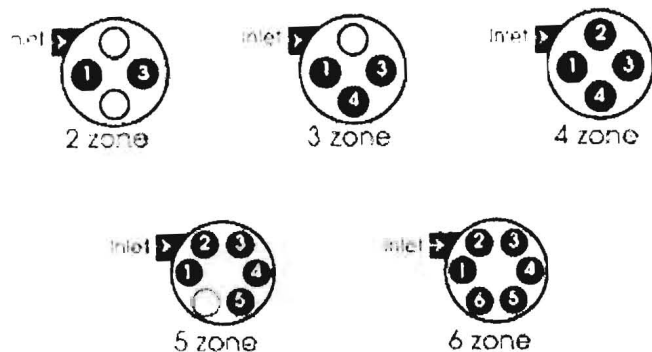
Do NOT turn the valve upside down when gluing the lines into the valve outlets. Glue may run down into the valve and interfere with valve operation. Allow glue to dry for at least two hours before operating or testing the valve. For best results, use a multi-purpose glue which is compatible with ABS plastic.

To seal off any unused outlets, install a piece of PVC pipe at least six inches in length to the outlet and cap the pipe. This will allow additional zones to be added easily at a later time. Make sure proper cam is installed for number of zones to be used.

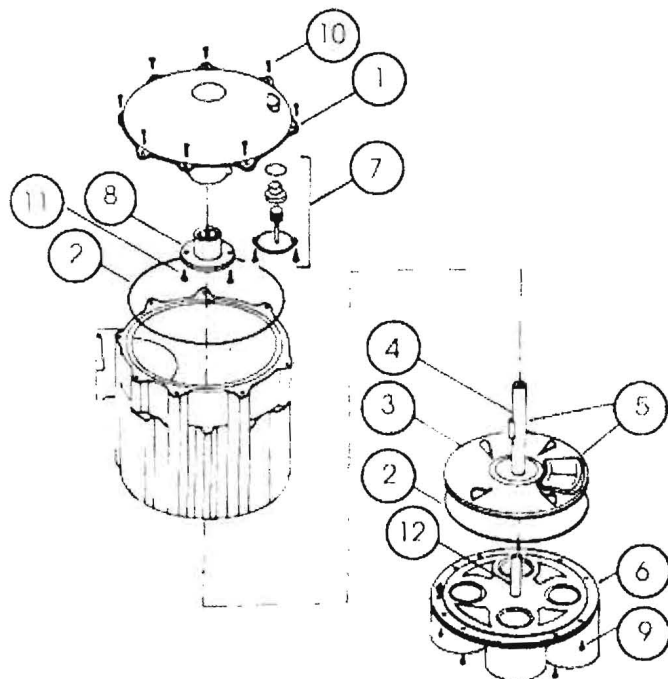
In regions of the country where winter temperatures may cause damage to exterior pipes, the HYDROTEK® 6000 Series Valve should be winterized. To protect the control valve and other irrigation components from damage, the entire system should be drained or cleared using compressed air. Contact your K-Rain dealer for information on the winterization requirements in your area.

Active Zone Diagram

Black dots indicate active outlets for cam being used



HYDROTEK® 6000 VALVE PARTS



1	4 Outlet valve top 6 Outlet valve top	8002804 8002806
2	Valve body seal	8600000
3	Rubber flap disk	8003000
4	Stem with .032 spring Stem with .028 spring	8004002 8004003
5	Stem/disk assy.with .032 spring Stem/disk assy.with .028 spring	8003050 8003051

6	4 Outlet valve bottom 6 Outlet valve bottom	8002704 8002706
7	Vacuum breaker assy.	8005001
8	Two zone, 4 outlet cam Three zone, 4 outlet cam Four zone, 4 outlet cam Five zone, 6 outlet cam Six zone, 6 outlet cam	8002902 8002903 8002904 8002905 8002906
9	Valve bottom screws (6) (10-24 x3/4 Phil Pan SS)	8004410
10	Valve top screws (8) (10-24 x5/8 Slit.phst SS)	8004412
11	Cam retaining screws (2) (6 x1/2 Phil Pan SS)	8004414
12	Valve bottom S.S Pin (1/4" dia.)	8600001

TROUBLESHOOTING

1. Problem: Valve Does Not Change or Cycle to Next Zone or Outlet

Cause: Debris or foreign objects preventing proper movement of stem and disk assembly.

Solution: Remove valve top and check for foreign objects. Clean build-up from walls of valve as necessary.

Solution: Check for freedom of movement of stem and disk assembly up and down over the center pin in bottom of valve. Scale deposits may build up on the pin and hold stem and disk assembly down. Clean pin and again check for freedom of movement.

Cause: Disk may have expanded and is rubbing against inside walls of body.

Solution: Replace disk and clean build-up from walls of valve as necessary.

Cause: Restriction of flow causing pressure in valve to build up, preventing valve from cycling.

Solution: Be sure that all operating outlets are not capped and that the flow to operating zones is not restricted in any manner.

Solution: The backflow of water from uphill lines may be preventing the valve from cycling properly. This can happen when the valve is placed too far below an elevated irrigation line. If the valve cannot be placed close to the high point of the system, a check valve should be installed near the valve in the outlet line that runs uphill from the valve.

2. Problem: Water Comes Out of all the Valve Outlets

Cause: Stem and disk assembly not seating properly on valve outlet.

Solution: Check for sufficient water flow . A minimum of 15 GPM is required to properly seat the disk.

Solution: Remove the valve top and clean the inside walls as necessary to ensure that nothing is interfering with the up and down movement of the stem and disk assembly inside the valve.

Solution: Make sure that the operating outlets are not capped and that the flow to the operating zones is not restricted in any manner.

Solution: Replace disk if necessary.

Cause: Too many sprinkler heads on a zone will cause insufficient pressure for disk to seat firmly over valve outlet.

Solution: Reduce the number of heads on the zone to obtain the proper sprinkler operating pressure.

3. Problem: Valve Skips Outlets or Zones.

Cause: For a pump installation, the pump may be losing its prime, causing the water flow to surge. This will cause the valve to cycle quickly several times, skipping one or more zones. Verify that the flow to the valve is constant by turning ON after having been OFF for at least 15 minutes. The flow should be steady and uninterrupted.

Solution: Seal any pump suction line leaks.

Solution: Replace or install suction line check valve to prevent pump from losing its prime.

Cause: The stem and disk assembly is being advanced past the desired outlet.

Solution: Ensure that the correct cam for the desired number of zones is installed and that the outlet lines are installed to the correct outlet ports of the valve.

TECHNICAL INFORMATION

Valve Top and Body Construction	Die Cast Metal
Valve Bottom Construction	ABS High Strength Plastic
Flow Range	15 - 100 G.P.M.
Inlet	Threaded 1 1/2" NPT
Outlet	Allows for 1 1/2" PVC pipe tap and glued connection

FLOW AND PRESSURE LOSS CHARACTERISTICS

6000 Series 4 Outlet Valve

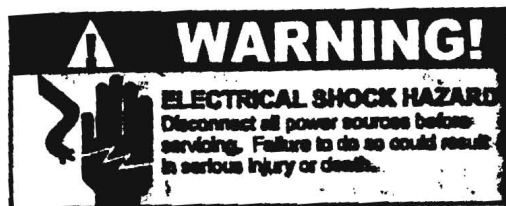
Flow (GPM)	5	20	30	40	50	60	70	80	90	100	110	120	130	140	150
Pressure	2.0	2.5	3.0	3.5	4.0	5.0	6.0	7.5	9.0	10.0	10.5	11.0	12.0	12.5	13.0

6000 Series 6 Outlet Valve

Flow (GPM)	15	20	30	40	50	60	70	80	90	100	110	120	130	140	150
Pressure	2.0	3.0	3.5	4.0	5.0	6.0	7.5	9.0	10.0	11.0	11.5	12.0	12.5	13.0	14.0

Installer Friendly Series SJE-Rhombus® Type IFS

Installation Instructions and Operation/Troubleshooting Manual



This control panel must be installed and serviced by a licensed electrician in accordance with the National Electric Code NFPA-70, state 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 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.

Installation

This Installer Friendly Series (IFS) control panel was designed to control single phase pump(s). The controller records pump status, number of cycles, elapsed run time, and current float status.

Mounting the Control Panel

Note: The control panel should not be mounted in a location that may be subject to submersion.

1. Determine mounting location for panel. If distance exceeds the length of either the float cables or the pump power cables, splicing will be required. For outdoor or wet installation, we recommend the use of an SJE-Rhombus® liquid-tight junction box with liquid-tight connectors to make required connections. You must use conduit sealant to prevent moisture or gases from entering the panel.
2. Mount control panel with mounting devices furnished.
3. Determine conduit entrance locations on control panel. Check local codes and schematic for the number of power circuits required. (Float cables require separate conduit from power and pump cables.)

Note: Be sure the proper power supply voltage, amperage, and phase meet the requirements of the pump motor(s) being installed. If in doubt, see the pump identification plate for voltage/phase requirements.

4. Drill proper size holes for type of connectors being used.

Note: If using conduit, be sure that it is of adequate size to pull the pump cable(s) through.

5. Attach cable connectors and/or conduit connectors to control panel.

**FOR INSTALLATION REQUIRING
A SPLICE, FOLLOW STEPS 6-10;
FOR INSTALLATION WITHOUT A
SPLICE, GO TO STEP 11.**

6. Determine location for mounting junction box according to local code requirements. Do not mount the junction box inside the sump or basin.
7. Mount junction box to proper support.
8. Run conduit to junction box. Drill proper size holes for the type of conduit used.

Warranty void if panel is modified.

Call factory with servicing questions:

1-800-RHOMBUS

(1-800-746-6287)

Manufactured by:

**SJE
Rhombus**
CONTROLS

22650 County Highway 6 ■ P.O. Box 1708

Detroit Lakes, Minnesota 56502 USA

1-888-DIAL-SJE (1-888-342-5753)

Phone: 218-847-1317 ■ Fax: 218-847-4617

E-mail: sje@sjerhombus.com

Website: www.sjerhombus.com

SJE-Rhombus
Printed in USA
11/92 1B-Rev 2.05

INSTALLER FRIENDLY SERIES™ - IFS Single Phase Simplex (Demand/TD)

Single phase, simplex demand dose or timed dose, float controlled system for pump control and system monitoring.

The IFS simplex control panel is designed to control one 120, 208, 240 VAC single phase pump in water and sewage installations.

The IFS control panel features a simple, easy-to-use touch pad on the inner door for programming and monitoring pump and float operation.

The panel configuration can be easily converted in the field to either a timed dose or demand dose by a simple jumper change, and by adding a display board (timed dose only) for programming pump ON/OFF times.

TOUCH PAD FEATURES

- A. **Control Power Indicator/Fuse.** Indicator light will illuminate if control power is present in panel.
- B. **Control Fuse Replace Indicator** will illuminate if control fuse is blown. Alarm will activate if control fuse is blown.
- C. **Alarm Power Indicator/Fuse.** Indicator light will illuminate if alarm power is present in panel.
- D. **Alarm Fuse Replace Indicator** will illuminate if alarm fuse is blown.
- E. **Float Indicators** will illuminate when floats are activated. Alarm will activate if a float operates out of sequence and the appropriate float indicator will flash.
- F. **HOA (Hand-Off-Automatic) Buttons** control pump mode with indication. Hand mode defaults to Automatic when stop level is reached.
- G. **Pump Run Indicator** will illuminate when pump is called to run.
- H. **Seven-Segment LED Display** shows mode, pump elapsed time (hh:mm), events (cycles), alarm counter, timed dose override counter, and ON/OFF times. (Display is standard on timed dose and optional on demand dose.)
- I. **Next Push Button** when pressed toggles display through: mode, elapsed time meter, cycle counter, and alarm counter. Timed dose mode also provides override counter and pump ON/OFF times.
- J. **Repeat Cycle Timer Display Push Buttons** when pressed sets pump ON/OFF times (timed dose only).

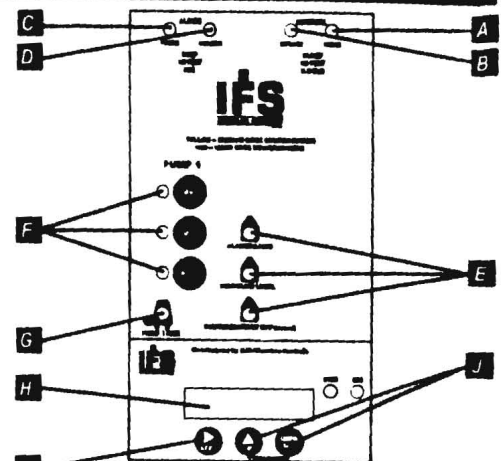
Note: LED display will turn off after one minute of not being used.

PANEL COMPONENTS

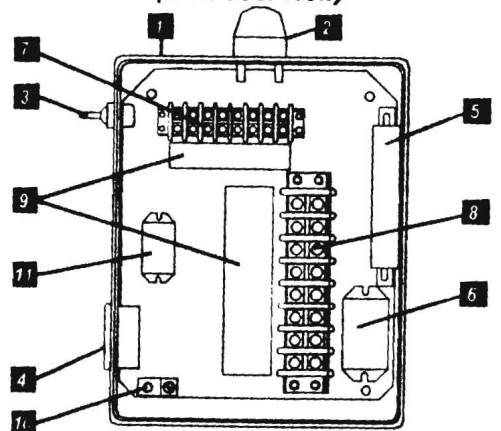
1. **Enclosure base** measures 10 X 8 X 4 inches (25.4 X 20.32 X 10.16 cm). NEMA 4X (ultraviolet stabilized thermoplastic with removable mounting feet for outdoor or indoor use). **Note:** Options, voltage, and amp range selected may change enclosure size and component layout.
2. **Red Alarm Beacon** provides 360° visual check of alarm condition.
3. **Exterior Alarm Test/Normal/Silence Switch** allows horn and light to be tested and horn to be silenced in an alarm condition. Alarm automatically resets once alarm condition is cleared.
4. **Alarm Horn** provides audio warning of alarm condition (83 to 85 decibel rating).
5. **Circuit Breaker** (optional) provides pump disconnect and branch circuit protection.
6. **Power Relay** controls pump by switching electrical line(s). Definite purpose contactors used when pump full load amps are above 15.
7. **Float Connection Terminal Block**
8. **Large Incoming Power/Pump Connection Terminal Block**
9. **Terminal Block Installation Labels**
10. **Ground Lug**
11. **Alarm Activation Relay**

NOTE: Schematic/Wiring Diagram and Pump Specification Label are located inside the panel on enclosure cover

SEE BACKSIDE FOR COMPLETE LISTING OF AVAILABLE OPTIONS.



**Model Shown IFS11W904X8AC
(Inner door view)**



**Model Shown IFS11W904X8AC
(Inside view)**

Reg. Cdn Pat. & TM Off

FEATURES

- Entire control system (panel and switches) is UL Listed to meet and/or exceed industry safety standards
- Dual safety certification for the United States and Canada
- Standard package includes:
Demand Dose - three 20' Sensor Float® control switches
Timed Dose - two 20' Sensor Float® control switches
- Complete with step-by-step installation instructions
- Three-year limited warranty



SJE Rhombus
CONTROLS

PO Box 1708, Detroit Lakes, MN 56502

1-888-DIAL-SJE • 1-218-847-1317

1-218-847-4617 Fax

email: sje@sjerhombus.com

www.slerhombus.com

Installation Instructions

9. Identify and label each wire before pulling through conduit into control panel and junction box. Make wire splice connections at junction box.
10. Firmly tighten all fittings on junction box.
11. If a junction box is not required, pull cables through conduit into control panel.
12. Connect pump wires per wiring diagram or schematic and float wires to the proper terminals as shown on the schematic.
13. Connect pump, control, and alarm incoming power conductors to proper position on terminals. See schematic for terminal connections.

VERIFY CORRECT OPERATION OF CONTROL PANEL AFTER INSTALLATION IS COMPLETE.

Installation of Floats

CAUTION: If control switch cables are not wired and mounted in the correct order, the pump system will not function properly. Control switches need to run in separate conduit from pump and power lines.

WARNING: Turn off all power before installing pump wires in pump chamber. Failure to do so could result in serious or fatal electrical shock.

1. Determine your normal operating level and desired float configuration, as illustrated in Figures 2-5.
2. Mount float switches at appropriate levels. Be sure that floats have free range of motion without touching each other or other equipment in the basin.
3. For mounting clamp installation: place the cord into the clamp as shown in Figure 1. Locate the clamp at the desired activation level and secure the clamp to the discharge pipe as shown in Figure 1.

NOTE: Do not install cord under hose clamp.

4. Tighten the hose clamp using a screwdriver. Over tightening may result in damage to the plastic clamp. Make sure the float cable is not allowed to touch the excess hose clamp band during operation.

NOTE: All hose clamp components are made of 18-8 stainless steel material. See your SJE-Rhombus® supplier for replacements.

5. If using an optional redundant off float, mount slightly below the low level float.
6. The alarm float can be positioned anywhere that the alarm level is desired.

Figure 1

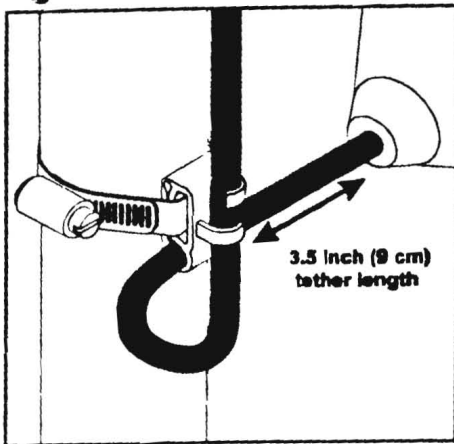


Figure 2
Simplex/Duplex Timed Dose

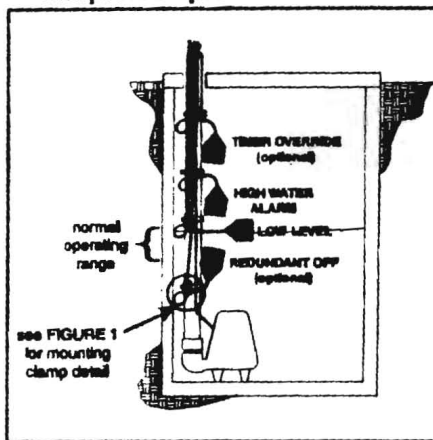


Figure 3
Simplex Demand

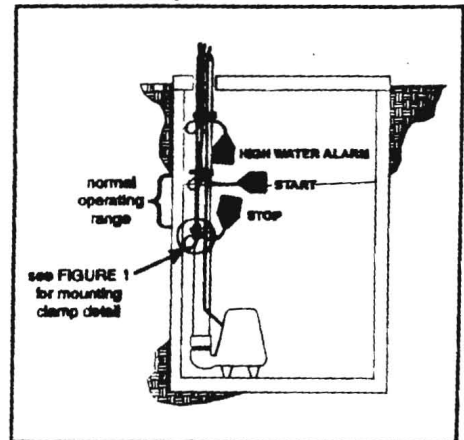


Figure 4
Duplex Demand 3 Float

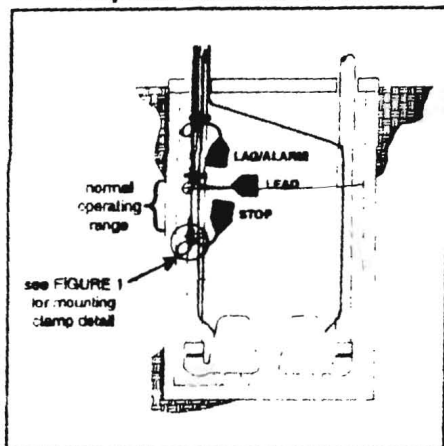
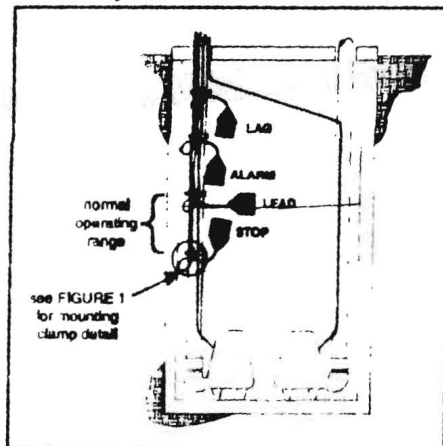


Figure 5
Duplex Demand 4 Float



Operations

The Installer Friendly Series (IFS) control panel uses float switches to continuously monitor and control the liquid level in the tank.

Hand Operation - The stop/redundant off float must be raised to put panel in HAND operation. To override the stop/redundant off float, press and hold the HAND button. The pump runs until the HAND button is released. The panel then returns to the AUTO mode. If the stop/redundant off float is raised and the panel is placed in the HAND mode, and left in the HAND mode, the pump continues to run until the stop/redundant off float lowers. The panel then returns to the AUTO mode.

Off Operation - The panel is in the OFF mode.

Auto Operation - In time dose (t-dose) mode, when the panel is in the AUTO mode, the timer controls pump ON and OFF time as long as the low level float is raised. In demand (d-dose) mode, the stop and start float controls the pump.

Alarm Count- Shown on display as "AL-Ct", counts the number of times the alarm is activated. Note: Alarm counter does not include testing operations in the total count. High alarm and floats out of sequence add to count.

Override Count- (Timed dose applications only.) Shown on display as "OR-Ct", counts the number of times the override operation occurs. Note: the override float is optional.

Green Control and Alarm Power Indicators - Illuminates when control power and alarm power is present.

Red Control and Alarm Fuse Replacement Indicators - Illuminates when control power and alarm power is present and the control fuse or alarm fuse is blown. If the control fuse needs replacing, the panel sounds an alarm.

Display- Will turn off after one minute of non-use.

Float Indicators - Illuminates if the float is raised. Flashes if the float is out of sequence and places the panel in alarm mode.

Timer Override Float - Overrides the OFF time and pump will run for full dose ON time (timed dose only, optional).

Display Board (optional for demand dose)

Viewing panel settings

With control power supplied to panel:

Press  button. The display will show **t-dose** for timed dose applications, or **d-dose** for demand applications.

Press  button. The display will show ETM count in hh:mm.

Press  button. The display will show CC count.

Press  button. The display will show ETM count (pump 2) in hh:mm (duplex panels only).

Press  button. The display will show CC count (pump 2) (duplex panels only).

Press  button. The display will show **AL-Ct** alarm count.

Press  button. The display will show **tO-Ct** timer override count (timed dose mode only).

Press  button. The display will flash **On**, then the ON time in hh:mm:ss (timed dose mode only).

Press  button. The display will flash **OFF**, then the OFF time in hh:mm:ss (timed dose mode only).

Program ON and OFF times for TD panels

With control power supplied to panel:

Press and hold  button for 3 seconds until **Prog** is displayed.

The display will flash **ON**, then the time in hh:mm:ss.

Setting pump ON & OFF times (follow Section A)

Section A

Press  button to display time in hh:mm:ss.

Press  button until desired digit flashes

Press  button until desired time is achieved.

Repeat process pressing  and  buttons until desired time is reached.

Press  button to save.

Press  button. The display will flash **OFF** and show the OFF time in hh:mm:ss. Repeat the instructions in **Section A** to set OFF times.

Press and hold  button for 3 seconds until **run** is displayed.

Timer programming is complete.

Display Board (cont'd)

Program Pump sequence "ALT", "2-1" or "1-2"
(Duplex only)

With control power supplied to panel:

Press and hold  button for 3 seconds until **Prog** is displayed.

Press  button until **ALtEm** flashes with either **ALt**, **2-1**, or **1-2** flashing.

Press  button to display **ALt**, **2-1**, **1-2**.

Press  button until desired sequence is achieved.

Press and hold  button for 3 seconds until **run** is displayed.

Pump sequence programming is complete.

Troubleshooting

Float Controls

1. Check the floats during their entire range of operation. Clean, adjust, replace and repair damaged floats.
2. Measure the float resistance to determine if the float is operating properly.

To measure float resistance:

- a. Isolate the float by disconnecting one or both of the float leads from the float terminals.
- b. Place one ohmmeter lead on one of the float wires, and the other ohmmeter lead on the other float wire.
- c. Set the ohmmeter dial to read ohms and place on the R X 1 scale. With the float in the "off" position, the scale should read infinity (high resistance), if not replace the float.

With the float in the "on" position, the scale should read close to zero, if not replace the float. Readings may vary depending on the accuracy of the measuring device.

Magnetic Contactor Coil

To measure the coil, disconnect one of the coil leads. Measure the coil resistance by setting the ohmmeter on the R X 1 scale. A defective coil will read zero indicating a short, or infinity (high resistance) indicating an opened coil. Replace defective contactor.

Fuse

To check the continuity of the fuse, pull the fuse out of the fuse holder. With the ohmmeter on the R X 1 scale, measure resistance. A reading of infinity (high resistance) indicates a blown fuse that must be replaced with a fuse of the same type, voltage, and amp rating.

Alarm Light

With power on, hold the test/normal/silence switch in the "test" position. The alarm light should turn on. If not, replace the bulb with that of the same type.

Alarm Horn

With power on, hold the test/normal/silence switch in the "test" position. The alarm horn should turn on. If not, replace the horn with that of the same type.

SJE-Rhombus® Three-Year Limited Warranty

SJE-RHOMBUS® warrants to the original consumer that this product shall be free of manufacturing defects for three years after the date of consumer purchase. During that time period and subject to the conditions set forth below, **SJE-RHOMBUS®** will repair or replace, for the original consumer, any component which proves to be defective due to defective materials or workmanship of **SJE-RHOMBUS®**.

ELECTRICAL WIRING AND SERVICING OF THIS PRODUCT MUST BE PERFORMED BY A LICENSED ELECTRICIAN.

THIS WARRANTY DOES NOT APPLY: (A) to damage due to lightning or conditions beyond the control of **SJE-RHOMBUS®**; (B) to defects or malfunctions resulting from failure to properly install, operate or maintain the unit in accordance with printed instructions provided; (C) to failures resulting from abuse, misuse, accident, or negligence; (D) to units which are not installed in accordance with applicable local codes, ordinances, or accepted trade practices; and (E) to units repaired and/or modified without prior authorization from **SJE-RHOMBUS®**.

Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

TO OBTAIN WARRANTY SERVICE: The consumer shall assume all responsibility and expense for removal, reinstallation, and freight. Any item to be repaired or replaced under this warranty must be returned to **SJE-RHOMBUS®**, or such place as designated by **SJE-RHOMBUS®**.

ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS ARE LIMITED TO THE DURATION OF THIS WRITTEN WARRANTY. SJE-RHOMBUS® SHALL NOT, IN ANY MANNER, BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES AS A RESULT OF A BREACH OF THIS WRITTEN WARRANTY OR ANY IMPLIED WARRANTY.

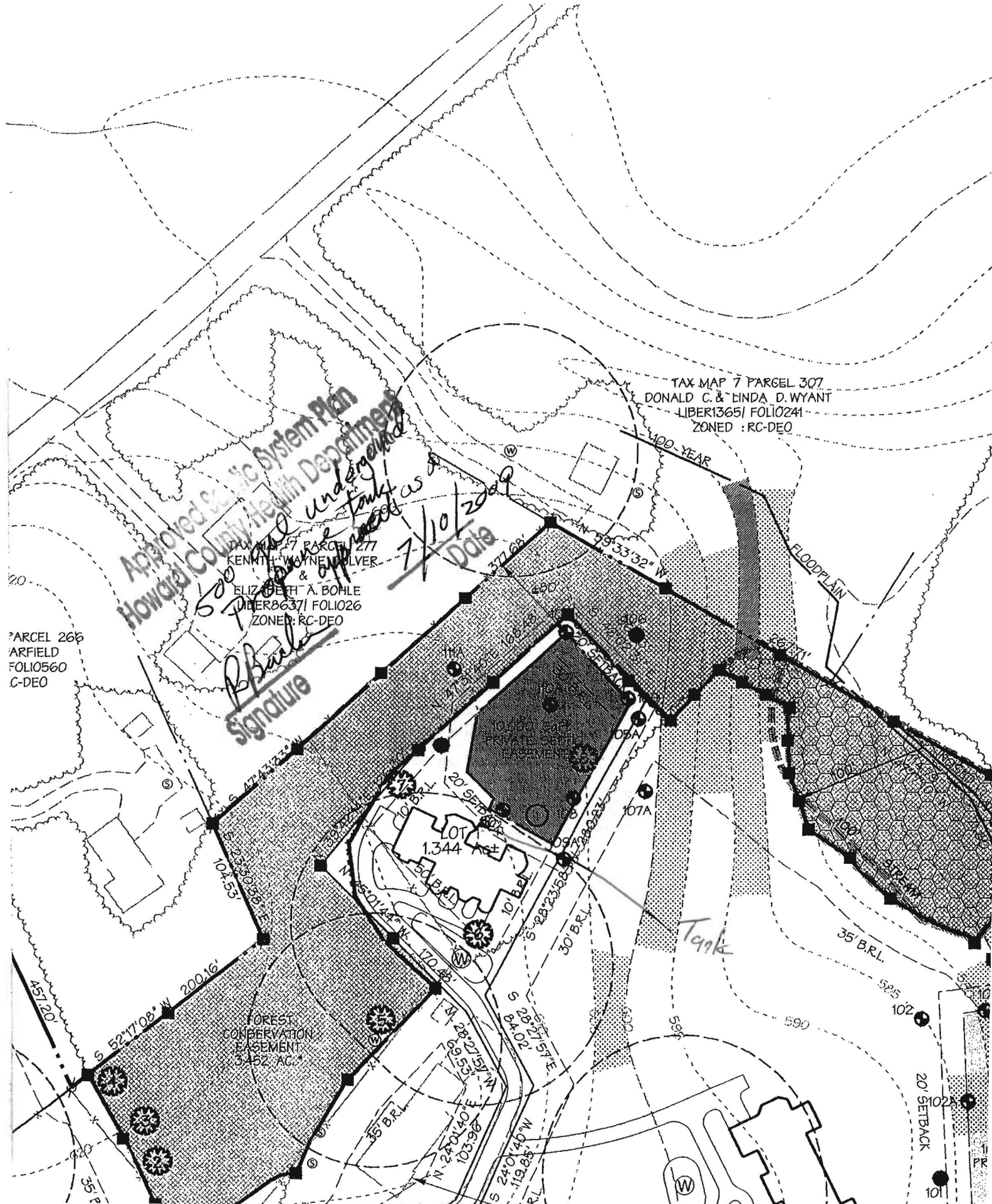
PARCEL 266
ARFIELD
FOLI0560
C-DEO

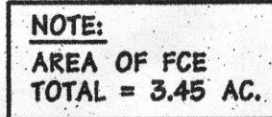
Approved Public System Plan
Howard County Health Department
60' Pond
underground tanks as of 7/10/2009
Date

TAX MAP 7 PARCEL 277
KENNETH WAYNE POLVER
&
ELIZABETH A. BOHLE
OWNER 86371 FOLI026
ZONED: RC-DEO

R. Backe
Signature

TAX MAP 7 PARCEL 307
DONALD C. & LINDA D. WYANT
LIBER13651 FOLI0241
ZONED: RC-DEO





DATA SOURCES:

TOPOGRAPHIC DATA OBTAINED FROM HOWARD COUNTY
GIS DATED MARCH 1998.
BOUNDARY INFORMATION FIELD RUN SURVEY BY DMW
DATED JUNE 2005.

APPROVED: HOWARD COUNTY DEPT. OF PLANNING & ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

CHIEF, DIVISION OF LAND DEVELOPMENT _____ DATE _____

Date	No.	Revision Description
------	-----	----------------------

Minor Subdivision
16780 A.E. Mullinix Road
Supplemental Sheet

Howard County, Maryland



Daft-McCune-Walker, Inc.
200 East Pennsylvania Avenue
Towson, Maryland 21286
(410) 296-3333
Fax 296-4705

**A Team of Land Planners,
Landscape Architects,
Engineers, Surveyors &
Environmental Professionals**

TAX MAP '7 Grid 22 PARCEL 323, 512
4th ELECTION DISTRICT OF HOWARD COUNTY, MARYLAND

FOREST CONSERVATION PLAN

Des. By	CH JS	Scale	1" = 100'	Proj. No.	04034 A
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Des. By	CH, PC	Scale	1" = 100'	Proj. No.	C-100-177
Rev. By	MDP	Date	12/8/06		

1 of 2

1 of 2

F-06-044

TREE	DESCRIPTION	CONDITION	PROPOSED STATUS
1	48" <i>Quercus rubra</i>	Fair	To be retained
2	32" <i>Quercus rubra</i>	Fair	To be retained
3	46" <i>Twin Quercus prinus</i>	Poor	To be retained
4	43" <i>Twin Quercus prinus</i>	Poor	To be retained
5	33" <i>Quercus prinus</i>	Fair	To be retained
6	35" <i>Twin Quercus prinus</i>	Poor	To be removed
7	34" <i>Quercus prinus</i>	Fair	To be removed
8	34" (estimated) <i>Quercus alba</i>	Poor	To be removed

12/13/06
Date



Landscape Architect No. 3173

