

ADDRESS: 1733 Skillman Lane, Petaluma
APN 048-091-003

**CALCULATIONS FOR MOUND
PRIVATE SEWAGE DISPOSAL SYSTEM**

ABSORPTION RATE: 0.614 g/sf/day
745 gpd Design Capacity
SLOPE: 5%

WASTEWATER LOAD: (Design loading rate, DLR)

| | |
|----------------------------------|---------------|
| 10 Beds x 60 gallons per day | = 600 gallons |
| 8 employees x 15 gallons per day | = 120 gallons |
| 10 visitors x 2.5 gallons | = 25 gallons |
| <hr/> | |
| Total | = 745 gpd |

SYSTEM CONFIGURATION:

Existing 600 gpd mound to remain in use. New 145 gpd mound to be constructed.

SOIL LOADING RATE:

0.545 gal/sf/day

LINEAR LOADING RATE:

4.8 gpd/linear foot

SAND FILL LOADING RATE:

Use medium-coarse fill sand with less than 5% smaller than 0.53 mm.

Infiltration rate = 1.0 gal/sf/day

SIZE ABSORPTION AREA:

Width = LLR/SandLR
= 4.8 gpd/lf/1.0 gpd/sf
= 4.8'

Length = DLR/LLR (**New mound**)
= 145 gpd/4.8 gpd/lf
= 30.2', use 35 linear feet

BASAL WIDTH:

$$\begin{aligned}\text{Basal width} &= \text{LLR/SLR} \\ &= 4.8 \text{ gpd/lf}/0.545 \text{ gpd/sf} \\ &= 8.8' \text{ min.}\end{aligned}$$

MOUND HEIGHT:

$$\begin{aligned}\text{Fill depth} &= 1.0' \text{ min. beneath absorption bed} \\ \text{Bed depth} &= 0.75' \text{ with } 0.5' \text{ below pipe}\end{aligned}$$

$$\begin{aligned}\text{Fill depth at downslope edge bed} &= 1.0'+0.05(4.8') \\ &= 1.24'\end{aligned}$$

$$\begin{aligned}\text{Fill depth at top of downslope shoulder} &= 1.24'+0.75' \\ &\quad +0.05(2') \\ &= 2.09'\end{aligned}$$

$$\begin{aligned}\text{Fill depth at top of upslope shoulder} &= 1.0'+0.75'-0.05(2) \\ &= 1.65'\end{aligned}$$

$$\begin{aligned}\text{Topsoil cover at centerline} &= 1.5' \text{ min.} \\ \text{Topsoil cover at edge bed} &= 1.0' \text{ min.}\end{aligned}$$

UPSLOPE WIDTH:

$$\begin{aligned}\text{Width} &= (\text{Fill depth at top of upslope shoulder})/(3:1 +.05) \\ &= (1.65')/(0.33 + 0.05) \\ &= 1.65'/0.38 \\ w &= 4.34' \text{ (use } 4.5') \\ \text{Total Width} &= 6.5' \text{ (} 4.5' + 2' \text{ shoulder)}\end{aligned}$$

ENDSLOPE WIDTH:

$$\begin{aligned}\text{Width} &= (\text{Top of downslope shoulder})3:1 \text{ slope} + 2' \text{ shoulder} \\ &= 2.09'(3)+2' \\ &= 8.27' \text{ say } 8.5'\end{aligned}$$

DOWNSLOPE WIDTH:

$$\begin{aligned}\text{Width} &= (\text{Fill depth at top of downslope shoulder})/(3:1 - .05) \\ &= (2.09')/(0.33 - 0.05) \\ &= 2.09'/0.28 \\ w &= 7.46 \text{ use } 7.5' \\ \text{Total} \quad w &= 9.5' \text{ (} 7.5' + 2' \text{ shoulder)}\end{aligned}$$

BASAL AREA (New mound) :

Area req'd. = 145 gpd/0.545 gpd/sf
= 266 min. sf required
Area avail. = (bed length)(bed width+downslope width)
= (35')(4.8'+9.5')
= 501 sf

WIDTH OF TOPSOIL COVER (from mound manual)

w = 8' downslope toe
= 4' upslope and endslopes

MOUND DIMENSIONS (New mound) :

Length = 35'(gr bed) + 2(8.5')sand + 2(4')topsoil = 60'
Width = 4.8'(gr bed)+6.5'(up sand)+4'(up soil)+9.5'(dn sand)+8'(dn soil)
= 32.8'

DISTRIBUTION SYSTEM (Existing Mound) :

One pair existing laterals at bed center
Lateral length = 60 lf
Lateral dia = 1-1/2"
Hole size = 1/8"
Hole spacing = 36" o.c.
Holes/lateral = 20
Q/lateral = 20 holes(0.426 gpm/hole) = 8.52 gal/lateral
Qtotal = (2)(8.52 gal) = 17.04 gpm
Existing Pump Capacity Requirement = 17.04 gpm

DISTRIBUTION SYSTEM (New Mound) :

Use one lateral at bed center
Lateral length = 33 lf
Lateral dia = 1-1/2"
Hole size = 1/8"
Hole spacing = 36" o.c.
Holes/lateral = 11
Q/lateral = 11 holes(0.426 gpm/hole) = 4.69 gal/lateral
Qtotal = (1)(4.69 gal) = 4.69
Additional Pump Capacity Requirement = 4.69 gpm

Total Pump Capacity = 17.04 gpm + 4.69 gpm = 21.73 gpm, **use 25 gpm**

Head losses:

Elev. head:

At pump = 52'
At mound = 63'
At distal end = 5'
Total elev. head = 63' - 52' + 5'
= 14'

Friction Head

2" Pressure Line

Head = (200 lf) (1.10' / 100')
= 2.2'

2" fittings in sump

90° ell = 5.5 lf
Ch. vlv. = 17.2 lf
Gate vlv. = 1.4 lf
45° ells = 2.8 lf
[5.5 + 17.2 + 1.4 + 2(2.8)] x (1.10' / 100')
= 29.7 x (1.10' / 100')
= 0.33'

Ells and Tees

2" ells = 5.5 lf
2" tee (side) = 12 lf
[(5.5 x 4) + (12 x 3)] (1.10' / 100')
= 0.64'

Reducers, valves, laterals

Reducer = 2.5 lf
GV 3/4opn = 4 lf
Laterals = (2) 60 lf ea
(1) 33 lf
(2.5 + 4 + 60') (0.70' / 100') (2 laterals) +
(2.5 + 4 + 33') (0.39 / 100') (1 lateral)
= 1.1'

Total friction head = 2.20' + 0.33' + 0.64' + 1.1' = 4.27'

Total Head = 14' + 4.27' = 18.27 say 20'

FOR 25 GPM AT 20' TOTAL HEAD, USE EXISTING PUMP.

SIZE DOSE:

Use the greater of 10 times volume of laterals, or 110 gal:

$$\begin{aligned}\text{Vol. } 1\text{-}1/4\text{"} &= (0.064 \text{ gal/lf}) (60 \text{ lf}) (2 \text{ laterals}) \\ &\quad + (0.064 \text{ gal/lf}) (33 \text{ lf}) (1 \text{ lateral}) \\ &= 9.79 \text{ gallons}\end{aligned}$$

$$10(9.79) = 97.9 \text{ gallons}$$

$$\text{Dose} = 110 \text{ gallons}$$



PRODUCT IMAGES



Model ME40 Series

4/10 HP Cast Iron Effluent & Drain Water Pump Series, 80 GPM

The Myers® ME40 series effluent pumps are one of the industry's most efficient models featuring a 4/10 HP motor. This powerful pump provides the flow and head required for demanding dosing systems and drainage applications. The ME40 incorporates cast iron, engineered thermoplastic and stainless steel in combination to produce a powerful and highly durable pump.

KEY FEATURES

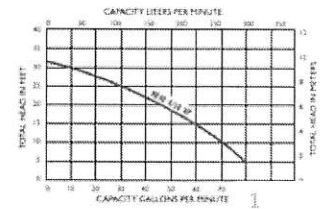
- Enclosed design for high-efficiency pumping
- Eliminates possibility of jamming between impeller and volute
- Passes full 3/4" solids
- Durable motor will deliver many years of reliable service
- Oil-filled motor for maximum heat dissipation and continuous bearing lubrication
- Lower ball bearing and heavy-duty, type 6 seal for added pump life
- Positive sealing, quick-connect float and switch cords make replacement simple if service is ever necessary
- Field-tested, wide-angle, mercury-free mechanical float switch provides maximum drawdown (automatic models only)

WARRANTY

Limited Warranty: 2 years from date of manufacture

See your Myers® dealer for details

PERFORMANCE



ACCESSORIES

CHECK VALVE SERIES, 1-1/4" - 3" PIPES,
THERMOPLASTIC & CAST IRON OPTIONS

SPECIFICATIONS

RESOURCES

- BODY CONSTRUCTION:** Cast Iron
- HORSEPOWER:** 4/10 HP
- MAXIMUM HEAD:** 32' (9.75m)
- MAXIMUM CAPACITY:** 30 GPM (303 LPM)
- FLOW at 10' LIFT:** 71 GPM
- SWITCH TYPE:** Tethered Float
- MINIMUM SUMP DIAMETER:** Simplex: 24" Duplex: 36"
- DISCHARGE PIPE SIZE:** 1-1/2" NPT
- MAXIMUM SOLIDS HANDLING SIZE:** 3/4"
- AMP DRAW (full load):** 6 Amps on 230v 12 Amps on 115v
- CORD LENGTH:** 20'
- VOLTAGE:** Available in 230v or 115v AC, 60 Hz
- MAXIMUM LIQUID TEMPERATURE:** 140 F (60 C)

CLOSE 

