_____ County - Residential Onsite Sewage System Pump Sizing Worksheet

Project Name		Designer	
Project Address		Date	

A. System Information				
1. Number of Bedrooms and Bedroom Equivalents				BR & Equiv.
2. Design Daily Flow				gpd
3. Onsite System Type and Size (check system type and include sizing information)		Subsurface Flood Dosed	Soil Absorption Area	square feet
				lineal feet
		Elevated Sand Mound Pressure Distribution	Aggregate Bed	square feet
			Basal Area	square feet
			Number of laterals	laterals
			Perforations/lateral	perforations
			Total perforations	perforations
		Subsurface Pressure Distribution	SAF Area	square feet
			Soil Loading Rate	gpd/ft^2
			Total perforations	perforations
4. Effluent Force Main Diameter				inches
5. Effluent Force Main Length				feet
6. Length of effluent force main that drains to dose tank				feet
B. Pump Discharge Rate				gpm

C. Total Dose Volume Calculation		
1. Dose Volume to SAF	gal.	1 DDF for FD (& PD with SLR<1.20) ¼ DDF for ESM (& PD with SLR=1.2)
2. Drainback Volume (use A6 length)	gal.	0 if EFM drains to SAF
3. Total Dose Volume (C1 + C2)		gallons

D. Total Dynamic Head Calculation					
1. Static Head		ft.	Elevation difference		
2.	Type and Size of Fitting	Number of Fittings	Equivalent Length per fitting		Equivalent Length
		X		=	feet
		X		=	feet
		X		=	feet
		X		=	feet
a. Total Equivalent Length of Fittings (sum equivalent lengths from above)					feet
b. Total Equivalent Length of Force Main for Friction Loss (A5 + D2a)					feet
c. Friction Loss (use length in D2b)		ft.	In total equivalent length of EFM		
3. Design Head		ft.	0' in FD Systems, 3' in ESM Systems and 2.5-3' in Subsurface Pressure Distribution		
4. Total Dynamic Head (D1 + D2c + D3)					feet

E. Pump Selection (attach pump performance curve)	Manufacturer	
	Model	

_____ _____

LHD Reviewer Date of Review

☐ Approved ☐ Not Approved

_____ County - Residential Onsite Sewage Dose Tank Sizing Worksheet

Project Name		Designer	
Project Address		Date	

Dose Tank Manufacturer						
Dose Tank Material (check one)		**Concrete**		**Poly/Plastic**		**Fiberglass**
Dose Tank Liquid Volume (gal.)				**gal.**		
Dose Tank Capacity (G/I)				**gal./in.**		

Attach a manufacturer specific cross sectional view of the dosing tank, depicting float settings, to this worksheet as part of the plan submittal.

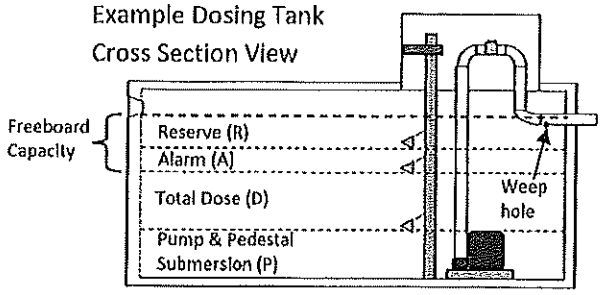
Dose Tank Sizing - Capacity Chart					
		Height (in)		Tank Volume (gal)	
Pump & Pedestal Submersion (P)		PH	in.	PV	gal.
Total Dose (D)		DH	in.	DV	gal.
Freeboard (F)	Alarm	AH	in.	AV	gal.
	Reserve	RH	in.	RV	gal.
Total (P + D + F)**			in.		gal.

****NOTE:** The sum of the heights and the sum of the volumes must be less than or equal to the tank capacity as identified on the manufacturer's cross section. A manufacturer's cross section view must be submitted with the installation plan.

It is very important that the system be installed in a manner that is consistent with the design. If the dose tank and/or the effluent pump specified in the plan submittal is not the same as what is going to be installed at the site, revised dose tank and/or effluent pump information must be submitted in writing, by the system designer, to the local health department. The local health department must approve the design changes before installation.

Key: G/I = Tank Capacity (gal/in)	PH = Pump & Pedestal Height (in)	PV = Volume required to submerge pump (gal)
	DH = Total Dose Height (in)	DV = Volume of the Total Dose (gal)
	AH = Alarm Height (in)	AV = Volume required for alarm (gal)

Example Dosing Tank
Cross Section View



[redacted]

* The tank capacity in gallons/inch must be provided. This number is manufacturer and tank size dependent. For tanks that have inconsistent tank capacity, a tank capacity chart must be used to determine float settings.

1. **Pump & Pedestal Submersion** – The capacity to keep the pump submerged.
   a. Add the height of the pump and the pedestal height (if necessary) to determine PH. The height of the pump is given in the pump specifications. The pump must be submerged at all times.
   b. The volume of the tank that is used to submerge the pump (PV) is the pump & pedestal height (PH) multiplied by the tank capacity (G/I).

[redacted]

2. **Total Dose** – The capacity from the off float to the on float.
   a. The volume of the total dose (DV) was determined in the pump sizing worksheet. The total dose is the dose to the soil absorption field plus drainback (if any).
   b. The height of the total dose in the dose tank (DH) is the total dose volume (DV) divided by the tank capacity (G/I).

[redacted]

3. **Freeboard** – Capacity above the on float, and below the tank inlet, that is sufficient for a high water alarm to function properly. The high water alarm should sound prior to any effluent backing up into the sewer line entering the dosing tank. The capacity of the tank above the alarm float, which allows the alarm float to function properly and allows extra capacity in case of pump failure, may be considered to be reserve capacity. The volume of the reserve capacity is recommended to be a minimum of 150 gallons.
   a. **Alarm** – The capacity from the on float to the alarm float.
      i. The height of the alarm float above the on float (FH) is typically set at 4".
      ii. The volume of the tank that is used for the alarm (AV) is the alarm height (AH) multiplied by the tank capacity (G/I).

[redacted]

   b. **Reserve Capacity** – The capacity above the high water alarm to the invert of the inlet. It is recommended to provide a minimum reserve capacity of 150 gallons.
      i. The height of the reserve capacity is the tank height from the bottom of the tank to the invert of the inlet minus the height of the pump plus the does plus the alarm (PH + DH + AH).
      ii. The volume of the reserve capacity is the reserve height multiplied by the tank capacity (G/I).

[redacted]

NOTE: The sum of the heights and the sum of the volumes must be less than or equal to the tank capacity as identified on the manufacturer's cross section. A manufacturer's cross section view must be submitted with the installation plan.

Key: G/I = Tank Capacity (gal/in)	PH = Pump & Pedestal Height (in)	PV = Volume required to submerge pump (gal)
	DH = Total Dose Height (in)	DV = Volume of the Total Dose (gal)
	AH = Alarm Height (in)	AV = Volume required for alarm (gal)
	RH = Reserve Height (in)	RV = Volume of the reserve capacity