# 24 Appendix 24.0 Forms

Update effective January 1, 2015 - This manual may be used as a reference by a STS designer when specifying standards for construction, installation notes and certain aggregate materials for STS components. STS designers are not be required to use this manual. When used, if conflicts exist between this manual and Ohio Administrative Code 3701-29, the state code shall prevail. STS contactors shall follow the approved STS design. **General Health District** Flow Rate Calculations/Drainback/Timer Settings Worksheet For 10' x 30' ISF Using A Concrete Septic Tank

Address:

a.

b.

- 1. The following must be done BEFORE completing this work sheet.
  - All pressure pipes are properly glued, weep hole has been properly drilled, and no external water is entering the tank.
  - Supply mains and manifolds, then laterals were flushed. See Section 5.14. Observe water leaving clean-outs for:
    - (i) Uniform Streams.
    - (ii) Clear Flow With No Debris.
- 2. Make a drawing of laterals below and note the house location. Measure the full operating head of the system using clear tubes on the lateral clean outs. Measurements are taken from the top of the lateral, not the top of the clean out. Record the initial squirt heights on at least 25% (min. 2) of the laterals.

- 3. Set the operating head to 5ft. on each lateral using clear tubes on <u>all</u> of the lateral cleanouts (Check Every Lateral at the same time.) The "lowest" squirt height must be at 5ft. Record each individual lateral's set squirt height on your drawing above.
  - (a) If the squirt heights vary on different laterals, then check for blocks/breaks or other problems and make appropriate repairs. See Section 5.8.5 for allowable squirt height variation.
    - (b) After repairs are made start over at step 1.
- 4. Perform a timed draw down test, Section 3.8.1. The volume of the tank/basin in gallons per inch will be needed. Consult the tank vendor for specific tank volumes. For best accuracy, draw down tests should be performed by running the pump for 2 4 minutes.

	Dosing Tank Dimensions	Manufacturer		Size
	(End measurement Start measurement_	) <b>x</b> Volume of tank	<sup>gal</sup> / <sub>inch</sub> ÷ Run Time	min. = [Q <sub>set</sub> ] <sup>gal</sup> / <sub>min</sub>
5.	Divide Q <sub>set</sub> by Q <sub>design</sub> (Q <sub>design</sub> is 25.95 <sup>gal</sup> / <sub>min.</sub> ) Q <sub>set</sub> /Q <sub>design</sub> = (a) If Q <sub>set</sub> /Q <sub>design</sub> is .85 or greater, (b) If Q <sub>set</sub> /Q <sub>design</sub> is less that .85 or			n to step 1.
6.	Feet	of 1" PVC Drain back of 1¼" PVC Drain back	$\begin{array}{ccc} x & .045 \\ x & .078 \\ g^{al}/_{ft} = \\ x & .106 \\ g^{al}/_{ft} = \\ x & .174 \\ g^{al}/_{ft} = \\ \end{array}$	gallons. gallons.
			V <sub>Total Drain back</sub> ] =	gallons.
	17 <sup>9a</sup>	/ <sub>dose</sub> + V <sub>Total Drain back</sub>	gal/ <sub>dose</sub> =[[V <sub>Total Dose</sub> ]	gal/ <sub>dose</sub>
7.	Calculate the timer settings required for the design On Setting = V <sub>Total Dose</sub> ( <sup>gal</sup> / <sub>dose</sub> ) ÷ Q <sub>set</sub> Convert any fractional minutes to secon On Setting =mins Override On Setting is the same as the Off Setting 2.84 <sup>hours</sup> / <sub>dose</sub> Override Off Setting 1.7 <sup>hours</sup> / <sub>dose</sub>	( <sup>gal</sup> / <sub>min</sub> ) =>>         gal/ <sub>c</sub> ds.         ( <sup>1</sup> / <sub>10</sub> minute = 6 second ec]           ne On Setting         or           Off Setting	$g_{\text{dose}} \div \underline{\qquad}^{gal}/_{\min} = On$ onds Ex67min x 60 <sup>sec</sup> / <sub>min</sub> = $\frac{1}{2}$ onds = 2 hrs 51 min per dose.	40 sec)

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Address:

а.

b.

Permit Number:

- The following must be done BEFORE completing this work sheet. 1.
  - All pressure pipes are properly glued, weep hole has been properly drilled, and no external water is entering the tank.
  - Supply mains and manifolds, then laterals were flushed. See Section 5.14. Observe water leaving clean-outs for:
    - (i) Uniform Streams.
    - Clear Flow With No Debris. (ii)
- Make a drawing of laterals below and note the house location. Measure the full operating head of the system using clear tubes 2. on the lateral clean outs. Measurements are taken from the top of the lateral, not the top of the clean out. Record the initial squirt heights on at least 25% (min. 2) of the laterals.

- 3. Set the operating head to 5ft. on each lateral using clear tubes on all of the lateral cleanouts (Check Every Lateral at the same time.) The "lowest" squirt height must be at 5ft. Record each individual lateral's set squirt height on your drawing above.
  - If the squirt heights vary on different laterals, then check for blocks/breaks or other problems and make (a)
    - appropriate repairs. See Section 5.8.5 for allowable squirt height variation.
    - (b) After repairs are made start over at step 1.

Perform a timed draw down test, Section 3.8.1. The septic tank volume chart will be needed. To properly perform a draw down 4. test, a measurement must be made to determine the water level location within the tank in relation to the tank top. The tank volume chart must then be consulted after the draw down has been completed to determine specific volumes. For best accuracy, draw down tests should be performed by running the pump for 2-4 minutes. Start by measuring from a fixed point to the inside top of the tank. Record this distance in the space provided. Next measure from the fixed point to the surface of the water level. Record this distance in the space provided. Finally run the pump for an exact length of time and immediately measure from the fixed point to the "stop" liquid level. Record this measurement in the space provided. Note: The stop measurement should not include piping drainback. All Measurements must be to the nearest 1/8 inch. Dosing Tank Dimensions\_\_\_\_\_ Manufacturer\_\_ Fixed Point to Inside Top of Tank\_\_\_\_\_ Size 

 Fixed Point to Start Liquid Level
 - Fixed Point to Inside Top of Tank
 =

 Fixed Point to Stop Liquid Level
 - Fixed Point to Inside Top of Tank
 =

 \_ Start Measurement = Stop Measurement Volume In Tank at the Start Measurement gallons Volume In Tank at the Stop Measurement gallons \_\_\_\_\_ \_gallons ÷ \_\_\_\_\_ minutes run = [Q<sub>set</sub>] <sup>gal</sup>/<sub>mi</sub>h Divide **Q**<sub>set</sub> by **Q**<sub>design</sub> (**Q**<sub>design</sub> is 25.95<sup>gal</sup>/<sub>min.</sub>) 5. Q<sub>set</sub>/Q<sub>design</sub> = If Q<sub>set</sub>/Q<sub>design</sub> is .85 or greater, but less than 1.15; then it is OK to proceed. (a) If Q<sub>set</sub>/Q<sub>design</sub> is less that .85 or greater than 1.15; then repairs must be made. Return to step 1. (b) Calculate any drain back volume in the piping network. (Includes discharge assemblies, force mains, and manifolds) 6. Feet of 1" PVC Drain back x  $.045^{\text{gal}}/_{\text{ft}} =$ gallons. x  $.078^{\text{gal}}/_{\text{ft}} =$ x  $.106^{\text{gal}}/_{\text{ft}} =$ Feet of 1¼" PVC Drain back gallons. Feet of 1½" PVC Drain back gallons. x  $.174^{\text{gal}}/_{\text{ft}} =$ Feet of 2" PVC Drain back gallons + \_\_\_\_\_ [ V<sub>Total</sub> Drain back] = gallons. <sup>gal</sup>/<sub>dos</sub> 17<sup>gal</sup>/<sub>dose</sub> + V<sub>Total Drain back</sub> Calculate the timer settings required for the design 7. On Setting =  $V_{\text{Total Dose}} (g^{\text{gal}}/_{\text{dose}}) \div Q_{\text{set}} (g^{\text{gal}}/_{\text{min}}) =>> \_____{\text{gal}/_{\text{dose}}} g^{\text{gal}}/_{\text{dose}} \div \_____{\text{gal}/_{\text{min}}} g^{\text{gal}}/_{\text{min}} = On Setting_{\text{gal}/_{\text{min}}} = On Setting_{\text{gal}/_{\text{min}}} = 40 \text{ sec}$ nin/<sub>dose</sub> On Setting = \_\_\_\_\_min \_\_\_\_\_sec\_\_ Override On Setting is the same as the On Setting Off Setting 2.84 hours/dose Off Setting = 2 hrs 51 min per dose. or Override Off Setting 1.7 hours/dose or Override Off Setting = 1 hr 42 min per dose

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Address:

5.

6.

а.

b.

Permit Number:

- The following must be done BEFORE completing this work sheet. 1.
  - All pressure pipes are properly glued, weep hole has been properly drilled, and no external water is entering the tank.
  - Supply mains and manifolds, then laterals were flushed. See Section 5.14. Observe water leaving clean-outs for:
    - (i) Uniform Streams.
    - (ii) Clear Flow With No Debris.
- Make a drawing of laterals below and note the house location. Measure the full operating head of the system using clear tubes 2. on the lateral clean outs. Measurements are taken from the top of the lateral, not the top of the clean out. Record the initial squirt heights on at least 25% (min. 2) of the laterals.

- Set the operating head to 5ft. on each lateral using clear tubes on all of the lateral cleanouts (Check Every Lateral at the same 3. time.) The "lowest" squirt height must be at 5ft. Record each individual lateral's set squirt height on your drawing above.
  - If the squirt heights vary on different laterals, then check for blocks/breaks or other problems and make (a) appropriate repairs. See Section 5.8.5 for allowable squirt height variation.
    - (b) After repairs are made start over at step 1.
- 4. Perform a timed draw down test, Section 3.8.1. The volume of the tank/basin in gallons per inch will be needed. Consult the tank vendor for specific tank volumes. For best accuracy, draw down tests should be performed by running the pump for 2 - 4 minutes.

Dosing Tank L	imensions	Man	ufacturer		Size
(End measure	ment	Start measurement	_) <b>x</b> Volume of tank	<sup>gal</sup> / <sub>inch</sub> ÷ Run Tir	memin. = [Q <sub>set</sub> ]
Divide <b>Q</b> <sub>set</sub> by (a) (b)	Q <sub>set</sub> /Q <sub>de</sub> If Q <sub>set</sub> /Q	sign is 31.14 <sup>gal</sup> / <sub>min.</sub> ) sign = <sub>design</sub> is .85 or greater, but l <sub>design</sub> is less that .85 or gre			Return to step 1.
Calculate any	drain back v	Feet of 1 Feet of 1	<ul> <li>(Includes discharge a "PVC Drain back</li> <li>"4" PVC Drain back</li> <li>"2" PVC Drain back</li> <li>"PVC Drain back</li> </ul>	x .045 <sup>gal</sup> / <sub>ft</sub> = x .078 <sup>gal</sup> / <sub>ft</sub> =	gallons.
Calculate any o	drain back v	Feet of 1 Feet of 1 Feet of 1	" PVC Drain back 14" PVC Drain back 12" PVC Drain back 2" PVC Drain back	$\begin{array}{ll} x & .045  {}^{gal}/_{ft} = \\ x & .078  {}^{gal}/_{ft} = \\ x & .106  {}^{gal}/_{ft} = \end{array}$	gallons. gallons. gallons.

7. Calcula

te the time settings required for the design			
<b>On Setting = V</b> <sub>Total Dose</sub> ( $^{gal}/_{dose}$ ) ÷ Q <sub>set</sub> ( <sup>g</sup>	<sup> al</sup> / <sub>min</sub> ) =>>	<sup>gal</sup> / <sub>dose</sub> ÷ <sup>gal</sup> / <sub>min</sub> <b>= On Set</b> t	
Convert any fractional minutes to second	s. ( <sup>1</sup> / <sub>10</sub> min	nute = 6 seconds Ex67min x $60^{\text{sec}}/_{\text{min}}$ = 40 seconds	ec)
On Setting =minsec		_	
Override On Setting is the same as the	On Setting	g	_
Off Setting 2.23 hours/dose	or	Off Setting = 2 hrs 14 min per dose.	
Override Off Setting 1.34 hours/dose	or	Override Off Setting = 1 hr 21 min per dose	

Flow Rate Calculations/Drainback/Timer Settings Worksheet For 10' x 36' ISF Using A Poly or Fiberglass Septic Tank

Address:

а.

b.

- 1. The following must be done BEFORE completing this work sheet.
  - All pressure pipes are properly glued, weep hole has been properly drilled, and no external water is entering the tank.
  - Supply mains and manifolds, then laterals were flushed. See Section 5.14. Observe water leaving clean-outs for:
    - (i) Uniform Streams.
  - (ii) Clear Flow With No Debris.
- 2. Make a drawing of laterals below and note the house location. Measure the full operating head of the system using clear tubes on the lateral clean outs. Measurements are taken from the top of the lateral, not the top of the clean out. Record the initial squirt heights on at least 25% (min. 2) of the laterals.

- 3. Set the operating head to 5ft. on each lateral using clear tubes on <u>all</u> of the lateral cleanouts (Check Every Lateral at the same time.) The "lowest" squirt height must be at 5ft. Record each individual lateral's set squirt height on your drawing above.
  - (a) If the squirt heights vary on different laterals, then check for blocks/breaks or other problems and make appropriate repairs. See Section 5.8.5 for allowable squirt height variation.
    - (b) After repairs are made start over at step 1.
- Perform a timed draw down test, Section 3.8.1. The septic tank volume chart will be needed. To properly perform a draw down 4. test, a measurement must be made to determine the water level location within the tank in relation to the tank top. The tank volume chart must then be consulted after the draw down has been completed to determine specific volumes. For best accuracy, draw down tests should be performed by running the pump for 2-4 minutes. Start by measuring from a fixed point to the inside top of the tank. Record this distance in the space provided. Next measure from the fixed point to the surface of the water level. Record this distance in the space provided. Finally run the pump for an exact length of time and immediately measure from the fixed point to the "stop" liquid level. Record this measurement in the space provided. Note: The stop measurement should not include piping drainback. All Measurements must be to the nearest 1/8 inch. Dosing Tank Dimensions\_\_\_\_\_ Manufacturer\_\_ Fixed Point to Inside Top of Tank\_\_\_\_\_ Size Fixed Point to Start Liquid Level \_\_\_\_\_\_ - Fixed Point to Inside Top of Tank\_\_\_\_\_ \_ Start Measurement - Fixed Point to Inside Top of Tank Fixed Point to Stop Liquid Level = Stop Measurement Volume In Tank at the Start Measurement gallons gallons Volume In Tank at the Stop Measurement \_\_\_\_\_ <sup>gal</sup>/<sub>mi</sub>h \_gallons ÷ \_\_\_\_\_ minutes run = [Q<sub>set</sub>] \_\_\_ Divide **Q**<sub>set</sub> by **Q**<sub>design</sub> (**Q**<sub>design</sub> is 31.14 <sup>gal</sup>/<sub>min.</sub>) 5. Q<sub>set</sub>/Q<sub>design</sub> = If Q<sub>set</sub>/Q<sub>design</sub> is .85 or greater, but less than 1.15; then it is OK to proceed. (a) If Qset/Qdesign is less that .85 or greater than 1.15; then repairs must be made. Return to step 1. (b) Calculate any drain back volume in the piping network. (Includes discharge assemblies, force mains, and manifolds) 6. .045 <sup>gal</sup>/<sub>ft</sub> = Feet of 1" PVC Drain back х gallons.  $.078^{\text{gal}}/_{\text{ft}} =$  $.106^{\text{gal}}/_{\text{ft}} =$ Feet of 1<sup>1</sup>/<sub>4</sub>" PVC Drain back gallons. х Feet of 1<sup>1</sup>/<sub>2</sub>" PVC Drain back Х gallons. .174 <sup>gal</sup>/<sub>ft</sub> = Feet of 2" PVC Drain back х gallons + \_\_\_\_\_ [ V<sub>Total</sub> Drain back] = gallons. <sup>gal</sup>/<sub>dos</sub> 20<sup>gal</sup>/<sub>dose</sub> + V<sub>Total Drain back</sub> gal/<sub>dose</sub> = [V<sub>Total Dose</sub>] 7. Calculate the timer settings required for the design On Setting =  $V_{\text{Total Dose}} (^{\text{gal}}/_{\text{dose}}) \div \mathbf{Q}_{\text{set}} (^{\text{gal}}/_{\text{min}}) =>> \_____{\text{gal}/_{\text{dose}}} \div \_____{\text{dose}} \Rightarrow \______{\text{gal}/_{\text{min}}} = 40 \text{ Sec})$ Convert any fractional minutes to seconds. (1/<sub>10</sub> minute = 6 seconds Ex. .67min x 60<sup>sec</sup>/<sub>min</sub> = 40 sec) <sup>nin</sup>/<sub>dose</sub>

On Setting =min	sec	_
Override On Setting is the same as	s the On Settin	g
Off Setting 2.23 hours/dose	or	Off Setting = 2 hrs 14 min per dose.
Override Off Setting 1.34 hours/dose	or	Override Off Setting = 1 hr 21 min per dose

Update effective January 1, 2015 - This manual may be used as a reference by a STS designer when specifying standards for construction, installation notes and certain aggregate materials for STS components. STS designers are not be required to use this manual. When used, if conflicts exist between this manual and Ohio Administrative Code 3701-29, the state code shall prevail. STS contactors shall follow the approved STS design. **General Health District** Flow Rate Calculations/Drainback/Timer Settings Worksheet For 10' x 48' ISF Using A Concrete Septic Tank

Address:

a.

b.

- 1. The following must be done BEFORE completing this work sheet.
  - All pressure pipes are properly glued, weep hole has been properly drilled, and no external water is entering the tank.
  - Supply mains and manifolds, then laterals were flushed. See Section 5.14. Observe water leaving clean-outs for:
    - (i) Uniform Streams.
    - (ii) Clear Flow With No Debris.
- 2. Make a drawing of laterals below and note the house location. Measure the full operating head of the system using clear tubes on the lateral clean outs. Measurements are taken from the top of the lateral, not the top of the clean out. Record the initial squirt heights on at least 25% (min. 2) of the laterals.

- 3. Set the operating head to 5ft. on each lateral using clear tubes on <u>all</u> of the lateral cleanouts (Check Every Lateral at the same time.) The "lowest" squirt height must be at 5ft. Record each individual lateral's set squirt height on your drawing above.
  - (a) If the squirt heights vary on different laterals, then check for blocks/breaks or other problems and make appropriate repairs. See Section 5.8.5 for allowable squirt height variation.
    - (b) After repairs are made start over at step 1.
- 4. Perform a timed draw down test, Section 3.8.1. The volume of the tank/basin in gallons per inch will be needed. Consult the tank vendor for specific tank volumes. For best accuracy, draw down tests should be performed by running the pump for 2 4 minutes.

Dosing Tank Dimensions	M	anufacturer		_ Size
(End measurement	Start measurement	) <b>x</b> Volume of tank	<sup>gal</sup> / <sub>inch</sub> ÷ Run Time	min. = [[Q <sub>set</sub> ] <sup>gai</sup> / <sub>min</sub>

- 5. Divide  $\mathbf{Q}_{set}$  by  $\mathbf{Q}_{design}$  ( $\mathbf{Q}_{design}$  is 41.52 <sup>gal</sup>/<sub>min.</sub>)
  - Q<sub>set</sub>/Q<sub>design</sub> = \_\_\_\_
  - (a) If **Q**<sub>set</sub>/**Q**<sub>design</sub> is .85 or greater, but less than 1.15; then it is OK to proceed.
  - (b) If **Q**<sub>set</sub>/**Q**<sub>design</sub> is less that .85 or greater than 1.15; then repairs must be made. Return to step 1.
- 6. Calculate any drain back volume in the piping network. (Includes discharge assemblies, force mains, and manifolds) East of 1" PVC Drain back  $x = 0.45^{\text{gal}/_{e}} = 0.045^{\text{gal}/_{e}}$

		X .045°/ft –	galions.
	Feet of 1¼" PVC Drain back	x .078 <sup>gal</sup> / <sub>ft</sub> =	gallons.
	Feet of 1½" PVC Drain back		gallons.
	Feet of 2" PVC Drain back	x .174 <sup>gal</sup> / <sub>ft</sub> =	gallons
		+	
	[ V <sub>T</sub>	otal Drain back] =	gallons.
	27 <sup>gal</sup> / <sub>dose</sub> + V <sub>Total Drain back</sub>	gal/ <sub>dose</sub> =[[V <sub>Total</sub>	Dose] <sup>gal</sup> / <sub>dose</sub>
7.	Calculate the timer settings required for the design On Setting = $V_{Total Dose} (g^{gal}/_{dose}) \div Q_{set} (g^{gal}/_{min}) =>> g^{gal}/_{dos}$	se ÷gal/ <sub>min</sub>	= On Setting <sup>min</sup> / <sub>dose</sub> .
	Convert any fractional minutes to seconds. $(^{1}/_{10} \text{ minute} = 6 \text{ second})$	ds Ex67min x 60 <sup>sec</sup>	/ <sub>min</sub> = 40 sec)
	On Setting =minsec		
	Override On Setting is the same as the On Setting		
	Off Setting 2.25 <sup>hours</sup> / <sub>dose</sub> or Off Setting =	2 hrs 15 min per do	se.
	Override Off Setting 1.35 hours/dose or Override Off	Setting = 1 hr 21 mi	in per dose

Flow Rate Calculations/Drainback/Timer Settings Worksheet For 10' x 48' ISF Using A Poly or Fiberglass Septic Tank

Address:

а.

b.

- 1. The following must be done BEFORE completing this work sheet.
  - All pressure pipes are properly glued, weep hole has been properly drilled, and no external water is entering the tank.
  - Supply mains and manifolds, then laterals were flushed. See Section 5.14. Observe water leaving clean-outs for:
    - (i) Uniform Streams.
    - (ii) Clear Flow With No Debris.
- 2. Make a drawing of laterals below and note the house location. Measure the full operating head of the system using clear tubes on the lateral clean outs. Measurements are taken from the top of the lateral, not the top of the clean out. Record the initial squirt heights on at least 25% (min. 2) of the laterals.

- 3. Set the operating head to 5ft. on each lateral using clear tubes on <u>all</u> of the lateral cleanouts (Check Every Lateral at the same time.) The "lowest" squirt height must be at 5ft. Record each individual lateral's set squirt height on your drawing above.
  - (a) If the squirt heights vary on different laterals, then check for blocks/breaks or other problems and make appropriate repairs. See Section 5.8.5 for allowable squirt height variation.
    - (b) After repairs are made start over at step 1.
- Perform a timed draw down test, Section 3.8.1. The septic tank volume chart will be needed. To properly perform a draw down 4. test, a measurement must be made to determine the water level location within the tank in relation to the tank top. The tank volume chart must then be consulted after the draw down has been completed to determine specific volumes. For best accuracy, draw down tests should be performed by running the pump for 2-4 minutes. Start by measuring from a fixed point to the inside top of the tank. Record this distance in the space provided. Next measure from the fixed point to the surface of the water level. Record this distance in the space provided. Finally run the pump for an exact length of time and immediately measure from the fixed point to the "stop" liquid level. Record this measurement in the space provided. Note: The stop measurement should not include piping drainback. All Measurements must be to the nearest 1/8 inch. Dosing Tank Dimensions\_\_\_\_\_ Manufacturer\_\_ Fixed Point to Inside Top of Tank\_\_\_\_\_ Size 

   Fixed Point to Start Liquid Level
   - Fixed Point to Inside Top of Tank
   =

   Fixed Point to Stop Liquid Level
   - Fixed Point to Inside Top of Tank
   =

   \_ Start Measurement = Stop Measurement Volume In Tank at the Start Measurement gallons Volume In Tank at the Stop Measurement gallons \_\_\_\_\_ <sup>gal</sup>/<sub>mi</sub>h \_gallons ÷ \_\_\_\_\_ minutes run = [Q<sub>set</sub>] \_\_\_\_ Divide **Q**<sub>set</sub> by **Q**<sub>design</sub> (**Q**<sub>design</sub> is 41.52<sup>gal</sup>/<sub>min.</sub>) 5. Q<sub>set</sub>/Q<sub>design</sub> = If Q<sub>set</sub>/Q<sub>design</sub> is .85 or greater, but less than 1.15; then it is OK to proceed. (a) If Qset/Qdesign is less that .85 or greater than 1.15; then repairs must be made. Return to step 1. (b) Calculate any drain back volume in the piping network. (Includes discharge assemblies, force mains, and manifolds) 6. Feet of 1" PVC Drain back x  $.045^{\text{gal}}/_{\text{ft}} =$ aallons. x  $.078^{\text{gal}}/_{\text{ft}} =$ x  $.106^{\text{gal}}/_{\text{ft}} =$ Feet of 1¼" PVC Drain back gallons. Feet of 1<sup>1</sup>/<sub>2</sub>" PVC Drain back gallons. x  $.174^{\text{gal}}/_{\text{ft}} =$ Feet of 2" PVC Drain back gallons + \_\_\_\_\_ [ V<sub>Total</sub> Drain back] = gallons. <sup>gal</sup>/<sub>dos</sub> 27<sup>gal</sup>/<sub>dose</sub> + V<sub>Total Drain back</sub> \_\_\_\_\_\_<sup>gal</sup>/<sub>dose</sub> = [V<sub>Total Dose</sub>] \_\_\_\_ 7. Calculate the timer settings required for the design On Setting =  $V_{\text{Total Dose}} (g^{\text{gal}}/_{\text{dose}}) \div Q_{\text{set}} (g^{\text{gal}}/_{\text{min}}) =>> \_____{\text{gal}/_{\text{dose}}} g^{\text{gal}}/_{\text{dose}} \div \_____{\text{gal}/_{\text{min}}} g^{\text{gal}}/_{\text{min}} = On Setting_{\text{gal}/_{\text{min}}} = On Setting_{\text{gal}/_{\text{min}}} = 40 \text{ sec})$ nin/<sub>dose</sub> On Setting = \_\_\_\_\_min \_\_\_\_\_sec\_\_ Override On Setting is the same as the On Setting Off Setting 2.25 hours/dose Off Setting = 2 hrs 15 min per dose. or Override Off Setting 1.35 hours/dose Override Off Setting = 1 hr 21 min per dose or

Flow Rate Calculations/Drainback/Timer Settings Worksheet For Intermittent Sand Filters and Mounds (Concrete Tank)

Address	:		Permit Number:_	
1.	Number of bedrooms	x 120 <sup>gal</sup> / <sub>day</sub> = [Q <sub>peak</sub> ]	$\frac{gai}{day}$ x .60 = <b>[Q</b> average]	<sup>ai</sup> / <sub>day</sub>

- The following must be done BEFORE completing this work sheet. 2.
  - All pressure pipes are properly glued, weep hole has been properly drilled, and no external water is entering the tank. a.
  - Supply mains and manifolds, then laterals were flushed. See Section 5.14. Observe water leaving clean-outs for: b.
    - (i) Uniform Streams.

1.

6.

7.

8.

9.

- Clear Flow With No Debris. (ii)
- 3. Make a drawing of laterals below and note the house location. Measure the full operating head of the system using clear tubes on the lateral clean outs. Measurements are taken from the top of the lateral, not the top of the clean out. Record the initial squirt heights on at least 25% (min. 2) of the laterals.
- 4. Set the operating head to 5ft. on each lateral using clear tubes on all of the lateral cleanouts (Check Every Lateral at the same time.) The "lowest" squirt height must be at 5ft. Record each individual lateral's set squirt height on your drawing above.
  - If the squirt heights vary on different laterals, then check for blocks/breaks or other problems and make (a) appropriate repairs. See Section 5.8.5 for allowable squirt height variation.
    - (b) After repairs are made start over at step 2.
- Perform a timed draw down test, Section 3.8.1. The volume of the tank/basin in gallons per inch will be needed. Consult the tank 5. vendor for specific tank volumes. For best accuracy, draw down tests should be performed by running the pump for 2 - 4 minutes.

Dosing Tank Dir	mensions	Manufacturer			Size
(End measurem	ent Start me	easurement) x Volume of tar	lk <sup>gal</sup> / <sub>i</sub>		min. =
Divide <b>Q</b> <sub>set</sub> by <b>Q</b> Number of orific	es per zone in the sy Q <sub>set</sub> /Q <sub>design</sub> =	n in the design or is calculated by the stem x .4325 = <b>[Q<sub>design</sub>]</b>	<sup>gai</sup> / <sub>m</sub>	in	
(a)	If <b>Q</b> <sub>set</sub> / <b>Q</b> <sub>design</sub> is .85	or greater, but less than 1.15; then	it is OK to pr	oceed.	
(b)	If <b>Q</b> <sub>set</sub> /Q <sub>design</sub> is les	s that .85 or greater than 1.15; then	repairs must	t be made. Retu	Irn to step 2.
NOLE. L		e calculated if orifices are in the up p Feet of ¾" PVC Drain back Feet of 1" PVC Drain back Feet of 1¼" PVC Drain back Feet of 1½" PVC Drain back Feet of 2" PVC Drain back	X . X . X . X . X .	078 <sup>gal</sup> / <sub>ft</sub> = 106 <sup>gal</sup> / <sub>ft</sub> = 174 <sup>gal</sup> / <sub>ft</sub> = +	gallons. gallons. gallons. gallons. gallons
			VTotal Drain bac	⊧k] =	gallons.
Calculate the to .028 <sup>gal</sup> / <sub>ft</sub> x V <sub>Net Dose</sub>	tal dose volume requ feet of lateral <sup>gal</sup> / <sub>dose</sub> + <b>V</b> Total Dra	ired for the design. per zone x 5 = <b>[[V<sub>Net Dose</sub>]</b> ain back <sup>gal</sup> / <sub>dose</sub> = <b>[[V<sub>Total Doc</sub></b>	_ <sup>gal</sup> / <sub>dose</sub> se]	<sup>gal</sup> /dose	
	a or a offinge required	for the design			
Calculate the tin			1,	aal,	min /
On Set	ting = V <sub>Total Dose</sub> ( <sup>gal</sup> / <sub>c</sub>	hose) $\div \mathbf{Q}_{set}$ ( <sup>gal</sup> / <sub>min</sub> ) =>> gas tes to seconds. ( <sup>1</sup> / <sub>10</sub> minute = 6 seconds.			

Convert any fractional	minutes to seco	onas. (7 <sub>10</sub> mi	nule = $6 \sec^{10}$	onus ex67m	$\ln x  60  /_{\min} = 40  \text{sec})$	
On Setting =	min	sec ((Note: C	Overide On S	Setting set the	same as <b>On Setting</b> ))	
Off Setting = Qaverage	( <sup>gal</sup> / <sub>day</sub> ) ÷ V <sub>Net Do</sub>	se ( <sup>gal</sup> / <sub>dose</sub> ) =>	>	<sup>gal</sup> / <sub>day</sub> ÷	<sup>gal</sup> / <sub>dose</sub> = [D <sub>average</sub> ]	doses/ <sub>day</sub>
24 <sup>hours</sup> / <sub>day</sub> ÷ [Daverage]			<b>g</b> r	nours/ <sub>dose</sub>		
Convert any fractional	hours to minute	es. (.10 hour =	6 minutes E	Ex20 hours x	60 <sup>min</sup> / <sub>hour</sub> = 12minutes.)	
Off Setting =						
<b>Override Off Setting</b>				gal/ <sub>day</sub> ÷	<sup>gal</sup> / <sub>dose</sub> = [D <sub>peak</sub> ]_	doses/ <sub>day</sub>
24 hours/day +[Dpeak]				liouis/ <sub>dose</sub>		
Convert any fractional	hours to minute	es. (.10 hour =	6 minutes E	x45 hours x	60 <sup>min</sup> / <sub>hour</sub> = 27minutes.)	
Override Off Setting	=hrs	min	per dose.			

Update effective January 1, 2015 - This manual may be used as a reference by a STS designer when specifying standards for construction, installation notes and certain aggregate materials for STS components. STS designers are not be required to use this manual. When used, if conflicts exist between this manual and Ohio Administrative Code 3701-29, the state code shall prevail. STS contactors shall follow the approved STS design. Flow Rate Calculations/Drainback/Timer Settings Worksheet For Intermittent Sand Filters and Mounds (Fiber or Poly Tank)

Address	Permit Number:
1.	Number of bedrooms x 120 <sup>gal</sup> / <sub>day</sub> = $\left[ Q_{peak} \right]_{day}$ gal/ <sub>day</sub> x .60 = $\left[ Q_{average} \right]_{day}$ gal/ <sub>day</sub>
2.	The following must be done BEFORE completing this work sheet.
	<ul> <li>All pressure pipes are properly glued, weep hole has been properly drilled, and no external water is entering the tank.</li> <li>Supply mains and manifolds, then laterals were flushed. See Section 5.14. Observe water leaving clean-outs for:</li> </ul>
	(i) Uniform Streams.
	(ii) Clear Flow With No Debris.
3.	Make a drawing of laterals below and note the house location. Measure the full operating head of the system using clear tubes
	on the lateral clean outs. Measurements are taken from the top of the lateral, not the top of the clean out. Record the initial squirt heights on at least 25% (min. 2) of the laterals.
4.	Set the operating head to 5ft. on each lateral using clear tubes on <u>all</u> of the lateral cleanouts (Check Every Lateral at the same
	time.) The "lowest" squirt height must be at 5ft. Record each individual lateral's set squirt height on your drawing above. (a) If the squirt heights vary on different laterals, then check for blocks/breaks or other problems and make
	appropriate repairs. See Section 5.8.5 for allowable squirt height variation.
	(b) After repairs are made start over at step 2.
5.	Perform a timed draw down test, Section 3.8.1. The septic tank volume chart will be needed. To properly perform a draw down
	test, a measurement must be made to determine the water level location within the tank in relation to the tank top. The tank volume chart must then be consulted after the draw down has been completed to determine specific volumes. For best
	accuracy, draw down tests should be performed by running the pump for 2-4 minutes. Start by measuring from a fixed point to
	the inside top of the tank. Record this distance in the space provided. Next measure from the fixed point to the surface of the
	water level. Record this distance in the space provided. Finally run the pump for an exact length of time and immediately
	measure from the fixed point to the "stop" liquid level. Record this measurement in the space provided. <b>Note:</b> The stop measurement should not include piping drainback. All Measurements must be to the nearest 1/8 inch.
	Dosing Tank Dimensions Manufacturer Size
	Fixed Point to Inside Top of Tank
	Fixed Point to Start Liquid Level       - Fixed Point to Inside Top of Tank       =Start Measurement         Fixed Point to Stop Liquid Level       - Fixed Point to Inside Top of Tank       =Stop Measurement
	Volume In Tank at the Start Measurement gallons
	- Volume In Tank at the Stop Measurementgallons
	======================================
6.	Divide $\mathbf{Q}_{set}$ by $\mathbf{Q}_{design}$ ( $\mathbf{Q}_{design}$ is given in the design or is calculated by the # of orifices in each zone multiplied by .4325)
•	Number of orifices per zone in the system x .4325 = $[Q_{design}]$ <sup>gal</sup> / <sub>min</sub>
	Q <sub>set</sub> /Q <sub>design</sub> =
	<ul> <li>(a) If Q<sub>set</sub>/Q<sub>design</sub> is .85 or greater, but less than 1.15; then it is OK to proceed.</li> <li>(b) If Q<sub>set</sub>/Q<sub>design</sub> is less that .85 or greater than 1.15; then repairs must be made. Return to step 2.</li> </ul>
7.	Calculate any drain back volume in the piping network. (Includes discharge assemblies, force mains, sub mains, and manifolds)
	Note: Laterals would only be calculated if orifices are in the up position
	$\frac{1}{10000000000000000000000000000000000$
	Feet of 1" PVC Drain backx $.045^{gal}/_{ft}$ =gallons.Feet of 1¼" PVC Drain backx $.078^{gal}/_{ft}$ =gallons.
	Feet of $1\frac{1}{2}$ PVC Drain back x $.106^{\text{gal}}/\text{ft} = \text{gallons}.$
	Feet of 2" PVC Drain back x $.174^{\text{gal}}/_{\text{ft}}$ =gallons
	+ [ V <sub>Total Drain back</sub> ] = gallons.
8.	Calculate the total dose volume required for the design.
	.028 <sup>gal</sup> / <sub>ft</sub> xfeet of lateral per zone x 5 = [V <sub>Net Dose</sub> ] <sup>gal</sup> / <sub>dose</sub>
	$V_{\text{Net Dose}} = V_{\text{Total Dose}} - \frac{gal}{dose} + V_{\text{Total Drain back}} - \frac{gal}{dose} = [V_{\text{Total Dose}}] - \frac{gal}{dose}$
9.	Calculate the timer settings required for the design <b>On Setting = V</b> <sub>Total Dose</sub> ( $^{gal}/_{dose}$ ) ÷ Q <sub>set</sub> ( $^{gal}/_{min}$ ) =>> $^{gal}/_{dose}$ ÷ $^{gal}/_{min}$ = <u>On Setting</u> $^{min}/_{dose}$ .
	Convert any fractional minutes to seconds. ( $1/_{10}$ minute = 6 seconds Ex67min x 60 <sup>sec</sup> / <sub>min</sub> = 40 sec)
	On Setting = min sec ((Note: Overide On Setting set the same as On Setting))
	$\frac{\text{Off Setting} = \underline{Q}_{average} \left( \overset{\text{(gal}}{\text{(day)}} + \underbrace{V}_{Net \text{ Dose}} \left( \overset{\text{(gal}}{\text{(dase)}} \right) = >> \underbrace{\overset{\text{(gal}}{\text{(day)}} + \underbrace{Q}_{average}}_{average} \underbrace{\overset{\text{(gal}}{\text{(dase)}} + \underbrace{Q}_{average}}_{average} \underbrace{\overset{\text{(gal}}{\text{(dase)}} + \underbrace{Q}_{average}}_{average} \underbrace{\overset{\text{(gal}}{\text{(dase)}} + \underbrace{Q}_{average}}_{average} \underbrace{\overset{\text{(gal)}}{\text{(dase)}} + \underbrace{Q}_{average}}_{average} \underbrace{\overset{\text{(gal)}}{\text{(gal)}} + \underbrace{Q}_{average}}_{average} \underbrace{\overset{\text{(gal)}}{\text{(gal)}} + \underbrace{Q}_{average}}_{average}}_{average} \underbrace{\overset{\text{(gal)}}{\text{(gal)}} + \underbrace{Q}_{average}}_{average}}_{average} \underbrace{\overset{\text{(gal)}}{\text{(gal)}} + \underbrace{Q}_{average}}_{average}}_{average} \underbrace{\overset{\text{(gal)}}{\text{(gal)}} + \underbrace{Q}_{average}}_{average}}_{average} \underbrace{\overset{\text{(gal)}}{\text{(gal)}} + \underbrace{Q}_{average}}_{average}}_{average}}_{average} \underbrace{\overset{\text{(gal)}}{\text{(gal)}} + \underbrace{Q}_{average}}_{average}}_{average}}_{average}}_{average}}$
	24 <sup>louis</sup> / <sub>day</sub> ÷ [D <sub>average</sub> ] <sup>uses</sup> / <sub>day</sub> = Off Setting <sup>louis</sup> / <sub>dose</sub>
	Convert any fractional hours to minutes. (.10 hour = 6 minutes Ex20 hours x $60^{min}/_{hour}$ = 12minutes.)
	Off Setting =hrsmin per dose. Override Off Setting = Q <sub>peak</sub> ( <sup>gal</sup> / <sub>day</sub> ) ÷ V <sub>Net Dose</sub> ( <sup>gal</sup> / <sub>dose</sub> ) =>>g <sup>al</sup> / <sub>day</sub> ÷g <sup>al</sup> / <sub>day</sub> ÷g <sup>al</sup> / <sub>dose</sub> = [D <sub>peak</sub> ]d <sup>doses</sup> / <sub>day</sub>
	Override Off Setting = $Q_{\text{peak}} \begin{pmatrix} gal/_{\text{day}} \end{pmatrix} \div V_{\text{Net Dose}} \begin{pmatrix} gal/_{\text{dose}} \end{pmatrix} =>> \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_$
	<u>Convert any fractional hours to minutes. (.10 hour = 6 minutes Ex45 hours x 60<sup>mm</sup>/<sub>hour</sub> = 27minutes.)</u>
	Override Off Setting =hrsmin per dose.

Update effective January 1, 2015 - This manual may be used as a reference by a STS designer when specifying standards for
construction, installation notes and certain aggregate materials for STS components. STS designers are not be required to use this
manual. When used, if conflicts exist between this manual and Ohio Administrative Code 3701-29, the state code shall prevail. STS contactors shall follow the approved Store design.
STS contactors shall follow the approved STS design: General nearth District
w Rate Calculations/Drainback/Float Settings Worksheet For Pumped Secondary Systems (ex. Modified At-grades)
Using A Dosing Basin/Tank With A Uniform Volume Throughout The Tank's Depth

Address:

a.

- 1. The following must be done BEFORE completing this work sheet.
  - All pressure pipes are properly glued, weep hole has been properly drilled, and no external water is entering the tank.

Permit Number:

- b. Supply mains and manifolds, then laterals were flushed. See Section 5.14. Observe water leaving clean-outs for:
  - (i) Uniform Streams.
  - (ii) Clear Flow With No Debris.
- 2. Make a drawing of laterals below and note the house location. Measure the full operating head of the system using clear tubes on the lateral clean outs. Measurements are taken from the top of the lateral, not the top of the clean out. Record the initial squirt heights on at least 25% (min. 2) of the laterals.
- 3. Set the operating head to 5ft. on each lateral using clear tubes on <u>all</u> of the lateral cleanouts (Check Every Lateral at the same time.) The "lowest" squirt height must be at 5ft. Record each individual lateral's set squirt height on your drawing above.
  - (a) If the squirt heights vary on different laterals, then check for blocks/breaks or other problems and make appropriate repairs. See Section 5.8.5 for allowable squirt height variation.
  - (b) After repairs are made start over at step 1.
- 4. Perform a timed draw down test, Section 3.8.1. The volume of the tank/basin in gallons per inch will be needed. Consult the tank vendor for specific tank volumes. For best accuracy, draw down tests should be performed by running the pump for 2 4 minutes.

Dosing Tank Dimensions	Man	ufacturer		Size
(End measurement	- Start measurement	) x Volume of tank	<sup>gal</sup> / <sub>inch</sub> ÷ Run Time	_min. =
			[Q <sub>set</sub> ] _	gai/ <sub>min</sub>

- 5. Divided  $\mathbf{Q}_{set}$  by  $\mathbf{Q}_{design}$  ( $\mathbf{Q}_{design}$  is given in the design or is calculated by the # of orifices in each zone multiplied by .4325) Number of orifices per zone in the system\_\_\_\_\_ x .4325 =  $\left[\mathbf{Q}_{design}\right]_{min}^{gal}$ 
  - Q<sub>set</sub>/Q<sub>design</sub> =
  - (a) If  $\mathbf{Q}_{set}/\mathbf{Q}_{design}$  is .85 or greater, but less than 1.15; then it is OK to proceed.
  - (b) If **Q**<sub>set</sub>/**Q**<sub>design</sub> is less that .85 or greater than 1.15; then repairs must be made. Return to step 2.
- 6. Calculate any drain back volume in the piping network. (Includes discharge assemblies, force mains, sub mains, and manifolds) Note: Laterals would only be calculated if orifices are in the up position

		_	
		+	
Feet of 2" PVC Drain back	х	.174 <sup>gal</sup> / <sub>ft</sub> =	gallons
Feet of 1½" PVC Drain back	х	.106 <sup>gal</sup> / <sub>ft</sub> =	gallons.
Feet of 1¼" PVC Drain back	х	.078 <sup>gal</sup> / <sub>ft</sub> =	gallons.
Feet of 1" PVC Drain back	х	.045 <sup>gal</sup> / <sub>ft</sub> =	gallons.
Feet of ¾" PVC Drain back	х	.028 <sup>gal</sup> / <sub>ft</sub> =	gallons.
vouid only be calculated if orifices are in the up position			

 $\begin{bmatrix} V_{\text{Total Drain back}} = \underline{gallons.} \\ \text{Verify this calculated estimate by measuring the liquid levels directly in dosing tank after the pump turns off following a full dosing event and after drain back ceases. This will yield the drain back volume. The volume of the dose tank in gallons per inch will be needed to calculate using this method. Consult the tank vendor for specific tank volumes.$ 

(Start measurement	End measurement	) x Volume of tank	<sup>gal</sup> / <sub>inch</sub> =	[VTotal Drain back]	gal	K
		Note: The greater of these	two volume	s will be used for	future calculati	ońs.

7.		total dose volume required for the design.	
	.028 <sup>gal</sup> / <sub>ft</sub> x	feet of lateral per zone x 5 = [[V <sub>Net Dose</sub> ] <sup>gal</sup> / <sub>dose</sub>	
	V <sub>Net Dose</sub>	$g^{al}/_{dose} + V_{Total Drain back}$	

8. Use the space below to calculate the float settings required for the design. These float settings must take into account any delay which the control panel may have after the "OFF" float drops. In these situations the installer will have to adjust the float settings accordingly.

### Flow Rate Calculations/Drainback/Float Settings Worksheet For Pumped Secondary Systems (ex. Modified At-grades) Using A Dosing Basin/Tank With A Variable Volume Throughout The Tank's Depth

Permit Number:

- The following must be done BEFORE completing this work sheet.
  - All pressure pipes are properly glued, weep hole has been properly drilled, and no external water is entering the tank. а. b.
    - Supply mains and manifolds, then laterals were flushed. See Section 5.14. Observe water leaving clean-outs for:
      - Uniform Streams. (i)

Address:

1.

5.

6.

- (ii) Clear Flow With No Debris.
- 2. Make a drawing of laterals below and note the house location. Measure the full operating head of the system using clear tubes on the lateral clean outs. Measurements are taken from the top of the lateral, not the top of the clean out. Record the initial squirt heights on at least 25% (min. 2) of the laterals.
- Set the operating head to 5ft. on each lateral using clear tubes on all of the lateral cleanouts (Check Every Lateral at the same 3. time.) The "lowest" squirt height must be at 5ft. Record each individual lateral's set squirt height on your drawing above.
  - If the squirt heights vary on different laterals, then check for blocks/breaks or other problems and make (a) appropriate repairs. See Section 5.8.5 for allowable squirt height variation.
    - After repairs are made start over at step 1. (b)
- Perform a timed draw down test, Section 3.8.1. The dosing tank volume chart will be needed. To properly perform a draw down 4. test, a measurement must be made to determine the water level location within the tank in relation to the tank top. The tank volume chart must then be consulted after the draw down has been completed to determine specific volumes. For best accuracy, draw down tests should be performed by running the pump for 2-4 minutes. Start by measuring from a fixed point to the inside top of the tank. Record this distance in the space provided. Next measure from the same fixed point to the surface of the water level. Record this distance in the space provided. Finally run the pump for an exact length of time and immediately measure from the fixed point to the "stop" liquid level. Record this measurement in the space provided. Note: The stop measurement should not include piping drainback. All Measurements must be to the nearest 1/8 inch.

Dimensions	lanufacturer		Size
Inside Top of Tank			
Start Liquid Level - I	ed Point to Inside Top of Tank	=	Start Measurement
Stop Liquid Level I	ked Point to Inside Top of Tank	=	Stop Measurement
me In Tank at the Start Measurem	nt gallons		
me In Tank at the Stop Measurem	tgallons		
	gallons ÷	minutes run =	= <b>[Q<sub>set</sub>]</b> <sup>gai</sup> / <sub>min</sub>
by <b>Q<sub>design</sub> (Q<sub>design</sub> is given in the de</b>			ultiplied by .4325)
ifices per zone in the system		/ <sub>min</sub>	
Q <sub>set</sub> /Q <sub>design</sub> =			
If Qset/Qdesign is .85 or greater,	ut less than 1.15; then it is OK to p	proceed.	
If <b>Q</b> <sub>set</sub> / <b>Q</b> <sub>design</sub> is less that .85 c	greater than 1.15; then repairs mu	st be made. Return	n to step 2.
drain back volume in the piping ne		lies, force mains, sul	b mains, and manifolds)
: Laterals would only be calculated	orifices are in the up position		
me In Tank at the Stop Measurem = by Q <sub>design</sub> (Q <sub>design</sub> is given in the de ifices per zone in the system Q <sub>set</sub> /Q <sub>design</sub> = If Q <sub>set</sub> /Q <sub>design</sub> is .85 or greater, If Q <sub>set</sub> /Q <sub>design</sub> is less that .85 or	tgallons gallons ÷ gn or is calculated by the # of orific _ x .4325 = [Q <sub>design</sub> ] <sup>gal</sup> / ut less than 1.15; then it is OK to p greater than 1.15; then repairs mu vork. (Includes discharge assembl	/ <sub>min</sub> proceed. ist be made.  Return	ultiplied by .4325) n to step 2.

,				
-	Feet of ¾" PVC Drain back	х	.028 <sup>gal</sup> / <sub>ft</sub> =	gallons.
	Feet of 1" PVC Drain back	Х	.045 <sup>gal</sup> / <sub>ft</sub> =	gallons.
	Feet of 1¼" PVC Drain back	Х	.078 <sup>gal</sup> / <sub>ft</sub> =	gallons.
	Feet of 1 <sup>1</sup> / <sub>2</sub> " PVC Drain back	Х	.106 <sup>gal</sup> / <sub>ft</sub> =	gallons.
	Feet of 2" PVC Drain back	Х	.174 <sup>gal</sup> / <sub>ft</sub> =	gallons

+

VTotal Drain back = gallons. Verify this calculated estimate by measuring the liquid levels directly in dosing tank after the pump turns off following a full dosing event and after drainback ceases. This will yield the drainback volume. The tank volume chart must be consulted to determine specific volumes. Use a method similar to Step 4 to derive volumes at specific tank depths.

	Vol. In Tank at the Stop Measurement Vol. In Tank After Drainback Measurement) = [VTotal Drain back]ga
	Note: The greater of these two volumes will be used for future calculations
7.	Calculate the total dose volume required for the design.
	028 <sup>gal</sup> / <sub>ft</sub> xfeet of lateral per zone x 5 = [V <sub>Net Dose</sub> ] <sup>gal</sup> / <sub>dose</sub>
	Vet Dose gal/dose + VTotal Drain back gal/dose = [VTotal Dose] gal/dose

8. Use the space below to calculate the float settings required for the design. These float settings must take into account any delay which the control panel may have after the "OFF" float drops. In these situations the installer will have to adjust the float settings accordingly.

Update effective January 1, 2015 - This manual may be used as a reference by a STS designer when specifying standards for construction, installation notes and certain aggregate materials for STS components. STS designers are not be required to use this

	<ul> <li>When used, if conflicts exist between this manual and Ohio Adi ntactors shall follow the approved STS design.</li> </ul>	ministrative Code 3701-29, the state code shall prevail. Number of Bedrooms		
Installer		Daily Design Flow (DDF) [# Bedrooms x 120 gal/day]		gal
HSTS Type		Time Dosed Reserve Volume [0.80 x DDF]*** [1.0 x DDF]	Minimum	Set At gal
Permit Number		Minimum Operating Capacity [2.5 x DDF]	Minimum	Set At gal

Da

Completed By:

nit Number		Mi	nimum Operating Capaci	ty [2.5 x DDF]			gal	ompleted By: ate:
Pump#1 (Firs	st Pump in Treatr	nent Train)	Pump#2 (Se	cond Pum	p in Trea	tment 7	Frain)	olet
Dosing Application	Timed	Demand	Dosing Application	Time	ed	Demand		ed
Tank Make/Model		( gal/in)	Tank Make/Model			(	gal/in)	By:
Pump Make/Model			Pump Make/Model					
	Timed Dosing			Timed I	Dosing			
Surge Capacity [ 0.80 x DI	DF ]***	Minimum Set At gal	Surge Capacity [ 0.80 >	( DDF ]***		Minimum	Set At gal	
Timed Drawdown Flow Ra	ite, (gal/min)	Q= gal/min	Timed Drawdown Flow	Rate, (gal/min)		Q=	gal/min	
Timer Setting Pump Run, (	(min)	T= min	Timer Setting Pump Ru	n, (min)		T=	min	
Dose Volume Delivered by	/ Pump [ Q x T]	gal	Dose Volume Delivered	by Pump [ Q x	: T]		gal	
Drainback Volume		gal	Drainback Volume				gal	
Net Dose Volume		gal	Net Dose Volume				gal	
<u> </u>	Demand Dosing			Demand	Dosing			
Dose Volume Delivered (B	ased on float settings)	gal	Dose Volume Delivered	Dose Volume Delivered (Based on float settings) gal				
Drainback Volume		gal	Drainback Volume				gal	
Net Dose Volume		gal	Net Dose Volume				gal	
Timed Dose Applie	cation Demand	Dose Application	Timed Dose App	olication	Demand	Dose Ap	plication	
gal High Water Alarm Surge* gal Timer Enable MOC gal Low Water Cutoff	n** in in in in in in in in	$\begin{array}{c c} m & & & & & \\ & & & & & \\ \hline & & & & & \\ \hline & & & &$	Reserve gal High Water Alarm Surge* gal Timer Enable Low Water Cutoff	in**	High Wate Alan 2 in Pump "Or Dose* Volume gal Pump "		Float Tree	HAMILTON COUNTY GENERAL HEALTH DISTE Division of Water Quality
*Water level MUST be within this of 3) Squirt height check **These dimensions measured fro *** Volumes may be reduced acco	capacity for 1) Pump drawdown te om the "Top of the Tank Lid" or "To ording to Section 3.4.4		*Water level MUST be within th 3) Squirt height check **These dimensions measured *** Volumes may be reduced a				-	Installer Generated Documentation           Tifle:         Dose         Worksheets           Drawn         By:         CMG         Date:         2/2/05         Revision #:

## **Owner/Installer Replacement System Interview and Sign Off Form**

The following problems have come up on previous repairs or replacements of Household Sewage Treatment Systems (HSTS) throughout the County. These situations have created unnecessary call-backs, nuisance alarms, and very costly <u>newly installed</u> system replacements. As a result, the Health District requires that the installer must interview the homeowner before the replacement system is given final approval. The following list includes situations that must be identified and eliminated by the homeowner. Your installer, or other qualified professional, may help you in this process. Once all of the items on the list have been addressed, you and your installer must sign the bottom of this form, acknowledging that the appropriate corrective actions have been taken. This form must then be given back to the Health District. The intent of this exercise is to ensure that your new HSTS will not be unnecessarily overloaded, creating premature system failure or nuisance conditions.

- □ I/we have identified and fixed, if present, any leaking pipes in the building sewer, allowing groundwater infiltration into the house drain and ultimately the HSTS.
- □ I/we have verified and have taken corrective actions, if necessary, ensuring that all piping tied into the HSTS is from household wastewater sources.
- □ I/we have verified and have taken corrective actions, if necessary, to ensure that all sources of wastewater are routed to the HSTS. (applicable permits obtained, for example a plumbing permit)
- □ I/we have verified and have taken corrective actions, if necessary, to ensure no downspouts, foundation drains, clear water sumps, and/or other non-wastewater sources are routed to the HSTS.
- □ I/we have verified and have taken corrective actions, if necessary, to reroute downspouts, foundation drains, and/or other non-wastewater source outlets away from the new sewage system.
- □ I/we will have the building sewer line replaced, back to the exit of the house, or as close as practically possible.
- □ I/we have verified and have taken corrective actions, if necessary, to fix any leaking plumbing fixtures in the dwelling. (Faucets, toilets, etc.)
- □ I/we have verified that any watersoftners within the dwelling are set so that the backwash waters will not make the household's wastewater volume exceed the average design flow rate of the sewage system.

Installer's Signature

Date

Homeowner's Signature Date

Printed Name

Printed Name

## 25 Appendix 25.0 References

AK Industries, Inc. 2001. *AK Industries: Plastic Sewage Tank Installation Procedures*. Plymouth, Indiana.

ASTM. 2003. *Standard Specifications for Concrete Aggregate. C-33.* American Society of Testing and Materials. ASTM C33-03. West Conshohocken, Pennsylvania

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