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.

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.

Hamilton County General Health District

Flow Rate Calculations/Drainback/Timer Settings Worksheet For 10' x 30' ISF Using A Concrete Septic Tank

Address:_____ Permit Number:_____

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

   (End measurement_____ - Start measurement_____) **x** Volume of tank_____ $^{gal}/_{inch}$ ÷ Run Time_____min. **=**
   [Q_{set}] _____ $^{gal}/_{min}$

5. Divide **Q_{set}** by **Q_{design}** (**Q_{design}** is 25.95 $^{gal}/_{min.}$)
   Q_{set}/Q_{design} = _____
   (a) If **Q_{set}/Q_{design}** is .85 or greater, but less than 1.15; then it is OK to proceed.
   (b) If **Q_{set}/Q_{design}** 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)

_____Feet of 1" PVC Drain back	x	.045 $^{gal}/_{ft}$ =	_____gallons.
_____Feet of 1¼" PVC Drain back	x	.078 $^{gal}/_{ft}$ =	_____gallons.
_____Feet of 1½" PVC Drain back	x	.106 $^{gal}/_{ft}$ =	_____gallons.
_____Feet of 2" PVC Drain back	x	.174 $^{gal}/_{ft}$ =	_____gallons

+ ==========

[$V_{Total\ Drain\ back}$] = _____ gallons.

17 $^{gal}/_{dose}$ + **$V_{Total\ Drain\ back}$** _____ $^{gal}/_{dose}$ **=** **[$V_{Total\ Dose}$]** _____ $^{gal}/_{dose}$

7. Calculate the timer settings required for the design
   On Setting = $V_{Total\ Dose}$ ($^{gal}/_{dose}$) ÷ Q_{set} ($^{gal}/_{min}$) **=>>** _____ $^{gal}/_{dose}$ ÷ _____ $^{gal}/_{min}$ = **On Setting** _____ $^{min}/_{dose}$.
   Convert any fractional minutes to seconds. ($^{1}/_{10}$ minute = 6 seconds Ex. .67min x 60 $^{sec}/_{min}$ = 40 sec)
   On Setting = _____min _____sec
   Override On Setting is the same as the On Setting
   Off Setting 2.84 $^{hours}/_{dose}$ or **Off Setting** = 2 hrs 51 min per dose.
   Override Off Setting 1.7 $^{hours}/_{dose}$ or **Override Off Setting** = 1 hr 42 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.

Hamilton County General Health District

Flow Rate Calculations/Drainback/Timer Settings Worksheet For 10' x 30' ISF Using A Poly or Fiberglass Septic Tank

Address:_____ Permit Number:_____

1. The following must be done BEFORE completing this work sheet.
   a. All pressure pipes are properly glued, weep hole has been properly drilled, and no external water is entering the tank.
   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 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.
   (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 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. **Note:** 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 Measurement _____gallons
   ==========
   = _____gallons ÷ _____ minutes run = **[Q_{set}]** _____ $^{gal}/_{min}$

5. Divide Q_{set} by Q_{design} (Q_{design} is 25.95 $^{gal}/_{min.}$)
   Q_{set}/Q_{design} = _____
   (a) If Q_{set}/Q_{design} is .85 or greater, but less than 1.15; then it is OK to proceed.
   (b) If Q_{set}/Q_{design} 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)

_____Feet of 1" PVC Drain back	x	.045 $^{gal}/_{ft}$ =	_____gallons.
_____Feet of 1¼" PVC Drain back	x	.078 $^{gal}/_{ft}$ =	_____gallons.
_____Feet of 1½" PVC Drain back	x	.106 $^{gal}/_{ft}$ =	_____gallons.
_____Feet of 2" PVC Drain back	x	.174 $^{gal}/_{ft}$ =	_____gallons

   \+ ==========
   [$V_{Total\ Drain\ back}$] = _____ gallons.

   17 $^{gal}/_{dose}$ + **$V_{Total\ Drain\ back}$** _____ $^{gal}/_{dose}$ = **[$V_{Total\ Dose}$]** _____ $^{gal}/_{dose}$

7. Calculate the timer settings required for the design
   On Setting = $V_{Total\ Dose}$ ($^{gal}/_{dose}$) ÷ Q_{set} ($^{gal}/_{min}$) **=>>** _____ $^{gal}/_{dose}$ ÷ _____ $^{gal}/_{min}$ = **On Setting** _____ $^{min}/_{dose}$.
   Convert any fractional minutes to seconds. ($^{1}/_{10}$ minute = 6 seconds Ex. .67min x 60 $^{sec}/_{min}$ = 40 sec)
   On Setting = _____min _____sec
   Override On Setting is the same as the On Setting
   Off Setting 2.84 $^{hours}/_{dose}$ or **Off Setting** = 2 hrs 51 min per dose.
   Override Off Setting 1.7 $^{hours}/_{dose}$ or **Override Off Setting** = 1 hr 42 min per dose.

Hamilton County General Health District

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

Address:_____ Permit Number:_____

1. The following must be done BEFORE completing this work sheet.
   a. All pressure pipes are properly glued, weep hole has been properly drilled, and no external water is entering the tank.
   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 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.
   (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_____) **x** Volume of tank_____ $^{gal}/_{inch}$ ÷ Run Time_____min. **=**
   [Q_{set}] _____ $^{gal}/_{min}$

5. Divide **Q_{set}** by **Q_{design}** (**Q_{design}** is 31.14 $^{gal}/_{min.}$)
   Q_{set}/Q_{design} = _____
   (a) If **Q_{set}/Q_{design}** is .85 or greater, but less than 1.15; then it is OK to proceed.
   (b) If **Q_{set}/Q_{design}** 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)

_____Feet of 1" PVC Drain back	x	.045 $^{gal}/_{ft}$ =	_____gallons.
_____Feet of 1¼" PVC Drain back	x	.078 $^{gal}/_{ft}$ =	_____gallons.
_____Feet of 1½" PVC Drain back	x	.106 $^{gal}/_{ft}$ =	_____gallons.
_____Feet of 2" PVC Drain back	x	.174 $^{gal}/_{ft}$ =	_____gallons

+ ==========

[$V_{Total\ Drain\ back}$] = _____ gallons.

20 $^{gal}/_{dose}$ + **$V_{Total\ Drain\ back}$** _____ $^{gal}/_{dose}$ **=** **[$V_{Total\ Dose}$]** _____ $^{gal}/_{dose}$

7. Calculate the timer settings required for the design
   On Setting = $V_{Total\ Dose}$ ($^{gal}/_{dose}$) ÷ Q_{set} ($^{gal}/_{min}$) **=>>** _____ $^{gal}/_{dose}$ ÷ _____ $^{gal}/_{min}$ = **On Setting** _____ $^{min}/_{dose}$.
   Convert any fractional minutes to seconds. ($^{1}/_{10}$ minute = 6 seconds Ex. .67min x 60 $^{sec}/_{min}$ = 40 sec)
   On Setting = _____min _____sec
   Override On Setting is the same as the On Setting
   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.

Hamilton County General Health District

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

Address:_____ Permit Number:_____

1. The following must be done BEFORE completing this work sheet.
   a. All pressure pipes are properly glued, weep hole has been properly drilled, and no external water is entering the tank.
   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 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.
   (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 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. **Note:** 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 Measurement _____gallons
   ==========
   = _____gallons ÷ _____ minutes run = **[Q_{set}]** _____ $^{gal}/_{min}$

5. Divide Q_{set} by Q_{design} (Q_{design} is 31.14 $^{gal}/_{min.}$)
   Q_{set}/Q_{design} = _____
   (a) If Q_{set}/Q_{design} is .85 or greater, but less than 1.15; then it is OK to proceed.
   (b) If Q_{set}/Q_{design} 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)

_____Feet of 1" PVC Drain back	x	.045 $^{gal}/_{ft}$ =	_____gallons.
_____Feet of 1¼" PVC Drain back	x	.078 $^{gal}/_{ft}$ =	_____gallons.
_____Feet of 1½" PVC Drain back	x	.106 $^{gal}/_{ft}$ =	_____gallons.
_____Feet of 2" PVC Drain back	x	.174 $^{gal}/_{ft}$ =	_____gallons

\+ ==========

[$V_{Total\ Drain\ back}$] = _____ gallons.

20 $^{gal}/_{dose}$ + **$V_{Total\ Drain\ back}$** _____ $^{gal}/_{dose}$ = **[$V_{Total\ Dose}$]** _____ $^{gal}/_{dose}$

7. Calculate the timer settings required for the design
   On Setting = $V_{Total\ Dose}$ ($^{gal}/_{dose}$) ÷ Q_{set} ($^{gal}/_{min}$) **=>>** _____ $^{gal}/_{dose}$ ÷ _____ $^{gal}/_{min}$ = **On Setting** _____ $^{min}/_{dose}$.
   Convert any fractional minutes to seconds. ($^{1}/_{10}$ minute = 6 seconds Ex. .67min x 60 $^{sec}/_{min}$ = 40 sec)
   On Setting = _____min _____sec
   Override On Setting is the same as the On Setting
   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.

Hamilton County General Health District

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

Address:_____ Permit Number:_____

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

   (End measurement_____ - Start measurement_____) **x** Volume of tank_____ $^{gal}/_{inch}$ ÷ Run Time_____min. =
   [Q_{set}] _____ $^{gal}/_{min}$

5. Divide Q_{set} by Q_{design} (Q_{design} is 41.52 $^{gal}/_{min.}$)
   Q_{set}/Q_{design} = _____
   (a) If **Q_{set}/Q_{design}** is .85 or greater, but less than 1.15; then it is OK to proceed.
   (b) If **Q_{set}/Q_{design}** 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)

_____Feet of 1" PVC Drain back	x	.045 $^{gal}/_{ft}$ =	_____gallons.
_____Feet of 1¼" PVC Drain back	x	.078 $^{gal}/_{ft}$ =	_____gallons.
_____Feet of 1½" PVC Drain back	x	.106 $^{gal}/_{ft}$ =	_____gallons.
_____Feet of 2" PVC Drain back	x	.174 $^{gal}/_{ft}$ =	_____gallons

+ ==========

[$V_{Total\ Drain\ back}$] = _____ gallons.

27 $^{gal}/_{dose}$ + **$V_{Total\ Drain\ back}$** _____ $^{gal}/_{dose}$ = **[$V_{Total\ Dose}$]** _____ $^{gal}/_{dose}$

7. Calculate the timer settings required for the design
   On Setting = $V_{Total\ Dose}$ ($^{gal}/_{dose}$) ÷ Q_{set} ($^{gal}/_{min}$) **=>>** _____ $^{gal}/_{dose}$ ÷ _____ $^{gal}/_{min}$ = **On Setting** _____ $^{min}/_{dose}$.
   Convert any fractional minutes to seconds. ($^{1}/_{10}$ minute = 6 seconds Ex. .67min x $60^{sec}/_{min}$ = 40 sec)
   On Setting = _____min _____sec
   Override On Setting is the same as the On Setting
   Off Setting 2.25 $^{hours}/_{dose}$ or **Off Setting** = 2 hrs 15 min per dose.
   Override Off Setting 1.35 $^{hours}/_{dose}$ 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.

Hamilton County General Health District

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

Address:_____ Permit Number:_____

1. The following must be done BEFORE completing this work sheet.
   a. All pressure pipes are properly glued, weep hole has been properly drilled, and no external water is entering the tank.
   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 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.
   (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 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. **Note:** 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 Measurement _____gallons
   ==========
   = _____gallons ÷ _____ minutes run = **[Q_{set}]** _____ $^{gal}/_{min}$

5. Divide Q_{set} by Q_{design} (Q_{design} is 41.52 $^{gal}/_{min.}$)
   Q_{set}/Q_{design} = _____
   (a) If Q_{set}/Q_{design} is .85 or greater, but less than 1.15; then it is OK to proceed.
   (b) If Q_{set}/Q_{design} 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)

_____Feet of 1" PVC Drain back	x	.045 $^{gal}/_{ft}$ =	_____gallons.
_____Feet of 1¼" PVC Drain back	x	.078 $^{gal}/_{ft}$ =	_____gallons.
_____Feet of 1½" PVC Drain back	x	.106 $^{gal}/_{ft}$ =	_____gallons.
_____Feet of 2" PVC Drain back	x	.174 $^{gal}/_{ft}$ =	_____gallons

\+ ==========

[$V_{Total\ Drain\ back}$] = _____ gallons.

27 $^{gal}/_{dose}$ + **$V_{Total\ Drain\ back}$** _____ $^{gal}/_{dose}$ = **[$V_{Total\ Dose}$]** _____ $^{gal}/_{dose}$

7. Calculate the timer settings required for the design
   On Setting = $V_{Total\ Dose}$ ($^{gal}/_{dose}$) ÷ Q_{set} ($^{gal}/_{min}$) **=>>** _____ $^{gal}/_{dose}$ ÷ _____ $^{gal}/_{min}$ = **On Setting** _____ $^{min}/_{dose}$.
   Convert any fractional minutes to seconds. ($^{1}/_{10}$ minute = 6 seconds Ex. .67min x 60 $^{sec}/_{min}$ = 40 sec)

   On Setting = _____min _____sec
   Override On Setting is the same as the On Setting
   Off Setting 2.25 $^{hours}/_{dose}$ or **Off Setting** = 2 hrs 15 min per dose.
   Override Off Setting 1.35 $^{hours}/_{dose}$ 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.

Hamilton County General Health District

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

Address:_____ Permit Number:_____

1. Number of bedrooms _____ x 120 $^{gal}/_{day}$ = **[Q_{peak}]** _____ $^{gal}/_{day}$ x .60 = **[$Q_{average}$]** _____ $^{gal}/_{day}$

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

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 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_____) **x** Volume of tank_____ $^{gal}/_{inch}$ ÷ Run Time_____min. **=**
   [Q_{set}] _____ $^{gal}/_{min}$

6. Divide **Q_{set}** by **Q_{design}** (**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}]** _____ $^{gal}/_{min}$
   Q_{set}/Q_{design} = _____
   (a) If **Q_{set}/Q_{design}** is .85 or greater, but less than 1.15; then it is OK to proceed.
   (b) If **Q_{set}/Q_{design}** is less that .85 or greater than 1.15; then repairs must be made. Return to step 2.

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

_____Feet of ¾" PVC Drain back	x	.028 $^{gal}/_{ft}$ =	_____gallons.
_____Feet of 1" PVC Drain back	x	.045 $^{gal}/_{ft}$ =	_____gallons.
_____Feet of 1¼" PVC Drain back	x	.078 $^{gal}/_{ft}$ =	_____gallons.
_____Feet of 1½" PVC Drain back	x	.106 $^{gal}/_{ft}$ =	_____gallons.
_____Feet of 2" PVC Drain back	x	.174 $^{gal}/_{ft}$ =	_____gallons
		+	==========
		[$V_{Total\ Drain\ back}$] =	_____ **gallons.**

8. Calculate the total dose volume required for the design.
   .028 $^{gal}/_{ft}$ x _____feet of lateral per zone x 5 = **[$V_{Net\ Dose}$]** _____ $^{gal}/_{dose}$
   $V_{Net\ Dose}$_____ $^{gal}/_{dose}$ + **$V_{Total\ Drain\ back}$** _____ $^{gal}/_{dose}$ **=** **[$V_{Total\ Dose}$]** _____ $^{gal}/_{dose}$

9. Calculate the timer settings required for the design
   On Setting = $V_{Total\ Dose}$ ($^{gal}/_{dose}$) ÷ Q_{set} ($^{gal}/_{min}$) **=>>** _____ $^{gal}/_{dose}$ ÷ _____ $^{gal}/_{min}$ = **On Setting** _____ $^{min}/_{dose.}$
   Convert any fractional minutes to seconds. ($^{1}/_{10}$ minute = 6 seconds Ex. .67min x $60^{sec}/_{min}$ = 40 sec)
   On Setting = _____min _____sec ((Note: **Overide On Setting** set the same as **On Setting**))
   Off Setting = $Q_{average}$ ($^{gal}/_{day}$) **÷ $V_{Net\ Dose}$** ($^{gal}/_{dose}$) **=>>** _____ $^{gal}/_{day}$ ÷_____ $^{gal}/_{dose}$ = **[$D_{average}$]**_____ $^{doses}/_{day}$
   24 $^{hours}/_{day}$ **÷ [$D_{average}$]**_____ $^{doses}/_{day}$ = **Off Setting** _____ $^{hours}/_{dose}$
   Convert any fractional hours to minutes. (.10 hour = 6 minutes Ex. .20 hours x $60^{min}/_{hour}$ = 12minutes.)
   Off Setting = _____hrs _____min -- per dose.
   Override Off Setting = Q_{peak} ($^{gal}/_{day}$) **÷ $V_{Net\ Dose}$** ($^{gal}/_{dose}$) **=>>** _____ $^{gal}/_{day}$ ÷_____ $^{gal}/_{dose}$ = **[D_{peak}]**_____ $^{doses}/_{day}$
   24 $^{hours}/_{day}$ **÷[D_{peak}]**_____ $^{doses}/_{day}$ = **Override Off Setting**_____ $^{hours}/_{dose}$
   Convert any fractional hours to minutes. (.10 hour = 6 minutes Ex. .45 hours x $60^{min}/_{hour}$ = 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.

Hamilton County General Health District

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 $^{gal}/_{day}$ = **[Q_{peak}]** _____ $^{gal}/_{day}$ x .60 = **[$Q_{average}$]** _____ $^{gal}/_{day}$
2. The following must be done BEFORE completing this work sheet.
   a. All pressure pipes are properly glued, weep hole has been properly drilled, and no external water is entering the tank.
   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.
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. **Note:** 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 Measurement _____gallons
   ==========
   = _____gallons ÷ _____ minutes run = **[Q_{set}]** _____ $^{gal}/_{min}$
6. Divide **Q_{set}** by **Q_{design}** (**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}]** _____ $^{gal}/_{min}$
   Q_{set}/Q_{design} = _____
   (a) If **Q_{set}/Q_{design}** is .85 or greater, but less than 1.15; then it is OK to proceed.
   (b) If **Q_{set}/Q_{design}** is less that .85 or greater than 1.15; then repairs must be made. Return to step 2.
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

_____Feet of ¾" PVC Drain back	x	.028 $^{gal}/_{ft}$ =	_____gallons.
_____Feet of 1" PVC Drain back	x	.045 $^{gal}/_{ft}$ =	_____gallons.
_____Feet of 1¼" PVC Drain back	x	.078 $^{gal}/_{ft}$ =	_____gallons.
_____Feet of 1½" PVC Drain back	x	.106 $^{gal}/_{ft}$ =	_____gallons.
_____Feet of 2" PVC Drain back	x	.174 $^{gal}/_{ft}$ =	_____gallons

+ ==========
[$V_{Total\ Drain\ back}$] = _____ gallons.

8. Calculate the total dose volume required for the design.
   .028 $^{gal}/_{ft}$ x _____feet of lateral per zone x 5 = **[$V_{Net\ Dose}$]** _____ $^{gal}/_{dose}$
   $V_{Net\ Dose}$_____ $^{gal}/_{dose}$ + **$V_{Total\ Drain\ back}$** _____ $^{gal}/_{dose}$ = **[$V_{Total\ Dose}$]** _____ $^{gal}/_{dose}$
9. Calculate the timer settings required for the design
   On Setting = $V_{Total\ Dose}$ ($^{gal}/_{dose}$) ÷ Q_{set} ($^{gal}/_{min}$) **=>>** _____ $^{gal}/_{dose}$ ÷ _____ $^{gal}/_{min}$ = **On Setting** _____ $^{min}/_{dose}$.
   Convert any fractional minutes to seconds. ($^{1}/_{10}$ minute = 6 seconds Ex. .67min x $60^{sec}/_{min}$ = 40 sec)
   On Setting = _____min _____sec ((Note: **Overide On Setting** set the same as **On Setting**))
   Off Setting = $Q_{average}$ ($^{gal}/_{day}$) **÷ $V_{Net\ Dose}$** ($^{gal}/_{dose}$) **=>>** _____ $^{gal}/_{day}$ ÷_____ $^{gal}/_{dose}$ = **[$D_{average}$]**_____ $^{doses}/_{day}$
   24 $^{hours}/_{day}$ **÷ [$D_{average}$]**_____ $^{doses}/_{day}$ = **Off Setting** _____ $^{hours}/_{dose}$
   Convert any fractional hours to minutes. (.10 hour = 6 minutes Ex. .20 hours x $60^{min}/_{hour}$ = 12minutes.)
   Off Setting = _____hrs _____min -- per dose.
   Override Off Setting = Q_{peak} ($^{gal}/_{day}$) **÷ $V_{Net\ Dose}$** ($^{gal}/_{dose}$) =>> _____ $^{gal}/_{day}$ ÷_____ $^{gal}/_{dose}$ = **[D_{peak}]**_____ $^{doses}/_{day}$
   24 $^{hours}/_{day}$ **÷[D_{peak}]**_____ $^{doses}/_{day}$ = **Override Off Setting** _____ $^{hours}/_{dose}$
   Convert any fractional hours to minutes. (.10 hour = 6 minutes Ex. .45 hours x $60^{min}/_{hour}$ = 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.

Hamilton County General Health District

Flow 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:_____ Permit Number:_____

1. The following must be done BEFORE completing this work sheet.
   a. All pressure pipes are properly glued, weep hole has been properly drilled, and no external water is entering the tank.
   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 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.
   (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_____) **x** Volume of tank_____ $^{gal}/_{inch}$ ÷ Run Time_____min. **=**
   [Q_{set}] _____ $^{gal}/_{min}$

5. Divided Q_{set} by Q_{design} (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}]** _____ $^{gal}/_{min}$
   Q_{set}/Q_{design} = _____
   (a) If **Q_{set}/Q_{design}** is .85 or greater, but less than 1.15; then it is OK to proceed.
   (b) If **Q_{set}/Q_{design}** 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 ¾" PVC Drain back	x	.028 $^{gal}/_{ft}$ =	_____gallons.
_____	Feet of 1" PVC Drain back	x	.045 $^{gal}/_{ft}$ =	_____gallons.
_____	Feet of 1¼" PVC Drain back	x	.078 $^{gal}/_{ft}$ =	_____gallons.
_____	Feet of 1½" PVC Drain back	x	.106 $^{gal}/_{ft}$ =	_____gallons.
_____	Feet of 2" PVC Drain back	x	.174 $^{gal}/_{ft}$ =	_____gallons

+ ==========

[$V_{Total\ Drain\ back}$] = _____ 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 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_____ $^{gal}/_{inch}$ = **[$V_{Total\ Drain\ back}$]** _____**gal**

***Note**: The greater of these two volumes will be used for future calculations.*

7. Calculate the total dose volume required for the design.
   .028 $^{gal}/_{ft}$ x _____feet of lateral per zone x 5 = **[$V_{Net\ Dose}$]** _____ $^{gal}/_{dose}$
   $V_{Net\ Dose}$_____ $^{gal}/_{dose}$ + **$V_{Total\ Drain\ back}$** _____ $^{gal}/_{dose}$ **=** **[$V_{Total\ Dose}$]** _____ $^{gal}/_{dose}$

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 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.

Hamilton County General Health District

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

Address:_____ Permit Number:_____

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

   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 Measurement _____gallons
   ==========
   = _____gallons ÷ _____ minutes run = [**Q_{set}**] _____ $^{gal}/_{min}$
5. Divided **Q_{set}** by **Q_{design}** (**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}**] _____ $^{gal}/_{min}$
   Q_{set}/Q_{design} = _____
   (a) If **Q_{set}/Q_{design}** is .85 or greater, but less than 1.15; then it is OK to proceed.
   (b) If **Q_{set}/Q_{design}** 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 ¾" PVC Drain back	x	.028 $^{gal}/_{ft}$ =	_____gallons.
_____	Feet of 1" PVC Drain back	x	.045 $^{gal}/_{ft}$ =	_____gallons.
_____	Feet of 1¼" PVC Drain back	x	.078 $^{gal}/_{ft}$ =	_____gallons.
_____	Feet of 1½" PVC Drain back	x	.106 $^{gal}/_{ft}$ =	_____gallons.
_____	Feet of 2" PVC Drain back	x	.174 $^{gal}/_{ft}$ =	_____gallons

   + ==========
   [**$V_{Total\ Drain\ back}$**] **=** _____ **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 _____) = [**$V_{Total\ Drain\ back}$**] _____**gal**

   ***Note**: The greater of these two volumes will be used for future calculations.*
7. Calculate the total dose volume required for the design.
   .028 $^{gal}/_{ft}$ x _____feet of lateral per zone x 5 = [**$V_{Net\ Dose}$**] _____ $^{gal}/_{dose}$
   $V_{Net\ Dose}$_____ $^{gal}/_{dose}$ + **$V_{Total\ Drain\ back}$** _____ $^{gal}/_{dose}$ **=** [**$V_{Total\ Dose}$**] _____ $^{gal}/_{dose}$
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 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.

Site Address		**Number of Bedrooms**		
Installer		**Daily Design Flow (DDF) [# Bedrooms x 120 gal/day]**		**gal**
HSTS Type		**Reserve Volume [0.80 x DDF]*** Time Dosed [1.0 x DDF] Demand Dosed**	Minimum	Set At **gal**
Permit Number		**Minimum Operating Capacity [2.5 x DDF]**	Minimum	Set At **gal**

Date:

Completed By:

Pump#1 (First Pump in Treatment Train)

Dosing Application	**Timed**	**Demand**	
Tank Make/Model			**(gal/in)**
Pump Make/Model			

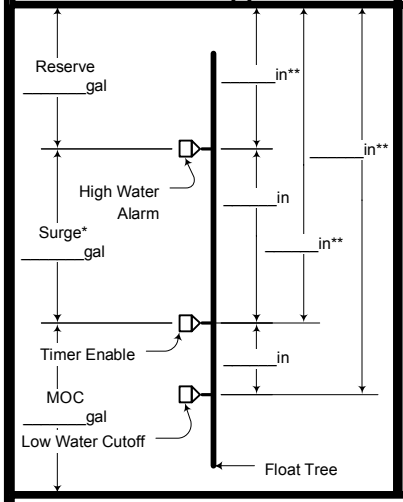
Timed Dosing

Surge Capacity [0.80 x DDF]* **	Minimum	Set At	**gal**
Timed Drawdown Flow Rate, (gal/min)	Q=		**gal/min**
Timer Setting Pump Run, (min)	T=		**min**
Dose Volume Delivered by Pump [Q x T]			**gal**
Drainback Volume			**gal**
Net Dose Volume			**gal**

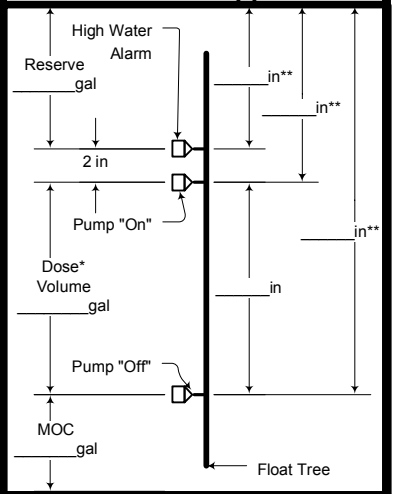
Demand Dosing

Dose Volume Delivered (Based on float settings)	**gal**
Drainback Volume	**gal**
Net Dose Volume	**gal**

Timed Dose Application



Demand Dose Application



***Water level MUST be within this capacity for 1) Pump drawdown test; 2) Gate valve adjustment; 3) Squirt height check**
****These dimensions measured from the "Top of the Tank Lid" or "Top of the Tank Lip"**
***** Volumes may be reduced according to Section 3.4.4**

Pump#2 (Second Pump in Treatment Train)

Dosing Application	**Timed**	**Demand**	
Tank Make/Model			**(gal/in)**
Pump Make/Model			

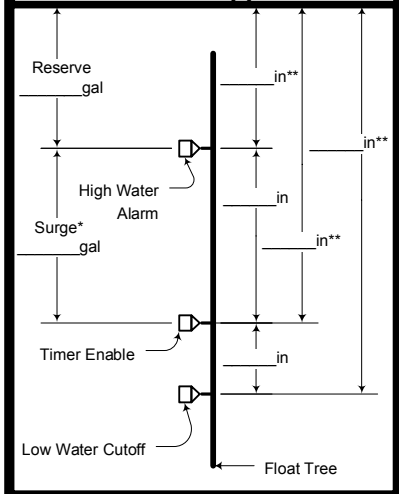
Timed Dosing

Surge Capacity [0.80 x DDF]* **	Minimum	Set At	**gal**
Timed Drawdown Flow Rate, (gal/min)	Q=		**gal/min**
Timer Setting Pump Run, (min)	T=		**min**
Dose Volume Delivered by Pump [Q x T]			**gal**
Drainback Volume			**gal**
Net Dose Volume			**gal**

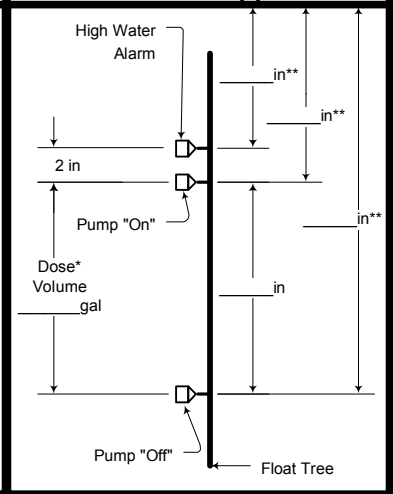
Demand Dosing

Dose Volume Delivered (Based on float settings)	**gal**
Drainback Volume	**gal**
Net Dose Volume	**gal**

Timed Dose Application



Demand Dose Application



***Water level MUST be within this capacity for 1) Pump drawdown test; 2) Gate valve adjustment; 3) Squirt height check**
****These dimensions measured from the "Top of the Tank Lid" or "Top of the Tank Lip"**
***** Volumes may be reduced according to Section 3.4.4**

HAMILTON COUNTY GENERAL HEALTH DISTRICT
Division of Water Quality

Installer Generated Documentation

Title: **Dose Worksheets**

Drawn By:	Date:	Revision #:
CMG	2/2/05	3.0

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 newly installed 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

ASTM. 2003. *Standard Specification for Precast Concrete Septic Tanks*. American Society of Testing and Materials. ASTM C1227-03 West Conshohocken, Pennsylvania.

Advanced Drainage Systems, Inc. *SB_2 Installation Guidelines*. Columbus, Ohio.

Advanced Drainage Systems, Inc. *N-12 Sanitary Pipe Products*. Columbus, Ohio.

Advanced Drainage Systems, Inc. *Nonwoven Geotextile Products*. Columbus, Ohio.

American Manufacturing Company, Inc. 2002. *Perc-Rite Wastewater Drip Dispersal Systems: Designer's Guide*. Manassas, Virginia.

American Manufacturing Company, Inc. 2004. *American Septic Drip Distribution Installer's Guide - Draft*. Manassas, Virginia.

Amerson, R., Tyler, E.J., and Converse, J.C. 1991. *Infiltration as Affected by Compaction, Fines, and Contact Area of Gravel.* Proceedings of the Sixth National Symposium on Individual and Small Community Sewage Systems. ASAE, St. Joseph, Michigan

Auger, R., Chenier, R., and Roy, C. 1998. *Use of Non-Woven Fabric in Intermittent Filters.* Proceedings of the Eighth National Symposium on Individual and Small Community Sewage Systems. ASAE, St. Joseph, Michigan.

Ball, H.L. 1991. *Sand Filters: State of the Art and Beyond*. Proceedings of the Sixth National Symposium on Individual and Small Community Sewage Systems. ASAE, St. Joseph, Michigan.

Ball, H.L. 1994. *Sand Filters and Shallow Drainfields*. Orenco Systems, Inc., Sutherlin Oregon.

Ball, H.L. 1995. *Pressure Dosing: Attention To Detail*. Orenco Systems, Inc., Sutherlin Oregon.