

RetroFAST® Service Manual For Indiana

For use with:

RetroFAST® 0.150, 0.250, 0.375



CONTENTS

| | |
|--|-----------|
| GENERAL INFORMATION | 4 |
| ABOUT FAST® | 4 |
| GENERAL NOTES..... | 5 |
| GENERAL LAYOUT AND MAJOR SYSTEM COMPONENTS | 6 |
| REGULAR SERVICE MAINTENANCE | 7 |
| SERVICE PROVIDER CHECKLIST | 8 |
| HOW TO CHECK THE SLUDGE DEPTH..... | 8 |
| TANK PUMPING PROCEDURE..... | 9 |
| SEASONAL/INTERMITTENT USE | 9 |
| BLOWER REPLACEMENT | 10 |
| Blower Removal: | 10 |
| Blower Installation: | 11 |
| CLEANING THE BLOWER FILTER | 11 |
| Blower Filter Removal:..... | 11 |
| Blower Filter Installation:..... | 12 |
| CONTROL PANEL REPLACEMENT | 12 |
| TROUBLE-SHOOTING GUIDE | 13 |
| LIMITED WARRANTY | 14 |
| TERMS AND CONDITIONS..... | 14 |
| KEEP FOR YOUR RECORDS | 15 |
| APPENDIX: COLLECTION OF EFFLUENT SAMPLE | 16 |

GENERAL INFORMATION

One or more of the following patents protects this process: 3,966,599; 3,966,608; 3,972,965; 5,156,742.

If you have questions regarding any BioMicrobics product, please contact your distributor first.

If necessary, contact us at:

1-800-753-FAST (3278) or +1-913-422-0707

e-mail: sales@biomicrobics.com

ABOUT FAST

The FAST® (Fixed Activated Sludge Treatment) system uses naturally occurring bacteria (biomass) to treat sewage for dispersal into the soil absorption field. This continuous process provides the biomass with food (waste) and air in a suitable environment. Dead bacteria and non-biodegradable waste settle and accumulate in the bottom of the tank for periodic removal.

The FAST assembly consists of two components: the treatment module and blower. The blower continuously provides air to the system via the air supply pipe. The air supply pipe and draft tube create an airlift, which mixes oxygen and waste throughout the media inside the tank. Bacteria, supported by air from the airlift, grows on the media and digests the waste. Finally, a vent pipe expels vapors created by the process.



Always secure all access covers to prevent unauthorized people from entering the tank. Only qualified service personnel should open access ports and/or covers.

Infectious organisms also exist in a septic tank. So if any contact with wastewater occurs, immediately wash and disinfect all exposed areas and contact personal physician. Failure to do so could result in severe sickness or death.

DO NOT use an open flame or cause a spark near a septic tank's access points. Gases emanating from septic tanks can explode if ignited or deadly if inhaled.

1. GENERAL

The treatment system is complete with all needed equipment as shown on the drawings and specified therein. The following equipment is provided by BioMicrobics, Inc. with purchase of the system: (a) the RetroFAST® system sub-assembly, (b) either the foot top and foot bottom or lid, (c) the blower assembly, and (d) blower controls and alarms. All other items needed for installation and operation are not included.

The contractor will install the FAST® treatment system as manufactured by BioMicrobics, Inc. The contractor will ensure the proper fabrication of the tank, coordinate between the tank suppliers and FAST® system suppliers, arrange delivery to the job site, and oversee the installation of the FAST® unit. The tank must provide adequate pump-out access and must conform to local, state, and all other applicable codes. The tank must also be level within $\pm 1/2$ in [12 mm].

2. MEDIA

The FAST® media is made of rigid PVC, polyethylene, or polypropylene, and it is supported by the polyethylene insert. The media will be fixed in position and contain no moving or wearing parts, and it will not corrode. The media has been designed, and will be installed, to ensure that sloughed solids descend through the media to the bottom of the septic tank for easy cleanout.

3. REMOTE MOUNTED BLOWER

The blower must be set in a dry, stable place, and its elevation must be higher than the normal flood level. A two-piece, rectangular housing is included with the unit. The discharge air line from the blower to the FAST® system is not included and must be provided and installed by the contractor.

4. ELECTRICAL

The electrical source should be within 150 ft [45 m] of the blower; consult local codes for longer wiring distances. Wiring distances must prevent significant voltage loss. All wiring must conform to all applicable codes (IEC, NEC, etc.). All conduit and wiring must be supplied by the contractor.

5. CONTROLS

The control panel, which provides power to the blower, comes with an alarm system consisting of a visual and audible alarm that will indicate blower circuit failure and high motor load. The control panel is equipped with an SFR® (Sequencing Fixed Reactor) timed control feature. A manual silence button is included.

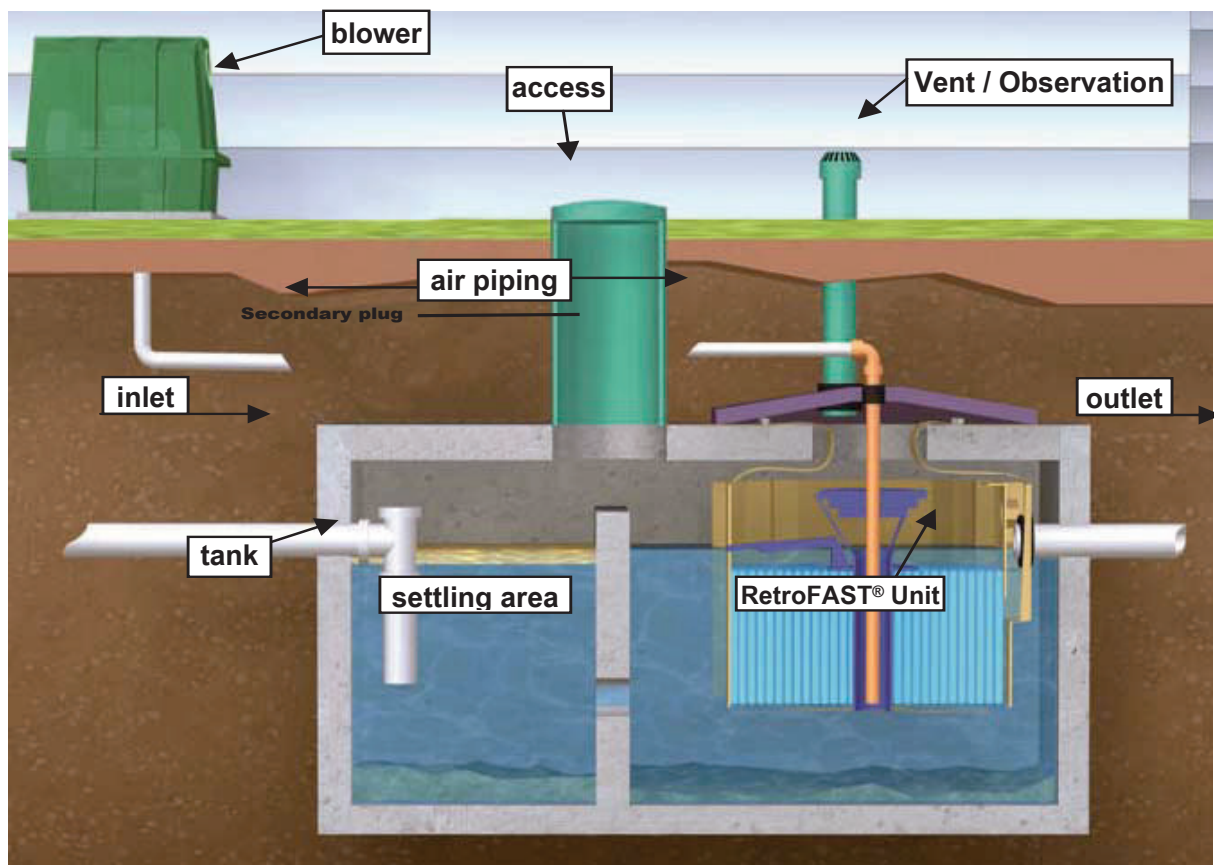
6. INSTALLATION AND OPERATING INSTRUCTIONS

Written instructions for proper installation, use, and service of the FAST® system (Indiana manuals) are included with the product and are available online at the BioMicrobics website. Installation of the FAST® system must be carried out in accordance with the written instructions provided in the Installation Manual. Moreover, all work related to the installation must be done in accordance with local codes and regulations.

GENERAL LAYOUT AND MAJOR SYSTEM COMPONENTS



| | PART NAME | PART NUMBER |
|---|------------------------|-----------------|
| 1 | RetroFAST® Lid | 010-CVRG25-375 |
| 2 | Blower | 020-1/4HPPAC |
| 3 | 1.5" Air line gasket | 050-GSKT2R |
| | 6" O/V gasket | 050-GSKT8 |
| | RetroFAST® Manual | RTF manual |
| 4 | Blower housing | 250-BBHSFL |
| 5 | 3" Outlet gasket | 050-GSKT3 |
| 6 | Liner | Model dependant |
| 7 | Blower piping & screws | 720-BLPRTS1/4HP |



REGULAR SERVICE MAINTENANCE



Always secure all access covers to prevent unauthorized people from entering the tank. Only qualified service personnel should open access ports and/or covers.

There are infectious organisms in a septic tank. If any contact with wastewater occurs, immediately wash and disinfect all exposed areas and contact personal physician. Failure to do so could result in severe sickness or death.

DO NOT use an open flame or cause a spark near a septic tank's access points. Gases emanating from septic tanks can explode if ignited or deadly if inhaled.



Introducing harmful or damaging substances into the FAST® system may void the warranty. For list of prohibited or limited-use substances, see the Owner's Manual.

NORMAL OPERATING CONDITIONS

| | |
|----------------------|---|
| SOUND | The FAST® system's blower makes a continuous humming sound. If you hear an unusual noise, refer to the Trouble-Shooting Guide . |
| ODOR | A musty, earthy-type of odor is normal. However, if you smell a sewage odor (rotten egg smell), check system vent and blower operation. |
| SIGHT | A properly loaded and operated FAST® system should produce clear effluent. If the effluent is cloudy, opaque, or suddenly changes, perform a system inspection. |
| CONTROL PANEL | The on-off switch should be in the "on" position, and the power light indicator should also be on. The alarm light indicator and the alarm buzzer should be off. Refer to the Trouble-Shooting Guide . |

SERVICE PROVIDER CHECKLIST

- ☐ **TRAFFIC** Ensure that the FAST® system has not been damaged due to excessive weight loading (>1,750 lb. point load) over the ground where the system was installed. Only normal yard traffic (lawn mowers, etc.) is acceptable. Traffic bearing (H-20) tanks can be made for use with FAST® units that use the foot installation option. Consult local distributor or the factory for guidance.
- ☐ **BLOWER OPERATION** NEVER turn off the blower unless testing alarm, as treatment quality and drain field life could be reduced.
 - Check the blower for proper function
 - Clean the blower's inlet air filter element.
 - The blower can be operated by a timer in certain situations. Contact your BioMicrobics distributor for more information.
 - If the blower is malfunctioning, please refer to the "Troubleshooting Guide" or Blower Replacement section below.
- ☐ **ALARM** The alarm has a ~10 second built-in delay.
 - Test the audible alarm by turning the blower OFF. To silence the alarm, use the "Silence" button on the panel's front.
 - If the alarm is activated for an unknown reason, please refer to the **Trouble-Shooting Guide** in this manual.
- ☐ **VENTS & INTAKES** Clear the vent(s) and blower housing intakes of any obstructions. Please refer to the **Trouble-Shooting Guide** located in this manual if you detect septic odors coming from the FAST® vent, as this may indicate a problem with the system.
- ☐ **WATER QUALITY** Effluent should be clear and odorless. All FAST® systems are capable of exceeding the USEPA standard for secondary wastewater treatment (40CFR, part 133.102) depending on how they are applied, sized, installed, and operated. If samples are required, please refer to the **Collection of Effluent Sample** in the Appendix.
- ☐ **PRIMARY SOLIDS AND BIOSOLIDS (SLUDGE)** Frequency of sludge removal depends on the size and design of the septic tank. Check the sludge levels in both tanks/compartments and in multiple locations in each compartment of the tank(s). If the sludge depth in the settling compartment is close to the port or outlet pipe intake connecting the settling compartment to the secondary treatment (FAST) zone, have the tank pumped out. If the sludge is near the bottom of the FAST unit, have the system pumped (see below for more details).

To check the sludge depth in the secondary zone, which contains the FAST system, open the access ports or cover(s) to the secondary zone and insert a sludge-measuring instrument (a so-called "sludge judge") Determine how deep the sludge is. Then calculate how far from the bottom of the FAST unit the sludge is by subtracting the sludge amount from the distance between the bottom of the FAST unit and the bottom of the tank. The sludge needs to be pumped when the sludge level is 3 to 4 inches below the bottom of the FAST unit.

HEIGHT DIMENSIONS OF RetroFAST® MODELS

| FAST® Models | Module height |
|-------------------------|--------------------|
| RetroFAST® 0.150 . | 32 in [81cm] |
| RetroFAST® 0.250, 0.375 | 33.5 in [85.1 cm] |
| | |

We recommend that you pump both zones even if only one zone requires pumping. Pump the settling zone first and then the secondary zone, which contains the FAST® system.



Only qualified service personnel should open access ports/covers. If any contact is made with wastewater, immediately wash and disinfect all exposed areas and contact personal physician. Failure to do so could result in severe sickness or death.



Avoid pumping down after periods of heavy rain or when the ground water is likely to be above the bottom of the concrete tank. Emptying the tank under these conditions could cause the tank to float up and become dislodged if it is not sufficiently anchored to prevent flotation.

1. Open the access ports/cover(s) and insert the hose.

Note: *We recommend that you pump out both chambers of the tank, even if only one side requires it.*

2. Pump out the tank as much as possible, maneuvering the hose if possible to multiple areas of the tank.
3. Thicker settled solids and floating scum will likely be remaining when the majority of the water is pumped out. A back-flushing procedure may be necessary to mix and break up remaining solids so they can be effectively pumped out of the tank.
4. Once the unit has been pumped out, immediately refill the tank with clean water to reduce the risk of the tank floating and to minimize the impact on treatment. Close the access ports/cover(s) making sure it is air-/watertight.
5. Properly dispose of the solids removed in compliance with local and state regulations.

If any stricter state, local or municipal regulations apply to you, those regulations supersede the operational directions given here.

SEASONAL/INTERMITTENT USE

The FAST® System will function normally even if there is no wastewater flowing during short periods of vacancy. Examples of seasonal/intermittent use and suggested operational procedures:

- **Summer use property** (i.e., shut down all winter): Blower should be turned off at end of summer and restarted at least a week before returning. Please contact your local service provider to restart the system and check with local regulations.
- **Weekend property** (i.e., used at least one weekend out of three): Maintain normal operation or use FAST®'s SFR® blower timer feature on the control panel.

Note: Consult your service provider and local regulations for guidance on seasonal use.



All electrical work must be properly performed by a qualified electrician per all applicable codes.



Always keep tank openings covered during storage and installation.

When replacing a blower follow the steps below. If relocating the blower, run the electrical supply conduit from the control panel to the desired blower location. Airline piping from the blower to the FAST® unit may NOT exceed 100 ft [30.5 m] in total length and must have no more than four elbows. The blower and blower housing must be mounted on a solid base such as concrete to avoid settling.

Blower Removal

1. Remove power from the blower assembly by switching the circuit breaker in the control panel to the OFF position. Also, switch off the circuit breaker in the building's main service panel. If you plan to keep the blower disconnected for more than 48 hours, it may be necessary to prevent the discharge of wastewater into the drain field.



Electrical Hazard: Disconnect power before servicing. Failure to do so may result in electrical shock causing severe bodily injury or death.

2. Remove blower housing cover by unscrewing the mounting bolts and lifting the lid off the blower housing base.
3. Remove the motor conduit box cover on the blower motor by unscrewing the two screws securing it to the conduit box.
4. Check with an appropriate measuring device to determine if there is power at the electrical wire leads in the conduit box before proceeding.
5. If there is no power at the wire leads, disconnect the power leads from the motor leads, noting the connections for proper re-connection during installation. Insulate and support the wires out of the way of the blower so they won't interfere with the blower removal process.
6. Disconnect the outlet piping of the blower either by disconnecting the union (if used), unscrewing the pipe from the blower, or cutting a section of the outlet piping. If the piping needs to be cut, be sure to cut the pipe in an area such that a coupling or union (preferred) can be installed at the cut when the blower is re-installed.
7. Cover the openings in the pipe where the separation occurred to prevent any foreign material from entering.
8. Remove the mounting bolts securing the blower flange to the blower housing base.
9. Lift the blower assembly off the blower housing base.

Blower Installation

1. Make sure the circuit breaker in the control panel and the main circuit breaker to the building are in the OFF position.



Electrical Hazard: Disconnect power before servicing. Failure to do so may result in electrical shock causing severe bodily injury or death.

2. Set the blower assembly on the blower housing base by matching the blower flange holes with the holes in the blower housing base.
3. Bolt the blower flange to the blower housing base using the bolts removed during the removal procedure.
4. Connect the blower outlet piping to the air line by connecting the union (if used), screwing the air line into the blower, or installing a coupling at the cut, depending on the method of removal.
5. Check the power leads coming into the blower housing with an appropriate measuring device to determine if there is power at the leads.
6. If there is no power at the leads, connect the leads to the blower using the correct scheme as noted on the inside of the motor conduit box cover.
7. Insulate the wires and fit them inside the conduit box in a professional manner.
8. Attach the conduit box cover to the conduit box using the two screws removed during the removal procedure.
9. Test the blower for correct operation by switching the circuit breakers in the control panel and the building to the ON position.
10. Put the blower housing cover on the blower housing base by matching the cover bolt holes with the base bolt holes. Bolt the cover to the base using the bolts removed during the removal procedure.

CLEANING THE BLOWER FILTER

Blower Filter Removal

1. Follow steps 1 and 2 of **Blower Removal** procedure above.



Electrical Hazard: Disconnect power before servicing. Failure to do so may result in electrical shock causing severe bodily injury or death.

2. Remove wing nut from top of blower housing and remove filter housing cover.
3. Remove filter while preventing any particles or dirt from entering inlet piping to blower.
4. Clean filter base while preventing any particles or dirt from entering inlet piping to blower.

Blower Filter Installation

1. Make sure the circuit breaker in the control panel is in the OFF position.



Electrical Hazard: Disconnect power before servicing. Failure to do so may result in electrical shock causing severe bodily injury or death.

2. Make sure filter base is clean of any particles or dirt.
3. Install filter onto base.
4. Install filter assembly cover and secure with the wing nut removed during the removal procedure.
5. Follow steps 9 and 10 of **Blower Installation** procedure.

CONTROL PANEL REPLACEMENT



Always have all utility lines and equipment marked by a locating service prior to performing any work.



All electrical work shall be properly performed by a qualified electrician per all applicable codes. Failure to do so may result in severe bodily injury or death.

When replacing a panel, follow the steps below. If relocating the panel, run the electrical supply conduit from the control panel to the blower location. **Note:** *The electrical supply line should NOT exceed 150 ft [45 m] total.*

1. Turn all Power OFF.
2. Examine wiring directions inside the supplied FAST® control panel (also found at the end of this manual).
3. A dedicated breaker is required in the building's master electrical panel. Make connections between the master panel and FAST® control panel.
4. Make connections between the blower and FAST® control panel per the electrical diagram.

TROUBLE-SHOOTING GUIDE

| Problem | Possible Causes | Solutions |
|---|---|---|
| Alarm light and/or buzzer is activated | Blower switch is OFF | Turn blower switch ON. For breaker switch found on the small control panel, verify breaker does not trip. |
| | Blower current is below minimum. | Check blower wiring and operation. If blower is not running, thermal overload switch in motor may have tripped, or motor is nonfunctioning. Allow motor to cool to reset thermal switch. In small control panels, check blower fuse. In large control panels with contactor and overload, check if the overload is tripped. |
| | Blower current is above normal. | Verify amp draw of motor against nameplate full load amps. If blower is running above normal amp draw or FLA, check possible causes including high water level and air pipe blockage. |
| | | |
| | External input dry contact is closed | Check if an optional external input such as a float switch is activated. |
| | Circuit board failure | Contact a BioMicrobics technical service representative. |
| High water level in FAST® tank | The FAST® tank is flooded. | Determine cause of flooding (e.g., line obstruction, lateral field/pump failure, high flows, etc.) |
| Blower motor is making a loud whining or grinding noise | Blower motor bearing has failed. | Remove blower and have blower motor serviced. |
| | A foreign object has entered blower housing. | Remove blower for service and check condition of air filter. |
| Water in the blower | Water has entered the blower housing. | The blower should be located in an area where water does not accumulate. It must be located at least two feet above the treated water outlet pipe from the FAST® system. |
| | Blower motor is wired backwards, pulling water into blower from treatment tank. | Correct the motor wiring for proper rotation. Allow blower to dry. |
| Unpleasant odor emanating from the FAST unit | The blower and air piping are not operating correctly. | Check the blower, vents, and air piping for proper operation. Make sure the vents have sufficient openings for air to escape. |
| | The system is overloaded. | Check the maximum flow rate to the FAST unit to see that it is within normal limits. |
| | Blower recently started after period of no use. | Septic odors may be present for several hours when starting a blower after the system is idle for long periods of time, such as in seasonal use properties. |

For other problems and trouble-shooting help, call BioMicrobics: +1 (913) 422-0707 or **1-800-753-FAST (3278)**

LIMITED WARRANTY

BioMicrobics, Inc. warrants the following systems

RetroFAST® 0.150, 0.250, 0.375

against defects in materials and workmanship, for a period of two years after installation or 30 months from date of shipment. For all other systems and spare parts, BioMicrobics Inc. warrants against defects in materials and workmanship for a period of one year after installation, or eighteen months from date of shipment, whichever occurs first, subject to the following terms and conditions.

Note: *For this warranty to be effective, BioMicrobics must receive the product registration for the system.*

During the warranty period, if any part is defective or fails to perform as specified when operating at design conditions, and if the equipment has been installed and is being operated and maintained in accordance with the written instructions that BioMicrobics, Inc. has provided, BioMicrobics, Inc. will repair or replace at its discretion such defective parts free of charge. Defective parts must be returned by owner to BioMicrobics, Inc.'s factory postage paid, if so requested. The cost of labor and all other expenses resulting from replacement of the defective parts and from installation of parts furnished under this warranty shall be borne by the owner. This warranty does not cover general system misuse, aerator components that have been damaged by flooding or any components that have been disassembled by unauthorized persons, improperly installed or damaged due to altered or improper wiring or overload protection. This warranty applies only to the treatment system and does not include any of the structure wiring, plumbing, drainage, septic tank or disposal system. BioMicrobics, Inc. reserves the right to revise, change or modify the construction and/or design of the BioMicrobics system, or any component part or parts thereof, without incurring any obligation to make such changes or modifications in present equipment. BioMicrobics, Inc. is not responsible for consequential or incidental damages of any nature resulting from such things as, but not limited to, defect in design, material, or workmanship, or delays in delivery, replacements or repairs.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES EXPRESS OR IMPLIED. BIOMICROBICS, INC. SPECIFICALLY DISCLAIMS ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. NO REPRESENTATIVE OR PERSON IS AUTHORIZED TO GIVE ANY OTHER WARRANTY OR TO ASSUME FOR BIOMICROBICS, INC. ANY OTHER LIABILITY IN CONNECTION WITH THE SALE OF ITS PRODUCTS.

KEEP FOR YOUR RECORDS

Manufacturer Name: BioMicrobics, Inc.

Manufacturer Phone: 1-800-753-FAST (3278)

FAST® System Serial Number: _____

System Designer Name: _____

Designer Phone: _____

Installed By: _____

Installer Phone: _____

Maintenance Provider Name: _____

Maintenance Provider Phone: _____

APPENDIX: COLLECTION OF EFFLUENT SAMPLE

All samples must be collected, stored, transported, and tested according to the “Testing Protocol” outlined below and the most current version of Standard Methods.

It is imperative that samples be collected properly and analyzed correctly by appropriate methods; otherwise, the results will not provide an accurate representation of the unit’s performance. Inaccurate sampling leads to misleading results and unnecessary or ineffective process changes. All representatives of BioMicrobics, Inc. will use the following protocol when sampling FAST® Wastewater Treatment Systems.

I. Sampling Equipment

- A. It is required that equipment designed for proper sampling be used. All samples should be collected in sample bottles provided by a certified laboratory. Where the sampling point is difficult to reach, a means to collect samples shall be provided, e.g., a pole with a sampling container attached.
- B. Each sample will require at least 3 labeled sample bottles.
 - 1. Samples collected for TKN and ammonia concentrations require a preservative and should have the preservative put in the bottles by the laboratory.
 - 2. Samples collected for NO₃ and NO₂ will have one bottle.
 - 3. Samples collected for BOD and TSS will have one bottle.
 - 4. Samples collected for pH may require another bottle.
- C. Dissolved oxygen (DO) and pH meters may be used. If you use them, they must be calibrated at the site using the manufacturer’s required techniques.
- D. A sludge measurement device, such as a “Sludge Judge”.
- E. A logbook to record pH, DO, and temperature will be provided. Sample time, flow conditions, sampler’s name, and a verbal description of the effluent indicating the relative amount of solids, the clarity, and any color or odor detected should also be recorded.
- F. A cooler stocked with wet ice will be provided every day that samples are to be collected.
- G. A Chain of Custody sheet will be provided, to be completed by the sampler.
- H. A brush will be provided to facilitate cleaning of the effluent discharge pipe in preparation for the collection of effluent samples.
- I. A garden hose with a back-flow preventer attached to the end hooked to the home is required. This hose will be used to induce hydraulic flow for sampling in situations where there is not a free-flowing effluent at the time of collection. The hose should be inserted into the wastewater system far enough upstream of the treatment system to induce the flow through the system, but not affect the sample collected in any way. The preventer is necessary to protect the water supply of the home from possible contamination. An apparatus should be supplied that would help hold the hose up out of the sewage when possible.
- J. Antibacterial soap and distilled water will also be provided for cleaning of collection equipment.

K. Latex gloves and eye protection will be provided.

II. Sampling techniques

- A. A grab sample must be taken from a free-flowing effluent pipe. The pipe will most likely be located in a distribution box or pump chamber downstream from the treatment unit. **Note:** It is very important that the pipe be cleaned (see D).
- B. If flow is not present, connect the garden hose to an outdoor faucet. The hose should be inserted into the wastewater system far enough upstream of the treatment system to induce the flow through the system, but not affect the sample collected in any way. For most residential units, this would be in the inlet to the septic tank. For this location, the hose should be placed in the inlet tee to best simulate influent into the septic tank. The hose should **not** be allowed to run at this location longer than 10 minutes.
- C. Put on protective eye wear and latex gloves.
- D. To the extent possible, use the brush to clean the discharge pipe of attached growth that may dislodge during the process of collecting. Rinse the pipe with the garden hose.
Note: If the pipe is not accessible for cleaning in this manner, the sampler must avoid knocking loose large solids that could contaminate the sample from the pipe.
- E. Place the end of the garden hose in position to add water to the first compartment – NOT the reaction chamber – of the septic tank (see Step B). Take care to not touch the sewage with the end of the hose. Turn the faucet on.
- F. After the effluent has been flowing out of the pipe for a minimum of 10 minutes, place the collection container into the stream of effluent and rinse any collection containers (including sample bottles) that will contain effluent. **DO NOT** rinse TKN and ammonia sample bottles that contain a preservative.
- G. If a free-flowing sample cannot be taken from a pump chamber, then the operator must determine if the contents of the pump chamber are representative of the effluent. There are three components of the evaluation of whether the sample will be representative:
 - (i) Determine if there are settleable solids in the bottom of the pump chamber (using a sludge measurement). If there are any solids, then the pump chamber must be cleaned out before a representative sample can be taken.
 - (ii) Measure the dissolved oxygen in the pump chamber. The dissolved oxygen in this chamber must be above 1.0 mg/l for the sample to be representative of an aerobic effluent. If the dissolved oxygen is below 1.0 mg/l, then the pump chamber should not be used for sampling.
 - (iii) Collect a sample from the pump chamber and compare it to a sample from the reaction chamber. Samples collected from a pump chamber should be taken from six inches to a foot below the surface. This will help to eliminate any floatable solids from affecting the sample. This sample should be compared to a sample collected off of the spray from the reaction chamber. This sample should be allowed to settle for 5 minutes and then compared to the sample from the pump chamber. If the clarity of the two samples is similar, then it can be assumed that the samples are similar. If the pump chamber sample is cloudy or obviously darker than the settled aeration sample, then the pump chamber sample should not be used as a representative sample. If the

sample cannot be collected from the pump chamber, then a sample should be collected from the reaction chamber. This information should be noted in the log as well as the other observations used to collect this sample.

- H. Take the sample for pH and temperature and test for those parameters immediately. When finished with this sample, discard it back into the system and rinse it several times with water.
- I. Take the DO reading inside the reaction chamber and outside the unit in the anoxic zone of the tank.
- J. Record the pH, DO, and temperature in the logbook along with the date, address, and time.
- K. Take the sample bottles and place them into the cooler with the wet ice. The bottles should be well covered by the ice in order to facilitate faster cooling.
- L. Clean the sampling containers with antibacterial soap and water and rinse them with distilled water before collecting another sample.
- M. Fill out the Chain of Custody Sheet with correct sample ID numbers and all other required information and/or pertinent comments. Be sure and sign this sheet and observe the laboratory personnel signing it when you deliver a sample. The samples should be delivered the same day they are collected. If necessary, arrangements can be made to deliver the samples after normal business hours.