Modifications to Peat Filter Innovative Approvals' Performance and Monitoring Requirements Effective 5-30-05 NC Division of Environmental Health

Table I: Water Quality Performance Standards

Parameter	Septic Tank Effluent* (mg/l)	Peat Effluent Mean (mg/l)**	Peat Effluent Single Sample (mg/l)***
BOD	300 (350)	15	30
TSS	200	15	30
TKN	80 (100)		
NH3-N	(included with TKN)	10	20
Fecal coliform		10,000 (colonies/100 ml)	25,000 (colonies/100 ml)

* Septic Tank Effluent exceedances trigger warning note to system owner (Issue NOV for exceedences over maximum values in parentheses)

** Mean for site or system [Arithmetic for all but Fecal (geometric)]

** * Single grab or 24-hour composite sample limit

Table II: Wastewater Usage Performance Standards

3-7 day Average (gpd)	Monthly Average (gpd)
1.3 Q	Q

Note: "Q" is Design Daily Flow (gpd)

Operation, Maintenance, and Sampling

1. Wastewater Usage Measurements

   a. In conjunction with water quality sampling:
   Measure 3-4 day (collected between Monday and Friday of measured week); or
   Measure 7-day flow; or
   Measure 30-day flow.

      i. Take readings coincident with system (site) sampling. For summer resort areas, measurement period for 2005 shall be between May 30 and July 10.

      ii. Make certain facility is occupied during measurement period.

      iii. Record water meter reading (when meter present) at beginning and end of measurement period. Note on report observations made of irrigation system, pool, outdoor showers, occupancy, etc.

iv. Pumped System: Record cycle counts and elapsed time meter (ETM) readings at beginning and end of measurement period. Do pump draw-down test (run pump for period equal to design pump run-time for a single dose) as basis for deriving usage from ETM readings (**note: an effluent sample shall not be collected immediately after doing a pump drawdown test**)

v. Gravity Ecoflo System: Set up and calibrate volumetrically "tipper-counter" or other monitoring mechanism subsequently proposed by the manufacturer and approved by the State (Note: water meter readings can be accepted as sole source of wastewater usage data if operator verifies no irrigation system, pool or other non-connected water use fixtures, and if historical data indicate no past wastewater usage standard violations).

Note: Operator may arrange for daily wastewater usage data to be collected by owner or by owner's or Operator's agent based upon the ORCs verification that the data will be accurately collected.

b. Long-Term Usage Information: Estimate wastewater usage since the last inspection, using the most accurate data available for the particular site/system.

i. Water meter readings (when available) shall be collected, commenting on observation of irrigation system, pool, or other non-connected water use activities observed.

ii. For pump systems, estimate shall also be made using pump time clock readings and measured pump draw-down measurement (which is to be redone at least annually).

iii. For gravity Ecoflo, measurement shall be either based upon cycle counts of "tipper" box (when present, which has been calibrated volumetrically), or from water meter readings if operator verifies no irrigation system, pool or other non-connected water use fixtures (and historical data indicate no past wastewater usage standard violations), or by other monitoring mechanism subsequently proposed by the manufacturer and approved by the State.

2. <u>Water Quality Sampling</u>

a. Sampling shall be done during periods of occupancy and during the wastewater usage measurement period (recommend sampling at the same time the final usage readings are collected).

b. Samples shall be collected either by: i.) ORC trained in proper sample collection procedures by the manufacturer; or ii) Certified laboratory staff trained in proper sample collection procedures by the manufacturer. Person collecting sample, sample collection method, and collection locations shall be noted on the sampling reports.

c. Septic Tank Effluent (influent to Peat system) shall be collected at all sites and analyzed for BOD and total Kjeldahl Nitrogen (TKN). Sample shall be collected for pumped systems either by capturing effluent as it enters the pump tank, grab sampling from 12 to 18-inches below the liquid surface in the pump tank (with a "Coliwasa"), or by collecting a sample at a pre-established sampling port in the pump discharge line. (Note: if pump is activated to obtain the septic tank effluent sample, collect the peat filter effluent sample first). For gravity Ecoflo systems, the septic tank effluent sample shall be collected from the inlet to the peat module.

d. Peat Filter effluent is to be sampled and analyzed for BOD and Ammonium (NH3-N):

i Type A Systems: **Sample shall not be "forced"**. For pump systems, the pump shall not be manually operated prior to collecting the effluent. The sample may be collected by placing the collection receptacle in the sampling port and allowing effluent to accumulate for up to 3 hours prior to removing the receptacle for transportation to the laboratory, in adherence to standard sample retrieval, storage, transportation and chain of custody protocols. **Manufacturer's procedures shall be followed.**

ii. Type B Systems: Sample shall be collected either by collecting a sample at a pre-established, manufacturer-approved sampling port in the effluent line from the system, or for a dosing system by capturing effluent as it enters the pump tank, grab sampling from 12 to 18-inches below the liquid surface in the pump tank (with a "Coliwasa"), or by collecting a sample at a pre-established sampling port in the pump tank influent line or in the pump system's discharge line. **Manufacturer's procedures shall be followed.**

Exceptions to Effluent Sampling Requirements: Upon inspection, peat effluent sampling shall not be performed if the system is observed to be hydraulically failing either by ponding at least to the level of the bottom of the peat media, effluent bypassing the peat and discharging directly to the ground surface or underlying gravel bed, or continuous ponding of effluent on top of the peat media even after maintenance. Any of these conditions shall be considered a system failure reportable to the health department within 48 hours.

3. Qualitative Assessment of Peat Modules during Annual ORC Inspection:

a. All peat modules shall be opened on an annual basis, to observe distribution system functionality, uniformity of effluent distribution within and between modules, condition of peat (settlement, degradation, surface accumulations of solids), root or sand infiltration or insect infiltration, and observation or evidence of past effluent ponding on peat surfaces. The manufacturers shall prepare detailed guidelines for Operators describing how to perform a qualitative assessment of the peat, and how to address any problems encountered.

b. Modifications to the peat surface or adjustments needed to the distribution grid shall be made in accordance with manufacturers recommendations. Vegetation and backfill surrounding the modules shall be cut back and adjusted as needed to maintain access, good ventilation, and minimize infusion of sand, soil or vegetation.

c. It is strongly recommended that peat surface condition be documented by digital camera photograph (pre and post any maintenance activities).

4. Results of Wastewater Usage, Water Quality Sampling and Qualitative Assessment:

a. When wastewater usage measured during the 3 to 4-day, 7 day, or 30-day flow study exceeds wastewater usage performance standards, the ORC shall arrange for the collection of an additional 3 to 4-day, 7-day or 30-day usage measurement within the next 30 days (the owner could be requested to take 30 consecutive daily readings, one or more weekly readings, or the ORC/ORC's representative shall take the follow-up readings).

b. When laboratory results indicate non-compliance with the peat system Single Sample Limit proscribed in Table I above for any parameter, the ORC shall arrange to resample peat filter effluent for that parameter within 15 days (also resample the septic tank effluent for the corresponding parameter).

c. The ORC shall inform the Health Department:

i. within 48 hours of finding a system malfunctioning (hydraulic failure either by ponding observed in the gravel bed beneath the peat modules, effluent bypassing the peat and discharging directly to the ground surface or underlying gravel bed, or continuous ponding of effluent on top of the peat media even after maintenance).

ii. within 30 days of completing wastewater usage, water quality sampling and qualitative assessment, including notification of any wastewater usage of or sample non-compliance, or needs for owner to cut back vegetation and/or backfill surrounding modules or to make other repairs.

d. A Notice of Non-Compliance (NNC) shall be issued to the Owner when:

i. Wastewater Usage measured exceeds wastewater usage performance standards by any amount (see Table II).

ii. Septic tank effluent exceeds criteria set forth in Table I.

iii. Maintenance/repairs are needed as identified by the ORC or Health Department during system inspections.

Notice shall identify non-compliant condition(s), explain potential impacts, and suggest methods to bring the system or use back into compliance.

e. A Notice of Violation (NOV) shall be issued to the Owner when:

i. The system is found to be malfunctioning.

ii. Wastewater Usage measurements or water quality sampling requirements delineated herein have not been met.

iii. Wastewater Usage measurement over any 3-day (or longer) period exceeds 1.3 Q ("Q" is design daily flow).

iv. Septic tank effluent exceeds maximum criteria set forth in Table I for any parameter.

v. Peat system effluent exceeds Single Sample Limit for any parameter, even upon re-sampling.

Notice shall identify violation(s) and steps necessary to remedy the problems, establish time frame to achieve compliance, any other follow-up requirements, and set forth further enforcement possibilities if compliance is not achieved.

f. A Notice of Violation (NOV) shall be issued to the Manufacturer (by the State) when:

i. Arithmetic mean of all samples **from all systems** monitored during a monitoring season (excluding outliers, including the upper and lower 2.5% of data points for any single parameter, or the single highest and lowest data points, if there are less than 40 total sample results for that parameter) exceeds the TS-I mean effluent performance standards (geomean for fecal coliform samples)*; or

ii. Percent of samples exceeding the TS-I Single Sample Limit performance standard in any monitoring season exceeds 10 percent for one or more parameters*; or

iii. Percent of sites in violation of the TS-I Single Sample Limit performance standards in any monitoring season exceeds 20 percent for one or more parameters*.

*** Note: for any of these "system" performance standards, data shall be excluded from sites where influent has been documented to exceed septic tank effluent criteria established above, where flow has been documented to exceed the site's design flow, or where the site has otherwise been documented to have been subjected to significant abuse**

Notice shall identify violation(s) and require manufacturer to identify steps necessary to remedy the problems and propose time frame to achieve compliance, any other follow-up requirements, and set forth further enforcement possibilities if compliance is not achieved.