

**NORTH CAROLINA DEPARTMENT OF HEALTH AND HUMAN SERVICES
DIVISION OF PUBLIC HEALTH
ENVIRONMENTAL HEALTH SECTION
ON-SITE WATER PROTECTION BRANCH**

INNOVATIVE WASTEWATER SYSTEM APPROVAL
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INNOVATIVE WASTEWATER SYSTEM NO: IWWS-2002-1-R1

Issued To: William G. Freed CEO
AquaPoint.3, LLC
8443 Caratoke Hwy Suite 1
Powells Point, NC 27966-9779
252-207-5853
www.AquaPoint.com

For: Bioclere™ Modified Trickling Filter Systems

Approval Date: April 18, 2002
October 21, 2013 Addition of 16 Series and other Modifications

In accordance with General Statute 130A-343, 15A NCAC 18A .1969 and .1970, a proposal by AquaPoint.3, LLC, for an updated approval of subsurface wastewater systems utilizing the Bioclere™ Modified Trickling Filter has been reviewed, and found to meet the standards of an innovative system when all of the following conditions are met:

I. General

A. Scope of this Innovative Approval

1. Bioclere™ Modified Trickling Filter pretreatment systems are designed, installed, operated and maintained to meet TS-I or TS-II effluent standards in accordance with Rule 15A NCAC 18A .1970. Refer to Rule .1970(a) Table VII – Effluent Quality Standards for Advanced Pretreatment Systems for treatment performance levels.
2. Special operation, maintenance and monitoring of Bioclere™ Modified Trickling Filter pretreatment systems and associated subsurface systems to ensure the treatment performance standards shall be met.

B. This Innovative System Approval is applicable to wastewater systems utilizing Bioclere™ Modified Trickling Filter pretreatment systems that have a design flow not exceeding 3,000 gallons per day, and that treat domestic wastewater, wastewater from food service facilities and meat markets, or similar high strength wastewater from other commercial establishments. Pretreatment devices must be installed prior to the Bioclere™ Modified Trickling Filter pretreatment system to reduce Fats, Oil & Grease (FOG) to less than 100 mg/l.

C. Any site utilizing these systems shall have sufficient alkalinity to perform the proper amount of nitrification. The influent also shall not have a pH or toxins that significantly inhibit microbial growth.

- D. Chemical additives shall be provided if required for the Bioclere™ Modified Trickling Filter pretreatment system to meet the treatment performance standards.
- E. Use of Bioclere™ Modified Trickling Filter pretreatment systems that have a design flow exceeding 3,000 gallons per day may be permitted after approval by the Department on a case-by-case basis in accordance with the Large Systems State Review/Approval Process (Rule 15A NCAC 18A .1938).

II. System Description

The Bioclere™ Modified Trickling Filter pretreatment systems consist of the following components: a state approved septic tank; single or multiple Bioclere™ Modified Trickling Filters with clarifier, arranged in series or parallel; a clarifier return line to the initial septic tank; and a final septic tank sized at twenty-five percent of the required capacity (except for design flows less than 1,000 gallons per day that are domestic strength wastewater and systems requiring tertiary filtration). A recirculation tank and additional treatment may be required to ensure that treatment performance standards shall be met.

III. Siting Criteria

The Bioclere™ Modified Trickling Filter pretreatment systems and associated drainfields shall be sited and sized in accordance with Rule .1970 for TS-I or TS-II systems. Drip irrigation systems used with Bioclere™ Modified Trickling Filter pretreatment systems shall be sited and sized in accordance with the manufacturer specific drip approval.

IV. System Sizing

The system sizing criteria shall be based upon the long term acceptance rate specified in the appropriate portion of the rules or Innovative and Experimental approval for the type of ground absorption system to be used.

V. Special Site Evaluation

A special site evaluation may be required based on the proposed ground absorption system. Refer to manufacturer specific drip approvals and Rule .1970(p).

VI. Design Criteria

- A. The Bioclere™ Modified Trickling Filter pretreatment system shall be designed in accordance with the following criteria.
 - 1. Grease traps or grease interceptors in accordance with .1955(k) shall be required for food service facilities, meat markets, and other places of business projected to generate similar high strength wastewater.
 - 2. The septic tank(s) shall be approved by the state and sized in accordance with .1952 (b). As part of this approval, the septic tanks will have inlet and outlet sanitary tees.
 - 3. The final settling tank shall be sized at twenty-five percent of the septic tank capacity required in .1952 (b).
 - 4. For design flows less than 1,000 gallons per day that are domestic strength wastewater, a final settling tank is not required.

5. Any system where tertiary filtration will be provided after the Bioclere™ Modified Trickling Filter, a final settling tank is not required.
6. A 1½-inch clarifier return line shall be routed to the initial septic tank.
7. For systems designed to meet TS-I standards, the clarifier return line to the initial septic tank shall operate at approximately 50 percent of the average flow to the Bioclere™ Modified Trickling Filter.
8. For systems designed to meet TS-II standards, the clarifier return line to the initial septic tank shall operate at approximately 100 to 200 percent of the average flow to the Bioclere™ Modified Trickling Filter.
9. The 16/12, 16/15, and 16/19 models are available as an "At Grade" unit. This allows burial to a nominal 12-inch vertical exposure with an integrated airlift on the effluent outlet end of the Bioclere which will return the effluent to within 12 inches of finished grade.
10. For Bioclere™ Modified Trickling Filter pretreatment systems that do not require a final pump dosing tank to the drainfield, an effluent filter in a basin/chamber will be placed on the outlet/discharge line from the Bioclere. The effluent filter shall have a maximum screening size opening of 1/16 of an inch.
11. In addition to the general components provided by the manufacturer with each Bioclere™ Modified Trickling Filter, the layout of the system shall follow the "NC General Flow Schematic" (Attachment B). The following North Carolina-specific specifications shall be applicable to all approved units:
 - a. The flange connection joining the Bioclere filter section to the Bioclere sump section shall be factory sealed with fiber reinforced plastic (FRP) to provide a permanent watertight seal.
 - b. The internal shipping supports shall be removed, made from, or encapsulated with non-biodegradable material.
 - c. Each unit shall have a ventilation fan, a single dosing pump, a sludge return pump, and a low level float switch. With the exception of the 16 Series, the ventilation fan shall be rated at 115v/1ph/60hz, painted metal, ball bearing fan with a factory rated airflow of 240 cubic feet per minute. The 16 Series ventilation fan has a factory rated airflow of 58 cubic feet per minute.
 - d. For systems with a design flow over 3,000 gallons per day or that are treating high strength wastewater, dual dosing pumps will be required in the Bioclere™ Modified Trickling Filter.
 - e. The junction box for each Bioclere™ Modified Trickling Filter shall be a NEMA 4X enclosure.
 - f. Pump run timers for each pump shall be provided.
 - g. Telemetry will be provided on all units for two years through the manufacturer with a RMSYS system or other telemetry system approved by AquaPoint.3, LLC (and information provided to the Department).
12. General attributes of the approved Bioclere™ Modified Trickling Filter models are summarized in Table 1, below:

Table 1 - Bioclere™ Modified Trickling Filter Model Chart

Bioclere Model Number	Diameter (feet)	Vertical Size (feet)
16/12/SS	5'-2"	8'
16/12/LS	5'-2"	9'
16/15	5'-2"	10'-3"
16/19	5'-2"	11'-6"
16/22	5'-2"	12'-2"
16/25	5'-2"	14'-2"
22/15	5'-2"	12'-6"
22/19	5'-2"	14'
24/20-950	8	14'-8"
24/20-1600	8	16'-3"
24/24-950	8	16'-5"
24/24-1600	8	18'
24/30-950	8	17'-8"
24/30-1600	8	19'-3"
30/24	10	18'
30/32	10	20'-7"
36/30	12	22'

13. The 7-day and 30-day flow monitoring requirements will be met by one of the following options:
 - a. when an approved drip dispersal system is used, the flow monitoring requirements will be met by the drip system control panel,
 - b. when a drip dispersal system is used but only one control panel will be utilized, the Operator in Responsible Charge (ORC) will be provided with a Lascar USB Data Logger which will log effluent pump cycles and dosing time, or
 - c. for systems with gravity or siphon dosed systems, a water meter (pulse generator) will be supplied to be installed on the water line serving the property and the Lascar USB Data Logger will be used to collect the flow data.
14. AquaPoint.3, LLC will provide authorized ORCs (contracted or employee) with a Lascar USB Data Logger for deployment on systems requiring its use.
 - a. The ORCs will be trained on the following: proper connection procedures, the procedure for collecting information, and printing out reports.
 - b. The ORC will deploy the unit at least 30 days prior to an annual required sampling and site inspection.
 - c. AquaPoint.3, LLC may also require it's ORC to visit a site weekly the month prior to the required sampling and site inspection visit for the purposes of obtaining flow readings.
 - d. Approved ORCs not employed by or under contract with AquaPoint.3, LLC may purchase the Lascar USB Data Logger and AquaPoint.3, LLC will provide the training and operation information.
15. The UV disinfection system (optional for TS-I, required for TS-II) will be one of the following:
 - a. 0-1,500 gpd: "UV The Disinfector®" or Salcor 3G unit.
 - b. 1,501-3,000 gpd: Dual bulb "UV The Disinfector®" or Salcor 3G (2 units).
 - c. Other UV systems specifically approved by the Department and AquaPoint.3, LLC.

16. Influent from each Bioclere™ Modified Trickling Filter pretreatment system will be sampled by pulling an influent sample from the influent “tee” of the primary septic tank. The influent tee will extend to 50% of the tank depth. This arrangement will create an effective stilling well for raw influent wastewater. Effluent samples will be taken from the final pump tank downstream of the treatment system.
 17. Buoyancy calculations shall be completed by a North Carolina Professional Engineer for all Bioclere™ Modified Trickling Filter pretreatment systems, associated tankage, and/or UV basins if they intersect the seasonal high water table. Ballast shall be provided as necessary.
- B. Bioclere™ Modified Trickling Filter systems treating waste streams other than domestic strength or domestic strength with design flows greater of 1,000 gallons per day or greater shall be designed by a North Carolina Professional Engineer. Single family residential applications with a design flow less than 1,000 gallons per day shall be designed by a North Carolina Professional Engineer or a North Carolina Licensed Professional who has received training and written approval from AquaPoint.3, LLC to design the Bioclere™ Modified Trickling Filter system.

VII. Installation and Testing

- A. A pre-construction conference shall be required to be attended by the system designer, engineer (if required), AquaPoint.3, LLC manufacturer's representative, AquaPoint.3, LLC certified installer, and local health department (LHD), prior to beginning construction of the Bioclere™ Modified Trickling Filter pretreatment system.
- B. The Bioclere™ Modified Trickling Filter pretreatment system shall be located in compliance with the horizontal setback requirements of Rule .1950(a) and Rule .1970 and shall be located to prevent surface/subsurface water inflow/infiltration. The drainfield horizontal setback requirements are in accordance with Rule .1970, as appropriate for TS-I or TS-II systems.
- C. All Bioclere™ Modified Trickling Filter pretreatment systems shall be installed according to directions provided by the manufacturer in the installation manual and instructions found on AquaPoint.3, LLC. CAD drawings of each system. Additionally, all Bioclere™ Modified Trickling Filter pretreatment systems and components used with, but not manufactured by AquaPoint.3, LLC, shall be installed in accordance with all applicable regulations and manufacturer instructions.
- D. All individuals/companies installing Bioclere™ Modified Trickling Filter pretreatment systems shall be in possession of all necessary permits and licenses before attempting any portion of a new or repair installation. The company/individual must be a Level IV installer and AquaPoint.3, LLC certified.
- E. Watertightness of the tanks shall be demonstrated by a 24-hour leakage test conducted at the installation site after being installed and prior to backfilling. A water level change of 1/2inch or more within a 24-inch riser over 24 hours, or visual observation of leakage shall be cause for failure of the watertightness test. Initial water level shall be 2 inches above the riser/adapter seam.
- F. The top of the Bioclere unit shall be constructed to extend at least twelve inches above the ground surface and the surrounding area graded to shed surface water away from the containment structure. If the top is greater than 48 inches above the ground surface, OSHA approved access

and rails shall be provided as approved by the project engineer.

- G. An appointed AquaPoint.3, LLC manufacturer's representative shall start-up the Bioclere™ Modified Trickling Filter pretreatment system for each installation and shall provide an installation and start-up acceptance letter to the LHD prior to issuance of the operation permit.
- H. Specified site preparation steps and construction specifications for the ground absorption system shall be strictly adhered to, including specified depth of trenches in relation to site limiting conditions, cover material specifications (if needed), trench installation method, etc.
- I. Prior to Operation Permit issuance, the engineer or designer of record and the AquaPoint.3, LLC manufacturer's representative shall conduct an inspection/startup of all associated system components in accordance with the Bioclere Field Report provided by AquaPoint.3, LLC. (Attachment D) The LHD personnel and the O RC will attend and observe the inspection/startup.

VIII. Operation, Maintenance, Monitoring, and Reporting

- A. Bioclere™ Modified Trickling Filter pretreatment systems shall be classified, at a minimum, as a Type Va system in accordance with Table V(a) of Rule .1961(b). Management and inspection shall be in accordance with Rules .1961 and .1970 except that for the first year inspections are quarterly. After the first year, for systems with a design flow less than 1,500 gallons per day, the inspection frequency drops to semi-annual. In the event any system is found out of compliance, AquaPoint.3, LLC will assist in the development of an action plan to bring the system back into compliance. The maximum inspection frequency shall revert to quarterly for a period of one year after the system found to be out of compliance is repaired.

Minimum system inspection/maintenance frequency shall be quarterly for systems with a design flow of 1,500 to 3,000 gallons per day or for any system treating high strength wastewater.

- B. All Bioclere™ Modified Trickling Filter pretreatment systems require an operation and maintenance agreement between the system owner and AquaPoint.3, LLC, or its authorized representative, as per Rule .1970. The system shall be inspected by an operator who is both a certified subsurface operator and a Grade II biological wastewater treatment plant operator. The certified operator shall either be an employee of AquaPoint.3, LLC or authorized in writing by AquaPoint.3, LLC to operate and maintain the system.
- C. All Bioclere™ Modified Trickling Filter pretreatment systems shall be maintained according to the latest revision of the Bioclere Operation and Maintenance Instructions as published by AquaPoint.3, LLC and shall complete the Bioclere Field Report (See Attachment D).
- D. At each Bioclere™ Modified Trickling Filter pretreatment system inspection, the ORC shall, at a minimum, observe, monitor, and record the following:
 - 1. Wastewater level in all the tanks.
 - 2. Sludge and scum levels in all the tanks.
 - 3. Clogging of effluent filter.
 - 4. Watertightness of tanks, risers, and pipe connections at the tanks.
 - 5. Operation of pumps, floats, valves, electrical controls, and alarms.
 - 6. Pumping frequency from pump impulse counters and elapsed run time meters.
 - 7. Drainfield pump delivery rate (drawdown test), determination of the average pump run time, and drainfield dosing volume.

8. Any structural damage, accessibility issues, adequate ventilation, excess odors, ponding of effluent, insect infestations, vegetative growth over the drainfield, or surfacing of effluent on the drainfield area.
 9. Sample of Bioclere system effluent collected from the sampling point to check for effluent clarity and odor, and a sample of influent, as required.
- E. The ORC shall also conduct other additional observations, measurements, monitoring, and maintenance activities as specified in the Operation Permit and as recommended by the manufacturer.
- F. Sampling
1. All sampling shall be done in accordance with Rule .1970(n)(3) and (5).
 2. All systems shall be tested for effluent CBOD₅, TSS, NH₄-N, and fecal coliforms. Systems specified to meet TS-II shall also sample the effluent for TN. Influent shall be tested for BOD₅ and TKN.
 3. Influent from each Bioclere™ Modified Trickling Filter pretreatment system will be sampled by drawing the influent sample from the influent “tee” of the primary septic tank. The influent tee will extend to 50% of the tank depth. Effluent will be sampled from the final pump tank downstream of the treatment system.
- G. Notification and Performance of Maintenance and Repairs
1. The ORC shall alert AquaPoint.3, LLC, the LHD, and the system owner within 48 hours of needed maintenance or repair activities including, but not limited to, landscaping, tank sealing, tank pumping, pipe or control system repairs, media replacement, and/or adjustments to any other system component.
 2. The ORC shall notify the system owner, AquaPoint.3, LLC, and the LHD whenever the pump delivery rate efficiency and/or average pump run times are not within 25% of initial measurements conducted prior to system startup.
 3. System troubleshooting and needed maintenance shall be provided to maintain the pump delivery rate and average pump run time within 25% of initial measurements conducted during system startup.
 4. The septic tank will be pumped as needed upon recommendation of the ORC and in accordance with the Bioclere Operation and Maintenance Instructions. However, at a minimum, the septic tank will be pumped whenever the solids level exceeds 25% of the tank’s total liquid working capacity or the scum layer is more than four inches thick.
 5. The tanks shall be pumped by a properly permitted septage management firms, and the septage handled in accordance with 15A NCAC 13B .0800.
 6. The ORC shall notify the LHD and system owner in writing whenever repairs are indicated. All maintenance activities shall be logged and recorded in the ORC reports provided to the LHD.
- H. Reporting
1. The ORC shall provide a completed written report to the system owner and the LHD within 30 days of each inspection. At a minimum this report shall specify:
 - a. The completed Bioclere Field Report (See Attachment D),
 - b. The date and time of inspection,
 - c. System operating conditions observed according to VI.E,
 - d. System operating conditions measured according to VI.E, and VI.F,
 - e. Results from any laboratory analyses of any influent and effluent samples,
 - f. Maintenance activities performed since the last inspection report,

- g. An assessment of overall system performance,
- h. A list of any improvements or maintenance needed,
- i. A determination of whether the system is malfunctioning, and the specific nature of the malfunction, and
- j. Any changes made in system settings, based on recommendations of the manufacturer.

IX. Responsibilities and Permitting

- A. Prior to the installation of a Bioclere™ Modified Trickling Filter pretreatment system at a site, the owner or owner's agent shall fill out an application at the LHD for the proposed use of this system. The LHD shall issue an Improvement Permit or Authorization to Construct or amend a previously issued Authorization to Construct allowing for the use of a Bioclere™ Modified Trickling Filter pretreatment system.
- B. The Improvement Permit and Authorization to Construct shall contain all conditions the site approval is based upon, including the proposed use of the Innovative system. The operation permit will include all conditions specified in the Improvement Permit and Authorization to Construct.
- C. When a special site evaluation is required pursuant to Rule .1970(p)(1) or a drip approval, an evaluation and written, sealed report from a Licensed Soil Scientist regarding the site shall be provided to the LHD. The report shall contain the information as specified in Rule .1970(p)(2) and "Requirements for Submittals of Soil Reports and Pretreatment and/or Dispersal System Designs". The LHD may request the assistance of their Regional Soil Scientist in evaluating this report prior to permit issuance.
- D. The Bioclere™ Modified Trickling Filter pretreatment system shall be designed by one of the following: an AquaPoint.3, LLC authorized designer or a North Carolina Professional Engineer.
- E. Prior to the issuance of an Authorization to Construct for a Bioclere™ Modified Trickling Filter pretreatment system, a design submittal prepared by an authorized designer or a North Carolina Professional Engineer shall be submitted for review and approval by the LHD. The design submittal shall include the information required in "Requirements for Submittals of Soil Reports and Pretreatment and/or Dispersal System Designs".
- F. A North Carolina Professional Engineer is required for all systems except single family residential units with design flows less than 1,000 gpd or as otherwise required for a drip system. All design submittals shall be accompanied by a design certification from AquaPoint.3, LLC (example of the manufacturer design certification is in Attachment A). AquaPoint.3, LLC, the North Carolina Professional Engineer, or approved designer shall also provide a set of support design calculations for each system. These support design calculations shall conform with the USEPA "Assessment of Single Stage Trickling Filter Nitrification" 1991, the USEPA "Nitrogen Control" 1993 and the Metcalf & Eddy "Wastewater Engineering – Treatment, Disposal and Reuse", 1991. An example of a complete set of North Carolina-specific specifications is provided in Attachment C.
- G. It is recommended that local authorized environmental health practitioners attend a design training session offered by the manufacturer/authorized representative prior to permitting the system. Also, at the request of the LHD, a Regional Engineer will review the design.

- H. An AquaPoint.3, LLC manufacturer's representative shall certify in writing that the Bioclere™ Modified Trickling Filter pretreatment system was installed in accordance with the approved design prior to Operation Permit issuance.
- I. A North Carolina Professional Engineer shall certify in writing that a system required to be designed by an engineer was installed in accordance with the approved plans and specifications prior to Operation Permit issuance.
- J. For sites required to be evaluated by a Licensed Soil Scientist or Professional Geologist (see Section VII.C), the health department may specify as a condition on the Improvement Permit and Authorization to Construct that a Licensed Soil Scientist or Professional Geologist oversee critical phases of the drainfield installation and certify in writing that the installation was in accordance with their specified site/installation requirements prior to the Operation Permit issuance.
- K. The ORC shall be present during the final inspection of the system prior to the issuance of the operation permit. The ORC shall be certified as both a NC Subsurface Operator and a Grade II biological wastewater treatment plant operator.
- L. On an annual basis, AquaPoint.3, LLC shall provide a report to the On-Site Water Protection Branch including the number and location of new system installations during the previous year, and effluent data and operator reports for each operational Bioclere™ Modified Trickling Filter pretreatment system installed in North Carolina under this Innovative Approval. These reports shall provide information to the Department based upon the monitoring data and observations made from the Innovative systems installed pursuant to this Approval. This should include an assessment of system performance in relation to the established treatment performance standards; an assessment of physical and chemical properties of the materials used to construct the system, in terms of strength, durability, and chemical resistance to loads and conditions experienced; recommended areas of applicability for the system; and any conditions and limitations related to the use of the system.

X. Repair of Systems

The provisions of 15A NCAC 18A .1961(l) shall govern the use of Bioclere™ Modified Trickling Filter pretreatment system for repairs to existing malfunctioning wastewater systems.

Approved by: _____ Date: _____

Attachment A. Design Certification Letter



DESIGN CERTIFICATION

Day of Week, Month Day, Year

*I. M. Engineer, PE
Engineer & Associates
100 E Main St
PO Box 100
Anywhere, US 12345*

SAMPLE

Re: Proposed Project

This will certify that Aquapoint Inc.'s wastewater treatment equipment for the referenced project and as shown on the site plans *project name & location*, Final Revision *date*, prepared by *Engineer & Associates*, has been designed in accordance with generally accepted principles for the design of wastewater treatment systems. The system has been designed to meet the following specifications when installed in compliance with the approved plans and operated and maintained according to the manufacturer's recommendations.

If the maximum seasonal groundwater elevation is above the bottom of the Bioclere unit the resultant uplift forces may require concrete ballast surround of the Bioclere unit to offset buoyancy.

Design Specifications

<i>FLOW</i>	<i>Q (GPD)</i>		INFLUE NT (MG/L)	EFFLUENT (MG/L)
Design	16,000	PH	6.5 – 8.5	6.5 – 8.5
Average	13,300	Temperature (degrees)	Min. 10 C	
Peak	16,000	BOD ₅	240	<10
		TSS	200	<10
		TKN	31.5	
		Ammonia Nitrogen		<10
		Total Nitrogen	37.5	<20 or 60% reduction

Attachment A. Design Certification Letter

This certification reflects the design parameters as indicated above and assumes no other environmental factors that will adversely affect treatment. Toxic products such as floor strippers, cleaners, degreasers and sanitizing products containing Quaternary Ammonium Chlorides (QAC's) are known to be highly toxic to the wastewater treatment system bacteria and should not be discharged to the wastewater system.

Material modifications to the referenced plans may affect this Certification. Aquapoint Inc. reserves the right to review the final approved plans and to modify this Certification accordingly.

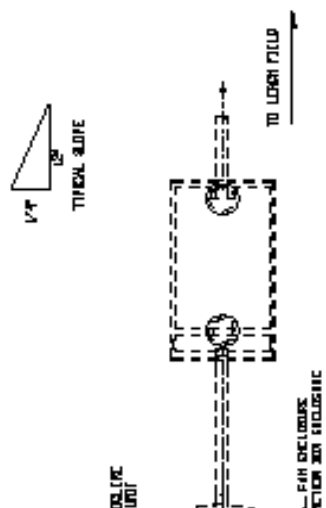
Sincerely,

SAMPLE

Mark Lubbers
Aquapoint Inc.

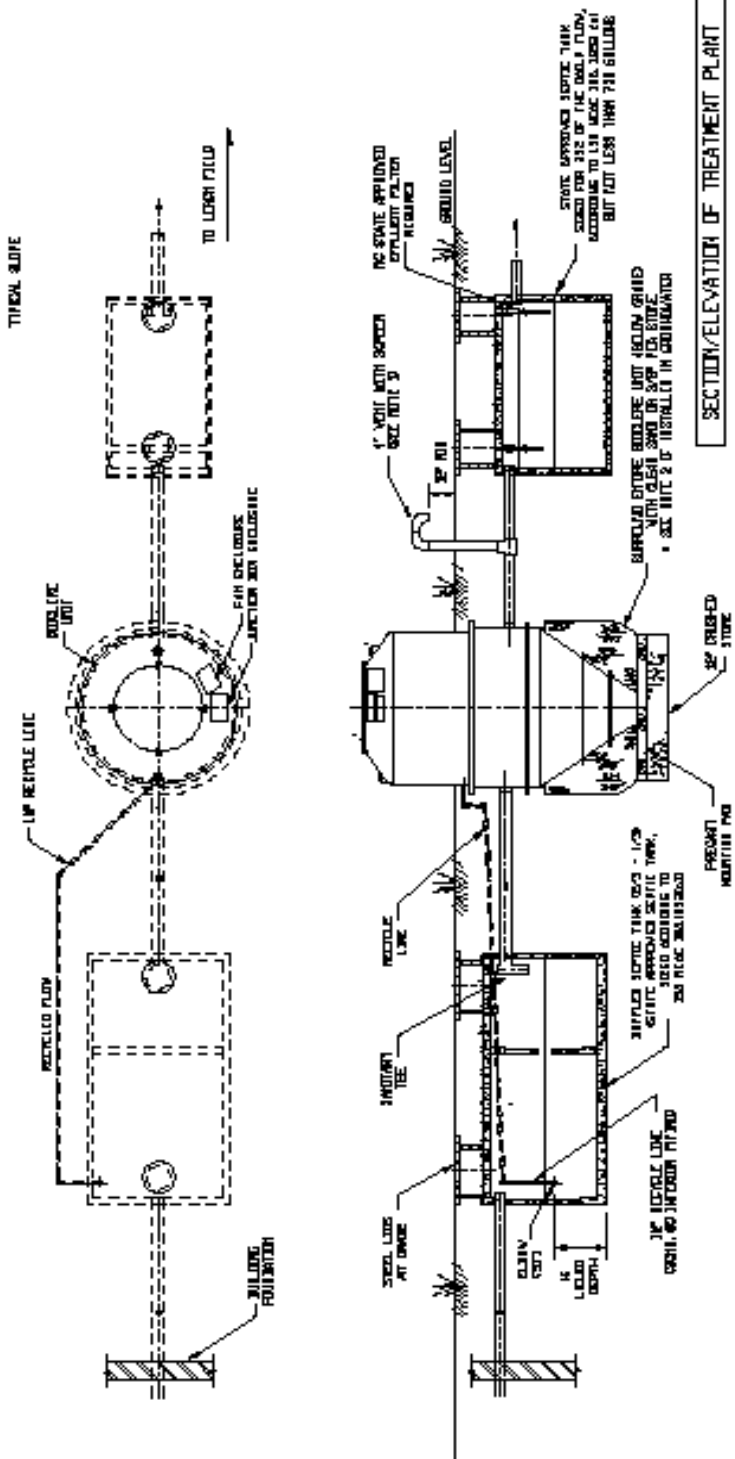
N.C. GENERAL FLOW SCHEMATIC

PLAN ON TREATMENT PLANT



- NOTES UNLESS OTHERWISE SPECIFIED
1. VENT MAY BE RUN UP TO THE ROOF OF THE BUILDING.
 2. IF INSTALLED IN GROUND WATER CONTACT SITE ENGINEER FOR ANCHORING REQUIREMENTS.
 3. CONTRACTOR IS TO SUPPLY ALL CONCRETE STRUCTURES AND PERFORM INSTALLATION.
 4. OSHA RAILS AND LADDER REQUIRED IF TOP OF BODLERE IS GREATER THAN 48" ABOVE GRADE.
 5. MINIMUM 4" DIA SAND 40 PORE BEFORE AND AFTER BODLERE AT EX. SLOPE.

SECTION/ELEVATION OF TREATMENT PLANT



AWJ
Aggregators

641 DUNSHADE BLVD
 P.O. BOX 31120
 NEW BEDFORD, MA 02745
 650-944-7677 FAX 650-944-7177

TITLE: TYPICAL FLOW SCHEMATIC
 DRAWING NO: 16K1866-B
 PROJECT: A
 DATE: 15 FEB 08
 DRAWN BY: R.W. WILLEY
 SCALE: 1" = 6'-0" SHEET: 3 / 4-B
 SHEET NO. 1 OF 1

DESIGNED BY: AWJ
 CHECKED BY: AWJ
 THE SCALE AND LEVEL OF THIS DRAWING IS AS SHOWN ON THE DRAWING. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE EXISTING CONDITIONS AND FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS BEFORE CONSTRUCTION.

0	3'	6'	9'	12'	15'	18'	21'	24'	27'	30'
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Attachment C. Bioclere Specifications

BIOCLERE SPECIFICATION

General

There shall be furnished and installed a factory built, fixed film aerobic process type sewage treatment plant(s) with all needed equipment for efficient operation. The unit shall include a trickling filter situated over a final settling tank.

Construction

The unit shall be delivered complete from supplier and shall include: random packed PVC manufactured media, ventilation fan, dosing pump(s), sludge return pump, internal piping, wiring and controls. The trickling filter portion of the tank shall have fiberglass inner and outer skins with the cavity between filled with polyurethane foam insulation. The remainder of the plant shall be constructed of FRP or plastic. All internal piping shall be schedule 40 PVC plastic pipe. The treatment plant shall withstand normal pressures from the interior hydrostatic load and from the soil.

The flange connection joining the Bioclere filter section to the Bioclere sump section shall be factory sealed with fiber reinforced plastic (FRP) to provide a permanent watertight seal.

The internal shipping supports shall be removed, made from, or encapsulated with non-biodegradable material.

The Bioclere units shall be leak tested for zero percent 24-hour leakage by filling the clarifier with clean water to the outlet invert.

Filter Media

The PVC randomly packed filter media has a void ratio of >95%. It is UV resistant and resistant to a wide range of aqueous solutions, acids, alkalis, oxidizing agents, oils, fats, and alcohols.

Final Settling Tank

A cone shaped settling tank shall have 60 degree sloped sides to prevent the accumulation of biological and inorganic suspended solids and shall contain the necessary internal baffling to prohibit short-circuiting of the wastewater.

Electrical Components

The unit shall have a ventilation fan, one media dosing pump for 16 series and two media dosing pumps for all others, a sludge return pump, and a low level float switch with the following characteristics.

The ventilation fan shall be a 115v/1ph/60hz, painted metal, ball bearing fan with a factory rated airflow rate 58 cubic feet per minute in 16 Series units, all other units fans will be 240 cubic feet per minute.

Dosing pumps and recycle pump shall be 115v/1ph/60hz stainless steel submersible pumps. All pumps shall have an internal high temperature shut off switch. The alternating dosing pumps shall be controlled such that when one pump fails the remaining operational pump will complete both dosing cycles.

The low level 115v/1ph/60hz float switch shall be installed to prevent the recycle pump from operating when water levels are abnormally low in the Bioclere (i.e. during primary tank pumping).

Attachment C. Bioclere Specifications

Power Supply

The unit shall have a dedicated properly sized power supply.

Wiring

The electrical contractor shall complete the wiring between the Bioclere control panel and the terminal strip within the Bioclere fan module meeting all local, state, and federal codes.

All fittings, connections, etc. shall be weatherproof and water tight construction. Ground terminals are provided in both the main panel and the junction box for each unit. Each ground terminal shall be wired to an earth ground.

The junction box for the Bioclere unit shall be in a NEMA 4X enclosure.

Care shall be taken to match the wires between the control panel and the terminal strip within the Bioclere fan module located on each unit.

Control Panel

A control panel shall be furnished with an audio and visual alarm for pump failure and tripped circuit breaker conditions, an exterior alarm silence button, and an on/off/test power/alarm toggle switch. Within the NEMA 4X enclosure: pump timers, pump run timers for each pump (elapsed time meters), terminal strip, on/off/test switches, run lights, dosing pump alternator, circuit breakers and current sensors shall be provided.

Warranty

All equipment provided shall be warranted against defects in materials and workmanship for a period of one year from the date of installation.

Attachment C. Bioclere Specifications

Services Provided

Aquapoint.3, LLC or an approved manufacturer's representative shall provide the following services for each project: Note that all Bioclere unit(s) and ancillary equipment supplied by Aquapoint.3, LLC is to be installed by the certified and approved installer.

- Review the design criteria, size and provide specifications for the Aquapoint.3, LLC supplied equipment.
- Review and comment on the site-specific site plan prior to manufacturing.
- Provide a Technical Manual that includes and is not limited to installation instructions; equipment specifications and operation and maintenance procedures for the Aquapoint.3, LLC supplied equipment.
- Provide onsite technical assistance for the handling and positioning of the Bioclere unit(s) the day of installation.
- Return to the site for testing and/or commissioning of the Bioclere unit(s) upon substantial completion of site work by the installer (piping, electrical, grading, etc.). Aquapoint.3, LLC may install the randomly packed PVC media, Aquapoint.3, LLC employee or appointed representative will install pumps into the Bioclere unit(s), which will complete unit setup. Aquapoint.3, LLC or approved representative will be available to train the operator(s) and instruct the owner on Bioclere operation the day of commissioning/testing.
- Test and/or commission the ancillary equipment supplied by Aquapoint.3, LLC the day of Bioclere commissioning and/or testing.
- Remain accessible to the owner and/or operator for phone consultation.
- Be available for additional site visits or consultation.

Attachment D. Bioclere Field Report

AQUAPOINT.3, LLC 39 Tarkiln Place TEL. 508 998-7577 FAX. 508 998-7177		
BIOCLERE FIELD REPORT		
Date:	Installation:	Tested:
Client:	Service:	Commissioned:
Address:	Other:	Scheduled Maint.
Inspector:		
Bioclere Model Number(s)		
1) ODOR		
Is there an odor around site? Y / N Source of odor?		
Check all that apply:	Mild: Med: Strong:	Musty: Septic:
2) SAMPLES		
Take influent/effluent samples as required?	Influent Y / N	Effluent Y / N
Please fax analytical results to Aquapoint for review.		
3) SLUDGE		
a) Measure sludge in primary tanks and grease traps as required:		
b) Primary tank:	Scum depth:	Sludge depth:
c) Does grease trap need pumping? Y / N	Scum depth:	Sludge depth:
4) BIOCLERE VENTS		
a) Is air passing through the vent?	UNIT 1	UNIT 2
If in doubt put a small plastic bag around the vent and allow to fill		Y / N
b) Is the fan operating and in good condition?	Y / N	Y / N
5) GENERAL		
a) Any external damage to the unit(s)? If yes, then provide details on back	Y / N	Y / N
b) Are cover, fan box and control panel securely locked?	Y / N	Y / N
c) Any filter flies in the unit?	Y / N few / many	Y / N few / many
Location of flies:		
d) Locks / Latches / Handles, OK?	Y / N	Y / N
e) Lid Gasket, OK?	Y / N	Y / N
f) Does the fan box contain standing water? If yes, then remove water and clean drain holes if necessary.	Y / N	Y / N

Attachment D. Bioclere Field Report

6) BIOMASS CHARACTERIZATION		
a) Color of biomass?		
1)white 2)white/grey 3)grey 4)grey/brown 5)brown 6)red/brown 7)black 8)other		
b) Thickness of biomass 6- 12 inches below media surface		
1) light 2) medium 3) heavy		

7) NOZZLE SPRAY PATTERN		
a) Does spray cover the entire surface of media? If not then clean each nozzle with a bottle brush	Y / N	Y / N
Does the spray now cover the entire surface area? If not then:	Y / N	Y / N
1) remove nozzles and soak them in a bleach solution		
2) manually engage both dosing pumps for 2 minutes		
3) replace nozzles		
Does the spray now cover the entire surface area? If not then consult Aquapoint , Inc.	Y / N	Y / N

8) PUMPS AND CONTROL PANEL		
a) Record dosing and recycle pump timer settings from control panel		
Dosing pump 1 and 2:	Min on/ off min	Min on/ off min
Recycle pump:	Min on/ off min	Min on/ off min
In Bioclere control panel set dosing and recycle timers to a test cycle:		
a) Measure amperage of dosing pump 1:	amps	amps
b) Measure amperage of dosing pump 2:	amps	amps
c) Measure amperage of dosing pump:	amps	amps
Are the dosing pumps alternating?	Y / N	Y / N
Are the timers operating properly?	Y / N	Y / N
Visually inspect relays for wear an record problems below.		
*If spare components are needed contact Aquapoint		
If an ammeter is not available, set the timers to a test cycle as above and physically at the Bioclere, check the pumps operation as follows:		
Dosing pumps: Check that pump(s) are operating, alternating and the	Pump 1: OK? Y/ N	Pump 1: OK? Y/ N

