July 31, 2018

Certified Mail Number: 7005 1820 0003 1872 6057

Bennette Burks, P.E.
3-Engineering, LLC
1518 Willow Lawn Drive, Suite 300
Henrico, Virginia, 23230

Dear Mr. Burks:

This letter is in response to your request to use an alternative repair method as a supplemental pretreatment device used in the treatment train preceding Fuji Clean aerobic treatment systems. This alternative repair method is intended for establishments, requiring additional oxygen to address high biological oxygen demand (BOD) strength. Examples of such establishments are food services. The Florida Department of Health (Department) has no objection to the use of this alternative repair method subject to the conditions below.

The proposed alternative repair method is under the scope of Florida Administrative Code (FAC), Rule 64E-6.015(3). You provided information that this alternative repair method will include the following:

1. Installation of one or more CAPAFC75 SSI coarse bubble diffusers, a Fuji Clean MACBlower, and associated Schedule 40 PVC piping.
2. The diffusers will be installed in a tank following a septic or pretreatment tank and before a Fuji Clean aerobic treatment system. Grease interceptors will precede the septic tanks as required for the establishment. Tubing associated with the aerator enters the tank through penetrations in the riser. The MACBlower is installed outside of the tank. An effluent filter is installed at the tank outlet.
3. Up to 16 diffusers can be installed in each tank, and multiple tanks can be used in the treatment train.
4. Sizing of the tank and the number of aerators used is described in the system's design, installation and maintenance manual.

Conditions of Use

1. Use of the product shall be in conjunction with a Fuji Clean aerobic treatment unit or performance-based treatment system including a Fuji Clean aerobic treatment unit. The maintenance agreement for the system shall include the product.
2. Use of the product shall be specified by the engineer of record in the permit application for the onsite sewage treatment and disposal system in conjunction with an assessment of wastewater strength as described in footnote 2 to table IV or in 64E-6.012(3), Florida Administrative Code, and in accordance with your instructions. The aeration treatment systems that the product assists shall be of sufficient capacity for the estimated sewage flow.

3. Florida-approved treatment receptacles proposed for use with your product shall comply with your dimensional specifications. No structural modifications to the existing tank or lid are allowed beyond installation of a riser. The unit must be installed through holes in the riser.
4. Installation of your unit shall be considered an alternative repair subject to Rule 64E-6.015(3), FAC. Please note that alternative repair methods cannot be used where the absorption surface of the drainfield is within six inches of the wet season water table.
5. Installation and use shall be as detailed in the Florida installation manual submitted by you on July 11, 2018.
6. Any changes to the manual must be reviewed by the department prior to distribution in Florida.
7. The unit may be installed in all system construction applications (new, modification, repair).

Be advised that the Department is not a testing agency. This determination of non-objection reflects only a review of the information submitted by you for compliance with Florida Statutes and Florida Administrative Code. The alternative repair method evaluation does not investigate the validity of performance claims. The Department's non-objection must not be interpreted as certifying effectiveness, endorsing or recommending use of the alternative repair method. The alternative repair method must not be advertised as "state approved". The Department also does not assume liability for any promise, guarantee, or expectation from purchasing or using this alternative repair method. The department reserves the right to withdraw acceptance if the alternative repair method is modified to differ from what was considered in this evaluation.

This letter of no-objection is limited to the Florida Department of Health's jurisdictional circumstances as defined in Chapter 64E-6, Florida Administrative Code and Chapter 381.0065, Florida Statutes. If we may be of further assistance or should you have any additional questions regarding this letter, please contact Debby Tipton at 850-901-6944.

Sincerely,

Ed Barranco, MPH, CEHP, CPM
Environmental Administrator
Onsite Sewage Programs

EB/dt
Enclosure
cc: Sam Samuelson, Fuji Clean USA LLC

FujiClean USA™ LLC
Toward Clean Water…

FLORIDA ALTERNATIVE REPAIR METHOD FOR FUJI CLEAN CE- AND CEN-SERIES WASTEWATER TREATMENT UNITS

Design—Installation—Maintenance
Revised—July 11, 2018

CERTIFICATION

Fuji Clean USA, LLC, (Fuji Clean) does not object to the use of the enclosed Alternative Repair Method ("ARM") for Fuji Clean CE- and CEN-Series installations receiving wastewater characterized as "high strength" when the wastewater otherwise conforms to Fuji Clean recommendations, requirements, restrictions, and prohibitions and any other requirements and/or limitations provided herein.

Introduction

Fuji Clean system are designed to treat wastewater having characteristics considered "typical" for domestic wastewater. A discussion of typical domestic wastewater is beyond the scope of these instructions but can be found in standard industry texts such as Wastewater Engineering: Treatment and Reuse by Metcalf and Eddy, among others. Designers often encounter commercial and residential occupancies generating wastewater that has a BOD (Biochemical Oxygen Demand) considered higher than typical. Supplemental aeration prior to discharge to the Fuji Clean unit has been effective in reducing the BOD such that Fuji Clean unit can provide efficient treatment.

Location

Supplemental aeration is a step that precedes discharge to the Fuji Clean unit but comes after primary treatment and grease traps. Supplemental aeration is neither to replace nor modify grease trap and/or primary treatment requirements. Supplemental aeration is a final preliminary treatment method just prior to discharge to the Fuji Clean unit.

Determination of Need and Capacity

The determination to include supplemental aeration is made in concert with a discussion with the manufacturer. The determination begins with a characterization of the wastewater and understanding of the occupancy. Foodservice occupancies, for example, often generate high-strength wastewater that is amenable to supplemental aeration. Next, the designer will perform a mass balance to estimate how much the BOD is reduced in each step. For example, Metcalf

and Eddy report that BOD can be reduced approximately 35 percent in a primary treatment tank having a minimum 12-hour detention time. The designer can estimate the supplemental aeration capacity once he or she has estimated the BOD that will enter the Fuji Clean unit. As many as 16 aerators can be placed in a single tank. Multiple tanks can be used based on convenience and availability of tankage. Figure 2 shows a simple spreadsheet used to estimate supplemental aeration.

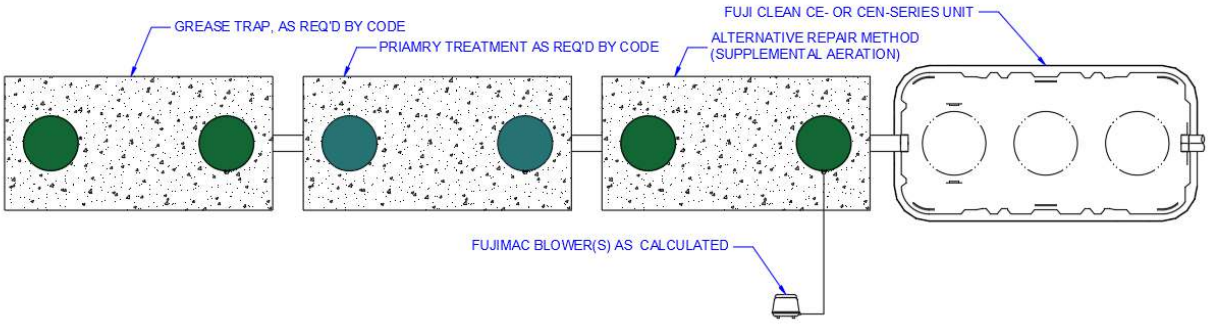

Figure 1—ARM Location Schematic

EXAMPLE PROBLEM--ADDITIONAL AERATION DESIGN REQUIREMENTS		
ITEM	**VALUE**	**UNITS**
FLOW	400	GPD
BOD	2,400	mg/L
UPTAKE	1.2	LB-02/LB BOD
O2 REQ'D	10	LB/DAY
CE10 DESIGN PARAMETERS		
FLOW	900	GPD
INFLUENT BOD	200	mg/L
UPTAKE	1.2	LB-O2/LB BOD
O2 PROVIDED	1.8	LB/DAY
ADDITIONAL COMPRESSOR REQUIREMENTS		
ADD'L O2 REQ'D	7.8	LB/DAY
ADD'L O2 REQ'D	3.5	kg/DAY
FTE	0.5	(Water Clarity)
ADD'L O2 REQ'D	7.1	kg/DAY
EFFICIENCY	0.050	(O2-Water Mixing)
ADD'L O2 REQ'D	142	kg/DAY
O2 CONCENTRATION	0.230	
AIR REQ'D	617	kg/DAY
AIR DENSITY	1.225	kg/m3
AIR REQ'D	504	m3/DAY
ADD'L AIR REQ'D	**350**	**L/MIN**
COMPRESSOR SELECTION		
MAC 150R	180	L/MIN
NO. IN SEPTIC TANK	2	EACH
SSI DIFFUSERS	4	EACH
ADD'L AIR SUPPLIED	**360**	**L/MIN --> OK**

Figure 2—Supplemental Aeration Spreadsheet Calculation

Installation

Installation can be completed using readily available Sch 40 PVC pipe and fittings, grommets, and aerators.

Each compressor serves two aerators. The aerators are installed as shown in Figure 3.

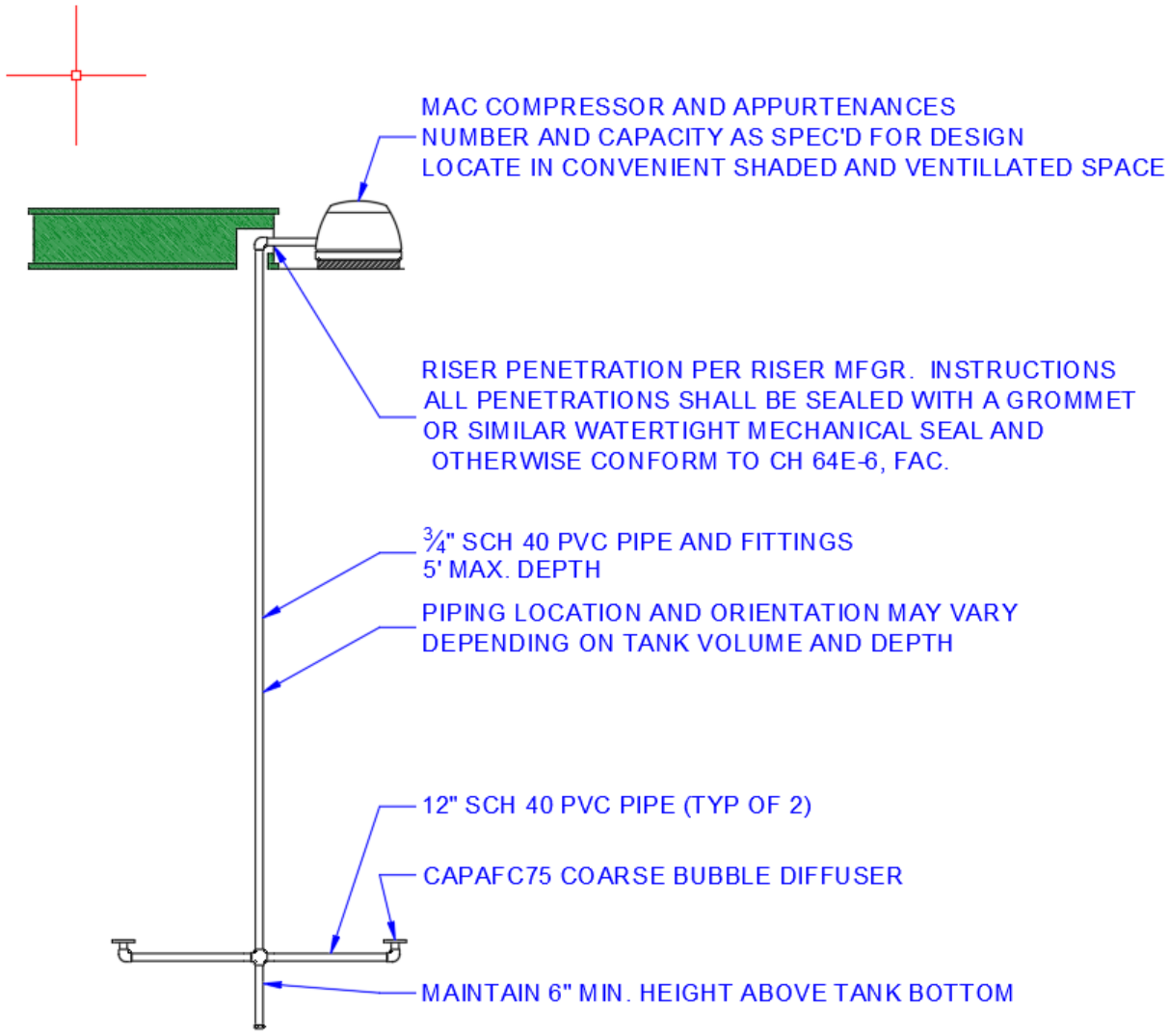

Figure 3—Aeration Line Installation Schematic

PVC pipe is assembled to fit the tank and within the limits for maximum aerator depth and minimum height above the tank bottom. A penetration is typically made in the riser though any suitable opening may be used. Riser penetrations must be sealed using a grommet or other

mechanical seal. Unions may be used to join pipe sections. A cap may be used to seal the pipe bottom. Be sure to prepare and glue all joints in accordance with the pipe and fitting manufacturer's instructions.

The compressor shall be placed in a convenient location in accordance with Fuji Clean recommendations. If requested, the compressor can be attached to an alarm. Otherwise, performance can be monitored as a part of periodic maintenance events.

Maintenance

Maintenance is relatively simple. The maintenance provider will confirm that the compressor and aerators are operating properly and that the tank is not full of solids. Compressors are maintained in accordance with standard FujiMac procedures. Aerators can be cleaned and inspected as may be necessary. Tanks are inspected and pumped in accordance with applicable rules for septic tanks and grease traps. Generally speaking, the supplemental aeration tank is performing adequately if the Fuji Clean effluent meets applicable effluent quality standards.

Procedures

- Confirm proper operation and condition of the Fuji Clean unit
- Inspect FujiMac compressor for proper operation
- Check for objectionable odors in vicinity of tank
- Examine tank to confirm aeration of contents
- Measure the scum and sludge volumes to determine the need for pumping
- Measure the SVI (Sludge Volume Index) to determine the need for pumping
- Service the effluent filter in accordance with its manufacturer's instructions
- Document all observations on the standard maintenance checklist

Summary

Fuji Clean units provide the highest quality effluent among treatment technologies. Supplemental aeration can be an effective technique to facilitate Fuji Clean performance for troublesome occupancies. Fuji Clean coordinates with its partners—owners, regulators, designers, installers, and maintenance providers—to provide the tools and techniques to address high strength wastewater.

ALTERNATIVE REPAIR METHOD

THIS ALTERNATIVE REPAIR METHOD IS INTENDED FOR OCCUPANCIES, PARTICULARLY FOODSERVICE, THAT MAY EXPERIENCE BOD CONCENTRATIONS GREATER THAN TYPICAL FOR DOMESTIC WASTEWATER. THE APPROACH RELIES ON DEVELOPING AND MAINTAINING SUFFICIENT OXYGEN WITHIN A TANK TO DEVELOP A MICROBIAL COLONY ADAPTED TO THE WASTEWATER STRENGTH. DIFFERENT COLONIES MAY DEVELOP AT DIFFERENT WASTEWATER STRENGTHS. THE ADDITIONAL AERATION IS AUGMENTED WITH GREASE TRAPS AND EFFLUENT FILTERS TO PROVIDE BOD REDUCTIONS TO DOMESTIC WASTEWATER STRENGTH BEFORE DISCHARGE TO THE FUJI CLEAN UNIT.

A MINIMUM 12-HOUR DETENTION TIME IS REQUIRED BASED ON DESIGN FLOW; AERATION BE CAN PROVIDED AT THE VOLUME REQUIRED FOR EACH APPLICATION. AS MANY AS 16 AERATORS CAN BE INSTALLED IN EACH TANK, AND MULTIPLE TANKS CAN BE USED IF REQUIRED FOR THE SAKE OF CONVENIENCE OR AVAILABILITY OF TANKAGE. AIRLINES CONNECTING THE BLOWERS AND AERATORS SHALL ENTER THE TANK THROUGH A PENETRATION THROUGH THE RISER. THE AIRLINE AND PENETRATION MUST CONFORM TO APPLICABLE PROVISIONS OF CHAPTER 64E-6, FAC.

EACH AERATOR CAN BE CONTROLLED BY A PANEL THAT CAN BE ADJUSTED FOR ON/OFF CYCLES AS DESIRED FOR A PARTICULAR APPLICATION. THE PANEL CONTAINS SENSING CIRCUITRY AND ALARM TO REPORT AERATOR FAILURE.

EACH TANK IS ALSO EQUIPPED WITH AN EFFLUENT FILTER TO CAPTURE AND RETAIN SOLIDS AND IMPEDE SHORT-CIRCUITING.

THE TANK IS PLACED AFTER SEPTIC TANKS SIZED IN ACCORDANCE WITH SECTION 64E-6.013 (7), FAC.

ALTERNATIVE REPAIR METHOD
THEORY OF OPERATION
FOR USE IN ONSITE SEWAGE SYSTEM APPLICATIONS REQUIRING ADDITIONAL OXYGEN TO ADDRESS HIGH BOD STRENGTH

SCALE: NONE
DATE: 07/11/2018
DRAWN BY: BDB

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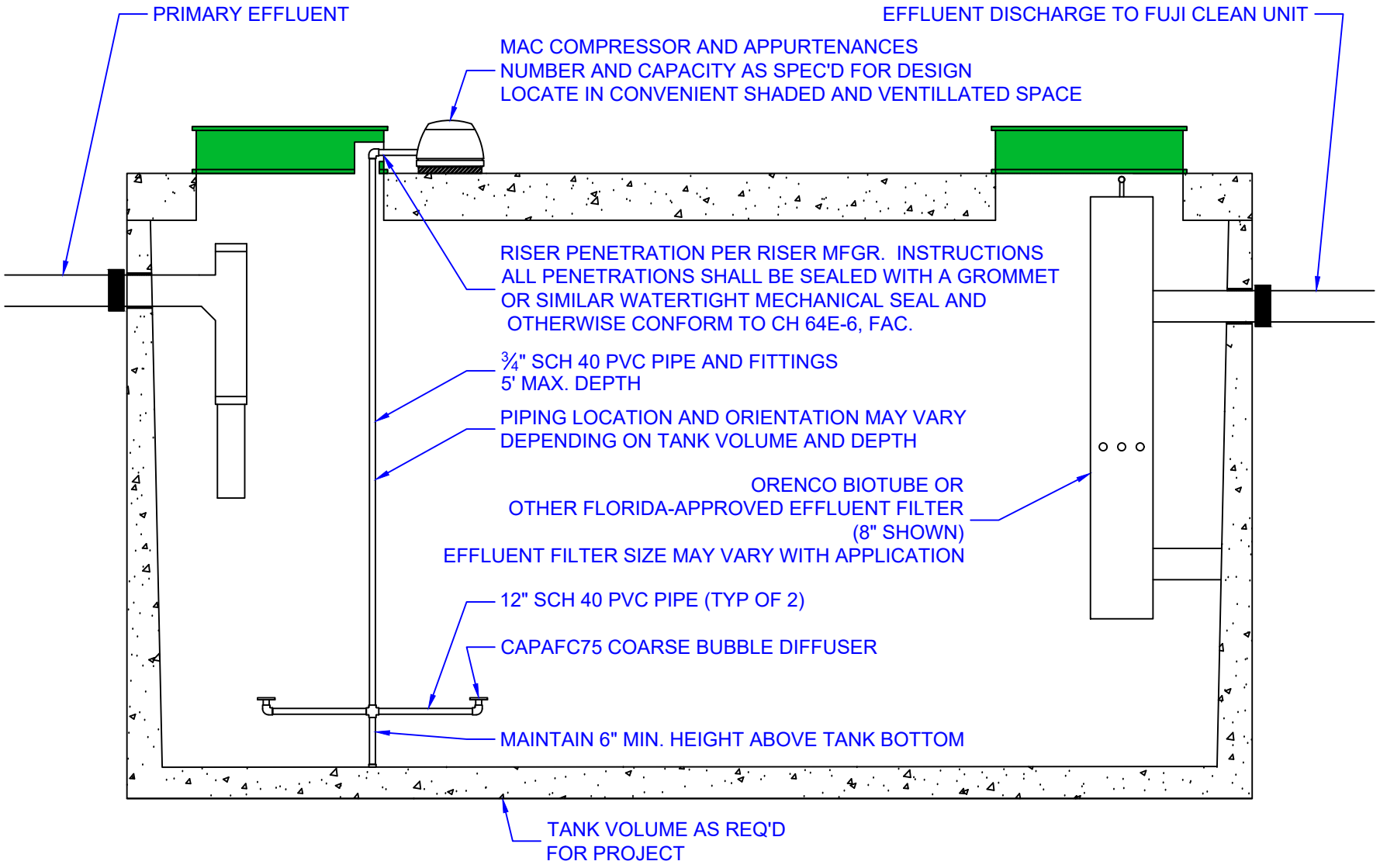
Toward Clean Water...



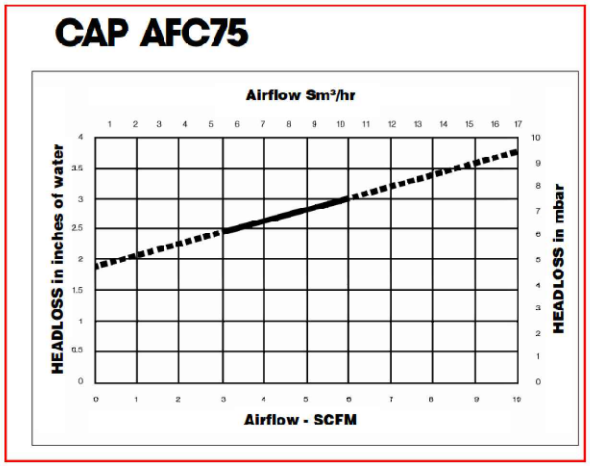
ALTERNATIVE REPAIR METHOD

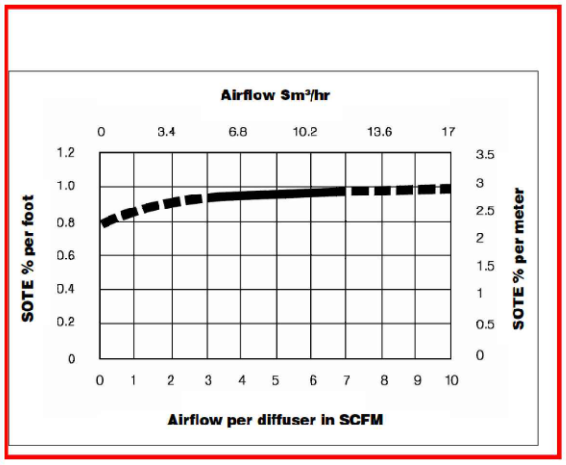
INSTALLATION SCHEMATIC

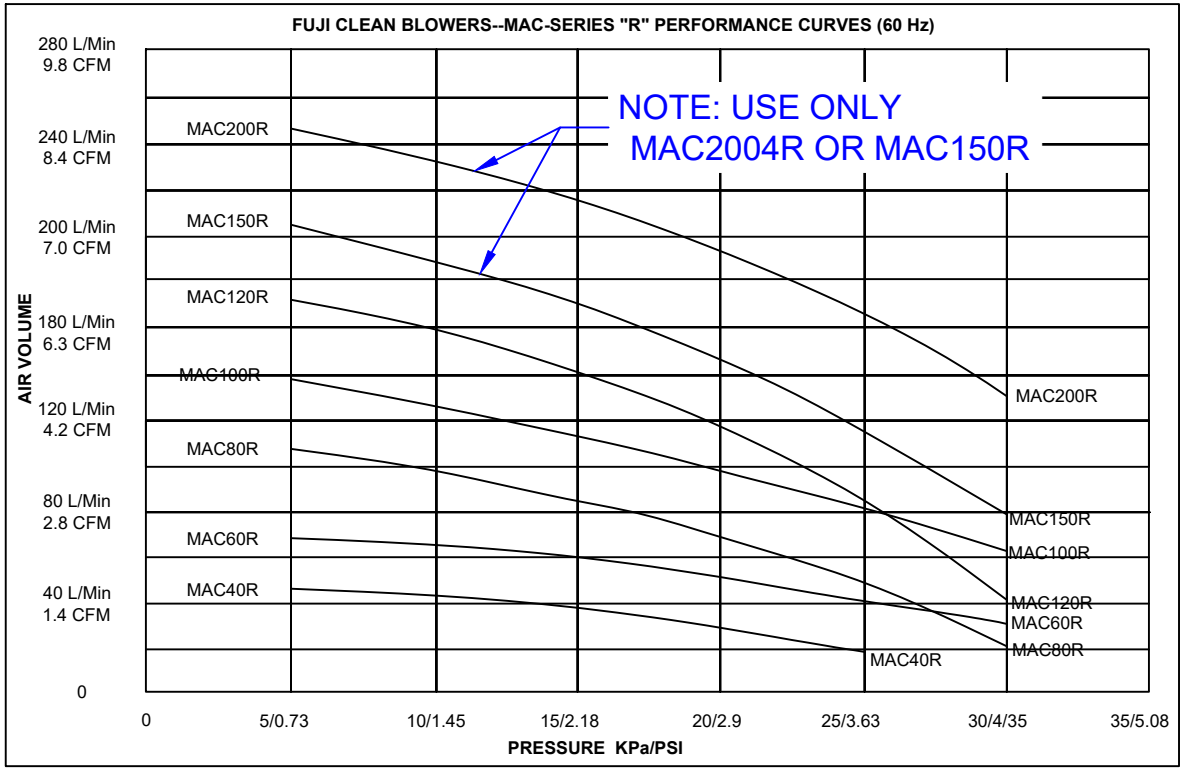
FOR USE IN ONSITE SEWAGE SYSTEM APPLICATIONS REQUIRING ADDITIONAL OXYGEN TO ADDRESS HIGH BOD STRENGTH

SCALE:	NONE
DATE:	07/09/2018
DRAWN BY:	BDB

FujiClean USA™
Toward Clean Water...







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ADD'L AIR SUPPLIED	**360**	**L/MIN --> OK**

ALTERNATIVE REPAIR METHOD

CALCULATIONS AND COMPRESSOR SELECTION FOR USE IN ONSITE SEWAGE SYSTEM APPLICATIONS REQUIRING ADDITIONAL OXYGEN TO ADDRESS HIGH BOD STRENGTH

SCALE: NONE

DATE: 05/31/2018

DRAWN BY: BDB

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