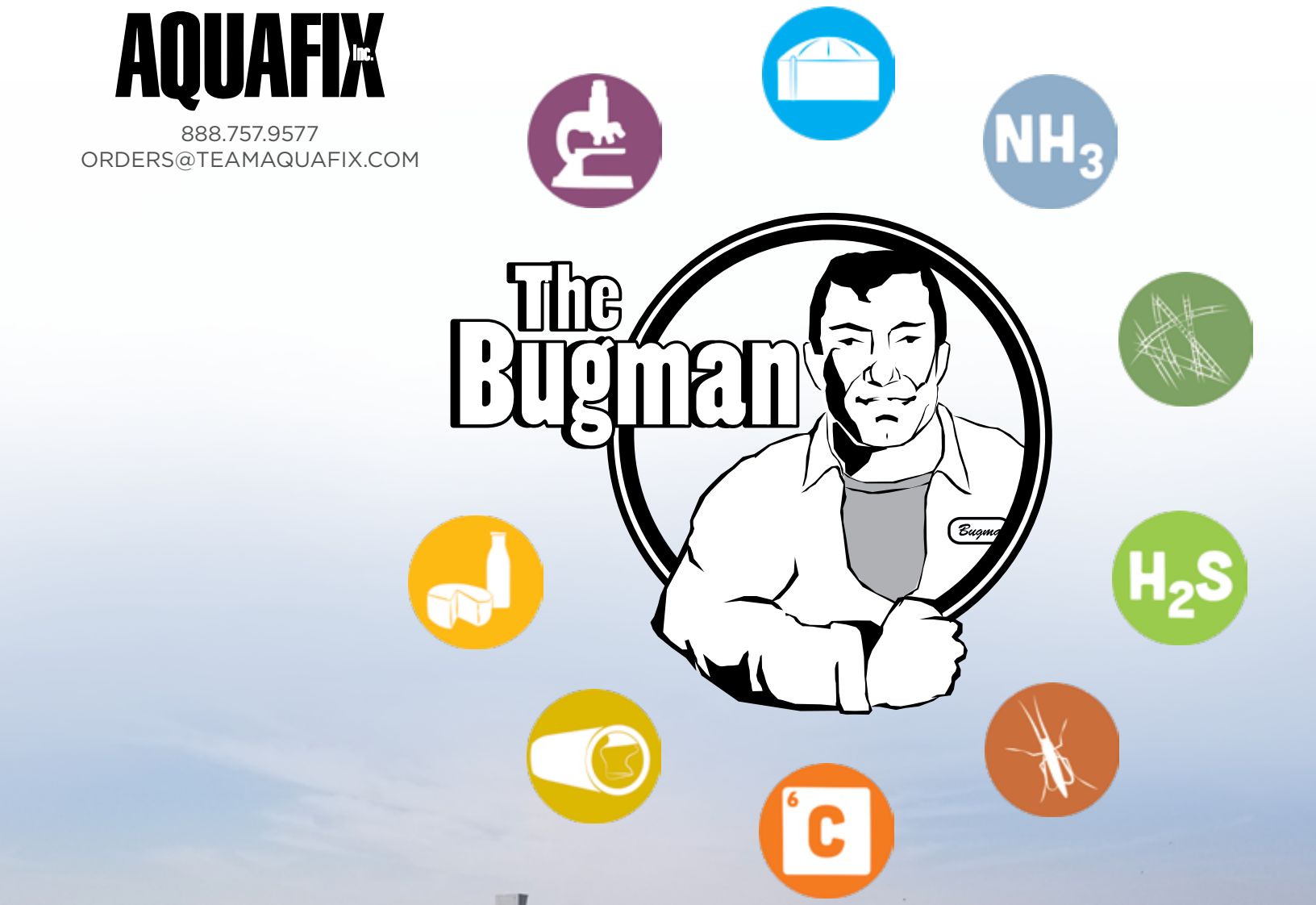
AQUAFIX Inc.

888.757.9577
ORDERS@TEAMAQUAFIX.COM



WASTEWATER SOLUTIONS

2019 CATALOG

CONTACT US

Call: 888.757.9577
Hours: Monday - Friday 7:30 am - 4:00 pm CST
Email: info@teamaquafix.com
Order: www.teamaquafix.com or orders@teamaquafix.com
Para español, envíe un email a: international@teamaquafix.com

Catalog designed by Derek Laughlin, Aquafix Marketing Specialist.

Proven Solutions

GREASEBERG®

WHAT YOU SEE ON THE SURFACE IS ONLY THE BEGINNING.

EXPENSIVE HABIT

How much does a pump malfunction cost you, in both time and money?

NOT TO BE TAKEN LIGHTLY

A recent Greaseberg discovered in London weighed 280,000 pounds. That's the equivalent of 25 full grown African Elephants!

2019 WEBINAR EVENTS

Free To Attend.
Once you've registered and secured your space in an Aquafix webinar, all you have to do is attend!

Lots To Learn.
Aquafix webinars cover a wide range of wastewater topics. We have proven solutions and tips to solving lots of issues.

Easy To Join.
Access simple registration for our webinars at *www.teamaquafix.com/upcoming-webinars*

JANUARY 9	**NITRIFICATION: UNDERSTANDING THE 7 STEPS**
MARCH 27	**TOXICITY IN YOUR WASTEWATER PLANT**
MAY 29	**KEYS TO ANAEROBIC DIGESTER STABILITY**
JULY 31	**WASTEWATER LAGOON ALGAE**
SEPTEMBER 25	**PROTOZOA, METAZOA, AND BUILDING GOOD FLOC**
DECEMBER 4	**ELIMINATING FOAM CAUSING FILAMENTS**

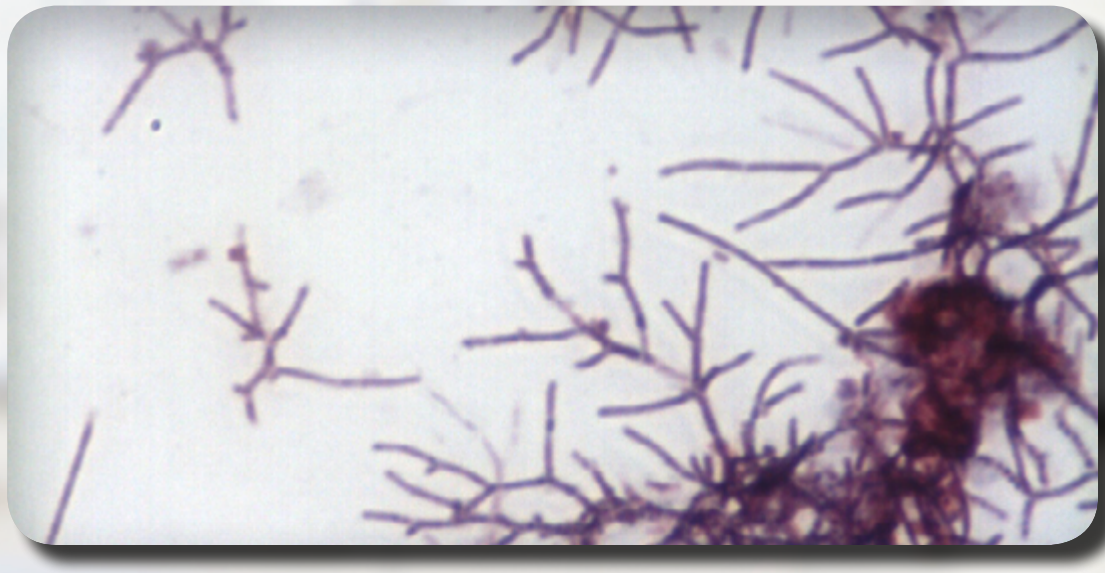
MICRO AND FILAMENT ORIGINS TESTING $425.00

Our most requested lab analysis is the Microanalysis and Filament Origins Test. It gives operators all the information they need to make informed decisions on how they manage their treatment plant.

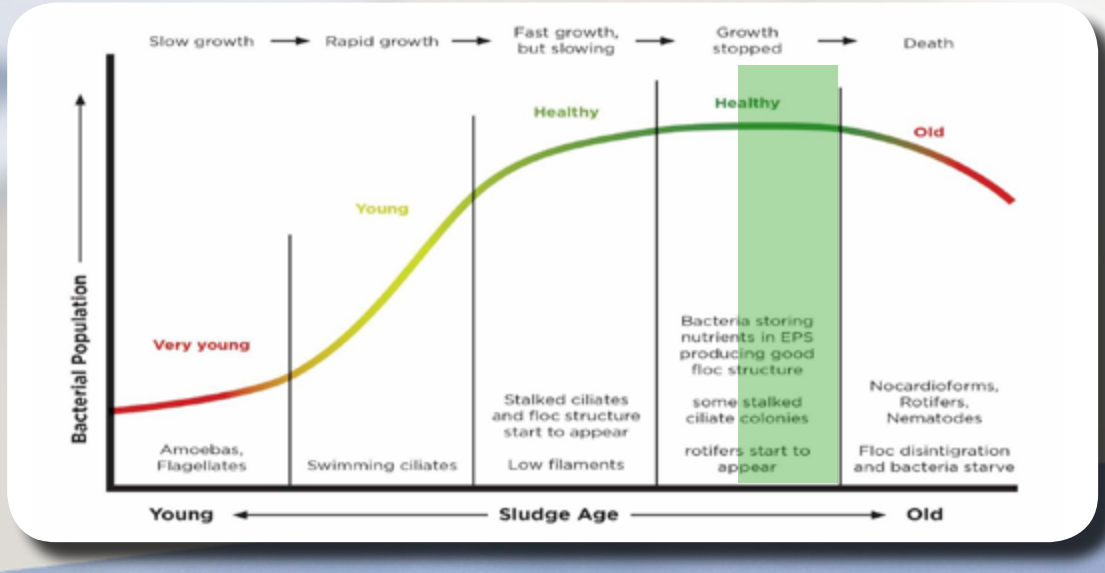
- Call us to request a cooler with sample bottles and easy to follow instructions
- Learn about your mixed floc structure, EPS generation, filaments, sludge age, and more
- Receive recommendations within 3 days

INCLUDED IN YOUR REPORT:

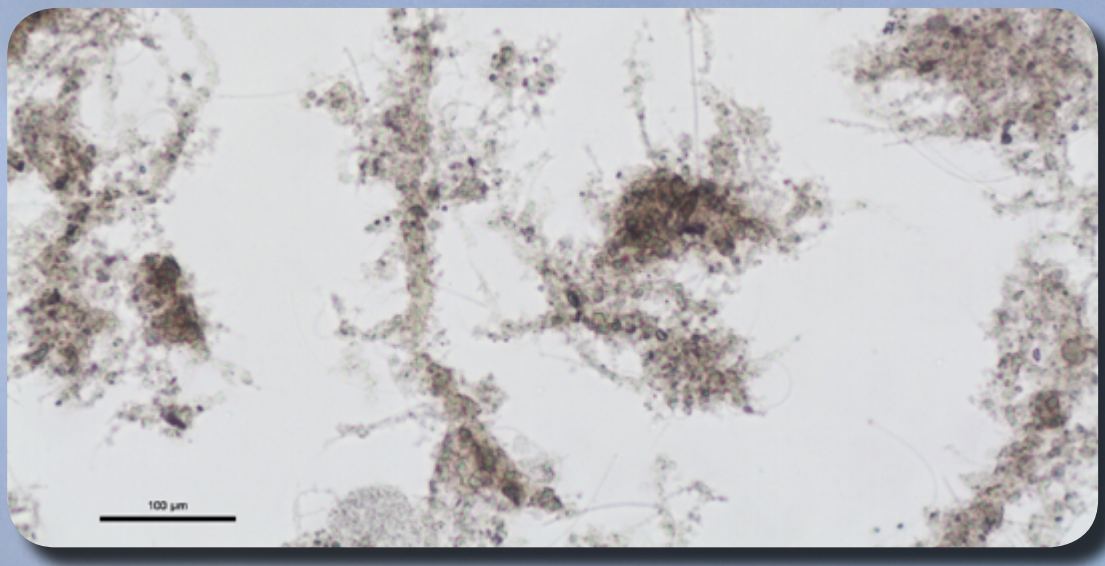
FILAMENT ID



SLUDGE AGE ANALYSIS



FLOC STRUCTURE



AQUAFIX Laboratory

Magnifying the why.

The Aquafix Laboratories are a fundamental part of all our products. We study wastewater conditions in all types of applications. At our lab, at the University of Wisconsin Research Park, we have access to state-of-the-art equipment and the latest research in the field.

Through this work we know how to influence wastewater bacteria to benefit your operation.

For more information, or to request a test kit, call 888.757.9577

Watch our “how to submit a sample” video at www.teamaquafix.com/submit-a-sample/

AQUAFIX LAB SERVICES

MICROANALYSIS & FILAMENT ORIGINS **$425.00**	• Identification of major and minor filaments and subspecies with Gram and Neisser staining • Precise explanation of their presence and origin • Testing of EPS sliming • An analysis of metazoa and protozoa in the system • An analysis of floc structure, sludge age, and oxygen penetration • Treatment and process recommendations • 3-4 day turnaround
PROACTIVE MICROANALYSIS PROGRAM **$1,200.00**	• 4 Microanalysis and Filament Origins tests, use at your own pace • Spot potential problems before they become a major issue • Filament ID, EPS sliming, floc structure and oxygen penetration, and more • Helpful recommendations to improve biology function and optimize your treatment plant • Get a clearer picture of how your plant conditions evolve over time

EASY TO USE GREASE ERASER

The best technologies for grease control are born in the Aquafix Laboratories. If you're jaded with grease control products making empty claims, you've got to try our scientifically proven Bug On A Rope, which is literally packed with biostimulants and grease digesting cultures. Our whole grease control line is simple and easy to use and is backed by our promise of 100% success, or we will make it right.

VITASTIM GREASE

VitaStim Grease is excellent for chewing up high levels of grease and fatty acids. It will control foaming, decrease sludge production, and reduce grease and filaments.

30 Pound Pail $16.41/lb
1/2 lb or 1 lb packets available

BUG ON A ROPE

Set it and forget it lift station technology. Slowly releases powerful bacteria and nutrients for grease control.

9 Pound Brick $160.00
Case of 4 Bricks $560.00

GREASE

BEFORE

AFTER

THE GREASEBERG'S® WORST ENEMY

Fast-acting Greasezilla works best on old hardened grease. Entirely biological, it is safe to use and immediately starts degrading grease deposits. We often pair this with Bug On A Rope for the initial treatment of high grease lift stations.

GreaseZilla works great in:

- Lift stations
- Clogged pipes
- Scum pits
- Drain lines

GREASEZILLA

GreaseZilla is a powerful biological technology that removes the hard, stuck-on grease rings while lowering odors in various applications. GreaseZilla is highly effective year-round.

5 Gallon Case $38.00/gal
55 Gallon Drum $33.00/gal
275 Gallon Tote $29.00/gal

GREASE

DAY 1

DAY 14

WIN THE FILAMENT WAR

Getting rid of foaming filaments is one of the key areas where Aquafix prides itself. Our innovative Foam Buster and Qwik-Zyme L approach attacks the root cause of the foam.

We guarantee results that will not only vastly outperform chlorinating, but will also help the biology.

FOAM BUSTER

ONE OF A KIND. Foam Buster is a micronutrient blend that controls foaming by giving the naturally occurring bacteria biostimulants to outcompete foaming filaments.

30 Pound Pail $10.00/lb
1 lb packets

50 Pound Bag $6.50/lb
Bulk

QWIK-ZYME L

WORKS FAST. Provides a fast way to break down grease and long chain fatty acids that can build up and cause foaming. Use with Foam Buster to accelerate results.

5 Gallon Case $36.50/gal

55 Gallon Drum $29.54/gal

275 Gallon Tote $25.20/gal

FOAM

BEFORE

AFTER

KNOCK BACK FOAM FAST

DeFoam 3000 puts a monomolecular film across the surface of foaming basins that reduces the surface tension of the foam, knocking it down. This product is formulated for biological systems. Unlike silicone-based industrial defoamers, DeFoam 3000 won't disrupt bacterial floc and works at low dose rates.

DEFOAM 3000

DeFoam 3000 is a 100% concentrate defoamer, specifically designed for biological wastewater treatment plants. It is silicone-free and quickly knocks back foam.

Call for pricing.

FOR DOSE RATES, SEE PAGE 57 | WWW.TEAMAQUAFIX.COM

A defoamer for all occasions:

DeFoam 3000 works great in both anaerobic digesters and aeration basins!

RESTORE NITRIFICATION NOW

Nitrifiers are notoriously slow growing, and operators often don't have time to wait for them to repopulate on their own. Waiting can sometimes take months.

A typical Dynamic Duo treatment only takes 10 days, and often the ammonia concentrations are already dropping within the first 3 days as the nitrifying bacteria take hold.

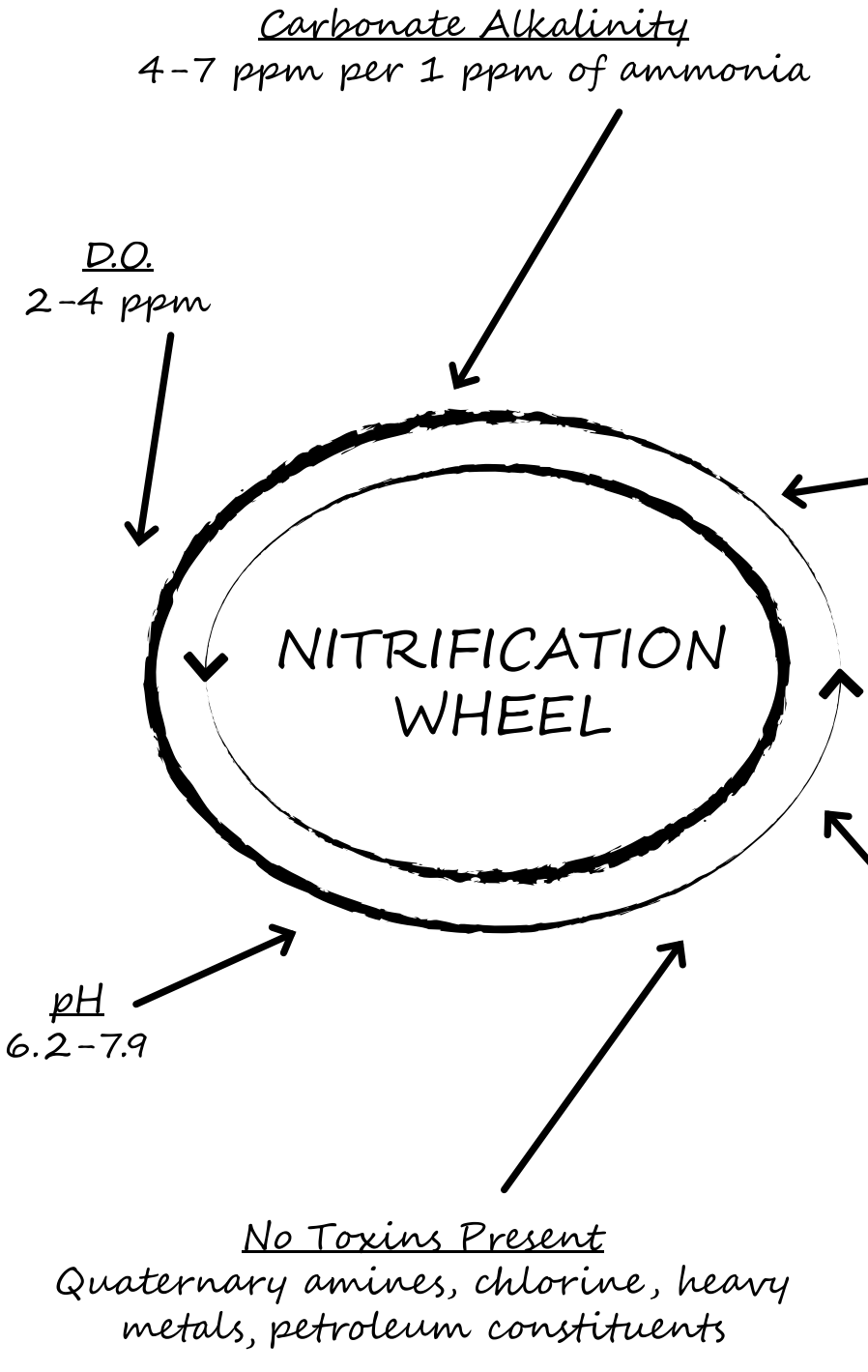
VITASTIM DYNAMIC DUO

STRONGER TOGETHER. This combination packs a powerful punch helpful to the growth and reproduction of nitrifying bacteria. Dynamic Duo is made up of VitaStim Nitrifiers and VitaStim Ammonia Assimilators, which contain active bacteria including *Nitrosomonas*, *Nitrobacter*, *Nitrospira*, and heterotrophic nitrifiers at the highest concentration in the industry.

2 Quart Box (1 of each) **$216.00/case**

2 Gallon Case (1 of each) **$528.00/case**


AMMONIA
NH3


Carbonate Alkalinity
4-7 ppm per 1 ppm of ammonia
D.O.
2-4 ppm
Nitrifying Bacteria
NITRIFICATION WHEEL
pH
6.2-7.9
Temperature
Warmer water, faster growth
No Toxins Present
Quaternary amines, chlorine, heavy metals, petroleum constituents

MIDGE FLIES: KILL THEM DEAD

Red worm and midge fly populations are quick to get out of control. The red worms grow by eating your mixed liquor, and can wipeout an entire plant's biomass.

Getting rid of them is easy. Your crew will thank you for putting a stop to the infestation.

AQUABACxt

EPA-registered biolarvacide for controlling red worms and midge flies in wastewater treatment plants. Highly effective; you won't be disappointed.

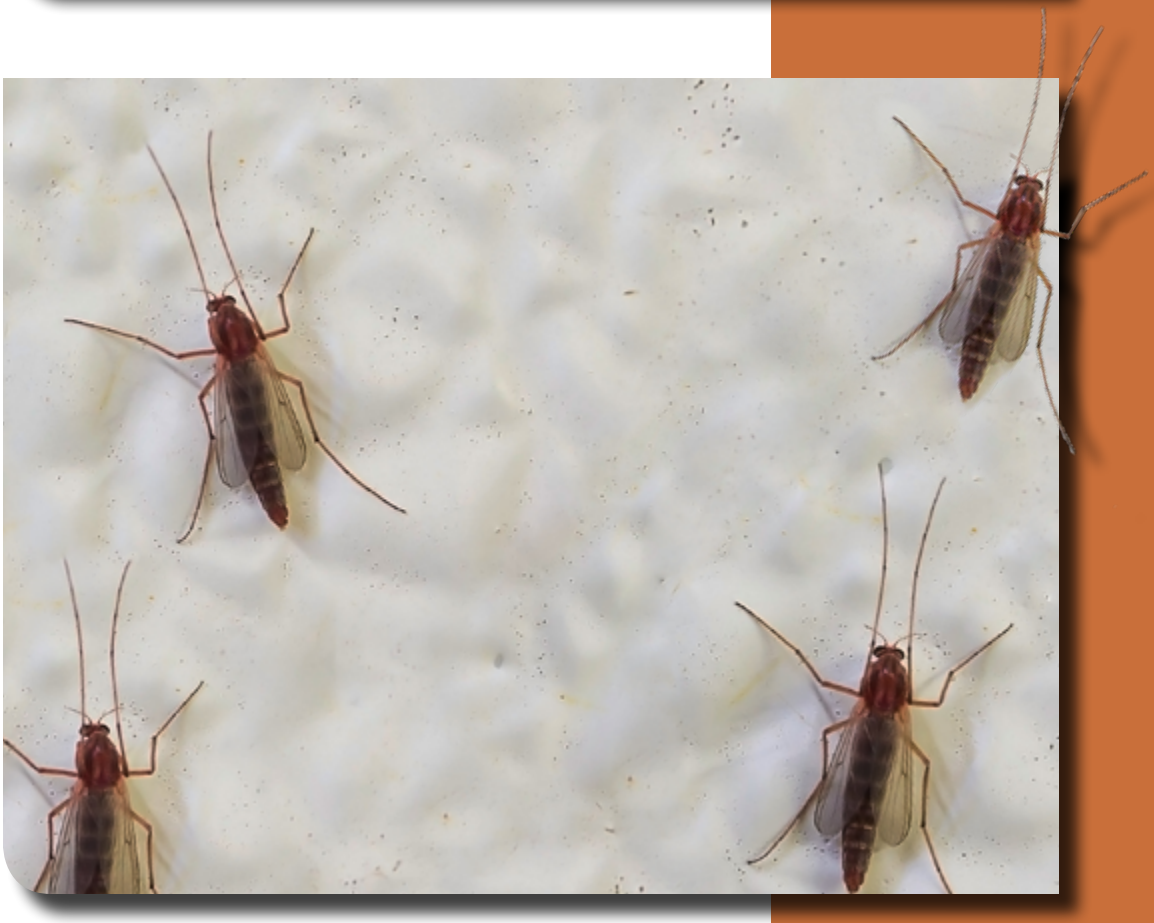
5 Gallon Case $69.00/gal
135 Gallon Pallet ..... Call for pricing

BUGJUICE

Red worms protect themselves from AQUABACxt by hiding in fats, papers, fibers, and waxes. BugJuice breaks down red worm cocoons, exposing more of the larvae to AQUABACxt.

5 Gallon Case $70.00/gal
55 Gallon Drum $64.00/gal
275 Gallon Tote $60.00/gal

RED WORMS



RELIABLE UPSET RECOVERY

As food processing plants, schools, and hospitals use more biocides in their sanitation process, wastewater operators struggle to keep up with the harm done to their biological communities. The Aquafix lab a is leading researcher into how disinfectants like quaternary amines interact with wastewater biology. One result of this research is the development of our VitaStim Rebuild. It gives operators a serious tool to speed recovery after an upset.

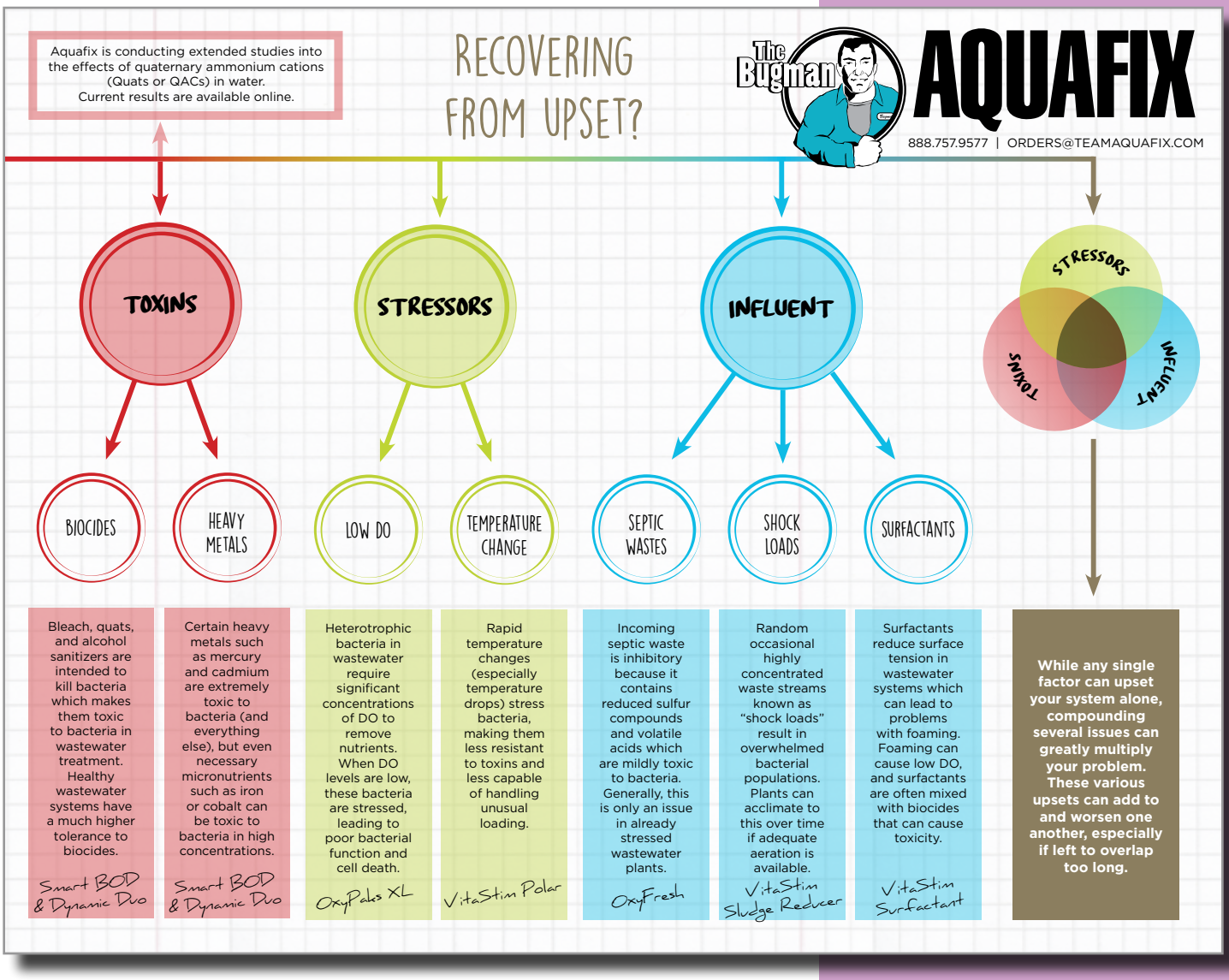
VITASTIM REBUILD

VitaStim Rebuild is one of the most effective tools for quickly getting a wastewater treatment plant running again after an upset. This product is also beneficial to the process of starting up a new treatment plant. It contains a combination of specially selected bacteria and biostimulants to accomplish both tasks.

30 Pound Pail $16.65/lb
1/2 lb or 1 lb packets available

Email us at technicalservice@teamaquafix.com today for your FREE printable copy of our handy upset recovery flowchart!

Or visit: www.teamaquafix.com/wastewater-upset-recovery/



THE MOST ADVANCED CARBON SOURCE

Bring your mixed liquor back to life. SmartBOD puts more control back into the hands of the operator, to improve nutrient removal, and build a better floc.

Offsets Problems Related To:

- Low Incoming BOD
- Incoming Toxicity
- Poor Settling or Bulking
- Low F:M Filaments

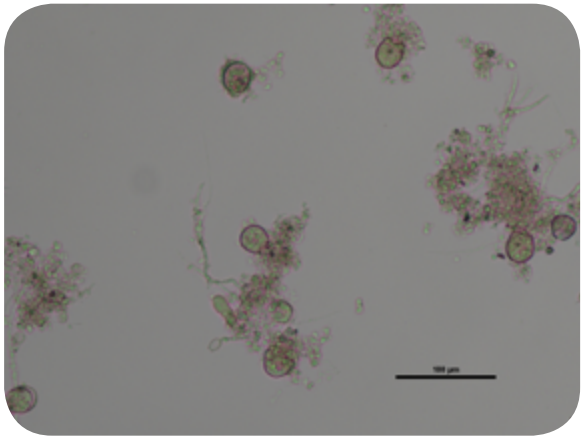
SmartBOD

SmartBOD provides an advanced carbon source to promote flocculation, build a healthy and diverse biomass, and can promote ammonia and phosphorus removal. As a dry powder, SmartBOD is easy to use and can be added in by hand or in larger applications can be fed with a screw feeder or slaking system.

50 Pound Bag $8.50/lb
Bulk

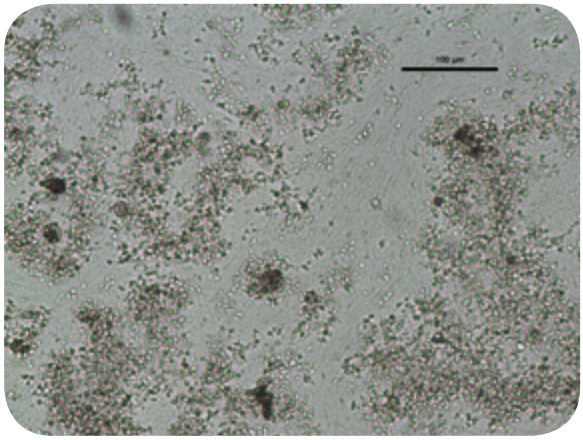
CARBON SOURCE

DAY 1



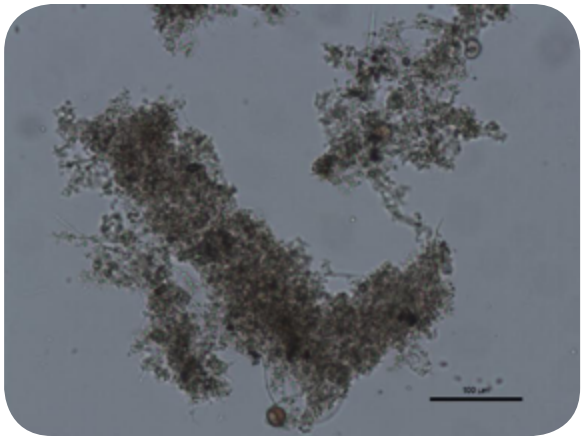
Poor nutrient balance resulted in only partial floc formation.

DAY 7



After adding SmartBOD for seven days bacterial health is improving.

DAY 14



Flocs are fully formed and settling well.

"Our plant had trouble building solids due to severe underloading. I was blown away by how quickly our MLSS came back with SmartBOD."

Joseph,
North Carolina

ACCELERATING AEROBIC DIGESTION

In even the most modern plants fine screen grit removal falls short. Often grease, oil, paper, and lint pass through the plant into the digester. BugJuice converts these insoluble BODs into soluble BODs, dramatically reducing solids production.

What is Insoluble BOD?

- Lint
- Paper
- Fibers
- Grease

BUGJUICE

BugJuice saves you tens of thousands of dollars by cutting hauling 10%-30%. It reduces sludge, increases percent solids, improves settling, reduces foaming, and clears decant water.

5 Gallon Case $70.00/gal

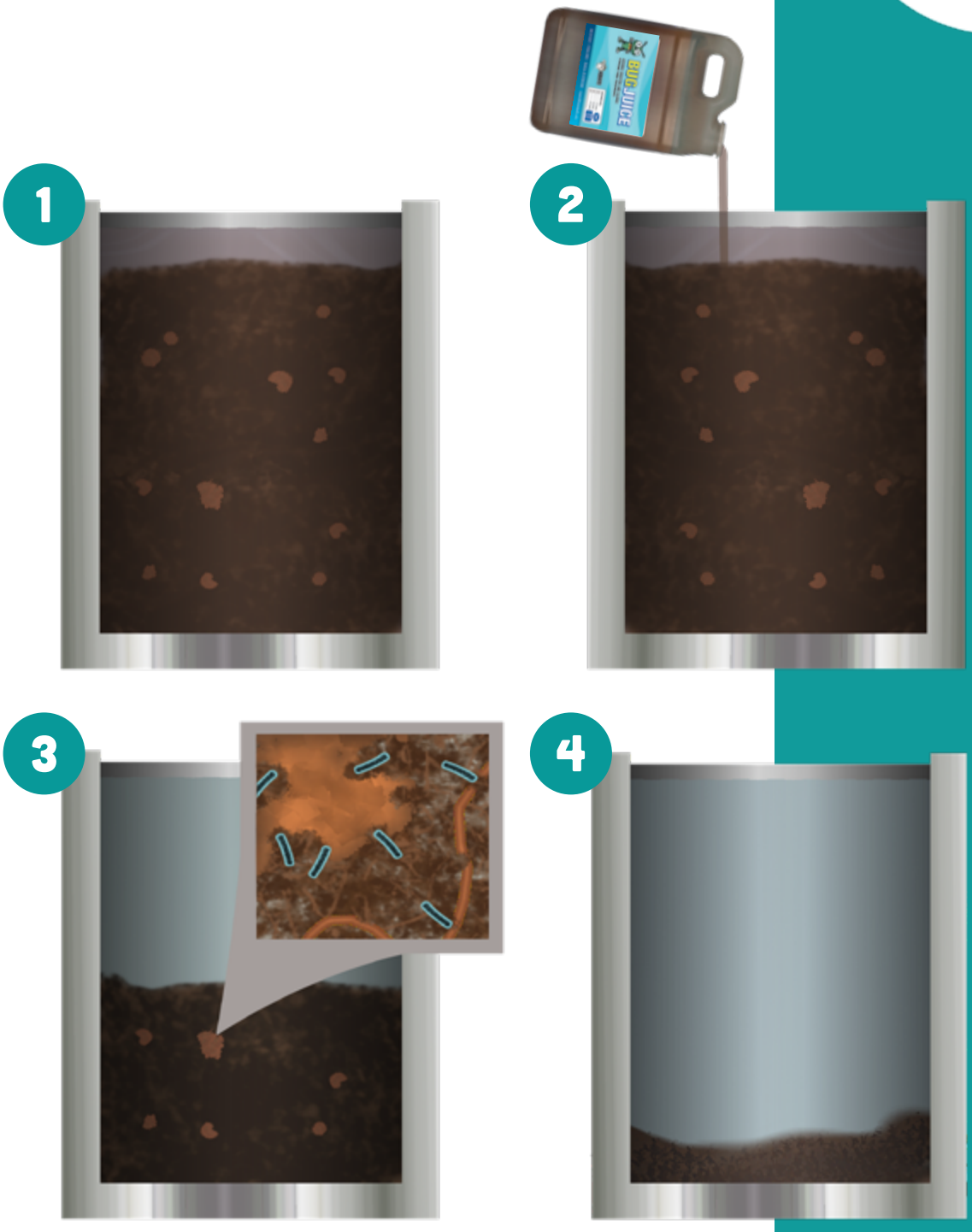
55 Gallon Drum $64.00/gal

275 Gallon Tote $60.00/gal

FOR DOSE RATES, SEE PAGE 55 | WWW.TEAMAQUAFIX.COM

HOW BUGJUICE WORKS

- 30% of the BOD in a wastewater plant is insoluble and ends up in the digester.
- As BugJuice converts these BODs, bacteria work to consume the previously inaccessible energy source.



STRIKE THE RIGHT BALANCE

Anaerobic digestion requires a stable pH and balanced micronutrients. These two products provide both.

BIOGAS1

BioGas1 boosts methane production and improves the function of methane forming bacteria by delivering bioavailable micronutrients. This product speeds conversion of volatile acids and can help anaerobic digesters become more stable.

5 Gallon Jug $24.85/gal

55 Gallon Drum $17.40/gal

275 Gallon Tote $15.00/gal

BOOST N LOCK

Boost N Lock is a blend of 4 types of alkalinity that excels at stabilizing your pH. Pair with the knowledgeable guidance of your technical rep for best results.

50 Pound Bag $2.40/lb

Bulk

2000 Pound Pallet $1.50/lb

ANAEROBIC DIGESTION

BEFORE

AFTER

TURNING GREASE INTO METHANE

Fat, Oil, and Grease substrates are like rocket fuel for your digester. But when you get too much FOG they often lead to foaming. The biocatalysts in Qwik-Zyme L allow you to keep the gas production high and the operations running.

QWIK-ZYME L

WORKS FAST. Lipid-degrading biocatalysts that break down grease and long chain fatty acids that can build up in anaerobic digesters and cause foaming. Use whenever a load of high FOG feedstock is added, or whenever fatty acids are building up in the digester.

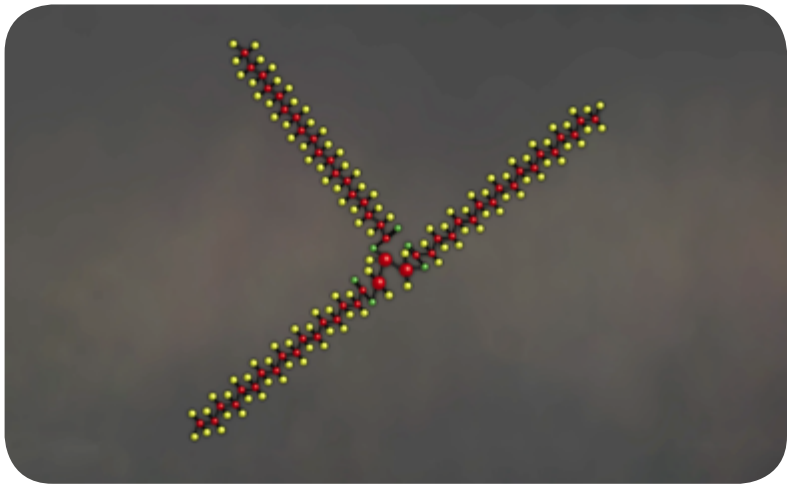
5 Gallon Case $36.50/gal

55 Gallon Drum $29.54/gal

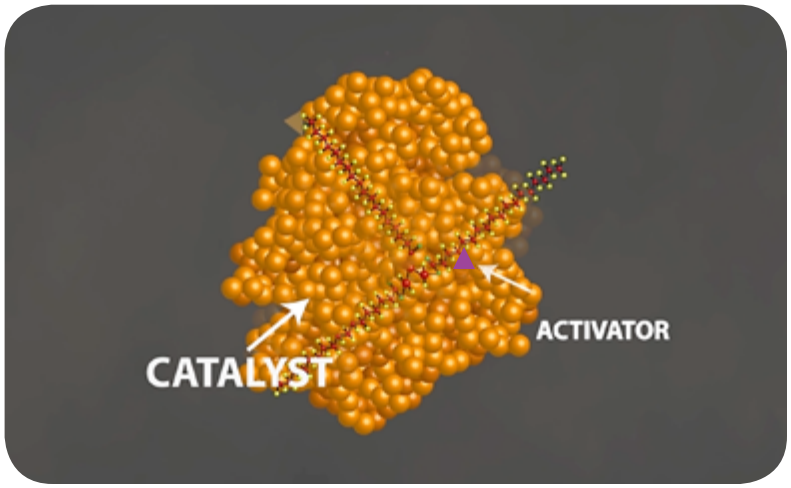
275 Gallon Tote $25.20/gal

FOR DOSE RATES, SEE PAGE 59 | WWW.TEAMAQUAFIX.COM

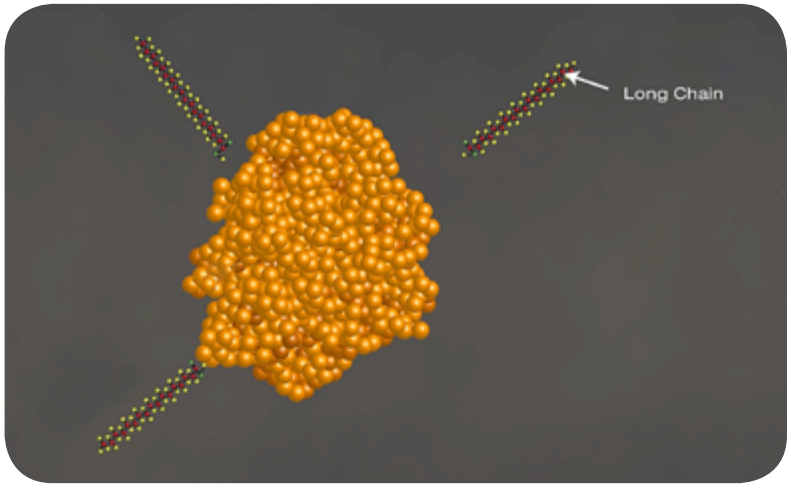
HOW QWIK-ZYME L WORKS



Difficult to digest grease molecule



Qwik-Zyme L biocatalyst acting on grease molecule



Grease breaks apart

"Most weekends our digester sees a rise in volatile acids. When this happens we start feeding Qwik-Zyme L on Monday morning and watch the VA's drop right back down."

Rich,
Ohio

THE SIMPLEST SLUDGE SOLUTIONS

When a lagoon has effluent BOD, TSS, or ammonia issues, it is all driven by the level of nutrients in the sludge accumulations at the bottom. Our products reduce the sludge and eliminate the nutrients within the sludge to clarify the effluent. The warm months of summer are the best time for a biological treatment to remove sludge that accumulates over winter.

VITASTIM LAGOON LINE

Bacteria selected for their ability to digest the tough insoluble BOD in lagoon sludge.

VitaStim Summer Slam **$17.97/lb**
75°F and up

VitaStim Sludge Reducer **$15.25/lb**
65 - 75°F

VitaStim Polar **$17.97/lb**
Below 65°F

OXYPAKS XL

KICK BACTERIA INTO OVERDRIVE! OxyPaks XL is an oxygen source that is used in wastewater lagoons, as well as sand and rock filters, to accelerate the digestion of sludge and prevent odors. This product allows the VitaStim Lagoon Line bacteria to better penetrate the sludge and degrade it.

50 Pound Pail **$6.00/gal**
1 lb packets.


LAGOON SLUDGE
STARCRAFT
REMOVE 30-60% OF SLUDGE

UNCONTROLLABLE ALGAE IS A SERIOUS LIABILITY

Excess algae in your lagoon can cause high effluent BOD, TSS, phosphate and coliforms. Our combination of 8% Copper and PondZilla Pro not only kills the algae, but helps prevent it from coming back. When the algae is gone the sunlight can penetrate and kill the coliforms. And effluent nutrients and TSS are brought back into compliance.

PONDZILLA PRO

PondZilla Pro* is an aquatic catalyst that provides better algaecide results by enhancing penetration. PondZilla Pro allows the algaecide to work more thoroughly and helps to clarify water.

*THIS PRODUCT DOES NOT KILL aquatic plants or algae. Rules for application must be followed in each state, some restrictions may apply. Call us at 888.757.9577 for more information.

5 Gallon Case $75.00/gal

55 Gallon Drum $63.00/gal

8% COPPER

8% Copper is a chelated copper algaecide that is effective at getting rid of branch, filamentous, and planktonic algae.

5 Gallon Case $20.00/gal

ALGAE ALERT

BEFORE

AFTER

DUCKWEED HAS MET ITS MATCH

Duckweed is one of the most aggressive aquatic plants out there. It can take over a pond in a matter of days. The sad part is, ducks don't eat it.

The Duckweed Complete combination provides an easy and effective treatment for duckweed.

DUCKWEED COMPLETE

Dead plant material releases key nutrients, like nitrogen and phosphorus. Pondzilla Pro energizes the natural bacteria to clean up and recycle dead organics. With this boost the natural bacteria uptake more nitrogen and phosphate. Clipper™ does not bioaccumulate in the sludge and it breaks down fast.

5 lb Clipper™ + 5 gal PondZilla Pro **$1,272.50/case**
*Treats 5 acres

DUCKWEED

BEFORE

AFTER

MORE BANG FOR YOUR BUCK

Overloading and milk spills cause unnecessary foaming and create problems downstream. Our protein- and fat-degrading biocatalyst dramatically speed the breakdown of hard-to-digest substrates. Being able to degrade these milk fats and proteins knocks out the foam.

QWIK-ZYME L

GET RID OF FOAM.
Provides a fast way to break down grease and long chain fatty acids that can build up in wastewater plants and cause foaming.

5 Gallon Case $36.50/gal
55 Gallon Drum $29.54/gal
275 Gallon Tote $25.20/gal

QWIK-ZYME P

REDUCE SLUDGE PRODUCTION.
Qwik-Zyme P improves digestion of dairy waste by breaking down proteins, including casein. Undigested proteins cause excess sludge production, odors, and a cloudy effluent.

5 Gallon Case $49.00/gal
55 Gallon Drum $42.00/gal
275 Gallon Tote $40.00/gal

BEFORE

AFTER

ELIMINATE ODORS, MAKE YOUR NEIGHBORS HAPPY

When your wastewater system becomes surrounded by homeowners, our products provide an easy way to neutralize odors and stop the complaints.

These are not masking agents. The best part is they are easy to use: just drip the product into the waste stream.

See the details to the right for a free trial.

DAZZEL SEWER SWEETENER

Neutralize odors in the collection system, or as the waste stream enters the plant. These essential oils bind with odor causers, and neutralize them quickly.

5 Gallon Case $32.00/gal
55 Gallon Drum $23.50/gal
275 Gallon Tote $22.50/gal

DE-SULPH-A-NATOR

THE INSTANT H_2S NEUTRALIZER. De-Sulph-A-Nator is easily metered into your system to diminish H_2S gases and odors. It is a non-hazardous sulfide scavenger.

5 Gallon Case $35.00/gal
55 Gallon Drum $30.00/gal
275 Gallon Tote $29.50/gal

HYDROGEN SULFIDE

H_2S

ASK FOR YOUR FREE QUART AND TEST DAZZEL SEWER SWEETENER YOURSELF!

1. Collect 800 ml of your stinkiest wastewater.
2. Divide sample evenly into two beakers.
3. Add 3 drops of DAZZeL Sewer Sweetener to one beaker.
   - Label this one treated, the other control.
4. Stir both beakers a few times.
5. Compare odors after 4 hours.
6. Call us to discuss your results!

NEW IN 2019...

TOTES!

We have added
quantity price breaks for
275 gallon totes on many of
our popular liquid products. Perfect for
maintaining a lasting supply, or knocking out a major issue.

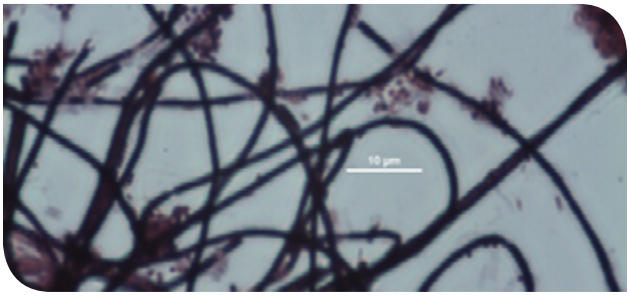
QWIKLY DEGRADE GREASE

QWIK-ZYME L, PG 14, 30, 32

COMMON PROBLEM-CAUSING FILAMENTS

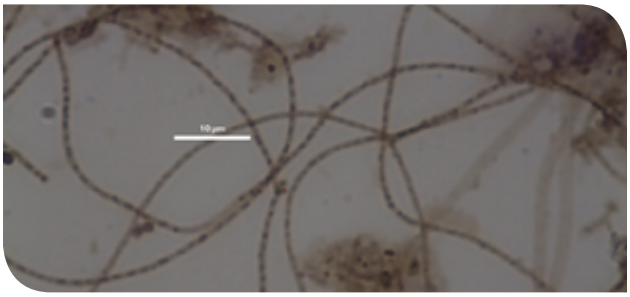
Filaments can cause all sorts of problems for wastewater operators like foaming and bulking. These problems can lead to violations in effluent limits and less efficient treatment. There are many more filaments that can appear in wastewater than are included in this guide. It can be difficult to identify these filaments because identical species tend to vary in appearance due to plant conditions. This guide will cover the environmental conditions which can lead to most filamentous growth. We will also cover how we use each filament's environmental preferences to create an effective way to limit the growth of these filaments in wastewater systems.

Microthrix parvicella



M. parvicella under Gram stain

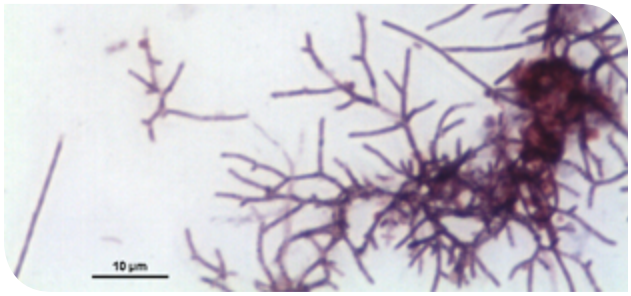
M. parvicella is usually a very distinctive filament in wastewater treatment. This is due to its spaghetti-like appearance under Gram stain. It stains strongly Gram positive and contains Neisser positive granules. *M. parvicella* tends to thrive in cold temperatures with high fats, oils, and greases (FOG). *M. parvicella* floats in water due to the high concentration of low density fats present in its cell wall. This filament forms a tangled mat on the surface of aeration systems which effectively traps air from air diffusers leading to foam formation. While *M. parvicella* is known for forming a thick layer of dark brown scum up to around 6 inches, *M. parvicella* can lead to foaming of a variety of colors and consistency and therefore must be identified microscopically before an effective treatment can take place.



M. parvicella under Neisser stain

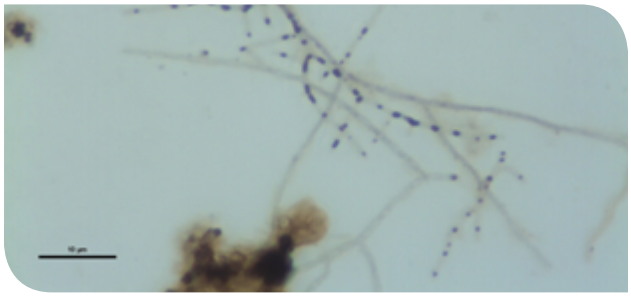
M. parvicella foaming can be controlled effectively through the addition of Foam Buster and Qwik-Zyme L while increasing sludge wasting. Foam Buster provides a blend of proteins, amino acids and micronutrients which allows wastewater floc forming bacteria to better outcompete filamentous bacteria in conditions with high levels of incoming FOG. Qwik-Zyme L degrades fats, oils and greases to starve the filaments.

Nocardioforms



Nocardia Gram stained

Nocardioforms, or "*Nocardia*," are typically easy to identify in wastewater because of their true branching, Gram positive staining, and Neisser positive granules. True branching means one filament continues to grow in multiple directions, like the growth of an oak tree. Nocardioforms, like *M. parvicella* produce a low density fatty cell wall which causes them to float on the surface of water. This in combination with their generation of surfactants during growth, and their formation of a thick mat due to branching causes them to typically form very stable foam that can be several feet thick. While Nocardioforms are known to produce a very thick stable foam, they also can form thin layers of scum which means you cannot definitively identify "*Nocardia* foaming" without microscopic observations.



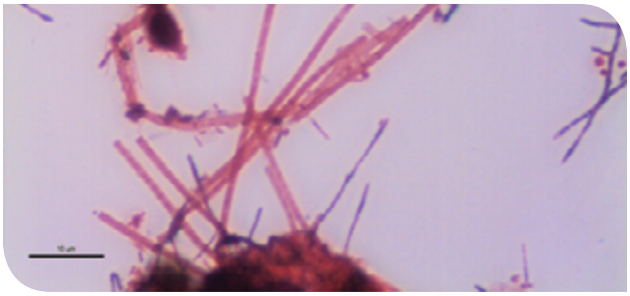
Nocardia Neisser stained

Nocardioforms can be controlled with the addition of Qwik-Zyme L and Foam Buster to favor floc-forming bacteria over filaments, and through increased wasting to reduce sludge age. VitaStim Rebuild can be used to rebuild bacterial populations after increased wasting.

RECOMMENDED PRODUCTS:

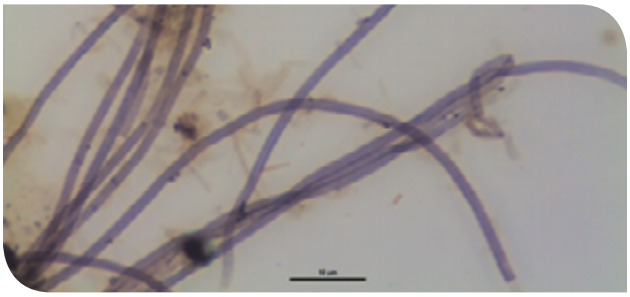
Foam Buster	pg 14
Qwik-Zyme L	pg 14
VitaStim Rebuild	pg 22

Type 0092



Type 0092 Gram stained

Type 0092 can cause bulking problems in aerobic wastewater systems but is an important precursor to *M. parvicella* foaming. Type 0092 uses the same food sources as *M. parvicella* but prefers warmer conditions. This filament's individual cells are difficult to see as they are normally contained within floc. These filaments have a sheath which stains a very distinctive blue-violet after Neisser staining. Due to the similar food requirements of Type 0092 and *M. parvicella*, they tend to trade prevalence when the weather gets warmer or cooler. Therefore, if you observe Type 0092 in high levels in the fall, you are very likely to see the population shift to high levels of *M. parvicella* as the temperature cools in a wastewater system leading to foaming.



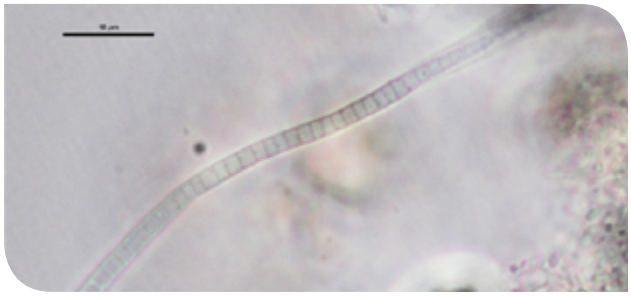
Type 0092 Neisser stained

Type 0092 can be controlled by Qwik-Zyme L upstream from a wastewater system and the addition of Filament Buster in an aeration basin are effective for the control of this filament.

RECOMMENDED PRODUCTS:

Filament Buster	Visit our website
Qwik-Zyme L	pg 14

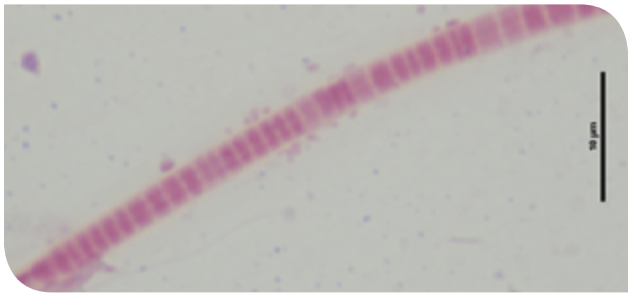
Thiothrix/Type 021N



Unstained *Thiothrix*/Type 021N

Thiothrix/Type 021N are thought to be different forms of the same filament. The Type 021N form is more prevalent in nitrogen deficient conditions and *Thiothrix* tends to be more observed in low DO, septic, and sulfur reducing conditions. Type 021N tends to have disk-shaped large cells, and *Thiothrix* usually has rectangular cells which sometimes contain sulfur granules. Both filaments stain Gram negative but can contain granules which stain Gram positive. Occasionally these granules can be present in high enough levels to make the staining identification difficult.

These filaments can be controlled by our Filament Buster in a wastewater aeration system as well as the addition of OxyFresh to regions of a wastewater plant with low DO, and whenever septic waste is added.



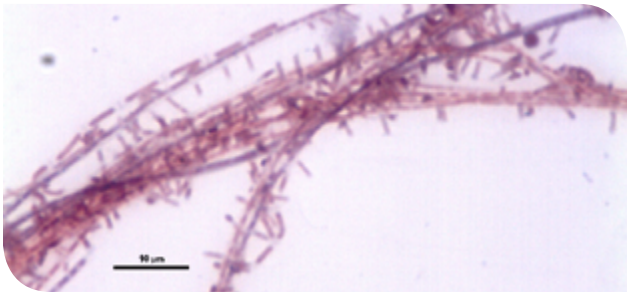
Thiothrix/Type 021N Gram stained

Filament Buster provides a balanced source of nitrogen which is readably available to floc forming bacteria to allow them to out compete low nitrogen filaments. OxyFresh increases wastewater plant ORP to help limit septicity in low DO conditions.

RECOMMENDED PRODUCTS:

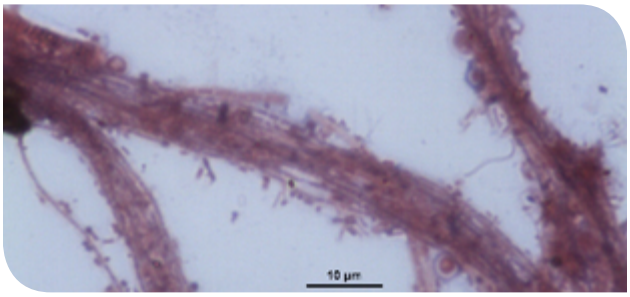
Filament Buster	Visit our website
Qwik-Zyme L	pg 14
OxyFresh	Visit our website

Type 1851



Type 1851 under Gram stain

Type 1851 is a Gram positive (or Gram variable) filament that is relatively easy to distinguish due to its rectangular cells, attached growths, and tendency to form bundles when populations get high. Generally, this filament appears in wastewater systems with Low F:M conditions. This filament occasionally appears in systems with high levels of Nocardioforms. This is because Nocardioforms are very effective at removing nutrients. This can lead to low F:M conditions in systems with typically acceptable F:M ratios. In these cases, if you can control the Nocardioforms, then you can control the low F:M filaments such as Type 1851.



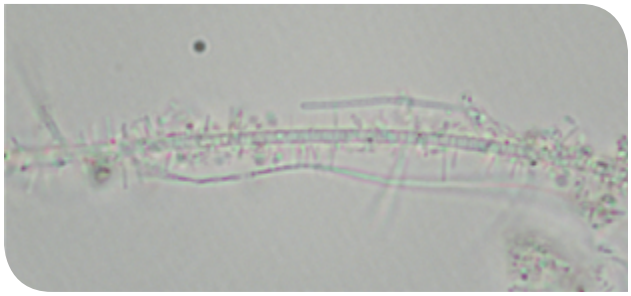
Type 1851 with thick bundles

We recommend the addition of SmartBOD when this filament is causing problems. SmartBOD is a well-balanced, easy to use food source that assists in the growth of floc-forming bacteria, allowing them to outcompete low F:M filaments.

RECOMMENDED PRODUCTS:

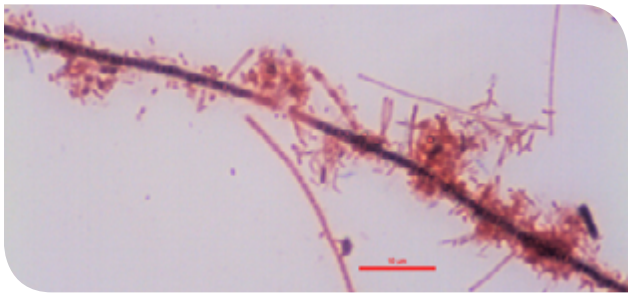
SmartBOD	pg 24

Type 0041/Type 0675



Unstained Type 0041/Type 0675

Type 0041/0675 are slightly different forms of the same filament. Type 0675 is usually slightly thinner than Type 0041 but both filaments stain Gram positive (or Gram variable), contain square shaped cells, and generally have high levels of attached growths present. These filaments generally do not cause major problems but occasionally increase in prevalence in mild low F:M conditions which can lead to bulking. These filaments can be easily controlled by the addition of SmartBOD in severe cases, and by the addition of VitaStim Low F:M.



Type 0041/Type 0675 Gram stained

RECOMMENDED PRODUCTS:

SmartBOD	pg 24
VitaStim Low F:M	Visit our website

TERTIARY TREATMENT MIDGE FLY CONTROL

This covered UV disinfection room looks beautiful now, but for a long time it was covered constantly in midge flies. Red worms start their life cycle in plants secondary clarifiers, and culminate them as flies inside the UV Building. The operators were continuously cleaning the room, and had installed bug zappers and bug bombs to try to control them. Unfortunately, killing the adult flies did no good as new ones were constantly developing in the clarifiers.

They began using AQUABACxt and BugJuice in the summer of 2016. AQUABACxt is a biolarvacide that is very specific in its targets. They liked that it doesn't harm the good bacteria, and doesn't result in any effluent toxicity issues. BugJuice is used to help degrade the protective cocoons that some red worms use to protect themselves. The combination was extremely effective and now they have a UV building that's not a nightmare to spend time in.

LOCATION: Pennsylvania **PLANT SIZE:** 6.5 MGD

MAJOR ISSUE: Red worms and midge flies

AFFECTED AREAS: Secondary clarifiers and UV disinfection room

PRODUCTS USED: AQUABACxt and BugJuice

RESTORING MIXED LIQUOR HEALTH

LOCATION: North Carolina

PLANT SIZE: 10,000 GPD

MAJOR ISSUE: Toxic influent

PRODUCTS USED: VitaStim Rebuild and SmartBOD

This customer runs a wastewater treatment plant at a textile factory. The factory's production has been slashed dramatically, and the facility is running a skeleton crew, generating less than half the plants design flow. One day the operators noticed that the treatment plant had received a toxic influent, and their mixed liquor had nearly all died.

Months of trying to rebuild the MLSS, and several loads of seed sludge didn't seem to help. Finally, they used Aquafix's VitaStim Rebuild and SmartBOD, and were "blown away" by how quickly the biology rebounded. Nutrient removal improved, and now the plant is running as usual.

RESORT TOWN WITH FLOW FLUCTUATIONS

It's not unusual for this coastal wastewater plant to experience fluctuations in flow. Their plant generally handled those changes in flow pretty well, but the 4th of July weekend always resulted in an effluent ammonia spike, as flows jumped from 150,000 to 400,000 GPD in a short timeframe. The nitrifying bacteria weren't capable of responding to the change quickly enough.

This year they used a more proactive approach. They fed Aquafix's SmartBOD carbon supplement during the 2 weeks leading up to the holiday, to help acclimate the biology to greater loading. Then, immediately before the peak flow, they started adding our Vitastim Nitrifiers, to help speed the rate of ammonia uptake. This combination allowed them to meet their permit numbers this year.

UNUSUAL FOAMING FILAMENT

LOCATION: Oklahoma
PLANT SIZE: 200,000 GPD
MAJOR ISSUE: Type 021N/*Thiothrix*
AFFECTED AREAS: Oxidation ditches
PRODUCTS USED: Filament Buster and Accelerator VII

A municipal customer came to us describing a foam that sounded like either *Microthrix* or *Nocardia*. The foam was dense, stable, and brown. We started with a basic microanalysis performed in our lab to determine which filament was responsible. The results surprised us as the most prevalent filament was Type 021N/*Thiothrix*.

In this case it appeared that the high levels of Type 021N/*Thiothrix* were causing foam through two different mechanisms. First it was disrupting the ability of bacteria to form floc. This meant high amounts of solids, which caused foam when at the surface and agitated. Second, the floc that was forming trapped air and rose to the surface, causing additional foaming.

To combat the low nitrogen conditions that cause this filament, our treatment started with an organic nitrogen supplement, Filament Buster. The customer increased wasting to physically remove filaments. Over the course of 1 month the floc forming bacteria were able to replace Type 021N/*Thiothrix*, and foaming subsided.

GREASE CONTROL FOR ANAEROBIC DIGESTERS

Qwik-Zyme L is the best option for speeding the breakdown of Fats, Oils, and Grease in anaerobic digesters. This customer operates a digester with feedstock composed of food waste and manure. The manure has a great stabilizing effect on the digester, but anytime the food waste fraction rises the digester begins to have issues like foaming.

The first thing they notice when too much fat has entered the digester is a rise in volatile acids. To combat this jump, they meter in Qwik-Zyme L. The catalysts in Qwik-Zyme L speed the digestion of grease and fatty acids. This year they have begun adding Qwik-Zyme L 5 days per week as a preventative maintenance program.

The operator says “Anytime I see an increase in the VA:Alkinity ratio, I just increase the Qwik-Zyme L dose and watch the VA’s come back down.”

LOCATION: Ohio
DIGESTER SIZE: 750,000 Gallons
MAJOR ISSUE: Foam due to high FOG
AFFECTED AREAS: Anaerobic digesters
PRODUCTS USED: Qwik-Zyme L

TUNA PROCESSING FACILITY IN MEXICO

On the pacific coast in Mexico is one of the world's premier tuna processing facilities. In the wastewater plant the design limitations include: a small footprint, water temperatures averaging 80-100° F, influent COD and ammonia of approximately 4,500 and 500 ppm, and single digit effluent standards. Because the plant is so small and the loadings high, the engineers had concerns over a cloudy effluent and asked us to be involved.

This process uses our Qwik-Zyme L, Qwik-Zyme P, and VitaStim Summer Slam. Qwik-Zyme P accelerates the degradation of proteins. Undegraded they can cause a cloudy effluent. Furthermore, Qwik-Zyme P releases ammonia nitrogen from the proteins so they're available for nitrification. Qwik-Zyme L speeds the degradation of fish oil into volatile fatty acids (VFA), this prevents filamentous foam and the VFAs help phosphorous uptake in their process. They also use our VitaStim Summer Slam to lower sludge production and ammonia in their warm water. The engineering of the process is remarkable.

WOMEN OF WASTEWATER™, TELL YOUR STORY

LET AQUAFIX BE YOUR MEGAPHONE AND SHARE YOUR VOICE

Whether you're in the field, behind a desk, or in front of a microscope, we want to hear your story about being a woman in the wastewater industry!

Over the course of our business, we've learned that the wastewater industry is full of innovative minds, colorful voices, and just plain dedicated people doing essential work. But women make up only about 5% of that population, leaving young women choosing their future careers without female mentors. Thinking about all the voices they weren't hearing is what led us to develop the Inspiring Women of Wastewater™ program.

Contact us to be entered and to show incoming generations what they can achieve in the field of wastewater: www.teamaquafix.com/women-of-wastewater

DOSAGE RATES

Quantity discounts available for plants larger than 3 MGD.

8% Copper

pg 34

Lagoon Algaecide			
1 Acre Lagoon, 5 Feet Deep	**Water**	**8% Copper**	**PondZilla Pro**
Moderate Dose Mixture (.5 ppm Copper)	100 gal	8.5 gal	3 gal
Moderate Dose Mixture (.5 ppm Copper)	40 gal	3.5 gal	1 gal
Acre/Ft Dosing*	**Water**	**8% Copper**	**PondZilla Pro**
Moderate Dose Mixture (.5 ppm Copper)	17 gal	1.7 gal	0.6 gal
Moderate Dose Mixture (.5 ppm Copper)	7 gal	0.7 gal	0.2 gal

For best results, spray evenly over surface targeted area.
**(Lagoon size in acres) x (Lagoon depth in feet) = acre/ft*

AQUABACxt

pg 20

Midge Fly and Red Worm Elimination	
Super Dose (Recommended)	0.5 gal per 100,000 GPD twice per week for first two weeks
Initial Dose	1 qt per 100,000 GPD twice per week for first two weeks
Maintenance Dose	1 pt per 100,000 GPD once per week

Note: Feed all at once, do not feed gradually.

BioGas1

pg 28

Micronutrients to Boost Methane	
Initial Dose	5 gal per 100,000 gal tank volume
Maintenance Dose	2.5 gal per 50,000 gal daily inflow, added once per week

Boost N Lock

pg 28

Stabilize pH in Aerobic and Anaerobic Wastewater Systems	
ph < 6	Use our high purity magnesium hydroxide
pH > 6*	Initial Dose: 400 lb per MGD per day until pH is neutralized Maintenance Dose: 20 lb per MGD per day

**General dose rates; exact rates are determined by titration. Call us for titration help.*

BugJuice

pg 20 & 26

Sludge Reduction in an Aerobic Digester	
Initial Dose	0.5 gal per 100,000 gal once per week for 4 weeks
Maintenance Dose	1 qt per 100,000 gal basin once per week

Bug On A Rope

pg 10

24-7 Slow Release Block For Lift Station Grease Removal	
How to Use	The faster it dissolves, the faster the results. Keep in mind that warmer weather will cause the block to dissolve more quickly. After 3 months, any remaining material should be knocked off the plastic core into the lift station.
Where to Place	
Heavy Grease	When grease is the heaviest, place Bug On A Rope directly under the incoming flow or use multiple Bug On A Ropes farther from the flow.
Moderate Grease	For grease maintenance; when lift station is at its lowest flow rate, place Bug On A Rope 1-2 ft under water in the middle of the lift station. This will assure best dissolving rate during moderate incoming levels of grease.
Dissolving Rates	
20,000-50,000 GPD	2-3 months
100,000 GPD	6 weeks-2 months
300,00 GPD	3 weeks

Duckweed Complete pg 36

Surface Application	
1/4 Acre (Spot Treatments)	4 oz Clipper™ + 1 quart PondZilla Pro per 5 gallon
1 Acre	1 lb Clipper™ + 1 gallon PondZilla Pro
4 Acres	4 lb Clipper™ + 4 gallons of PondZilla Pro
Subsurface Application	
1/4 Acre (Spot Treatments)	1 lb Clipper™ + 1 gallon PondZilla Pro per 5 gallon
1 Acre	4 lb of Clipper™ + 4 gallons PondZilla Pro
4 Acres	16 lb of Clipper™ + 16 gallons of PondZilla Pro

**Clipper™ also kills filamentous algae and aquatic weeds.*
For 1-4 acre treatments blend Duckweed Complete in a 30 to 50 gallon agricultural sprayer.

DAZZeL Sewer Sweetener pg 40

Fast-acting Odor Control	
Initial Dose	4 gal per 100,000 GPD for 10 days
Maintenance Dose	1 gal per 100,000 GPD for 30 days

De-Sulph-A-Nator pg 40

Lift Stations/Collection Systems/Sewer Lines Sulfide Odor Control		
Flow Rate	**Drip Dose**	**Spray Dose**
1,000 GPD	1.5-6 oz per day	-
10,000 GPD	15-60 oz per day	-
100,000 GPD	1-4.5 gal per day	0.5 gal per day
1 MGD	12-45 gal per day	2-4 gal per day

Note: General doses based on ppm of H_2S in the system

DeFoam 3000

pg 16

Fast Foam Deflation	
Initial Dose	1 gal per 1,000 sq ft of surface area
Maintenance Dose	1-2 qt per 1,000 sq ft of surface area

Foam Buster

pg 14

Foam Caused by *Microthrix parvicella* or Foam Less Than 12” Thick		
Flow Rate	Initial Dose	Maintenance Dose
100,000 GPD	1 lb per day for 60 days	0.5 lb per day for 60 days day
500,000 GPD	2 lbs per day for 60 days	1 lb per day for 60 days
1 MGD	3 lbs per day for 60 days	1.5 lbs per day for 60 days
Foam Caused by *Nocardia* or Dark Foam Greater Than 12” Thick		
Dose at 2-4 times the *Microthrix* rates, depending on severity.		

Note: General doses based on ppm of H_2S in the system

GreaseZilla

pg 12

Lift Stations/Collection Systems/Sewer Lines Grease Control

Flow Rate	Initial Dose 1-2 Weeks	Maintenance Dose
10,000 GPD	6.5 oz per day	6.5 oz twice per week
100,000 GPD	0.5 gal per day	0.5 gal twice per week
500,000 GPD	2.5 gal per day	2.5 gal twice per week
1 MGD	5 gal per day	5 gal twice per week

Grease Traps

Grease Trap Size	Heavy Dose	Maintenance Dose
1,000 GPD	0.5 gal twice per week	8 oz per week
10,000 GPD	5 gal twice per week	0.5 gal per week
20,000 GPD	10 gal twice per week	1 gal per week

OxyPaks XL

pg 32

Oxygen Source for Lagoon Bacteria

Lagoon Sludge	25-100 lb per acre, depending on the amount of sludge and companion products used
Sand Filter Backwash	2-4 lb per 10,000 gal of backwash

PondZilla Pro

pg 34

Booster for Algaecides

Diluted and Blended with SeClear G (Algaecide)	0.5-3 gal per acre depending on severity of algae

Qwik-Zyme L

pg 14, 30 & 38

Microthrix parvicella Foam & WWTP Grease	
Initial Dose	1 qt per 100,000 GPD per day for 30 days
Maintenance Dose	1 pt - 1 qt per 100,000 GPD until foam is gone (30 days recommended)
Nocardia Foam	
2-4 times *Microthrix* dose; must pair with Foam Buster	
Lift Stations & Sewer Lines	
Initial Dose	1 qt per 100,000 GPD three time for first week
Maintenance Dose	1 qt per 100,000 GPD once per week

Qwik-Zyme P

pg 38

Milk & Cheese Waste	
Initial Dose	1 qt per 100,000 GPD for 30 days
Maintenance Dose	1 pt per 100,000 GPD per day

SmartBOD

pg 24

For Supplementing BOD	
Plant start up or Severely low F:M	30 lb per day per 1 MGD for 10 days
Above 59°F (15°C)	30 lb per day per 1 MGD. Best when combined with VitaStim Low F:M
Below 59°F (15°C)	15 lb per day per 1 MGD. Best when combined with VitaStim Polar
Below 49°F (9.5°C)	Call for custom dosing

VitaStim Dynamic Duo

pg 18

Ammonia Control per 100,000 GPD Flow

Water Temperature	Initial Dose	Maintenance Dose
Below 60°F (15.6°C)	36 oz per day for 10 days	-
60-72°F (15.6-22.2°C)	12 oz per day for 4 days	2 oz per day for 6 days
Above 72°F (22.2°C)	12 oz on first day	2 oz per day for 8 days

Ammonia Control per MGD Flow

Water Temperature	Initial Dose	Maintenance Dose
Below 60°F (15.6°C)	3 gal per day for 10 days	-
60-72°F (15.6-22.2°C)	1 gal per day for 4 days	12 oz per day for 6 days
Above 72°F (22.2°C)	1 gal on first day	12 oz per day for 8 days

VitaStim Grease

pg 10

Grease in WWTP or Lift Station

Initial Dose	0.5 lb per 100,000 GPD per day for 30 days
Maintenance Dose	0.5 lb per 100,000 GPD every other day as needed

Note: For lift station grease, apply upstream.

VitaStim Polar

pg 32

For Lagoon Sludge When Below 65°F (18.3°C)

Cleanup Dose	2 lb per day per 4 acres
Maintenance Dose	0.5 lb per day per 4 acres

Municipal Sludge & BOD Reducer in WWTP

Initial Dose	0.5 lb per 100,000 GPD per day for 30 days
Maintenance Dose	0.5 lb per 100,000 GPD every other day as needed

VitaStim Rebuild

pg 22

For Recovery After Toxicity or Upset	
Initial Dose	1 lb per 100,000 GPD per day for 30 days
Maintenance Dose	0.5 lb per 100,000 GPD for 20 days

VitaStim Sludge Reducer

pg 32

For Lagoon Sludge When 65-75°F (18.3-23.9°C)	
Cleanup Dose	2 lb per day per 4 acres
Maintenance Dose	0.5 lb per day per 4 acres
Municipal Sludge & BOD Reducer in WWTP	
Initial Dose	0.5 lb per 100,000 GPD per day for 30 days
Maintenance Dose	0.5 lb per 100,000 GPD every other day as needed

VitaStim Summer Slam

pg 32

For Lagoon Sludge When Above 75°F (23.9°C)	
Initial Dose	2 lb per day per 4 acres
Maintenance Dose	0.5 lb per day per 4 acres

BE THE BUGMAN.

Like all true Bugmen and Bugwomen--

You are a diligent steward of your bacteria,

You watch the Aquafix webinars,

You take tough issues to the Aquafix Laboratories,

You stay in contact with Aquafix's technical reps,

And most importantly,
You get a FREE hat!

Call 888.757.9577 for your free Bugman hat!

THE BUGMAN KNOWS, EVERY SOLUTION LIES WITHIN THE 'WHY'

An interview with Kevin Ripp, Director of Science and Innovation *aka "The Bugman".*

How long have you been involved in wastewater?
During the summers in college I worked at a wastewater plant. I took samples, cleaned rags off of bar screens, cleaned lift stations, and listened to the operators tell me what was going on with the plant.

How did you get the name "The Bugman"?
We had an industrial facility in the Chicago area with numerous consultants and engineers involved and when we solved their issues within a few weeks the operators started referring to me as "The Bugman". It began to catch on from there and now when I walk into a familiar wastewater plant they say "Hey, The Bugman is here!"

What drives everyone at Aquafix?
We solve biological issues in a fundamental way. We like to investigate and dig deep on the behalf of our customers to figure out what exactly is going on with the biology and chemistry of their process. This pursuit of the truth has allowed us to develop superior wastewater products that are used all over the world.

What has been the key to Aquafix's success over the past 18 years?
We invest in people passionate about cleaning up wastewater and work with customers to find out the truth about why a problem exists.

What makes the Aquafix Laboratory unique?
Our lab is in the University of Wisconsin Research Park. This provides us with the resources we need to do world class research and customer service. In addition, the University of Wisconsin Steven's Point's wastewater lab does all our testing on carbon sources and on technologies to degrade fat, oil, and grease.

How do you handle it when an Aquafix treatment doesn't succeed?
Our commitment to customers is that our product will work and if we fall short we make it right, whatever it takes. Our goal is 100% success; we do not want any operator unhappy with any product or service at any time.

How long does it take to develop one of your products?
As a biological sciences company we have to understand the biology of a process and the chemistry we are trying to remove. As a result developing a new product takes about 4-7 years of continuous research.

What is the best comeback you ever heard from a wastewater operator?
His wastewater plant was not running well and the builders of the plant told him to read the book. He said, "My bugs didn't read the book"!

What's your favorite thing about this industry?
I often say wastewater is never boring and the opportunity for learning how to improve biological processes is so vast.

AQUAFIX Inc.

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888.757.9577

GREASE
Page 10-13

FOAM
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AMMONIA
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MIDGE FLIES
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