



# NEXTGEN SEPTIC SYSTEM OVERVIEW

July 2019



# CONTENTS

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- NextGen overview
- Influent/effluent profiles / nutrient removal
- Studies, certifications and data
- System footprint
- Zero-liquid Discharge System
- Use Cases
- Community System

# ABOUT NEXTGEN SEPTIC

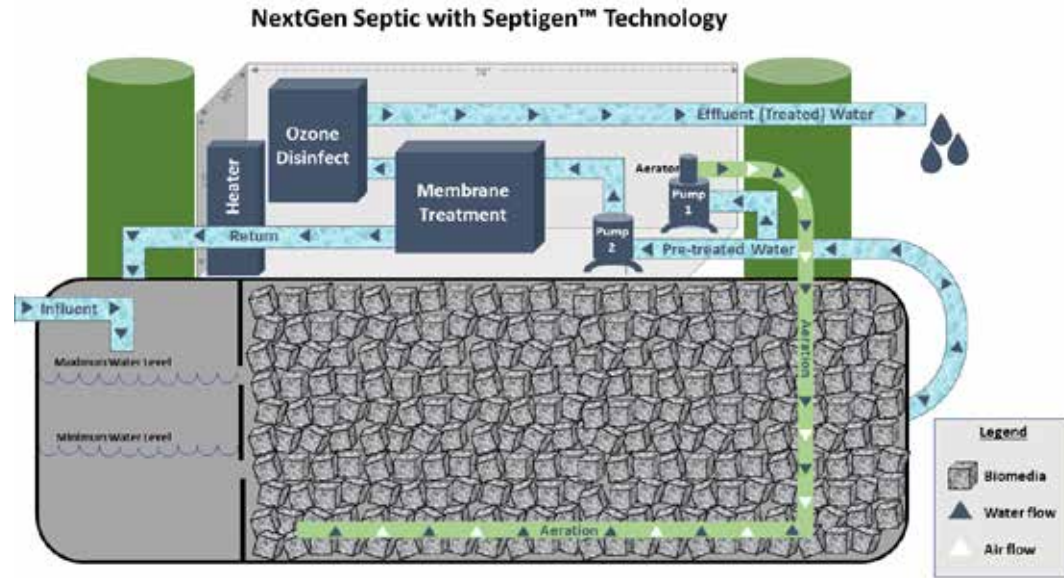
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- NextGen Septic, LLC is based in Cincinnati, Ohio.
- Our purpose is to create and develop new technologies to address the global fresh water crisis, starting in our back yards.
- The NextGen system with Septigen technology was invented by our founder, Dr. Rakesh Govind, who has over 30 years experience and recognition as a national expert on biological treatment of wastewater and air.
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- Dr. Govind has consulted for major wastewater treatment companies and speaks globally about water reuse and global water protection.

# THREE-STAGES OF TREATMENT

- Simultaneous biological aerobic and anoxic treatment of the organic material breaks down solids and treats nitrogen and phosphorous through a combination of proprietary biomedias and high-capacity aeration technology;
- The membrane separation phase treats water for nitrogen and phosphorous in addition to filtering and treating any remaining suspended solids;
- Ozone disinfection technology is used as a final stage to ensure treated water meets surface discharge and reuse standards.



# INFLUENT/EFFLUENT PROFILES



Flow	cBOD5 (mg/L)	NH3-N (mg/L)	TP (mg/L)	TSS (mg/L)
Influent	456	10	10	985
Effluent	7.1	BDL	3.3	0.8
% Removal	98.2	100	65.7	91.7

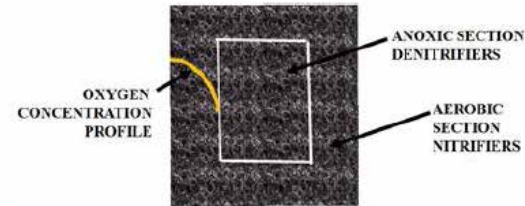
## **RESULTS OF INDEPENDENT THIRD PARTY TESTING**

Water Quality Parameter	Measure	Average Influent	Average Effluent: Standard Septic	Knox 2/6 Sample	Graywater discharge Req. Range
cBOD <sub>5</sub>	mg/L	220	100-350	ND	130-180
Turbidity	NTU	68	47	0.4	50-100
Total Organic Carbon	mg/L	178	123	10.7	50-100
Total Nitrogen	mg/L	32	25	1.9	3-5
Total Phosphorous	mg/L	10-27	13	5.9	1-3
Fecal Coliform	CFU/100 mL	7.4 million	3.7 Million	<2.0	<10,000

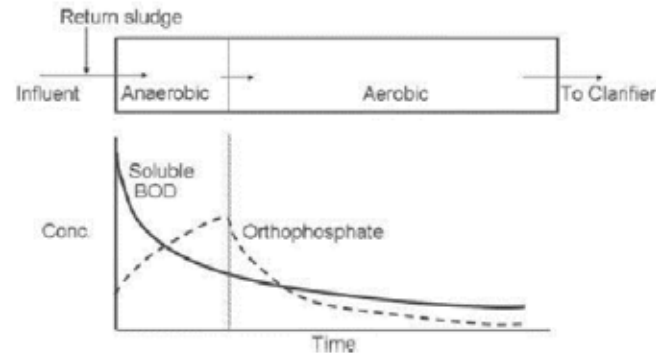
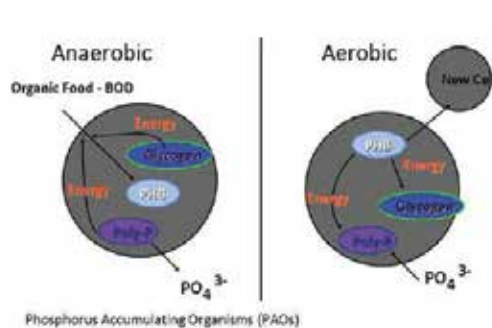
# NUTRIENT REMOVAL

Septigen™ technology uses open-cell biomedias to enable simultaneous nitrification and denitrification.

The oxygen concentration profile, curve in yellow



Uses anaerobic/aerobic sequence to reduce phosphorus



# STUDIES & CERTIFICATIONS

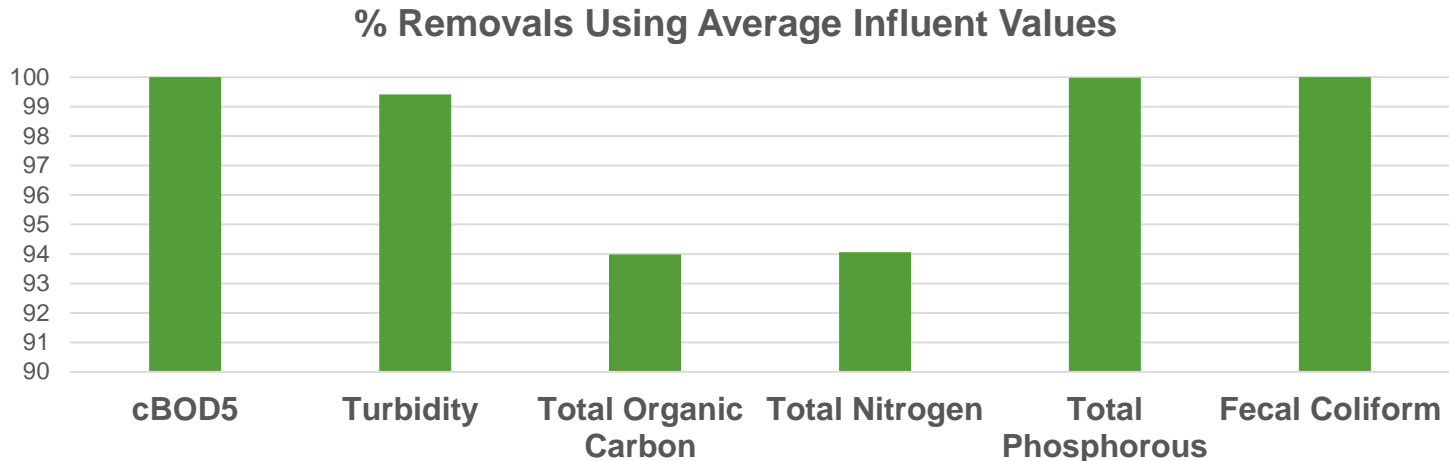
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- Currently undergoing testing for various EPA approved certifications
- Approved for surface discharge in State of Kentucky and Tennessee
- Approved for sub-surface discharge in South Dakota
- Received State of Ohio EPA approvals for commercial application at a Golf Club (currently installed)

# FIELD PERFORMANCE DATA

- Independent testing was conducted in February 2019 for the NextGen Septic, installed at a house in Kentucky in December 2018
- Sampling and analysis was conducted by Pace Laboratories





# FIELD PERFORMANCE DATA

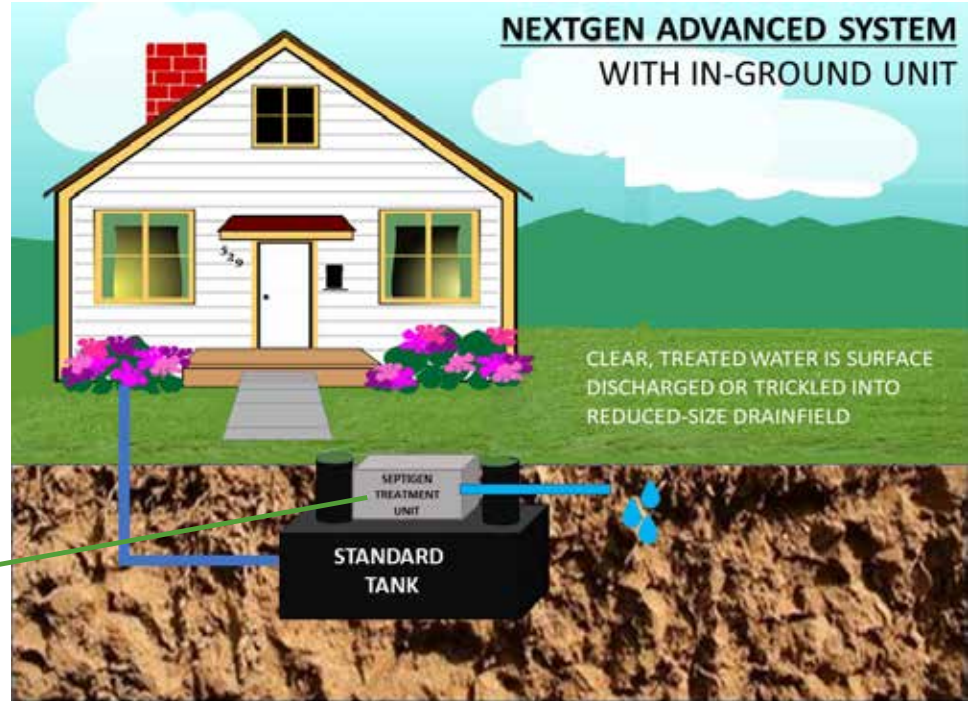
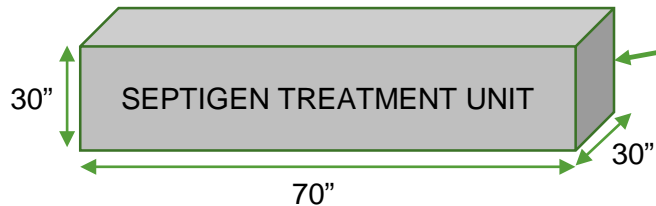


- Results of effluent testing at various installations
  - Sampling collected by NextGen
  - Testing completed by independent laboratory

NEXTGEN SEPTIC INFLUENT FIELD RAW DATA							NEXTGEN SEPTIC EFFLUENT DATA				
NextGen Septic Installation (name withheld to maintain privacy)	cBOD5	TSS	NH3-N	TP	pH	Fecal Coliforms (MPN/100 mL)	cBOD5	TSS	NH3-N	TP	Coliforms (MPN/100 mL)
<b>19</b>											
Kentucky home	177	728	6.2	1.2	7.6	7.37E+06	5.5	BDL	3.1	0.5	1
		1356	1.1	15.5	7.3	9.59E+05	7.1	BDL	2.1	0.8	2
<b>20</b>				0.0		0.00E+00					
Kentucky home	700	95	7.3	7.7	7.6	1.46E+04	8.8	BDL	2.4	0.9	
Had kitchen waste connected to septic	1977	1885	11.1	1.8	7.8	1.08E+04	6.3	BDL	3.0	0.4	
	3	107	0.6	17.7	7.4	6.25E+05	6.3	BDL	1.8	1.1	
	174	4265	0.6	0.1	8.1	1.08E+04	9.7	BDL	2.6	0.6	15
	387	4	3.8	5.9	7.7	1.24E+04	7.6	BDL	3.5	0.8	14
	470	600	24.0	11.7	8.2	3.66E+06	8.3	BDL	4.2	1.1	2
<b>21</b>											
Kentucky home	370	681	12.7	0.8	7.8	1.16E+04	6.3	BDL	1.9	1.0	6
	263	1078	1.3	1.8	7.4	3.05E+05	6.5	BDL	3.1	0.7	1
	0	2216	0.3	26.4		6.19E+05	6.8	BDL	4.2	0.8	3
<b>22</b>											
Kentucky home	760	99	7.0	5.6		8.64E+05	8.9	BDL	1.8	1.0	5
Had kitchen waste connected to septic	2828	1936	15.7	1.8	8.0	1.23E+04	6.9	BDL	2.6	0.6	1
	3	46	0.9	24.6	7.8	1.74E+04	5.7	BDL	3.4	1.0	
	109	3648	0.6	0.1		3.93E+05	7.8	BDL	4.6	0.6	
	707	6	2.9	8.2	8.0	6.97E+05	5.4	BDL	2.2	0.9	11
			21.2	9.4	8.1	1.61E+04	8.3	BDL	2.1	0.4	

# SYSTEM FOOTPRINT

- The stainless steel treatment unit is designed to fit between risers on most standard residential septic tanks, or can be placed above ground.



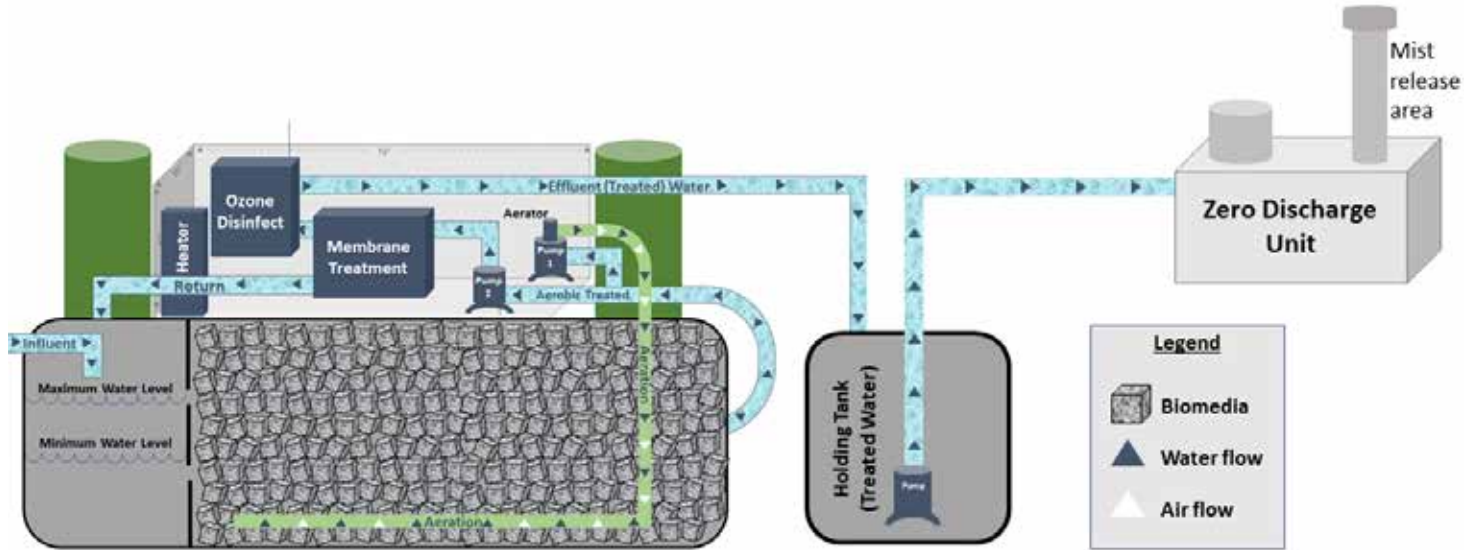


# NextGen Septic



# NEXTGEN ZERO LIQUID DISCHARGE

The NexGen Zero Liquid Discharge (ZLD) System uses the NextGen Advanced System technology for water treatment, adding an additional technology to convert treated water into vapor and aerosols:

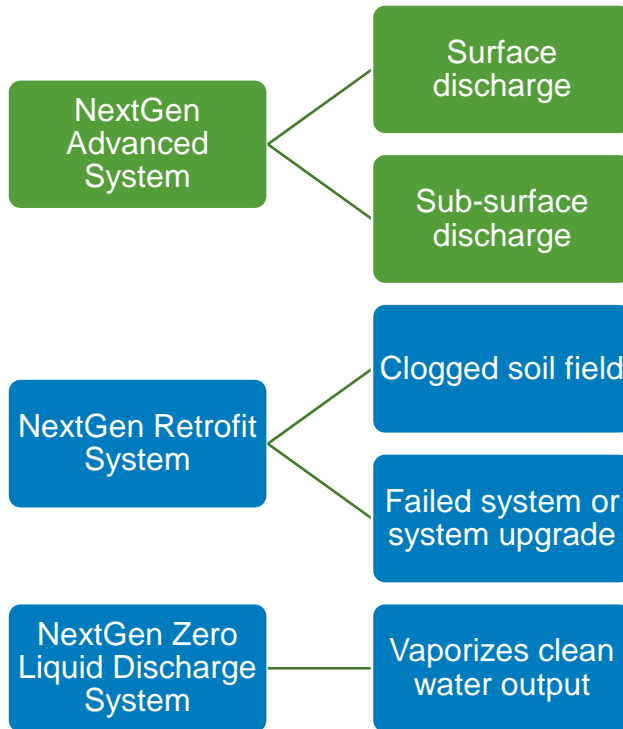


Treated water is flowed into the ZLD holding tank, then pumped through a high pressure nozzle, creating a water mist with average drop diameter of <10 microns.



The mist is injected in a flow of ambient air, amplified by a factor of 10. The water mist flows out of the ZLD unit at high velocity, ejecting the mist and air to a height of 30-50', allowing the mist to evaporate into the air.

# NEXTGEN RESIDENTIAL USE CASES



- Cost-effective vs. mound system
- Ideal for small lot or undesirable soil conditions
- Water reuse system design in development

- Reduced drain field required
- Ideal for small lot

- Use existing, approved tank = reduced install costs
- Resurrects drain field in months

- Does not require new soil field construction
- Resurrects drain field in months

- Ideal for small lot or undesirable soil conditions where surface discharge is not an available option

# NEXTGEN COMMUNITY SYSTEM



NextGen Community systems combine the best of wastewater plant and advanced septic technology into a neighborhood wastewater treatment system that recharges the local water supply with decontaminated water that can be used to beautify the community through irrigation.

Three stage system includes

- **Individual collection units.** 20 gallon, in-ground tanks, placed throughout the community, collect sewage and wastewater from each house. When a unit reaches capacity, the contents are transported to the community treatment system using vacuum pumps located at the collection tank.
- **Community treatment system.** The NextGen treatment system consists of a collection tank and the Septigen™ Treatment Unit.
  - The two-compartment concrete collection tank serves to 1) collect influent from individual units, and 2) break down organic materials through simultaneous aerobic and anoxic treatment using waving biomedica and high-capacity aeration.
  - The Septigen Treatment Unit consists of a stainless steel tank with pumps, aerator unit, and ceramic membrane to treat water, removing harmful contaminants, including E.coli, fecal coliforms, nitrogen and phosphorous. Also in the unit is an ozone generating system, which provides final disinfection of the treated water.
- **Treated water dispersal.** A second precast concrete tank stores treated water and disperses in one of two ways.
  - **Reuse** of water for irrigation of community homes and common areas.
  - **Release** into the ground at a controlled rate based on measured average water percolation rate of the designated soil dispersal area.



THANK YOU!

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