Conventional Rezoning

29th Street



Minimum Lot Size Dictates for Septic Systems

Septic Systems Environmental Impact

Clarification Needed from Initial Hearing



Preliminary Site Plan

Plan to Construct 2 Detached Single Family Residences

Each Approximately a Gross Total of 2,160+/- SF 1,662+/- SF Under AC

3 BR, 2 Baths





Interior Lot

Unique Covered Walkway to Side Main Entrance Door

Recessed Garage on Interior Lot allows for a 3-Point Turn and safer entry onto 29th Street.

Elevations are Preliminary and Conceptual. Final Design to be Compatible with Surrounding Homes



Interior Lot

Landscape Area Facing 29th Street



Corner Lot

Looking from Lee Dr back to 29th Street

Garage on Corner Lot House is Accessed from Lee Dr which is Less Busy.



Aerial View with Lee Dr on Left and 29th Street on Right

Large Setback Areas on 29th Street on both Lots allow for Landscape Opportunities that will Enhance the Street view.





Conditions for Rezoning

Agreement to Commissioner Uribe's Conditions based on Community Feedback

♦ Use of ATU Septic Systems

- Limit Structures to Single Story
- ♦ Configure Lots to Lee Dr Creating 2 Lots of 70' X 100'

Lee Dr Front

Lots: Each 69' X 100' Set Back on 29th/15'

29th Street Front (Original)

- Lots: each 50' X 139' •
- Set Back on 29th Street 25' •

Plat Change and its Impact on Septic System Minimum Lot Sizes is Critical

Proposed new Lot Configuration would be agreeable with the condition that it would not require a replat or change the original plat





XX.-X.

SET BACKS +

Key Considerations

- Targeting Essential Workers in the community; Workforce Housing.
- Police Officers, Firemen, Teachers, Nurses, Medical Personnel
- Quality Built New Homes in Keeping with Style and Feel of Community.
 - **Competitively Priced Homes & Desirable Updated Floor Plans**
- Scarcity & Demand of New Home Product in the Area
- Proximity to SODO and all the Downtown Cultural, Educational, Entertainment and Health Care-Provider Hub

29TH Street and Lee Dr

Affordably Priced Quality Built Homes that will Compliment and Enhance the Community.



Clarification Facts on Key Points From Initial Hearing





SEPTIC SYSTEMS ENVIRONMENTAL IMPACT

A Voluntary Meeting with Community HOA was Held

on Tuesday, November 12th

Key Questions, Concerns, Suggestions & Feedback was Gathered from Residents.

- ♦ Is Property Subject to the Florida Health Department 4 per acre criteria for Septic Systems?
- Other than the FL Health Department Requirements ; are there any other Orange County Ordinances that require septic tank minimum lot sizes?
- **Are Proposed Homes Compliant with all Orange County Setbacks?**
- **The Septic Tank setbacks**, will they fit on the Lots?
- Septic System Environmental Impacts?

Florida Health Department Assessment

Email Received on Monday, Oct 21, 2019 from Bart Harris at The Florida Dept. of Health in Orange County

Parcel was <u>Platted in 1923</u> and would <u>allow the Pre 1972 Lot</u> <u>Size Provisions to Apply</u> where there is <u>No Minimum Lot Size</u> <u>Requirement</u>.

The <u>Authorized Sewage Flow</u> <u>would need to be met</u> based on City Water Availability.

Septic System Minimum Lot Size

- Hello Mr. Durruthy,
- ♦ I see on the property record card and warrantee deed, where this is a single parcel (single tax/property ID number), consisting of two lots lot 13 and lot 14. Likewise the lots located adjacent consist of 4 lots (lots 15 to 18) with a single tax/property ID. They do not appear to have been combined to create a single lot with only one set of property lines. According to the property appraiser's website the lots were platted in 1923 and there have been no replats or subdividing since that time. This would allow the pre 1972 lot size provisions to apply where there is no minimum lot size requirement, for lots served by public water, however the authorized sewage flow would need to be met and system would need adequate room for placement. Since the pre 72 provisions apply, a variance to lot system requirements would not apply.
- ۲
- Please contact me for any further questions.
- ♦

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- Thank You,
- ۲
- ۲
- **&** Bart Harris, RS, CPM
- Environmental Manager
 Florida Dept. of Health in Orange County
- Office: (407) 723-5218 / Cell: (407) 697-4844
- ♦ <u>http://orange.floridahealth.gov</u>
- ♦ Twitter: <u>GOHealthyOrange</u>

Authorized Sewage Flow

	# of Bedroom Footage of Buil 1 bedrooms ≤ 2 bedrooms ≤ 3 bedrooms ≤	s Or Sq. ding Area 5 750 ft ² 1,200 ft ² 2 250 ft ²	Estimate Sewage F 200 200 300	ed M low Ta	linimum arik Size 900 900	Martingua Size F Sano	n Drainfield 2 Bed Fime 1 0 60LR 334 334 500	Dra Ff [®] Sa	Trench Filme Ind 0.80LR 250 250 375		
	4 bedrooms ≤ 5 bedrooms ≤ 6 bedrooms ≤ 7 bedrooms ≤	3.300 ft ² 4,050 ft ² 4 800 ft ² 5,550 ft ²	400 460 520 580		1050 1200 1350 1350		667 767 867 967		500 575 050 725		
	8 bodrooms ≤ 6,300 ft ² 9 bedrooms ≤ 7,050 ft ² 10 bedrooms ≤ 7,800 ft ² 11 bedrooms ≤ 8,550 ft ² 12 bedrooms ≤ 9,300 ft ²		640 700 760 820 880		1500 1500 1650 1900		1067 1167 1267 1367 1467		800 875 990 1025 1100		
Per Lot:			940		1900		1567		1175		
29th Street		50X138	6,976	0.1601	Allowable	400.34	Gallons per c	lay	Up to 3,300 SF/ GPD/We are at planned Home	4 BDRM is a capacity wi Size	t 400 th
City Water Factor: 2,500 Estimate Calculat 2,500=				ated Sewage Flow is ated by taking the .1601 X 400.34				Allows Up To 3,300 SF 4 Bedroom Home to be Built on Each Lot			

Other than the FL Health Department Requirements; are there any other Orange County Ordinances that require septic tank minimum lot sizes?

Sec. 37-538. - Lot size requirements for individual on-site sewage disposal systems with central water.

An OSDS may be allowed if the following criteria are met:

1- Single-family unit:

8-Exemption: Residential lots exclusive of lakefront lots, (i) in subdivisions platted prior to January 1, 1972, or (ii) existing as lots of record prior to January 1, 1972, shall be exempt from the minimum lot size/density requirements contained in subsections (1) and (2).

a. Lots greater than or equal to one-third (1/3) acre (14,520 square feet): OSDS in all areas, subject to suitable soils.

b. With swale drainage lots greater than or equal to one-fourth $(\frac{1}{4})$ acre (10,890 square feet): Where central sewer service is not available OSDS may be permitted subject to suitable soils.

c. With **closed drainage**: four (4) lots per net acre (excluding roads, retention pond tracts, surface water bodies below the normal high water elevation, and jurisdictional wetland areas, but including the unpaved portion of adjacent right-of-way and portion of adjacent retention pond above design high water contour or elevation): Where central sewer service is not available OSDS in all areas, subject to suitable soils.

Orange County Ordinance Mirrors Fl Health Department

There are no other OC based requirements

Sc. 34-5.-Definitions Roadway Section: (2) Urban shall mean a paved street having a closed drainage system, i.e., utilizing curbs and gutters rather than swales for drainage.

Orange County Applicable Setbacks

Home Footprints Shown are the compliant buildable pads within which the homes will be designed.

The Narrowest Portion of the Lot is determined to be the "Front" for applying Setbacks No Matter Where the front Door of the Home Faces.

Homes are fully Compliant with Set Back Requirements

*H: For lots platted on or after 3/3/97, or unplatted parcels. For lots platted prior to 3/3/97, the following setbacks shall apply: R-1AA, 30 feet front, 35 feet rear; R-1A, 25 feet front, 30 feet rear; R-1, 25 feet front, 25 feet rear, 6 feet side; R-2, 25 feet front, 25 feet rear, 6 feet side for one (10 and two (2) dwelling units; R-3, 25 feet front, 25 feet rear, 6 feet side for two (2) dwelling units. Setbacks not listed in this footnote shall apply as listed in the main text of this section.



Lee Dr Front

Reconfiguring Lots with a Lee Dr Front would not accomplish any esthetic enhancement or better compatibility with surrounding area:

- 1. The set back on 29t Street would be 15' rather than 25' as currently proposed.
- 2. Current proposed site plan would in essence revert back to original plat of 50' front Lots with 25' set back on 29th street. This is more esthetically effective from the more important 29th street vantage point and more in keeping with surrounding area.
- 3. The buildable pads resulting from a Lee Dr front would not be optimal.



Septic System Setbacks/ Will They Fit?

Aerobic Treatment Unit with Drip field Fits.

5 Ft Set Back from Property Line and Structure.

Planed ATU Septic Systems Require Significantly Less Space than Conventional Systems

Buildable Pads allow for Required Setbacks for ATU System



Anerobic Conventional System

Conventional System Will Not Fit

Required Drain Field Size of 375 SF would not meet unobstructed area requirements

An "Aerobic" System in Addition to being the more Environmentally Correct Choice is also the Only Choice.



The New Home's Septic System Environmental Impact

 Insight on the Significant Advantages of Aerobic versus Anerobic Systems and the Nature of Existing Septic Systems in the area.



Surrounding Properties

Sample Set:



Avg Year Built of Surrounding Sample Set of Homes: 1961

All Septic Systems in Surrounding properties are Conventional Anerobic Systems.

With 2 Exceptions

Permit Data from FL Health Dpt. Records have been kept since 1999.

Aerobic Treatment Units in the Area

There are only 2 in the larger surrounding area. Both Lake Front Properties

Only ATU's in imr	mediate area:								
Aerobic	Name	Address	City	Zip	Permit Issue	Expiration			
48-QX-1437127	Fender, Rick	500 29th Street	Orlando	32805	03/11/19	12/31/20	Annual	09/12/19	
48-QX-1733788	Hornsby, Charles & Charlotte	3221 Alamo Drive	Orlando	32805	06/01/18	05/31/20	Annual	09/12/19	





New Homes

The New Homes will feature the more Advanced and Effective ATU's Aerobic Treatment Units



Aerobic Versus Anerobic Systems

✤ The Impact of Bacteria on the Septic System Process

♦ Nitrogen Reducing ATU's

Introducing: Chris Brown

Chris is the owner of Chris Brown Septic and he has been a leader in the installation and maintenance of ATU's since **2005**.

Florida Onsite Sewage Nitrogen Reduction Strategies Study

The quality of Florida's surface and groundwater resources is increasingly being **threatened** by anthropogenic sources of pollutants. **Nitrogen** is one of these pollutants, which is both an **environmental** and **drinking water concern**. As little as one milligram per liter of nitrogen has been **shown to lead to algae growth in Florida's springs**

Onsite sewage treatment and disposal systems (OSTDS) are one of the sources of nitrogen. These systems are used for household wastewater treatment where sewers are Unavailable..

Approximately **one third** of Florida's population is served by OSTDS representing approximately **2.5 million systems** (Briggs, Roeder et al. 2007). This number is expected to increase with rising population in the state



Florida Onsite Sewage Nitrogen Reduction Strategies Study

Task A.2

Literature Review of Nitrogen Reduction Technologies for Onsite Sewage Treatment Systems

Final Report

August 2009

Conventional Septic System-Anerobic

 Anaerobic septic systems involve the use of bacteria that don't require oxygen to live. In an anaerobic system, you've got a septic tank with two main pipes.
 Inside the septic tank, solid waste settles and is eaten by the anaerobic bacteria. Liquid waste floats to the top.



One of the pipes comes from the house, and the other heads out into your yard to the drain field. That outbound pipe splits into several pipes that sit just below the surface of your lawn. Wastewater from the tank moves out to the smaller pipes (Drain Field) under the surface, which have holes at their ends. The wastewater then filters or "percolates" out into the soil.

Conventional Septic System Failure

The Biomat

Conventional Systems **Promote** the **Growth** of a Black Sludge Called the **Biomat** in the drain field

> Over Time this Build Up **Seals** the ground and sidewall of the drain filed **preventing** it **from absorbing** the water discharged from the Septic Tank

This will **Result** in Symptoms of **Septic System Failure**

What Causes Septic Problems?

Conventional septic systems work in an anaerobic or oxygen free environment, promoting the growth of a black, sludge-like layer called the biomat in the drain field. Drainfield is a generic term that refers to: gravity fed and pressurized drainfields, mounds, trenches, cesspools, seepage pits, drywells and lagoons.

Over time, the biomat builds up and seals the ground and sidewalls of the drainfield, preventing it from absorbing water discharged from the septic tank. This results in many symptoms of septic system failure, including ponding, foul smell, sluggish toilets and drains, tank overflows and system back-ups. – Read more about aerobic bacteria vs. anaerobic bacteria.



Biomat growing and clogging the drainfield in an anaerobic septic system

Aerobic-Advanced Treatment Units (ATU's)

3 Chamber System

The first chamber functions like a septic tank to remove solids and scum

Air is pumped in the second chamber to supply oxygen and mix the contents. Aerobic bacteria decompose the organic material producing an effluent much lower in biochemical oxygen demand (BOD).

The final chamber slows the flow of the water, so solids settle before the clarified effluent exits the tank

THE BIOBARRIER® SYSTEM

The BioBarrier® Membrane Bioreactor combines the activated sludge treatment process with the exceptional clarification properties of a membrane. The System is installed in locally approved tanks, in a two compartment tank, or multiple tanks, with the membrane module always in the last compartment/ tank. Primary treatment consists of sedimentation and separation of floatables and solids, and occurs in the first compartment. The



second compartment/tank can be used to enhance the BioBarrier's nitrogen reducing capabilities. The second compartment houses the BioBarrier system. The BioBarrier's blower aerates the wastewater for naturally occurring bacteria (biomass) to grow and treat the sewage. The membrane prevents most particles from being discharged into the receiving environment.

The clean water is discharged to the receiving environment by the effluent pump. The aerator also helps limit the rate of fouling on the membrane sheets. This is a continuous process provided the biomass is supplied with waste (food) and air in a suitable environment. A vent pipe allows for venting of non-harmful by-products created by the process. The entire process produces effluent with very low levels of bacteria, organic matter (BOD), solids (TSS)

and Total Kjeldal Nitrogen.

When nitrogen removal is needed the system (The BioBarrier® 0.5-N, 1.0-N, 1.5-N) consists of a tank with three compartments, or two tanks totaling at least three compartments, with exactly two compartments in the second or final tank. The first compartment or tank provides primary treatment - sedimentation and separation of floatables and solids, and is equipped with an outlet screening device called SaniTEE®. The second and third compartments must be in the same tank, and the second compartment is where denitrification takes place under anoxic conditions. The third compartment, the aeration/membrane zone, is separated from the anoxic zone by a baffle wall between the two zones to allow nitrified waste to enter into the anoxic area for denitrification.

Aerobic-Advanced Treatment Units (ATU's)

Enhanced or Advanced Treatment Units <u>Further Treat the wastewater before it's</u> <u>discharged</u>

Aerobic Treatment typically produces a <u>substantially higher</u> <u>quality effluent than is produced by a septic tank alone</u>

> A well designed and maintained ATU produces an effluent which is much lower in BOD. This means that *much less treatment is required in the soil absorption field*. Additionally, aerobic treatment of organic material does not produce the odors characteristic of anaerobic treatment in the septic tank

Aerobic vs Anerobic Bacteria & Their Impact on Septic System Efficiency

The inefficient oxygen hating anaerobic bacteria in a standard conventional septic tank reduce the wastewater strength only 30% - 40%. Therefore, the drain field must perform 60% - 70% of the water cleansing.

Oxygen loving bacteria in an aerobic system dramatically improve the quality of wastewater leaving a septic tank versus standard oxygen hating bacteria.

Aerobic bacteria will generate 20 times or more energy from the same amount of organic material than anaerobic bacteria

Aerobic bacteria will reproduce and consume organic material at an explosive rate as compared to anaerobic bacteria.



Time Growth rates for aerobic and anaerobic bacteria

National Science Foundation NSF

Florida Approved NSF 245 Certified Models

Note: Bio-Microbics, BioBarrier MBR 0.5 Model Test

> Nitrogen Reduction Rating of 79%

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Manufacturer	Equipment Series	NSF Tested Model	Third Party Certifying Organization	Florida-Approved NSF 245-Certified Models	Average Total Nitrogen Reduction - NSF 245 Completion Report*	NSF 245 Report Date
Aquaklear, Inc.	AquaKlear	AK6S245	Gulf Coast Testing	AK6S245C, AK10S245C	50.8%	October 2010
Bio-Microbics, Inc.	BioBarrier	MBR 0.5	NSF International	MBR 0.5-N; MBR 1.0-N; MBR 1.5-N	79%	October 2011
Bio-Microbics, Inc.	MicroFAST *TANK REQUIREMENTS FOR NSF 245- CERTIFICATION UNDER REVIEW [9/27/2019]	0.5	NSF International	MicroFast 0.5, 0.625, 0.75, 0.9, 1.5 ¹	55%	October 2008
Clearstream Wastewater Systems, Inc.	Clearstream	500 D	Gulf Coast Testing	500D, 500DST, 600D, 600DT, 600DC3, 750D, 750DT, 800D, 800DT, 1000D, 1000DT, 1500D	52.9%	March 2013
Delta Treatment Systems, LLC.	ECOPOD-N	E50-N	NSF International	E50-N, E-60-N, E75-N, and E100-N	53%	February 2010
Fuji Clean USA	CEN	5	NSF International	CEN 5, 7, 10	74%	April 2015
Jet	Jet-CF	500	Gulf Coast Testing	J-500CF, J-750CF, J- 1000CF, J-1250CF, J-1500CF	67%	December 2008 (revised December 2018)
Norweco, Inc.	Singulair TNT	TNT-500	NSF International	TNT-500**, 750**, 1000, 1250, 1500	68%	November 2007
Orenco Systems	Advantex	AX20RTN	NSF International	AX20RTN, AX20N	55%	May 2015

NSF Standard 245 (Nitrogen-Reducing) Certified Aerobic Treatment Units (ATUs) in Florida (Rule 64E-6.012, Florida Administrative Code)

¹NSF approval for models of certain serial numbers only; see http://info.nsf.org/Certified/Wastewater/Listings.asp?Standard=040& for details. Please note that Florida requires approval of treatment receptacles prior to sale and installations. A list of approved treatment receptacles for use with ATUs can be found at: http://www.floridahealth.gov/environmental-health/onsite-sewage/products/_documents/atu.pdf. Be aware that the model identification in that list is not always complete.

*Department of Environmental Protection (DEP) Basin Management Action Plan (BMAP) nitrogen-reducing requirements differentiate between systems with 24 inches of separation between the bottom of the drainfield and the wettest season water table (WSWT) and those that do not. Existing systems (modifications/repairs) installed with less than 24 inches of water table separation between the bottom of the drainfield and the WSWT (as allowed per Rule 64E-6) must use systems that are capable of at least 65% nitrogen removal. New systems and modifications/repairs installed with at least 24 inches between the bottom of the drainfield and the WSWT may use any system capable of at least 50% nitrogen removal to comply with future BMAP requirements.

**Note that the TNT-500 is NSF 245 certified for a rated capacity of 500 gpd or 600 gpd; the TNT-750 is NSF 245 certified for a rated capacity of 750 gpd or 800 gpd.

Disclaimer: This list does not represent or imply an endorsement of any particular company, person, product, configuration, or technology. The list reflects the compiler's information as September 2, 2019.

Advantages of An Aerobic Treatment Unit



Can provide a higher level of treatment than a Septic Tank; Reducing wastewater strength more than 90%



Provides an alternative for sites not suited for conventional septic systems



Reduces the workload on drain fields thus extending their life.



MLS Sale Data

Property was on the market 278 Days.

An end user buyer wanting to build 1 home on the lot did not materialize during this extended amount of time on the market

> One can argue that a single home is not the Highest and Best Use



Thank You