

**Town of Pittsboro
Wastewater Treatment
Preliminary Engineering Report (PER)
80% PER Stage**



THE WOOTEN COMPANY

ENGINEERING | ARCHITECTURE
PLANNING | GEOMATICS

**Carl Scharfe, P.E.
The Wooten Company
Raleigh, N.C.**

20-Yr Wastewater Flow Projections (Design Year 2035)

- **Wastewater Flow Summary**

– Pittsboro and ETJ Areas. gpd	1,749,000
– Chatham Park Wastewater Flow, gpd	<u>2,700,000</u>
– Total Projected 2035 Wastewater Flow, gpd	4,449,000

- **Wastewater Discharge Summary**

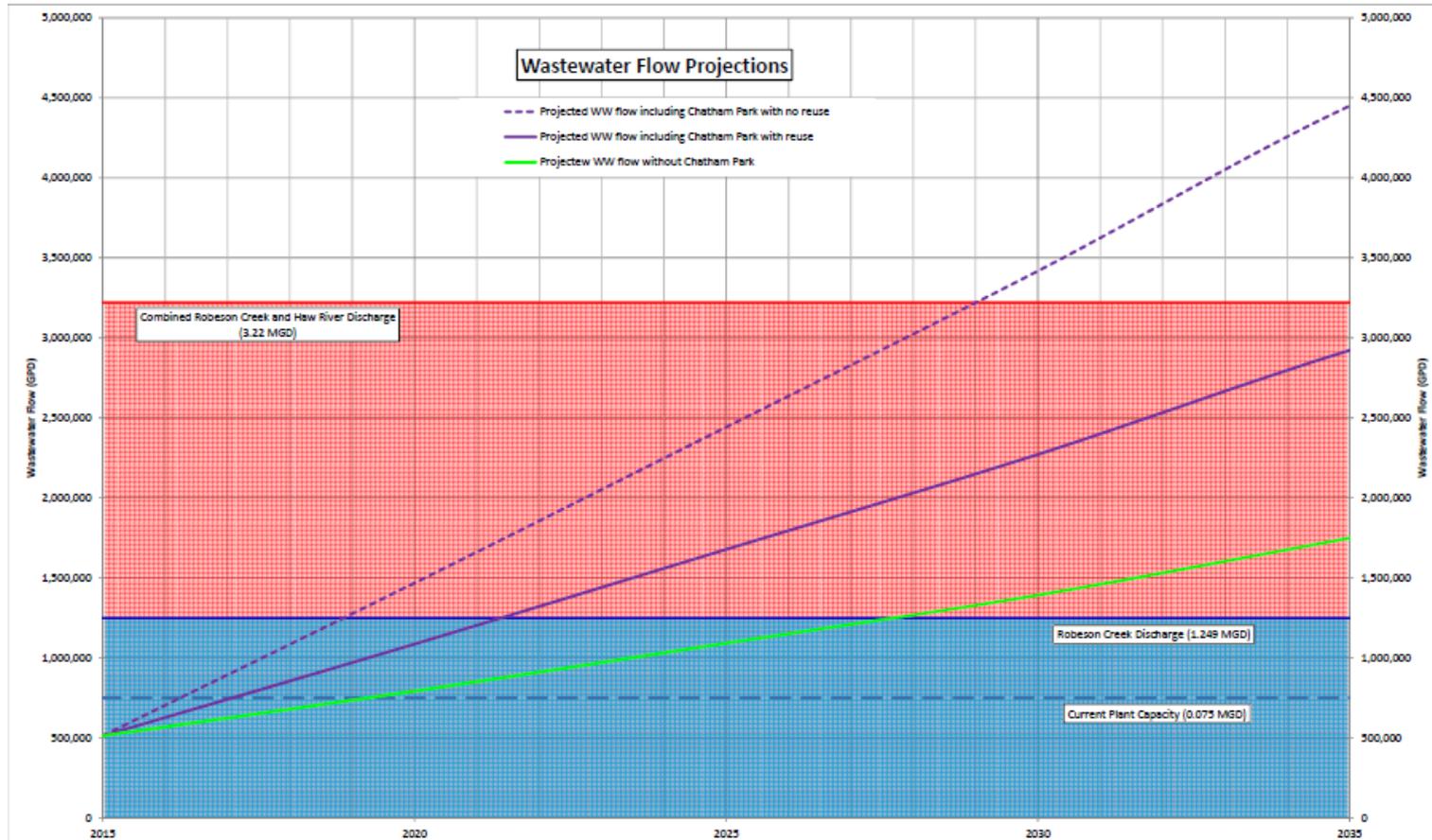
– Pittsboro and ETJ Areas, gpd*	1,689,000
– Chatham Park Wastewater Discharge, gpd **	<u>1,200,000</u>
– Total Net 2035 Wastewater Discharge, gpd	2,889,000

* Includes 60,000 gpd reclaimed flow to 3M

** Includes 1.5 mgd reclaimed water demand at CP

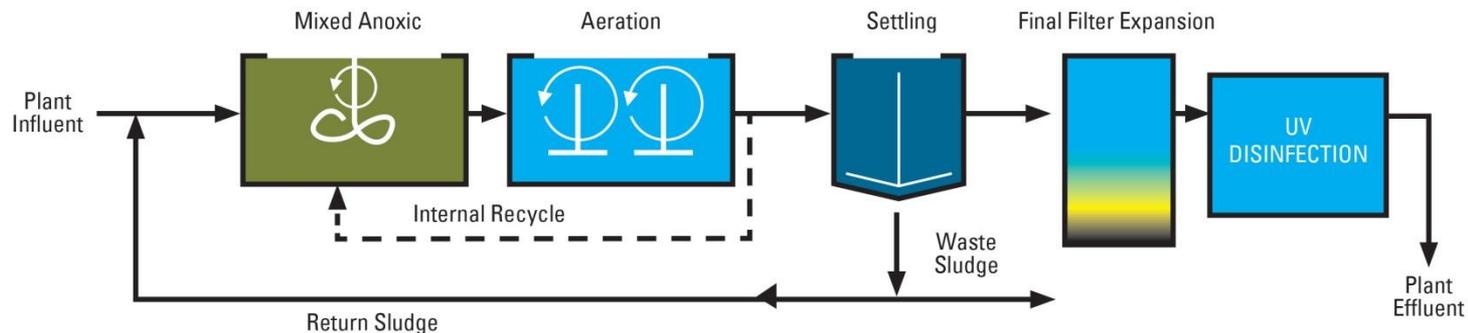


Wastewater Flow Projections



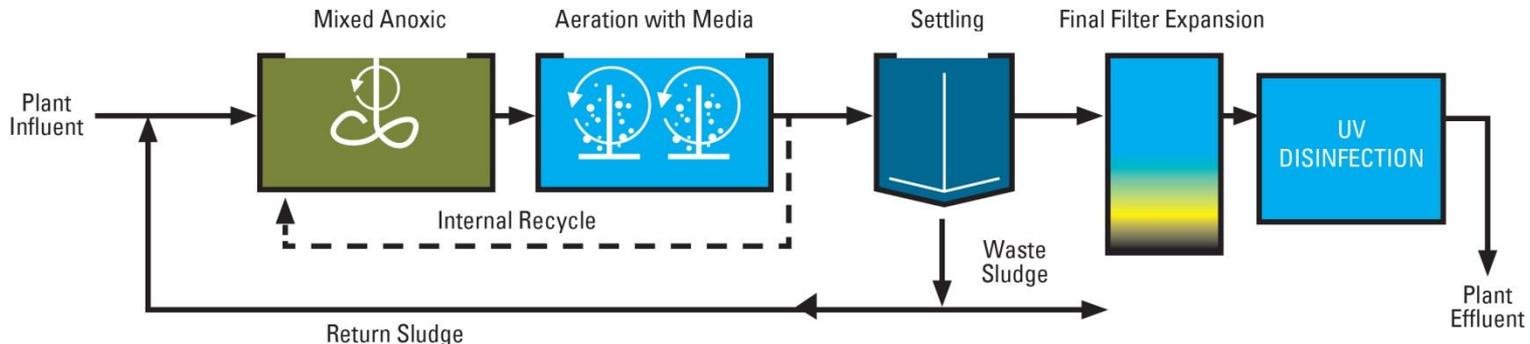
Conventional Biological Nutrient Removal (BNR)

- **What is it?**
 - Biological Treatment + Gravity Settling (clarifiers) + Filtration + UV disinfection
 - Rational: Traditional large volume tanks w normal bacteria levels



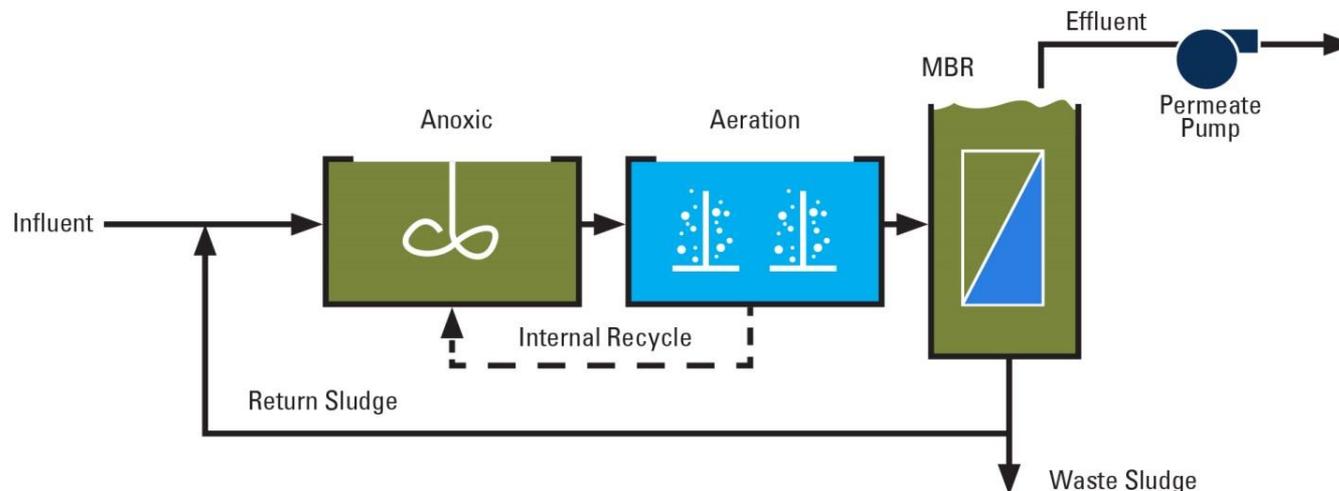
Membrane Bioreactor (MBR)

- **What is it?**
 - Biological Treatment + Membrane Filtration (0.035 – 0.4 micron size) + UV Disinfection
 - Membranes (barrier) replace clarifiers and use highly concentrated bacteria levels (smaller volume)

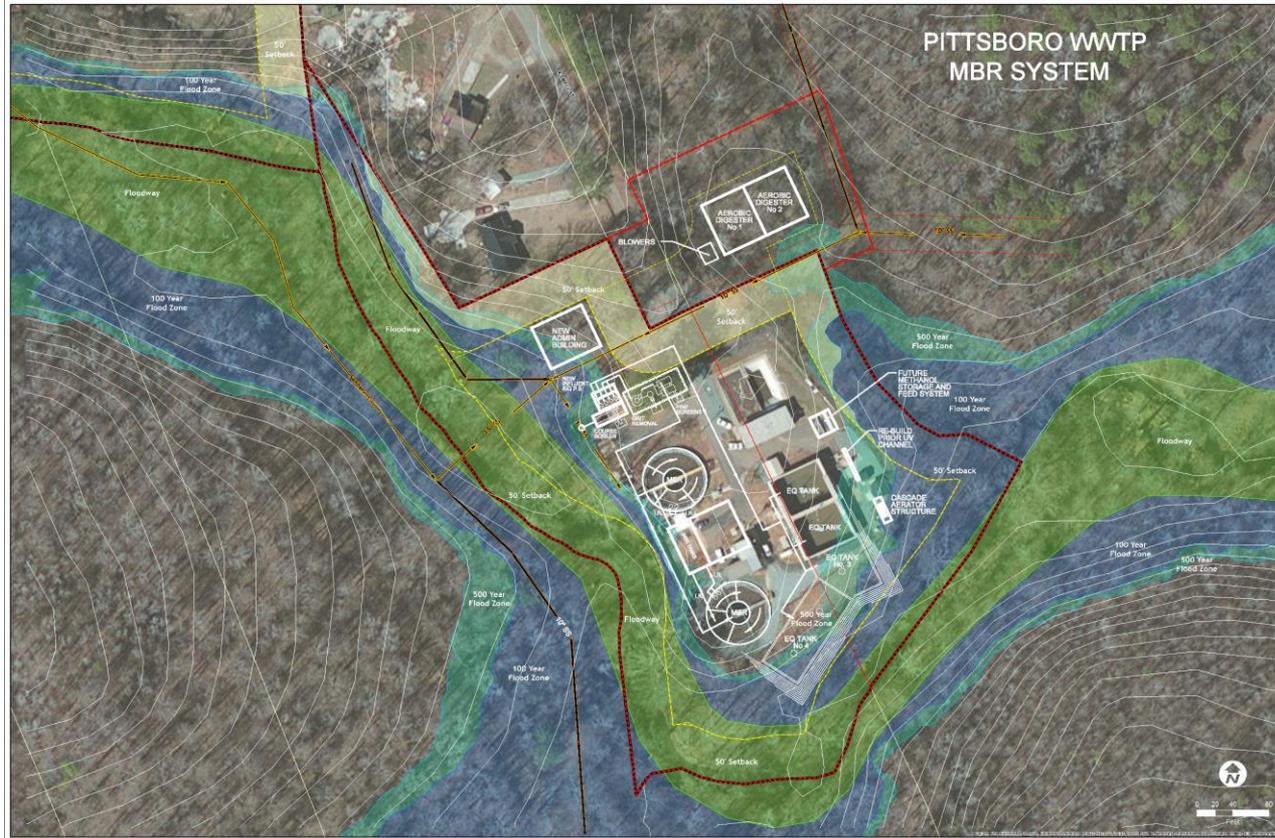


Integrated Fixed Film Activated Sludge (IFAS)

- **What is it?**
 - Biological Treatment (with Plastic Media) + Gravity Settling (clarifiers) + Filtration + UV Disinfection
 - Add media to increase bacteria in same volume



Preliminary MBR Layout



THE WOOTEN COMPANY

ENGINEERING | ARCHITECTURE
PLANNING | GEOMATICS

Off-Site Equalization



THE WOOTEN COMPANY

ENGINEERING | ARCHITECTURE
PLANNING | GEOMATICS

Alternative Comparison

	Conventional BNR Plant	IFAS	MBR
Site Footprint	Large	Moderate	Smallest
Additonal Land	3+ acres	1.6 acres	1 acre
Operators familiar with technology	Yes	No	No
Clarifiers Needed	Yes	Yes	No
Tertiary Filters Needed	Yes	Yes	No
Established and Widely Accepted Technology	Yes	No	Yes
Sensitive to Hyraulic Loadings	Moderate	Moderate	High
High Level of Automatic Controls	No	No	Yes
Equipment Routine Maintenance	Low	Moderate	High
Sensitive to Solids Setting	Yes	Yes	No
Suseptible to Solids Washout	Somewhat	Somewhat	No
Aeration Energy Requirements	Low	High	High



Alternative Preliminary Capital Costs

Alternative Preliminary Capital Cost Table	
Alternative	Capital Cost Range (million dollars)
Alternative 1: Conventional Biological Nutrient Removal (BNR)	\$15,500,000 to \$16,700,000
Alternative 2: Membrane Bioreactor (MBR)	\$15,000,000 to \$16,100,000
Alternative 3: Integrated Fixed Film Activated Sludge (IFAS)	\$15,800,000 to \$16,800,000
Alternative 4: Pump to Sanford	\$14,750,000 to \$16,000,000

- (1) Alternative 1 to 3 preliminary cost estimates assume on-site EQ tanks location.

