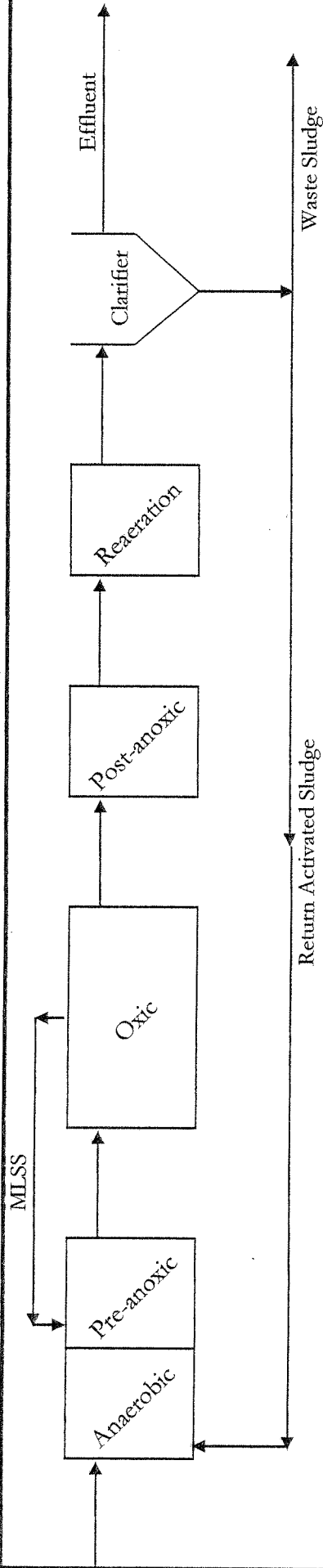


ATTACHMENT E

PILOT SYSTEM PROCESS SCHEMATIC

5-STAGE IFAS PROCESS



- Stage 1 Anaerobic Stage**
 Mix only, no air, D.O. < 0.5 mg/L
 Activated sludge from the clarifier mixes with influent wastewater.
 Produces necessary organic stress conditions for biological phosphorus removal in following aerobic stages.
 Organic stress occurs in absence of DO and Nitrate.
- Stage 2 Pre-anoxic stage (De-nitrification)**
 Mix only, no air, D.O. < 0.4 mg/L
 Nitrate rich MLSS from Stage 3 mixes with flow from fermentation stage.
 Nitrate reduced to gaseous nitrogen and released to atmosphere.
 Luxury phosphorus uptake by organisms.
- Stage 3 Oxic stage (Nitrification)**
 Air only with media, D.O. > 4.0 mg/L
 Oxygen oxidizes BOD and converts ammonia to nitrate.
- Stage 4 Post-anoxic stage (De-nitrification)**
 Mix only, no air, D.O. < 0.4 mg/L
 Nitrate reduced to gaseous nitrogen and released to atmosphere.
 Results in low effluent nitrogen concentration.
 Alternate carbon source added for necessary food supply.
- Stage 5 Reaeration stage (Nitrification)**
 Air only, D.O. > 2.0 mg/L
 Creates and maintains aerobic condition for final clarification.
 Prevents sludge from becoming septic and releasing phosphorus in the clarifier.
 Additional oxygen ensures that sludge remains aerobic, retaining phosphorus for use in Stage 1.

BNR CAPABILITIES	
Nitrogen Removal	Excellent
Phosphorus Removal	Excellent