

## ANAMMOX FOR SIDE STREAM TREATMENT OF EFFLUENT

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### Rationale:

- Dewatering of biosolids at Tres Rios WWTP produces 0.5 mg/day of effluent with 1000 ppm NH<sub>4</sub>
- Effluent re-enters head works and extra O<sub>2</sub> needed for nitrification
- Adds significantly to energy costs (30% Total energy costs)
- Need to remove the NH<sub>4</sub> from the effluent prior to re-entry to headworks

### Objectives:

- Use Anammox side stream treatment to remove NH<sub>4</sub> from effluent with significant cost savings
- Progress from lab scale to pilot scale to full scale treatment
- Utilize next generation sequencing to monitor microbial consortium (**WET Center focus**)
- Evaluate incidence of viruses in the water obtained from biosolids and the influence of anammox on virus inactivation (**WET Center focus**)

### Approach:

- Utilize Anammox bacteria provided by UA faculty member Professor Jim Field
- Collaborate with Dr. Field and Pima County Wastewater to establish pilot scale treatment at WEST
- Correlate next generation sequencing data with efficacy of NH<sub>4</sub> removal
- Analyze effluent water before and after anammox treatment for viruses

### Key Deliverables:

- Proof-of-concept for NH<sub>4</sub> removal
- Full-scale, real-world side stream treatment
- Process control via next generation sequencing
- Insight into the influence of anammox on virus inactivation
- \$0.5m savings per year for Pima County

### Project Status:

Ongoing 2018