COUNTY OF SUFFOLK

STEVEN BELLONE
SUFFOLK COUNTY EXECUTIVE

SUFFOLK COUNTY
DEPARTMENT OF HEALTH SERVICES
DIVISION OF ENVIRONMENTAL QUALITY

DRAFT 2019 REPORT ON THE PERFORMANCE OF INNOVATIVE AND ALTERNATIVE ONSITE WASTEWATER TREATMENT SYSTEMS

Prepared: March 2020

Gregson H. Pigott, MD, MPH
Commissioner

Walter Dawydiak, PE, JD
Director
Division of Environmental Quality

Prepared By: Justin Jobin, Environmental Projects Coordinator
Julia Priolo, Senior Environmental Analyst

Tables of Contents Page

PREFACE

On March 17, 2020, the Suffolk County Legislature unanimously approved the State Environmental Quality Review Act (SEQRA) Statement of Findings for the Final Generic Environmental Impact Statement for the Suffolk County Subwatersheds Wastewater Plan (SWP). The Statement of Findings certifies that the requirements of SEQRA have been met and that the SWP was developed from among reasonable alternatives. Importantly, the Statement of Findings recognize Nitrogen discharge from onsite wastewater sources represents the single greatest factor that can be managed to restore and protect our waters from the impacts of nutrient enrichment-related water quality degradation."

The SWP is the product of three years of intensive research, documentation, modeling, and evaluation of all of Suffolk County's water resources, involving and supported by government agencies on all levels, academia, and expert work groups. Primary conclusions and recommendations in the Plan include:

- The use of Innovative and Alternative Onsite Wastewater Treatment Systems (I/A OWTS) represents the most cost-effective approach for reducing nitrogen from wastewater sources in most areas of Suffolk County.

- Wastewater management upgrades alone could achieve one of the primary load reduction goal targets in greater than 75 percent of Suffolk County's coastal estuaries.

- An initial 30 year roadmap of policy recommendations that describe how, when, and where install wastewater upgrades for the estimated 380,000 onsite wastewater disposal systems in Suffolk County. This roadmap can support the transition from the current County-led voluntary I/A OWTS programs and locally driven Town/Village programs, to an integrated and methodical countywide effort; and,

- Development of an Adaptive Management and Long-Term Monitoring Plan, including provisions for an annual project review and report.

The strategy described in Suffolk County's SWP was developed in partnership with the Long Island Nitrogen Action Plan (LINAP) and in collaboration with numerous project partners, stakeholders, and technical experts. The conclusions and recommendations of the SWP, combined with the existing I/A OWTS programs described in this annual report, establish a strong foundation for the planned evolution away from reliance on cesspools and septic systems in Suffolk County.

The preparation of the 2019 annual technology review for Innovative and Alternative Onsite Wastewater Treatment Systems (I/A OWTS) was prepared during the COVID-19 Pandemic of 2020. During the NY PAUSE stay-at-home period, the Suffolk County Department of Health Services (SCDHS) witnessed an increase in Septic Improvement Program (SIP) grant applications due to failing systems. Fully 68% of SIP grant applications received during April 2020 indicated a system failure as compared to only 20% in April of 2019. . Out of the 50 failures reported to SIP in April of 2020, all were identified as being cesspools or unknown systems that were installed prior to 1973. The Septic Haulers Information Portal (SHIP) also saw a 56% increase in reported failures in March and April of 2020 compared to January and February

of 2020. These statistics are an indication that cesspools were simply not designed to handle full-time stay at home use, which SCDHS speculates lead to these failures during this time. Proper functioning sanitary systems are necessary for the health and safety of the occupants of those properties, and SCDHS will expand on the possible impacts of the Pandemic on Suffolk County's sanitary system in the 2020 Annual Report.

SCDHS notes that 2019 represented the best year on record with regards to the performance of Provisionally Approved I/A OWTS in Suffolk County. All of the Provisionally Sampled systems averaged 15 mg/L TN in 2019, bringing the cumulative average (all bi-monthly sampling date collected from 2016 – 2019) down to 16 mg/L TN. This is notably less than the SCDHS standard of 19 mg/L, which is an impressive accomplishment when compared to performance in proximate jurisdictions that do not have a management program as robust and effective as Suffolk County's. Although performance numbers are trending downward as additional systems are installed and more data is collected, SCDHS does not recommend changing the performance standard for total nitrogen at this time. As technologies begin to approach General Use Approval in 2021, however, SCDHS anticipates having a clearer picture as to whether or not to recommend a change to the performance standard in 2022 if the data warrants a change. Questions regarding this report should be directed to: Justin.Jobin@suffolkcountyny.gov.

I. Executive Summary

The Suffolk County Department of Health Services (SCDHS) has prepared this annual report in accordance with the requirements of Article 19 of the Suffolk County Sanitary Code (Article 19). The report summarizes the performance of innovative and alternative onsite wastewater treatment systems (I/A OWTS) installed in Suffolk County as well as neighboring jurisdictions and examines emerging technologies that could potentially become available for use in Suffolk County. This report also provides recommendations for future research, development and modifications to Suffolk County's performance standard provided technology treatment capabilities warrant such adjustments.

This report was prepared in the spring of 2020 using the complete dataset from 2019. The 2020 annual report will be prepared in the spring of 2021.

Performance Standard for Total Nitrogen

Suffolk County currently requires I/A OWTS to be capable of reducing effluent total nitrogen (TN) to 19 milligrams per liter (mg/l) or less as outlined in the SCDHS "Standards Promulgated Under Article 19 for the Approval and Management of Innovative and Alternative Onsite Wastewater Treatment Systems" (Article 19 Standards). The performance standard of 19 mg/L represents the most stringent requirement for TN that does not allow for increase in density out of all the proximate jurisdictions evaluated by SCDHS.

I/A OWTS Demonstration Programs in Suffolk County

Suffolk County continues to examine, test, and approve new nitrogen removing septic systems (I/A OWTS) technologies through its DEC-funded Septic/Cesspool Upgrade Program Enterprise II (grant (SCUPE II). In 2014, the County began the first of two (2) I/A OWTS Demonstration Programs. Phase I consisted of four manufacturers which donated six technologies donated. Phase II, initiated in 2017, consisted of six manufacturers which donated eight technologies (seven of these technologies have been installed as of 12/31/2019). The County sampled and evaluated these systems at thirty-five (35) private residences throughout Suffolk County. Eight (8) of these technologies have been approved for provisional use in Suffolk County as of 12/31/2019. In addition, the County is working with the NYS Center for Clean Water Technology (CCWT) to test and monitor experimental technologies including 2 constructed wetland systems and 7 nitrogen reducing biofilters (NRB's).

Technologies that maintained an average of 19 mg/l TN or better for 75% of all the systems tested for a minimum of six (6) months under the demonstration program are granted provisional approval. Six technologies have been granted provisional approval. The results of the demonstration systems are summarized in **Table 1** and the results of the Provisional Use Sampling is summarized in **Table 2. Figures 1 and 2** display the provisional use sampling results as cumulative and 12-month rolling average**.** The results of all bi-monthly manufacturer samples taken throughout the provisional use

phase are utilized to determine approval or disapproval for the technology to enter the general use phase. The results of the 12-month rolling average during provisional use phase are utilized to determine if the technology is consistently meeting the performance requirements set forth in the Sanitary Code. In addition, the Department takes samples of systems within the provisional use phase for quality assurance and quality control. Table 2 includes the results of these QA/QC samples for technologies under provisional use approval.

Table 1: Septic Demo System Performance in Suffolk County as of 12/31/2019
Data Represents a 6-Month Rolling Average During Demonstration Phase

Technology	AVG TN (mg/L)*	Provisional Approval
Hydro-Action AN Series	11.6 mg/L	Approved in September 2016
Norweco – Singulair TNT	18.3 mg/L	Approved in October 2016
Orenco Advantex – RT	18.8 mg/L	Approved in March 2017
Norweco – Hydro-Kinetic	17.4 mg/L	Approved in April 2017
Fuji Clean System	16.6 mg/L	Approved in January 2018
SeptiTech STAAR	13.6 mg/L	Approved in July 2018
Orenco AX Series	16.7 mg/L	Approved in September 2019
Ecoflo Coco Filter + Denite	18.8 mg/L	Approved in September 2019
Amphidrome	15.1 mg/L	These technologies are undergoing further evaluation and the Department Cannot Issue Provisional Approval at this Time
BioMicrobics Bio Barrier	14.65 mg/L	
Pugo	16.8 mg/L	
Ecoflo Coco Filter	32.6 mg/L	These technologies did not meet SCDHS performance requirements during the demonstration period and cannot be approved at this time.
BUSSE MBR	58.6 mg/L	
Waterloo Biofilter	57.3 mg/L	
Waterloo Biofilter + Denite	53.4 mg/L	

*19 mg/L is the Standard for average effluent TN for I/A OWTS in Suffolk County

Table 2: Sample Results of Provisional Use Technologies as of 12/31/2019

Technology	Avg.TN (mg/L) 12-Month Rolling Avg. (MFR-only)	# of Samples	Avg.TN (mg/L) Provisional Phase to date (MFR-only)	# of Samples	Avg.TN (mg/L) Provisional Phase to date (MFR and County)	# of Samples
Hydro-Action AN Series	**9.43**	86	**10.5**	142	**12.2**	212
Orenco AX-20	**9.5**	24	**9.5**	24	**9.7**	25
Fuji Clean System	**11.2**	104	**11.4**	134	**12.1**	178
SeptiTech STAAR	**14.5**	19	**14.1**	33	**16.1**	31
Norweco – Hydro-Kinetic	**18.2**	30	**19.7**	68	**20.6**	96
EcoFlo Coco Filter + Denite	**19.0**	4	**19.0**	4	**17.4**	5
Norweco – Singulair TNT	**21.2**	69	**23.0**	117	**27.2**	165
Orenco Advantex – RT	**26.6**	44	**26.8**	54	**26.7**	70

- 19 mg/L is the standard for average effluent TN for I/A OWTS in Suffolk County. Provisionally-approved technologies with a 12-month rolling average above 19 mg/L are shown in red.
- The 12-month rolling average of all provisional technologies as of 12/31/2019 is 15.0 mg/L. The cumulative average of all provisional technologies as of 12/31/2019 is 16.0 mg/L.
- As per the Standards, only manufacturer samples are used to determine if a technology is meeting the Department's performance requirements. County samples are utilized for quality assurance/quality control. See appendices for all sample results.
- The cumulative average of a technology's TN results is utilized to determine approval of use in Suffolk County. The 12-month rolling average is utilized to determine when major and minor violations are issued.

Figure 1: Cumulative Bi-Monthly Sampling Results for Provisionally Approved I/A OWTS

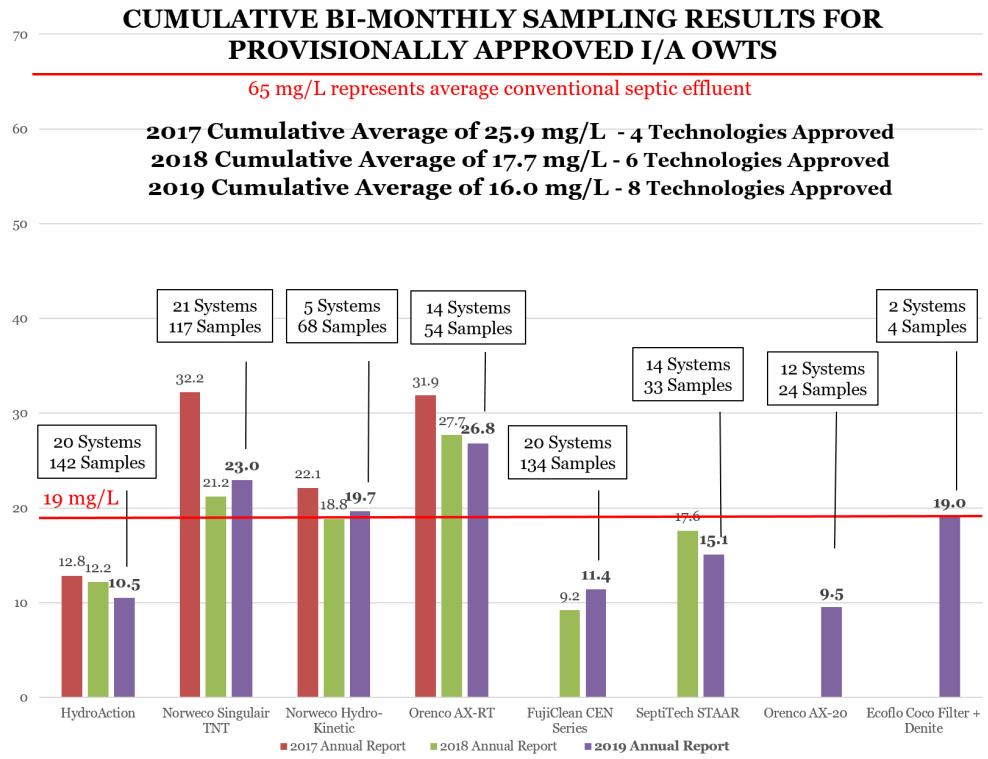
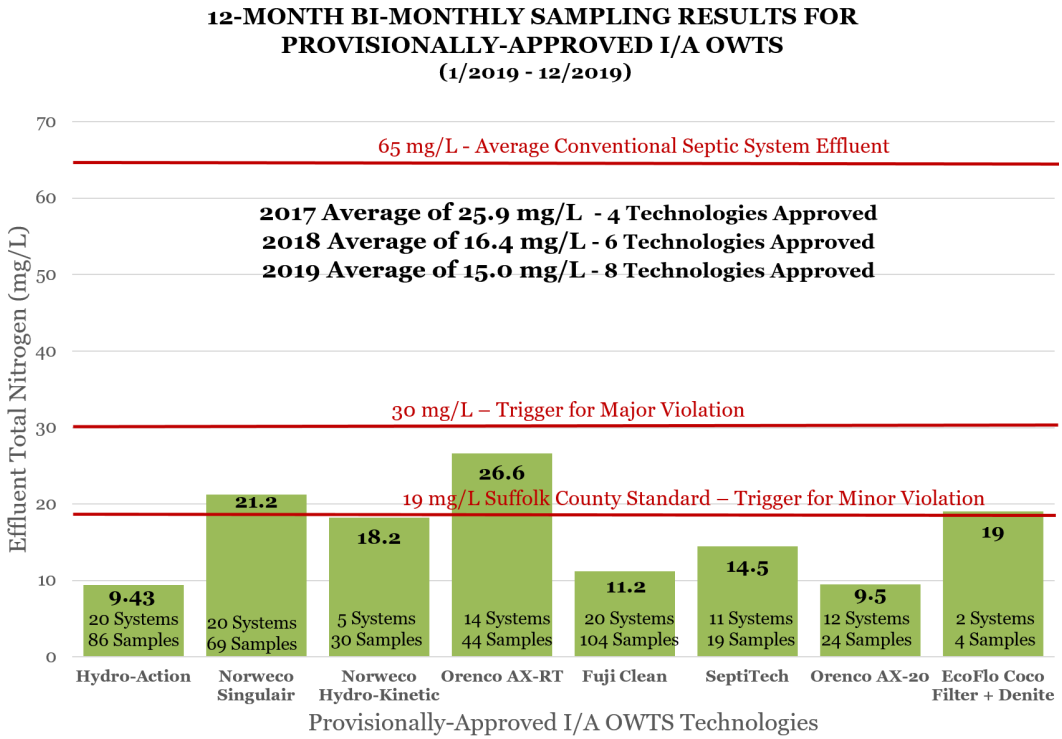


Figure 2: 12-Month Bi-Monthly Sampling Results for Provisionally Approved I/A OWTS



I/A OWTS Performance in Proximate Jurisdictions

Prior to developing an I/A OWTS implementation program, Suffolk County embarked on a four (4) state tour to evaluate I/A OWTS programs in neighboring jurisdictions. This tour included visits to the New Jersey Pinelands Commission, Maryland Department of Environment, Rhode Island's New England Onsite Wastewater Training Program, and Massachusetts Barnstable County Department of Health and Environment. Lessons learned from these jurisdictions were instrumental in guiding the County in the development of a robust I/A OWTS management program and the County has continued to benefit from consultation with these jurisdictions throughout the Demonstration Program and I/A OWTS program development. **Table 3** and **Table 4** depict the I/A OWTS technologies approved for use in these jurisdictions along with performance data for 2018 compared to performance during their NSF 245 or EPA ETV certification processes. Section XII of this report details I/A OWTS approvals and performance in other jurisdictions.

Table 3: I/A OWTS Approved in Proximate Jurisdictions

Technology	Jurisdiction				
	Suffolk	MA	RI	MD	NJ
Advantex AX Series	🔵	🔴	●	●	
Advantex AX-RT Series	🔴	🔴	🔴	●	
Amphidrome	🔵	🔴	●		●
AquaKlear				●	
BioBarrier MBR	🔵	🔵	🔴		●
Bioclere		🔴	●		●
Busse	🔵				●
Ecoflo Coco	🔵			🔴	
FAST		🔴	●		●
Fuji Clean	🔴			●	
Hoot ANR					●
Hoot BNR	🔵			●	
Hydro-Action AN Series	🔴			●	
Hydro-Kinetic	🔴		🔴	🔴	
MicroFAST		●		🔴	
Mod FAST		🔴			
Nitrex	🔵	🔴	●	🔴	
Nitrex Plus		🔵			
OMNI Recirculating Sand Filter		🔵			
OMNI-Cycle System		🔵			
Recirculating Sand Filter		●	●		
RetroFAST				●	
RID Phosphorus Removal System		🔵			
RUCK		●			
RUCK CFT		🔵			
SeptiTech	🔴	🔴	●	●	●
Singulair DN		🔴	●		
Singulair TNT	🔴	🔴	🔴	●	
Waterloo Biofilter	🔵	🔴			
White Knight			●		

●	General Use
🔴	Provisional Use/Undergoing Field Verification
🔵	Piloting Use

Table 4: 2019 Comparison of I/A OWTS Results

Technology	NSF 245 or ETV Certification	**Suffolk County (Mean)**	Maryland (Mean)	Barnstable County (Mean)	New Jersey Pinelands (Grand Median)	Rhode Island (Median)
Orenco Advantex AX-20	NSF 24 mg/l	**9.5 mg/L ****	17.0 mg/l	21.1 mg/l	No Data	14.9 mg/L
Orenco Advantex RT		**26.8 mg/L****	14.5 mg/l		No Data	No Data
HydroAction	NSF 15 mg/L	**10.5 mg/L ****	20.3 mg/l	No Data	No Data	No Data
Norweco Singulair	NSF 12 mg/L	**23.0 mg/L ****	27.0 mg/l	32.4 mg/L	No Data	No Data
Norweco Hydro-Kinetic	NSF 7.9 mg/L	**19.7 mg/L ****	No Data	No Data	No Data	No Data
Ecoflo Coco Filter + Denite	No Data	**19.0 mg/L ****	No Data	No Data	No Data	No Data
Fuji Clean CEN Series	NSF 10 mg/L	**11.4 mg/L ****	14.1 mg/L	No Data	No Data	No Data
BioMicrobics SeptiTech	NSF 17 mg/L	**14.1 mg/L ****	20.0 mg/l	22.7 mg/l	11.6 mg/l	11.3 mg/L
BUSSE MF	NSF 16 mg/l	**58.6 mg/L ***	No Data	No Data	No Data	No Data
Amphidrome	ETV 10.81 mg/L	**15.1 mg/L ***	No Data	19.8 mg/l	11.9 mg/l	No Data
BioMicrobics BioBarrier	NSF 9 mg/L	**14.6 mg/L ***	No Data	No Data	29.3 mg/l	No Data
BioMicrobics FAST	NSF 17 mg/L	**No Data**	25.4 mg/l	32.4 mg/l	18.2 mg/l	17.1 mg/L
Ecoflo Coco Filter	NSF 18.6 mg/L	**47 mg/L ***	No Data	No Data	No Data	No Data
Waterloo Biofilter	ETV 14 mg/L	**57.3 mg/L ***	No Data	43.0 mg/l	No Data	No Data
Bioclere	No Data	**No Data**	No Data	22.9 mg/l	11.2 mg/l	No Data
Pugo	NSF 17 mg/L	**16.8 mg/L ***	No Data	No Data	No Data	No Data
AquaKlear	No Data	**No Data**	27.5 mg/l	No Data	No Data	No Data
Hoot BNR	No Data	**No Data**	21.0 mg/l	No Data	No Data	No Data
Hoot ANR	NSF 5.6 mg/L	**No Data**	No Data	25.1 mg/L	No Data	No Data

Yellow highlight represents technologies approved for Provisional Use in Suffolk County as of 12/31/2019

* represents data collected in the Suffolk County Septic Demonstration Program as of 12/31/2019

** represents data collected during Suffolk County Provisional Use Approval, as of 12/31/2019

Maryland data obtained from https://mde.maryland.gov/programs/Water/BayRestorationFund/OnsiteDisposalSystems/Documents/BAT_CLASS_I.pdf last dated 3/4/20

Barnstable County Data is 2019 average obtained from Barnstable County Department of Health and Environment

New Jersey Data obtained from the New Jersey Pinelands Commission Alternate Design Treatment Systems Pilot Program 11/5/2019 Implementation Report

Rhode Island Data obtained from "Evaluation of Nitrogen Concentration in Final Effluent of Advanced Nitrogen-Removal Onsite Wastewater Treatment Systems (OWTS)" Brittany V. Lancellotti & George W. Loomis & Kevin P. Hoyt & Edward Avizinis & Jose A. Amador

The cumulative average of each I/A OWTS technology's TN results is utilized for approval of use in Suffolk County. SCDHS believes that using an average is the best method of evaluating a technology because it is a true indication of how well a technology will protect the environment. Use of median data tends to artificially lower TN results and is not a true indicator of mass loading. Suffolk County and the State of Maryland appear to be the only jurisdictions in close proximity that use average TN data to evaluate I/A OWTS performance.

Experimental and Emerging Technologies

New York State recently established the NYS Center for Clean Water Technology (CCWT) at Stony Brook University, whose primary objective is to develop and commercialize wastewater treatment systems for individual onsite (household) use that are both more affordable and highly efficient at removing nitrogen and other contaminants.

The CCWT has identified Nitrogen Reducing Biofilters (NRBs) as a system showing the capability to meeting this goal. NRBs consist of a septic tank with a pump pressure dosing effluent into a technology that uses layers of sand and sawdust to treat wastewater. In 2016, CCWT installed three (3) different configurations of the NRB at the Massachusetts Alternative Septic System Test Center (MASSTC).In 2017, CCWT worked with Suffolk County to install 3 NRB's on residential sites located at County Park properties as experimental I/A OWTS units. By the end of 2019, seven (7) NRBs were installed and two (2) more were pending installation. The SCDHS sample results for the NRB's are outlined in **Table 5**. See appendix iii for all NRB sample results from 2019. In addition, CCWT is performing its own research and publications on NRB's.

Table 5: SCDHS 2019 NRB Sample Results

NRB Technology	# of Systems as of 12/31/2019	# of Samples as of 12/31/2019	AVG TN mg/L
Unlined NRB (grab samples)	3 (1 has no occupants)	27	10.7 mg/L
Lined NRB	3	19	11.4 mg/L
Box NRB	1 (2 pending)	5	4.0 mg/L

CCWT and SCDHS have also had discussions with Dr. Daniel Smith of AET Tech LLC regarding the potential for development of emerging technologies that utilize zeolite to retain ammonium for nitrogen removal. This technology differs from other I/A OWTS in that it does not utilize oxygen or the nitrification/denitrification bioreactions in the treatment process.

2019 Annual Report Highlights, Recommendations and Next Steps

Based on the information contained in this report, the Department makes the following recommendations and conclusions:

- As of 12/31/2019, the SCDHS Office of Wastewater Management had issued 1,195 permits to install I/A OWTS. During 2019, 516 IA systems were installed, 216 of which were financed in part through the Septic Improvement Program.

- Two (2) new technologies received Provisional Use Approval in 2019: The Orenco AX-20 and the Ecoflo Coco Filter with Denite Polishing unit, which is manufactured by PremierTech Aqua, based in Montreal.

- For 2019, the average total nitrogen of all bi-monthly Provisional technologies averaged 15 mg/L and the cumulative average from 2016 through 2019 of all Provisional technologies averaged 16 mg/L of total nitrogen. These numbers highlight the success of the I/A OWTS Demonstration Program, which was an effective method to spark the use of innovative and alternative technologies in Suffolk County.

- In addition, 2019 represented the first year where Provisional Samples in excess of the first twenty (20) year-round, seasonal properties, and commercial systems had to complete annual sampling.
    - HydroAction annual sampling averaged 11.1 mg/L of Total Nitrogen and included 48 systems.
    - FujiClean annual sampling averaged 10.1 mg/L of Total Nitrogen and included 40 systems.
    - SeptiTech, Orenco (AX-20), & EcoFlo did not have installs that triggered a requirement for annual sampling in 2020, but all three technologies were in compliance with bi-monthly sampling requirements.
    - Norweco did not provide the required annual sampling in 2019 for the Singulair TNT and HydroKinectic systems. Orenco did not provide the required annual sampling in 2019 for the AX-RT systems. Reminder letters were sent to both manufacturers and both will face enforcement actions in 2020 which could result in the suspension of Provisional Use Approval.
- The demonstration program allowed the assessment of system design, operation & maintenance, installation issues, and the overall ability of each technology to meet TN reduction objectives in Suffolk County. Though all technologies participating in the demonstration program have certification for nitrogen reductions (through NSF-245 or EPA's ETV testing), not all technologies have proved capable of reducing TN to 19 mg/L or less in Suffolk County. SCDHS recommends that these manufacturers be notified in 2020 that SCDHS is no longer going to sample these systems and is unable to issue Provisional Use Approval due to the apparent inability of the technologies to meet the County's Performance Standards for TN.

- Suffolk County's performance standard of 19 mg/L represents the most stringent requirement enacted by a government agency in regards to TN that does not also allow for increase in density.

- Although SCDHS does not recommend that the 19 mg/L TN standard be changed at this time, it is important to note that the 2019 cumulative average for total nitrogen from Provisionally Approved I/A OWTS was 16 mg/L. As SCDHS continues to gather additional data on these systems as they move through the Provisional Use Approval process, the Department may be in a position in 2021 to recommend a more stringent performance standard if the data supports that.

- New emerging technologies such as the NRB's piloted by SBU's CCWT, Constructed Wetlands, and the technologies currently under development by Dr. Daniel Smith of AET Tech LLC, all represent promising technologies being developed, piloted, and studied locally in Suffolk County.

SCDHS will continue to work aggressively and cooperatively with CCWT to pursue, evaluate, and install these technologies in Suffolk County. Additional NRB installations are planned for 2020. CCWT Installations as of 12/31/2019:

- 3 Lined NRB –**11.4 mg/L** average TN for 2019 (1 out of service)
- 3 Unlined NRB – **11.5 mg/L** average TN for 2019
- 1 Box NRB - **4.0 mg/L** average TN for 2019

- With the unanimous adoption of the SEQRA Statement of Findings for the Subwatersheds Wastewater Plan in March of 2020, Suffolk County will begin to advance policy recommendations that cannot be executed without the establishment of a stable and recurring revenue source to offset the cost of IA/OWTS to homeowners. Specific policy recommendations currently under development include revising the requirements for Appendix A Modified Sewage Disposal Systems to accommodate reduced setbacks (under certain settings) and to increase the allowable flow to 30,000 gallons per day; and, revising the Suffolk County Sanitary Code to required I/A OWTS for all new construction and building additions requiring upgrade of the existing sanitary system. Suffolk County will continue to work closely with the Article 6 Work Group on the preparation of the proposed updates of the sanitary and construction codes.

II. Purpose of Annual Evaluation

Pursuant to Article 19 of the Suffolk County Sanitary Code (Article 19), the Suffolk County Department of Health Services (SCDHS) serves as the Responsible Management Entity (RME) to facilitate development and use of Innovative and Alternative Onsite Wastewater Treatment Systems (I/A OWTS) as an environmental conservation and public health protection measure. In compliance with Section 760-1907 of Article 19, SCDHS has prepared this annual report, which outlines the progress of the I/A OWTS program within Suffolk County, and considers potential opportunities for improvement. The purpose of the annual report is to regularly review and recommend research on I/A OWTS to increase the effectiveness of the County's program. This report was prepared in 2020 using the complete dataset from 2019. This report will serve as a template for the 2020 annual report, which will be prepared in the spring of 2021.

The report provides an evaluation of I/A OWTS currently installed in Suffolk County, and an evaluation of the use and performance of I/A OWTS in similar jurisdictions. The report utilizes data from the National Sanitation Foundation/American National Standards Institute ("NSF/ANSI"), the U.S. Environmental Protection Agency's Environmental Technology Verification ("ETV") Program, and other jurisdictions, including Massachusetts, Rhode Island, New Jersey and Maryland. A primary goal of this report is to evaluate the performance capabilities of I/A OWTS and make recommendations to modify Suffolk County's performance standard if warranted.

III. Reclaim Our Water Overview

Water is the single most significant resource for which Suffolk County bears responsibility. In 2014 Suffolk County Executive Steven Bellone announced the *Reclaim Our Water* initiative, identifying

water quality as his administration's highest priority. Since then, the County has participated in a four -state tour of Innovative and Alternative Onsite Wastewater Treatment Systems (I/A OWTS), issued 2015's Comprehensive Water Resources Management Plan, initiated the Subwatersheds Wastewater Plan, piloted thirteen (13) I/A OWTS technologies on forty (40) residential properties, adopted Article 19 of the sanitary code, and also amended the Residential Construction Standards for the first time since 1973. These efforts would not have been possible without the assistance of many stakeholders, most notably, New York State Department of Environmental Conservation (NYSDEC) and the Long Island Nitrogen Action Plan (LINAP). The Septic / Cesspool Upgrade Program Enterprise (SCUPE) is a DEC grant that has enabled Suffolk County to embark on these aggressive measures to battle nitrogen pollution.

The lack of wastewater treatment infrastructure in most of Suffolk County has been an acknowledged public health concern for more than 50 years. Hundreds of thousands of parcels in Suffolk County are currently served by polluting cesspools and septic systems, but will never connect to a sewer system. Reversing degradation of water quality will depend on replacement of existing systems with new, individual Innovative and Alternative Onsite Wastewater Treatment Systems (I/A OWTS).

The following are key program components of the *Reclaim Our Water* initiative:

Liquid Waste Licensing

Suffolk County began licensing of the septic industry with eleven specialized endorsements under the "liquid waste umbrella" and required training, certification and continuing education for I/A OWTS installers. All installers must hold a current Liquid Waste License pursuant to Chapter 563 Article VII (Septic Industry Businesses) with an Endorsement as an Innovative and Alternative Treatment System Installer through the Suffolk County Department of Labor, Licensing and Consumer Affairs. The Department of Labor, Licensing, and Consumer Affairs maintains a list of liquid waste license holders. Twenty-three (23) training classes and stakeholders meetings were offered in 2019, with a total of 602 participants.

Long Island Nitrogen Action Plan ("LINAP")

The New York State Department of Environmental Conservation ("NYSDEC") and Long Island Regional Planning Council (LIRPC) have partnered with Suffolk County, Nassau County, and numerous other stakeholders to advance the LINAP initiative and to help improve wastewater treatment within Suffolk County to better protect water resources. The NYSDEC has provided grant funding for the Suffolk County Septic/Cesspool Upgrade Program Enterprise ("SCUPE") for the evaluation of I/A OWTS, development of an I/A OWTS program, and to initiate the Subwatersheds Wastewater Plan to prioritize areas in need of improved wastewater treatment. The SCUPE funding has enabled the County to hire start-up staff for the I/A OWTS Program and a Responsible Management Entity. It has also provided funding for the Septic Improvement Program. Overall, these programs are early actions in the LINAP, a multiyear initiative to reduce nitrogen in Long Island's surface and ground waters, in which Suffolk County participates as a partner.

Suffolk County Sanitary Code and Standards for Construction

Suffolk County Department of Health Services has prepared and implemented Article 19 Standards to regulate I/A OWTS and has been updating the Standards and Sanitary Code in order to keep the County's regulations up to date with the progress of the I/A OWTS program and technology advances. The Standards memorialize that the Department serves as the designated Responsible Management Entity to administer and conduct a comprehensive set of activities and has the legal authority and technical capacity to ensure the long term operation, maintenance, and management of all I/A OWTS in Suffolk County. In 2017, the residential standards were revised to allow for best-fit retrofits, procedures for conducting percolation tests, and updated to allow gravel-less absorption trenches and the addition of Pressurized Shallow Drainfields (PSD's) following I/A OWTS. Future revisions to the Construction Standards will include specifications for polishing units to further reduce nitrogen from I/A OWTS effluent. SCDHS convenes stakeholders the "Article 6 Work Group" several times a year to discuss the status of the Reclaim Our Water program and to receive input on potential standard changes. SCDHS held four (4) Article 6 Work Group Stakeholders meetings and two (2) Article 6 Sub Workgroup Meetings on Affordable Housing and Hamlet Density with the Use of TDRs in 2019.

Suffolk County Septic Demonstration Programs

Demonstration programs give manufacturers of I/A OWTS the opportunity to showcase and demonstrate single family residential onsite wastewater treatment system technologies in Suffolk County—at no cost to the County and participating homeowners — in an effort to prove the viability of these systems in local conditions and potentially, to expedite provisional approval of those technologies. There have been two demonstration programs in Suffolk County, one beginning in 2014 and the other in 2016. Technologies participating in the demonstration program were offered a streamlined path to Provisional Approval. If 75% of the systems of any technology in the demonstration program maintained a dataset of 19 mg/L or better for a minimum of six months, the technology was granted Provisional Use Approval.

Suffolk County Subwatersheds Wastewater Plan ("SWP")

The SWP is the science-based bridge that will serve to support policy decisions and provide a recommended process and timetable for wastewater upgrades. The SWP is based on a series of models, data evaluations and cost-benefit analyses, and establishes a framework for holistic performance management of wastewater to mitigate impacts to ground and surface waters. The SWP sets priority areas, nitrogen reduction goals, and describes where, when, and what methods should be implemented to meet nitrogen reduction goals. The Draft SWP report was released in 2019, with the Final SWP and SEQRA process completed in 2020. The County is now beginning to advance the recommendations provided in the SWP. SWP recommendations that may be executed in 2020 include, but are not be limited to:

- Revisions to the requirements for Appendix A Modified Subsurface Disposal Systems to allow flows up to 30,000 gallons per day and accommodate reduced setbacks under certain site conditions;
- Requiring I/A OWTS for new construction or major building additions;
- Evaluating existing Sewage Treatment Plant design flow rates; and,
- Preparation of an Adaptive Management and Long-Term Monitoring Plan

Septic Improvement Program ("SIP") & New York State Septic System Replacement Program (SSRP)

The Suffolk County Septic Improvement Program (SIP) launched on July 3, 2017 at www.ReclaimOurWater.info. The Program provides homeowners looking to install new nitrogen reducing septic systems (known as I/A OWTS) with county grants up to $20,000 to offset the increased costs of these new technologies. In addition, beginning in January 2019, homeowners can also qualify for a New York State Septic System Replacement Program (SSRP) grants of up to $10,000 for a total of up to $30,000 in grants. The County and State funding available can support the issuance of approximately 80 grants per month. Applications are accepted on a rolling basis, and priority is given to high and medium density residential parcels located within the 0-25 year groundwater travel time or within 1,000 feet of enclosed waterbodies. Post-installation landscaping and irrigation restoration costs are the responsibility of the property owner. Through the end of 2019, a total of 746 SIP grant certifications were issued to homeowners to fund septic system upgrades to I/A OWTS. A summary of the Septic Improvement Program can be found in the 2019 SIP Annual Report, annexed here as Attachment V.

Suffolk County Environmental Health Information Management System ("EHIMS")

In the fall of 2019, Suffolk County began a phased launch of its Environmental Health Information Management System (EHIMS). In its current form, EHIMS provides a centralized, GIS linked database to support permitting and oversight of Innovative/Alternative Onsite Wastewater Treatment Systems installations and maintenance countywide. The system greatly improves communication between County offices through a shared database, and shared workflows, that notifies different groups when there is a new application or task that requires their attention. Additional phases of EHIMS, which should become operational in 2020, will support public interface and enforcement functions. EHIMS will allow citizens to submit applications, upload documents, make payments, and get real-time status updates through an online portal. This will improve communication between the County and licensed professionals and greatly enhance operating efficiency, as the public portal will facilitate the sharing of submissions and revisions electronically.

Septic Haulers Information Portal (SHIP)

Changes to Article 6 of the Suffolk County Sanitary Code approved in December of 2017, prohibit the in-kind replacement of cesspools, and require that all replacements or retrofits of existing sewage disposal systems consist of a code compliant system, a conventional septic system at a minimum. Permits for replacements or retrofits to existing sewage disposal systems that do not require a formal permit from SCDHS must be registered through the Septic Haulers Information Portal (SHIP), which is a streamlined process for contractor to submit documentation and receive an OK to Proceed from the Department within 24-48 hours. In addition, property owners with failed cesspools who wish to install an I/A OWTS can do so utilizing a streamlined process through SHIP, provided the installation does not require a formal permit from SCDHS. Eligible homeowners may take advantage of State and County grants to upgrade their failed cesspools with an I/A OWTS. In many cases, the cost is equivalent or less than the cost of a conventional septic system. As of December 31, 2019 a total of 751 replacement or retrofits have been reported through SHIP. Approximately 100 of these have been retrofits to IA OWTS.

IV. I/A OWTS Approval Process in Suffolk County

All I/A OWTS technologies must be approved by the Department for use in Suffolk County as either "Experimental", "Piloting", "Provisional", or as a "General Use" system in order to be permitted for installation as an onsite wastewater treatment system in accordance with the Article 19 Standards. During each phase of approval, the I/A OWTS technology must undergo sampling as stated in the Article 19 Standards. The minimum sampling requirements and resulting combined TN average outlined in Tables 6 and 7, and defined in the Article 19 Standard, are required prior to a system receiving approval to move from one phase of approval to the next and eventually to the final approval phase known as "General Use." Refer to table 1 for the amount of I/A OWTS SCDHS wastewater permit approvals issued and installations by technology type as of 12/31/2019. **Tables 6 and 7** below summarize the approval process for both residential and commercial systems.

Table 6: Summary Approval Chart for Residential Systems

Approval Phase	# of Systems	Sampling Frequency	Performance Requirement
Experimental	3 – 5 Year-Round	Monthly Sampling 12 months rolling average	The total dataset of 75% of the systems must have a combined average of 19 mg/L or less TN
Piloting*	8 – 12 Year-Round	Monthly Sampling 12 months rolling average	The total dataset of 75% of the systems must have a combined average of 19 mg/L or less TN
Septic Demonstration Systems*	1 – 5 Year-round	Monthly Composite Samples 6 month rolling average for streamlined approval.	The dataset of 75% of the systems must maintain a combined average of 19 mg/L or less TN
Provisional 1	First 20 Year-Round	Bi-Monthly Sampling for 24 months rolling average	The dataset of all the 20 systems must have a combined average of 19 mg/L or less TN
Provisional 2	All Other installations during Provisional Use Approval	Every 12 months, unless seasonal then every month of operation.	The annual dataset must maintain a combined average of 19 mg/L or less TN in order to remain in the Provisional phase ***
General Use		Every 36 Months	The dataset must maintain an average of 19 mg/L or less in order to remain in General Use phase **

Note: The number of required systems is a cumulative number. For example, the minimum of 20 systems for Provisional Use includes the number of systems installed as part of Experimental and Piloting phases.

**Suffolk County Sponsored I/A OWTS Demonstration Program may permit a streamlined Pilot approval phase.*

***The combined average of the dataset in Experimental, Piloting and Provisional 1 is the requirement to achieve successful completion of that phase.*

Table 7: Approval Chart for Commercial Systems			
Approval Phase	**# of Systems**	**Sampling Frequency**	**Performance Requirement**
Experimental*	3 – 5 year-round	Monthly Sampling 12 months rolling average	The total dataset of 75% of the systems must have a combined average of 19 mg/L or less TN
Piloting*	8 – 12 year-round	Monthly Sampling 12 months rolling average	The total dataset of 75% of the systems must have a combined average of 19 mg/L or less TN
Provisional 1	First 20 Systems Installed and systems installed in commercial subcategories**	Monthly Sampling for 12 months; bi-monthly sampling for an additional 12 months	The dataset of all the 20 systems must have a combined average of 19 mg/L or less TN
Provisional 2	All Other installations during Provisional Use Approval	Every 12 months, unless seasonal then every month of operation.	The annual dataset must maintain a combined average of 19 mg/L or less TN in order to remain in the Provisional phase ***
General Use	All Systems	Every 12 Months	The dataset must maintain an average of 19 mg/L or less in order to remain in General Use phase ***

Note: The number of required systems is a cumulative number. The minimum of 20 systems for Provisional Use includes the number of systems installed as part of Experimental and Piloting processes.

** Piloting and Experimental phases are identical for residential and commercial systems. A technology can advance to Provisional Approval after successfully completing piloting phase with residential systems, commercial systems, or any combination thereof.*

*** In order for a commercial technology to receive General Use Approval specific to any of the following subcategories: (1) office, retail, industrial, gym and dry goods; (2) restaurants, coffee shops, and other kitchen / fats, oils, and grease (FOG) waste; (3) multi-tenant residential; (4) institutional use; (5) medical use, a minimum of four (4) systems must be installed and successfully implemented in that specific subcategory.*

****The combined average of the dataset in Experimental, Piloting and Provisional 1 is the requirement to achieve successful completion of that phase. The combined average of the dataset in Provisional 2 and General Use shall be evaluated to affirm compliance to maintain approval or disclose non-performance to be considered for revocation*

V. Overview of I/A OWTS Performance Standards

Suffolk County currently requires I/A OWTS to be capable of reducing effluent total nitrogen (TN) to 19 milligrams per liter (mg/l) or less as outlined in the SCDHS "Standards Promulgated Under Article 19 for the Approval and Management of Innovative and Alternative Onsite Wastewater Treatment Systems" (Article 19 Standards). The established treatment requirement mimics the performance requirements of Rhode Island and Massachusetts. The treatment level of 19 mg/l represents a

reduction in TN through the I/A OWTS of approximately 50% to 70% depending on the incoming nitrogen concentration, which may vary from site to site depending on water usage and other factors.

Other States permit higher effluent TN. The State of Maryland, for example, requires I/A OWTS to meet 30 mg/l or less. The New Jersey Pinelands Commission regulates nitrogen reduction in terms of density. Systems that treat to 14 mg/l TN, for example, based on their standard, may be used for development of lots of at least 1 acre in size.

Suffolk County adopted some of the most stringent performance standards, technology approval process, and monitoring requirements in the nation. The results of all bi-monthly manufacturer samples taken throughout the provisional use phase are utilized to determine approval or disapproval for the technology to enter the general use phase. If a technology fails to meet performance requirements, the Department Standards include provisions for minor and major violation triggers for technologies in provisional and general use phases and reserves the right to revoke or suspend a technologies approval.

Article 6 of the Suffolk County Sanitary Code) limits the amount of sewage that can be discharged on a parcel of land based on lot area when using an onsite sewage disposal system such as a conventional system (septic tank plus leaching structure) or an I/A OWTS. I/A OWTS are only permitted to be used when a site meets the density requirements of Article 6. Using an I/A OWTS coupled with the density requirements of Article 6, greater water resource protection can be achieved.

VI. Number of I/A OWTS in Suffolk County

Adoption of Article 19 of the Suffolk County sanitary code gave SCDHS the ability to approve and permit innovative and alternative systems as a right, without the need for a Board of Review variance. As of December 31, 2019 there had been 1,248 I/A OWTS approved for construction, of which at least 697 had been installed. The number of installations represents a best estimation of installations completed. There may be as many as 1,000 I/A OWTS installed in Suffolk County. Due to the structure of the County's previous database, however, installations were not reported until the applicant received final approval. In many instances this could be months after the installation. As the county transitions to the public portal in the new SCDHS EHIMS program, I/A installations will be reported as soon as a wastewater management inspector signs off that the installation occurred in accordance with Department Standards. SCDHS expects to have an exact number of I/A OWTS installations in the 2020 annual report.

As predicted in the 2018 annual report, based on the 545 SCDHS Office of Wastewater Management permit approvals that were issued as of 12/31/2018, there was a large increase in installations since the 2018 annual report amount of 169. There have been approximately 529 installations in 2019, an increase of 360 systems. As of 12/31/2019, a total of 1,195 SCDHS Office of Wastewater Management permits were issued, some for multiple systems, implying that the number of I/A OWTS installations in 2020 will likely continue to increase. **Figure 3** displays the number of I/A OWTS installations through 12/31/2019. **Table 8** shows the number of I/A OWTS permit approvals and I/A OWTS installations by technology type.

Figure 3: I/A OWTS Installations by Year as of 12/31/2019

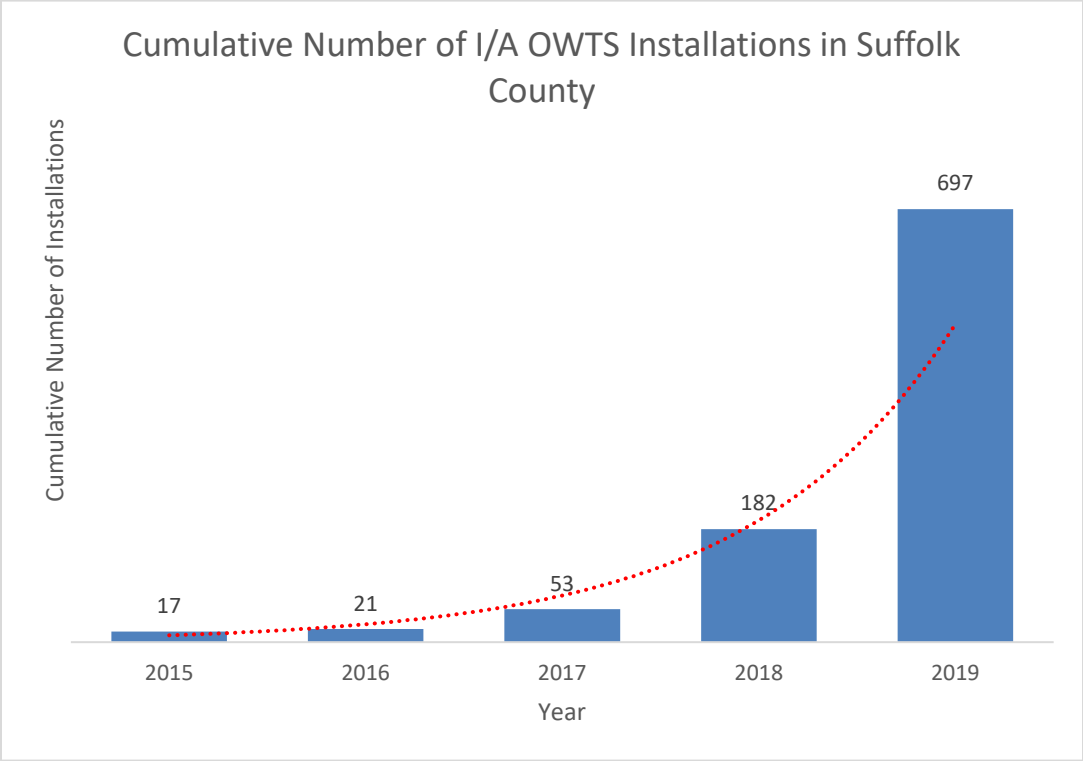


Table 8: I/A OWTS Wastewater Permit Approvals and Installations of Provisionally Approved Technologies as of 12/31/2019

Technology (Date of Approval)	**I/A OWTS Permit Approvals as of 12/31/2019**	**Percent increase over Previous Year (Approvals)**	**I/A OWTS Installations as of 12/31/2019**	**Percent increase over Previous Year (Installations)**
Hydro-Action AN-Series (September 2016)	372	157%	180	283%
Norweco Singulair TNT (October 2016)	220	56%	102	122%
Norweco Hydro-Kinetic (April 2017)	7	17%	6	0%
Orenco Advantex AX-RT (March 2017)	30	67%	24	200%
Orenco AX-RT MAX (Commercial Size AX-RT)	1	0%	1	0%

FujiClean USA (January 2018)	485	141%	315	751%
SeptiTech STAAR (July 2018)	48	1100%	39	1850%
EcoFlo CocoFilter (September 2019)	2	0%	2	0%
Orenco Advantex AX-20 (September 2019)	3	0%	3	0%

VII. I/A OWTS Performance during the Septic Demonstration Programs

In 2014, Suffolk County developed provisions for participation in an I/A OWTS Demonstration Program, whereby a vendor installs, tests and maintains systems at no cost or at a reduced cost to Property Owner(s). This program is based on a similar program in Rhode Island where 58 I/A OWTS were installed, evaluated over a 10-year period to provide a means for industry training, performance evaluations, and provide data for the development of I/A OWTS regulations. Technologies that participated in the Demonstration Program were subject to a streamlined approval process, under which the Department has approved technologies for Provisional Use if 75% of the units installed have a combined total average effluent TN of 19 mg/L or less based on at least six months of composite sampling.

The Demonstration Program proved to be an effective tool to assess the design, operation, maintenance, installation, and overall ability of I/A OWTS technologies to meet nitrogen reduction objectives in Suffolk County. The dual-purpose framework of the program also included a means for accelerated construction of programmatic infrastructure and validation of local institutional ability to review, approve, install and operate I/A OWTS systems. As part of this approach, Suffolk County dedicated significant staff resources to work with manufacturers, who also committed to an intensive cooperative program, including:

- industry training (designers, installers, O&M contractors)
- regulatory training (procedures/standards to review/approve, and inspect)
- cooperative process optimization; i.e., vendors working with Suffolk to optimize systems (recirculation rates, oxygen supply, etc.) given local influent strength, venting configurations, etc.
- demonstration of systems to design professionals, non-governmental organizations (NGOs), civics, local governments, etc.

A technology's successful completion of a demonstration program allows admittance into the Provisional approval phase, where rigorous testing and statistical protocols are utilized prior to granting general use approval. The Demonstration Program was a key component of the County's

Reclaim Our Water initiative and contributed to deliberate and responsible acceleration of I/A OWTS in Suffolk County.

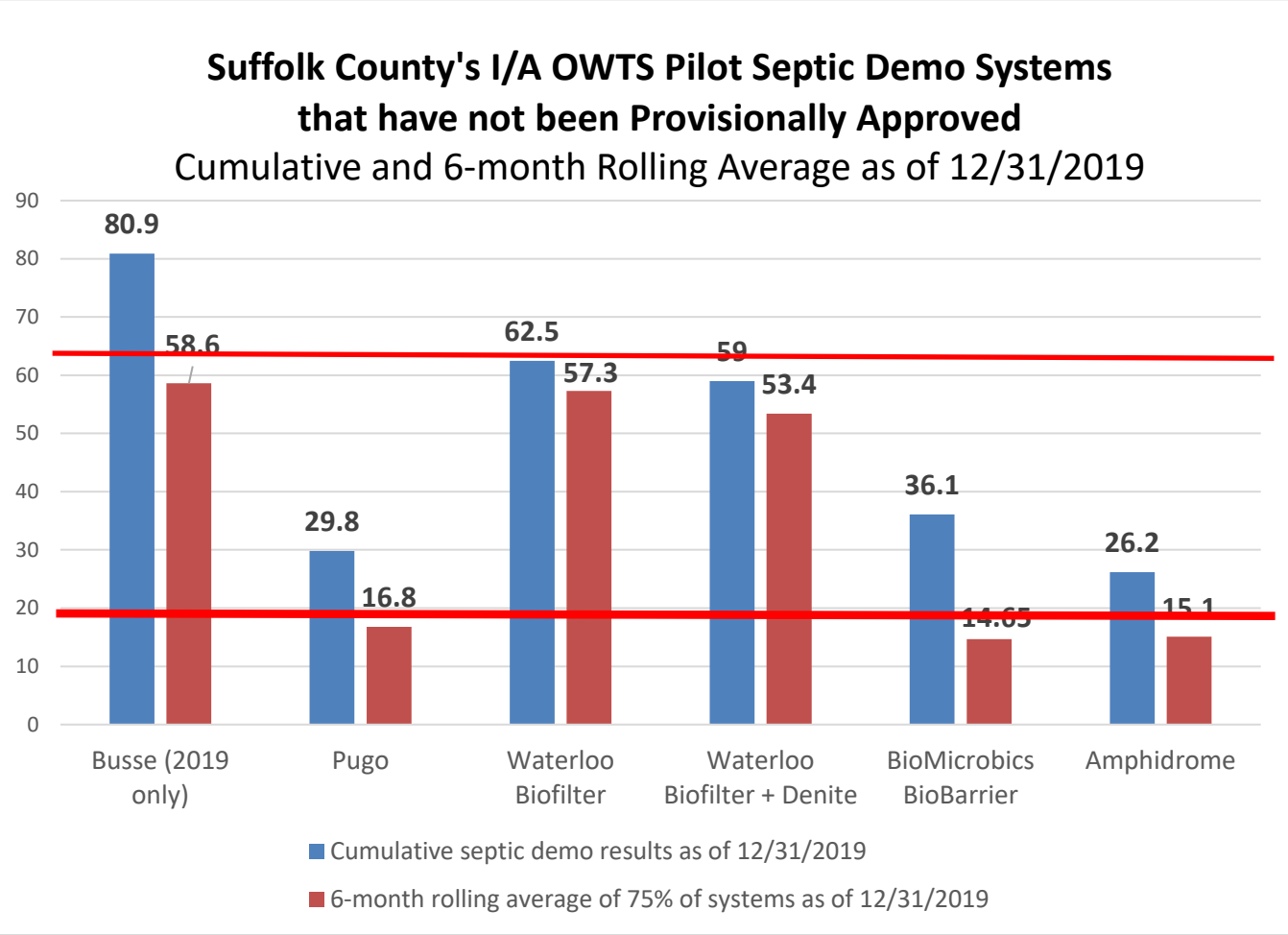
Suffolk County's Demonstration Programs

Suffolk County launched the first phase of the "demo program" in April of 2014, with the issuance of the first Request for Expression of Interest (RFEI) for a Demonstration Program of Innovative and Alternative Onsite Wastewater Systems (I/A OWTS). A total of 19 systems were donated by four manufacturers representing six different technologies. Following the County-wide lottery for interested homeowners, the systems were installed between June 24, 2015 and February 29, 2016. Suffolk County launched the second phase of the "demo program" in April of 2016, with the issuance of a second RFEI. A total of six (6) manufactures representing eight (8) technologies offered to install 20 systems on residential properties. However, the two donated BioMicrobics FAST systems have not yet been installed as of 12/31/2019. **Figure 4** shows all technologies that participated in the demo program.

Two (2) technologies received Provisional Approval in 2016, two (2) in 2017, an additional two (2) in 2018 and another two (2) technologies received Provisional Approval in 2019. Figures 1 and 2 in the beginning of this report show sampling results of these eight (8) provisionally approved technologies. **Figure 5** below shows the performance of I/A OWTS technologies in the septic demonstration program that have not been provisionally approved. See Appendices i and ii for all sampling results of the Phase 1 septic demo systems, most of which were under provisional use approval in 2019.

Figure 4: I/A OWTS Demonstration Program Participants

Figure 5: Performance of I/A OWTS Technologies in the Septic Demonstration Program that have not been Provisionally Approved



Hydro-Action AN Series

The Hydro-Action systems utilize a suspended growth aeration system. The treatment occurs as wastewater enters the pretreatment tank and flows by gravity into the aeration compartment. Wastewater flows by gravity from the aeration chamber through a hole in the base of the cone shaped clarifier, where final settling takes place. The hydraulic roll created by the aeration system helps draw settled solids out of the base of the clarifier and back into the aeration chamber. The aerobically-charged wastewater is then recirculated back to the pretreatment tank, where it further denitrifies. Treated wastewater exits by gravity through a tee structure located in the center of the clarifier, treated effluent is then discharged to a Department approved leaching structure.

Five (5) Hydro-Action AN systems were installed as part of the Septic Demonstration Program. The systems were sampled from May 2016 through November 2016 and averaged 11.9 mg/L TN. The dataset of 75% of the systems maintained an average of 11.6 mg/L TN. Hydro Action was granted Provisional Use Approval on September 28, 2016.

20 year-round Provisional Use systems are required to be sampled by the manufacturer every 2-months for a 24 month period. **Hydro Action sampled 20 systems bi-monthly as of 12/31/2019. The cumulative average of all systems as of 12/31/2019 was 10.5 mg/L TN. The 12-month rolling average for 2019 was 9.4 mg/L.**

Norweco Singulair TNT

The Singulair wastewater treatment system is a self-contained three-chambered treatment system utilizing primary treatment (settling), mechanical aeration, clarification, and flow equalization to achieve treatment. Wastewater from the building enters the primary settling chamber through an inlet tee, then enters an aeration chamber. In the aeration chamber, an aspirator at the bottom of a shaft disperses air radially as fine bubbles provide oxygen for the biomass and vertically mix chamber contents. The wastewater in the aeration chamber passes through to the clarification chamber for final settling of solids. Treated wastewater passes through an effluent filter as it exits the system and is then gravity fed to the leaching structure.

Five (5) Singulair TNT systems were installed as part of the Septic Demonstration Program. The systems were sampled from May 2016 through November 2016 and averaged 20.8 mg/L TN. The dataset of 75% of the systems maintained an average of 18.3 mg/L TN. Norweco Singulair TNT was granted Provisional Use Approval on October 7, 2016.

20 year-round Provisional Use systems are required to be sampled by the manufacturer every 2-months for a 24 month period. **Norweco sampled 20 systems bi-monthly as of 12/31/2019. The cumulative average of all systems was 23.0 mg/L TN. The 12-month rolling average for 2019 was 21.2 mg/L. Norweco submitted a corrective action plan in 2018 has and been implementing work designed to reduce effluent TN from the Singulair systems and meet the 19 mg/L standard.**

Orenco AX-RT Series

The AdvanTex® AX-RT Series is a recirculating textile filter treatment system. It is contained within a single fiberglass tank installed with the access panel at grade. It is preceded by a two-compartment septic tank and discharges to a leachfield. Raw sewage enters the septic tank through its inlet tee. In the septic tank, the raw sewage separates into three distinct zones -- a scum layer, a sludge layer, and a clear layer. Effluent from the clear layer passes through a Biotube® effluent filter and is discharged by gravity to the recirculation treatment tank portion of the AX-RT unit, which contains a Biotube Pump Package.

The recirculation pump is timer controlled to ensure that small, intermittent doses (micro-doses) of effluent are applied to the textile sheets throughout the day. This ensures an aerobic, unsaturated environment for optimal treatment to occur. Effluent is sprayed over the textile sheets. The effluent

then percolates down through the textile sheets and is distributed between the recirculation and discharge chambers by means of the AX-RT baffle. Periodically, a pump in the discharge chamber doses effluent to the dispersal system.

One (1) Orenco AX-RT system was installed as part of the Septic Demonstration Program. The system was sampled from February 2016 through September 2016. The dataset of 75% of the systems maintained an average of 18.5 mg/L TN.

Note: The 18.5 mg/l average above excluded two months of data for the Orenco RT system as the homeowner reported that a significant amount of bleach was discharged to the systems after cleaning coral from a fish tank. The Department made a decision to exclude the April and May 2016 samples and Provisional Use Approval was issued in April 2017.

20 year-round Provisional Use systems are required to be sampled by the manufacturer every 2-months for a 24 month period. **Orenco sampled 14 systems bi-monthly as of 12/31/2019. The cumulative average of all systems was 26.8 mg/L TN. The 12-month rolling average for 2019 was 26.6 mg/L. Orenco submitted a corrective action plan in 2018 has and been implementing work designed to reduce effluent TN from the Orenco AX-RT systems and meet the 19 mg/L standard.**

Norweco HydroKinetic

The HydroKinetic system uses extended aeration, attached growth, nitrification and denitrification processes to treat wastewater. It consists of four treatment chambers (pretreatment, anoxic, aeration and clarification) followed by a Hydro-Kinetic FEU filter containing filter media facilitating additional reduction of BOD and TSS by attached growth, prior to discharge to a leaching structure. The clarification chamber incorporates a flow equalization unit. Aeration is controlled by a factory-programmed timer and wastewater is recirculated from the clarifier back to the anoxic chamber at factory set intervals. The system is available with both concrete and HDPE tankage and with the pre-treatment tank either integral to the other three chambers in a four-chambered tank, or as a distinct tank.

Five (5) Norweco HydroKinetic systems were installed as part of the Septic Demonstration Program. The Department began sampling the systems in August 2016. The Hydrokinetic system averaged 24.6 mg/l in 2017 and the dataset of 75% of the systems maintained an average of 17.4 mg/L and was issued Provisional Use Approval in April of 2017.

20 year-round Provisional Use systems are required to be sampled by the manufacturer every 2-months for a 24 month period. **Norweco sampled 5 systems bi-monthly as of 12/31/2019. The cumulative average of all systems was 19.7 mg/L TN. The 12-month rolling average for 2019 was 18.2 mg/L.**

Orenco AX-20 Series

The Orenco AX series is a prepackaged packed bed media filter that is contained in a fiberglass container that is installed after a two compartment septic tank. A pump basin in the second compartment of the septic tank distributes effluent to the treatment unit where it is nitrified. Effluent trickles through the media collects at the bottom of the treatment unit where it flows by gravity back to the inlet end of the septic tank for denitrification. When the level in the septic tank reaches peak level a valve seals off the recirculation and sends treated effluent to a separate chamber where it is then discharged to the leaching structure.

Three (3) Orenco AX-20 systems have been installed as part of the Septic Demonstration Program. The Department began sampling the systems in August 2016. **The three Orenco AX-20 systems had a 6-month rolling average of 16.7 mg/L and was issued Provisional Use Approval in September of 2019.**

20 year-round Provisional Use systems are required to be sampled by the manufacturer every 2-months for a 24 month period. **Orenco sampled 12 AX-20 systems bi-monthly as of 12/31/2019** (beginning in September once provisional approval was grant)**. The cumulative average of all Orenco AX-20 systems averaged 9.5 mg/l as of 12/31/2019. The 12-month rolling average for 2019 was 9.5 mg/L.**

Note: Orenco AX-20 in the only I/A OWTS technology currently taking advantage of the New England Data Share program; there are 9 systems in Massachusetts being sampled bi-monthly for the Suffolk County provisional phase.

BUSSE GT

The Busse System is installed above grade, in non-living areas of the house such a garage or basement. The fiberglass tanks have four compartments, the first for settling, second for aeration, third for settling and final compartment for membrane filtration.

There are two (2) Busse systems that were installed as part of the demonstration program. Both systems were taken off line in the spring of 2016 due to non-performance, most notably, an effluent pH of less than 4 in both systems. Site SDS#7 was briefly turned back on from June 19, 2017 to July 25th 2017 and the performance did not improve. The manufacturer is currently working with local engineers to reconfigure the system and treatment process. The monitoring of these systems resumed in the beginning of 2019, but were taken off line again due to poor system performance. The average performance of the system was 83.1 mg/L as of December 31, 2017. No sampling was done in 2018. **The one effluent sample taken in 2019 resulted in 58.6 mg/L total nitrogen.**

Amphidrome

Amphidrome is a multi-tank system utilizing a biologically active filter operating as a sequencing batch reactor. Sewage first enters a septic tank to allow for settling and separation. Liquid wastewater flows by gravity from the septic tank into the reactor where it moves through layers of gravel and sand and receives aeration via an external blower. Wastewater continues through the reactor into the clearwell tank containing two submersible pumps. When the first submersible pump cycles on it pushes wastewater backward through the system; back flowing up though the reactor and also recirculating back to the septic tank. When the submersible pump cycles off, the wastewater moves again by gravity forward through the system and into the clearwell tank. The second submersible pump in the clearwell tank moves final effluent to discharge.

There were two (2) Amphidrome Systems installed between February and June of 2017 as part of Phase 2 of the Septic Demonstration Program. **The average of all of the samples at equilibrium was 26.1 mg/L and the dataset of the systems maintained a 6-month rolling average of 15.1 mg/L.** Provisional Use Approval was granted to Amphidrome in 2019 pending submission of required sampling plan, however the manufacturer has neglected to submit the required documentation.

Ecoflo Coco Filter

Ecoflo Coco Filter is a trickling media filter comprised of multiple tanks. The first tank is a baffled septic tank for settling and separation of incoming sewage. The liquid wastewater moves through an effluent filter and then to the Ecoflo Coco Filter. In the filter unit a tipping weir evenly disperses incoming wastewater over a thick bed of coconut husks. The wastewater is treated by the bacteria living on the coconut husks as it moves downward through the media and is then collected at the bottom of the unit. A submersible pump in the filter unit moves the collected wastewater through a splitter valve which allows some water to be recirculated back to the septic tank and some to be moved to a sulfur polishing unit. The wastewater that is pumped to the sulfur polishing unit moves by gravity through the sulfur media and finally out to discharge.

There were two (2) Ecoflo Coco Filter Systems installed between November 2016 and February 2017 as part of Phase 2 of the Septic Demonstration Program. Note: Site SDS#9 was installed on November 10, 2016 but had a failure of the dosing weir and the system was restarted on July 25, 2017. Ecoflo also installed a denitrification polishing filter following the treatment unit to remove excess nitrate from the effluent. Suffolk County took composite samples before and after the secondary denitrification unit. The average of Ecoflo Coco Filters at equilibrium was 54.8 mg/L as of 12/31/2019, the 6-month rolling average before the denitrification unit was 32.6 mg/L and **the 6-month rolling average *after* the denitrification unit was 18.8 mg/L**. Ecoflo Cocofilter with Denite Unit was granted Provisional Use Approval in September of 2019.

20 year-round Provisional Use systems are required to be sampled by the manufacturer every 2-months for a 24 month period. **EcoFlo Coco Filter Denite+ was sampled in 2 systems bi-monthly as of 12/31/2019** (beginning in September once provisional approval was grant)**. The cumulative**

average of all EcoFlo Coco Filter Denite+ systems averaged 19.0 mg/l as of 12/31/2019. The 12-month rolling average for 2019 was 19.0 mg/L.

Pugo System

Pugo is a self-contained, extended aeration and contact filtration unit consisting of three chambers. In the primary chamber sewage separates and settles allowing liquid wastewater to flow through and solids to sink to the bottom where they are subject to anaerobic digestion. Liquid wastewater then enters the aeration chamber where it is circulated via aeration from an external blower through plastic media harboring microbes which will metabolize and remove nutrients from the wastewater. An air lift pump powered by the same external blower recirculates aerated wastewater back to the primary chamber to complete denitrification. Wastewater flows by gravity into the third and final clarifying chamber where settling of any residual solids occurs and final effluent is discharged.

There were four (4) Pugo Systems installed between January and March of 2017 as part of Phase 2 of the Septic Demonstration Program. **The dataset of 75% of the systems maintained a 6-month rolling average of 16.8 mg/L TN.** Provisional Use Approval was granted to Pugo in 2019 pending submission of required sampling plan, however when the manufacturer provided the required documentation, they included effluent results that required the Department question the sample method as the effluent results were all above 30 mg/L with an average of 74.5 mg/L. The Department is working with the manufacturer to resolve issues prior to issuing Provisional Use Approval.

Note: Site SDS#29 was restarted on 9/27/2017 due to the system failure suspected to the due to the homeowner's use of essential oils.

FujiClean CEN Series

FujiClean is a self-contained, extended aeration and contact filtration treatment unit consisting of three chambers. The first sedimentation chamber allows for pretreatment of influent via settling and separation. Liquids then move by gravity to the anaerobic chamber where it comes in contact with a submerged media that allows for colonization of bacteria to aid in nitrate denitrification. In the final chamber aerobic contact filtration occurs via an external air blower and a submerged media. The same air blower also powers air lift pumps which recirculate sludge and water from the last chamber back to the first chamber and pumps final effluent out to discharge.

There were four (4) FujiClean CEN Systems installed between March and June of 2017 as part of Phase 2 of the Septic Demonstration Program. The systems were sampled from June 2017 through November 2017 after reaching equilibrium and averaged 18.5 mg/L TN. **The dataset of 75% of the systems maintained an average of 16.6 mg/L TN. FujiClean CEN received Provisional Use Approval in January 2018.**

20 year-round Provisional Use systems are required to be sampled by the manufacturer every 2-months for a 24 month period. **Fuji sampled 20 systems bi-monthly as of 12/31/2019. The**

cumulative average of all systems as of December 31, 2019 was 11.4 mg/L TN. The 12-month rolling average for 2019 was 11.2 mg/L.

Waterloo Biofilter

Waterloo Biofilter is a packed bed media filter comprised of multiple tanks. Raw sewage flows from the building into a septic tank with digester where solids are separated from liquids. After gravity flowing into the pump tank, wastewater is time dosed over the biofilter in the treatment tank by a submersible pump. Wastewater is absorbed by and trickles downward through foam media which provides both physical filtration and biological treatment via inhabitant microbes. Treated wastewater is collected at the bottom of the treatment tank where a submersible pump moves it through the piping manifold which splits the flow between the alkalinity tank and sulfur polishing tank. The wastewater that is pushed to the alkalinity tank is conditioned prior to recirculation into the primary septic tank. The remainder of the wastewater is pumped to the polishing unit where sulfur contact further reduces nitrogen levels prior to final effluent discharge.

There were two (2) Waterloo Biofilter Systems installed May 2017 as part of Phase 2 of the Septic Demonstration Program. Waterloo also installed a denitrification polishing filter following the treatment unit to remove excess nitrate from the effluent, **this secondary denitrification had a 6-month rolling average of 62.5 mg/L TN as of 12/31/2019**. **The 6-month rolling average of Waterloo Biofilter was 57.3 mg/L as of 12/31/2019.** SCDHS had worked with the manufacturer in 2018 and 2019 to try to improve overall performance of the two systems with no improvement, however it appears the Waterloo Biofilter System will be removed from the Septic Demonstration Program in 2020.

BioMicrobics BioBarrier

BioBarrier is a membrane bioreactor consisting of two tanks. The first tank allows for settling and separation of incoming sewage with liquid wastewater moving through an effluent filter to prevent large solids from entering the treatment tank. Next liquid wastewater moves into the first chamber of the treatment tank, known as the anoxic zone, where a low oxygen mixed liquor is maintained by an external mixing blower. Wastewater then flows to the second chamber, known as the aerobic zone, where the reactor unit is submerged. A second external blower piped to the reactor unit creates an upward flow between membrane plates providing vigorous scouring action. Wastewater is passed through the membranes for microfiltration and ultrafiltration processes to produce the final effluent which is pumped to discharge.

There were two (2) BioBarrier MBR Systems installed between May and June of 2017 as part of Phase 2 of the Septic Demonstration Program. In the 2018 annual report, this technology had a 6-month rolling average of 50.5 mg/L. SCDHS worked with the Manufacturer in 2018 to try and improve the performance of these systems, which resulting in a vast improvement in performance. **As of 12/31/2019, the 6-month rolling average for the BioBarrier MBR Systems was 14.65 mg/L.**

SCDHS expects to grant conditional Provisional Use Approval after discussing conditions with the Article 6 Workgroup in 2020.

BioMicrobics SeptiTech STAAR

SeptiTech STAAR is a trickling filter comprised of two tanks. The first tank is a baffled septic tank for settling and separation of incoming sewage. Wastewater from the primary septic tank flows into the bottom of the second tank, mixing with already treated wastewater. A pump at the bottom of the second tank moves wastewater upward and through sprayers which both aerate and disperse the wastewater onto the filter media. As wastewater moves through the filter media it is treated by inhabitant microbes and then moves by gravity back to the tank below mixing with newly incoming wastewater from the primary septic tank and previously treated water. A portion of the treated wastewater along with sludge that accumulates at the bottom the filter tank is recirculated back to the primary septic tank for denitrification. A submersible pump located in the second chamber of the filter tank moves the final effluent to discharge.

There were two (2) SeptiTech STAAR Systems installed in 2017 as part of Phase 2 of the Septic Demonstration Program. **The 6-month rolling average for SeptiTech STAAR was 13.6 mg/L and the technology received Provisional Use Approval in July of 2018.**

20 year-round Provisional Use systems are required to be sampled by the manufacturer every 2-months for a 24 month period. **SeptiTech sampled 14 systems bi-monthly as of 12/31/2019. The cumulative average of all systems was 14.1 mg/L TN. The 12-month rolling average for 2019 was 14.5 mg/L.**

BioMicrobics MicroFAST

MicroFAST is a two tank fixed activated sludge treatment system. The first tank is a baffled septic tank for settling and separation of incoming sewage. Wastewater from the septic tank flows into a secondary treatment tank consisting of a fixed film aeration unit that receives oxygen from an external blower 24/7. Following the aeration unit is a clearwell with a recirculation pump that sends effluent back to the headworks of the septic tank for denitrification. Final effluent can be dispersed to leaching by pump or gravity.

Two (2) MicroFAST Systems have yet to be installed as part of Phase 2 of the Septic Demonstration Program.

VIII. Septic Demonstration Program – Lessons Learned

1. Aesthetics and yard disruption are the most important factors to homeowners when selecting a system. Technologies with more than three lids and a footprint larger than a conventional septic tank will not be as widely used as I/A systems that take up a smaller footprint.

2. Homeowners who take an active role in their septic system project, especially those that make a financial investment, are more likely to be satisfied with the project and operate the I/A OWTS in accordance with manufacturer recommendations.

3. Although all technologies in the Septic Demonstration Program had NSF 245, or ETV Certification, not all technologies are capable of meeting performance standards under actual residential conditions in Suffolk County.

4. Not all pre-existing sites are able to meet Department Standards and setbacks. The Department acknowledged this and developed best-fit standards for upgrades and retrofits of existing systems with I/A OWTS.

IX. Other Approved Technologies in Suffolk County

Since the initial Septic Demonstration Program, there have been additional I/A OWTS technologies that have received approval for use in Suffolk County. Below is a summary of the non-demonstration systems approved for experimental and pilot use at of 12/31/2019.

Experimental Use

- Nitrogen Reducing Biofilter (NRBs) - NRBs are field-built systems that take advantage of naturally occurring soil microbes to achieve nitrogen removal by nitrification of influent nitrogen in a sand layer and subsequent denitrification of nitrate in a lower layer consisting of sand lignocellulose (wood chips). NRBs are passive systems in which wastewater flows by gravity. The Center for Clean Water Technology (CCWT) at Stony Brook University is researching and testing NRBs at the Massachusetts Alternative Septic System Test Center (MASSTC) as well as the new CCWT test center that opened in 2019. CCWT has also installed 7 full-scale NRBs in Suffolk County under Experimental Use approval as of 12/31/2019. Three NRB designs are being tested: the lined, unlined and box nitrogen reducing biofilter designs.

- Constructed Wetlands – Constructed Wetlands, also known as vegetated recirculating gravel filters, are currently designated as experimental systems. The Department has been working with SBU CCWT to designate the technology as pilot approval based on these systems are approved for general use in Rhode Island and Massachusetts. SSCT provided a draft guidance document in 2019 and SCDHS expects to be issuing pilot use approval in 2020. Suffolk County has funded commercial-use constructed wetlands installations at Sylvester

Manor Education Farm and The Nature Conservancy's Uplands Farm, see section XI for the performance of those systems.

- Nitrex Filter – The Nitrex Filter by Lombardo and Associates consists of an up-flow carbon media filter comprised of a proprietary blend of lignocellulose that is used in combination with a NSF-Certified nitrification system. This technology has been tested at the MASSTC as well as other test centers. There is one Nitrex Filter installed in Suffolk County at the Scully Estate.

Detailed description of these two technologies are included in section XIV, Experimental and Emerging Technologies, of this report.

Pilot Use

- ECOPOD-N Series by Delta Environmental received piloting approval on July of 2017. The system utilizes a fixed film process in a modular unit located in the septic tank. Both nitrification and denitrification occur in a single tank. There have been no ECOPOD-N installations in Suffolk County as of 12/31/2019.

- Hoot-ANR by Hoot Systems, LLC received piloting approval on November of 2018. The Hoot-ANR I/A OWTS uses extended aeration, activated sludge and fixed film filtration processes to achieve wastewater treatment. The system consists of a pretreatment tank, an aeration chamber, a clarifier and an attached growth media chamber. There have been no Hoot installations in Suffolk County as of 12/31/2019.

General Use

By the end of 2019, there were no I/A OWTS technologies approved for general use in Suffolk County. It is anticipated that several technologies shall complete the provisional approval phase in 2021.

X. O&M Requirements for Provisionally Approved Systems

Article 19 of the Suffolk County Sanitary Code requires that all I/A OWTS be maintained in accordance with manufacturer recommendations, at a minimum of every 12 months. All of the Provisionally Approved systems currently include three -year operation and maintenance (O&M) agreements as part of their purchase and are maintained every six (6) months. Maintenance can include the following activities depending on the technology:

- Measure scum and sludge and recommend pumping as needed
- Check floats, controls, and alarms
- Check recirculation rates
- Clean all submerged pumps
- Change filter in aerators and blowers
- Measure air flow through system
- Check pump system and flush out Pressurized Shallow Drainfields (PSD's)

Table 9 provides the cost of an O&M provided by the vendors for the six provisionally-approved technologies. Table 10 provides the cost of replacement parts provided by the vendors for the six provisionally-approved technologies. Table 11 provides the wattage and estimated costs of electricity to run the six provisionally-approved technologies.'

Table 9: O&M Costs for Provisionally Approved Systems

Technology	One Year Contract Cost
Hydro-Action AN	$250.00
Orenco Advantex AX20-RT	$271.66
Fuji Clean Systems	$300.00
Norweco Hydro-Kinetic	$300.00
Norweco Singulair TNT	$315.00
SeptiTech STAAR	$250.00
Orenco AX-20	$271.66
EcoFlo Coco Filter Denite+	Information not provided to SCDHS as of the published date of this report.

Table 10: Repair and Replacement Costs for Provisionally Approved Systems

Technology	Item	Cost	Life Expectancy
Norweco Singulair TNT	Aerator Replacement	$500.00	10 years
	Control Panel Replacement**	$1,200.00	20 years
Fuji Clean CEN System	Blower Replacement (MAC 80R)	$320.00	10 years
	Blower Replacement (MAC 100R)	$420.00	
	Blower Rebuild	$150.00	
	Float Replacement	$100.00	5-10 years
	Control Panel Replacement**	$400.00	20 years
Hydro-Action AN Series	Blower Replacement	$400.00	10 years
	Blower Rebuild	$100.00	
	Recirculation Pump Replacement	$400.00	10 years
	Float Replacement	$80.00	5-10 years
	Control Panel Replacement **	$1,200.00	20 years
Orenco Advantex AX-RT & AX-20	Recirculation Pump Replacement	$800.00	10 years
	Float Replacement	$80.00	5-10 years
	Control Panel Replacement **	$1,500.00	20 years

Norweco Hydro-Kinetic	Blower Replacement	$300.00	10 years
	Blower Rebuild	$100.00	
	Recirculation Pump Replacement	$500.00	10 years
	Control Panel Replacement **	$1,200.00	20 years
SeptiTech STAAR	Recirculation Pump Replacement	$520.00	10 years
	Float Replacement	$75.00	5 -10 years
	Control Panel Replacement **	$1,200.00	20 years
EcoFlo Coco Filter Denite +	Coconut Media	Information not provided to SCDHS as of the published date of this report.	
	Denite Filter		
	Recirculation Pump Replacement		
	Float Replacement		

Table 11: Estimated Electrical Costs for Provisionally Approved Technologies

Technology	1 year electrical consumption (kWh/year)	Increased electrical costs per year ($0.22/ kWh)
Orenco Advantex AX-RT	335.8 kWh	$73.88
Orenco Advantex AX-20	335.8 kWh	$73.88
Fuji Clean System	463.55 kWh	$101.98
Hydro-Action AN	699.22 kWh	$153.83
SeptiTech STAAR	912 kWh	$200.64
Norweco Singulair TNT	979.66 kWh	$215.53
Norweco Hydro-Kinetic	1051.2 kWh	$231.26
EcoFlo Coco Filter Denite+	Information not provided to SCDHS as of the published date of this report	

Note: the Hydro-Action unit utilizes a mixer pump during start-up. The pump use is discontinued after startup, and usage data will vary after the start-up period.

XI. Performance of Commercial I/A OWTS in Suffolk County

Through the end of 2019, forty-eight (48) permits were issued for I/A OWTS at commercial sites. As of December 31, 2019, thirty-two (32) of commercial systems have been installed. There were seven (7) commercial I/A OWTS sampled in 2019.

- An Orenco AX-MAX-225 unit was installed at Meschutt Beach County Park in Hampton Bays in 2016. With the exception of documented blower malfunction, the system is performing below the nitrogen standard of 19 mg/L total nitrogen.

- Three (3) different designs of vegetated recirculating gravel filters (VRGF) have been installed in Suffolk County.

  (1) One was installed at Sylvester Manor Educational Farm on Shelter Island in 2017, which is meeting the 19 mg/L total nitrogen standard

  (2) The system at Fishers Island Yacht Club which was averaging 69.8 mg/L as of 12/31/2018 and was not sampled in 2019. The Fishers Island system was installed to monitor and demonstrate nitrogen reduction in a low-flow seasonal environment with high influent concentration. The Fisher's Island system has shown an average nitrogen reduction of 56%.

  (3) Another VRGF, also referred to as a Constructed Wetland, designed by CCWT was installed at The Nature Conservancy's Upland Farm property in 2019 with a woodchip denitrification filter following the VRGF. Sampling of the Upland Farm VRGF began in April 2019. Unfortunately, this system's performance is not meeting the 19 mg/L total nitrogen standard. The Department has requested an engineer's report from CCWT's design professional in order to improve the system's performance.

- A Norweco HydroKinetic I/A OWTS was installed with an Eljen geotextile gravelless sand filter leaching field at Lake Ronkonkoma County Park in 2018. The system is averaging 68.1 mg/L TN. SCDHS and Suffolk County Parks are working with Norweco on a corrective action plan for the Hydro-Kinetic system installed at Lake Ronkonkoma County Park.

- Two FujiClean systems were installed at commercial sites in 2019 and are meeting the 19 mg/L total nitrogen standard.

System performance of these commercial systems is illustrated in **Table 12**; see Appendix iv for all sampling results of the commercial systems.

Table 12: Commercial System Performance in Suffolk County

Commercial System	Location	2017-only Performance (mg/L)	2018-only Performance (mg/L)	2019-only Performance (mg/L)
Orenco AX-Max	Meschutt Beach County Park	17.0	15.4 (51.9 mg/L including blower malfunction)	11.7
Vegetated Recirculating Gravel Filter	Sylvester Manor Education Farm	14.5	7.4	9.8
	Fishers Island Yacht Club	124.3 (59% nitrogen reduction)	69.8 (56% nitrogen reduction)	N/A

	Uplands Farm	N/A	N/A	83.1 (Post-Wetland) 67.9 (Post-Polishing)
Norweco HydroKinetic	Lake Ronkonkoma County Park	N/A	68.1 (pre-leach field effluent)	75.6 (pre-leach field effluent)
Fuji Clean CEN	Peconic Baykeeper	N/A	N/A	15.9
	Surf Lodge	N/A	N/A	11.9

Commercially installed I/A OWTS technologies can receive General Use Approval based on their effectiveness for specific commercial categories. Their effectiveness in the following subcategories will be evaluated:

(1) office, retail, industrial, gym and dry goods;
(2) restaurants, coffee shops, and other kitchen / fats, oils, and grease (FOG) waste;
(3) multi-tenant residential;
(4) institutional use;
(5) medical use.

A minimum of four (4) systems must be installed and successfully implemented in that specific subcategory in order to receive General Use approval in that specific commercial use subcategory.

Technologies known to perform effectively for residential I/A OWTS are performing equally effectively for commercial (FujiClean, Orenco), demonstrating that commercial systems can provide performance equal to that of residential systems. Field-built commercial systems' performance is much more dependent on the design and use of each individual system. However, there is insufficient data and number of systems to assess performance of most technologies. As more commercial systems are installed in the various subcategories and are sampled, a larger dataset will be available for analysis.

XII. Performance of I/A OWTS in Other Jurisdictions

Prior to developing an I/A OWTS implementation program, Suffolk County embarked on a four- state tour to evaluate I/A OWTS programs in neighboring jurisdictions. This tour included visits to the New Jersey Pinelands Commission, Maryland Department of Environment, Rhode Island's New England Onsite Wastewater Training Program, and Massachusetts Barnstable County Department of Health and Environment. Lessons learned from these jurisdictions were instrumental in guiding the County in the development of a robust I/A OWTS management program and as such, the County has

continued to consult with these jurisdictions throughout the Demonstration Program and I/A OWTS program development.

When reviewing I/A OWTS performance in other jurisdictions, it is important to note that Suffolk County utilizes the combined average of a technology's TN results in order to represent the overall ability of a technology. SCDHS believes that using an average is the best method of evaluating a technology because it is a true indication of how well a technology will protect the environment. The median tends to yield artificially lower TN results and is not a true indicator of mass loading. Other than Maryland, Suffolk County appears to be the only jurisdictions in close proximity that uses the true TN average to evaluate I/A OWTS performance. A combined average yields a true mass loading versus other methods of analysis. See Table 13 for a hypothetical example.

Table 13: The Case for Utilizing Total Nitrogen Average versus Median

Technology	System 1	System 2	System 3	System 4	Average	Median
A	18 mg/l	18 mg/l	20 mg/l	20 mg/l	19 mg/l	19 mg/l
B	16 mg/l	16 mg/l	16 mg/l	60 mg/l	27 mg/l	16 mg/l

Therefore, the Department believes that a combined average provides an improved method of analyzing a technology's performance.

Considering I/A OWTS installations and performance in other jurisdictions is valuable considering these wastewater technologies have been in use for decades elsewhere. Table 14 provides the amount of I/A OWTS installation in other jurisdictions by decade.

Table 14: The Case for Utilizing Total Nitrogen Average versus Median

	I/A OWTS INSTALLED BY DECADE			
Jurisdiction	**1999 or prior**	**2000 - 2009**	**2010 - 2019**	**Total**
State of Rhode Island	33	2,490	3,874	**6,397**
Barnstable County, Massachusetts	214	2,127	1,103	**3,444**
Anne Arundel County, Maryland	160	717	1,454	**2,331**
New Jersey Pinelands	0	173	157	**330**
TOTAL	**407**	**5,507**	**6,588**	**12,502**

Massachusetts

The Massachusetts Department of Environmental Protection (MassDEP) has jurisdiction of I/A OWTS. The State Environmental Code Title 5 is the regulation used to evaluate and approve conventional and advanced onsite systems. Suffolk County based its approval process on Massachusetts three-phase (piloting, provisional, and general use) model. MassDEP requires I/A

OWTS in the Nitrogen Sensitive Areas (Public Wellheads and properties with private wastewater and private well under one acre) under Title 5 guidelines and when density is greater than 440 gallons per day. MassDEP also requires the use of a secondary treatment unit for installations of septic systems with a design flow of 2,000 gpd or greater when the system is located within a Zone II/ Interim Wellhead Protection Area. In these instances, the regulations state 19 mg/L must be met for residential where the load is 660 gpd/acre and 25 mg/L for multi-family residential and commercial areas where the load is up to 550 gpd/acre.

MassDEP Title 5 regulations are in place in order to protect drinking water sources. Barnstable County and other Cape Cod towns have more stringent regulations and require I/A OWTS in areas beyond the State's Nitrogen Sensitive Areas and pertain to environmental protection measures.

I/A OWTS Approved in the State of Massachusetts

- General Use Approval
    - MicroFAST
    - Recirculating Sand Filters
    - RUCK
- Provisional Use Approval
    - Orenco Advantex AX20 and RT
    - Amphidrome
    - Bioclere
    - FAST
    - RetroFAST
    - Nitrex
    - BioMicrobics SeptiTech STAAR
    - Norweco Singulair
    - Waterloo Biofilter
    - Hoot
- Pilot Use Program
    - NitROE

Barnstable County Department of Health and Environment Septic Database

Barnstable County Septic Database tracks sampling, O&M, and pump-outs of I/A OWTS located on Cape Cod and Nantucket. These numbers include single family residential, multi-family residential and commercial sites. **Table 15** lists the most common technologies and treatment performance based on data collected in 2019.

Table 15: 2019 Treatment Performance of I/A OWTS in Barnstable County, MA

	Technology	Mean TN (mg/L)
Barnstable County	Advantex	21.1
	Amphidrome	19.8
	FAST	32.4
	SeptiTech	22.7
	Bioclere	22.9
	Norweco Singulair	32.4
	OMNI Recirculating Sand Filter	32.5
	RUCK	19.0
	HOOT	25.1
	Waterloo	43.0
	NitROE	18.6

Rhode Island

The State of Rhode Island Department of Environmental Management (RIDEM) Office of Water Resources regulates wastewater treatment for the entire state, including I/A OWTS and the approval of new technologies. Most of the systems approved meet 50% TN reduction and meet TN effluent of 19mg/L; RIDEM also has approved a limited number of Norweco Hydro-Kinetic installations for 75% TN reduction. There is currently no long-term monitoring required in Rhode Island. However, RIDEM has recently revised their approval guidance that calls for initial monitoring and has agreed to share that information with Suffolk County when available.

RIDEM requires IA OWTS in designated critical resources areas, such as in the Salt Pond and Narrow River Management Areas and public well radius areas. I/A OWTS can be used when there in a non-conforming lot that does not meet setbacks or density and for new construction, as part of the variance criteria. Several local municipalities have adopted more stringent regulations that require the use of I/A OWTS in certain situations beyond the requirements of the state.

Approved Technologies for Nitrogen Reduction in Rhode Island:

- Amphidrome
- BioBarrier
- BioClere
- FAST (single home and modular)
- Norweco Singulair DN, Green, TNT
- Norweco Hydro-Kinetic
- White Knight
- Orenco Advantex AX and RT
- Recirculating Sand Filter
- SeptiTech

Maryland

In May of 2004, the Bay Restoration Fund (BRF) was signed into law. The purpose of the BRF was to create a reoccurring revenue stream, financed by wastewater treatment plant and septic system users, who are assessed a monthly fee ranging between $2.50 to $5 per month. The BRF has received approximately $1.5 billion as of June 30, 2019, of which $170 million was spent to finance 10,288 nitrogen removing septic systems, referred to as Best Available Technology (BAT), in the State of Maryland. Maryland's program goal is to use the BRF to reduce nutrient loading to Chesapeake Bay by upgrading systems to municipal sewage treatment plants (STP's), upgrade existing conventional septic systems in the Critical Areas to nitrogen reducing BAT systems, and to reduce nitrogen through the Winter Cover Crop Program.

Maryland regulations require BAT systems for new construction and replacement of existing septic systems within the Chesapeake Bay and Atlantic Coastal Bays Critical Areas. The Critical Area is defined as the area within 1,000 feet of the waterbody. Maryland adopted a treatment performance limit of 30 mg/L for TN and is the least stringent of the states looked at for this report. The Maryland Department of the Environment (MDE) field verified technologies, twelve (12) systems of each technology were sampled (24-hour composite samples) quarterly for one year and if the systems averaged 30 mg/L TN or better they were certified as BAT technologies. However, MDE has no long-term monitoring plan in place to evaluate the function of BAT systems overtime. All wastewater systems greater than 5,000 GPD must utilize BAT. In addition, sites outside of the Critical Area may be required to install a BAT if they do not meet current standards (pre-existing lot size or deficient soil types).

The BRF provides grants to property owners to cover part or all of the cost for a BAT Pretreatment Unit. Based on the availability of funding, applications are processed on a first-come, first-served basis with priority given to the repair or replacement of failing septic systems within the Critical Areas. Low interest loans are also available. Only pre-qualified state-licensed disposal system contractors may install BAT systems in the State. Pre-paid two-year maintenance contracts and annual inspections in perpetuity are required for all BAT installations. The Maryland Code states "the property owner is required to operate and maintain the BAT for the life of the system through a certified service provider. The owner shall ensure the BAT system is inspected and has necessary operation and maintenance performed at a minimum of once per year." Inspection contracts are with the selected system distributor's trained inspector, which there are few of, so homeowners have little choice in regard to who completes the annual inspections. The **Table 16** lists the performance data of the BAT systems approved for use in Maryland.

Approved Technologies for Nitrogen Reduction in Maryland:

- Orenco Advantex AX20 and AX-RT
- AquaKlear
- Hoot BNR
- Hydro-Action AN Series

- RetroFAST
- BioMicrobics SeptiTech STAAR
- Norweco Singulair Green and Singulair TNT
- Fuji Clean CEN-Series

Table 16: Technology Performance Summary Table of Maryland BAT systems

	Technology	Mean TN (mg/L)
Maryland	Fuji Clean CEN-Series	14.1
	Orenco Advantex AX-20	17
	Orenco Advantex AX-RT	14.5
	Hoot BNR	21
	Hydro-Action AN Series	20.3
	RetroFAST	25.4
	SeptiTech	20
	Singulair Green/TNT	27
	AquaKlear	27.5

New Jersey

New Jersey Pinelands Commission regulates land use and development within the Pinelands region. I/A OWTS are required for new construction within the New Jersey Pinelands region. There are approximately 331 I/A OWTS installed compared to the 10,000 existing conventional on-site wastewater disposal systems. Legacy conventional septic systems are not required to be updated, as long as they are repaired/replaced in-kind/in-place they are grandfathered, however cesspools are outlawed. Within the Pinelands growth areas, the following systems are approved on the minimum corresponding lot size: Amphidrome (1 acre), Bioclere (1 acre), and BioMicrobics MicroFAST (1.4 acres). SeptiTech was being piloted and is recommended to be permanently approved for 1 acre. BioMicrobics BioBarrier was being piloted but is recommended to be removed from the program due to insufficient total nitrogen removal. Hoot and BUSSE I/A OWTS technologies were being piloted but are recommended to be removed due to no systems being installed after 8 years in the pilot program. Cromaglass I/A OWTS technology was being piloted but never received approval due to insufficient total nitrogen removal. After an I/A OWTS technology completes the pilot program, an approval for a specific lot size is determined. After a technology has completed the pilot phase, no additional laboratory testing or sampling is required. On residential properties that are at least 3.2 acres or more, no I/A OWTS technology is required, even for new construction. New Jersey Pinelands Commission requires NEHA certification for installers, and a five (5) year pre-paid operation & maintenance contract. The Commission encourages homeowners to renew their operation & maintenance contracts after the five years are up, but this is not a requirement, and usually does not happen. Therefore, there is no guarantee that the systems are continuing to meet the treatment standard they did during piloting after the initial five (5) year maintenance contract expires. The **Table 17** lists the performance data of the NJ Pinelands Commission systems, based on the most recent annual report which is for 2019 through November 5, 2019.

Table 17: Performance Summary Table for the New Jersey Pinelands, as of 11/2019

	Technology	TN (mg/L)
New Jersey Pinelands	MicroFAST	18.2
	SeptiTech	11.6
	Bioclere	11.2
	Amphidrome	11.9
	BioMicrobics BioBarrier	29.3
	Cromaglass	31.5

XIII. Statistical Analysis of Barnstable County's I/A OWTS Database

The Horsley Witten Group, Inc. (HW) was retained by the United States Environmental Protection Agency (USEPA) in 2016 to conduct a statistical analysis of the sampling data that has been collected through the Barnstable County Septic Database. This database includes field sampling data for approximately 2,039 advanced treatment systems and provides an opportunity to evaluate how many samples are needed to understand the performance of a new nitrogen reducing technology for onsite septic systems. Two questions were evaluated with the data provided by Barnstable County:

1. How many samples are needed to understand the performance of an individual system serving one home?
2. How many systems need to be sampled to evaluate the overall performance of an advanced technology?

The Horsley Witten Group (HW) determined from the analysis that twelve (12) samples per system is a reasonable number of samples that contributes to an acceptable percent error range (e.g., 20% or below). A twelve (12) sample plan would make it easy to implement a monthly sampling plan across one year. All of the results presented in this section represent the calculation using a 90% confidence level. HW also analyzed the number of systems needed within different technologies, some of the technologies analyzed had a reached the 20% error range threshold with only a few systems tested (8 systems or less), whereas other technologies require more systems and data to analyze (20 systems) in order reach the same threshold. Since the field evaluation data collection protocol will be designed to test many technologies, this analysis can help inform regulators to choose an appropriate number of systems to test. The analysis shows that field testing a select number of systems between eight (8) and twenty (20) with twelve (12) samples collected on each system would provide a sufficient amount of data to evaluate the performance of the technology. Suffolk County was the first jurisdiction to develop an approval process based on this statistical analysis.

XIV. Experimental and Emerging Technologies

New York State recently established the NYS Center for Clean Water Technology (CCWT) at Stony Brook University, with the primary objective of developing and commercializing wastewater treatment systems for individual onsite (household) use that are affordable and highly efficient at removing nitrogen and other contaminants. The CCWT has identified Nitrogen Reducing Biofilters (NRBs) as a system potentially capable of meeting this goal.

NRBs utilize a two-stage biofiltration concept treating septic tank effluent (STE). In the two-stage process, nitrification occurs in the Stage 1 biofilter, followed by denitrification in the Stage 2 biofilter. The NRB designs investigated by the CCWT typically consist of a vertically stacked media arrangement, with the Stage 1 biofilter directly above the Stage 2 biofilter. The first stage provides ammonification and nitrification via a porous media (sand) biofilter. The underlying second stage provides denitrification via an anoxic biofilter with reactive media (such as lignocellulose). An alternative design being tested utilizes a lined stage 1 nitrification biofilter discharging to an upflow stage 2 biofilter in a tank. The initial NRB design was developed as part of the Florida Onsite Sewage Nitrogen Reduction Strategies Study (FOSNRS) and further refined incorporating lessons learned in additional trials conducted at the Massachusetts Alternative Septic System Test Center (MASSTC). The full-scale pilot testing demonstrated that NRBs are able to achieve high percentages of total nitrogen removal (up to 90%). CCWT has installed three (3) variations of NRB's at the MASSTC in 2016 and installed NRB's at 7 private residences on County Park Sites from 2017-2019 with additional installations planned for 2020. The NRBs installed in Suffolk County, NY (Unlined, Lined and Box) were monitored once the system reached steady state. The SCDHS sample results for the NRB's are outlined in **Table 18**. See appendix iii for all NRB sample results through 2019. In addition, CCWT is performing their own research on the NRB's which is outlined in the 2017 Annual Technology Review of Innovative / Alternative OWTS which was prepared by SCDHS and CCWT for the New York State Department of Environmental Conservation.

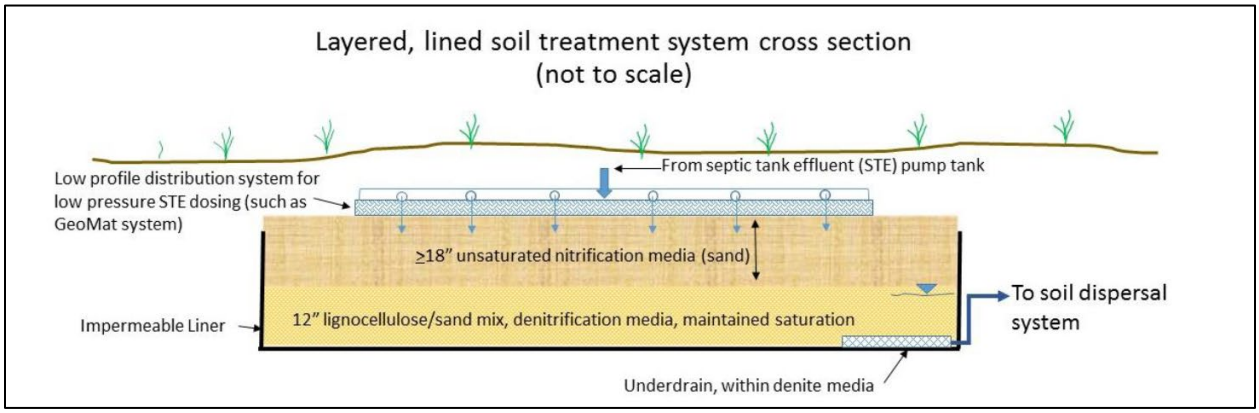
Field installed pilot NRB systems have been capable of reducing nitrogen to below 6 mg/L. Additional pilot testing is needed on year-round residences in Suffolk County. Further refinement of NRB's is required in order to bring the installation costs to affordable levels. CCWT has been working with the SCDHS to develop a cost efficient and passive I/A OWTS. CCWT has constructed the CCWT Wastewater Research and Innovation Facility (WRIF) in Stony Brook, NY. The WRIF allows the Center to design and implement experiments that will yield technical design standards. CCWT has started the development of the next generation of nitrogen removing biofilters, (a.k.a. NRB 2.0). The basis for significant cost reduction rests on three essential design objectives, namely:

1. Reducing the footprint dimensions of the nitrification sand filter unit process;
2. Reducing the detention time of the denitrification wood chip bioreactor unit process and/or improve overall efficiency of denitrification process;
3. Reducing the extent of controls, valves, and associated hardware.

Table 18: SCDHS NRB Sample Results

NRB Technology	# of Systems as of 12/31/2019	# of Samples as of 12/31/2019	AVG TN mg/L
Unlined NRB	3 (1 is out of service)	27	10.7 mg/L
Lined NRB	3	19	11.4 mg/L
Box NRB	1 (2 pending)	5	4.0 mg/L

Figure 6: Schematic of a Lined Nitrogen Reducing Biofilter



CCWT and SCDHS have also engaged in discussions with Dr. Daniel Smith of AET Tech LLC regarding three (3) emerging technologies summarized in Table 19. Dr. Smith has been working on the development of 3 technology platforms summarized in Table 19. The first technology, Anaerobic Ion Exchange (AN-IX), utilizes a chemical process with anaerobic solids blanket chamber providing ammonification and three (3) ion exchange chambers filled with zeolite that captures NH4+. It differs from other I/A OWTS in that it does not utilize oxygen or the nitrification/denitrification bioreactions. The nitrogen removal is due to ammonium being retained in the zeolite. AN-IX has been tested at test center setting in Maryland and Florida and has shown a 95% total nitrogen removal. The zeolite media needs to be replaced or regenerated approximately every 3 years. The footprint of the technology is small and contains no electrical components. Suffolk County plans to work with Dr. Smith and CCWT to pilot the AN-IX system locally.

The second technology being developed by AET Tech LLC is the Submerged Oxygenation Biofilter/Auto-Denitrification (SOB-AD), which utilizes a submerged oxygenation biofilter made of porous granular media (90% zeolite, 10% limestone alkalinity admixture) in which wastewater passes through once followed by a denitrification sub-chamber. SOB-AD operates by passive gravity flow and has no inherent need for a wastewater pump.

The third technology being developed by AET Tech LLC is the Air Circulation Biofilter / Denitrification (ACB-DEN) process that employs an air circulation ion-exchange biolfilter and anaerobic denitrification. It utilizes an unsaturated downflow granular media biofilter with low-level air circulation

to assist in media oxygenation and ammonium oxidation followed by a denitrification sub-chamber. The media consists of 90% zeolite and 10% alkalinity admixture. Utilizes a wastewater pump and requires replacement or regeneration of zeolite. Air circulation and downward airflow pattern minimize clogging and allow increase in loading rate to keep footprint small.

Table 19: Summary of Emerging Technologies by Dr. Daniel P. Smith of AET Tech LLC

Technology	Process	Footprint	Nitrogen Recovery
Anaerobic Ion Exchange (AN-IX)	Upflow pretreatment and NH_4^+ ion exchange	89 ft^2	Yes
Submerged Oxygenation Biofilter / Auto-Denitrification (SOB-AD)	NH_4^+ oxidation to NO_2^- / anammox & denitrification	82 ft^2	No
Air Circulation Biofilter / Denitrification (ACB-DEN)	Biofiltration: nitrification & denitrification	77 ft^2	No

Constructed Wetlands, also known as vegetated recirculating gravel filters, are currently designated as experimental systems. The Department has been working with SBU CCWT to designate the technology as pilot approval based on these systems are approved for general use in Rhode Island and Massachusetts. SSCT provided a draft guidance document in 2019 and SCDHS expects to be issuing pilot use approval in 2020. Suffolk County has funded commercial-use constructed wetlands installations at Sylvester Manor Education Farm and The Nature Conservancy's Uplands Farm, see section XI for the performance of those systems.

An additional emerging technology that may be piloted in Suffolk County is the NitROE™ system that is being tested at MASSTC and has been installed in Cape Cod under the Mass DEP Pilot Permitting Program with support from the Massachusetts Clean Energy Center. The manufacturer, KleanTu, developed the NitROE™ technology at MASSTC and has installed 11 units at residences on Martha's Vineyard and in Falmouth, Cape Cod. The technology consist of a tank with an aeration chamber with an air pump and a denitrification chamber filled with wood chips as a carbon source. Samples were taken monthly by Tisbury Wastewater Treatment Plant employees in 2018 and 2019. The average influent (untreated) TN at 11 these sites is 81 mg/L (based on 58 samples) and the average effluent (treated) TN is 18.6 mg/L (based on 127 samples).

The sheer number (approximately 380,000) of septic systems and cesspools in Suffolk County combined with the County's Reclaim Our Water initiative, has led to a renewed interest in cost-effective and performance-effective nitrogen removal technologies. In 2019, SCDHS has received interest from several I/A manufacturers throughout the world that have new products that they wish to bring to market in Suffolk County.

XV. Overview of Septic Haulers Information Portal (SHIP)

Changes to Article 6 of the Suffolk County Sanitary Code approved in December of 2017, prohibit the installation of new cesspools and require that all replacements or retrofits of existing sewage disposal systems consist of a code compliant system, a conventional septic system at a minimum. This requirement applies to property owners who determine that their sanitary system needs to be replaced or retrofitted. This change to the Sanitary Code does not require that properties with cesspools upgrade their systems, it only applies to voluntary replacements and retrofits.

Permits for replacements or retrofits to existing sewage disposal systems that do not require a formal permit from SCDHS must be registered through the Septic Haulers Information Portal (SHIP), which is a streamlined process for contractor to submit documentation and receive an OK to Proceed from the Department within 24-48 hours. In addition, property owners who have a failed cesspool and wish to install an I/A OWTS may do so utilizing a streamlined process through SHIP, provided the job does not require a formal permit from SCDHS. Eligible homeowners may take advantage of State and County grants to upgrade their failed cesspool with an I/A OWTS. In many cases the cost is equivalent or less than the cost of a conventional septic system. Utilizing this streamlined process eligible applicants can be issued a grant and approval to install within 24-48 hours.

As of December 31, 2019 a total of 751 replacement or retrofits have been reported through SHIP. Approximately 100 of these have been retrofits to IA OWTS. SCDHS plans continued outreach in 2020 to inform homeowners of financial incentives available to replace your failing septic system or cesspool with an I/A OWTS.

XVI. Education and Outreach

Industry education and public outreach has been part of the foundation of the Reclaim Our Water initiative and has proven to be key to the installation and performance of I/A OWTS throughout Suffolk County. Below find a summary of the education and outreach that was completed in 2019:

- 28 Septic Improvement Program presentations and meetings
- 23 Liquid Waste Industry Education Training Classes and Tours with 602 Total Participants
- Four Article 6 Workgroup Stakeholders Meetings and Two Sub-Workgroup Meetings
- 35 Subwatersheds Wastewater Plan Education Presentations and Meetings

See section VII in the “Report to NYS Environmental Facilities Corporation on Suffolk County’s Septic Improvement Program and State Septic System Replacement Program” for further details on public outreach.

XVII. Summary and Recommendations

The I/A OWTS Demonstration Program was an effective method to spark the use of innovative and alternative technologies in Suffolk County. The demonstration program allowed the assessment of system design, operation & maintenance, installation issues, and the overall ability of each technology to meet nitrogen reduction objectives in Suffolk County. Though all technologies participating in the

demonstration program have certification for nitrogen reductions (through NSF 245 or EPA's ETV testing), not all technologies proved capable of reducing total nitrogen to at or below 19 mg/L in Suffolk County. When combined with the findings of the SWP, three things are apparent:

1) Suffolk County's stringent performance standard of 19 mg/L is appropriate given the relatively high load reduction goals identified in the SWP;

2) I/A OWTS are capable of achieving this performance standard and are a critical, cost effective, wastewater management strategy for the restoration and protection of Suffolk County's water resources; and,

3) Continued research and testing of new technologies is appropriate to:

    a. Support achievement of load reduction goals in subwatersheds with high load reduction requirements;
    b. Increase cost effectiveness to reduce overall long-term upgrade and maintenance costs; and,
    c. Evaluate and/or develop new technologies for treating other contaminants such as contaminants of emerging concern.

The Suffolk County performance standard of 19 mg/L represents the most stringent requirement for TN that does not allow for increase in density. SCDHS does not recommend modification of the performance standard of 19 mg/L until there is sufficient data justifying a 90% confidence in the results as concluded by Horsely Witten Group in the analysis of Barnstable County's septic system database. (i.e. there should be a minimum of 12 samples of 20 systems of a technology before the County considers changing the performance standard). However, it is important to note that the average of bi-monthly provisionally approved I/A OWTS was 16 mg/L TN for 2019. Several technologies are expected to reach General Use Approval in 2021, and SCDHS could recommend more stringent performance standards in 2022 if the data warrants that action.

Although Provisionally Approved systems as a whole were able to meet SCDHS performance standards, two (2) of the technologies were unable to maintain a TN average of 19 mg/L or less during the last 12 months. The manufacturers of both of these technologies, Orenco AX-RT and Norweco Singulair TNT, have developed and implemented corrective action plans to improve performance. If these technologies fail to meet performance standards or follow SCDHS monitoring requirements, SCDHS has the authority to revoke or suspend Provisional Use Approval.

Suffolk County's continued efforts through the Reclaim Our Water Initiative and the County's collaboration with the NY Center for Clean Water Technology, have sparked broad interest in new technologies and innovation in Suffolk County. New emerging technologies such as the Nitrogen Reducing Biofilters (NRB's) being evaluated and piloted by SBU's CCWT are promising additions to the existing technologies being evaluated. SCDHS and CCWT are both committed to work together to aggressively pursue, evaluate, and install these technologies in Suffolk County. Advancement of nitrogen-reducing wastewater treatment technologies is an imperative goal of the Reclaim Our Water initiative in light of the high load reduction goals identified in the SWP.

REFERENCES USED IN PREPARATION OF THIS REPORT

2017 and 2018 Annual Technology Review of I/A OWTS prepared for the New York State Department of Environmental Conservation.

Barnstable County Septic Online Database. https://septic.barnstablecountyhealth.org/

The Center for Clean Water Technology at SUNY Stony Brook and Hazen Group, *Nitrogen Reducing Biofilter Draft Engineering Report*, November 2016

Horsley Witten Group*, Analysis of Barnstable County Advanced Onsite Wastewater Septic Data,* August 7, 2017

Maryland Bay Restoration Fund Advisory Committee Annual Status Report January 2020 (15th Report)
https://mde.maryland.gov/programs/Water/BayRestorationFund/Documents/2020%20BRF%20Report-Final.pdf

Maryland's Nitrogen-Reducing Septic Upgrade Program, Maryland Department of the Environment
http://mde.maryland.gov/programs/Water/BayRestorationFund/OnsiteDisposalSystems/Pages/index.aspx

NJ Pinelands Commission, 2018-2019 *Annual Report to the New Jersey Pinelands Commission Alternate Design Treatment Systems Pilot Program Implementation Report*. November 5, 2019

Suffolk County, *Requests for Expressions of Interest (RFEI) for Phase II Demonstration of I/A OWTS in Suffolk County*, March 10, 2016

Suffolk County Department of Health Services, *Article 6 of the Suffolk County Sanitary Code,* Originally Adopted November 19, 1980

Suffolk County Department of Health Services, *Article 19 of the Suffolk County Sanitary Code,* Effective 8/1/2016

Suffolk County Department of Health Services, S*tandards Promulgated Under Article 19 for the Approval and Management of Innovative and Alternative Onsite Wastewater Treatment Systems*, Issued December 29, 2017

Technical Bulletin 170908 NitROE Tank Technology for Enhanced Nitrogen Removal from Title 5 Septic Systems. 9-21-2017
http://www.mvcommission.org/sites/default/files/docs/NitROE%20Technology%20Technical%20Bulletin%202017_0908.pdf

Suffolk County Septic Demo Pilot Phase **Composite Sample Data** (Effluent)

Notes:

(1) Non-Steady State -- Result taken before system developed a treatment process to reduce nitrogen (can be either a composite or grab sample)

(2) Steady State - Result taken after system developed a treatment process to reduce total nitrogen (TN)

(3) Samples Type are either Composite sample (taken over a 24-hour period) or grab sample taken at a single point in time

(4) Compare - grab sample taken to compare to composite sample. Grab sample was taken on the last day of the composite sample

(5) Calculate - Composite result used to calculate average total nitrogen (TN) to determine provisional approval (only composite samples used to calculate average). Data from 75% of units must average 19mg/l of TN for at least 6 months of composite sampling to receive provisional approval. This requirement for demo systems only (non-demo systems require 12 months of sampling with 75% of systems meeting an average TN of 19/mg/l to receive provisional approval)

(6) Total Nitogen (mg/l) = TKN +Nitrate +Nitrite

Manufacturer	Site #	Sample Date	Field #	Lab ID #	Sample Type (3)	State (1)(2)	Compare Sample	TN(mg/l) (6)	TKN (mg/l)	Ammonia (as N)	NO3 (Nitrate as	NO2 (Nitrite as	BOD	TSS	PH	Temp	Alkalinity
Hydro-Action		3/21/16 - 3/22/16	00131860322	160732	Composite	Non-Steady	No	56.8	50.1	30.1	3.6	2.8	120	44	7.34	56	182
	SDS#18	4/11/16-4/12/16	00318160412	160913	Composite	Non-Steady	No	29.4	23.8	23.4	1	4.6	31	18	7.61		157
		5/16/16-5/17/16	002318160517	161237	Composite	Steady	No	18.7	2.4	< 0.5	15.8	0.5	16	16	6.56	60.3	18
		6/20/16 - 6/21/16	004318160621	161498	Composite	Steady	No	24.8	8.5	0.8	16.3	< 0.5		67	6.77	70.8	26.8
		7/18/16 - 7/19/16	001318160719	161731	Composite	Steady	No	10.6	5.3	< 0.5	5.3	< 0.5	18	53	7.07	80	65
		8/15/16 - 8/16/16	001318160816	161940	Composite	Steady	No	4.5	< 0.5	< 0.5	4.5	< 0.5	< 9	< 10	7.17	80	68
		9/12/16 - 9/13/16	001318160913	162170	Composite	Steady	Yes	9	2.3	< 1	6.7	< 0.5		< 10	7.13	73	54.4
		11/14/16-11/15/16	001318161115	162766	Composite	Steady	No	10.1	7.9	3.8	2.2	< 0.5	18	33	6.57	56	23.3
	SDS#10	12/14-15/15	004318151215	Lab #12-15	Composite	Non-Steady	No	32.9	31.6	21.57	< 5	1.3			7.4		
		2/22/16 - 2/23/16	004318160223	160435	Composite	Non-Steady	No	93.3	91	63.6	< 1	2.3	31		7.61	45.5	287
		3/14/16 - 3/15/16	04318160315	160645	Composite	Non-Steady	No	66.2	64.1	49.8	< 0.5	2.1	83	33	7.64	47.2	
		4/11/16 - 4/12/16	004318160412	160914	Composite	Non-Steady	No	56.8	53.1	43.1	1	2.7	123	49	7.71		
		5/9/16 - 5/10/16	004318160510	161172	Composite	Steady	Yes	5.7	< 0.5	< 0.5	3.6	2.1	19	16	6.6	59.3	22
		6/13/16-6/14/16	004318160614	161440	Composite	Steady	No	9.7	2	< 0.5	7.7	< 0.5	< 17	< 10	7.34		
		7/11/16-7/12/16	004318160712	161650	Composite	Steady	No	14.1	2.2	< 0.5	11.9	< 0.5	9	10	6.94	77	318
		8/8/16 - 8/9/16	004318160809	161884	Composite	Steady	No	8.8	< 1	1.4	8.8	< 0.5	< 17	14	7.08	78	45.6
		9/12/16 - 9/13/16	004318160913	162173	Composite	Steady	No	9.7	2.9	< 1	6.8	< 0.5		10	7.33	73	48
		10/17/16 - 10/18/16	005318161018	162474	Composite	Steady	No	9.3	2	< 0.5	7.3	< 0.5	11	10	7.32		58
	SDS#12	2/22/16 - 2/23/16	001318160223	160432	Composite	Non-Steady	No	45.8	42	28.2	1.8	2	63		7.41	48	222
		3/14/16 - 3/15/16	002318160315	160643	Composite	Non-Steady	No	41.9	40.2	24.1	0.6	1.1	124	70	7.4	57.6	
		4/11/16-4/12/16	00318160412	160911	Composite	Non-Steady	Yes	30.3	21.3	19.8	2.5	6.5	128	49	7.36		165
		5/9/16 - 5/10/16	002318160510	161170	Composite	Steady	No	14.1	5.1	< 0.5	9	< 0.5	27	< 25	7.09	58.5	52
		6/13/2016-6/14/16	002318160614	161438	Composite	Steady	Yes	12.2	2	< 0.5	10.2	< 0.5	< 16	< 10	7.75	72.4	111
		7/11/16-7/12/16	002318160712	161648	Composite	Steady	No	14.5	4.9	< 0.5	9.6	< 0.5	22	53	7.63	69	138
		8/8/16 - 8/9/16	002318160809	161882	Composite	Steady	No	10.4	6.1	3.5	4.3	< 0.5	55	90	6.88	74	176
		9/12/16 - 9/13/16	003318160913	162172	Composite	Steady	Yes	12.1	1.8	< 1	10.3	< 0.5		10	7.64	72	110.2
		10/17/16 -10/18/16	002318161018	162471	Composite	Steady	Yes	11.1	1.7	< 0.5	9.4	< 0.5	< 7	< 10	7.52		76
	SDS#11	3/14/16 - 3/15/16	04318160315	160646	Composite	Steady	No	16.3	11.7	5.5	< 0.5	4.6	62	42	6.88	53.2	
		4/11/16-4/12/16	005318160412	160915	Composite	Steady	No	18.5	14.6	11.2	0.5	3.4	35	19	7.29		89
		5/9/16 - 5/10/16	005318160510	161173	Composite	Steady	No	5.2	< 0.5	< 0.5	2.4	2.8	37	< 25	7.08	59.2	72
		6/13/16 - 6/14/16	005318160614	161441	Composite	Steady	No	10.8	2.3	< 0.5	8.5	< 0.5	< 17	< 10	7.16	71.6	35
		7/11/16 to 7/12/16	005318160712	161651	Composite	Steady	No	10.5	2.6	< 0.5	7.9	< 0.5	11	11	6.83	72.4	27
		8/8/16 - 8/9/16	005318160809	161885	Composite	Steady	No	10.1	< 1	< 0.5	10.1	< 0.5	10	< 10	6.69	73	23
		9/12/16 - 9/13/16	005318160913	162174	Composite	Steady	No	13.4	3.2	< 1	10.2	< 0.5		22	6.02	80	10
		10/17/16-10/18/16	006318161018	162475	Composite	Steady	No	12.6	3.3	< 0.5	9.3	< 0.5	14	23	6.67	71	20
	SDS#6																
		5/16/16-5/17/16	003318160517	161238	Composite	Steady	Yes	11.3	5.5	3.6	5.2	0.6	< 16	13	7.49	58.6	54.5
		6/20/16 - 6/21/16	005318160621	161499	Composite	Steady	No	24.2	4.9	< 0.5	19.3	< 0.5		< 10	7.22	70.4	23.5
		7/18/16 - 7/19/16	002318160719	161732	Composite	Steady	No	12.8	0.9	< 0.5	11.9	< 0.5	< 9	< 10	7.42	80	54
		8/15/16-8/16/16	002318160816	161941	Composite	Steady	No	13.9	9.3	1.2	2.2	2.4	10	< 10	7.75	75	163
		9/12/16 - 9/13/16	002318160913	162171	Composite	Steady	Yes	4.3	1.8	< 1	2.5	< 0.5		< 10	7.72	72	88.6
		11/14/16-11/15/16	003318161115	162769	Composite	Steady	No	19.6	3.8	< 0.5	15.2	0.6	7	< 10	7.19	50	53.2
								20.64146	13.21	8.5163	6.6439	1.327	36.12	24.87	7.201951	66.48485	89.6029

Manufacturer	Site #	Sample Date	Sample #	Lab ID #	Sample Type (3)	State (1)(2)	Compare Sample	TN(mg/l) (6)	TKN (mg/l)	Ammonia (as N)	NO3 (Nitrate as	NO2 (Nitrite as	BOD	TSS	PH	Temp	Alkalinity
BUSSE GT																	
	SDS#7	3/28/16 - 3/29/16	005318160329	160796	Composite	Non-Steady	No	58.6	33.9	1.1	24.7	< 0.5			5.49		
		4/18/16 -4/19/16	003318160419	160971	Composite	Non-Steady	Yes	102.4	34.3	29	68.1	< 0.5	< 8	< 10	4.08	64	
		5/16/16-5/17/16	005318160517	161240	Composite	Non-Steady	No	76.3	27.3	22.3	48.9	< 0.5	< 10	< 10		59.8	
		6/20/16 - 6/21/16	007318160621	161501	Composite	Non-Steady	No	108.2	46.7	28.9	61.5	< 0.5		< 10	3.84		
		8/15/16 - 8/16/16	004318160816	161946	Composite	Non-Steady	No	13.4	13.4	15.3	< 0.5	< 0.5	< 7	< 10	3.57	80	
		9/19/16 - 9/20/16	001318160920	162237	Composite	Non-Steady	Yes	80.8	30.2	26.9	50.6	< 0.5	7	< 10	3.7	72	
		10/3/16-10/4/16	001318161004	162361	Composite	Non-Steady	No	70.1	22.7	17.3	47.4	< 0.5	8	10	3.62	74	
		6/19/17-6/20/17	003881170620	171496	Composite	Non-Steady	Yes	113.1	6.1	4	107	< 0.5	< 5	< 10	3.5	71.96	
		7/24/17-7/25/17	003881170725	171888	Composite	Non-Steady	Yes	140	NR	7.3	140	< 0.5				73.4	
		1/7/19-1/8/19	003881190108	190055	Composite		Yes	58.6	13.4	12.3	45.2	< 0.5	< 5	< 25	9.66	11.9	NR
	SDS#3	9/26/16 - 9/27/16	002318160927	162297	Composite	Non-Steady	Yes	68.5	16.8	20.9	51.7	< 0.5	7	< 10	3.68	74	
								80.90909	24.48	16.845	58.691	0.5	7.125	11.67	4.571111	64.56222	#DIV/0!

Manufacturer	Site #	Sample Date	Sample #	Lab ID #	Sample Type (3)	State (1)(2)	Compare Sample (Yes or No) (4)	TN(mg/l) (6)	TKN (mg/l)	Ammonia (as N)	NO3 (Nitrate as N)	NO2 (Nitrite as N)	BOD	TSS	PH	Temp	Alkalinity
Orenco Advantex AX20-RT	SDS#2	2/22/16 - 2/23/16	002318160223	160433	Composite	Steady	No	18.9	1	1.2	17.9	< 1	< 13		6.38	48	68
		3/21/16 - 3/22/16	004318160322	160735	Composite	Steady	No	21.2	3.6	1.8	17.6	< 0.5	< 13	< 10	6.24	54.3	64
		4/11/16-4/12/16	02318160412	160912	Composite	Non-Steady	Yes	70.9	68.1	42.2	0.5	2.3	12		6.14		47
		5/16/16-5/17/16	001318160517	161236	Composite	Non-Steady	Yes	35	3.8	3.2	31.2	0.5	< 10	< 10	6.16	66.8	45.5
		6/20/16 - 6/21/16			Composite	Steady	Yes	24.5	7.9	7.1	16.6	< 0.5		< 10		69.9	
		7/18/16 - 7/19/16	005318160719	161734	Composite	Steady	No	19.7	12	0.5	7.7	0.8	< 9	< 10	6.55	78	135
		8/22/16 - 8/23/16	002318160823	162020	Composite	Steady	No	13.6	3.2	2.8	9.9	0.5	< 9	< 10	6.21	77	118.6
		9/26/16 - 9/27/16	00131816092	162296	Composite	Steady	Yes	19.6	19.6	16.1	< 0.5	< 0.5	24	13	9.87	77	228
		10/3/16-10/4/16	004318161004	162364	Composite	Steady	No	14.5	14.5	19.7	< 0.5	< 0.5	25	13		64	
		11/21/16-11/22/16	002318161122	162827	Composite	Steady	Yes	29.7	< 1	1.2	29.7	< 0.5	< 5	3.2	6.18	57	11
		12/5/16-12/6/16	005918161206	162902	Composite	Steady	Yes	25.6	1.7	1.5	23.9	0.5	< 5	< 10	6.46	55	25
		1/9/17-1/10/17	004318170110	170056	Composite	Steady	Yes	26.11	7.4	< 0.5	17.91	0.8	6	< 10	6.65		35.6
		2/6/17-2/7/17	005318170207	170306	Composite	Steady	Yes	21.7	4.1	4	17.6	< 0.5	< 5	< 10	6.16	50	47
		3/20/17-3/21/17	007881170321	170618	Composite	Steady	Yes	22.3	3.2	3.7	18.5	0.6	< 5	< 10	6.83	49	
								25.95071	10.79	7.5357	15.001	0.714	10.85	9.933	6.6525	62.16667	74.9727

Manufacturer	Site #	Sample Date	Sample #	Lab ID #	Sample Type (3)	State (1)(2)	Compare Sample	TN(mg/l) (6)	TKN (mg/l)	Ammonia (as N)	NO3 (Nitrate as	NO2 (Nitrite as	BOD	TSS	PH	Temp	Alkalinity
Orenco AX20	SDS#13	11/14/16-11/15/16			Composite	Steady	Yes	23.9	8	4.2	15.2	0.7	10	< 10	6.64	54	37

		12/12/16-12/13/16			Composite	Steady	Yes	51.3	37.1	5.2	14.2	0.7	182	380	6.84	55	65.6
		2/6/17-2/7/17			Composite	Steady	Yes	33.2	23.4	9.8	9.8	< 0.5	93	< 10	6.81	53	124
		3/20/17-3/21/17			Composite	Steady	Yes	19.9	11.9	8.1	8	< 0.5	18	12	6.86	51	90
		4/24/17-4/25/17	007881170425	170968	Composite	Steady	Yes	14.1	11	10.7	2.2	0.9	42	16	7.14		113
		6/26/17-6/27/17	007881170627	171580	Composite	Steady	Yes	14.9	7	6	7	0.9	22	< 10	7.07	71.96	105
		8/14/17-8/15/17	003881170815	172542	Composite	Steady	Yes	15.8	3.8	4.9	12	< 0.5	14	11	7.44	72.14	105.4
		8/28/17-8/29/17	003881170829	172798	Composite	Steady	Yes	16.9	5.2	5.7	11.7	< 0.5	11	5	7.16	69.8	113
		10/2/17-10/3/17	007881171003	173260	Composite	Steady	Yes	14.7	3.5	2.6	11.2	< 0.5	9	< 20	7.46	69.8	130
		11/13/17-11/14/17	007881171114	173658	Composite	Steady	Yes	11.4	1.2	3.6	10.2	< 0.5	9	< 10	7.29	62.1	106
		12/11/17-12/12/17	007881171212	173953	Composite	Steady	Yes	15.1	7.5	4.2	7.6	< 0.5	19	7	6.96	56.5	66
	SD # 33	12/18/17-12/19/17	008881171219	174031	Composite	Steady	Yes	16.2	3.4	0.8	3.3	9.5	17	18	6.96	58.3	NR
		2/5/18-2/6/18	003881180206	180289	Composite	Steady	Yes	14.1	2.8	0.6	7.2	4.1	9	6	7.25	51.3	69
		3/19/18-3/20/18	003881180320	180681	Composite	Steady	Yes	14.4	3.6	1.1	10.8	< 0.5	9	< 10	7.22	50.2	63
		4/16/18-4/17/18	003881180417	180914	Composite	Steady	Yes	13	3.2	1	9.8	< 0.5	11	< 10	7.09	52.9	69
		5/14/18-5/15/18	001934180515	181201	Composite	Steady	Yes	17.2	3.9	1.3	13.3	< 0.5	6	< 10	6.88	63.5	50
		6/18/18-6/19/18	005934180619	181484	Composite	Steady	Yes	20.7	20.7	14.7	< 0.5	< 0.5	41	20	7	72.5	296
		7/16/18-7/17/18	005934180717	181742	Composite	Steady	Yes	48.7	38.1	1.9	10.6	< 0.5	< 5	< 10	6.71	77.9	66
		8/13/18-8/14/18	001881180814	182004	Composite	Steady	Yes	23.6	15.5	7.5	8.1	< 0.5	40	116	6.68	24.9	96
		9/17/18-9/18/18	001881180918	182314	Composite	Steady	Yes	11.9	5.3	4.9	6.6	< 0.5	6	< 10	NR	24.1	78
		10/22/18-10/23/18	001881181023	182574	Composite	Steady	Yes	14	1.7	1.4	11.8	0.5	NR	NR	6.95	18.1	NR
		11/26/18-11/27/18	001881181127	182855	Composite	Steady	Yes	15	4	2.7	11	< 0.5	< 6	2	6.85	13.7	NR
		12/17/18-12/18/18	001881181218	183074	Composite	Steady	Yes	14.9	7.4	5	7.5	< 0.5	< 5	< 12.5	6.59	13	NR
		1/14/19-1/15/19	001881190115	190123	Composite	Steady	Yes	13.9	10.6	7.8	2.7	0.6	9	25	NR	10.4	
	SD # 34	8/28/17-8/29/17	001881170829	172796	Composite	Steady	Yes	24.2	8.7	5.7	10	5.5	< 5	< 5	6.4	74.7	38
		10/2/17-10/3/17	005881171003	173258	Composite	Steady	Yes	20.9	2.4	2.3	18.5	< 0.5	< 5	< 10	6.2	73.4	17
		11/13/17-11/14/17	009881171114	173660	Composite	Steady	Yes	44.9	40.5	42.2	4.4	< 0.5	7	< 10	7.13	65.7	203
		12/11/17-12/12/17	005881171212	173951	Composite	Steady	Yes	63.4	54.4	44.7	8.1	0.9	94	190	6.9	63	211
		1/22/18-1/23/18	001881180123	180153	Composite	Steady	Yes	22.7	5.6	3.2	17.1	< 0.5	7	< 10	5.63	57.6	162
		3/5/18-3/6/18	001881180306	180526	Composite	Steady	Yes	28.5	4.9	3.1	23.6	< 0.5	7	< 5	5.52	60.3	10
		4/2/18-4/3/18	001881180403	180776	Composite	Steady	Yes	22.1	4.5	4.3	17.6	< 0.5	< 5	< 5	5.31	61.9	NR
		4/30/18-5/1/18	001934180501	181062	Composite	Steady	Yes	18.4	8.2	5	10.2	< 0.5	< 5	< 5	6.05	64.4	25
		6/11/18-6/12/18	001934180612	181409	Composite	Steady	No	28.9	11.9	7	17	< 0.5	20	21	6.3	73.22	39
		7/2/18-7/3/18	001934180703	181610	Composite	Steady	Yes	24	7.5	4.4	16.5	< 0.5	< 7	< 10	6.08	76.28	NR
		7/30/18-7/31/18	001934180731	181866	Composite	Steady	Yes	28.9	6.7	5.6	22.2	< 0.5	< 11	< 12.5	5.95	78.08	19
		8/27/18-8/28/18	001934180828	182115	Composite	Steady	Yes	24.7	10.8	9.6	13.9	< 0.5	< 5	< 10	6.41	27.3	NR
		10/15/18-10/16/18	001881181016	182506	Composite	Steady	Yes	26	6.7	9.6	19.3	< 0.5	< 6	< 10	NR	21.2	NR
		11/19/18-11/20/18	001881181120	182812	Composite	Steady	Yes	19.2	4.2	4.7	15	< 0.5	< 6	< 10	5.76	19.4	16.6
		12/10/18-12/11/18	001881181211	183010	Composite	Steady	Yes	15.2	0.9	2.4	14.3	< 0.5	< 6	< 10	4.17	14.9	NR
		1/7/19-1/8/19	001881190108	190056	Composite	Steady	Yes	17.2	1.7	< 1	15.5	< 0.5	< 2	< 18.75	6.1	14.9	24
		2/4/19-2/5/19	001881190205	190297	Composite	Steady	Yes	15.9	2.1	1.8	13.8	< 0.5	< 18	< 10	NR	14.9	NR
								22.29024	10.28	6.6415	11.446	0.971	20.23	27.32	6.588108	50.182	86.8867

Manufacturer	Site #	Sample Date	Sample #	Lab ID #	Sample Type (3)	State (1)(2)	Compare Sample	TN(mg/l) (6)	TKN (mg/l)	Ammonia (as N)	NO3 (Nitrate as	NO2 (Nitrite as	BOD	TSS	PH	Temp	Alkalinity
Norweco Singulair TNT	SDS#21	9/19/16 - 9/20/16	006318160920	162242	Composite	Steady	No	23	12.4	6.2	1.1	9.5	79	62	6.96	74	82
		10/3/16-10/4/16	006318161004	162366	Composite	Steady	Yes	42.6	36.6	35.7	5.4	0.6	197	108		74	
		11/21/16-11/22/16	003318161122	162828	Composite	Steady	Yes	57.4	52.2	40.1	< 0.5	5.2	197	88	7.43	64	262
	SDS#27	5/9/16 - 5/10/16			Composite	Steady	Yes	15.3	15.3	<0.5	< 0.5	< 0.5	86	110	6.82	59	131
		6/13/16 - 6/14/16	001318160614	161437	Composite	Steady	Yes	26.1	23.5	1.1	2.6	< 0.5	96	232	7.15	73.6	142.5
		7/11/16-7/12/16	001318160712	161647	Composite	Steady	No	31.1	22.5	3.9	8.6	< 0.5	111	190	6.87	70	150
		8/8/16 - 8/9/16	001318160809	161881	Composite	Steady	No	10.7	< 0.1	< 0.5	10.7	< 0.5	19	16	7.64		123
		9/19/16 - 9/20/16	004318160920	162240	Composite	Steady	No	46.2	30.2	8.1	16	< 0.5	171	384	6.85	76	116
		10/3/16-10/4/16	003318161004	162363	Composite	Steady	No	44.6	20.2	2	24.4	< 0.5	124	232	6.34	64	
		11/28/16-11/29/16	001318161129	162859	Composite	Non-Steady	No	227.1	208	1	19.1	< 0.5	1009	3620	6.29		83.5
	SDS#15	3/21/16 - 3/22/16	002318160322	160733	Composite	Steady	No	14	14	2.3	< 0.5	< 0.5	48	90	6.81	62	102
		4/18/16-4/19/16	02318160419	160970	Composite	Steady	Yes	14.8	14	14.2	0.8	< 0.5	< 16	27	7.12	57.6	146
		5/16/16-5/17/16	004318160517	161239	Composite	Steady	Yes	22.2	5.6	2.3	16.6	< 0.5	21	32	6.57	66.8	38.75
		6/20/16 -6/21/16	006318160621	161500	Composite	Steady	No	15.8	5.2	1.5	10.6	< 0.5		61	6.87	77.7	62
		7/18/16 - 7/19/16	003318160719	161733	Composite	Steady	No	17.3	12	< 0.5	5.3	< 0.5	78	82	6.88	81	110
		8/15/16 - 8/16/16	006318160816	161944	Composite	Steady	No	53.1	< 0.5	< 0.5	44.6	< 0.5	55	160	6.49	84	51.2
		9/19/16 - 9/20/16	002318160920	162238	Composite	Steady	Yes	10.1	6.8	3.2	2.4	0.9	48	32	6.8	81	71
		10/3/16-10/4/16	002318161004	162362	Composite	Steady	Yes	6.3	3.3	< 0.5	2.3	0.7	33	25	6.71	74	
		11/21/2016-11/22/16	001318161122	162826	Composite	Steady	Yes	17.2	15.1	9.1	< 0.5	2.1	64	34	6.84	65	93
	SDS#26	3/14/16 - 3/15/16	003318160315	160644	Composite	Steady	No	15.4	15.4	5.4	< 0.5	< 0.5	73	87	6.77	47.6	
		4/18/16-4/19/16	005318160419	160973	Composite	Steady	No	12.5	12.5	7.1	< 0.5	< 0.5	55	53	6.72	57.6	122
		5/9/16 - 5/10/16	0033131816051	161171	Composite	Steady	No	12.8	12.8	5.3	< 0.5	< 0.5	53	81	6.66	58	77
		6/13/16 - 6/14/16	003318160614	161439	Composite	Steady	No	14.1	14.1	9.8	< 0.5	< 0.5	18	20	7.15	75.3	116
		7/11/16-7/12/16	003318160712	161649	Composite	Steady	No	13.7	13.7	10.6	< 0.5	< 0.5	25	37	6.94	77	112
		8/8/16 - 8/9/16	003318160809	161883	Composite	Steady	No	11.8	11.1	12.7	< 0.5	0.7	13	19	7.04	74	122
		9/19/16 - 9/20/16	005318160920	162241	Composite	Steady	No	2.9	2.9	1.5	< 0.5	< 0.5	21	17	6.06	76	74
		10/3/16-10/4/16	005318161004	162365	Composite	Steady	Yes	3.7	2.3	2	1.4	< 0.5	11	10		68	
		11/28/16-11/29/16			Composite	Steady	No	9.1	5.2	0.6	3.9	< 0.5	25	60	6.57		49.6
								28.24643	20.98	6.9519	6.475	1.079	101.7	213.2	6.821154	69.488	105.937

Manufacturer	Site #	Sample Date	Sample #	Lab ID #	Sample Type (3)	State (1)(2)	Compare Sample	TN(mg/l) (6)	TKN (mg/l)	Ammonia (as N)	NO3 (Nitrate as	NO2 (Nitrite as	BOD	TSS	PH	Temp	Alkalinity
Norweco Hydro-Kinetic	SDS#4	8/22/16 - 8/23/16	004318160823	162022	Composite	Steady	No	4.2	< 1	0.5	4.2	< 0.5	< 9	25	7.53	81	136
		9/26/16 - 9/27/16	004318160927	162299	Composite	Steady	Yes	8.7	1.4	< 0.5	7.3	< 0.5	9	12	7.43	77	185
		10/17/16-10/18/16	003318161018	162472	Composite	Steady	No	10.2	2.3	1.2	7.9	< 0.5	< 7	< 10	7.13		134
		11/28/16-11/29/16	003318161129	162861	Composite	Steady	Yes	11.7	2.4	< 0.1	9.3	< 0.5	9	48.4	6.98	57	99
		12/12/16-12/13/16	003318161213	162950	Composite	Steady	No	13.6	1.4	< 0.5	12.2	< 0.5	< 5	< 10	6.93		93.2
		1/23/17-1/24/17	004881170124	170189	Composite	Steady	Yes	13.4	0.8	< 0.5	12.6	< 0.5	< 6	< 10	7.03	49	111.25
		2/27/17-2/28/17	002858170228	170443	Composite	Steady	Yes	8.5	< 0.5	< 0.5	8.5	< 0.5	< 9	10	6.94	48.2	93.4
		3/27/17-3/28/17	004881170328	170688	Composite	Steady	Yes	11.8	6.9	5.3	0.7	4.2	5	< 10	3.97		115.6
		4/17/17-4/18/17	004881170418	170901	Composite	Steady	Yes	5.4	2.1	1.3	3.3	< 0.5	< 5	7	6.92		110.8
	SDS#24/25	9/26/16 - 9/27/16	005318160927	162300	Composite	Steady	No	7	3.5	0.9	3.5	< 0.5	11	12	7.31	73	176.2
		10/17/16-10/18/16	004318161018	162473	Composite	Steady	Yes	13.8	6.9	4.9	6.9	< 0.5	20	10	7.33		182
		11/28/16-11/29/16	004318161129	162862	Composite	Steady	No	33.8	< 1	< 0.5	33.8	< 0.5	< 5	< 10	6.84		54.4
		12/12/16-12/13/16	004318161213	162951	Composite	Steady	No	52.3	< 1	< 0.5	52.3	< 0.5	< 5	< 10	6.36		29.8
		1/23/17-1/24/17	005881170124	170190	Composite	Steady	Yes	83.6	12.9	8.4	70.7	< 0.5	< 6	< 10	4.9	45	25
		2/27/17-2/28/17	005858170228	170446	Composite	Steady	No	75.4	5.1	7.6	70.3	< 0.5	< 7	< 10	5.62	54.2	
		3/27/17-3/28/17	008881170328	170692	Composite	Steady	Yes	59.6	6.6	4.3	53	< 0.5	6	< 10	5.86	44	6.2
		4/17/17-4/18/17	008881170418	170905	Composite	Steady	Yes	55.7	3.9	4.9	51.8	< 0.5	7	< 5	5.69		5
	SDS#19	8/22/16 - 8/23/16	003318160823	162021	Composite	Steady	Yes	2.3	< 1	< 0.5	2.3	< 0.5	< 11	< 10	7.43	78	222
		9/19/16-9/20/16	003318160920	162239	Composite	Steady	Yes	7.7	2	0.8	5.7	< 0.5	10	10	7.28	76	200
		10/17/16-10/18/16	001318161018	162470	Composite	Steady	Yes	7.7	2.3	0.8	5.4	< 0.5	8	< 10	7.14		192
		11/28/16-11/29/16	002318161129	162860	Composite	Steady	Yes	10.6	3.2	0.7	7.4	< 0.1	7	6.4	7.02	57	125
		12/5/16-12/6/16	00491861206	162901	Composite	Steady	Yes	11.1	1.5	< 0.5	9.6	< 0.5	8	< 10	7.09	56	107.6
		1/9/17-1/10/17	003318170110	170055	Composite	Steady	Yes	21.6	1.8	< 0.5	19.8	< 0.5	< 5	< 10	6.94		78.8
		2/6/17-2/7/17	004318170207	170305	Composite	Steady	No	9.4	< 1	< 0.5	9.4	< 0.5	< 5	< 10	6.86	48	130.75
		3/20/17-3/21/17	005881170321	170616	Composite	Steady	Yes	17	< 1	< 0.5	< 0.5	< 0.5	< 5	< 10		45	
		4/10/17-4/11/17	005881170411	170834	Composite	Steady	Yes	50.1	49.6	50.8	0.5	< 0.5		12	7.38	54.3	
	SDS#17	11/14/16-11/15/16	004318161115	162770	Composite	Steady	Yes	16.6	1.5	1.1	15.1	< 0.5	7	< 10	6.74	59	114
		12/5/16-12/6/16	002318161206	162899	Composite	Steady	No	40.4	3.1	1.1	37.3	< 0.5	< 5	11.6	6.55	54	40.8
		1/9/17-1/10/17	002318170110	170054	Composite	Steady	No	71.3	< 1	< 0.5	71.3	< 0.5	< 7	24	6.77		80.4
		2/6/17-2/7/17	002318170207	170303	Composite	Steady	No	24.2	8.3	6	15.9	< 0.5	< 5	140	7.02	46	236

		3/6/17-3/7/17	003858170307	170515	Composite	Steady	Yes	27.5	6	2.6	21.5	< 0.5	7	15.2	6.86	45.5	
		4/3/17-4/4/17	003881170404	170752	Composite	Steady	Yes	30.5	2.1	< 0.5	28.4	< 0.5	< 6	< 10	6.75	46.4	
	SDS#14	11/14/16 - 11/15/16	002318161115	162767	Composite	Steady	No	35.4	9.9	8.3	25.5	< 0.5	< 5	< 10	6.74	50	133
		12/5/16 - 12/6/16	001918161206	162898	Composite	Steady	No	28.9	18	17.4	10.9	< 0.5	9	< 10	6.92	53	147.2
		1/9/17-1/10/17	001318170110	170053	Composite	Steady	Yes	10.7	< 1	< 0.5	10.7	< 0.5	6	< 10	6.57		82
		2/8/17 - 2/7/17	001318170207	170302	Composite	Steady	No	17.7	< 0.5	< 0.5	17.7	< 0.5	< 5	< 10	6.23	48	39.75
		3/6/17-3/7/17	001858170307	170513	Composite	Steady	Yes	8.5	< 0.5	< 0.5	8.5	< 0.5	< 9	10	6.94	47.6	
		4/3/17-4/4/17	001881170404	170750	Composite	Steady	No	17.6	1.2	< 0.5	16.4	< 0.5	8	< 10	6.37	50.36	
	Ronkonkoma	6/4/18-6/5/18	010934180605	181368	Composite		Yes	110	110	103	< 0.5	< 0.5	34	27	7.89	68	504
		7/2/18-7/3/18	010934180703	181619	Composite		Yes	107	107	114	< 0.5	< 0.5	88	34	7.73	79.16	7.2
		7/30/18-7/31/18	010934180731	181873	Composite		Yes	93.8	92.6	90.9	0.7	0.5	19	21.5	7.44	80.24	437
		8/27/18-8/28/18	008934180828	182122	Composite		Yes	2.1	< 0.5	< 0.5	1.2	0.9	16	44	7.29	26.2	NR
		10/15/18-10/16/18	005881181016	182510	Composite		Yes	28.3	0.1	1.3	27.7	0.5	12	17	7.06	19.5	151
		11/19/18-11/20/18	005881181120	182816	Composite		Yes	67.5	0.1	< 1	67.4	< 0.5	< 6	13.2	7.25	10.4	98.6
		4/8/19-4/9/19	002881190409	190881	Composite		Yes	79.2	< 0.1	11	73.8	5.4	30	46	NR	9.2	NR
		5/13/19-5/14/19	005881190514	191195	Composite		Yes	29.2	12.1	11.2	17.1	< 0.5	25	< 10	NR	13.2	132
		6/17/19-6/18/19	004881190618	191489	Composite		Yes	99.1	99.1	96.4	< 0.5	< 0.5	13	12.4	7.59	20.3	5.02
		7/15/19-7/16/19	004856190716	191748	Composite		Yes	100.6	99.8	112	0.8	< 0.5	> 83	45.5	7.63	24.7	544
		8/12/19-8/13/19	007856190813	191993	Composite		Yes	119	119	6.5	< 0.5	< 0.5	24	23	7.71	24.7	574
		9/9/19-9/10/19	007934190910	192213	Composite		Yes	136	136	110	< 0.5	< 0.5	20	27	NR	22.9	NR
		10/7/19-10/8/19	007934191007	192431	Composite		Yes	38.3	38.3	11.1	< 0.5	< 0.5	50	13.5	7.71	21	480
		11/18/19-11/19/19	005934191119	192754	Composite		Yes	48.7	12.4	16.6	35.7	0.6	36	27.5	4.29	3.7	NR
								24.71145	4.637	3.6184	19.687	0.587	7.27	15.23	6.712703	55.48308	112.456
Manufacturer	**Site #**	**Sample Date**	**Sample #**	**Lab ID #**	**Sample Type (3)**	**State (1)(2)**	**Compare Sample (Yes or No)**	**TN(mg/l) (6)**	**TKN (mg/l)**	**Ammonia (as N)**	**NO3 (Nitrate as**	**NO2 (Nitrite as**	**BOD**	**TSS**	**PH**	**Temp**	**Alkalinity**
Orenco Advantex	Meshutt Beach	7/25/16 - 7/26/16			Composite	Steady	No	18.1	17.2	9.5	0.9	< 0.5	35	37	7.37		133.2
AX-MAX Unit		8/22/16 - 8/23/16			Composite	Steady	No	20.1	20.1	18.6	< 0.5	< 0.5	125	88	7.33	78	183.4
		9/26/16 - 9/27/16			Composite	Steady	Yes	14.1	< 0.5	< 0.5	14.1	< 0.5	8	10	7.29	74	51.8
		6/5/17-6/6/17	006881170606	171361	Composite	Steady	Yes	8	1	< 0.5	7	< 0.5	< 5	< 10	8.03	63.68	213
		7/10/17-7/11/17	001881170711	171711	Composite	Steady	Yes	24.5	7.9	4	3.7	12.9	< 10	9	6.74	79.16	37.4
		8/7/17-8/8/17	010881170808	172453	Composite	Steady	Yes	16	6	9.9	10	< 0.5	7	< 5	7.09	80.06	83
		9/11/17-9/12/17	010881170912	172921	Composite	Steady	Yes	20.8	13.6	4.3	6.1	< 0.5	18	48	7.07	73.4	84
		10/16/17-10/17/17	010881171017	173422	Composite	Steady	Yes	15.5	15.5	19.9	< 0.5	< 0.5	< 5	< 5	7.76	62.2	200
		6/18/18-6/19/18	007934180619	181486	Composite	Steady	Yes	68.8	67.3	49.8	< 0.5	1.5	17	11.2	7.82	76.28	169
		7/16/18-7/17/18	007934180717	181744	Composite	Steady	Yes	144.6	140	8.3	4.6	< 0.5	20	< 10	7.37	81.32	120
		8/6/18-8/7/18	001934180807	181933	Composite	Steady	Yes	21.2	8.4	6.6	11.4	1.4	< 5	< 10	7.32	27.6	86
		8/20/18-8/21/18	001881180821	182065	Composite	Steady	Yes	21.3	4.1	3.1	16.7	0.5	< 6	< 10	7.31	21.9	123
		9/10/18-9/11/18	001934180911	182235	Composite	Steady	Yes	3.8	2.1	1.5	1.7	< 0.5	< 5	< 10	6.92	26.8	35
		6/24/19-6/25/19	001881190625	191542	Composite	Steady	Yes	11	6.9	4.1	4.1	< 0.5	17	21	6.6	21.9	78
		7/22/19-7/23/19	001856190723	191797	Composite	Steady	Yes	11.7	11.7	7.6	< 0.5	< 0.5	45	75	6.96		114
		8/19/19-8/20/19	001856190820	192054	Composite	Steady	Yes	22.1	6.5	9	15.1	0.5	19	22.8	7.06	26.9	NR
		9/16/19-9/17/19	004934190917	192284	Composite	Steady	Yes	12.5	8.4	5	4.1	< 0.5	22	24	NR	21.3	NR
								27	19.84	9.5412	5.9706	1.341	21.71	23.88	7.2525	54.3	114.053
Manufacturer	**Site #**	**Sample Date**	**Sample #**	**Lab ID #**	**Sample Type (3)**	**State (1)(2)**	**Compare Sample (Yes or No)**	**TN(mg/l) (6)**	**TKN (mg/l)**	**Ammonia (as N)**	**NO3 (Nitrate as**	**NO2 (Nitrite as**	**BOD**	**TSS**	**PH**	**Temp**	**Alkalinity**
Amphidrome	SDS#28	3/20/17-3/21/17	03881170321	170614	Composite	Non-Steady	Yes	44.6	44.6	43.5	< 0.5	< 0.5	20	12	7.45	45	267.6
		4/10/17-4/11/17	001881170411	170830	Composite	Non-Steady	Yes	30.7	29.3	33.2	1.4	< 0.5	NR	10	7.53	53	NR
		5/8/17-5/9/17	001881170509	171100	Composite	Non-Steady	Yes	47.7	46.8	47.1	< 0.5	0.9	11	20	7.66	59.36	236
		6/19-17-6/20/17	001881170620	171494	Composite	Steady	Yes	9.5	6.1	1.2	< 0.5	3.4	12	12	7.61	68.37	183
		7/24/17-7/25/17	001881170725	171886	Composite	Steady	Yes	9.9	1.8	< 0.5	8.1	< 0.5	< 5	7	7.53	73.4	NR
		8/21/17-8/22/17	001881170822	172714	Composite	Steady	Yes	5.7	3.6	< 0.5	2.1	< 0.5	12	31	7.65	78.08	NR
		10/4/17-10/5/17	001881171005	DHS LAB	Composite	Steady	Yes	15.5	2.2	< 0.5	13.3	< 0.5	NA	NA	NA	73	NA
		10/30/17-10/31/17	001881171031	173573	Composite	Steady	Yes	11.9	< 1	< 1	11.9	< 0.5	6	12	7.16	63.9	46
		12/4/17-12/5/17	001881171205	173886	Composite	Steady	Yes	24.4	< 0.5	0.8	24.4	< 0.5	< 5	< 10	NR	54.9	NR
		1/22/18-1/23/18	005881180123	180157	Composite	Steady	Yes	42.9	8.5	6.2	34.4	< 0.5	15	18	5.31	46	50
	SD#35	10/2/17-10/3/17	002881171003	173256	Composite	Steady	Yes	18.8	1.5	< 0.5	17.3	< 0.5	7	< 10	7.27	74.5	48
		11/13/17-11/14/17	011881171114	173662	Composite	Steady	Yes	18.1	1.8	< 0.5	16.3	< 0.5	7	< 10	7.49	66.4	64
		12/11/17-12/12/17	003881171212	173949	Composite	Steady	Yes	46.1	46.1	34.2	< 0.5	< 0.5	> 168	26	7.24	63.9	212
		1/22/18-1/23/18	003881180123	180155	Composite	Steady	Yes	73.2	48.2	12	25	< 0.5	244	476	6.81	57.6	72
		3/5/18-3/6/18	003881180306	180528	Composite	Steady	Yes	36.6	13.8	5	8.9	13.9	48	48	6.81	55.9	48
		4/2/18-4/3/18	003881180403	180778	Composite	Steady	Yes	44.3	44.3	34.3	< 0.5	< 0.5	53	66	7.17	60.1	211
		4/30/18-5/1/18	003934180501	181064	Composite	Steady	Yes	54.5	45.1	21.1	< 0.5	9.4	13	17	7.17	64.4	123
		6/4/18-6/5/18	003934180605	181361	Composite	Steady	Yes	22.1	2.6	< 0.5	19.5	< 0.5	6	< 10	6.9	66.74	35
		7/2/18-7/3/18	003934180703	181612	Composite	Steady	Yes	13.8	2.7	< 0.5	11.1	< 0.5	6	< 10	7.03	72.32	NR
		7/30/18-7/31/18	003934180731	181868	Composite	Steady	Yes	16.9	3.1	0.7	13.8	< 0.5	13	13.5	7.25	74.3	198
		8/27/18-8/28/18	003934180828	182117	Composite	Steady	Yes	10.8	1.3	< 0.5	9.5	< 0.5	< 5	< 10	NR	24.8	NR
		10/15/18-10/16/18	003881181016	182508	Composite	Steady	Yes	7.6	1.7	< 1	5.9	< 0.5	6	< 10	7.62	21.1	195
		11/19/18-11/20/18	003881181120	182814	Composite	Steady	Yes	11	0.8	< 1	10.2	< 0.5	< 6	< 10	7.54	17.4	188
		12/10/18-12/11/18	003881181211	183012	Composite	Steady	Yes	10.7	0.5	< 0.5	10.2	< 0.5	< 6	< 10	7.92	15.2	216
								26.1375	14.91	10.283	10.263	1.567	30.64	37.33	7.24381	56.23625	140.741
Manufacturer	**Site #**	**Sample Date**	**Sample #**	**Lab ID #**	**Sample Type (3)**	**State (1)(2)**	**Compare Sample (Yes or No)**	**TN(mg/l) (6)**	**TKN (mg/l)**	**Ammonia (as N)**	**NO3 (Nitrate as**	**NO2 (Nitrite as**	**BOD**	**TSS**	**PH**	**Temp**	**Alkalinity**
Ecoflo	SDS#9	12/12/16-12/13/16	001318161213	162948	Composite (B)	Non-Steady	No	93	93	82.2	< 0.5	< 0.5	< 5	12.8	7.78		503.2
		1/23/17-1/24/17	002881170124	170187	Composite (B)	Non-Steady	No	84.4	82.7	70.6	0.6	1.1	< 6	< 10	7.78		512.5
		2/27/2017-2/28/17	006881170228	170447	Composite (B)	Non-Steady	No	97.1	91.1	75.5	6	< 0.5	11	< 10	7.47	47.5	NR
		3/27/17-3/28/17	001881170328	170685	Composite (B)	Non-Steady	No	62.9	57.2	55.1	4.3	1.4	18	< 10	7.24	47	312
		4/17/17-4/18/17	001881170418	170898	Composite (B)	Non-Steady	No	52.3	38.2	35	9.6	4.5	11	5	6.99		253.6
		5/15/17-5/17/17	001881170516	171177	Composite (B)	Non-Steady	No	N/A	NR	46.3	3.3	0.9	24	< 10	7.04	63.86	NR
		7/24/17-7/25/17	005881170725	171900	Composite (B)	Non-Steady	Yes	86.6	86.6	99.1	< 0.5	< 0.5	55	33	7.61	75.2	NR
		8/21/17-8/22/17	003881170822	172716	Composite (B)	Non-Steady	Yes	88.3	83	69.9	0.5	4.5	14	10	7.26	78.8	NR
		9/25/17-9/26/17	002881170926	173188	Composite (B)	Steady	Yes	44.8	37.2	34.2	7.6	< 0.5	32	25	7	71.8	244
		10/30/17-10/31/17	003881171031	173575	Composite (B)	Steady	Yes	37.3	20.2	23	17.1	< 0.5	33	13	7.26	67.1	236
		12/4/17-12/5/17	005881171205	173890	Composite (B)	Steady	Yes	NR	NR	2.2	9.6	< 0.5	22	< 3	7.11	57.6	296
		1/22/18-1/23/18	009881180123	180161	Composite (B)	Steady	Yes	46.4	31.5	25.8	12.3	2.6	26	14	6.92	53.1	220
		3/5/18-3/6/18	007881180306	180532	Composite (B)	Steady	Yes	48.3	28.4	29.7	17.3	2.6	26	12	7.15	53.1	251
		4/2/18-4/3/18	007881180403	180781	Composite (B)	Steady	Yes	61.8	40.5	30.3	19.1	2.2	25	19	7.03	48.7	252
		4/30/18-5/1/18	007934180501	181068	Composite (B)	Steady	Yes	64.4	59.6	44.2	2	2.8	42	16	6.98	57.9	345
		6/4/18-6/5/18	007934180605	181365	Composite (B)		Yes	80	76.5	67	2.3	1.2	49	25	7.08	66.38	411
		7/2/18-7/3/18	007934180703	181616	Composite (B)		Yes	82.2	65.5	63.2	16.7	< 0.5	20	< 10	7.12	72.5	NR
		7/30/18-7/31/18	007934180731	181870	Composite (B)		Yes	110.3	97.8	94.3	12.5	< 0.5	< 13	< 13	7.27	75.02	382
		8/27/18-8/28/18	005934180828	182119	Composite (B)			77	57	54.4	20	< 0.5	12	< 10	7.1	24.6	NR
	SDS#8	3/6/17-3/7/17	005858170307	170517	Composite(B)	Non-Steady	No	47.5	47.5	35	< 0.5	< 0.5	12	10	NR	48.6	NR
		4/3/17-4/4/17	005881170404	170754	Composite (B)	Non-Steady	No	54.4	54.4	50.8	< 0.5	< 0.5	< 6	< 10	7.71	47.6	NR
		5/1/17-5/2/17	003881170502	171024	Composite (B)	Non-Steady	No	61.7	44.8	45.7	13.3	3.5	9	< 10	7.2	58.82	324
		6/5/17-6/6/17	003881170606	171358	Composite (B)	Steady	No	10.8	1	< 0.5	9.8	< 0.5	< 5	12	6.92	60.98	241
		7/10/17-7/11/17	005881170711	171715	Composite (B)	Steady	No	13	3.6	1.1	9.4	< 0.5	< 5	< 10	7.05	75.92	202
		8/7/17-8/8/17	003881170808	172446	Composite(B)	Steady	Yes	2.4	2.4	1.4	< 0.5	< 0.5	< 5	8	6.95	73.22	196
		9/11/17-9/12/17	003881170912	172914	Composite (B)	Steady	Yes	19.3	1.3	< 0.5	18	< 0.5	< 5	< 5	7.04	70.2	127
		10/16/17-10/17/17	003881171017	173415	Composite(B)	Steady	Yes	16	< 0.5	< 0.5	16	< 0.5	< 5	< 5	6.92	67.3	122
		11/20/17-11/21/17	003881171121	173756	Composite (B)	Steady	Yes	15.1	1.4	0.5	13.7	< 0.5	< 5	< 10	7.42	62.4	106
		1/29/18-1/30/18	001881180130	180225	Composite (B)	Steady	Yes	22.5	< 1	< 1	22.5	< 0.5	< 5	< 10	6.99	41.5	75

								54.80741	44.59	39.276	9.1724	1.252	17.45	12.1	7.1925	60.25769	267.205
Manufacturer	Site #	Sample Date	Sample #	Lab ID #	Sample Type (3)	State (1)(2)	Compare Sample	TN(mg/l) (6)	TKN (mg/l)	Ammonia (as N)	NO3 (Nitrate as	NO2 (Nitrite as	BOD	TSS	PH	Temp	Alkalinity
Ecofio with Denite Filter																	
	SDS#9	12/12/16-12/13/16	002318161213	162949	Composite (A)	Non-Steady	No	87.5	87.5	82.7	< 0.5	< 0.5	< 5	< 10	7.64		478.4
		1/23/17-1/24/17	003881170124	170188	Composite (A)	Non-Steady	No	77.9	77.9	76.7	< 0.5	< 0.5	< 6	< 10	7.52		496
		2/27/17 - 2/28/17	007881170228	170448	Composite (A)	Non-Steady	Yes	91.9	91.9	75.6	< 0.5	< 0.5	< 7	< 10	7.47	47.5	NR
		3/27/17-3/28/17	002881170238	170686	Composite (A)	Non-Steady	Yes	66.2	64.3	58.4	1.4	0.5	15	< 10	7.36	47	339.6
		4/17/17-4/18/17	002881170418	170899	Composite (A)	Non-Steady	Yes	41.1	34	33.9	7.1	< 0.5	10	< 5	7.19		298
		5/15/17-5/16/17	002881170516	171178	Composite (A)	Non-Steady	Yes	43.3	43.3	46.2	0.5	0.5	21	< 10	7.15	63.86	NR
		6/19/17-6/20/17	005881170620	171498	Composite (A)	Non-Steady	Yes	87.4	87.4	75	< 0.5	< 0.5	131	< 10	7.27	73.4	510
		7/24/17-7/25-17	006881170725	171901	Composite (A)	Non-Steady	No	87.7	87.7	106	< 0.5	< 0.5	153	14	7.1	75.2	NR
		8/21/17-8/22/17	004881170822	172717	Composite (A)	Non-Steady	No	82.6	81.8	74.6	< 0.5	0.8	12	11	7.38	78.8	NR
		10/30/17-10/31/17	004881171031	173576	Composite (A)	Steady	No	20	20	24.4	< 0.5	< 0.5	15	11	7.31	67.1	267
		12/4/17-12/5/17	006881171205	173891	Composite (A)	Steady	No	27.2	27.2	21.7	< 0.5	< 0.5	< 7	8	7.19	57.6	333
		1/22/18-1/23/18	010881180123	180162	Composite (A)	Steady	No	29.5	29.5	28.5	< 0.5	< 0.5	8	< 10	7.26	53.1	302
		3/5/18-3/6/18	008881180306	180533	Composite (A)	Steady	No	34.2	28.6	30.7	3.4	2.2	10	4	7.3	53.1	NR
		4/2/18-4/3/18	008881180403	180782	Composite (A)	Steady	No	36.4	36.4	34.1	< 0.5	< 0.5	< 5	< 10	7.03	48.7	387
		4/30/18-5/1/18	009934180501	181070	Composite (A)	Steady	No	64.7	64.7	47.9	< 0.5	< 0.5	29	40	7.19	57.9	392
		6/4/18-6/5/18	009934180605	181367	Composite (A)		No	75.1	75.1	69.3	< 0.5	< 0.5	43	15	7.1	66.38	428
		7/2/18-7/3/18	009934180703	181618	Composite (A)		No	68.2	68.2	63.4	< 0.5	< 0.5	13	< 10	7.2	72.5	NR
		7/30/18-7/31/18	009934180731	181872	Composite(A)		No	106	106	95.7	< 0.5	< 0.5	< 13	< 13	7.57	75.02	372
		8/27/18-8/28/18	007934180828	182121	Composite(A)		No	72	51.2	55.6	20.8	< 0.5	44	26.4	7.42	24.6	NR
	SDS#8	3/6/17-3/7/17	006858170307	170518	Composite (A)	Non-Steady	Yes	40.6	40.6	35.5	< 0.5	< 0.5	12	< 10	7.58	48.6	328.4
		4/3/17-4/4/17	006881170404	170755	Composite (A)	Non-Steady	Yes	51.8	51.8	51.1	< 0.5	< 0.5	< 6	< 10	7.53	47.6	NR
		5/1/17-5/2/17	004881170502	171025	Composite (A)	Non-Steady	Yes	44.7	44.7	46.7	< 0.5	< 0.5	10	< 10	7.11	58.82	352
		6/5/17-6/6/17	004881170606	171359	Composite (A)	Steady	Yes	1.1	1.1	< 0.5	< 0.5	< 0.5	< 5	12	7.18	60.98	343
		7/10/17-7/11/17	006881170711	171716	Composite (A)	Steady	Yes	1.3	1.3	1	< 0.5	< 0.5	< 5	< 10	7.28	75.92	294
		8/7/17-8/8/17	004881170808	172447	Composite(A)	Steady	No	1.5	1.5	1.4	< 0.5	< 0.5	< 5	< 5	7.27	73.22	271
		9/11/17-9/12/17	004881170912	172915	Composite(A)	Steady	No	1.1	1.1	0.6	< 0.5	< 0.5	< 5	< 5	7.48	70.2	235
		10/16/17-10/17/17	004881171017	173416	Composite(A)	Steady	No	0.8	0.8	< 0.5	< 0.5	< 0.5	< 5	< 5	7.54	67.3	244
		11/20/17-11/21/17	004881171121	173757	Composite (A)	Steady	No	4	2.3	1.3	1.7	< 0.5	< 5	< 10	7.57	62.4	157
		1/29/18-1/30/18	002881180130	180226	Composite (A)	Steady	No	5.2	4.4	3.3	0.8	< 0.5	< 5	< 10	7.41	41.5	167
								46.58621	45.25	42.838	1.6103	0.569	21.03	11.19	7.331034	60.31923	333.067
Manufacturer	Site #	Sample Date	Sample #	Lab ID #	Sample Type (3)	State (1)(2)	Compare Sample	TN(mg/l) (6)	TKN (mg/l)	Ammonia (as N)	NO3 (Nitrate as	NO2 (Nitrite as	BOD	TSS	PH	Temp	Alkalinity
PUGO	SDS#1	2/27/17-2/28/17	004845170228	170445	Composite	Non-Steady	No	58.2	54.6	44.6	3.6	< 0.5	14	72	7.31	44.4	NR
		3/27/17-3/28/17	006881170328	170690	Composite	Steady	Yes	23.3	5.2	2.2	14.4	3.7	16	< 10	6.72	59	23.8
		4/17/17-4/18/17	006881170418	170903	Composite	Steady	Yes	12	4.6	3	< 0.5	7.4	10	5.2	7.03	69.9	55.4
		5/15/17-5/16/17	004881170516	171180	Composite	Steady	Yes	27.1	8.3	4.9	17.9	0.9	59	33.2	6.71	67.82	NR
		6/19/17-6/20/17	007881170620	171500	Composite	Steady	Yes	22.5	6.1	3.7	16.4	< 0.5	18	17	6.99	73.76	32
		7/24/17-7/25/17	008881170725	171903	Composite	Steady	Yes	20.8	19.8	21.8	1	< 0.5	31	21	7.61	77	NR
		8/21/17-8/22/17	008881170822	172721	Composite	Steady	Yes	24.4	24.4	20.5	< 0.5	< 0.6	53	23	7.44	82.4	NR
		9/25/17-9/26/17	007881170926	173193	Composite	Steady	Yes	24.7	24.7	22.6	< 0.5	< 0.5	64	33	7.24	79.3	76
		10/30/17-10/31/17	008881171031	173580	Composite	Steady	Yes	30.4	28.6	31.3	1.8	< 0.5	29	13	7.69	72	188
		12/4/17-12/5/17	008881171205	173893	Composite	Steady	Yes	31	31	31.3	< 0.5	< 0.5	24	26	7.47	64	195
		1/8/18-1/9/18	003881180109	180055	Composite	Steady	Yes	45.6	45.6	38.1	< 0.5	< 0.5	37	23	7.34	55.4	232
		2/26/18-2/27/18	003881180227	180454	Composite	Steady	Yes	36.3	36.3	28.7	< 0.5	< 0.5	45	21	7.48	63.7	197
		3/26/18-3/27/18	003881180327	180722	Composite	Steady	Yes	23.5	23.5	22.9	< 0.5	< 0.5	< 6	21.2	7.51	61	170
		4/23/18-4/24/18	003881180424	180885	Composite	Steady	Yes	36.4	34.6	30.8	1.8	< 0.5	47	26	7.42	63.1	128
		5/21/18-5/22/18	003934180522	181260	Composite	Steady	Yes	45.8	25.3	18.7	19.9	0.6	67	48	7.25	70.34	60
		7/23/18-7/24/18	003934180724	181809	Composite	Steady	Yes	23.9	6.9	4.5	17	< 0.5	16	25.2	6.97	79.7	21.1
		8/20/18-8/21/18	005881180821	182069	Composite	Steady	Yes	17.9	1.9	1.6	16	< 0.5	67	43	6.64	24.8	49
		9/24/18-9/25/18	003881180925	182367	Composite	Steady	Yes	21.9	4.7	3.5	17.2	< 0.5	14	4.4	NR	23.7	NR
		10/15/18-10/16/18	009881181016	182514	Composite	Steady	Yes	21.2	2	4.2	19.2	< 0.5	NR	NR	NR	21.3	NR
		11/19/18-11/20/18	009881181120	182820	Composite	Steady	Yes	17.4	2.5	1.2	14.9	< 0.5	21	36	6.55	15	27.6
		12/10/18-12/11/18	007881181211	183016	Composite	Steady	Yes	45.7	11.4	16.3	34.3	< 0.5	29	21.5	3.84	14.2	NR
		1/28/19-1/29/19	001881190129	190237	Composite	Steady	Yes		5.4	4.1			17	18	NR	11.4	NR
		4/1/19-4/2/19	002881190402	190817	Composite	Steady	Yes	26.4	16.1	16.7	10.3	< 0.5	38	58	NR	15.2	NR
		4/29/19-4/30/19	001881190430	191072	Composite	Steady	Yes	15.6	10.1	2.4	5.5	< 0.5	37	60	NR	17.3	59
		6/3/19-6/4/19	001881190604	191379	Composite	Steady	Yes	3.7	1	4.2	2.7	< 0.5	19	5	7.33	21.9	95.1
		7/1/19-7/2/19	001934190702	191619	Composite	Steady	Yes	11.4	7.8	4	3	0.6	9	13	6.8	25.1	NR
		7/29/19-7/30/19	001856190730	191850	Composite	Steady	Yes	27.4	26.8	25.8	< 0.5	0.6	NR	55	7.02	26.8	169
		8/26/19-8/27/19	001934190827	192100	Composite	Steady	Yes	15.4	6	4.3	8.6	0.8	16	22	6.94	24.1	59
	SDS#20	4/10/17-4/11/17	003881170411	170832	Composite	Non-Steady	Yes	70.7	69.8	72.5	0.9	< 0.5		< 10	8.12	58.6	NR
		5/8/17-5/9/2017	003881170509	171102	Composite	Steady	Yes	22	< 1	< 0.5	< 0.5	22	12	< 10	7.21	62.42	51.5
		6/12/17-6/13/17	005881170613	171426	Composite	Steady	Yes	33.2	< 1	< 1	32.2	1	15	< 10	7.16	70.34	NR
		7/17/17-7/18/17	004881170718	171812	Composite	Steady	Yes	17.5	1.9	< 1	15.6	< 0.5	7	< 10	7.53	73.76	93.4
		8/21/17-8/22/17	006881170822	172719	Composite	Steady	Yes	24.1	2.8	0.5	20.1	1.2	14	6	7.29	77.9	NR
		9/25/17-9/26/17	005881170926	173191	Composite	Steady	Yes	31.2	6.6	2.1	23.4	1.2	36	37	7.32	76.3	150
		10/30/17-10/31/17	006881171031	173578	Composite	Steady	Yes	20.9	< 1	1.1	20.9	< 0.5	18	21	7.16	67.1	48
		11/27/17-11/28/17	005881171128	173786	Composite	Steady	Yes	NR	NR	27.1	20.1	< 0.5	20	9	6.65	60.6	NR
		1/8/18-1/9/18	001881180109	180053	Composite	Steady	Yes	60.2	25.6	31.1	34.6	< 0.5	16	12	7.19	48.2	106
		2/26/18-2/27/18	001881180227	180452	Composite	Steady	Yes	44.5	21.6	16.7	22.9	< 0.5	26	15	7.1	55.6	60
		3/26/18-3/27/18	001881180327	180720	Composite	Steady	Yes	59.9	28.8	30	30.6	0.5	13	< 10	7.4	51.8	104.4
		4/23/18-4/24/18	001881180424	180883	Composite	Steady	Yes	80.5	39.3	35.6	41.2	< 0.5	< 6	5	7.14	54.1	88
		5/21/18-5/22/18	001934180522	181258	Composite	Steady	Yes	56.4	20.8	13.4	35.6	< 0.5	< 6	7	7.29	63.5	85
		7/23/18-7/24/18	001934180724	181807	Composite	Steady	Yes	18	14	7.1	4	< 0.5	129	27.5	7.43	73.4	177
		8/20/18-8/21/18	003881180821	182067	Composite	Steady	Yes	16.3	3.9	1.4	12.4	< 0.5	16	71.6	7.31	24.3	123
		9/24/18-9/25/18	001881180925	182365	Composite	Steady	Yes	21.4	2.5	2.6	18.9	< 0.5	9	< 10	NR	25.6	NR
		10/15/18-10/16/18	007881181016	182512	Composite	Steady	Yes	20.4	3.8	3.8	15.8	0.8	38	31	7.33	20.3	109
		11/19/18-11/20/18	007881181120	182818	Composite	Steady	Yes	30.8	3.3	5.6	27.5	< 0.6	15	< 12.5	6.92	14.1	54
		12/10/18-12/11/18	005881181211	183014	Composite	Steady	Yes	68.6	40	19.2	28.6	0.8	33	20	5.66	11.1	NR
		1/7/19-1/8/19	005881190108	190060	Composite	Steady	Yes	21.1	8.6	5	11.8	0.7	21	< 25	7.25	10.4	7.25
		2/4/19-2/5/19	003881190205	190299	Composite	Steady	Yes	61.6	45	31.7	13	3.6	48	45	NR	9.8	NR
		3/18/19-3/19/19	001881190319	190678	Composite	Steady	Yes	24.8	7.7	< 0.5	16	1.1	20	< 25	6.99	12.5	NR
		4/8/19-4/9/19	004881190409	190883	Composite	Steady	Yes	23.9	11.4	5.5	12	0.5	36	27	NR	13	NR
		5/13/19-5/14/19	007881190514	191197	Composite	Steady	Yes	27.6	15.6	3	11.4	0.6	54	76	NR	15.4	131
		6/17/19-6/18/19	006881190618	191491	Composite	Steady	Yes	45.4	32.9	14.2	11.8	0.7	98	20	7.31	18.3	226
		7/15/19-7/16/19	006856190716	191750	Composite	Steady	Yes	28.5	23.4	7.1	3.6	1.5	55	108	7.88	24.6	193
		8/19/19-8/20/19	007856190820	192060	Composite	Steady	Yes	19	2.7	3.2	16.3	< 0.5	8	9.2	7.44	NR	125
	SDS#5	4/10/17-4/11/17	008881170411	170837	Composite	Non-Steady	Yes	37.7	32.9	30.1	< 0.5	4.8		< 10	7.97	64	NR
		5/8/17-5/9/17	005881170509	171104	Composite	Steady	Yes	9.3	< 1	0.5	3.8	5.5	< 7	16	7.15	68.36	NR
		6/12/17-6/13/17	010881170613	171431	Composite	Steady	Yes	15.3	1.1	< 1	14.2	< 0.5	< 5	< 10	NR	77.54	NR
		7/17/17-7/18/17	009881170718	171817	Composite	Steady	Yes	41.7	18	15.9	23.7	< 0.5	18	79	6.71	79.88	33
		9/18/17-9/19/17	008881170919	173007	Composite	Steady	Yes	22.7	20.2	15.8	2.5	< 0.5	45	75	7.07	77.7	36.4
		10/23/17-10/24/17	010881171024	173493	Composite	Steady	Yes	37.1	16.1	0.6	21	< 0.5	9	23	6.64	70.5	NR
		11/27/17-11/28/17	010881171128	173791	Composite	Steady	Yes	NR	NR	5.6	20.8	< 0.5	14	9	6.46	59.5	NR
		1/8/18-1/9/18	007881180109	180059	Composite	Steady	Yes	47.2	26.1	16	21.1	< 0.5	31	33	6.38	52	20
		2/26/18-2/27/18	007881180227	180458	Composite	Steady	Yes	20.2	6.9	3.1	13.3	< 0.5	22	26	6.58	62.8	20
		3/26/18-3/27/18	007881180327	180726	Composite	Steady	Yes	41	21	9.2	20	< 0.5	< 6	< 10	NR	57.4	NR
		4/23/18-4/24/18	007881180424	180889	Composite	Steady	Yes	38	20.2	14.9	17.8	< 0.5	19	43	6.63	63.1	19
		5/21/18-5/22/18	007934180522	181264	Composite	Steady	Yes	48.8	37.8	32.2	11	< 0.5	37	23	7.57	67.3	138

		7/23/18-7/24/18	007934180724	181813	Composite	Steady	Yes	26.6	23.3	7.6	3.3	< 0.5	35	234	7.07	80.96	60.2
		8/20/18-8/21/18	009881180821	182073	Composite	Steady	Yes	13.8	10.3	2.2	3.5	< 0.5	41	40	6.92	26.9	35
		9/24/18-9/25/18	005881180925	182369	Composite	Steady	Yes	11.2	5.8	1.8	5.4	< 0.5	26	38.4	NR	24.2	NR
		10/15/18-10/16/18	011881181016	182516	Composite	Steady	Yes	10.2	5.8	2.6	4.4	< 0.5	16	21	6.97	22.2	42
		11/26/18-11/27/18	006881181127	182860	Composite	Steady	Yes	12.6	6.9	2	0.8	4.9	11	16.5	6.87	14.6	NR
		12/17/18-12/18/18	006881181218	183078	Composite	Steady	Yes	16.8	1	2	15.8	< 0.5	14	17.5	4.12	14.2	NR
	SDS#29	5/1/17-5/2/17	001881170502	171022	Composite	Non-Steady	Yes	10.2	7.2	2.6	< 0.5	3	27	15	7.14		120
		6/5/17-6/6/17	001881170606	171356	Composite	Non-Steady	Yes	39	39	34.5	< 0.5	< 0.5	20	17	7.29	65.12	245
		7/10/17-7/11/17	003881170711	171713	Composite	Non-Steady	Yes	47.2	46.1	38.8	< 0.5	1.1	86	22	7.32	74.66	285.6
		8/7/17-8/8/17	008881170808	172451	Composite	Non-Steady	Yes	81	81	74.7	< 0.5	< 0.5	70	12	7.45	74.66	376
		9/11/17-9/12/17	008881170912	172919	Composite	Non-Steady	Yes	53.8	53.8	50.9	< 0.5	< 0.5	30	27	7.41	72.9	267
		10/16/17-10/17/17	008881171017	173420	Composite	Steady	Yes	19.8	< 0.5	< 0.5	19.8	< 0.5	< 5	< 5	6.64	70.3	15
		11/20/17-11/21/17	006881171121	173759	Composite	Steady	Yes	2.9	2.9	< 0.5	< 0.5	< 0.5	< 5	< 10	6.5	59.9	11
		2/5/18-2/6/18	001881180206	180287	Composite	Steady	Yes	25.9	2.2	2	23.7	< 0.5	< 5	< 5	6.26	47.7	11
		3/19/18-3/20/18	001881180320	180679	Composite	Steady	Yes	27.1	4.6	1.8	22.5	< 0.5	10	76	6.4	49.6	NR
		4/16/18-4/17/18	001881180417	180912	Composite	Steady	Yes	26.5	4.1	2	22.4	< 0.5	< 6	< 10	6.39	55	15
		5/14/15-5/15/18	003934180515	181203	Composite	Steady	Yes	11.3	4.6	< 1	6.7	< 0.5	11	< 10	6.94	62.1	41
		6/18/18-6/19/18	001934180619	181480	Composite	Steady	Yes	24.2	3	2.1	21.2	< 0.5	< 5	< 10	6.49	68	22
		7/16/18-7/17/18	001934180717	181738	Composite	Steady	Yes	11.9	6.4	< 0.8	5.5	< 0.5	10	16.8	7.05	73.4	NR
		8/13/18-8/14/18	003881180814	182006	Composite	Steady	Yes	10.3	7.6	2	2.7	< 0.5	< 9	16.5	6.93	25.4	79.6
								29.88795	16.8	13.077	12.344	1.166	26.83	27.91	6.996	49.39435	99.3044

Manufacturer	Site #	Sample Date	Sample #	Lab ID #	Sample Type (3)	State (1)(2)	Compare Sample (Yes or No)	TN(mg/l) (6)	TKN (mg/l)	Ammonia (as N)	NO3 (Nitrate as	NO2 (Nitrite as	BOD	TSS	PH	Temp	Alkalinity
FUJI Clean USA	SDS #30	4/24/17-4/25/17	001881170425	170962	Composite	Non-Steady	Yes	85.7	85.7	92.9	< 0.5	< 0.5	28	16	8.05	62.78	380
		5/22/17-5/23/17	001881170523	171246	Composite	Non-Steady	Yes	72.8	72.8	68.2	< 0.5	< 0.5	119	24	7.49	65.5	338
		6/26/17-6/27/17	001881170627	171575	Composite	Steady	Yes	22.4	22.4	22.1	< 0.5	< 0.5	< 5	< 10	7.4	71.6	167
		7/31/17-8/1/17	009881170801	172087	Composite	Steady	Yes	9.9	1.8	< 0.5	7.3	0.8	10	18.5	7.25	78.98	98
		8/28/17-8/29/17	009881170829	172804	Composite	Steady	Yes	71.4	70.5	68.7	< 0.5	0.9	24	27	?318?	76.8	N/R
		10/2/17-10/3/17	001881171003	173254	Composite	Steady	Yes	27.6	27.6	25.4	< 0.5	< 0.5	47	22	7.67	69.1	183
		11/13/17-11/14/17	001881171114	173652	Composite	Steady	Yes	16.6	5.8	<0.5	10.8	< 0.5	< 5	< 10	7.41	59.9	86
		12/11/17-12/12/17	001881171212	173947	Composite	Steady	Yes	10.7	1.2	< 0.5	8.9	0.6	< 5	< 5	7.24	52.9	74
	SDS #31	4/24/17-4/25/17	003881170425	170964	Composite	Non-Steady	Yes	117	117	123	< 0.5	< 0.5	45	60	8.1		503.6
		5/22/17-5/23/17	003881170523	171248	Composite	Non-Steady	Yes	74.9	70.2	65.6	< 0.5	4.7	103	56	7.67	65.5	319
		6/26/17-6/27/17	003881170627	171577	Composite	Steady	Yes	25.6	24.8	23.9	< 0.5	0.8	54	42	7.56	75.2	197
		7/31/17-8/1/17	005881170801	172083	Composite	Steady	Yes	4.3	1.4	1	2.1	0.8	< 5	< 10	7.48	78.26	138
		8/28/17-8/29/17	005881170829	172800	Composite	Steady	Yes	8.7	3.8	< 0.5	1.6	3.3	11	8	7.49	73.9	96
		10/2/17-10/3/17	009881171003	173262	Composite	Steady	Yes	5.8	4.5	< 0.5	1.3	< 0.5	13	12.5	7.66	69.4	122
		11/13/17-11/14/17	003881171114	173654	Composite	Steady	Yes	8.5	0.9	< 0.5	7.6	< 0.5	6	< 10	7.5	55.9	83
		12/11/17-12/12/17	009881171212	173955	Composite	Steady	Yes	19.9	19.2	18.5	< 0.5	0.7	16	< 5	7.66	52.5	167.4
	SDS #32	4/24/17-4/25/17	005881170425	170966	Composite	Non-Steady	Yes	58.2	58.2	58.1	< 0.5	< 0.5	44	38	7.64		75
		5/22/17-5/23/17	005881170523	171250	Composite	Non-Steady	Yes	45.3	41.5	42.7	2.7	1.1	15	12	7.71	65.5	209
		6/26/17-6/27/17	005881170627	171579	Composite	Steady	Yes	27.7	26.7	17.5	< 0.5	1	23	12	7.49	73.4	159
		7/31/17-8/1/17	007881170801	172085	Composite	Steady	Yes	4.1	1.9	< 0.5	< 0.5	2.2	9	12.5	7.77	77.36	229
		8/28/17-8/29/17	007881170829	172802	Composite	Steady	Yes	17.1	13.8	4.3	< 0.5	3.3	77	52	6.96	74.7	99
		10/2/17-10/3/17	011881171003	173264	Composite	Steady	Yes	11.6	6.3	< 0.5	4.8	0.5	21	10	7.63	72.1	80
		11/13/17-11/14/17	005881171114	173656	Composite	Steady	Yes	4.1	2.9	< 0.5	1.2	< 0.5	19	14	8.17	53.8	NR
		12/11/17-12/12/17	011881171212	173957	Composite	Steady	Yes	3.2	1.4	< 0.5	1.8	< 0.5	6	< 5	7.46	52	160
	SD #36	7/10/17-7/11/17	008881170711	171718	Composite	Non-Steady	Yes	23.8	2.1	< 0.5	21.7	< 0.5	6	< 10	7.63	76.28	88
		8/7/17-8/8/17	001881170808	172444	Composite	Non-Steady	Yes	33	1.1	1.5	31	0.9	21	44	7.12	72.14	53
		9/11/17-9/12/17	001881170912	172912	Composite	Steady	Yes	4.7	3.1	< 0.5	1.6	< 0.5	< 5	< 5	7.48	66.9	54
		10/16/17-10/17/17	001881171017	173413	Composite	Steady	Yes	23.4	< 0.5	< 0.5	23.4	< 0.5	< 5	< 5	6.56	65.7	14.4
		11/20/17-11/21/17	001881171121	173754	Composite	Steady	Yes	17.7	2.2	< 0.5	15.5	< 0.5	< 5	< 10	7.01	56.1	28
		12/18/17-12/19/17	004881171219	174028	Composite	Steady	Yes	29.9	1.3	< 0.5	28.6	< 0.5	21	65	6.4	50.2	NR
		1/23/18-1/30/18	004881180130	180228	Composite	Steady	Yes	30.2	1.6	0.5	28.6	< 0.5	18	< 10	6.07	42.1	50
		3/12/18-3/13/18	001881180313	180599	Composite	Steady	Yes	25.3	1.3	< 0.5	24	< 0.5	< 6	< 5	7.02	45.3	21
								29.40938	21.73	20.69	7.2188	0.956	24.91	20.17	7.41129	65.06	147.29

Manufacturer	Site #	Sample Date	Sample #	Lab ID #	Sample Type (3)	State (1)(2)	Compare Sample (Yes or No)	TN(mg/l) (6)	TKN (mg/l)	Ammonia (as N)	NO3 (Nitrate as	NO2 (Nitrite as	BOD	TSS	PH	Temp	Alkalinity
Waterloo	SD #37	6/12/17-6/13/17	001881170613	171422	Composite (B)	Non-Steady	Yes	42.3	40.4	37.4	0.6	1.3	26	< 10	7.31	70.7	267
		8/14/17-8/15/17	005881170815	172544	Composite (B)	Steady	Yes	23.9	17.5	22.8	5.7	0.7	14	< 10	7.04	79.88	223
		9/18/17-9/19/17	001881170919	173000	Composite (B)	Steady	Yes	31.6	22.1	23	8.7	0.8	15	10	7.09	74.1	NR
		10/23/17-10/24/17	001881171024	173484	Composite (B)	Steady	Yes	31.7	16.3	17.7	15.4	< 0.5	14	7	7.07	70.9	188
		11/27/17-11/28/17	001881171128	173782	Composite (B)	Steady	Yes	38.6	29.5	22.8	8.6	0.5	18	9	6.96	59.5	203
		1/29/18-1/30/18	008881180130	180232	Composite (B)	Steady	Yes	48.8	43.1	36.8	4.6	1.1	27	15	7.07	50.7	233
		3/12/18-3/13/18	005881180313	180603	Composite (B)	Steady	Yes	43.2	39.4	28.1	3.2	0.6	35	20	7.01	46.6	264
		4/9/18-4/10/18	003881180410	180839	Composite (B)	Steady	Yes	62.1	60.8	51.8	0.7	0.6	61	24.5	7.15	53.8	318
		5/7/2018-5/8/2018	003934180508	181127	Composite (B)	Steady	Yes	59.7	58.7	52.5	1	< 0.5	33	10.8	7.15	65.7	305
		6/11/18-6/12/18	004934180612	181412	Composite (B)	Steady	Yes	72.2	69.7	39.3	2.5	< 0.5	38	17.5	7.35	68.9	270
		7/9/18-7/10/18	003934180710	181678	Composite(B)	Steady	Yes	54.1	53	49.7	1.1	< 0.5	70	13.2	7.07	74.66	303
		1/14/19-1/15/19	006881190115	190127	Composite (B)	Steady	Yes	21.2	14.8	14.9	6.4	< 0.5	9	< 25	NR	10.4	NR
		2/25/19-2/26/19	005881190226	190497	Composite (B)	Steady	Yes	24.8	18.8	15.1	6	< 0.5	14	< 10	NR	10.9	NR
		3/25/19-3/26/19	004881190326	190750	Composite (B)	Steady	Yes	26.7	21.7	11.9	5	< 0.5	15	6.8	NR	13	NR
		4/22/19-4/23/19	004881190423	191005	Composite (B)	Steady	Yes	27.4	23.4	17.5	4	< 0.5	27	< 12.5	NR	16	NR
		5/20/19-5/21/19	004881190521	191269	Composite (B)	Steady	Yes	25.6	21.2	15.5	4.4	< 0.5	25	< 10	6.46	19.3	170
		6/24/19-6/25/19	003881190625	191544	Composite (B)	Steady	Yes	20.5	12.6	12.2	7.9	< 0.5	12	11	6.85	21.5	155
	SD #38	6/12/17-6/13/17	007881170613	171428	Composite (B)	Non-Steady	Yes	118.7	118	93.8	< 0.5	0.7	28	17	9.7	72.14	450
		7/17/17-7/18/17	006881170718	171814	Composite (B)	Non-Steady	Yes	82.5	79	83	3.5	< 0.5	19	14	7.33	80.42	450
		8/14/17-8/15/17	011881170815	172550	Composite (B)	Steady	Yes	84.5	81	90.1	3.5	< 0.5	12	< 10	7.42	77.54	455
		9/18/17-9/19/17	005881170919	173004	Composite (B)	Steady	Yes	74.9	62.4	12.5	11.4	1.1	7	6	7.43	75.2	376
		10/23/17-10/24/17	007881171024	173490	Composite (B)	Steady	Yes	53.5	39.6	39.4	13.9	< 0.5	NR	NR	NR	70.2	NR
		11/27/17-11/28/17	007881171128	173788	Composite (B)	Steady	Yes	68.3	48.9	36.5	19.4	< 0.5	5	< 5	7.22	58.6	258
		1/8/18-1/9/18	009881180109	180061	Composite (B)	Steady	Yes	61.2	44.5	33.4	13.8	2.9	< 5	6	7.19	47.6	263
		2/26/18-2/27/18	009881180227	180460	Composite (B)	Steady	Yes	47.7	40.4	36.5	6.5	0.8	17	7	7.25	51.8	33
		3/26/18-3/27/18	009881180327	180728	Composite (B)	Steady	Yes	69.7	60.7	73.3	7.4	1.6	10	8	7.72	48.2	334
		4/23/18-4/24/18	009881180424	180891	Composite (B)	Steady	Yes	113.9	101	92.2	12	0.9	10	5	7.53	54.1	349
		5/21/18-5/22/18	009934180522	181266	Composite (B)	Steady	Yes	85.7	75.6	67.1	9.3	0.8	25	< 5	7.54	63.5	204
		6/25/18-6/26/18	003934180626	181546	Composite (B)	Steady	Yes	96.1	78.6	65.8	15.9	1.6	20	10.4	7.5	72.68	348
		7/23/18-7/24/18	009934180724	181815	Composite (B)	Steady	Yes	94.3	71.2	63	22.1	1	< 9	< 10	7.42	76.82	297
		1/28/19-1/29/19	005881190129	190240	Composite (B)	Steady	Yes		102	57.9			8	3.2	NR	7	NR
		3/4/19-3/5/19	001881190305	190559	Composite (B)	Steady	Yes	81.2	76.6	80	3.9	0.7	8	3.2	7.8	11	NR
		4/22/19-4/23/19	008881190423	191009	Composite (B)	Steady	Yes	95.3	92.2	74.3	2.6	0.5	16	< 10	NR	14.4	NR
		5/20/19-5/21/19	008881190521	191273	Composite (B)	Steady	Yes	106.4	103	84.3	3.4	< 0.5	21	< 12.5	7.57	16.4	401
		6/24/19-6/25/19	007881190625	191548	Composite (B)	Steady	Yes	95.9	90.7	78.1	4.7	0.5	22	20.5	7.28	20.1	375
		7/22/19-7/23/19	004856190723	191800	Composite (pre)			105.1	98.7	87.9	6.4	< 0.5	29	18	7.74		418
								62.55143	56.31	47.725	7.0286	0.763	20.69	11.23	7.352414	49.264	292.963

Manufacturer	Site #	Sample Date	Sample #	Lab ID #	Sample Type (3)	State (1)(2)	Compare Sample (Yes or No)	TN(mg/l) (6)	TKN (mg/l)	Ammonia (as N)	NO3 (Nitrate as	NO2 (Nitrite as	BOD	TSS	PH	Temp	Alkalinity
Waterloo with Denite Filter	1																
		6/12/17-6/13/17	002881170613	171423	Composite (A)	Non-Steady	Yes	42.5	42.5	40.7	< 0.5	< 0.5	16	< 10	7.38	70.7	321
		7/17/17-7/18/17	001881170718	171809	Composite (A)	Steady	Yes	23.9	23.9	23.4	< 0.5	< 0.5	28	< 10	7.28	78.44	340
		3/12/18-3/13/18	006881180313	180604	Composite (A)	Steady	No	42.4	41.3	24.5	< 1	1.1	26	< 5	7.13	46.6	308

		4/9/18-4/10/18	004881180410	180840	Composite (A)	Steady	No	60.9	59.8	55	1.1	< 0.5	43	< 13	7.2	53.8	359
		5/7/2018-5/8/2018	005934180508	181129	Composite (A)	Steady	No	64	64	56.3	< 0.5	< 0.5	38	13.6	7.17	65.7	396
		6/11/18-6/12/18	006934180612	181414	Composite (A)	Steady	No	61.1	61.1	43.1	< 0.5	< 0.5	27	< 10	7.47	68.9	356
		7/9/18-7/10/18	005934180710	181680	Composite (A)	Steady	No	47.6	47.6	47.1	< 0.5	< 0.5	26	< 10	7.14	74.66	336
		1/14/19-1/15/19	007881190115	190128	Composite (A)	Steady	No	18.7	17.3	15.7	1.4	< 0.5	10	< 12.5	NR	9.4	NR
		2/25/19-2/26/19	005881190226	190498	Composite (A)	Steady	No	27.5	21.2	16.6	6.3	< 0.5	12	< 10	NR	10.9	NR
		3/25/19-3/26/19	005881190326	190751	Composite (A)	Steady	No	24	22.8	2.3	1.2	< 0.5	NR	NR	NR	13	NR
		4/22/19-4/23/19	005881190423	191006	Composite (A)	Steady	No	16.2	16.2	18.3	< 0.5	< 0.5	23	< 10	NR	16	NR
		5/20/19-5/21/19	005881190521	191270	Composite (A)	Steady	No	25.2	24.3	17.7	0.9	< 0.5	18	< 10	7.06	19.3	233
		6/24/19-6/25/19	004881190625	191545	Composite (A)	Steady	No	16.4	15.6	13.5	0.8	< 0.5	10	< 10	7.06	21.5	224
	2																
		6/12/17-6/13/17	008881170613	171429	Composite (A)	Non-Steady	Yes	96.8	96.8	87.4	< 0.5	< 0.5	20	< 10	7.56	72.14	448
		7/17/17-7/18/17	007881170718	171815	Composite (A)	Non-Steady	Yes	73	73	73.3	< 0.5	< 0.5	20	18	7.34	80.42	459
		2/26/18-2/27/18	010881180227	180461	Composite(A)	Steady	No	33.5	33.5	31.5	< 0.5	< 0.5	15	6	7.19	51.8	362
		3/26/18-3/27/18	010881180327	180729	Composite (A)	Steady	No	56.1	56.1	61.3	< 0.5	< 0.5	6	< 5	7.67	48.2	334
		4/23/18-4/24/18	010881180424	180892	Composite (A)	Steady	No	106	106	87.9	< 0.5	< 0.5	9	< 5	7.45	54.1	387
		5/21/18-5/22/18	010934180522	181267	Composite(A)	Steady	No	75.4	75.4	64.9	< 0.5	< 0.5	11	28	7.31	63.5	400
		6/25/18-6/26/18	005934180626	181548	Composite(A)	Steady	No	84.1	84.1	70.8	< 0.5	0.5	13	< 10	7.55	72.68	433
		7/23/18-7/24/18	011934180724	181817	Composite(A)	Steady	No	78.7	78.7	72.9	< 0.5	< 0.5	10	< 10	NR	76.82	NR
		1/28/19-1/29/19	006881190129	190241	Compsite (A)	Steady	No		93.4	82.7			16	1.6	NR	7	NR
		3/4/19-3/5/19	002881190305	190560	Composite (A)	Steady	No	94.7	94.7	75.8	< 0.5	< 0.5	16	1.6	7.55	7.2	NR
		4/22/19-4/23/19	009881190423	191010	Composite (A)	Steady	No	83.2	83.2	71.6	< 0.5	< 0.5	22	< 10	NR	14.4	NR
		5/20/19-5/21/19	009881190521	191274	Composite (A)	Steady	No	110.7	110	85.2	0.7	< 0.5	22	< 10	7.64	16.4	430
		6/24/19-6/25/19	008881190625	191549	Composite (A)	Steady	No	75.2	75.2	82.6	< 0.5	< 0.5	25	10	7.13	20.1	383
		7/22/19-7/23/19	005856190723	191801	Composite (Post	Steady	No	96.1	96.1	85.8	< 0.5	< 0.5	39	< 10	7.36		395
								58.99615	59.77	52.144	0.8615	0.523	20.04	9.973	7.332	43.60231	363.368

Manufacturer	Site #	Sample Date	Sample #	Lab ID #	Sample Type (3)	State (1)(2)	Compare Sample	TN(mg/l) (6)	TKN (mg/l)	Ammonia (as N)	NO3 (Nitrate as	NO2 (Nitrite as	BOD	TSS	PH	Temp	Alkalinity
BioMicrobics BioBarrier	SD #39	7/24/17-7/25/17	010881170725	171905	Composite	Non-Steady	Yes	63.9	5.8	19.2	58.1	< 0.5	33	8	6.83	75.2	NR
		8/21/17-8/22/17	010881170822	172723	Composite	Non-Steady	Yes	61	14.5	14.5	44.9	1.6	33	< 0.5	6.08	79.16	NR
		10/4/17-10/5/17	003881171005	DHS LAB	Composite	Steady	Yes	69.8	18	18.8	51.8	< 0.5	NA	NA	NA	70.2	NA
		10/30/17-10/31/17	010881171031	173582	Composite	Steady	Yes	N/A	NR	20.9	47.9	< 0.5	< 6	< 10	6.42	65.1	NR
		12/4/17-12/5/17	010881171205	173895	Composite	Steady	Yes	60.6	29.3	29.5	31.3	< 0.5	< 5	< 3	7.43	48.6	112
		1/8/18-1/9/18	005881180109	180057	Composite	Steady	Yes	64.9	14.4	17.5	50.5	< 0.5	< 5	< 5	6.07	44.8	NR
		2/26/18-2/27/18	005881180227	180456	Composite	Steady	Yes	73.4	26.7	22.3	46.7	< 0.5	< 5	< 10	5.3	45.7	NR
		3/26/18-3/27/18	005881180327	180724	Composite	Steady	Yes	77.1	17.1	26.9	60	< 0.5	< 4	< 5	4.43	47.7	NR
		4/23/18-4/24/18	005881180424	180887	Composite	Steady	Yes	56.2	12.7	11.1	43.5	< 0.5	< 5	< 5	5.02	51.8	NR
		5/21/18-5/22/18	005934180522	181262	Composite	Steady	Yes	100.2	44.8	18.3	55.4	< 0.5	< 6	< 5	6.01	63.86	NR
		6/25/18-6/26/18	001934180676	181544	Composite	Steady	Yes	25	< 0.5	< 0.5	25	< 0.5	< 5	< 10	7.03	69.26	19.4
		7/23/18-7/24/18	005934180724	181811	Composite	Steady	Yes	42.4	4.4	4.2	38	< 0.5	< 5	< 10	5.44	76.82	NR
		8/20/18-8/21/18	007881180821	182071	Composite	Steady	Yes	42.4	1.2	1.3	41.2	< 0.5	< 6	< 10	5.62	23.3	NR
		3/4/19-3/5/19	006881190305	190563	Composite	Steady	Yes	42.4	21.4	22.7	19.7	1.3	31	0.8	7.5	7.1	NR
		4/1/19-4/2/19	004881190402	190819	Composite	Steady	Yes	40	2.5	8.6	37.5	< 0.5	6	< 10	NR	9.5	NR
		4/29/19-4/30/19	003881190430	191074	Composite	Steady	Yes	32.6	< 0.1	1.8	32.6	< 0.5	< 6	< 10	NR	13.9	NR
		6/3/19-6/4/19	003881190604	191381	Composite	Steady	Yes	19.2	< 1	5.2	19.2	< 0.5	< 5	< 5	6.69	16.8	50
		7/1/19-7/2/19	003934190702	191621	Composite	Steady	Yes	20.8	1.8	4	19	< 0.5	< 5	< 10	6.67	22.2	50
		7/29/19-7/30/19	003856190730	191852	Composite	Steady	Yes	19.9	< 0.1	0.5	19.9	< 0.5	NA	< 10	6.79	25.8	NR
		8/26/19-8/27/19	003934190827	192102	Composite	Steady	Yes	14.7	0.2	0.6	14.5	< 0.5	< 25	< 10	7.05	22.8	51
		9/23/19-9/24/19	001934190924	192317	Composite	Steady	Yes	20.5	4.5	0.8	16	< 0.5	< 5	< 10	6.7	19.8	28
		10/28/19-10/29/19	003934191029	192607	Composite	Steady	Yes	14	< 0.1	< 0.5	14	< 0.5	< 6	< 10	6.77	5.8	250
	SD #40	7/17/17-7/18/17	011881170718	171819	Composite	Steady	Yes	22.74	3.74	4.1	1	18	< 5	< 10	6.92	78.8	32
		8/14/17-8/15/17	009881170815	172548	Composite	Steady	Yes	36.2	9.1	10.2	20.9	6.2	< 5	< 10	6.88	76.64	18
		9/18/17-9/19/17	010881170919	173009	Composite	Steady	Yes	33.7	9.1	8.9	24.6	< 0.5	< 5	< 10	5.32	73.8	NR
		10/23/17-10/24/17	005881171024	173488	Composite	Steady	Yes	N/A	NR	3.5	20.9	< 0.5	< 5	< 10	6.28	69.1	6.28
		1/29/18-1/30/18	012881180130	180236	Composite	Steady	Yes	51.8	27.4	17.6	18.5	5.9	56	< 20	7.07	50.5	50
		3/12/18-3/13/18	008881180313	180606	Composite	Steady	Yes	31.4	6.6	10.4	23.8	1	8	< 5	4.75	42.1	NR
		4/9/18-4/10/18	007881180410	180843	Composite	Steady	Yes	24.6	1.6	< 0.5	23	< 0.5	< 5	< 10	6.24	43.3	NR
		5/7/18-5/8/18	007934180508	181131	Composite	Steady	Yes	25.5	2.6	< 0.5	22.9	< 0.5	< 5	< 10	6.04	59	NR
		6/11/18-6/12/18	008934180612	181416	Composite	Steady	Yes	33.8	4.6	3.6	29.2	< 0.5	< 5	< 10	4.05	64.58	NR
		7/9/18-7/10/18	007934180710	181682	Composite	Steady	Yes	21	1	< 0.5	20	< 0.5	< 5	< 10	6.08	75.02	NR
		8/6/18-8/7/18	004934180807	181936	Composite	Steady	Yes	88.7	27.9	25.7	60.8	< 0.5	< 5	< 10	4.61	27.2	NR
		9/10/18-9/11/18	006934180911	182240	Composite	Steady	Yes	69.5	18.8	11.4	50.7	< 0.5	< 6	< 10	4.51	22.6	NR
		1/7/19-1/8/19	007881190108	190062	Composite	Steady	Yes	16.1	2.1	< 1	14	< 0.5	< 4	< 18.75	7.12	7.5	NR
		2/4/19-2/5/19	005881190205	190301	Composite	Steady	Yes	19.6	0.1	1.6	18	1.5	5	< 10	NR	2.3	NR
		3/18/19-3/19/19	003881190319	190680	Composite	Steady	Yes	25.7	< 0.1	3.6	25.7	< 0.5	NR	NR	5.83	5.3	NR
		4/8/19-4/9/19	006881190409	190885	Composite	Steady	Yes	14	0.5	1.7	13.5	< 0.5	5	< 10	NR	9.8	NR
		5/13/19-5/14/19	009881190514	191199	Composite	Steady	Yes	10.2	0.8	0.6	9.4	< 0.5	< 6	< 10	NR	12.9	49
		6/17/19-6/18/19	008881190618	191493	Composite	Steady	Yes	11.6	10.2	7.1	1.4	< 0.5	< 6	< 10	7.42	18.2	105
		7/15/19-7/16/19	008856190716	191752	Composite	Steady	Yes	6.2	3.5	1.5	2.7	< 0.5	< 5	< 10	7.3	24	92
		8/19/19-8/20/19	009856190820	192062	Composite	Steady	Yes	15.4	2.3	0.6	13.1	< 0.5	< 5	< 10	7.17	25	NR
		9/16/19-9/17/19	007934190917	192287	Composite	Steady	Yes	10.3	1.4	0.9	8.9	< 0.5	< 5	< 125	7.37	21.6	68
		10/21/19-10/22/19	005934191022	192556	Composite	Steady	Yes	12.2	< 0.1	< 0.5	12.2	< 0.5	< 5	< 10	6.7	6.3	NR
		11/25/19-11/26/19	005934191126	192800	Composite	Steady	Yes	11	1.1	< 0.5	9.9	< 0.5	< 5	< 12.5	NR	3.3	NR
								36.10	8.27	8.14	27.37	1.21	8.88	11.83	6.25	38.31	65.38

Manufacturer	Site #	Sample Date	Sample #	Lab ID #	Sample Type (3)	State (1)(2)	Compare Sample	TN(mg/l) (6)	TKN (mg/l)	Ammonia (as N)	NO3 (Nitrate as	NO2 (Nitrite as	BOD	TSS	PH	Temp	Alkalinity
BioMicrobics SeptiTech	SD #41	12/4/17-12/5/17	003881171205	173888	Composite	Steady	Yes	9.4	< 0.5	< 0.5	9.4	< 0.5	8	5	7.02	57.6	NR
		1/22/18-1/23/18	007881180123	180159	Composite	Steady	Yes	15.7	8.6	1	7.1	< 0.5	31	25	6.21	52.3	50
		3/5/18-3/6/18	005881180306	180530	Composite	Steady	Yes	9.1	3.1	4.2	6	< 0.5	76	45	6.76	51.1	52
		4/2/18-4/3/18	005881180403	180780	Composite	Steady	Yes	17.2	11.5	2.2	5.7	< 0.5	62	77	6.44	47.8	42
		4/30/18-5/1/18	005934180501	181066	Composite	Steady	Yes	8.9	6.4	2.8	2.5	< 0.5	35	21	6.97	57.2	52
		6/4/18-6/5/18	005934180605	181363	Composite	Steady	Yes	6	2.2	1.3	3.8	< 0.5	8	< 10	7.04	65.66	40
		7/2/18-7/3/18	005934180703	181614	Composite	Steady	Yes	12.2	2.1	< 0.5	10.1	< 0.5	< 5	< 10	6.61	75.74	NR
	SD #42	12/18/17-12/19/17	010881171219	174033	Composite	Non-Steady	Yes	53.1	47	46.4	< 0.5	6.1	NR	11	1.86	58.3	NR
		1/29/18-1/30/18	006881180130	180230	Composite	Steady	Yes	10.1	7.2	3	< 0.5	2.9	23	< 10	7.21	52.5	75
		3/12/18-3/13/18	003881180313	180601	Composite	Steady	Yes	13.3	0.6	0.5	9	3.7	14	< 5	6.95	54.3	32
		4/9/18-4/10/18	001881180410	180837	Composite	Steady	Yes	22.1	6.6	2.4	15.5	< 0.5	12	< 10	6.77	57.7	31
		5/7/18-5/8/18	001934180508	181125	Composite	Steady	Yes	12.5	7.6	3.3	4.9	< 0.5	42	20	7.07	67.5	47
		6/11/18-6/12/18	002934180612	181410	Composite	Steady	Yes	14.4	6.5	2.6	7.1	0.8	9	< 10	7.1	75.2	46
		7/9/18-7/10/18	001934180710	181676	Composite	Steady	Yes	21.4	9.4	6.5	12	< 0.5	8	< 10	7.1		53
								16.1	8.521	5.5143	6.7214	1.321	25.62	19.21	6.507857	59.45385	47.2727

SUFFOLK COUNTY I/A OWTS Grab Sample Data: Bi-Monthly Provisional Approval Phase Sampling (Effluent)

Notes:
(1) Non-Steady State -- Result taken before system developed a treatment process to reduce nitrogen (can be either a composite or grab sample)
(2) Steady State - Result taken after system developed a treatment process to reduce total nitrogen (TN)
(3) Samples Type are either Composite sample (taken over a 24-hour period) or grab sample taken at a single point in time
(4) Compare - grab sample taken to compare to composite sample. Grab sample was taken on the last day of the composite sample
(5) Calculate - Composite result used to calculate average total nitrogen (TN) to determine provisional approval (only composite samples used to calculate average). Data from 75% of Units must average 19mg/l of TN for at least 6 months of composite sampling to receive provisional approval. This requirement for demo systems only
(6) Total Nitrogen (mg/l) = TKN +Nitrate +Nitrite

(7) Grab samples are used for any of the following purposes: (a) To determine if a system has reached steady state prior to commencing composite sampling, (b) To verify and/or compare to composite samples taken

Manufacturer	Install	Provisional System #	Sample Date	Field #	Lab ID	Sample Type (3)	TN(mg/l) (6) (ALL SAMPLES)	TN(mg/l) (6) (County Only)	TN(mg/l) (6) (BIMONTHLY MFR ONLY)	TKN (mg/l)	Ammonia (as N)	NO3 (Nitrate as N)	NO2 (Nitrite as N)	BOD	TSS	PH	Temp	Alkalinity
HydroAction		1	8/2/2017	011881170802	08-17-00206	Grab	9.3	9.3	-	2.2	< 0.5	7.1	< 0.5	N/A	N/A	7.1	N/A	N/A
	Install 6/10/15		11/8/2017	001881171108	11-17-00156	Grab	8.7	8.7	-	0.9	N/A	7.8	< 0.5	N/A	N/A	N/A	N/A	N/A
	SD# 18		12/13/2017	MFR SAMPLE	7038168001	Grab	15.7	-	15.7	< 0.1	< 0.1	15.7	< 0.05	< 4	10	6.8	15	7.4
			2/15/2018	MFR SAMPLE	7043139004	Grab	20.4	-	20.4	< 0.1	2.2	20.4	< 0.05	< 4	16	7.2	15.8	2.8
			3/15/2018	001881180315	03-18-00283	Grab	20.3	20.3	-	3	< 0.5	< 0.5	17.3	N/A	N/A	N/A	N/A	N/A
			4/20/2018	MFR SAMPLE	7049177001	Grab	2	-	2	< 0.1	0.12	2	< 0.05	< 4	< 10	6.7	15.8	30
			7/3/2018	MFR SAMPLE	7057023001	Grab	8.1	-	8.1	0.9	0.13	7.2	< 0.05	< 2	< 10	7.3	18.9	34
			8/21/2018	MFR SAMPLE	7062258007	Grab	5.9	-	5.9	1.1	0.14	4.8	< 0.05	< 2	< 10	6.9	23.8	46.2
			9/20/2018	001881180920	09-18-00682	Grab	14.7	14.7	-	1.7	N/A	13	, 1.25	N/A	N/A	N/A	N/A	N/A
			10/22/2018	MFR SAMPLE	7068701007	Grab	21.25	-	21.25	0.95	< 0.1	20.3	< 0.05	< 4	10	6.1	15.2	5.1
			12/26/2018	MFR SAMPLE	7074897009	Grab	8.79	-	8.79	0.69	< 0.1	8.1	< 0.05	3.4	24	7	9.1	68.4
			3/20/2019	MFR SAMPLE	7082946009	Grab	14.14	-	14.14	0.82	0.12	13.2	0.12	6.1	17	7.4	14.6	24.4
			5/24/2019	MFR SAMPLE	7090841014	Grab	5.45	-	5.45	0.95	0.16	4.5	< 0.05	3.4	< 10	6.8	19.2	56.4
			6/6/2019	002881190606	06-19-00286	Grab	17.7	17.7	-	10.7	N/A	7	< 2.5	N/A	N/A	N/A	N/A	N/A
			7/18/2019	MFR SAMPLE	7098265014	Grab	8	-	8	1.6	< 0.1	6.4	< 0.05	< 4	14	6.9	22.9	62.5
			9/30/2019	MFR SAMPLE	70106717001	Grab	9.6	-	9.6	2	< 0.1	7.6	< 0.05	10.5	40	7	19.7	60.4
			10/15/2019	002-934-191015	10-19-00321	Grab	10.5	10.5	-	5.9	N/A	4.6	< 1.25	N/A	N/A	N/A	N/A	N/A
			11/20/2019	MFR SAMPLE	70112628002	Grab	7	-	7	2.2	< 0.1	4.8	< 0.05	3.1	23.6	7.1	15.3	52.9
		2	8/2/2017	007881170802	08-17-00202	Grab	11.5	11.5	-	1.4	< 0.5	10.1	< 0.5	N/A	N/A	6.7	N/A	N/A
	Install 7/7/15		11/16/2017	003881171116	11-17-00394	Grab	31.7	31.7	-	8	N/A	23.7	< 0.5	N/A	N/A	N/A	N/A	N/A
	SD# 10		12/14/2017	MFR SAMPLE	7038163001	Grab	11.4	-	11.4	1.4	0.12	10	< 0.05	< 4	13	6.9	15	26.8
			2/15/2018	MFR SAMPLE	7043139006	Grab	9.3	-	9.3	1.1	0.23	8.2	< 0.05	< 6.7	41	7.3	16.5	23
			4/5/2018	001881180405	04-18-00126	Grab	13.2	13.2	-	3.8	< 0.5	9.4	< 0.5	N/A	N/A	N/A	N/A	N/A
			4/20/2018	MFR SAMPLE	7049175001	Grab	13.25	-	13.25	0.85	0.27	12.4	< 0.05	< 66.7	46	6.65	14	20.8
			10/4/2018	005-881-181004	10-18-00144	Grab	10.2	10.2	-	1.5	N/A	6.2	< 2.5	N/A	N/A	N/A	N/A	N/A
			7/3/2018	MFR SAMPLE	7057014001	Grab	7.58	-	7.58	0.58	< 0.1	7	< 0.05	< 2	< 10	7.1	18.4	38
			8/21/2018	MFR SAMPLE	7062258009	Grab	9.1	-	9.1	1.2	0.15	7.9	< 0.05	< 2	< 10	6.8	24.5	38.3
			10/4/2018	005881181004	10-18-00144	Grab	10.2	10.2	-	1.5	N/A	6.2	< 2.5	N/A	N/A	N/A	N/A	N/A
			10/22/2018	MFR SAMPLE	7068701009	Grab	10.6	-	10.6	1.2	< 0.1	9.4	< 0.05	< 4	10	7	17	49.3
			12/26/2018	MFR SAMPLE	7074897011	Grab	10.97	-	10.97	0.67	< 0.1	10.3	< 0.05	< 4	8	7.3	8.9	42.4
			5/24/2019	MFR SAMPLE	7090841017	Grab	12.4	-	12.4	1.6	0.89	10.8	< 0.05	< 2	< 10	7	18.5	26.5
			6/13/2019	003881190613	06-19-00711	Grab	15.8	15.8	-	7.8	N/A	8	< 1.25	N/A	N/A	N/A	N/A	N/A
			7/19/2019	MFR SAMPLE	7098265018	Grab	9	-	9	1.1	< 0.1	7.9	< 0.05	< 4	< 10	7.2	23.7	32
			9/30/2019	MFR SAMPLE	70106717005	Grab	5.9	-	5.9	1.1	< 0.1	4.8	< 0.05	< 2	3.2	7	20.4	49.6
			11/6/2019	007-934-191106	11-19-00052	Grab	10.4	10.4	-	2.1	N/A	8.3	< 1.25	N/A	N/A	N/A	N/A	N/A
			11/20/2019	MFR SAMPLE	70112628005	Grab	11.58	-	11.58	0.58	< 0.1	11	< 0.05	< 2	< 2	6.5	15.5	34.8
		3	8/2/2017	003881170802	08-17-00198	Grab	13.1	13.1	-	6.2	0.65	6.9	< 0.5	N/A	N/A	7.4	N/A	N/A
	Install 8/21/15		11/2/2017	003881171102	11-17-00087	Grab	17.7	17.7	-	4.2	N/A	13.5	< 0.5	N/A	N/A	N/A	N/A	N/A
	SD# 12		12/14/2017	MFR SAMPLE	7038167001	Grab	12.4	-	12.4	2.8	0.16	9.3	0.34	< 4	48	7.2	16	36.2
			2/15/2018	MFR SAMPLE	7043139005	Grab	8.7	-	8.7	1.6	0.37	7.1	< 0.05	< 4	20	7.1	16	56
			3/8/2018	004881180308	03-18-00145	Grab	14.4	14.4	-	7.6	< 0.5	6.8	< 0.5	N/A	N/A	N/A	N/A	N/A
			4/20/2018	MFR SAMPLE	7049174001	Grab	14	-	14	< 0.1	< 0.1	14	< 0.05	< 13.3	< 10	6.8	14	46.8
			7/3/2018	MFR SAMPLE	7057021001	Grab	8.41	-	8.41	1.4	0.14	6.8	0.21	< 4	< 10	6.9	18.2	102
			8/21/2018	MFR SAMPLE	7062258008	Grab	11.6	-	11.6	< 0.1	< 0.1	11.6	< 0.05	< 2	< 10	6.9	24.5	92.7
			9/20/2018	006881180920	09-18-00687	Grab	11.2	11.2	-	1.7	N/A	9.5	< 1.25	N/A	N/A	N/A	N/A	N/A
			10/22/2018	MFR SAMPLE	7068701008	Grab	11.4	-	11.4	1	< 0.1	10.4	< 0.05	< 4	< 10	7.2	15.4	95.1
			12/26/2018	MFR SAMPLE	7074897010	Grab	9.25	-	9.25	0.95	< 0.1	8.3	< 0.05	6.8	35	7.2	8.9	66.5
			5/24/2019	MFR SAMPLE	7090841016	Grab	7.853	-	7.853	1.6	0.67	6.2	0.053	3.4	< 10	7.2	17.6	167
			6/6/2019	006881190606		Grab			-		N/A			N/A	N/A	N/A	N/A	N/A
			7/19/2019	MFR SAMPLE	7098265017	Grab	17.363	-	17.363	< 0.1	0.27	17.3	0.063	< 4	< 10	7	23.6	109
			9/30/2019	MFR SAMPLE	70106717004	Grab	8.8	-	8.8	< 0.1	< 0.1	8.8	< 0.05	< 4	5.2	6.9	20.2	120
			11/6/2019	006-934-191106	11-19-00124	Grab	15.1	15.1	-	6.9	N/A	8.2	< 1.25	N/A	N/A	N/A	N/A	N/A
			11/20/2019	MFR SAMPLE	70112628004	Grab	13.2	-	13.2	< 0.1	< 0.1	13.2	< 0.05	< 2	3.6	7	15.2	47.5
		4	8/2/2017	005881170802	08-17-00200	Grab	14.1	14.1	-	3.7	0.51	10.4	< 0.5	N/A	N/A	6.3	N/A	N/A
	Install 9/9/15		11/16/2017	001881171116	11-17-00392	Grab	13.2	13.2	-	2.6	N/A	10.6	< 0.5	N/A	N/A	N/A	N/A	N/A
	SD# 11		12/14/2017	MFR SAMPLE	7038162001	Grab	12.9	-	12.9	4.5	1.7	8.4	< 0.05	< 4	< 10	6.9	16	13.4
			2/15/2018	MFR SAMPLE	7043139007	Grab	11	-	11	2	1	9	< 0.05	< 4	35	6.8	15.9	9
			4/5/2018	003881180405	04-18-00128	Grab	20.1	20.1	-	13.4	1.98	6.7	< 0.5	N/A	N/A	N/A	N/A	N/A
			4/20/2018	MFR SAMPLE	7049176001	Grab	12.9	-	12.9	3.1	1.3	9.8	< 0.05	< 66.7	60	6.65	14	9.2
			7/3/2018	MFR SAMPLE	7057013001	Grab	8.2	-	8.2	4.1	0.2	4.1	< 0.05	< 4	11	6.7	18.6	4
			8/21/2018	MFR SAMPLE	7062258010	Grab	10.85	-	10.85	0.95	0.34	9.9	< 0.05	< 2	10	5.8	27	3.1
			10/22/2018	MFR SAMPLE	7068701010	Grab	11.13	-	11.13	0.93	< 0.1	10.2	< 0.05	< 4	< 10	7.2	16.8	45.6
			12/26/2018	MFR SAMPLE	7074897012	Grab	19.59	-	19.59	4.5	4.2	15	0.089	19.1	35	7.2	9.6	3
			2/20/2019	006881190220		Grab	29.12	29.12	-	18.42	N/A	10.7	< 2.5	N/A	N/A	N/A	N/A	N/A
			5/24/2019	MFR SAMPLE	7090841018	Grab	13.159	-	13.159	0.89	0.29	12.2	0.069	4.5	22	7.3	19.1	5.9
			7/19/2019	MFR SAMPLE	7098262019	Grab	20.164	-	20.164	0.5	0.38	19.6	0.064	< 4	10	6.8	23.5	<1
			9/30/2019	MFR SAMPLE	70106717006	Grab	6.5	-	6.5	1.5	< 0.1	5	< 0.05	< 2	4.8	7.2	20.4	53.9
			11/6/2019	005-934-191106	11-19-00050	Grab	32.8	32.8	-	16.3	N/A	16.5	< 2.5	N/A	N/A	N/A	N/A	N/A
			11/20/2019	MFR SAMPLE	70112628006	Grab	15.7	-	15.7	2	0.17	13.7	< 0.05	3.6	29.2	7.2	15.1	<1
		5	8/2/2017	003858170802	08-17-00209	Grab	4.1	4.1	-	0.9	< 0.5	3.2	< 0.5	N/A	N/A	7.5	N/A	N/A
	Install 11/12/15		11/8/2017	003881171108	11-17-00158	Grab	4.7	4.7	-	1.5	N/A	3.2	< 0.5	N/A	N/A	N/A	N/A	N/A
	SD# 6		12/13/2017	MFR SAMPLE	7038170001	Grab	7.8	-	7.8	< 0.1	< 0.1	7.8	< 0.05	5.4	11	7.1	15	40.8
			2/15/2018	MFR SAMPLE	7043139003	Grab	22.2	-	22.2	0.7	4	21.5	< 0.05	< 4	28	6.9	16.2	2.4
			3/15/2018	003881180315	03-18-00285	Grab	28.9	28.9	-	2.9	2.36	26	< 0.5	N/A	N/A	N/A	N/A	N/A
			4/20/2018	MFR SAMPLE	7049173001	Grab	43.1	-	43.1	< 0.1	0.19	39.4	3.7	< 66.7	68	5.6	9.6	2.2
			7/2/2018	MFR SAMPLE	7057020001	Grab	6.5	-	6.5	1.6	< 0.1	4.9	< 0.05	< 2	< 10	6.7	18.4	8
			8/21/2018	MFR SAMPLE	7062258004	Grab	3.5	-	3.5	1.3	< 0.1	2.2	< 0.05	< 2	< 10	7.4	23.4	66.4
			9/6/2018	005881180906	09-18-00206	Grab	5.8	5.8	-	1.1	N/A	4.2	< 0.5	N/A	N/A	N/A	N/A	N/A
			10/22/2018	MFR SAMPLE	7068701005	Grab	3	-	3	1.4	< 0.1	1.6	< 0.05	< 4	< 10	7.3	14.8	54.5
			3/20/2019	MFR SAMPLE	7082946003	Grab	23.8	-	23.8	< 0.1	< 0.1	23.8	< 0.05	3.4	17	7	13.1	4.6
			4/16/2019	001881190416	ZP00464	Grab	20.9	20.9	-	1.4	N/A	19.5	< 2.5	N/A	N/A	N/A	N/A	N/A
			5/23/2019	MFR SAMPLE	7090841009	Grab	5.884	-	5.884	3.1	0.62	2.7	0.084	12.7	18	7.1	18.9	65.5
			7/18/2019	MFR SAMPLE	7098265009	Grab	7	-	7	1.2	< 0.1	5.8	< 0.05	< 4	18	7.3	22.9	50.3
			9/20/2019	MFR SAMPLE	70105815012	Grab	6.813	-	6.813	2.1	0.013	4.7	< 0.05	2.9	8	7.2	19.8	37.8
			10/16/2019	006-934-191016	10-19-00387	Grab	4.9	4.9	-	1.5	N/A	3.4	< 1.25	N/A	N/A	N/A	N/A	N/A
			11/6/2019	MFR SAMPLE	70111025009	Grab	1.47	-	1.47	1.1	< 0.1	0.37	< 0.05	3.2	18	6.8	15.9	55.4
	Hobson (25 Pleasure	6	2/15/2018	MFR SAMPLE	7043139002	Grab	25.9	-	25.9	4.6	0.85	19.2	2.1	14.2	25	7.4	16	40.2
	Install 9/8/17		4/19/2018	002-881-180419	04-18-00594	Grab	10.39	10.39	-	5.4	N/A	3.3	1.69	N/A	N/A	N/A	N/A	N/A
			4/19/2018	MFR SAMPLE	7049178001	Grab	27.1	-	27.1	4.4	0.52	21	1.7	< 13.3	10	7.01	11.8	44.2
			7/3/2018	MFR SAMPLE	7057019001	Grab	14.2	-	14.2	< 0.5	0.25	14.2	< 0.05	< 2	< 10	7.2	19.1	8
			8/21/2018	MFR SAMPLE	7062258001	Grab	14.3	-	14.3	< 0.1	0.13	14.3	0.084	< 2	< 10	7	22.5	35.6
			9/13/2018	003881180913	09-18-00551	Grab	10.2	10.2	-	1.3	N/A	8.9	< 0.5	N/A	N/A	N/A	N/A	N/A
			10/22/2018	MFR SAMPLE	7068701001	Grab	12.8	-	12.8	1	< 0.1	11.8	< 0.05	< 4	< 10	7.5	15	64.7
			12/26/2018	MFR SAMPLE	7074897001	Grab	13.7	-	13.7	1.4	< 0.1	12.3	< 0.05	< 2	< 5	7.1	9.1	20
			3/20/2019	MFR SAMPLE	7082946007	Grab	12.92	-	12.92	0.72	0.17	12.2	< 0.05	< 2	< 5	7.3	13.8	35.6
			5/24/2019	MFR SAMPLE	7090841013	Grab	13.39	-	13.39	0.39	0.78	13	< 0.05	< 2	< 10	6.9	18.9	40.5
			5/30/2019	007881190530	05-19-01233	Grab	45	45	-	30.1	N/A	14.9	< 2.5	N/A	N/A	N/A	N/A	N/A
			7/18/2019	MFR SAMPLE	7098265013	Grab	11.3	-	11.3	< 0.1	0.15	11.3	< 0.05	< 4	< 10	7.4	23.1	42.4
			9/20/2019	MFR SAMPLE	70105815003	Grab	11.7	-	11.7	< 0.1	< 0.1	11.7	< 0.05	< 2	2.8	7.1	20.9	20.8
			11/6/2019	MFR SAMPLE	70111025013	Grab	1.9	-	1.9	< 0.1	< 0.1	1.9	< 0.05	< 2	2.4	6.8	15.5	5.3
		7	4/19/2018	MFR SAMPLE	7049180001	Grab	16.12	-	16.12	7.9	25	7.5	0.72	< 13.3	14	7.46	11	235
	Install 11/13/17		4/26/2018	002-881-180426	04-18-00775	Grab	47.7	47.7	-	47.7	N/A	< 1	< 0.5	N/A	N/A	N/A	N/A	N/A
			7/2/2018	MFR SAMPLE	7057015001	Grab	11.2	-	11.2	5.9	1.2	3.8	1.5	5.4	< 20	6.9	17.7	100
			10/10/2018	003881181010	10-18-00242	Grab	8.45	8.45	-	3.3	N/A	< 1.25	3.9	N/A	N/A	N/A	N/A	N/A
			5/9/2019	003881190509	05-19-00405	Grab	15.4	15.4	-	8.8	N/A	6.6	< 0.5	N/A	N/A	N/A	N/A	N/A
			5/23/2019	MFR SAMPLE	7090841006	Grab	9.53	-	9.53	1.9	0.31	7.5	0.13	3.3	12	6.9	17.9	75.2
			7/18/2019	MFR SAMPLE	7098265006	Grab	7.8	-	7.8	3.2	0.69	4.6	< 0.05	< 4	20	7.4	22.3	108
			9/20/2019	MFR SAMPLE	70105815009	Grab	8.3	-	8.3	2.9	0.43	5.4	< 0.05	4.2	7.6	7.3	19.7	155
			10/1/2019	005-934-191001	10-19-00040	Grab	8.5	8.5	-	1.7	N/A	6.8	< 2.5	N/A	N/A	N/A	N/A	N/A
			11/6/2019	MFR SAMPLE	70111025006	Grab	9.6	-	9.6	1.6	< 0.1	8	< 0.05	< 2	< 10	7	16.2	150
		8	4/26/2018	001-881-180426	04-18-00774	Grab	11.4	11.4	-	10.2	N/A	1.2	< 0.5	N/A	N/A	N/A	N/A	N/A
	Install 11/30/2017		10/10/2018	001881181010	10-18-00241	Grab	13.55	13.55	-	3.3	N/A	8	2.25	N/A	N/A	N/A	N/A	N/A
			4/25/2019	006881190425	ZP00747	Grab	12.5	12.5	-	6.5	N/A	6	< 2.5	N/A	N/A	N/A	N/A	N/A
			5/23/2019	MFR SAMPLE	7090841003	Grab	13.98	-	13.98	0.88	0.14	13.1	< 0.05	< 2	< 10	7	18.4	90.6

		7/18/2019	MFR SAMPLE	7098265003	Grab	5.7	-	5.7	1.8	< 0.1	3.9	< 0.05	4.1	24	7	23.2	60.8
		9/20/2019	MFR SAMPLE	70105815006	Grab	7.2	-	7.2	1.7	< 0.1	5.5	< 0.05	2.8	11.6	7.1	19.8	51.1
		11/6/2019	MFR SAMPLE	70111025003	Grab	5.58	-	5.58	0.98	< 0.1	4.6	< 0.05	3.8	14	7.2	16	62.1
		11/13/2019	002-934-191113	11-19-00211	Grab	7.8	7.8	-	1	N/A	6.8	< 2.5	N/A	N/A	N/A	N/A	N/A
	9	4/12/2018	004-881-180412	04-18-00350	Grab	12.5	12.5	-	9	3.78	< 2.5	3.5	N/A	N/A	N/A	N/A	N/A
Install 12/7/17		9/20/2018	002881180920	09-18-00683	Grab	9.5	9.5	-	4.1	N/A	5.4	< 1.25	N/A	N/A	N/A	N/A	N/A
		12/26/2018	MFR SAMPLE	7074897008	Grab	4.05	-	4.05	3	0.21	0.89	0.16	15.9	13	7.1	8	64
		3/20/2019	MFR SAMPLE	7082946010	Grab	7.661	-	7.661	3.4	0.11	4.2	0.061	16.3	18	7.6	14.3	66.9
		5/24/2019	MFR SAMPLE	7090841015	Grab	4.8	-	4.8	2.2	0.36	2.6	< 0.05	6.9	18	6.5	17.9	62.3
		6/6/2019	003881190606	06-19-00287	Grab	12.5	12.5	-	6.4	N/A	6.1	< 2.5	N/A	N/A	N/A	N/A	N/A
		7/18/2019	MFR SAMPLE	7098265015	Grab	8.2	-	8.2	1.2	< 0.1	7	< 0.05	< 4	10	7.2	22.8	64.5
		9/30/2019	MFR SAMPLE	70106717002	Grab	5.1	-	5.1	1.7	< 0.1	3.4	< 0.05	< 4	8.8	6.9	20.2	65.4
		11/20/2019	MFR SAMPLE	70112628003	Grab	7.2	-	7.2	2.1	0.15	5.1	< 0.05	2.9	7.6	6.7	14.7	62.7
	10	7/2/2018	MFR SAMPLE	7057017001	Grab	14.3	-	14.3	5	1.4	7.9	1.4	< 4	< 10	6.2	16.9	24
Install 3/7/2018		8/21/2018	MFR SAMPLE	7062258002	Grab	14.41	-	14.41	2.9	0.18	11.3	0.21	< 4	< 10	7.2	23.5	69.3
		9/6/2018	004881180906	09-18-00205	Grab	15.73	15.73	-	3.7	N/A	10.2	1.83	N/A	N/A	N/A	N/A	N/A
		10/22/2018	MFR SAMPLE	7068701002	Grab	7.4	-	7.4	2.9	0.1	4.5	< 0.05	< 4	< 10	7	13.5	109
		12/26/2018	MFR SAMPLE	7074897002	Grab	5	-	5	1.5	< 0.1	3.5	< 0.05	2	8	7.3	9.6	74.6
		3/20/2019	MFR SAMPLE	7082946005	Grab	12.36	-	12.36	0.96	0.16	11.4	< 0.05	< 2	5	7	14.1	35.5
		5/23/2019	MFR SAMPLE	709084011	Grab	13.69	-	13.69	0.39	0.79	13.3	< 0.05	< 2	10	7.1	19.1	41.4
		5/30/2019	005881190530	05-19-01231	Grab	30.4	30.4	-	21.7	N/A	8.7	< 2.5	N/A	N/A	N/A	N/A	N/A
		7/18/2019	MFR SAMPLE	7098265011	Grab	11.7	-	11.7	< 0.1	0.15	11.7	< 0.05	< 4	14	7.3	22.2	41.3
		9/20/2019	MFR SAMPLE	70105815001	Grab	10.9	-	10.9	< 0.1	< 0.1	10.9	< 0.05	< 2	< 10	6.8	19.7	22.6
		11/6/2019	MFR SAMPLE	70111025011	Grab	1.8	-	1.8	< 0.1	< 0.1	1.8	< 0.05	< 2	< 10	6.5	15.9	5.1
		12/9/2019	004-934-191209	12-19-00138	Grab	6.4	6.4	-	0.8	N/A	5.6	< 2.5	N/A	N/A	N/A	N/A	N/A
	11	7/2/2018	MFR SAMPLE	7057018001	Grab	32.4	-	32.4	29.3	25.2	1.9	1.2	5.1	< 10	6.7	17.9	136
Install 3/12/2018		9/6/2018	003881180906	09-18-00204	Grab	4.9	4.9	-	1.8	N/A	2.6	< 0.5	N/A	N/A	N/A	N/A	N/A
		3/20/2019	MFR SAMPLE	7082946006	Grab	27.296	-	27.296	25.9	19.3	1.3	0.096	10.2	8	7.1	13.9	164
		5/24/2019	MFR SAMPLE	7090841012	Grab	12.3	-	12.3	0.3	0.81	12	< 0.05	< 2	< 10	6.7	18.6	45.3
		5/30/2019	006881190530	05-19-01232	Grab	2.9	2.9	-	2.9	N/A	< 5	< 2.5	N/A	N/A	N/A	N/A	N/A
		7/18/2019	MFR SAMPLE	7098265012	Grab	3.5	-	3.5	1.5	< 0.1	2	< 0.05	< 4	< 10	7.8	22.7	91
		9/20/2019	MFR SAMPLE	70105815002	Grab	11	-	11	< 0.1	< 0.1	11	< 0.05	< 2	< 2	7.1	20.9	24.2
		11/6/2019	MFR SAMPLE	70111025012	Grab	1.9	-	1.9	< 0.1	< 0.1	1.9	< 0.05	< 2	< 2	6.7	16.1	5.2
		12/9/2019	003-934-191209	12-19-00137	Grab	18.3	18.3	-	4.5	N/A	13.8	< 2.5	N/A	N/A	N/A	N/A	N/A
	12	11/8/2018	001881181108	11-18-00141	Grab	11.78	11.78	-	6.1	N/A	2.8	2.88	N/A	N/A	N/A	N/A	N/A
Install 4/16/2018		4/25/2019	003881190425	ZP00744	Grab	15.3	15.3	-	1.9	N/A	13.4	< 2.5	N/A	N/A	N/A	N/A	N/A
		5/23/2019	MFR SAMPLE	7090841002	Grab	13.1	-	13.1	< 0.1	0.15	13.1	< 0.05	< 2	< 10	7.1	18.6	90.8
		7/18/2019	MFR SAMPLE	7098265002	Grab	8.34	-	8.34	1.4	0.2	6.8	0.14	4	18	7.2	23.5	112
		9/20/2019	MFR SAMPLE	70105815005	Grab		-	-	1.8	< 0.1	3.3	< 0.05	< 2	10.4	7.6	19.7	111
		11/6/2019	MFR SAMPLE	70111025002	Grab	7.686	-	7.686	1.2	0.16	6.4	0.086	2.7	6	7	15.7	109
		11/13/2019	009-934-191113	11-19-00218	Grab	5	5	-	1.2	N/A	3.8	< 1.25	N/A	N/A	N/A	N/A	N/A
	13	2/20/2019	005881190220		Grab	57.485	57.485	-	57.485	N/A	< 5	< 2.5	N/A	N/A	N/A	N/A	N/A
Install 4/16/2018		7/18/2019	MFR SAMPLE	7098265016	Grab	12.1	-	12.1	6.9	0.74	3.5	1.7	20.1	38	7.1	23.2	46.3
		9/30/2019	MFR SAMPLE	70106717003	Grab	4.1	-	4.1	1.9	< 0.1	2.2	< 0.05	5.8	8.8	7.1	19.9	41.1
		11/6/2019	002-934-191106	11-19-00120	Grab	6.2	6.2	-	1.1	N/A	5.1	< 0.5	N/A	N/A	N/A	N/A	N/A
		11/20/2019	MFR SAMPLE	70112628001	Grab	8	-	8	1.2	< 0.1	6.8	< 0.05	< 2	59.2	6.5	14.9	59.2
	14	10/4/2018	003881181004	10-18-00142	Grab	39.6	39.6	-	32.1	N/A	< 5	< 2.5	N/A	N/A	N/A	N/A	N/A
Install 4/26/2018		7/19/2019	MFR SAMPLE	7098265020	Grab	11.2	-	11.2	2.1	0.22	9.1	< 0.05	< 4	12	7.1	23.7	68.5
		9/30/2019	MFR SAMPLE	70106717007	Grab	15.5	-	15.5	2.1	0.12	13.4	< 0.05	4.5	30.4	7.3	20.1	<1
		11/6/2019	004-934-191106	11-19-00049	Grab	6	6	-	< 0.5	N/A	6	< 0.5	N/A	N/A	N/A	N/A	N/A
		11/20/2019	MFR SAMPLE	70112628007	Grab	9.7	-	9.7	2.2	0.41	7.5	< 0.05	5.1	13.2	6.9	15.3	56.9
	15	2/28/2019	001881190228		Grab	15.882	15.882	-	8.922	N/A	4.93	2.03	N/A	N/A	N/A	N/A	N/A
Install 5/7/18		5/23/2019	MFR SAMPLE	7090841001	Grab	12.06	-	12.06	0.46	< 0.1	11.6	< 0.05	< 2	< 10	6.8	18.1	84
		7/18/2019	MFR SAMPLE	7098265001	Grab	6.3	-	6.3	2.1	0.17	4.2	< 0.05	5.3	26	6.8	22.9	59.1
		9/20/2019	MFR SAMPLE	70105815004	Grab	4.9	-	4.9	1.8	0.12	3.1	< 0.05	< 2	11.6	7.2	19.1	104
		11/6/2019	MFR SAMPLE	70111025001	Grab	6.3	-	6.3	2.2	< 0.1	4.1	< 0.05	< 2	4.4	6.7	16.5	142
		11/13/2019	004-934-191113	11-19-00213	Grab	18.3	18.3	-	13	N/A	5.3	< 2.5	N/A	N/A	N/A	N/A	N/A
	16	8/21/2018	MFR SAMPLE	7062258005	Grab	4.08	-	4.08	3.2	0.33	0.8	0.08	11.8	14	7.6	23.1	100
Install 5/14/18		10/22/2018	MFR SAMPLE	7068701004	Grab	14.32	-	14.32	10.1	5.4	0.92	3.3	28	15	7.1	15	101
		10/25/2018	001881181025	10-18-00642	Grab	10.3	10.3	-	2.8	N/A	< 5	< 2.5	N/A	N/A	N/A	N/A	N/A
		12/26/2018	MFR SAMPLE	707897004	Grab	18.75	-	18.75	0.75	< 0.1	18	< 0.05	< 4	23	7.1	8.7	30.9
		3/20/2019	MFR SAMPLE	7082946002	Grab	10.95	-	10.95	0.85	0.17	10.1	< 0.05	< 2	< 5	7.4	13.6	35.4
		5/23/2019	MFR SAMPLE	7090841008	Grab	5.17	-	5.17	2.6	0.56	2.5	0.07	9.8	18	7.2	18.6	63
		5/30/2019	004881190530	05-19-01230	Grab	38.7	38.7	-	6.6	N/A	32.1	< 2.5	N/A	N/A	N/A	N/A	N/A
		7/18/2019	MFR SAMPLE	7098265008	Grab	6.6	-	6.6	1.3	< 0.1	5.3	< 0.05	< 4	20	7.6	23.1	51.1
		9/20/2019	MFR SAMPLE	70105815011	Grab	6	-	6	2.1	0.32	3.9	< 0.05	2.7	4.8	7	20.1	117
		11/6/2019	MFR SAMPLE	70111025008	Grab	1.7	-	1.7	1.7	< 0.1	< 0.05	< 0.05	4.9	18	7.2	15.3	34
		12/9/2019	007-934-191209	12-19-00141	Grab	1.6	1.6	-	1.6	N/A	< 2.5	< 1.25	N/A	N/A	N/A	N/A	N/A
	17	8/21/2018	MFR SAMPLE	7062258006	Grab	4.27	-	4.27	3.4	0.32	0.79	0.079	13.7	11	7.5	23.4	104
Install 5/25/2018		10/22/2018	MFR SAMPLE	7068701006	Grab	7.2	-	7.2	1.9	< 0.1	5.3	< 0.05	8.1	20	7.4	15.5	70.4
		2/28/2019	005881190228		Grab	25.914	25.914	-	2.714	N/A	23.2	< 2.5	N/A	N/A	N/A	N/A	N/A
		3/20/2019	MFR SAMPLE	7082946004	Grab	27.98	-	27.98	0.68	1.7	27.3	< 0.05	6.6	7	7	13.5	21
		5/23/2019	MFR SAMPLE	7090841010	Grab	8.1	-	8.1	1.9	0.58	6.2	< 0.05	3.2	< 10	7	18.8	79.3
		7/18/2019	004856190718	07-19-01102	Grab	5.4	5.4	-	2.5	N/A	2.9	< 1.25	N/A	N/A	N/A	N/A	N/A
		7/18/2019	MFR SAMPLE	7098265010	Grab	3.9	-	3.9	1.6	< 0.1	2.3	< 0.05	< 4	14	7.5	23	87.4
		9/20/2019	MFR SAMPLE	70105815013	Grab	4	-	4	2.7	< 0.1	1.3	< 0.05	5	21.2	6.9	20.2	86.8
		11/6/2019	MFR SAMPLE	70111025010	Grab	2.42	-	2.42	2.1	< 0.1	0.32	< 0.05	2.5	12	6.9	16.1	90.4
	18	8/21/2018	MFR SAMPLE	7062258003	Grab	3.6	-	3.6	2	0.15	1.6	< 0.05	7.5	12	7.5	22.5	51
Install 6/5/2018		10/22/2018	MFR SAMPLE	7068701003	Grab	6.8	-	6.8	4.8	0.92	2	< 0.05	17.1	18	7.1	14.9	63.8
		12/26/2018	MFR SAMPLE	7074897003	Grab	7.49	-	7.49	1.9	0.22	5.5	0.087	11.9	13	7.2	11.4	53.3
		2/28/2019	004881190228		Grab	10.477	10.477	-	2.117	N/A	8.36	< 2.5	N/A	N/A	N/A	N/A	N/A
		3/20/2019	MFR SAMPLE	7082946001	Grab	7.6	-	7.6	2.8	0.24	4.8	< 0.05	< 4	42	6.9	12.5	58.2
		5/23/2019	MFR SAMPLE	7090841007	Grab	4.253	-	4.253	2.2	0.44	2	0.053	6.5	< 10	7	19.3	57.8
		7/18/2019	003856190718	07-19-01101	Grab	10.9	10.9	-	2.8	N/A	8.1	< 2.5	N/A	N/A	N/A	N/A	N/A
		7/18/2019	MFR SAMPLE	7098265007	Grab	10	-	10	1.8	0.14	8.2	< 0.05	< 4	20	7	23	33.4
		9/20/2019	MFR SAMPLE	70105815010	Grab	7.1	-	7.1	2.4	0.13	4.7	< 0.05	3.6	10.4	7	20	37.4
		11/6/2019	MFR SAMPLE	70111025007	Grab	11.3	-	11.3	3.3	1.1	8	< 0.05	6.3	24	7.3	16.1	47.7
		12/9/2019	008-934-191209	12-19-00142	Grab	9.8	9.8	-	1.7	N/A	8.1	< 2.5	N/A	N/A	N/A	N/A	N/A
	19	11/8/2018	002881181108	11-18-00142	Grab	16.25	16.25	-	2.3	N/A	12.7	< 1.25	N/A	N/A	N/A	N/A	N/A
Install 6/6/2018		5/23/19	MFR SAMPLE	7090841004	Grab	14.1	-	14.1	1.3	0.1	12.8	< 0.05	2.5	12	6.5	17.9	86.3
		7/18/2019	MFR SAMPLE	7098265004	Grab	8.24	-	8.24	1.3	0.21	6.8	0.14	< 4	18	6.9	23	111
		9/20/19	MFR SAMPLE	70105815007	Grab	4.6	-	4.6	1.7	< 0.1	2.9	< 0.05	< 2	13.2	7.3	18.9	108
		11/6/19	MFR SAMPLE	70111025004	Grab	7	-	7	2.2	< 0.1	4.8	< 0.05	< 2	< 10	6.9	15.8	148
		11/13/19	003-934-191113	11-19-00212	Grab	9	9	-	1.7	N/A	7.3	< 2.5	N/A	N/A	N/A	N/A	N/A
	20	5/9/2019	001881190509	05-19-00403	Grab	32.62	32.62	-	30.1	N/A	< 2	2.52	N/A	N/A	N/A	N/A	N/A
Install 6/29/2018		5/23/19	MFR SAMPLE	7090841005	Grab	12.7	-	12.7	< 0.1	0.1	12.7	< 0.05	< 2	10	7.1	18.8	83.7
		7/18/2019	MFR SAMPLE	7098265005	Grab	20.1	-	20.1	15	0.61	5.1	< 0.05	24	94	6.8	23.6	61.9
		9/20/19	MFR SAMPLE	70105815008	Grab	7.1	-	7.1	1.7	< 0.1	5.4	< 0.05	2.4	8.8	7	19.2	51.2
		11/6/19	MFR SAMPLE	70111025005	Grab	6	-	6	1.3	< 0.1	4.7	< 0.05	< 2	< 10	6.7	15.5	149
		11/13/19	005-934-191113	11-19-00214	Grab	10	10	-	5.5	N/A	4.5	< 1.25	N/A	N/A	N/A	N/A	N/A
						12.23	15.64	10.53	3.242857	0.760716	9.3278992	0.7329076	6.80519	15.922	7.005732	17.39221	50.012

Manufacturer	Install	Provisional System #	Sample Date	Sample #	Lab ID	Sample Type (3)	TN(mg/l) (6) (ALL SAMPLES)	TN(mg/l) (6) (County Only)	TN(mg/l) (6) (BIMONTHLY MFR ONLY)	TKN (mg/l)	Ammonia (as N)	NO3 (Nitrate as N)	NO2 (Nitrite as N)	BOD	TSS	PH	Temp	Alkalinity
Orenco Advantex AX-RT		1	8/2/2017	001881170802	08-17-00196	Grab	23.3	23.3	-	1.3	1.84	22	< 0.5	N/A	N/A	6.6	N/A	N/A
	Install 9/17/15		11/2/2017	001881171102	11-17-00085	Grab	31	31	-	1.2	1.21	29.8	< 0.5	N/A	N/A	N/A	N/A	N/A
	SD# 2		11/29/2017	MFR SAMPLE	7112917-01	Grab	32.1	-	32.1	3.9	2.5	28.2	< 0.5	< 4	< 5	6.81	24.3	30
			3/8/2018	002881180308	03-18-00143	Grab	21.6	21.6	-	4.5	3.37	17.1	< 0.5	N/A	N/A	N/A	N/A	N/A
			3/14/2018	MFR SAMPLE	8031503-01	Grab	21.5	-	21.5	3.3	2.1	18.2	< 0.5	5.78	< 5	7.36	23.3	106
			4/29/2018	MFR SAMPLE	8043009-01	Grab	29.4	-	29.4	3.5	2.6	25.9	< 0.5	5.05	< 5	7.88	25	59.5
			7/5/2018	MFR SAMPLE	8070509-01	Grab	20.7	-	20.7	5.4	4.6	15.3	< 0.5	5.83	5.33	6.76	25.6	100
			9/20/2018	003881180920	09-18-00684	Grab	29.1	29.1	-	4.7	N/A	24.4	<1 1.25	N/A	N/A	N/A	N/A	N/A
			11/2/2018	MFR SAMPLE	7069825008	Grab	17.1	-	17.1	< 0.1	0.31	17.1	< 0.05	< 2	< 10	6.5	23.7	34.9
			1/2/2019	MFR SAMPLE	7075363008	Grab	21.2	-	21.2	< 0.1	1.8	21.1	0.29	5.7	5	6.8	23.1	44.4
			2/18/2019	MFR SAMPLE	9021904-06	Grab	12.5			< 1	< 1.4	12.5	< 0.5	5.95	8	7.01	22.6	64.5
			3/4/2019	MFR SAMPLE	9030511-06	Grab	16.7	-	16.7	< 1.4	1.6	16.7	< 0.5	6.08	< 8.33	6.95	22.9	67
			5/3/2019	MFR SAMPLE	9050340-06	Grab	18.4	-	18.4	2.38	1.4	16.1	< 0.5	7.31	< 10	6.43	23.9	69
			6/6/2019	004881190606	06-19-00288	Grab	16.9	16.9	-	2.1	N/A	14.8	< 2.5	N/A	N/A	N/A	N/A	N/A
			6/7/2019	MFR SAMPLE	9060707-14	Grab	17.94	-	17.94	2.94	< 1	15	< 0.5	12.2	< 16.7	6.51	24.5	59
			6/28/2019	MFR SAMPLE	9070102-10	Grab	17.6			2.1	1.4	15.5	< 0.3	< 4	< 8.33	6.42	23.3	62.5
			8/7/2019	MFR SAMPLE	9080714-04	Grab	22.4	-	22.4	< 1	1.2	22.4	< 0.3	< 4	< 5	6.78	22.8	44
			10/4/2019	MFR SAMPLE	9100415-08	Grab	21.7	-	21.7	1.7	< 1	20	< 0.5	< 4	< 10	7.08	21.1	44

			11/6/2019	009-934-191106	11-19-00127	Grab	18.7	18.7	-	0.9	N/A	17.8	< 0.5	N/A	N/A	N/A	N/A	N/A
			12/3/2019	MFR SAMPLE	9120352-03	Grab	23.4	-	23.4	1.1	< 1	22.3	< 0.4	< 4	< 8.33	6.76	21.1	22
		2	8/2/2017	002858170802	08-17-00208	Grab	43.39	43.39	-	11.9	9.92	30.4	1.09	N/A	N/A	6	N/A	N/A
	Install 3/30/17		11/8/2017	004881171108	11-17-00159	Grab	29.8	29.8	-	6.2	N/A	23.6	< 0.5	N/A	N/A	N/A	N/A	N/A
	SD# 43		11/22/2017	MFR SAMPLE	7112202-01	Grab	32	-	32	6.3	7.1	25.8	0.5	7.4	< 5	6.28	23.2	7.5
			3/14/2018	MFR SAMPLE	8031504-01	Grab	47.5	-	47.5	15.7	14.9	26.3	5.48	5.4	8.33	6.63	23.2	20
			3/15/2018	004881180315	03-18-00286	Grab	49.32	49.32	-	18.1	15.47	24.4	6.82	N/A	N/A	N/A	N/A	N/A
			4/29/2018	MFR SAMPLE	8043008-01	Grab	39.5	-	39.5	11.1	9.8	25.8	2.64	4.96	7.65	7.08	25.7	14.5
			2/18/2019	MFR SAMPLE	9021904-05	Grab	34.5			11.1	11.2	22.2	1.19	< 4	< 8.33	7.63	22.4	180
			3/4/2019	MFR SAMPLE	9030511-05	Grab	37.3	-	37.3	10.8	8.8	25.5	1.04	< 4	< 12.5	7.43	23.2	130
			2/28/2019	003881190228		Grab	34.8	34.8	-	9.5	N/A	25.3	< 2.5	N/A	N/A	N/A	N/A	N/A
			5/3/2019	MFR SAMPLE	9050340-05	Grab	19.2	-	19.2	4.9	3.6	14.3	< 0.5	< 4	< 12.5	7.33	23.8	155
			6/7/2019	MFR SAMPLE	9060707-11	Grab	26.02	-	26.02	3.22	1	22.8	< 0.5	< 4	< 16.7	7.34	24.5	126
			6/28/2019	MFR SAMPLE	9070102-08	Grab	23			2.1	< 1	20.9	< 0.3	< 4	138	7	21.8	62
			7/18/2019	002856190718	07-19-01100	Grab	21.6	21.6	-	2.1	N/A	19.5	< 1.25	N/A	N/A	N/A	N/A	N/A
			8/7/2019	MFR SAMPLE	9080714-02	Grab	23.8	-	23.8	1.1	< 1	22.7	< 0.3	< 4	7.5	7.01	22.8	130
			10/3/2019	MFR SAMPLE	9100339-06	Grab	16.9	-	16.9	< 1	< 1	16.9	< 0.5	< 4	3.67	7.47	21.8	91.5
			11/1/2019	MFR SAMPLE	9110117-05	Grab	18.3			< 1	< 1	18.3	< 0.4	< 4	2	7.31	22.7	20.5
			12/4/2019	MFR SAMPLE	9120444-06	Grab	16.6	-	16.6	< 1	< 1	16.6	< 0.4	< 4	< 6.25	6.9	22	11.5
			12/9/2019	005-934-191209	12-19-00139	Grab	20.6	20.6	-	1.7	N/A	18.9	< 1.25	N/A	N/A	N/A	N/A	N/A
		3	11/1/2018	MFR SAMPLE	7069825002	Grab	31.1	-	31.1	4.2	5.4	26.8	0.06	4.1	< 10	5.6	23.6	2.5
	Install 5/10/18		11/8/2018	003881181108	11-18-00143	Grab	41.3	41.3	-	8.9	N/A	29.9	< 2.5	N/A	N/A	N/A	N/A	N/A
			1/2/2019	MFR SAMPLE	9010333-02	Grab	37.6	-	37.6	8.6	4.8	26.7	2.2	< 4	< 8.33	7.06	24.2	90
			2/18/2019	MFR SAMPLE	9021904-02	Grab	22.5			7.9	5.32	17.4	3.23	9.39	15.7	7.17	22.2	80
			3/4/2019	MFR SAMPLE	9030511-02	Grab	25.3	-	25.3	4.34	2.4	19.6	1.32	14.3	< 6.25	6.87	22.7	33
			4/25/2019	002881190425	ZP00743	Grab	16.4	16.4	-	4.7	N/A	11.7	< 2.5	N/A	N/A	N/A	N/A	N/A
			5/3/2019	MFR SAMPLE	9050340-02	Grab	13.3	-	13.3	3.1	1.68	10.2	< 0.5	< 4	< 12.5	7.3	23.7	105
			6/7/2019	MFR SAMPLE	9060707-02	Grab	17.38	-	17.38	3.78	1.8	13.6	< 0.5	4.82	< 25	7.14	24.1	75.5
			6/28/2019	MFR SAMPLE	9070102-02	Grab	15.86			6.1	2.8	9.76	< 0.3	9.72	< 16.7	6.7	20.3	86
			8/8/2019	MFR SAMPLE	9080835-03	Grab	27.3	-	27.3	10.7	9.6	16.6	< 0.3	< 4	< 12.5	6.74	23	76.5
			10/1/2019	MFR SAMPLE	9100121-03	Grab	24.41	-	24.41	2.9	1	20.8	0.71	8.43	< 7.14	7.58	21.7	120
			11/1/2019	MFR SAMPLE	9110117-04	Grab	21.5			1.7	< 1	19.8	< 0.4	< 4	11.5	7.48	22.7	57
			11/13/2019	006-934-191113	11-19-00215	Grab	16.6	16.6	-	2.1	N/A	14.5	< 1.25	N/A	N/A	N/A	N/A	N/A
			12/4/2019	MFR SAMPLE	9120444-07	Grab	16.5	-	16.5	1.1	< 1	15.4	< 0.4	< 4	< 6.25	7.91	22.1	63
		4	11/1/2018	MFR SAMPLE	7069825004	Grab	6.4	-	6.4	< 0.1	< 0.1	6.3	< 0.05	2	10	6.8	23..5	60
	Install 7/10/2018		1/2/2019	MFR SAMPLE	9010333-04	Grab	5.29	-	5.29	< 2	< 1	5.29	< 0.5	< 4	< 3.12	6.95	24.2	34
			2/13/2019	001881190213		Grab	9.44	9.44	-	1.303	N/A	8.14	< 2.5	N/A	N/A	N/A	N/A	N/A
			2/18/2019	MFR SAMPLE	9021904-04	Grab	10.3			< 1	< 1.4	9	1.28	< 4	< 5	7.27	21.7	44.5
			3/4/2019	MFR SAMPLE	9030511-04	Grab	7.92	-	7.92	< 1.4	< 1	7.92	< 0.5	14.2	< 5	7.16	23.4	57.5
			5/3/2019	MFR SAMPLE	9050340-04	Grab	8.7	-	8.7	< 1.4	< 1	8.7	< 0.5	< 4	< 6.25	7.37	23.7	104
			6/7/2019	MFR SAMPLE	9060707-08	Grab	13.08	-	13.08	2.38	< 1	10.7	< 0.5	< 4	< 12.5	7.06	24.3	87.5
			6/28/2019	MFR SAMPLE	9070102-06	Grab	9.15			1.1	< 1	8.05	< 0.3	< 4	< 8.33	6.77	21.8	76.5
			8/8/2019	MFR SAMPLE	9080835-06	Grab	11.78	-	11.78	6.1	5	5.68	< 0.3	< 4	< 7.14	6.58	22.6	100
			10/1/2019	MFR SAMPLE	9100121-07	Grab	14.9	-	14.9	2.7	1.4	12.2	< 0.5	< 4	< 6.25	7.26	21.9	75
			11/1/2019	MFR SAMPLE	9110117-02	Grab	12.9			1.3	1	11.6	< 0.4	4.02	2	7.42	22.3	53.5
			12/4/2019	MFR SAMPLE	9120444-09	Grab	12.1	-	12.1	1.9	1.2	10.2	< 0.4	< 4	< 12.5	7.69	22.1	46.5
		5	10/4/2019	MFR SAMPLE	9100415-06	Grab	10.6	-	10.6	< 1	< 1	10.6	< 0.5	< 4	3.33	7.06	20.7	47.5
	Install 4/23/2019		11/4/2019	MFR SAMPLE	9110425-03	Grab	21	-	21	5.1	4.2	15.9	< 0.4	< 4	2.5	6.27	23.2	<5
			12/3/2019	MFR SAMPLE	9120352-04	Grab	21.8	-	21.8	5.9	5.4	15.9	< 0.4	< 4	< 6.25	7.08	21.7	103
		6	11/4/2019	MFR SAMPLE	9110425-05	Grab	15.3	-	15.3	1.9	< 1	13.4	< 0.4	< 4	4	7.2	23	23
	Install 8/29/2019		12/3/2019	MFR SAMPLE	9120352-08	Grab	18.1	-	18.1	< 1	< 1	18.1	< 0.4	< 4	< 8.33	6.77	21	17.5
		7	10/1/2019	MFR SAMPLE	9100121-06	Grab	26.3	-	26.3	8.7	32.4	17.6	< 0.5	< 4	< 5	6.44	21.8	15
	Install 10/3/2018		11/1/2019	MFR SAMPLE	9110117-03	Grab	46	-	46	12.7	16.6	33.3	< 0.4	< 4	1.67	6.35	22.6	<5
			12/4/2019	MFR SAMPLE	9120444-08	Grab	36.3	-	36.3	9.1	8.2	27.2	< 0.4	< 4	< 8.33	7.34	22.1	27
		8	10/1/2019	MFR SAMPLE	9100121-01	Grab	84.6	-	84.6	55.3	53	29.3	< 0.5	22.6	53.3	7.2	21.7	195
	Install 7/5/2019		11/1/2019	MFR SAMPLE	9110117-06	Grab	60.1	-	60.1	19.5	21.6	40.6	< 0.4	5.38	10	6.56	22.5	22
			12/4/2019	MFR SAMPLE	9120444-05	Grab	91.96	-	91.96	55.9	53	35.6	0.46	< 4	< 50	6.53	22.1	16.5
	Install 5/2019	9	10/1/2019	MFR SAMPLE	9100121-08	Grab	18.8	-	18.8	2.9	< 1	15.9	< 0.5	< 4	6.25	7.16	21.8	50
	Install 3/2019	10	10/1/2019	MFR SAMPLE	9100121-09	Grab	4.4	-	4.4	3.1	< 1	1.3	< 0.5	< 4	< 5	7.84	21.8	140
	Install 8/8/2019	11	12/3/2019	MFR SAMPLE	9120352-09	Grab	43.8	-	43.8	15.5	14	28.3	< 0.4	< 4	< 12.5	6.93	21.3	22
	Install 3/27/19	12	12/3/2019	MFR SAMPLE	9120352-06	Grab	34.26	-	34.26	5.1	4	28.2	0.96	5.62	< 25	7.11	20.3	24.5
	Install 3/4/19	13	12/3/2019	MFR SAMPLE	9120352-05	Grab	35.02	-	35.02	12.5	8.4	21.9	0.62	< 4	< 8.33	7.57	20.5	96
	Install 9/4/19	14	12/4/2019	MFR SAMPLE	9120444-01	Grab	66.5	-	66.5	44.1	37	21.9	0.5	< 4	< 8.33	6.88	21.7	10.5
							25.49	26.49	26.80	5.764573	5.725313	18.672533	0.8988	5.36644	11.883	6.962951	22.84483	65.77719

Manufacturer	Install	Provisional System #	Sample Date	Sample #	Lab ID	Sample Type (3)	TN(mg/l) (6) (ALL SAMPLES)	TN(mg/l) (6) (County Only)	TN(mg/l) (6) (BIMONTHLY MFR ONLY)	TKN (mg/l)	Ammonia (as N)	NO3 (Nitrate as N)	NO2 (Nitrite as N)	BOD	TSS	PH	Temp	Alkalinity
Norweco Singulair TNT		1	8/2/2017	006881170802	08-17-00201	Grab	38.89	38.89		28.1	22.52	3.1	7.69	N/A	N/A	6.6	N/A	N/A
	Install 11/13/15		10/30/2017	MFR SAMPLE	1710265	Grab	59.6		59.6	59.6	45.9	< 0.05	< 0.05	44	63	6.82	20.5	250
	SD# 21		11/16/2017	002881171116	11-17-00393	Grab	70	70		70	N/A	< 1	< 0.5	N/A	N/A	N/A	N/A	N/A
			12/19/2017	MFR SAMPLE	1712185	Grab	66.97		66.97	65.9	41.9	0.488	0.582	47	68	6.76	15	250
			2/14/2018	MFR SAMPLE	1802135	Grab	109		109	109	75.5	< 0.05	< 0.05	520	280	7.16	12.1	380
			4/5/2018	004881180405	04-18-00129	Grab	40.9	40.9		38.7	38.74	1.7	0.5	N/A	N/A	N/A	N/A	N/A
			5/3/2018	MFR SAMPLE	8050321	Grab	30.3		30.3	15.5	12	14.8	< 0.5	< 4	35.3	6.45	16.2	96.5
			6/12/2018	MFR SAMPLE	8061220-01	Grab	6.71		6.71	4.1	1.4	2.61	< 0.5	13.2	41	N/A	N/A	205
			7/12/2018	MFR SAMPLE	8071262-01	Grab	7.8			7.8	4.4	< 0.5	< 0.5	4.52	36.7	6.9	23.5	95
			8/2/2018	MFR SAMPLE	8080237-01	Grab	24.4		24.4	5.3	2.6	19.1	< 0.5	< 4	41	6.7	24.6	115
			9/10/2018	MFR SAMPLE	8091219-01	Grab	5.58			4.5	3.8	< 0.5	1.08	12.5	22.4	5.75	20.8	30
			10/1/2018	MFR SAMPLE	8100210-01	Grab	1.7		1.7	1.7	1	< 0.5	< 0.5	< 4	< 6.25	5.51	26.1	100
			10/4/2018	004881181004	10-18-00143	Grab	33.4	33.4		5	N/A	25.9	< 2.5	N/A	N/A	N/A	N/A	N/A
			1/4/2019	MFR SAMPLE	9010409-01	Grab	36.2		36.2	24.1	22.4	12.1	< 0.5	< 4	11.2	7.32	NR	130
			2/7/2019	MFR SAMPLE	9020729-01	Grab	25.4		25.4	7.9	4.8	17.5	< 0.5	< 4	18.3	6.28	11.7	34
			4/11/2019	MFR SAMPLE	9041133-01	Grab	18.5		18.5	3.5	1.2	15	< 0.5	10.1	40	6.72	12.6	60
			6/13/2019	004881190613	06-19-00715	Grab	45.4	45.4		32.8	N/A	12.6	< 2.5	N/A	N/A	N/A	N/A	N/A
			11/6/2019	006-934-191106	11-19-00051	Grab	Do Not Calculate	Do Not Calculate		8.1	N/A	< 10	34.4	N/A	N/A	N/A	N/A	N/A
		2	8/2/2017	004881170802	08-17-00199	Grab	N/A	N/A		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Install 9/22/15		8/10/2017	001881170810	08-17-00678	Grab	53.9	53.9		9.4	N/A	44.5	< 0.5	N/A	N/A	N/A	N/A	N/A
	SD# 27		10/30/2017	MFR SAMPLE	1710266	Grab	39.8		39.8	10.1	0.648	29.5	0.213	17	124	5.99	20.2	29
			11/2/2017	004881171102	11-17-00088	Grab	48.4	48.4		12.4	N/A	36	< 0.5	N/A	N/A	N/A	N/A	N/A
			12/19/2017	MFR SAMPLE	1712179	Grab	53.2	-	53.2	34.1	6.9	17.5	1.6	60	82	6.53	12.6	96
			2/14/2018	MFR SAMPLE	1802143	Grab	63.6	-	63.6	54.7	26.1	7.72	1.22	72	69	7	12.6	190
			3/8/2018	003881180308	03-18-00144	Grab	35.1	35.1		7.7	0.65	27.4	< 0.5	N/A	N/A	N/A	N/A	N/A
			4/30/2018	MFR SAMPLE	8050120	Grab	30.4	-	30.4	4.3	1.2	26.1	< 0.5	25.9	25	7.2	14.2	61
			6/12/2018	MFR SAMPLE	8061225-01	Grab	9.39	-	9.39	4.1	2.4	5.29	< 0.5	16	29.3	N/A	N/A	275
			7/12/2018	MFR SAMPLE	8071257-01	Grab	9.28			2.2	< 2	7.08	< 0.5	< 4	< 5	7	23.5	19.5
			8/2/2018	MFR SAMPLE	8080238-01	Grab	10.34	-	10.34	3.1	3	7.24	< 0.5	< 4	11.3	6.67	24.7	175
			9/12/2018	MFR SAMPLE	8091241-01	Grab	11.4			3.3	1.4	8.1	< 0.5	9.96	32.7	6.71	23.7	120
			9/20/2018	005881180920	09-18-00686	Grab	18.2	18.2		3.4	N/A	14.8	< 1.25	N/A	N/A	N/A	N/A	N/A
			10/2/2018	MFR SAMPLE	8100405-01	Grab	20.1	-	20.1	3.1	1.2	17	< 0.5	< 4	49.5	6.3	22.6	85
			12/11/2018	MFR SAMPLE	8121122-01	Grab	22.3	-	22.3	2.9	1	19.4	< 0.5	< 4	34	NR	NR	70
			2/13/2019	MFR SAMPLE	9021318-01	Grab	35.3	-	35.3	3.7	2.8	31.6	< 0.5	< 4	20.8	6.61	7.31	5
			6/6/2019	005881190606	06-19-00289	Grab	62.3	62.3		62.3	N/A	< 5	< 2.5	N/A	N/A	N/A	N/A	N/A
			8/22/2019	MFR SAMPLE	9082204-01	Grab	20.5	-	20.5	3.1	< 1	17.4	< 0.3	4.88	29	6.73	23.9	146
			10/8/2019	MFR SAMPLE	9100828-01	Grab	35.2	-	35.2	1.9	1.6	33.3	< 0.5	N/A	10.7	6.33	20.4	58.5
			11/6/2019	007-934-191106	11-19-00125	Grab	32.2	32.2		3.4	N/A	28.8	< 1.25	N/A	N/A	N/A	N/A	N/A
			12/17/2019	MFR SAMPLE	9121716-01	Grab	23.7	-	23.7	1.9	1.6	21.8	< 0.4	7.37	32.7	N/A	N/A	65.5
		3	8/2/2017	001858170802	08-17-00207	Grab	12.2	12.2		12.2	5.68	< 1	< 0.5	N/A	N/A	6.5	N/A	N/A
	Install 10/15/15		10/30/2017	MFR SAMPLE	1710272	Grab	11.9	-	11.9	5.46	0.645	6.19	0.215	5	33	6.37	21.3	56
	SD# 15		11/22/2017	002881171122	11-17-00513	Grab	21	21		13.1	N/A	5	2.9	N/A	N/A	N/A	N/A	N/A
			12/19/2017	MFR SAMPLE	1712164	Grab	23.04	-	23.04	15.5	1.49	7.54	< 0.05	20	46.7	6.26	17.4	44
			2/14/2018	MFR SAMPLE	1802146	Grab	5.93	-	5.93	5.53	1.76	< 0.05	0.399	11	28	6.6	11.8	30
			3/29/2018	002881180329	03-18-00610	Grab	8.5	8.5		8.5	N/A	< 1	< 0.5	N/A	N/A	N/A	N/A	N/A

		5/1/2018	MFR SAMPLE	8050225	Grab	8.41	-	8.41	7.9	7.8	0.51	< 0.5	5.41	5.5	6.42	18.9	85
		6/13/2018	MFR SAMPLE	8061431-01	Grab	8.2	-	8.2	4.9	4	3.3.	< 0.5	< 4	18	N/A	N/A	69
		7/11/2018	MFR SAMPLE	8071213-01	Grab	8.99			5.8	2.8	3.19	< 0.5	< 4	12.3	6.62	28.2	75
		8/1/2018	MFR SAMPLE	8080201-01	Grab	13.25	-	13.25	10.9	8.6	2.35	< 0.5	< 4	8.25	6.79	28.2	88
		9/12/2018	MFR SAMPLE	8091242-01	Grab	15.48			14.1	6.4	1.38	< 0.5	7	22.5	6.54	26.6	85
		9/13/2018	006881180913	09-18-00554	Grab	8.2	8.2		8.2	N/A	< 2.5	< 1.25	N/A	N/A	N/A	N/A	N/A
		10/3/2018	MFR SAMPLE	2100404-01	Grab	10.65	-	10.65	3.5	2.6	7.15	< 0.5	4.23	54.5	6.45	22.4	85
		12/5/2018	MFR SAMPLE	8120507-01	Grab	12.2	-	12.2	4.1	2.2	8.14	< 0.5	< 4	29.7	6.52	12.4	75
		2/6/2019	MFR SAMPLE	9020642-01	Grab	12.3	-	12.3	7.7	7	4.56	< 0.5	< 4	5	6.4	11.1	75
		4/10/2019	MFR SAMPLE	9041025-01	Grab	9.1	-	9.1	9.1	7.4	< 0.5	< 0.5	10.1	18	6.53	17.2	98
		5/16/2019	005881190516	05-19-00707	Grab	10.6	10.6		6.3	N/A	4.3	< 1.25	N/A	N/A	N/A	N/A	N/A
		6/5/2019	MFR SAMPLE	9060559-01	Grab	8.4	-	8.4	2.9	1.8	5.5	< 0.5	< 4	< 16.7	6.8	26.8	50.5
		8/6/2019	MFR SAMPLE	9080629-01	Grab	10.7	-	10.7	2.3	1.4	8.45	< 0.3	< 4	3.75	6.26	23.9	60.5
		10/8/2019	MFR SAMPLE	9100829-01	Grab	7.4	-	7.4	2.1	1.8	5.3	< 0.5	N/A	40.7	6.37	26.4	45
		12/4/2019	MFR SAMPLE	9120505-01	Grab	8.42	-	8.42	2.9	2.8	5.52	< 0.4	< 4	16.7	N/A	N/A	44
	4	8/2/2017	008881170802	08-17-00203	Grab	23.3	23.3		20.7	2	2.6	< 0.5	N/A	N/A	6.4	N/A	N/A
Install 11/12/15		10/30/2017	MFR SAMPLE	1710267	Grab	3.25	-	3.25	2.54	0.982	0.438	0.268	< 3	< 4	6.94	18	46
SD# 26		11/22/2017	005881171122	11-17-00516	Grab	5.19	5.19		2.3	N/A	2.3	0.59	N/A	N/A	N/A	N/A	N/A
		12/19/2017	MFR SAMPLE	1712182	Grab	20.5	-	20.5	20.5	14.9	< 0.05	< 0.05	22	20.7	7.06	14.6	130
		2/14/2018	MFR SAMPLE	1802136	Grab	17.4	-	17.4	16.6	5.41	0.08	0.729	38	52	7.27	12.3	92
		4/5/2018	002-881-180405	04-18-00127	Grab	9.4	9.4		9.4	4.46	< 1	< 0.5	N/A	N/A	N/A	N/A	N/A
		5/3/2018	MFR SAMPLE	8050323	Grab	7.7	-	7.7	7.7	6.2	< 0.5	< 0.5	< 4	35.5	6.54	20.4	82.5
		6/12/2018	MFR SAMPLE	8061224-01	Grab	4.9	-	4.9	4.9	5.8	< 0.5	< 0.5	12.7	21.5	N/A	N/A	105
		7/12/2018	MFR SAMPLE	8071258-01	Grab	6.11			< 2	< 2	6.11	< 0.5	< 4	< 3.68	6.56	28.3	105
		8/2/2018	MFR SAMPLE	8080239.01	Grab	3.7	-	3.7	3.7	2.8	< 0.5	< 0.5	< 4	17.5	6.93	26.7	165
		9/10/2018	MFR SAMPLE	8091221-01	Grab	1.7			1.1	< 1	< 0.5	0.6	11.3	25	6.18	29	90
		10/1/2018	MFR SAMPLE	8100208	Grab	6.3	-	6.3	6.3	4.8	< 0.5	< 0.5	< 4	25.5	6.61	26.5	35
		10/4/2018	006881181004	10-18-00145	Grab	12.2	12.2		4.7	N/A	< 5	< 2.5	N/A	N/A	N/A	N/A	N/A
		12/3/2018	MFR SAMPLE	8120417-01	Grab	8.16	-	8.16	3.5	1.8	4.66	< 0.5	< 4	14.3	6.58	17.6	80
		2/6/2019	MFR SAMPLE	9020730-01	Grab	12.6	-	12.6	11.1	7.6	1.54	< 0.5	4	9.62	6.64	8.6	101
		4/8/2019	MFR SAMPLE	9040914-01	Grab	8.3	-	8.3	8.3	5	< 0.5	< 0.5	16.3	15.5	6.28	17.5	93
		6/3/2019	MFR SAMPLE	9060426-01	Grab	10.8	-	10.8	7.9	5.4	2.94	< 0.5	5.92	23.5	6.7	24.4	91.5
		6/13/2019	002881190613	06-19-00710	Grab	10.9	10.9		10.9	N/A	< 5	< 2.5	N/A	N/A	N/A	N/A	N/A
		8/5/2019	MFR SAMPLE	9080605-01	Grab	11.9	-	11.9	9.7	8.2	2.24	< 0.3	12.2	15.7	6.37	30	113
		10/24/2019	MFR SAMPLE	9102425-01	Grab	6.9	-	6.9	6.9	2	< 0.4	< 0.4	N/A	38.7	6.81	18.9	88.5
		11/6/2019	008-934-191106	11-19-00053	Grab	14.8	14.8		7.4	N/A	7.4	< 2.5	N/A	N/A	N/A	N/A	N/A
		12/3/2019	MFR SAMPLE	9120339-01	Grab	19.6	-	19.6	9.7	5.2	9.9	< 0.3	14.5	52.7			80
	5	2/14/2018	MFR SAMPLE	1802149	Grab	171	-	171	171	109	< 0.05	< 0.05	90	70	7.17	8.5	530
Install 11/11/17		4/19/2018	004-881-180419	04-18-00596	Grab	96.9	96.9		96.9	N/A	< 2.5	< 1.25	N/A	N/A	N/A	N/A	N/A
		5/2/2018	MFR SAMPLE	8050325	Grab	6.5			6.5	6	< 0.5	< 0.5	< 4	124	6.8	13.5	480
		8/23/2018	MFR SAMPLE	8082303-01	Grab	10.9	-	10.9	10.9	6.8	< 0.5	< 0.5	6.81	32.5	6.59	22.9	275
		9/11/2018	MFR SAMPLE	8091223-01	Grab	11.3			11.3	5.6	< 0.5	< 0.5	87.5	18.5	6.38	24.4	280
		10/2/2018	MFR SAMPLE	8100229-01	Grab	37.08	-	37.08	33.9	28.8	3.18	< 0.5	5.03	13	6.76	22.5	290
		10/25/2018	003881181025	10-18-00644	Grab	102.6	102.6		95.1	N/A	< 5	< 2.5	N/A	N/A	N/A	N/A	N/A
		2/20/2019	MFR SAMPLE	9022032-01	Grab	66.6	-	66.6	35.5	32	11.6	19.5	4.92	12.5	7.18	7.8	125
		8/14/2019	MFR SAMPLE	9081413-01	Grab	14.7	-	14.7	11.3	5.6	2.07	1.36	9.06	25	6.79	26.1	180
		10/15/2019	008-934-191015	10-19-00327	Grab	Do Not Calculate	Do Not Calculate		99.3	N/A	< 5	< 2.5	N/A	N/A	N/A	N/A	N/A
	6	2/20/2018	MFR SAMPLE	1802185	Grab	34.7	-	34.7	30	15.6	3.97	0.685	27	24	7.68	10.8	130
Install 10/17/17		4/19/2018	003-881-180419	04-18-00595	Grab	31.4	31.4		31.4	N/A	< 2.5	< 1.25	N/A	N/A	N/A	N/A	N/A
		5/2/2018	MFR SAMPLE	8050324	Grab	2.82			2.1	1.4	0.72	< 0.5	< 4	14.3	7.13	15.5	165
		6/13/2018	MFR SAMPLE	8061433-01	Grab	9.21	-	9.21	3.9	1.8	5.31	< 1	14.2	22	N/A	N/A	131
		7/10/2018	MFR SAMPLE	8071104-01	Grab	17.5			17.5	15.8	< 0.05	< 0.05	11.3	12.5	7.05	25.3	170
		8/1/2018	MFR SAMPLE	8080206-01	Grab	7.26	-	7.26	3.5	2.6	3.76	< 0.5	< 4	< 10.6	6.63	27.5	135
		9/11/2018	MFR SAMPLE	8091222-01	Grab	7.3			6.3	5	1	< 0.5	5.79	15.5	6.55	25	275
		10/2/2018	MFR SAMPLE	8100228-01	Grab	15.7	-	15.7	3.1	1.2	12.6	< 0.5	< 4	14	6.65	23.3	140
		10/23/2018	002881181025	10-18-00643	Grab	21.6	21.6		14.1	N/A	< 2.5	< 5	N/A	N/A	N/A	N/A	N/A
		12/20/2018	MFR SAMPLE	8122016-01	Grab	19.7	-	19.7	6.9	4.8	12.8	< 0.5	< 4	35.5	7.2	NR	110
		2/20/2019	MFR SAMPLE	9022031-01	Grab	16.1	-	16.1	2.7	1	13.4	< 0.5	< 4	< 6.25	6.99	5	102
		4/9/2019	MFR SAMPLE	9040921-01	Grab	13.1	-	13.1	11.7	9.4	0.73	0.64	14.1	22	6.86	13.4	123
		4/16/2019	004881190416	ZP00467	Grab	11.9	11.9		11.9	N/A	< 5	< 2.5	N/A	N/A	N/A	N/A	N/A
		6/5/2019	MFR SAMPLE	9060556-01	Grab	7.22	-	7.22	5.9	5	1.32	< 0.5	< 4	< 15.6	6.92	20.9	136
		8/8/2019	MFR SAMPLE	9080837-01	Grab	6.28	-	6.28	2.5	1.2	3.78	< 0.3	< 4	< 8.33	6.45	27.1	100
		10/10/2019	MFR SAMPLE	9101102-01	Grab	11.8	-	11.8	1.3	< 1	10.5	< 0.5	N/A	12.7	6.89	20.9	83.5
		10/16/2019	002-934-191016	10-19-00383	Grab	13.7	13.7		2.8	N/A	10.9	< 1.25	N/A	N/A	N/A	N/A	N/A
		12/5/2019	MFR SAMPLE	9120526-01	Grab	14.6	-	14.6	2.9	1.2	11.7	< 0.4	8.74	30	N/A	N/A	87.5
	7	2/14/2018	MFR SAMPLE	1802148	Grab	77.9		77.9	76.7	67	0.1	1.13	25	26	7.56	10.2	320
Install 10/20/17		4/26/2018	003881180426	04-18-00776	Grab	86.6			86.6	N/A	< 1	< 0.5	N/A	N/A	N/A	N/A	N/A
		10/10/2018	005881181010	10-18-00244	Grab	50.35			46.6	N/A	< 2.5	< 1.25	N/A	N/A	N/A	N/A	N/A
		10/23/2018	MFR SAMPLE	8102328-01	Grab	11.84		11.84	11.3	9.8	< 0.5	0.54	8.86	51	6.2	20	180
		11/12/2019	004-934-191112	11-19-00166	Grab	Do Not Calculate			114.5	N/A	< 10	< 5	N/A	N/A	N/A	N/A	N/A
	8	2/11/2019	MFR SAMPLE	9021124-01	Grab	69.7	-	69.7	47.1	42.4	1.9	20.7	11.9	53.3	6.8	NR	270
Install 1/29/18		2/28/2019	002881190228		Grab	63.558	63.558		32.938	N/A	7.22	23.4	N/A	N/A	N/A	N/A	N/A
		4/30/2019	MFR SAMPLE	9043026-01	Grab	53.6	-	53.6	46.9	43.4	0.72	5.92	7.41	27	6.55	16.4	280
		6/26/2019	MFR SAMPLE	9062618-01	Grab	31.6	-	31.6	26.5	22.2	1.17	3.96	NR	NR	6.81	14.1	245
		7/18/2019	001856190718	07-19-01099	Grab	34.3	34.3		34.3	N/A	< 5	< 2.5	N/A	N/A	N/A	N/A	N/A
		8/7/2019	MFR SAMPLE	9080803-01	Grab	24.7	-	24.7	23.5	22	0.32	0.88	< 4	30.5	6.51	23.3	280
		11/12/2019	003-934-191112	11-19-00165	Grab	70.2	70.2		15.2	N/A	55	< 5	N/A	N/A	N/A	N/A	N/A
	9	8/23/2018	MFR SAMPLE	8082304-01	Grab	13.26	-	13.26	10.9	6.2	1.06	1.3	4.16	23.6	6.43	25.6	115
Install 2/21/18		9/13/2018	004881180913	09-18-00552	Grab	10.3	10.3		10.3	N/A	< 2.5	< 1.25	N/A	N/A	N/A	N/A	N/A
		9/11/2018	MFR SAMPLE	8091224-01	Grab	14.6			12.1	6	4.12	1.38	14.6	50.7	6.08	24.9	105
		10/3/2018	MFR SAMPLE	8100409-01	Grab	23.3	-	23.3	23.3	23.2	< 0.5	< 0.5	5.54	65.3	6.74	26.2	220
		2/6/2019	MFR SAMPLE	9020644-01	Grab	48.3	-	48.3	48.3	43.8	< 0.5	< 0.5	4.98	25.5	7.11	6.7	320
		4/30/2019	MFR SAMPLE	904025.01	Grab	46.3	-	46.3	33.1	33.6	3.06	10.2	8.71	35	6.62	19.1	145
		5/30/2019	008881190530	05-19-01234	Grab	45	45		45	N/A	< 5	< 2.5	N/A	N/A	N/A	N/A	N/A
		6/20/2019	MFR SAMPLE	9062029-01	Grab	32.9	-	32.9	32.9	30.6	< 0.5	< 0.5	6.67	56.4	6.53	15.3	205
		8/27/2019	MFR SAMPLE	9082720-01	Grab	34.2	-	34.2	7.7	5.2	26	0.51	NR	25	7.01	23.8	NR
		12/9/2019	002-934-191209	12-19-00136	Grab	Do Not Calculate	Do Not Calculate		92.9	N/A	< 5	< 2.5	N/A	N/A	N/A	N/A	N/A
	10	9/13/2018	005881180913	09-18-00553	Grab	18.5	18.5		18.5	N/A	< 2.5	< 1.25	N/A	N/A	N/A	N/A	N/A
Install 3/27/18		10/23/2018	MFR SAMPLE	8102405-01	Grab	15.5	-	15.5	2.5	2.4	13	< 0.5	< 4	11.3	6.24	22.1	75
		12/20/2018	MFR SAMPLE	8122018-01	Grab	12.9	-	12.9	6.1	5	6.8	< 0.5	< 4	11	7.13	NR	120
		2/19/2019	MFR SAMPLE	9021915-01	Grab	26.6	-	26.6	7.7	4.2	18.2	0.7	19.7	54	6.39	15.2	65
		4/23/2019	MFR SAMPLE	9042330-01	Grab	17.5	-	17.5	14.9	12.4	< 0.5	2.6	12.1	34.3	6.75	17.8	125
		5/16/2019	004881190516	05-19-00706	Grab	26.6	26.6		26.6	N/A	< 5	< 2.5	N/A	N/A	N/A	N/A	N/A
		6/5/2019	MFR SAMPLE	9060555-01	Grab	12.3	-	12.3	10.9	7.6	< 0.5	1.38	7.45	28.5	6.67	22	150
		8/20/2019	MFR SAMPLE	9082012-01	Grab	19.8	-	19.8	5.5	3	13.7	0.62	< 4	28.8	6.23	24.1	81
		10/30/2019	MFR SAMPLE	9103010-01	Grab	21.61	-	21.61	11.5	9.6	9.06	1.05	N/A	39	6.61	19.7	82
	11	9/11/2018	MFR SAMPLE	8091226-01	Grab	16.3	-	16.3	1.3	< 1	15	< 0.5	< 4	18	6.36	24.8	105
Install 4/4/18		10/3/2018	MFR SAMPLE	8100408-01	Grab	14.2			2.9	1	11.3	< 0.5	< 4	29	6.69	23.5	120
		12/4/2018	MFR SAMPLE	8120420-01	Grab	18	-	18	4.1	2.4	13.9	< 0.5	< 4	19.7	6.75	12.1	100
		2/6/2019	MFR SAMPLE	9020647-01	Grab	9.7	-	9.7	9.7	8.2	< 0.5	< 0.5	< 4	11.6	7.04	8	130
		2/13/2019	007881190213		Grab	6.29	6.29		3.509	N/A	2.78	< 1.25	N/A	N/A	N/A	N/A	N/A
		4/10/2019	MFR SAMPLE	9041027-01	Grab	17	-	17	1.7	2.2	15.3	< 0.5	15.1	15	6.52	13.3	57
		6/5/2019	MFR SAMPLE	9060553-01	Grab	8.28	-	8.28	1.9	1.2	6.38	< 0.1	< 4	11.2	6.75	21	80.5
		7/11/2019	002934190711	07-19-00626	Grab	40.1	40.1		1.7	N/A	38.4	< 1.25	N/A	N/A	N/A	N/A	N/A
		8/27/2019	MFR SAMPLE	9082721-01	Grab	38.5	-	38.5	2.1	2.2	36.4	< 0.5	NR	42	6.71	24.3	NR
		12/10/2019	001-934-191210	12-19-00186	Grab	52	52		3.2	N/A	48.8	< 2.5	N/A	N/A	N/A	N/A	N/A
	12	9/11/2018	MFR SAMPLE	8091225-01	Grab	8.3	-	8.3	8.3	5.8	< 0.5	< 0.5	< 4	15.4	6.26	22.3	100
Install 4/4/18		10/3/2018	MFR SAMPLE	8100403-01	Grab	2.5			2.5	2.2	< 0.5	< 0.5	< 4	18.6	6.5	21.1	75
		1/2/2019	MFR SAMPLE	9010213-01	Grab	22.9	-	22.9	5.7	4.8	17.2	< 0.5	< 4	13.5	7.16	NR	95
		2/13/2019	006881190213		Grab	30.299	30.299		16.599	N/A	13.7	< 1.25	N/A	N/A	N/A	N/A	N/A
		2/19/2019	MFR SAMPLE	9021916-01	Grab	27.9	-	27.9	12.1	10.2	15.8	< 0.5	11	23.5	7.25	7.3	100
		4/10/2019	MFR SAMPLE	9041109-01	Grab	23.9	-	23.9	4.5	4.6	19.4	< 0.5	9.43	14.8	6.8	10.7	78.5
		6/14/2019	MFR SAMPLE	9061409-01	Grab	27.4	-	27.4	5.9	4.8	21.6	< 0.5	9.21	16.7	6.63	16.8	98
		7/11/2019	003934190711	07-19-00627	Grab	29.8	29.8		29.8	N/A	< 5	< 2.5	N/A	N/A	N/A	N/A	N/A
		8/7/2019	MFR SAMPLE	9080805-01	Grab	27.3	-	27.3	1.5	< 1	25.8	< 0.3	< 4	8.6	6.22	23.9	35
		10/10/2019	MFR SAMPLE	9101105-01	Grab	30	-	30	3.7	2.4	26.3	< 0.5	N/A	18.9	6.52	18.5	33.5
		12/10/2019	006-934-191210	12-19-00191	Grab	36.2	36.2		3.1	N/A	33.1	< 2.5	N/A	N/A	N/A	N/A	N/A
		12/18/2019	MFR SAMPLE	9121825-01	Grab	33.8	-	33.8	1.9	1.6	31.9	< 0.4	< 4	29.2	N/A	N/A	23
	13	4/11/2019	MFR SAMPLE	9041137-01	Grab	17.8		17.8	8.3	4.4	9.46	< 0.5	5.29	31	6.61	14.9	135
Install 1/3/19		5/16/2019	003881190516	05-19-00705	Grab	12			12	N/A	< 5	< 2.5	N/A	N/A	N/A	N/A	N/A
		6/5/2019	MFR SAMPLE	9060551-01	Grab	11.9		11.9	11.9	9.6	< 0.5	< 0.5	8.54	26	6.91	22.9	260

			10/15/2019	006-934-191015	10-19-00325	Grab	Do Not Calculate			99.2	N/A	< 5	< 2.5	N/A	N/A	N/A	N/A	N/A
		14	2/5/2019	MFR SAMPLE	9020607-01	Grab	11.4	-	11.4	4.7	1.4	6.72	< 0.5	6.48	24.3	6.76	5.9	90
			4/9/2019	MFR SAMPLE	9040924-01	Grab	14.7	-	14.7	13.3	11.8	0.69	0.66	19.3	14	6.74	13.1	112
			5/9/2019	004881190509	05-19-00406	Grab	6.34	6.34		3.4	N/A	2.5	0.44	N/A	N/A	N/A	N/A	N/A
			6/4/2019	MFR SAMPLE	9060431-01	Grab	4.5	-	4.5	4.5	1.8	< 0.5	< 0.5	11.2	< 8.33	6.71	22.8	99.5
			8/7/2019	MFR SAMPLE	9080807-01	Grab	6.98	-	6.98	3.7	2.6	3.28	< 0.3	< 4	3	6.36	25.5	80
			10/1/2019	004-934-191001	10-19-00039	Grab	8.7	8.7		2.4	N/A	6.3	< 2.5	N/A	N/A	N/A	N/A	N/A
			10/9/2019	MFR SAMPLE	9101004-01	Grab	5.1	-	5.1	3.3	1.4	1.8	< 0.4	N/A	16.5	N/A	N/A	72
			12/5/2019	MFR SAMPLE	9120532-01	Grab	7.02	-	7.02	6.1	2.6	0.92	< 0.4	9.98	72.7	N/A	N/A	59.5
		15	4/16/2019	002881190416	ZP00465	Grab	112.6	112.6		112.6	N/A	< 5	< 2.5	N/A	N/A	N/A	N/A	N/A
			8/8/2019	MFR SAMPLE	9080839-01	Grab	5.3	-	5.3	5.3	3.8	< 0.3	< 0.3	5.89	10	6.53	23.8	218
			10/10/2019	MFR SAMPLE	9101108-01	Grab	5.9	-	5.9	5.9	1.8	< 0.5	< 0.5	N/A	47.3	6.42	19.8	118
			10/16/2019	005-934-191016	10-19-00386	Grab	Do Not Calculate	Do Not Calculate		10.6	N/A	< 5	< 2.5	N/A	N/A	N/A	N/A	N/A
			12/5/2019	MFR SAMPLE	9120533-01	Grab	23.76	-	23.76	22.9	17.6	< 0.4	0.86	11.8	40.6	N/A	N/A	172
		16	10/24/2019	MFR SAMPLE	9102426-01	Grab	20.5	-	20.5	20.5	13.4	< 0.4	< 0.4	N/A	62	7.11	19.6	172
	Install 9/7/18		12/5/2019	MFR SAMPLE	9120528-01	Grab	29.47	-	29.47	28.5	23.8	< 0.4	0.97	15.1	25.3	N/A	N/A	161
	Install 9/13/19	17	12/3/2019	MFR SAMPLE	9120340-01	Grab	24.6	-	24.6	2.3	2	22.3	< 0.3	8.14	< 5	N/A	N/A	100
	Install 9/25/19	18	12/3/2019	MFR SAMPLE	9120341-01	Grab	23.3	-	23.3	23.3	20.8	< 0.3	< 0.3	15.2	18.4	N/A	N/A	178
	Install 6/20/18	19	12/3/2019	MFR SAMPLE	9120402-01	Grab	27.8	-	27.8	7.3	4	20.5	< 0.4	11.5	64	N/A	N/A	78.5
	Instal 11/13/18	20	12/5/2019	MFR SAMPLE	9120531-01	Grab	22.16	-	22.16	7.9	1.4	2.96	11.3	13.2	52.5	N/A	N/A	103
	Install 7/23/19	21	12/3/2019	MFR SAMPLE	9120403-01	Grab	18.53	-	18.53	15.7	11.8	1.15	1.68	17.1	49.3	N/A	N/A	204
							24.80	33.72	22.95	16.93118	9.432384	7.443633	1.3222818	15.5048	30.635	6.679041	19.4825	125.8938
Manufacturer	**Install**	**Provisional System #**	**Sample Date**	**Sample #**	**Lab ID**	**Sample Type (3)**	**TN(mg/l) (6) (ALL SAMPLES)**	**TN(mg/l) (6) (County Only)**	**TN(mg/l) (6) (BIMONTHLY MFR ONLY)**	**TKN (mg/l)**	**Ammonia (as N)**	**NO3 (Nitrate as N)**	**NO2 (Nitrite as N)**	**BOD**	**TSS**	**PH**	**Temp**	**Alkalinity**
Norweco Hydro-Kinetic		1	8/2/2017	009881170802	08-17-00204	Grab	7.4	7.4		7.4	6.71	< 1	< 0.5	N/A	N/A	6.9	N/A	N/A
	Install 9/23/15		10/30/2017	MFR SAMPLE	1710264	Grab	31	-	31	31	28.9	< 0.05	< 0.05	< 3	27	6.84	18.3	250
	SD# 4		11/22/2017	003881171122	11-17-00514	Grab	25.6	25.6		22.7	N/A	2.9	< 0.5	N/A	N/A	N/A	N/A	N/A
			12/19/2017	MFR SAMPLE	1712180	Grab	11.78	-	11.78	5.39	0.165	6.39	< 0.05	5	40.8	6.81	13	120
			2/14/2018	MFR SAMPLE	1802134	Grab	8.39	-	8.39	1.92	0.319	6.47	< 0.05	< 3	< 6.67	7.15	12.4	110
			3/29/2018	004881180329	03-18-00612	Grab	7.1	7.1		3.4	1.71	3.7	< 0.5	N/A	N/A	N/A	N/A	N/A
			4/24/2018	MFR SAMPLE	1804249	Grab	12.4	-	12.4	4.13	0.157	8.24	< 0.05	< 2.9	< 6.67	6.54	12.4	100
			6/12/2018	MFR SAMPLE	8061222-01	Grab	24.9	-	24.9	24.9	23	< 0.5	< 0.5	4.23	12.7	N/A	N/A	250
			7/18/2018	MFR SAMPLE	8071904-01	Grab	6.92			3.9	2.4	3.02	< 0.5	< 4	9.33	6.81	25.9	160
			8/2/2018	MFR SAMPLE	8080236-01	Grab	4.99	-	4.99	4.3	3	0.69	< 0.5	< 4	< 6.25	6.63	24.6	170
			9/12/2018	MFR SAMPLE	8091240-01	Grab	3.9			3.9	2	< 0.5	< 0.5	< 4	< 10	6.71	24.7	355
			10/4/2018	001881181004	10-18-00140	Grab	10.35	10.35		1.8	N/A	7.3	< 1.25	N/A	N/A	N/A	N/A	N/A
			10/23/2018	MFR SAMPLE	8100410-01	Grab	11.24	-	11.24	4.1	1.4	7.14	< 0.5	< 4	< 5	NR	NR	135
			12/3/2018	MFR SAMPLE	8120416-01	Grab	10.7	-	10.7	1.5	< 1	9.5	< 0.5	< 4	6.5	6.33	12	100
			2/4/2019	MFR SAMPLE	9020604-01	Grab	14.6	-	14.6	1.5	< 1	13.1	< 0.5	< 4	< 5	6.6	7.9	100
			4/8/2019	MFR SAMPLE	9040913-01	Grab	7.74	-	7.74	1.5	< 1	6.24	< 0.5	9.53	< 8.33	6.12	11.9	95
			6/3/2019	MFR SAMPLE	9060425-01	Grab	4.44	-	4.44	3.9	2.4	0.54	< 0.5	4.84	< 8.33	6.21	19	134
			6/13/2019	005881190613	06-19-00713	Grab	9.3	9.3		9.3	N/A	< 5	< 2.5	N/A	N/A	N/A	N/A	N/A
			10/7/2019	MFR SAMPLE	9100826-01	Grab	11.7	-	11.7	1.5	< 1	10.2	< 0.5	N/A	8	6.67	23	61
			11/6/2019	002-934-191106	11-19-00047	Grab	13.7	13.7		1.1	N/A	12.6	< 0.5	N/A	N/A	N/A	N/A	N/A
			12/2/2019	MFR SAMPLE	9120337-01	Grab	9.16	-	9.16	< 1	< 1	9.16	< 0.3	10.5	< 5	N/A	N/A	58.5
		2	8/2/2017	010881170802	08-17-00205	Grab	13.3	13.3		1.7	<0.5	11.6	< 0.5	N/A	N/A	6.8	N/A	N/A
	Install 12/3/15		10/30/2017	MFR SAMPLE	1710263	Grab	10.9	-	10.9	2.23	< 0.05	8.66	< 0.05	< 3	< 10	7.27	17.3	130
	SD# 24/25		11/22/2017	004881171122	11-17-00515	Grab	26.1	26.1		2.4	N/A	23.7	< 0.5	N/A	N/A	N/A	N/A	N/A
			12/19/2017	MFR SAMPLE	1712181	Grab	47.88	-	47.88	1.98	< 0.05	45.9	< 0.05	< 3.2	< 4	6.62	11.2	30
			2/14/2018	MFR SAMPLE	1802133	Grab	68.7	-	68.7	9.16	5.43	59.5	< 0.05	< 3	< 5	5.78	12.4	8.4
			3/29/2018	003881180329	03-18-00611	Grab	19.7	19.7		2.4	N/A	17.3	< 0.5	N/A	N/A	N/A	N/A	N/A
			5/1/2018	MFR SAMPLE	1805017	Grab	12.4	-	12.4	3.47	0.468	8.88	< 0.05	< 3.3	< 3.33	6.96	11	84
			6/12/2018	MFR SAMPLE	8061221-01	Grab	9.68	-	9.68	1.5	< 1	8.18	< 0.5	4.3	< 5	N/A	N/A	105
			7/18/2018	MFR SAMPLE	8071905-01	Grab	8.92			1.7	< 1	7.22	< 0.5	< 4	< 3.57	6.2	22.4	115
			8/2/2018	MFR SAMPLE	8080235-01	Grab	18.6	-	18.6	8.1	7.8	10.5	< 0.5	< 4	< 8.33	7.07	25.2	210
			9/12/2018	MFR SAMPLE	8091239-01	Grab	18.1			4.7	4	13.4	< 0.5	< 4	< 6.25	6.76	23	140
			10/1/2018	MFR SAMPLE	8100209-01	Grab	8.83	-	8.83	6.9	5.8	0.55	1.38	4.97	15	6.71	21.7	99
			10/4/2018	002881181004	10-18-00141	Grab	22.1	22.1		2	N/A	17.6	< 2.5	N/A	N/A	N/A	N/A	N/A
			12/12/2018	MFR SAMPLE	8121227-01	Grab	35.8	-	35.8	24.1	23.4	11.7	< 0.5	< 4	21	NR	NR	200
			2/4/2019	MFR SAMPLE	9020603-01	Grab	29.1	-	29.1	2.9	3.8	26.2	< 0.5	< 4	< 8.33	6.6	4.3	33.5
			4/24/2019	MFR SAMPLE	9042401-01	Grab	3.5	-	3.5	3.5	1.6	< 0.5	< 0.5	9.3	8.33	6.15	8.83	185
			6/3/2019	MFR SAMPLE	9060424-01	Grab	19.6	-	19.6	1.9	< 1	17.7	< 0.5	< 4	< 6.25	6.94	18.1	115
			6/13/2019	006881190613		Grab												
			8/5/2019	MFR SAMPLE	9080603-01	Grab	6.46	-	6.46	1.1	< 1	5.36	< 0.3	< 4	< 3.12	6.65	24.1	65
			10/7/2019	MFR SAMPLE	9100824-01	Grab	4.98	-	4.98	< 1	< 1	4.98	< 0.5	N/A	< 7.14	6.88	20.5	100
			11/6/2019	003-934-191106	11-19-00048	Grab	6.4	6.4		1.3	N/A	5.1	< 1	N/A	N/A	N/A	N/A	N/A
			12/3/2019	MFR SAMPLE	9120336-01	Grab	10.89	-	10.89	1.5	< 1	9.39	< 0.3	6.86	< 5	N/A	N/A	80.5
		3	8/2/2017	002881170802	08-17-00197	Grab	14.6	14.6		< 0.5	0.63	14.6	< 0.5	N/A	N/A	6.9	N/A	N/A
	Install 12/10/15		10/30/2017	MFR SAMPLE	1710262	Grab	35.4	-	35.4	1.08	< 0.05	34.3	< 0.05	< 3	< 10	7.1	18.4	80
	SD# 19		11/2/2017	002881171102	11-17-00086	Grab	33.6	33.6		0.6	N/A	33	< 0.5	N/A	N/A	N/A	N/A	N/A
			12/19/2017	MFR SAMPLE	1712173	Grab	36.73	-	36.73	0.83	< 0.05	35.9	< 0.05	< 3.2	< 4	6.61	13	40
			2/14/2018	MFR SAMPLE	1802142	Grab	33.5	-	33.5	3.29	< 0.05	30	0.171	8	75	6.67	12.2	56
			3/8/2018	001881180308	03-18-00142	Grab	37.9	37.9		2.7	< 0.5	35.2	< 0.5	N/A	N/A	N/A	N/A	N/A
			5/1/2018	MFR SAMPLE	1805016	Grab	17.1	-	17.1	2.78	1.59	14.3	< 0.05	< 3.3	< 5	6.81	12.1	100
			6/12/2018	MFR SAMPLE	8061223-01	Grab	9.73	-	9.73	1.9	1.2	7.83	< 0.5	19.3	< 5	N/A	N/A	175
			7/18/2018	MFR SAMPLE	8071901-01	Grab	11			1.3	< 1	9.73	< 0.5	< 4	< 5	7.25	21.7	150
			8/1/2018	MFR SAMPLE	8080234-01	Grab	17	-	17	1.5	< 1	15.5	< 0.5	< 4	< 5	6.56	24.3	175
			9/11/2018	MFR SAMPLE	8091238-01	Grab	15.6			1.5	< 1	14.1	< 0.5	< 4	< 5	6.75	24.4	165
			9/20/2018	004881180920	09-18-00685	Grab	17.1	17.1		1.7	N/A	15.4	< 1.25	N/A	N/A	N/A	N/A	N/A
			10/2/2018	MFR SAMPLE	8100406-01	Grab	14.9	-	14.9	1.5	< 1	13.4	< 0.5	< 4	< 6.25	6.87	21.7	145
			12/5/2018	MFR SAMPLE	8120513-01	Grab	29.4	-	29.4	26.5	27.2	2.92	< 0.5	< 4	< 5	7.01	10.5	200
			2/20/2019	MFR SAMPLE	9022027-01	Grab	24.9	-	24.9	< 1	< 1	24.9	< 0.5	10.3	< 5	6.53	6.4	41.5
			4/11/2019	MFR SAMPLE	9041132-01	Grab	24.1	-	24.1	< 1	< 1	24.1	< 0.5	17.7	< 5	6.42	10.1	44
			6/5/2019	MFR SAMPLE	9060558-01	Grab	19	-	19	< 1	1	19	< 0.5	< 4	< 10	6.8	17.1	89.5
			6/13/2019	001881190613		Grab												
			8/6/2019	MFR SAMPLE	9080627-01	Grab	13	-	13	< 1	< 1	13	< 0.1	7.51	< 2.5	6.56	23.7	48
			10/8/2019	MFR SAMPLE	9100822-01	Grab	13.5	-	13.5	1.5	< 1	12	< 0.5	N/A	< 2.5	6.86	20.4	114
			11/6/2019	008-934-191106	11-19-00126	Grab	12.5	12.5		0.6	N/A	11.9	< 0.5	N/A	N/A	N/A	N/A	N/A
			12/3/2019	MFR SAMPLE	9120335-01	Grab	8.46	-	8.46	< 1	< 1	8.46	< 0.3	< 4	< 2.5	N/A	N/A	65
		4	8/2/2017	002881170803	08-17-00269	Grab	10.6	10.6		3	1.13	7.6	< 0.5	N/A	N/A	6.9	N/A	N/A
	Install 10/27/15		10/30/2017	MFR SAMPLE	1710271	Grab	11.3	-	11.3	2.59	< 0.05	8.75	< 0.05	< 4	< 10	7.25	19.2	220
	SD# 17		11/22/2017	001881171122	11-17-00512	Grab	11.8	11.8		1.8	N/A	10	< 0.5	N/A	N/A	N/A	N/A	N/A
			12/19/2017	MFR SAMPLE	1712163	Grab	15.23	-	15.23	2.03	< 0.05	13.2	< 0.05	< 4.8	< 4	7.24	11.4	200
			2/14/2018	MFR SAMPLE	1802145	Grab	23.8	-	23.8	12.9	1.28	10.8	0.12	< 3.4	< 5	7.43	7.3	160
			3/29/2018	001881180329	03-18-00906	Grab	65.2	65.2		64.1	N/A	1.1	< 0.5	N/A	N/A	N/A	N/A	N/A
			5/1/2018	MFR SAMPLE	1805029	Grab	56.8	-	56.8	56	48.4	0.63	0.139	9	< 6.67	7.32	10.3	390
			6/13/2018	MFR SAMPLE	8061432-01	Grab	4.94	-	4.94	2.9	1.8	2.04	< 1	< 4	< 5	N/A	N/A	192
			7/17/2018	MFR SAMPLE	8071802-01	Grab	3.24			1.3	< 1	1.94	< 0.5	< 4	< 8.33	7.21	21.3	200
			8/1/2018	MFR SAMPLE	8080204-01	Grab	3.5	-	3.5	1	< 1	1.8	< 0.5	< 4	< 5	6.78	25.5	210
			9/11/2018	MFR SAMPLE	8091218-01	Grab	20.4			< 1	1	20.4	< 0.5	< 4	< 12.5	6.47	23	145
			9/13/2018	001881180913	09-18-00549	Grab	25.8	25.8		2.4	N/A	23.4	< 1.25	N/A	N/A	N/A	N/A	N/A
			10/3/2018	MFR SAMPLE	8100407-01	Grab	1.7	-	1.7	1.7	< 1	< 0.5	< 0.5	< 4	< 8.33	6.61	22.4	130
			1/2/2019	MFR SAMPLE	9010210-01	Grab	33.5	-	33.5	3.3	1.8	30.2	< 0.5	< 4	11.7	7.01	NR	150
			2/6/2019	MFR SAMPLE	9020641-01	Grab	26	-	26	2.5	3.8	23.5	< 0.5	< 4	9	6.97	4.8	160
			4/23/2019	MFR SAMPLE	9042327-01	Grab	25.9	-	25.9	23.9	19	< 0.5	2	16.2	13	7.4	9.45	240
			5/30/2019	002881190530	05-19-01228	Grab	14.5	14.5		3.4	N/A	11.1	< 2.5	N/A	N/A	N/A	N/A	N/A
			6/4/2019	MFR SAMPLE	9060423-01	Grab	13.8	-	13.8	2.3	< 1	11.5	< 0.5	< 4	< 10	6.76	17	155
			8/7/2019	MFR SAMPLE	9080802-01	Grab	52.5	-	52.5	1.7	< 1	50.8	< 0.3	17.5	3.4	6.44	22.9	170
			10/10/2019	MFR SAMPLE	9101101-01	Grab	49.2	-	49.2	1.5	< 1	47.7	< 0.5	N/A	< 8.33	6.67	19.8	97.5
			12/4/2019	MFR SAMPLE	9120507-01	Grab	17.1	-	17.1	11.3	10.2	5.8	< 0.4	< 4	< 8.33	N/A	N/A	184
			12/10/2019	005-934-191210	12-19-00190	Grab	18.9	18.9		11.4	N/A	7.5	< 2.5	N/A	N/A	N/A	N/A	N/A
		5	8/3/2017	001881170803	08-17-00268	Grab	56.9	56.9		54.9	59.83	2	< 0.5	N/A	N/A	6.8	N/A	N/A
	Install 12/11/15		10/30/2017	MFR SAMPLE	1710270	Grab	17	-	17	3.66	1.35	13.2	0.133	< 3	< 4	6.57	16.5	64
	SD# 14		11/8/2017	002881171108	11-17-00157	Grab	18.1	18.1		2.2	N/A	15.9	< 0.5	N/A	N/A	N/A	N/A	N/A
			12/19/2017	MFR SAMPLE	1712162	Grab	27.23	-	27.23	1.93	0.8	25.3	< 0.05	< 4.8	< 5	6.34	12	24
			2/14/2018	MFR SAMPLE	1802147	Grab	47.6	-	47.6	30.6	17.8	17	< 0.05	< 3.2	< 10	6.69	8.2	110
			3/15/2018	002881180315	03-18-00284	Grab	86.6	86.6		86.6	74.8	< 1	< 0.5	N/A	N/A	N/A	N/A	N/A
			6/13/2018	MFR SAMPLE	8061434-01	Grab	17.4	-	17.4	8.7	7.6	8.66	< 1	< 4	< 5	N/A	N/A	134
			7/17/2018	MFR SAMPLE	8071804-01	Grab	19.4			18.9	16.6	0.52	< 0.5	24.5	< 5	6.87	22.1	185

			8/1/2018	MFR SAMPLE	8080208-01	Grab	11.37	-	11.37	2.5	1.2	8.87	< 0.5	< 4	< 5	6.16	25.1	100
			9/11/2018	MFR SAMPLE	8091220-01	Grab	6.38			3.1	2	3.28	< 0.5	< 4	< 12.5	6.13	22.8	130
			10/2/2018	MFR SAMPLE	8100226-01	Grab	14.7	-	14.7	9.9	7.4	4.8	< 0.5	< 4	< 6.25	6.42	22.9	110
			10/25/2018	004881181025	10-18-00645	Grab	24.5	24.5	-	13.3	N/A	8.7	< 2.5	N/A	N/A	N/A	N/A	N/A
			12/4/2018	MFR SAMPLE	8120425-01	Grab	15.9	-	15.9	4.5	3.8	11.4	< 0.5	< 4	< 5	6.47	12.8	80
			2/11/2019	MFR SAMPLE	9021122-01	Grab	20.5	-	20.5	1.7	< 1	18.8	< 0.5	< 4	< 6.25	6.91	NR	NR
			4/11/2019	MFR SAMPLE	9041135-01	Grab	8.76	-	8.76	2.7	< 1	6.06	< 0.5	< 4	< 8.33	6.43	10.7	63
			4/16/2019	005881190416	ZP00468	Grab	22.679	22.679	-	3.679	N/A	19	< 2.5	N/A	N/A	N/A	N/A	N/A
			6/6/2019	MFR SAMPLE	9060613-01	Grab	37.2	-	37.2	35.7	34.8	1.46	< 0.5	< 4	< 12.5	6.91	18.1	234
			8/8/2019	MFR SAMPLE	9080836-01	Grab	1.89	-	1.89	1.3	< 1	0.59	< 0.3	< 4	< 8.33	6.4	24.2	115
			10/9/2019	MFR SAMPLE	9101003-01	Grab	8.93	-	8.93	3.1	1.2	5.83	< 0.4	N/A	< 6.25	6.35	21	69
			10/15/2019	007-934-191015	10-19-00326	Grab	6.9	6.9	-	1.7	N/A	5.2	< 1.25	N/A	N/A	N/A	N/A	N/A
			12/5/2019	MFR SAMPLE	9120524-01	Grab	21.67	-	21.67	12.1	10.4	9.57	< 0.4	< 4	< 6.25	N/A	N/A	89.5
							19.734	22.830	19.687	6.38814	3.99	12.912326	0.5612941	5.47	8.62	6.769649	16.83615	136.3556
Manufacturer	**Install**	**Provisional System #**	**Sample Date**	**Sample #**	**Lab ID**	**Sample Type (3)**	**TN(mg/l) (6) (ALL SAMPLES)**	**TN(mg/l) (6) (County Only)**	**TN(mg/l) (6) (BIMONTHLY MFR ONLY)**	**TKN (mg/l)**	**Ammonia (as N)**	**NO3 (Nitrate as N)**	**NO2 (Nitrite as N)**	**BOD**	**TSS**	**PH**	**Temp**	**Alkalinity**
Fuji Clean		1	4/12/2018	003-881-180412	04-18-00349	Grab	21.45	21.45	-	16.7	17.57	2.3	2.45	N/A	N/A	N/A	N/A	N/A
	Install 2/22/17		4/12/2018	MFR SAMPLE	8041216-01	Grab	3.62	-	3.62	< 1	< 1	1.89	1.73	16.9	< 5	7.39	24.6	52
			6/6/2018	MFR SAMPLE	8060621-01	Grab	15.5	-	15.5	15.5	13.8	< 0.5	< 0.5	9.29	20	7.53	24.7	140
			8/9/2018	MFR SAMPLE	8081003-01	Grab	8.54	-	8.54	1.5	< 1	7.04	< 0.5	< 4	< 4.53	7.28	22.2	105
			10/8/2018	MFR SAMPLE	8100907-01	Grab	6.82	-	6.82	3.7	< 1	2.56	0.56	15.5	8.33	7.34	20.9	88
			10/25/2018	006881181025	10-18-00647	Grab	12.6	12.6	-	3.9	N/A	6.2	< 2.5	N/A	N/A	N/A	N/A	N/A
			12/7/2018	MFR SAMPLE	8120713-01	Grab	9.03	-	9.03	1.5	< 1	7.53	< 0.5	< 4	< 2.5	7.38	24.3	35.5
			2/8/2019	MFR SAMPLE	9020831-01	Grab	9.02	-	9.02	1.7	< 1	7.32	< 0.5	13.9	< 8.33	7.37	23.6	71
			3/19/2019	MFR SAMPLE	9031924-01	Grab	24.7	-	24.7	1.7	1.2	23	< 0.5	< 4	3	7.28	21	5.5
			5/15/2019	MFR SAMPLE	9051522-07	Grab	8.45	-	8.45	2.9	1.4	5.55	< 0.5	7.44	< 8.33	7.56	23.5	7.56
			6/6/2019	001881190606		Grab			-		N/A			N/A	N/A	N/A	N/A	N/A
			8/2/2019	MFR SAMPLE	9080226-03	Grab	3.91	-	3.91	1.5	< 1	2.41	< 0.3	< 4	< 12.5	7.55	22.4	64
			9/3/2019	MFR SAMPLE	9090335-03	Grab	10.78	-	10.78	1.1	< 1	9.68	< 0.4	4.87	< 10	7.37	24	43.5
			10/15/2019	001-934-191015	10-19-00320	Grab	Do Not Calculate	Do Not Calculate	-	57.9	N/A	< 5	< 2.5	N/A	N/A	N/A	N/A	N/A
			12/4/2019	MFR SAMPLE	9120415-02	Grab	31.87	-	31.87	26.7	20.2	3.32	1.85	7.5	< 8.33	8.09	22	122
	Lipski (7 Chestnut Pl,	2	4/12/2018	001-881-180412	04-18-00347	Grab	3.1	3.1	-	1.6	< 0.5	1.5	< 0.5	N/A	N/A	N/A	N/A	N/A
	Install 2/22/17		4/12/2018	MFR SAMPLE	8041213-01	Grab	4.1	-	4.1	2.7	1	1.4	< 0.05	< 4	< 5	7.86	24.7	58
			6/6/2018	MFR SAMPLE	8060618-01	Grab	6.58	-	6.58	4.3	2.2	1.58	0.7	< 4	< 5	7.83	24.4	125
			8/9/2018	MFR SAMPLE	8081005-01	Grab	3.62	-	3.62	< 1	< 1	3.62	< 0.5	4.01	< 6.25	7.36	22.6	45
			10/8/2018	MFR SAMPLE	8100908-01	Grab	6	-	6	2.5	< 1	3.5	< 0.5	12	< 10.4	7.32	26.2	76
			10/25/2018	005881181025	10-18-00646	Grab	8.25	8.25	-	1.6	N/A	5.4	< 1.25	N/A	N/A	N/A	N/A	N/A
			12/7/2018	MFR SAMPLE	8120714-01	Grab	26.59	-	26.59	22.9	20.8	1.86	1.83	8.97	5	7.78	24.1	185
			2/8/2019	MFR SAMPLE	9020822-01	Grab	9.46	-	9.46	1.9	< 1	5.01	2.54	< 4	< 8.33	7.23	21	64
			3/19/2019	MFR SAMPLE	9031926-01	Grab	9.34	-	9.34	6.3	4.2	1.86	1.18	< 4	4.5	7.44	21	195
			5/15/2019	MFR SAMPLE	9051522-05	Grab	7.1	-	7.1	7.1	1.4	< 0.5	< 0.5	18.2	42.7	7.39	23.2	52.5
			5/16/2019	002881190516	05-19-00704	Grab	15.8	15.8	-	1.3	N/A	14.5	< 1.25	N/A	N/A	N/A	N/A	N/A
			7/22/2019	MFR SAMPLE	9072226-03	Grab	6.65	-	6.65	3.3	< 1	3.35	< 0.3	11.8	< 6.25	7.34	20.8	100
			9/3/2019	MFR SAMPLE	9090335-05	Grab	7.46	-	7.46	3.3	< 1	4.16	< 0.4	9.84	< 10	7.71	24	82.5
			10/15/2019	005-934-191015	10-19-00324	Grab	1.9	1.9	-	1.9	N/A	< 2.5	< 1.25	N/A	N/A	N/A	N/A	N/A
			11/18/2019	MFR SAMPLE	9111815-03	Grab	5.05	-	5.05	1.1	< 1	3.76	0.19	< 4	< 8.33	7.6	21.3	33.5
		3	4/12/2018	MFR SAMPLE	8041214-01	Grab	22.3	-	22.3	4.1	1.6	18.2	< 0.05	< 4	< 5	7.41	24.6	45.5
	Install 2/28/17		6/6/2018	MFR SAMPLE	8060620-01	Grab	5.65	-	2.65	2.9	1.6	2.75	< 0.5	< 4	5	7.74	24.5	150
			8/9/2018	MFR SAMPLE	8081007-01	Grab	10.12	-	10.12	2.7	< 1	7.42	0.73	19.9	< 15.6	7.58	22.7	110
			9/13/2018	002881180906	09-18-00550	Grab	6.1	6.1	-	2.9	N/A	3.2	< 1.25	N/A	N/A	N/A	N/A	N/A
			10/8/2018	MFR SAMPLE	8100910-01	Grab	9.16	-	9.16	2.5	< 1	6.66	< 0.5	< 4	< 6.25	7.69	26.6	100
			12/7/2018	MFR SAMPLE	8120719-01	Grab	7.58	-	7.58	2.5	< 1	5.08	< 0.5	< 4	< 5	7.6	24.4	105
			2/8/2019	MFR SAMPLE	9020829-01	Grab	22.9	-	22.9	2.7	< 1	20.2	< 0.5	< 4	< 9.09	6.94	27.3	27.5
			3/19/2019	MFR SAMPLE	9031931-01	Grab	11.1	-	11.1	1.9	< 1	9.16	< 0.5	4.05	< 12.5	7.27	21	49.5
			5/15/2019	MFR SAMPLE	9051522-01	Grab	5.52	-	5.52	2.1	< 1	3.42	< 0.5	< 4	< 12.5	8.08	22.2	94
			5/30/2019	001881190606	05-19-01227	Grab	7.2	7.2	-	2.2	N/A	5	< 2.5	N/A	N/A	N/A	N/A	N/A
			7/23/2019	MFR SAMPLE	9072319-07	Grab	5.72	-	5.72	1.9	< 1	3.82	< 0.3	4.07	< 12.5	7.82	24.8	97.5
			9/3/2019	MFR SAMPLE	9090338-01	Grab	6.48	-	6.48	2.1	< 1	4.38	< 0.4	6.18	< 8.33	7.53	23.9	77.5
			11/20/2019	MFR SAMPLE	9112006-01	Grab	5.19	-	5.19	1.1	< 1	4.09	< 0.3	< 4	< 6.25	8.26	22.4	78
			12/10/2019	002-934-191210	12-19-00187	Grab	7.6	7.6	-	0.8	N/A	6.8	< 2.5	N/A	N/A	N/A	N/A	N/A
		4	4/12/2018	002-881-180412	04-18-00348	Grab	55.62	55.62	-	53.7	54.95	< 2.5	1.92	N/A	N/A	N/A	N/A	N/A
	Install 2/28/17		4/12/2018	MFR SAMPLE	8041215-01	Grab	7	-	7	6.5	2.4	0.5	< 0.5	14.9	23.5	7.76	24.6	69.5
			6/6/2018	MFR SAMPLE	8060619-01	Grab	77.7	-	77.7	77.7	79.8	< 0.5	< 0.5	9.6	10.2	7.91	24.4	505
			7/17/2018	MFR SAMPLE	8071706-01	Grab	6.08	-	6.08	4.9	1.6	1.18	< 0.5	< 4	8.67	7.57	24.3	135
			8/9/2018	MFR SAMPLE	8081004-01	Grab	8.42	-	8.42	3.7	1	4.72	< 0.5	4.53	< 13.9	7.36	22.4	115
			9/6/2018	006881180906	09-18-00207	Grab	10.75	10.75	-	3.6	N/A	5.9	< 1.25	N/A	N/A	N/A	N/A	N/A
			10/8/2018	MFR SAMPLE	8100912-01	Grab	5.7	-	5.7	2.5	< 1	3.2	< 0.5	4.76	< 6.25	7.34	26.1	110
			12/7/2018	MFR SAMPLE	8120722-01	Grab	24.6	-	24.6	2.3	< 1	21.2	1.19	< 4	< 6.25	6.95	24.3	32.5
			2/8/2019	MFR SAMPLE	9020821-01	Grab	30.3	-	30.3	6.7	6.2	5.24	18.4	19.3	< 12.5	6.66	19.8	29.5
			3/19/2019	MFR SAMPLE	9031925-01	Grab	60.24			58.7	52	< 0.5	1.54	16.4	6.5	7.33	21	310
			4/11/2019	MFR SAMPLE	9041115-01	Grab	63.4	-	63.4	59.9	58	0.7	2.84	15.8	< 25	7.87	22.6	290
			5/15/2019	MFR SAMPLE	9051522-06	Grab	18.3			1.5	< 1	16.8	< 0.5	< 4	< 25	7.14	23.5	15
			5/16/2019	001881190516	05-19-00703	Grab	17.9	17.9	-	2.2	N/A	15.7	< 1.25	N/A	N/A	N/A	N/A	N/A
			6/5/2019	MFR SAMPLE	9060528-04	Grab	5.56	-	5.56	2.3	< 1	3.25	< 0.5	< 4	< 8.33	8.1	24.6	71.5
			7/22/2019	MFR SAMPLE	9072226-04	Grab	9.33	-	9.33	3.5	1.8	3.4	2.44	8.9	< 4.17	7.19	20.7	64.8
			9/3/2019	MFR SAMPLE	9090335-04	Grab	10.41	-	10.41	5.9	2.6	3.96	0.55	16.6	10.4	7.51	24	88
			10/15/2019	004-934-191015	10-19-00323	Grab	Do Not Calculate	Do Not Calculate	-	4.5	N/A	< 5	< 2.5	N/A	N/A	N/A	N/A	N/A
			11/18/2019	MFR SAMPLE	9111815-04	Grab	6.69		6.69	3.5	2	2.59	0.6	5.66	< 12.5	7.8	21.3	89
		5	8/9/2018	MFR SAMPLE	8081008-01	Grab	6.67	-	6.67	3.5	< 1	3.17	< 0.5	7.07	< 8.33	7.64	22.7	125
	Install 1/30/18		9/6/2018	001881180906	09-18-00202	Grab	16.6	16.6	-	8.4	N/A	5.7	< 2.5	N/A	N/A	N/A	N/A	N/A
			10/8/2018	MFR SAMPLE	8100909-01	Grab	10.3	-	10.3	5.7	1	4.62	< 0.5	10.4	18.7	7.31	26.2	83
			12/7/2018	MFR SAMPLE	8120720-01	Grab	10.5	-	10.5	4.1	< 1	6.42	< 0.5	11.3	43.2	7.22	24.4	95
			2/8/2019	MFR SAMPLE	9020823-01	Grab	7.8	-	7.8	3.9	< 1	3.9	< 0.5	14	36.5	7.29	22.6	110
			3/19/2019	MFR SAMPLE	9031934-01	Grab	8.23	-	8.23	4.3	1	3.93	< 0.5	17.5	< 35.7	7.41	21	98
			5/9/2019	002881190509	05-19-00404	Grab	9.6	9.6	-	5.2	N/A	4.4	< 1	N/A	N/A	N/A	N/A	N/A
			5/14/2019	MFR SAMPLE	9051421-06	Grab	7.84	-	7.84	4.5	1	3.34	< 0.5	7.79	21.2	19	23.9	110
			7/24/2019	MFR SAMPLE	9072429-03	Grab	5.36	-	5.36	4.3	1.6	1.06	< 0.3	5.35	< 6.25	NR	NR	150
			9/3/2019	MFR SAMPLE	9090338-06	Grab	5.5	-	5.5	5.5	1.4	< 0.4	< 0.4	8.45	< 8.33	7.45	23.7	150
			11/13/2019	001-934-191113	11-19-00210	Grab	10.4	10.4	-	4.7	N/A	5.7	< 2.5	N/A	N/A	N/A	N/A	N/A
			11/19/2019	MFR SAMPLE	9111916-04	Grab	7.25	-	7.25	2.9	< 1	4.01	0.34	12	< 8.33	7.71	21.8	97.5
		6	10/8/2018	MFR SAMPLE	8100911-01	Grab	7.19	-	7.19	2.5	< 1	4.69	< 0.5	7.3	< 16.7	6.99	26	75
	Install 3/1/18		10/10/2018	004881181010	10-18-00245	Grab	11.55	11.55	-	5.2	N/A	5.1	< 1.25	N/A	N/A	N/A	N/A	N/A
			12/7/2018	MFR SAMPLE	8120717-01	Grab	15.2	-	15.2	2.1	< 1	13.1	< 0.5	< 4	12.7	6.72	24.4	14
			2/8/2019	MFR SAMPLE	9020825-01	Grab	5.64	-	5.64	1.9	< 1	3.74	< 0.5	< 4	< 12.5	6.85	22.6	39
			3/19/2019	MFR SAMPLE	9031932-01	Grab	5.84	-	5.84	2.9	< 1	2.94	< 0.5	4.02	< 25	7.26	21	51
			5/9/2019	006881190509	05-19-00408	Grab	8.6	8.6	-	2.8	N/A	5.8	< 0.1	N/A	N/A	N/A	N/A	N/A
			5/14/2019	MFR SAMPLE	9051421-08	Grab	8.95	-	8.95	2.3	< 1	6.65	< 0.5	< 4	< 8.33	7.36	23.8	37
			7/24/2019	MFR SAMPLE	9072429-06	Grab	7.52	-	7.52	5.3	1.8	2.22	< 0.3	9.99	13	NR	NR	55
			9/5/2019	MFR SAMPLE	9090512-05	Grab	5.94	-	5.94	3.3	1	2.64	< 0.5	< 4	< 12.5	7.61	21.3	53.5
			10/1/2019	001-934-191001	10-19-00037	Grab	10.3	10.3	-	3.8	N/A	6.5	< 2.5	N/A	N/A	N/A	N/A	N/A
			11/20/2019	MFR SAMPLE	9112006-04	Grab	5.12	-	5.12	1.9	< 1	3.22	< 0.3	< 4	< 15.6	7.84	23.1	42.5
		7	2/19/2019	MFR SAMPLE	7079932001	Grab	37.05			0.6	1.5	36.3	0.15	4.7	12	6.3	23.3	4.3

Install 3/20/18		3/19/2019	MFR SAMPLE	9031938-01	Grab	32.3	-	32.3	3.9	3	28.4	< 0.5	< 4	< 16.7	7.32	21	5
		5/14/2019	MFR SAMPLE	9051421-02	Grab	34.8	-	34.8	5.7	4.8	29.1	< 0.5	10	27	6.1	24.2	<5
		5/30/2019	003881190530	05-19-01229	Grab	28	28		4	N/A	24	< 2.5	N/A	N/A	N/A	N/A	N/A
		6/5/2019	MFR SAMPLE	9060528-02	Grab	25.4			2.9	< 1	22.4	< 0.5	< 4	< 25	7.1	24.3	18
		7/23/2019	MFR SAMPLE	9072319-03	Grab	7.62	-	7.62	3.3	< 1	4.32	< 0.3	6.85	< 16.7	7.69	24.8	87
		9/3/2019	MFR SAMPLE	9090338-03	Grab	6.72	-	6.72	4.3	< 1	2.42	< 0.4	7.56	< 12.5	7.5	23.9	95
		10/2/2019	001-934-191002	10-19-00093	Grab	2.9	2.9	-	2.9	N/A	< 5	< 2.5	N/A	N/A	N/A	N/A	N/A
		11/21/2019	MFR SAMPLE	9112112-03	Grab	10.8	-	10.8	< 1	< 1	10.8	< 0.4	5.46	< 12.5	7.91	22.8	43
	8	2/13/2019	003881190213		Grab	41.01	41.01	-	1.812	N/A	39.2	< 1.25	N/A	N/A	N/A	N/A	N/A
Install 5/1/18		2/19/2019	MFR SAMPLE	7079935001	Grab	54.355			< 0.1	0.17	54.3	0.055	< 4	10	7.2	23.3	36.5
		3/19/2019	MFR SAMPLE		Grab	30.8	-	30.8	1.7	< 1	29.1	< 0.5	< 4	< 12.5	7.29	21	31
		5/22/2019	MFR SAMPLE	9052206-02	Grab	19.5	-	19.5	2.1	< 1	17.4	< 0.5	16.3	< 25	7.77	24.1	81
		6/5/2019	MFR SAMPLE	9060528-01	Grab	23.9			1.5	< 1	22.4	< 0.5	< 4	< 12.5	7.69	23.7	63
		7/23/2019	MFR SAMPLE	9072319-02	Grab	9.67	-	9.67	2.7	< 1	6.97	< 0.3	9.06	< 12.5	7.76	24.6	136
		9/3/2019	MFR SAMPLE	9090338-04	Grab	12.8	-	12.8	2.1	< 1	10.7	< 0.4	7.75	8.75	7.98	23.7	154
		10/2/119	002-934-191002	10-19-00094	Grab	15.3	15.3	-	1.9	N/A	13.4	< 2.5	N/A	N/A	N/A	N/A	N/A
		12/4/2019	MFR SAMPLE	9120415-01	Grab	10.6	-	10.6	1.1	< 1	9.5	< 0.4	5.05	< 8.33	8.12	22	112
	9	10/8/2018	MFR SAMPLE	8100905-01	Grab	8.05	-	8.05	2.9	< 1	5.15	< 0.5	7.82	< 16.7	7.47	20.9	68
		12/7/2018	MFR SAMPLE	8120718-01	Grab	10.2	-	10.2	4.7	< 1	5.49	< 0.5	4.36	32	7.24	24.2	100
		2/8/2019	MFR SAMPLE	9020824-01	Grab	11.5	-	11.5	2.3	< 1	9.18	< 0.5	< 4	19.3	7.03	22.6	38
		2/13/2019	002881190213		Grab	11.79	11.79	-	2.212	N/A	9.58	< 1.25	N/A	N/A	N/A	N/A	N/A
		3/19/2019	MFR SAMPLE	9031933-01	Grab	7.28	-	7.28	1.7	< 1	5.58	< 0.5	17	< 12.5	7.35	21	62.5
		5/14/2019	MFR SAMPLE	9051421-07	Grab	15.8	-	15.8	9.9	6	4.56	1.32	11.9	28.5	7.86	23.8	95.5
		7/24/2019	MFR SAMPLE	9072429-04	Grab	6.97	-	6.97	2.5	< 1	4.47	< 0.3	4.19	8.75	NR	NR	60
		9/3/2019	MFR SAMPLE	9090338-05	Grab	3.7	-	3.7	3.7	< 1	< 0.4	< 0.4	12.2	11.7	7.29	23.7	95
		10/1/2019	006-934-191001	10-19-00041	Grab	11.7	11.7	-	3.6	N/A	8.1	< 2.5	N/A	N/A	N/A	N/A	N/A
		11/20/2019	MFR SAMPLE	9112006-02	Grab	15.1	-	15.1	2.1	< 1	13	< 0.3	< 4	< 8.33	7.95	22.5	47.5
	10	2/8/2019	MFR SAMPLE	9020827-01	Grab	17.1	-	17.1	4.1	< 1	3.5	9.46	16	< 16.7	6	21.2	<5
Install 8/1/18		2/28/2019	007881190228		Grab	11.774	11.774	-	2.634	N/A	7.12	2.02	N/A	N/A	N/A	N/A	N/A
		3/19/2019	MFR SAMPLE	9031929-01	Grab	8.33	-	8.33	4.5	< 1	0.36	3.2	9.93	14	7.17	21	43.5
		5/15/2019	MFR SAMPLE	9051522-04	Grab	6.96	-	6.96	2.7	< 1	4.26	< 0.5	< 4	17.5	7.42	22.6	32.5
		7/18/2019	005856190718	07-19-01103	Grab	15.1	15.1	-	9.1	N/A	6	< 2.5	N/A	N/A	N/A	N/A	N/A
		7/23/2019	MFR SAMPLE	9072319-05	Grab	7.51	-	7.51	4.5	< 1	3.01	< 0.3	19.3	51	7.67	24.9	57.5
		9/3/2019	MFR SAMPLE	9090335-06	Grab	4.81	-	4.81	2.5	< 1	2.31	< 0.4	13.3	< 16.7	7.6	24	56.5
		11/19/2019	MFR SAMPLE	9111916-05	Grab	5.4	-	5.4	3.1	3	1.93	0.37	34	< 8.33	7.49	21.6	53.5
	11	10/9/2018	MFR SAMPLE	8100918-01	Grab	7.8	-	7.8	2.3	< 1	5.5	< 0.5	5.77	< 12.5	7.32	26.3	59.5
Install 8/27/18		12/7/2018	MFR SAMPLE	8120721-01	Grab	15.4	-	15.4	2.7	< 1	12.7	< 0.5	< 4	< 12.5	7.11	24.6	23
		2/8/2019	MFR SAMPLE	9020830-01	Grab	10.7	-	10.7	1.5	< 1	9.2	< 0.5	4.61	< 8.33	6.79	22.7	21.5
		2/20/2019	003881190220		Grab	12.975	12.975	-	1.675	N/A	11.3	< 2.5	N/A	N/A	N/A	N/A	N/A
		3/19/2019	MFR SAMPLE	9031923-01	Grab	12.2	-	12.2	1.3	< 1	10.9	< 0.5	< 4	3.5	7.29	21	19.5
		5/13/2019	MFR SAMPLE	9051313-01	Grab	5.26	-	5.26	1.3	< 1	3.96	< 0.5	< 4	3	7.51	23.6	56
		7/11/2019	005934190711	07-19-00629	Grab	4.9	4.9	-	4.9	N/A	< 1	< 0.5	N/A	N/A	N/A	N/A	N/A
		7/22/2019	MFR SAMPLE	9072226-02	Grab	7.06	-	7.06	3.7	< 1	3.36	< 0.3	28.8	< 8.33	7.38	21	75
		9/3/2019	MFR SAMPLE	9090335-02	Grab	6.28	-	6.28	2.5	< 1	3.78	< 0.4	6.53	< 10	7.65	24	64
		11/18/2019	MFR SAMPLE	9111815-02	Grab	7.88	-	7.88	2.1	< 1	5.62	0.16	4.29	< 8.33	7.52	21.4	52.5
	12	2/8/2019	MFR SAMPLE	9020826-01	Grab	13	-	13	3.3	< 1	9.72	< 0.5	8.08	12.3	6.7	22.5	23
Install 9/18/18		2/28/2019	006881190228		Grab	18.088	18.088	-	5.088	N/A	13	< 2.5	N/A	N/A	N/A	N/A	N/A
		3/19/2019	MFR SAMPLE	9031930-01	Grab	16.6	-	16.6	3.7	1.2	12.9	< 0.5	4.83	20	7.38	21	12.5
		5/15/2019	MFR SAMPLE	9051522-03	Grab	12.7	-	12.7	5.7	1.2	7	< 0.5	5.9	26	7.29	20.5	28
		7/18/2019	006856190718	07-19-01104	Grab	17.6	17.6	-	7.6	N/A	10	< 2.5	N/A	N/A	N/A	N/A	N/A
		7/23/2019	MFR SAMPLE	9072319-04	Grab	11.1	-	11.1	6.9	1.4	4.21	< 0.3	26	23.5	7.53	24.9	49
		9/3/2019	MFR SAMPLE	9090335-07	Grab	14.37	-	14.37	6.5	< 1	7.38	0.49	26.1	23	7.05	23.9	43.5
		11/19/2019	MFR SAMPLE	9111916-06	Grab	11.26	-	11.26	2.7	3.4	8.56	< 0.3	13	30	7.57	21.7	37.5
	13	2/13/2019	004881190213		Grab	31.596	31.596	-	6.296	N/A	25.3	< 1.25	N/A	N/A	N/A	N/A	N/A
Install 9/21/18		2/19/2019	MFR SAMPLE	7079933001	Grab	55.56	-	-	7	2.5	48.2	0.36	13.8	20	5.5	23.3	2.1
		3/19/2019	MFR SAMPLE	9031939-01	Grab	27	-	27	3.1	< 1	23.3	0.58	17.2	< 25	7.4	21	6.5
		5/14/2019	MFR SAMPLE	9051421-01	Grab	18.1	-	18.1	1.9	< 1	16.2	< 0.5	< 4	16.5	7.33	23.8	44.5
		8/2/2019	MFR SAMPLE	9080226-01	Grab	6.58	-	6.58	4.5	< 1	2.08	< 0.3	5.7	< 12.5	7.29	22.2	90.5
		9/3/2019	MFR SAMPLE	9090338-02	Grab	12.55	-	12.55	4.9	1.4	7.65	< 0.4	10.6	19	7.19	23.9	51
		10/2/2019	003-934-191002	10-19-00095	Grab	2.2	2.2	-	2.2	N/A	< 5	< 2.5	N/A	N/A	N/A	N/A	N/A
		11/21/2019	MFR SAMPLE	9112112-02	Grab	1.43	-	1.43	< 1	< 1	1.43	< 0.4	< 4	< 6.25	8.19	22.8	86
	14	3/19/2019	MFR SAMPLE	9031922-01	Grab	11.8	-	11.8	8.7	7.2	1.93	1.2	4.14	12.6	7.37	21	87.5
Install10/22/18		5/16/2019	006881190516	05-19-00708	Grab	31.4	31.4	-	31.4	N/A	< 5	< 2.5	N/A	N/A	N/A	N/A	N/A
		5/22/2019	MFR SAMPLE	9052206-04	Grab	6.53	-	6.53	4.7	2.2	0.57	1.26	8.73	< 12.5	7.76	24.1	116
		7/22/2019	MFR SAMPLE	9072226-01	Grab	5.21	-	5.21	2.7	1	2.17	0.34	7.94	< 6.25	7.24	20.7	145
		9/3/2019	MFR SAMPLE	9090335-01	Grab	9.51	-	9.51	7.1	4.6	2.41	< 0.4	5.51	< 10	7.73	24	114
		11/6/2019	003-934-191106	11-19-00121	Grab	7.1	7.1	-	4.9	N/A	2.2	< 0.5	N/A	N/A	N/A	N/A	N/A
		11/18/2019	MFR SAMPLE	9111815-01	Grab	11.23	-	11.23	6.5	5	4.01	0.72	7.13	< 12.5	7.68	21.5	84
	15	5/22/2019	MFR SAMPLE	9052206-01	Grab	31.24	-		26.1	22.4	1.44	3.7	16.2	< 25	7.56	24.3	106
Install 10/25/18		6/5/2019	MFR SAMPLE	9060528-03	Grab	47.62	-		44.7	41	0.57	2.35	< 4	< 12.5	7.89	24.5	185
		7/23/2019	MFR SAMPLE	9072319-01	Grab	14.8	-	14.8	5.5	1.4	9.3	< 0.3	8.53	< 25	7.16	24.4	16.5
		9/18/2019	MFR SAMPLE	9091815-02	Grab	8.44	-	8.44	4.7	1	3.74	< 0.4	7.57	24	7.27	22.1	50
		10/2/2019	004-934-191002	10-19-00096	Grab	6.4	6.4	-	6.4	N/A	< 10	< 5	N/A	N/A	N/A	N/A	N/A
		11/21/2019	MFR SAMPLE	9112112-01	Grab	16.3	-	16.3	5.5	< 1	10.8	< 0.4	4.93	< 8.33	7.5	22.7	28
	16	5/9/2019	006881190509	05-19-00407	Grab	15.09	15.09	-	2.4	N/A	11.59	1.1	N/A	N/A	N/A	N/A	N/A
Install 10/26/18		5/22/2019	MFR SAMPLE	9052206-03	Grab	5.92	-	5.92	2.1	< 1	< 0.5	3.82	< 4	< 25	7.68	24.2	50
		7/24/2019	MFR SAMPLE	9072429-05	Grab	9.61	-	9.61	1.7	< 1	7.91	< 0.3	< 4	< 6.25	NR	NR	45
		9/5/2019	MFR SAMPLE	9090512-04	Grab	6.24	-	6.24	2.1	< 1	4.14	< 0.5	< 4	< 8.33	7.54	20.2	40.5
		10/1/2019	003-934-191001	10-19-00038	Grab	9.3	9.3	-	1.5	N/A	7.8	< 2.5	N/A	N/A	N/A	N/A	N/A
		11/20/2019	MFR SAMPLE	9112006-03	Grab	13	-	13	2.3	< 1	10.7	< 0.3	4.24	< 12.5	7.92	22.8	12.5
	17	3/19/2019	MFR SAMPLE	9031936-01	Grab	7.24	-	7.24	1.3	< 1	5.94	< 0.5	< 4	< 8.33	7.36	21	56
Install 10/30/18		4/25/2019	005881190425	ZP00746	Grab	7	7	-	0.6	N/A	6.4	< 1.25	N/A	N/A	N/A	N/A	N/A
		5/14/2019	MFR SAMPLE	9051421-04	Grab	7.63	-	7.63	< 1	< 1	7.63	< 0.5	< 4	< 8.33	7.85	24.3	42
		7/24/2019	MFR SAMPLE	9072429-01	Grab	4.41	-	4.41	< 1	< 1	4.41	< 0.3	< 4	< 2.5	NR	NR	45
		9/5/2019	MFR SAMPLE	9090512-02	Grab	14.6	-	14.6	1.3	< 1	13.3	< 0.5	< 4	< 5	7.36	21	54.5
		11/13/2019	008-934-191113	11-19-00217	Grab	12.6	12.6	-	0.6	N/A	12	< 0.5	N/A	N/A	N/A	N/A	N/A
		11/19/2019	MFR SAMPLE	9111916-03	Grab	13.1	-	13.1	< 1	< 1	13.1	< 0.1	< 4	< 10	7.79	21.9	56.5
	18	4/25/2019	007881190425	ZP00748	Grab	13.7	13.7	-	4.7	N/A	9	< 2.5	N/A	N/A	N/A	N/A	N/A
Install 11/14/18		5/14/2019	MFR SAMPLE	9051421-05	Grab	16.2	-	16.2	3.3	1.2	12.9	< 0.5	12.9	29	7.43	23.4	22.5
		7/24/2019	MFR SAMPLE	9072429-02	Grab	8.51	-	8.51	3.5	< 1	4.09	0.92	11.4	17.3	NR	NR	58
		9/3/2019	MFR SAMPLE	9090338-07	Grab	9.32	-	9.32	6.3	1.2	3.02	< 0.4	16.6	20.8	7.14	23.7	85
		11/13/2019	007-934-191113	11-19-00216	Grab	9.3	9.3	-	3.8	N/A	5.5	< 2.5	N/A	N/A	N/A	N/A	N/A
		11/19/2019	MFR SAMPLE	9111916-02	Grab	7.02	-	7.02	3.3	1	3.31	0.41	11.2	< 10	7.47	21.9	57.5
	19	4/25/2019	001881190425	ZP00742	Grab	16.18	16.18	-	8	N/A	< 5	8.18	N/A	N/A	N/A	N/A	N/A
Install 11/27/18		5/14/2019	MFR SAMPLE	9051421-03	Grab	17	-	17	3.5	< 1	13.5	< 0.5	5.92	< 16.7	7.65	24.1	86

		8/2/2019	MFR SAMPLE	9080226-02	Grab	6.66	-	6.66	5.5	< 1	1.16	< 0.3	9.67	16.5	7.62	22.4	196
		9/5/2019	MFR SAMPLE	9090512-01	Grab	9.18	-	9.18	2.7	< 1	6.48	< 0.5	4.77	< 6.25	7.7	20	145
		11/12/2019	002-934-191112	11-19-00164	Grab	19.9	19.9	-	4.5	N/A	15.4	< 5	N/A	N/A	N/A	N/A	N/A
		11/19/2019	MFR SAMPLE	9111916-01	Grab	12.9	-	12.9	2.5	< 1	10.4	< 0.1	10.1	11	7.69	21.9	81.5
	20	4/16/2019	003881190416	ZP00466	Grab	19.5	19.5		7.4	N/A	< 5	12.1	N/A	N/A	N/A	N/A	N/A
	Install 12/18/18	5/15/2019	MFR SAMPLE	9051522-02	Grab	15.5	-	15.5	1.7	< 1	13.8	< 0.5	< 4	< 8.33	7.93	22.4	70
		7/23/2019	MFR SAMPLE	9072319-06	Grab	5.22	-	5.22	3.3	< 1	1.92	< 0.3	4.97	< 10	7.66	24.9	72.5
		9/3/2019	MFR SAMPLE	9090335-08	Grab	7.11	-	7.11	3.9	2.4	2.17	1.04	16.3	11.2	7.39	23.9	67.5
		10/16/2019	004-934-191016	10-19-00385	Grab	Do Not Calculate	Do Not Calculate	-	17.5	N/A	< 5	< 2.5	N/A	N/A	N/A	N/A	N/A
		11/20/2019	MFR SAMPLE	9112006-05	Grab	6.5	-	6.5	6.5	< 1	< 0.3	< 0.3	35.7	34.4	7.76	22.9	67.5
						13.43	14.27	11.40	6.68	3.86	5.15	0.93	7.67583	8.86	7.506	23.15	81.1

Manufacturer	Install	Provisional System #	Sample Date	Sample #	Lab ID	Sample Type (3)	TN(mg/l) (6) (ALL SAMPLES)	TN(mg/l) (6) (County Only)	TN(mg/l) (6) (BIMONTHLY MFR ONLY)	TKN (mg/l)	Ammonia (as N)	NO3 (Nitrate as N)	NO2 (Nitrite as N)	BOD	TSS	PH	Temp	Alkalinity
BioMicrobics SeptiTech STAAR		1	9/25/2018	MFR SAMPLE	8092510-01	Grab	16.6	-	16.6	1.9	1.6	14.7	< 0.5	< 4	< 12.5	NR	NR	30
	Install 10/16/17		11/29/2018	MFR SAMPLE	8112919-02	Grab	20.3	-	20.3	6.3	NR	14	< 0.5	< 4	< 12.5	NR	NR	NR
			1/24/2019	MFR SAMPLE	9012402-02	Grab	17.2	-	17.2	2.3	< 2	14.9	< 0.5	10.1	10.8	NR	NR	12.5
			2/20/2019	004881190220		Grab	15.06	15.06		2.26	N/A	12.8	< 2.5	N/A	N/A	N/A	N/A	N/A
			4/18/2019	MFR SAMPLE	9041836-01	Grab	15.3	-	15.3	2.3	< 1	13	< 0.5	NR	< 16.7	6.69	23.3	NR
			6/10/2019	MFR SAMPLE	9061020-02	Grab	17.3	-	17.3	5.46	3	11.8	< 0.5	NR	< 8.33	6.85	23.3	NR
			7/11/2019	006934190711	07-19-00630	Grab	18.4	18.4		2.965	N/A	15.4	< 0.5	N/A	N/A	N/A	N/A	N/A
			8/6/2019	MFR SAMPLE	9080623-01	Grab	13.3	-	13.3	1.52	< 1	11.8	< 0.3	< 4	< 4.17	N/A	N/A	16
			10/26/2019	MFR SAMPLE	9102802-01	Grab	14.36	-	14.36	2.9	2.4	11.1	0.36	7.65	6	7.49	22.3	30
			11/6/2019	001-934-191106	11-19-00119	Grab	15.6	15.6		1.2	N/A	14.4	< 0.5	N/A	N/A	N/A	N/A	N/A
		2	9/25/2018	MFR SAMPLE	2092509-01	Grab	14.8		14.8	3.3	< 1	11.5	< 0.5	6.6	< 12.5	NR	NR	40
	Install 11/15/17		11/29/2018	MFR SAMPLE	8112919-01	Grab	18.5	-	18.5	4.1	NR	7.86	6.54	8.11	18	NR	NR	NR
			1/24/2019	MFR SAMPLE	9012402-01	Grab	22.27	-	22.27	9.1	7.6	11.3	1.87	12.8	< 8.33	NR	NR	75
			2/20/2019	002881190220		Grab	22.556	22.556		3.256	N/A	19.3	< 2.5	N/A	N/A	N/A	N/A	N/A
			4/18/2019	MFR SAMPLE	9041836-02	Grab	17	-	17	6.9	5.6	10.1	< 0.5	NR	< 25	7.04	23.4	NR
			6/10/2019	MFR SAMPLE	9061020-01	Grab	13.3	-	13.3	1.82	1.2	11.5	< 0.5	NR	< 12.5	6.75	20.4	NR
			7/18/2019	007856190718	07-19-01105	Grab	28.2	28.2		5.5	N/A	22.7	< 2.5	N/A	N/A	N/A	N/A	N/A
			8/6/2019	MFR SAMPLE	9080623-02	Grab	20	-	20	2.48	1.2	17.5	< 0.3	7.85	< 5	N/A	N/A	10.5
			10/16/2019	001-934-191016	10-19-00382	Grab	Do Not Calculate	Do Not Calculate		117.7	N/A	< 5	< 2.5	N/A	N/A	N/A	N/A	N/A
		3	8/6/2019	MFR SAMPLE	9080624-01	Grab	10.6	-	10.6	< 2.55	< 2	10.6	< 0.3	< 4	6.67	7.39	22.6	29
	Install 6/18/19		10/26/2019	MFR SAMPLE	9102802-02	Grab	13.49	-	13.49	4.45	2.8	8.63	0.41	11.9	9	7.57	22.1	56
			11/6/2019	001-934-191106	11-19-00046	Grab	15.7	15.7	-	3	N/A	12.7	< 2.5	N/A	N/A	N/A	N/A	N/A
		4	10/30/2019	MFR SAMPLE	9103013-02	Grab	17.7	-	17.7	2.1	< 1.47	15.6	< 0.4	< 4	3	7.79	22.8	70
	Install 5/30/19		12/9/2019	006-934-191209	12-19-00140	Grab	16.7	16.7		3.2	N/A	13.5	< 1.25	N/A	N/A	N/A	N/A	N/A
	Install 8/15/19	5	10/30/2019	MFR SAMPLE	9103013-01	Grab	12.78	-	12.78	2.38	1.4	10.4	< 0.4	12.5	7	7.53	22.7	86
	Install 10/8/18	6	10/26/2019	MFR SAMPLE	9102802-03	Grab	6.59	-	6.59	2.92	1.4	3.06	0.61	8.11	11	7.71	22	53
	Install 8/20/19	7	10/30/2019	MFR SAMPLE	9103013-05	Grab	8.28	-	8.28	1.5	1	6.78	< 0.4	< 4	21	8.05	22.2	81.5
	Install 8/28/19	8	10/28/2019	MFR SAMPLE	9102812-01	Grab	6.02	-	6.02	4.08	1.8	1.94	< 0.5	11.6	7	7.73	22.3	76
	Install 9/13/19	9	10/30/2019	MFR SAMPLE	9103013-06	Grab	13.22	-	13.22	2.3	1.4	2.68	8.24	4.98	19	7.19	22.2	21.5
	Install 5/2/19	10	10/30/2019	MFR SAMPLE	9103013-03	Grab	13.2	-	13.2	1.5	< 1.27	11.7	< 0.4	< 4	5	7.65	23.1	28
	Install 7/30/19	11	11/4/2019	MFR SAMPLE	9110408-04	Grab	6.47	-	6.47	1.9	< 1	4.57	< 0.4	6.1	4.5	8.12	22.7	106
			12/10/2019	007-934-191210	12-19-00192	Grab	13.7	13.7		4.4	N/A	9.3	< 2.5	N/A	N/A	N/A	N/A	N/A
							16.061	18.240	15.144									

Manufacturer	Install	Provisional System #	Sample Date	Field #	Lab ID	Sample Type (3)	TN(mg/l) (6) (ALL SAMPLES)	TN(mg/l) (6) (County Only)	TN(mg/l) (6) (BIMONTHLY MFR ONLY)	TKN (mg/l)	Ammonia (as N)	NO3 (Nitrate as N)	NO2 (Nitrite as N)	BOD	TSS	PH	Temp	Alkalinity
Orenco AdvanTex AX20		1	9/20/2019	MFR SAMPLE	9092009-05	Grab	7.82		7.82	4.9	3	2.52	0.4	5.46	< 8.33	7.27	20.9	114
Provisionally-approved 9/2019	Install 1/13/16		10/4/2019	MFR SAMPLE	9100415-01	Grab	6.92			2.9	2.4	4.02	< 0.5	< 4	3.33	6.69	22	73.5
			11/4/2019	MFR SAMPLE	9110425-01	Grab	7.65		7.65	5.5	2	1.68	0.47	4.2	10.5	7.42	22.9	99
		2	9/20/2019	MFR SAMPLE	9091333-02	Grab	13.53		13.53	4.7	3.8	8.83	< 0.3	6.05	< 12.5	7.21	20.7	63
	Install 11/14/2017		10/1/2019	MFR SAMPLE	9100121-02	Grab	14.4			3.9	3.8	10.5	< 0.5	< 4	< 10	7.3	21.3	71
			11/1/2019	MFR SAMPLE	9110117-01	Grab	13.9		13.9	3.7	4	10.2	< 0.4	7.8	8	7.18	22.2	59
			11/12/2019	001-934-191112	11-19-00163	Grab	11.4	11.4		2.6	N/A	9.8	< 1.25	N/A	N/A	N/A	N/A	N/A
		3	9/20/2019	MFR SAMPLE	9092009-04	Grab	17		17	< 1	2.2	17	< 0.4	< 4	< 5	5.9	22.3	11
	Install 7/12/2017		10/4/2019	MFR SAMPLE	9100415-02	Grab	21.9			3.1	2.2	18.8	< 0.5	< 4	< 3.33	5.84	22	<5
			11/4/2019	MFR SAMPLE	9110425-02	Grab	11.71		11.71	2.9	1.6	8.81	< 0.4	< 4	< 1.25	6.84	23.2	10
	MA	4	8/21/2019	MFR SAMPLE	19116418-02	Grab	21.46			2.3	0.82	19	0.16	< 2	4.1	6.3	N/A	43
	Install 8/11/05		11/5/2019	MFR SAMPLE	19117574-07	Grab	15.41		15.41	1.9	0.42	13	0.51	< 2	6	6.4	N/A	41
			12/10/2019	MFR SAMPLE	19117860-03	Grab	13.43		13.43	1.3	< 0.25	12	0.13	N/A	N/A	N/A	N/A	N/A
	MA	5	8/21/2019	MFR SAMPLE	19116418-03	Grab	13.2			3.8	1.7	9.2	0.2	6.1	8.6	7.1	N/A	75
	Install 6/3/09		11/5/2019	MFR SAMPLE	19117574-05	Grab	14.91		14.91	3.5	1.9	11	0.41	7.3	4	7.1	N/A	63
			12/10/2019	MFR SAMPLE	19117860-05	Grab	16.7		16.7	2.7	1.4	12	2	N/A	N/A	N/A	N/A	N/A
	MA	6	11/6/2019	MFR SAMPLE	19117574-09	Grab	12.41		12.41	2.4	0.68	9.6	0.41	5.7	8	6.9	N/A	27
	Install 12/7/09		12/9/2019	MFR SAMPLE	19117860-02	Grab	19.34		19.34	4.2	2.6	15	0.14	N/A	N/A	N/A	N/A	N/A
	MA	7	8/21/2019	MFR SAMPLE	19116418-01	Grab	16.49			1.4	< 0.25	15	0.09	< 2	2.8	6.4	N/A	32
	Install 11/21/16		11/5/2019	MFR SAMPLE	19117574-08	Grab	4.53		4.53	0.59	< 0.25	3.7	0.24	< 2	< 1.5	7.1	N/A	71
			12/9/2019	MFR SAMPLE	19117860-01	Grab	2.67		2.67	0.65	< 0.25	1.9	0.12	N/A	N/A	N/A	N/A	N/A
	MA	8	8/21/2019	MFR SAMPLE	19116418-04	Grab	10.68			2.5	0.38	7.8	0.38	2.5	7	7.1	N/A	41
	Install 6/3/09		11/5/2019	MFR SAMPLE	19117574-06	Grab	10.87		10.87	1.3	0.32	9.2	0.37	< 2	2	7	N/A	32
			12/10/2019	MFR SAMPLE	19117860-06	Grab	14.36		14.36	1.2	0.51	13	0.16	N/A	N/A	N/A	N/A	N/A
	MA	9	8/21/2019	MFR SAMPLE	19116418-06	Grab	6.22			0.89	< 0.25	5.2	0.13	< 2	5.2	7.6	N/A	56
	Install 2/27/09		11/5/2019	MFR SAMPLE	19117574-02	Grab	3.33		3.33	0.53	< 0.25	2.8	0.24	< 2	2	7.7	N/A	43
			12/10/2019	MFR SAMPLE	19117860-08	Grab	3.946		3.946	0.56	< 0.25	3.3	0.086	N/A	N/A	N/A	N/A	N/A
	MA	10	8/21/2019	MFR SAMPLE	19116418-08	Grab	10.655			1.1	< 0.25	9.5	0.055	< 2	5	6.8	N/A	49
	Install 7/20/10		11/5/2019	MFR SAMPLE	19117574-01	Grab	4.96		4.96	0.76	< 0.25	4.2	< 0.05	< 2	2	7	N/A	66
			12/10/2019	MFR SAMPLE	19117860-09	Grab	4.02		4.02	0.32	< 0.25	3.7	< 0.05	N/A	N/A	N/A	N/A	N/A
	MA	11	8/21/2019	MFR SAMPLE	19116418-05	Grab	22.3			2.8	1.2	19	0.5	< 2	7	6.6	N/A	31
	Install 2/20/06		11/5/2019	MFR SAMPLE	19117574-03	Grab	4.76		4.76	0.93	0.25	3.6	0.23	< 2	4	7.3	N/A	47
			12/10/2019	MFR SAMPLE	19117860-07	Grab	3.8		3.8	0.8	< 0.25	3	< 0.05	N/A	N/A	N/A	N/A	N/A
	MA	12	11/5/2019	MFR SAMPLE	19117574-04	Grab	9.13		9.13	1.4	< 0.25	7	0.73	< 2	2	7.3	N/A	100
	Install 5/29/18		12/10/2019	MFR SAMPLE	19117860-04	Grab	8.39		8.39	1.6	< 0.25	5.9	0.89	N/A	N/A	N/A	N/A	N/A
								11.4	9.532									

Manufacturer	Install	Provisional System #	Sample Date	Sample #	Lab ID	Sample Type (3)	TN(mg/l) (6) (ALL SAMPLES)	TN(mg/l) (6) (County Only)	TN(mg/l) (6) (BIMONTHLY MFR ONLY)	TKN (mg/l)	Ammonia (as N)	NO3 (Nitrate as N)	NO2 (Nitrite as N)	BOD	TSS	PH	Temp	Alkalinity
EcoFlo Coco Filter		1	10/8/2019	MFR SAMPLE	1910056-003A-F	Grab	152.09			150	76	2.09	< 0.05	N/A	210	7.26	18.9	88.9
Provisionally-approved 9/2019	Install 11/10/2016		10/8/2019	MFR SAMPLE	1910056-002A-F	Grab	81.8			52.8	40.4	29	< 0.05	N/A	41	6.17	20	178
			10/8/2019	MFR SAMPLE	1910056-001A-F	Grab	55		55	55	47.2	< 0.05	< 0.05	N/A	5.8	6.65	19.9	253
			11/6/2019	004-934-191106	11-19-00122	Grab	41.09			6.9	N/A	31.7	2.49	N/A	N/A	N/A	N/A	N/A
			11/6/2019	005-934-191106	11-19-00123	Grab	11	11		8	N/A	1.8	1.2	N/A	N/A	N/A	N/A	N/A
			12/6/2019	MFR SAMPLE	19-001A, C-E / 70114	Grab	16.74		16.74	14.9	11.3	1.84	< 0.05	29.7	4.3	6.59	10.7	181
			12/6/2019	MFR SAMPLE	19-002A, C-E / 70114	Grab	49.8			16.5	12.4	33.3	< 0.05	7.7	24.6	6.15	11.2	39.4
		2	10/3/2019	MFR SAMPLE	1910029-001A	Grab	2.008		2.008	1.68	0.774	0.328	< 0.05	< 4	< 3	6.98	17.5	152
	Install 2/23/2017		12/6/2019	MFR SAMPLE	18-001A, C-E / 70114	Grab	2.2123		2.2123	2.13	0.903	< 0.05	0.0823	< 4	< 3	7.04	10.1	54.5
			12/6/2019	MFR SAMPLE	18-002A, C-E / 70114	Grab	19.98			4.38	1.99	15.6	< 0.05	< 4	4	6.7	9.8	66.7
			12/10/2019	003-934-191210	12-19-00188	Grab	31.8	31.8		1.1	N/A	30.7	< 2.5	N/A	N/A	N/A	N/A	N/A
			12/10/2019	004-934-191210	12-19-00189	Grab	Do Not Calculate			6.3	N/A	< 5	< 2.5	N/A	N/A	N/A	N/A	N/A

									18.99/075										

Suffolk County Eperimental Technologies **Sample Data** (Effluent)

Notes:

(1) Non-Steady State -- Result taken before system developed a treatment process to reduce nitrogen (can be either a composite or grab sample)

(2) Steady State - Result taken after system developed a treatment process to reduce total nitrogen (TN)

(3) Samples Type are either Composite sample (taken over a 24-hour period) or grab sample taken at a single point in time

(4) Compare - grab sample taken to compare to composite sample. Grab sample was taken on the last day of the composite sample

(5) **Calculate - Composite result used to calculate average total nitrogen (TN) to determine provisional approval (only composite samples used to calculate average). Data from 75% of units must average 19mg/l of TN** for at least 6 months of composite sampling to receive provisional approval. This requirement for demo systems only (non-demo systems require 12 months of sampling with 75% of systems meeting an average TN of 19/mg/l to receive provisional approval)

(6) Total Nitogen (mg/l) = TKN +Nitrate +Nitrite

Manufacturer	Site #	Sample Date	Sample #	Lab ID #	Sample Type (3)	State (1)(2)	TN(mg/l) (6)	TKN (mg/l)	Ammonia (as N)	NO3 (Nitrate as	NO2 (Nitrite as	BOD	TSS	PH	Temp	Alkalinity
Vegetated Gravel Recirculating Filter (Constructed Wetland)	Sylvester	8/7/17-8/8/17	006881170808	172449	Composite	Steady	18	< 0.5	< 0.5	18	< 0.5	< 5	< 5	7.41	75.38	154
		9/11/17-9/12/17	006881170912	172917	Composite	Steady	16.4	1.4	< 0.5	15	< 0.5	< 5	< 5	7.56	71.1	175
		10/16/17-10/17/17	006881171017	173418	Composite	Steady	9.1	1	< 0.5	8.1	< 0.5	< 5	< 5	7.6	66.4	177
		5/15/18-5/15/18	005934180515	181205	Composite	Steady	3.3	3.3	< 1	< 0.5	< 0.5	< 7	< 10	7.68	58.5	206
		6/18/18-6/19/18	003934180619	181482	Composite	Steady	8.1	1.7	< 0.5	6.4	< 0.5	< 5	< 10	7.46	68.36	22
		7/16/18-7/17/18	003934180717	181740	Composite	Steady	10.8	1.8	< 0.5	9	< 0.5	< 5	< 10	7.53	72.68	20
		5/13/19-5/14/19	001881190514	191191	Composite	Steady	6.6	1.8	< 0.5	4.8	< 0.5	< 7	< 10	NR	11.4	122
		6/10/19-6/11/19	001881190611	191446	Composite	Steady	14.1	3.4	< 0.5	10.7	< 0.5	5	< 10	7.4	16.9	190
		7/8/19-7/9/19	001934190709	191674	Composite	Steady	13.4	2	< 0.5	11.4	< 0.5	5	< 10	7.58	24.3	161
		8/12/19-8/13/19	001856190813	191987	Composite	Steady	3.5	2.2	< 0.5	1.3	< 0.5	< 25	< 10	7.71	23.5	172
		9/9/19-9/10/19	001934190910	192207	Composite	Steady	8	2.8	< 0.5	5.2	< 0.5	< 7	< 10	7.77	22.5	176
		10/7/19-10/8/19	001934191007	192425	Composite	Steady	6	2.8	< 0.5	3.2	< 0.5	< 5	< 10	7.84	18.5	194
		11/18/19-11/19/19	-	-	-	-	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
	Fl YC	8/1/2017	BY75523	EFFLUENT		Non-Steady	84.6	84.6	77.9	< 0.02	0.01	43	21	7.94	NR	472
		8/1/2017	BY75524	INFLUENT		Non-Steady	275	275	246	< 0.02	0.044	340	150	8.73	NR	959
		10/12/2017	BZ19800	EFFLUENT		Non-Steady	164	164	158	< 0.02	0.018	14	12	8.2	NR	764
		10/12/2017	BZ19801	INFLUENT		Non-Steady	315	315	298	< 0.02	0.058	660	82	7.8	NR	1550
		7/12/18-7/13/18	CA89488	INFLUENT	Composite		114	114	104	< 0.02	0.01	64	36	8.64	NR	370
		7/12/18-7/13/18	CA89489	EFFLUENT	Composite		45.5	45.5	41.7	< 0.02	< 0.01	13	27	7.77	NR	275
		8/22/2018	CB16276	INFLUENT			73.8	73.8	63.4	< 0.02	< 0.01	71	46	8.48	NR	305
		8/22/2018	CB16277	EFFLUENT			26.68	22	19.9	3.4	1.28	5.1	8	7.71	NR	144
		10/3/2018	CB63547	INFLUENT			47.418	47.4	39.8	< 0.02	0.018	150	89	7.8	NR	220
		10/3/2018	CB63548	EFFLUENT			28.251	17.6	15.4	10.6	0.051	< 4	< 5	7.51	NR	116
	Upland	4/1/19-4/2/19	006881190402	190821	Composite (B)		95.6	95.6	66.2	< 0.5	< 0.5	28	20.8	NR	8	NR
		4/1/19-4/2/19	007881190402	190822	Composite (A)		78.1	78.1	51.6	< 0.5	< 0.5	> 64	46.8	NR	8	NR
		4/29/19-4/30/19	005881190430	191076	Composite (B)		52.4	50.2	37.2	2.2	< 0.5	14	23.2	NR	12.7	273
		4/29/19-4/30/19	006881190430	191077	Composite (A)		62.1	61.4	36.3	0.7	< 0.5	> 69	108	NR	12.7	327
		6/3/19-6/4/19	005881190604	191383	Composite (B)		64.7	64.7	59.1	< 0.5	< 0.5	38	< 5	7.41	18	50
		6/3/19-6/4/19	006881190604	191384	Composite (A)		56.6	55.6	53.9	0.5	0.5	> 84	4.5	6.63	18	554
		7/1/19-7/2/19	005934190702	191623	Composite (B)		101	101	89.7	< 0.5	< 0.5	92	66	7.44	23.8	539
		7/1/19-7/2/19	006934190702	191624	Composite (A)		71.6	71.6	58.2	< 0.5	< 0.5	> 178	56	6.73	23.8	622
		7/29/19-7/30/19	005856190730	191854	Pre		108	107	86.4	1	< 0.5	NR	356	7.21	25.1	538
		7/29/19-7/30/19	006856190730	191855	Post		59.1	58.4	49.8	0.7	< 0.5	NR	55	7.06	25.1	552
		8/26/19-8/27/19	005934190827	192104	Pre		122	122	138	< 0.5	< 0.5	> 191	108	7.25	23.4	649
		8/26/19-8/27/19	006934190827	192105	Post		95.7	95.7	86.5	< 0.5	< 0.5	79	29	7.11	23.4	66.7
		9/23/19-9/24/19	003934190924	192319	Pre		99.2	98.7	80.9	0.5	< 0.5	13	34	7.54	20.9	595
		9/23/19-9/24/19	004934190924	192320	Post		91	91	73.2	< 0.5	< 0.5	41	140	7.07	20.9	690
		10/28/19-10/29/19	005934191029	192609	Composite		79	79	69.1	< 0.5	< 0.5	38	16.5	7.41	6.7	496
		10/28/19-10/29/19	006934191029	192610	Composite		63	63	57.2	< 0.5	< 0.5	31	198	7.05	6.7	506
		12/2/19-12/3/19	003934191203	192820	Composite		49.7	47.9	39.2	1.8	< 0.5	32	< 25	6.78	1.1	212
		12/2/19-12/3/19	004934191203	192821	Composite		56.5	56.5	52	< 0.5	< 0.5	21	< 12.5	7.04	1.1	393

Manufacturer	Site #	Sample Date	Sample #	Lab ID #	Sample Type (3)	State (1)(2)	TN(mg/l) (6)	TKN (mg/l)	Ammonia (as N)	NO3 (Nitrate as	NO2 (Nitrite as	BOD	TSS	PH	Temp	Alkalinity
Lined NRB	Robinson	2/25/19-2/26/19	002881190226	190495	Composite	Steady	12.6	8.8	6.1	3.8	< 0.5	14	53	NR	3.2	NR
		3/25/19-3/26/19	002881190325	190748	Composite	Steady	8.5	8.5	14.1	< 0.5	< 0.5	17	68	NR	5.7	NR
		4/22/19-4/23/19	002881190423	191003	Composite	Steady	10.4	9.5	8.6	0.9	< 0.5	13	44		10	
		5/20/19-5/21/19	002881190521	191267	Composite	Steady	6.5	6.5	3.3	< 0.5	< 0.5	10	93	6.49	13.5	280
		6/17/19-6/18/19	002881190618	191487	Composite	Steady	3	3	1.4	< 0.5	< 0.5	< 18	82	6.39	18	312
		7/15/19-7/16/19	002856190716	191746	Composite	Steady	2.7	2.7	< 0.5	< 0.5	< 0.5	< 17	120	6.73	22.4	331
		8/19/19-8/20/19	003856190820	192056	Composite	Steady	3.8	3.8	0.6	< 0.5	< 0.5	11	108	7.1	22.8	347
		9/16/19-9/17/19	001934190917	192281	Composite	Steady	10.2	10.2	5.3	< 0.5	< 0.5	18	430	6.58	19.4	466
		10/21/19-10/22/19	001934191022	192552	Composite	Steady	4.1	4.1	1.2	< 0.5	< 0.5	10	228	6.48	15	400
		11/25/19-11/26/19	001934191126	192796	Composite	Steady	1.9	1.9	< 0.5	< 0.5	< 0.5	10	136	6.65	4.4	352
		12/23/19-12/24/19	001934191224	192947	Composite	Steady	1.6	1	< 0.5	0.6	< 0.5	15	122	NR	6.5	NR
	Robert Cushman Murphy 2	7/8/19-7/9/19	005934190709	191678	Composite	Steady	36.4	36.4	17.8	< 0.5	< 0.5	138	102	7	22.4	477
		8/12/19-8/13/19	005856190813	191991	Composite	Steady	13.8	13.8	< 0.5	< 0.5	< 0.5	18	38	7.04	23.2	384
		9/9/2019-9/10/19	005734190910	192211	Composite	Steady	10.3	9.6	4.7	0.7	< 0.5	16	113	NR	20.1	NR
		10/7/19-10/8/19	005934191007	192429	Composite	Steady	4.2	4.2	1.6	< 0.5	< 0.5	11	74	8.01	16.7	478
		11/18/19-11/19/19	003934191119	192752	Composite	Steady	3	1.1	< 0.5	1.9	< 0.5	< 5	56	7.63	2.5	371
		12/16/19-12/17/19	003934191217	192904	Composite	Steady	5.9	5.9	3.6	< 0.5	< 0.5	20	62	6.92	2.8	287
	Prosser 1	10/28/19/-10/29/19	001934191029	192605	Composite	Steady	28.7	25	15.4	2.2	1.5	28	48	7.1	4.5	471
		12/2/19-12/3/19	001934191203	192818	Composite	Steady	48.3	34.2	17.1	13.3	0.8	12	31	7.01	1.2	378
							11.36									

Manufacturer	Site #	Sample Date	Sample #	Lab ID #	Sample Type (3)	State (1)(2)	TN(mg/l) (6)	TKN (mg/l)	Ammonia (as N)	NO3 (Nitrate as	NO2 (Nitrite as	BOD	TSS	PH	Temp	Alkalinity
Box NRB	Robert Cushman Murphy 1	7/8/19-7/9/19	003934190709	191676	Composite	Steady	NR	NR	0.6	0.5	0.5	NR	NR	NR	23.1	NR
		8/12/19-8/13/19	003856190813	191989	Composite	Steady	1.7	1.7	< 0.5	< 0.5	< 0.5	< 7	< 10	7.8	22.9	320
		9/9/19-9/10/19	003934190910	192209	Composite	Steady	2.5	2.5	0.9	< 0.5	< 0.5	< 7	< 12.5	NR	19.9	NR
		10/7/19-10/8/19	0039341910007	192427	Composite	Steady	7.7	6.2	1.7	1.5	< 0.5	< 5	< 12.5	7.51	16.2	398
		11/18/19-11/19/19	001934191119	192750	Composite	Steady	1.1	1.1	< 0.5	< 0.5	< 0.5	< 5	< 12.5	7.3	2.9	247
		12/16/19-12/17/19	001934191217	192902	Composite	Steady	6.8	1.6	< 1	5.2	< 0.5	< 6	< 12.5	6.87	5.9	NR
	Prosser 2 Installed late January 2020															
	West Hills Not yet installed															
							3.96									

Manufacturer	Site #	Sample Date	Sample #	Lab ID #	Sample Type (3)	State (1)(2)	TN(mg/l) (6)	TKN (mg/l)	Ammonia (as N)	NO3 (Nitrate as	NO2 (Nitrite as	BOD	TSS	PH	Temp	Alkalinity
Unlined NRB	Southaven	9/11/2018	003934180911	182237	Grab		2.8	2.1	<0.5	0.7	<0.5	<22	78	6.48	21.9	310
		10/23/2018	006881181023	182578	Grab		6.2	3.3	1.8	2.9	<0.5	NR	NR	NR	15.4	NR
		11/27/2018	003881181127	182857	Grab		11.9	2.4	1	9	0.5	<6	NR	NR	8.7	NR
		12/18/2018	003881181218	183076	Grab		1.2	1.2	<1	<0.5	<0.5	<5	<12.5	7.78	5.4	170
		1/15/2019	003881190115	190125	Grab		NR	NR	7.5	13.8	<0.5	<5	<25	6.5	4.5	187
		2/26/2019	001881190225	190494	Grab		8.32	0.72	0.5	7.6	<0.5	NR	NR	NR	3.4	NR
		4/23/2019	001881190423	191002	Grab		16.1	2.2	<0.5	13.9	<0.5	NR	NR	NR	14	NR
		6/18/2019	001881190618	191486	Grab		2.3	2.3	0.9	<0.5	<0.5	7	43	6.18	17	211
		7/16/2019	001856190716	191745	Grab		6.1	6.1	5.2	<0.5	<0.5	11	55	6.47	21.6	146
		8/20/2019	005856190820	192058	Grab		6.7	5.5	6.2	0.5	0.7	6	41.6	6.79	NR	214
		9/17/2019	003934190917	192283	Grab		NR	NR	1.9	17.8	1	NR	NR	NR	17.1	NR
		10/22/2019	003934191022	192554	Grab		3.9	1.2	<0.5	2.7	<0.5	<5	<12.5	7.48	14.7	203
		11/26/2019	003934191126	192798	Grab		7.8	7	8.4	0.8	<0.5	13	51.5	5.7	10.7	NR

		12/24/2019	003934191224	192949	Grab		47.7		12.5		12.3	35.2		<0.5	NR		NR	NR	5.6	NR
	Upland North	4/2/2019	008881190402	190823	Grab		24.3		24.3		14.5	<0.5		<0.5	>56		87	NR	8.7	NR
		4/30/2019	007881190430	191078	Grab		30.5		30.5		13.6	<0.5		<0.5	>74		80	NR	11.7	542
		6/4/2019	007881190604	191385	Grab		14.1		14.1		9.3	<0.5		<0.5	>84		142	17.9	17.9	4.4
		7/2/2019	007934190702	191625	Grab		11.6		11.6		6	<0.5		<0.5	41		160	6.67	22.7	581
		7/30/2019	008856190730	191857	Grab		2.5		2.5		0.8	<0.5		<0.5	NR		162	6.73	26	640
		8/27/2019	00834190827	192107	Grab		13.3		13.3		5.2	<0.5		<0.5	NR		NR	NR	22.1	NR
		9/24/2019	005934190924	192321	Grab		NR		NR		NR	NR		NR	NR		NR	NR	NR	NR
		10/29/2019	-	-	-		NR		NR		NR	NR		NR	NR		NR	NR	NR	NR
	Upland South	4/2/2019	009881190402	190824	Grab		9.2		9.2		<0.5	<0.5		<0.5	NR		106	NR	8.7	NR
		4/30/2019	008881190430	191079	Grab		5.9		5.9		<0.5	<0.5		<0.5	>74		65	NR	11.7	NR
		6/4/2019	008881190604	191386	Grab		4.8		4.8		0.8	<0.5		<0.5	>86		114	6.38	17.3	463
		7/2/2019	008934190702	191626	Grab		6.1		6.1		<0.5	<0.5		<0.5	73		224	5.98	22.5	680
		7/30/2019	007856190730	191856	Grab		4.2		4.2		1	<0.5		<0.5	NR		96	6.99	26	576
		8/27/2019	007934190827	192106	Grab		14.6		14.6		10.3	<0.5		<0.5	42		102	6.83	22.1	NR
		9/24/2019	005934190924	192321	Grab		14.6		14.6		7.6	<0.5		<0.5	14		50	13.5	20.9	50
		10/29/2019	007934191029	192611	Grab		2.9		2.9		1.7	<0.5		<0.5	13		39	6.8	15.9	395
		12/3/2019	005934191203	192822	Grab		8		8		5.5	<0.5		<0.5	NR		NR	NR	5.7	NR
							10.7		7.9		5.5	9.5		0.7	24.4		94.2	7.7	15.0	335.8

Suffolk County I/A OWTS Technologies at Commercial Sites Sample Data (Effluent)

Notes:

(1) Non-Steady State -- Result taken before system developed a treatment process to reduce nitrogen (can be either a composite or grab sample)

(2) Steady State - Result taken after system developed a treatment process to reduce total nitrogen (TN)

(3) Samples Type are either Composite sample (taken over a 24-hour period) or grab sample taken at a single point in time

(4) Compare - grab sample taken to compare to composite sample. Grab sample was taken on the last day of the composite sample

(5) Calculate - Composite result used to calculate average total nitrogen (TN) to determine provisional approval (only composite samples used to calculate average). Data from 75% of units must average 19mg/l of TN for at least 6 months of composite sampling to receive provisional approval. This requirement for demo systems only (non-demo systems require 12 months of sampling with 75% of systems meeting an average TN of 19/mg/l to receive provisional approval)

(6) Total Nitogen (mg/l) = TKN +Nitrate +Nitrite

Manufacturer	Site #	Sample Date	Sample #	Lab ID #	Sample Type (3)	TN(mg/l) (6)	TKN (mg/l)	Ammonia (as N)	NO3 (Nitrate as N)	NO2 (Nitrite as N)	BOD	TSS	PH	Temp	Alkalinity
Vegetated Gravel Recirculating Filter (Constructed Wetland)	Sylvester	8/7/17-8/8/17	006881170808	172449	Composite	18	< 0.5	< 0.5	18	< 0.5	< 5	< 5	7.41	75.38	154
		9/11/17-9/12/17	006881170912	172917	Composite	16.4	1.4	< 0.5	15	< 0.5	< 5	< 5	7.56	71.1	175
		10/16/17-10/17/17	006881171017	173418	Composite	9.1	1	< 0.5	8.1	< 0.5	< 5	< 5	7.6	66.4	177
		5/15/18-5/15/18	005934180515	181205	Composite	3.3	3.3	< 1	< 0.5	< 0.5	< 7	< 10	7.68	58.5	206
		6/18/18-6/19/18	003934180619	181482	Composite	8.1	1.7	< 0.5	6.4	< 0.5	< 5	< 10	7.46	68.36	22
		7/16/18-7/17/18	003934180717	181740	Composite	10.8	1.8	< 0.5	9	< 0.5	< 5	< 10	7.53	72.68	20
		5/13/19-5/14/19	001881190514	191191	Composite	6.6	1.8	< 0.5	4.8	< 0.5	< 7	< 10	NR	11.4	122
		6/10/19-6/11/19	001881190611	191446	Composite	14.1	3.4	< 0.5	11	< 0.5	5	< 10	7.4	16.9	190
		7/8/19-7/9/19	001934190709	191674	Composite	13.4	2	< 0.5	11	< 0.5	5	< 10	7.58	24.3	161
		8/12/19-8/13/19	001856190813	191987	Composite	3.5	2.2	< 0.5	1.3	< 0.5	< 25	< 10	7.71	23.5	172
		9/9/19-9/10/19	001934190910	192207	Composite	8	2.8	< 0.5	5.2	< 0.5	< 7	< 10	7.77	22.5	176
		10/7/19-10/8/19	001934191007	192425	Composite	6	2.8	< 0.5	3.2	< 0.5	< 5	< 10	7.84	18.5	194
		11/18/19-11/19/19	-	-	-	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
	Fl YC	8/1/2017	BY75523	EFFLUENT		84.6	85	77.9	< 0	0	43	21	7.94	NR	472
		8/1/2017	BY75524	INFLUENT		275	275	246	< 0	0	340	150	8.73	NR	959
		10/12/2017	BZ19800	EFFLUENT		164	164	158	< 0	0	14	12	8.2	NR	764
		10/12/2017	BZ19801	INFLUENT		315	315	298	< 0	0.1	660	82	7.8	NR	1550
		7/12/18-7/13/18	CA89488	INFLUENT	Composite	114	114	104	< 0	0	64	36	8.64	NR	370
		7/12/18-7/13/18	CA89489	EFFLUENT	Composite	45.5	46	41.7	< 0	< 0	13	27	7.77	NR	275
		8/22/2018	CB16276	INFLUENT		73.8	74	63.4	< 0	< 0	71	46	8.48	NR	305
		8/22/2018	CB16277	EFFLUENT		26.68	22	19.9	3.4	1.3	5.1	8	7.71	NR	144
		10/3/2018	CB63547	INFLUENT		47.418	47	39.8	< 0	0	150	89	7.8	NR	220
		10/3/2018	CB63548	EFFLUENT		28.251	18	15.4	11	0.1	< 4	< 5	7.51	NR	116
	Upland	4/1/19-4/2/19	006881190402	190821	Composite (B)	95.6	96	66.2	< 0.5	< 0.5	28	21	NR	8	NR
		4/1/19-4/2/19	007881190402	190822	Composite (A)	78.1	78	51.6	< 0.5	< 0.5	> 64	47	NR	8	NR
		4/29/19-4/30/19	005881190430	191076	Composite (B)	52.4	50	37.2	2.2	< 0.5	14	23	NR	12.7	273
		4/29/19-4/30/19	006881190430	191077	Composite (A)	62.1	61	36.3	0.7	< 0.5	> 69	108	NR	12.7	327
		6/3/19-6/4/19	005881190604	191383	Composite (B)	64.7	65	59.1	< 0.5	< 0.5	38	< 5	7.41	18	50
		6/3/19-6/4/19	006881190604	191384	Composite (A)	56.6	56	53.9	0.5	0.5	> 84	4.5	6.63	18	554
		7/1/19-7/2/19	005934190702	191623	Composite (B)	101	101	89.7	< 0.5	< 0.5	92	66	7.44	23.8	539
		7/1/19-7/2/19	006934190702	191624	Composite (A)	71.6	72	58.2	< 0.5	< 0.5	> 178	56	6.73	23.8	622
		7/29/19-7/30/19	005856190730	191854	Pre	108	107	86.4	1	< 0.5	NR	356	7.21	25.1	538
		7/29/19-7/30/19	006856190730	191855	Post	59.1	58	49.8	0.7	< 0.5	NR	55	7.06	25.1	552
		8/26/19-8/27/19	005934190827	192104	Pre	122	122	138	< 0.5	< 0.5	> 191	108	7.25	23.4	649
		8/26/19-8/27/19	006934190827	192105	Post	95.7	96	86.5	< 0.5	< 0.5	79	29	7.11	23.4	66.7
		9/23/19-9/24/19	003934190924	192319	Pre	99.2	99	80.9	0.5	< 0.5	13	34	7.54	20.9	595
		9/23/19-9/24/19	004934190924	192320	Post	91	91	73.2	< 0.5	< 0.5	41	140	7.07	20.9	690
		10/28/19-10/29/19	005934191029	192609	Composite	79	79	69.1	< 0.5	< 0.5	38	17	7.41	6.7	496
		10/28/19-10/29/19	006934191029	192610	Composite	63	63	57.2	< 0.5	< 0.5	31	198	7.05	6.7	506
		12/2/19-12/3/19	003934191203	192820	Composite	49.7	48	39.2	1.8	< 0.5	32	< 25	6.78	1.1	212
		12/2/19-12/3/19	004934191203	192821	Composite	56.5	57	52	< 0.5	< 0.5	21	< 13	7.04	1.1	393

Manufacturer	Site #	Sample Date	Sample #	Lab ID #	Sample Type (3)	TN(mg/l) (6)	TKN (mg/l)	Ammonia (as N)	NO3 (Nitrate as N)	NO2 (Nitrite as N)	BOD	TSS	PH	Temp	Alkalinity
Norweco Hydro-Kinetic	Ronkonkoma	6/4/18-6/5/18	010934180605	181368	Composite	110	110	103	< 0.5	< 0.5	34	27	7.89	68	504
		7/2/18-7/3/18	010934180703	181619	Composite	107	107	114	< 0.5	< 0.5	88	34	7.73	79.16	7.2
		7/30/18-7/31/18	010934180731	181873	Composite	93.8	93	90.9	0.7	0.5	19	22	7.44	80.24	437
		8/27/18-8/28/18	008934180828	182122	Composite	2.1	< 0.5	< 0.5	1.2	0.9	16	44	7.29	26.2	NR
		10/15/18-10/16/18	005881181016	182510	Composite	28.3	0.1	1.3	28	0.5	12	17	7.06	19.5	151
		11/19/18-11/20/18	005881181120	182816	Composite	67.5	0.1	< 1	67	< 0.5	< 6	13	7.25	10.4	98.6
		4/8/19-4/9/19	002881190409	190881	Composite	79.2	< 0.1	11	74	5.4	30	46	NR	9.2	NR
		5/13/19-5/14/19	005881190514	191195	Composite	29.2	12	11.2	17	< 0.5	25	< 10	NR	13.2	132
		6/17/19-6/18/19	004881190618	191489	Composite	99.1	99	96.4	< 0.5	< 0.5	13	12	7.59	20.3	5.02
		7/15/19-7/16/19	004856190716	191748	Composite	100.6	100	112	0.8	< 0.5	> 83	46	7.63	24.7	544
		8/12/19-8/13/19	007856190813	191993	Composite	119	119	6.5	< 0.5	< 0.5	24	23	7.71	24.7	574
		9/9/19-9/10/19	007934190910	192213	Composite	136	136	110	< 0.5	< 0.5	20	27	NR	22.9	NR
		10/7/19-10/8/19	007934191007	192431	Composite	38.3	38	11.1	< 0.5	< 0.5	50	14	7.71	21	480
		11/18/19-11/19/19	005934191119	192754	Composite	48.7	12	16.6	36	0.6	36	28	4.29	3.7	NR

Manufacturer	Provisional System #	Sample Date	Sample #	Lab ID	Sample Type (3)	TN(mg/l) (6) (BIMONTHLY MFR ONLY)	TKN (mg/l)	Ammonia (as N)	NO3 (Nitrate as N)	NO2 (Nitrite as N)	BOD	TSS	PH	Temp	Alkalinity
Fuji Clean	Peconic Bay Keeper	9/18/2019	MFR SAMPLE	9091815-01	Grab	9.56	4.1	< 1	5.5	< 0.4	5.5	14	7.38	22.2	51
		11/22/2019	MFR SAMPLE	9112225-01	Grab	22.2	5.1	3.6	17	< 0.4	< 4	< 8.3	5.75	21.4	100
	Surf Lodge	9/5/2019	MFR SAMPLE	9090512-03	Grab	11.86	3.7	1.4	6.2	2	4.5	11	7.65	20.9	78

Manufacturer	Site #	Sample Date	Sample #	Lab ID #	Sample Type (3)	TN(mg/l) (6)	TKN (mg/l)	Ammonia (as N)	NO3 (Nitrate as N)	NO2 (Nitrite as N)	BOD	TSS	PH	Temp	Alkalinity
Orenco Advantex	Meshutt Beach	7/25/16 - 7/26/16			Composite	18.1	17	9.5	0.9	< 0.5	35	37	7.37		133.2
AX-MAX Unit		8/22/16 - 8/23/16			Composite	20.1	20	18.6	< 0.5	< 0.5	125	88	7.33	78	183.4
		9/26/16 - 9/27/16			Composite	14.1	< 0.5	< 0.5	14	< 0.5	8	10	7.29	74	51.8
		6/5/17-6/6/17	006881170606	171361	Composite	8	1	< 0.5	7	< 0.5	< 5	< 10	8.03	63.68	213
		7/10/17-7/11/17	001881170711	171711	Composite	24.5	7.9	4	3.7	13	< 10	9	6.74	79.16	37.4
		8/7/17-8/8/17	010881170808	172453	Composite	16	6	9.9	10	< 0.5	7	< 5	7.09	80.06	83
		9/11/17-9/12/17	010881170912	172921	Composite	20.8	14	4.3	6.1	< 0.5	18	48	7.07	73.4	84
		10/16/17-10/17/17	010881171017	173422	Composite	15.5	16	19.9	< 0.5	< 0.5	< 5	< 5	7.76	62.2	200
		6/18/18-6/19/18	007934180619	181486	Composite	68.8	67	49.8	< 0.5	1.5	17	11	7.82	76.28	169
		7/16/18-7/17/18	007934180717	181744	Composite	144.6	140	8.3	4.6	< 0.5	20	< 10	7.37	81.32	120
		8/6/18-8/7/18	001934180807	181933	Composite	21.2	8.4	6.6	11	1.4	< 5	< 10	7.32	27.6	86
		8/20/18-8/21/18	001881180821	182065	Composite	21.3	4.1	3.1	17	0.5	< 6	< 10	7.31	21.9	123
		9/10/18-9/11/18	001934180911	182235	Composite	3.8	2.1	1.5	1.7	< 0.5	< 5	< 10	6.92	26.8	35
		6/24/19-6/25/19	001881190625	191542	Composite	11	6.9	4.1	4.1	< 0.5	17	21	6.6	21.9	78
		7/22/19-7/23/19	001856190723	191797	Composite	11.7	12	7.6	< 0.5	< 0.5	45	75	6.96		114
		8/19/19-8/20/19	001856190820	192054	Composite	22.1	6.5	9	15	0.5	19	23	7.06	26.9	NR
		9/16/19-9/17/19	004934190917	192284	Composite	12.5	8.4	5	4.1	< 0.5	22	24	NR	21.3	NR