



woodardcurran.com

COMMITMENT & INTEGRITY DRIVE RESULTS

HULL WATER POLLUTION CONTROL FACILITY

October
2018

MONTHLY OPERATING REPORT



NPDES NO. MA0101231

Table of Contents

1	Executive Summary	2
2	Flows and Loadings	3
2.1	Average Effluent Monthly Flows – One Year Comparison	4
2.2	Monthly Summary of Rainfall and the Influence on Effluent Flows.....	5
3	Compliance.....	9
4	Key Performance Indicators.....	12
4.1	Water Quality - October.....	12
5	Odor Control.....	13
6	Maintenance Summary.....	17
6.1	Tasks Completed This Month.....	17
6.2	On Going Project Updates.....	24
7	Safety	27
8	Staff Development	28
9	Collection System.....	29
9.1	Wet Well Cleaning.....	29
9.2	Collection System Maintenance.....	29
10	Project Management & Administration	30
10.1	On-Going Projects and Support Items.....	30
11	Work Order Summary.....	32
12	Storm Event Preparedness Form.....	33

Cover pictures: Removal of the Underground Fuel Storage Tank

1 EXECUTIVE SUMMARY

This Monthly Operating Report provides a summary of the pertinent information and activities that occurred at Hull WPCF during the month of October 2018.

- No lost-time incidents for the month of October.
- There were 147 effluent samples taken in the month of October. Please see page (12) for details.
- There was a high flow event that occurred on October 27-28, where total plant flows were recorded at 3.73 MG for 10/27-28 with peak effluent flows near 7.9MG. Several of the pump station wet wells were high for a number of hours. There were no reported SSO's. Some trend charts have been included.
- The Bioxide system operated throughout the month of October at PS 3. The feed rate was decreased some due to lower H₂S levels and also to allow pumping of chemical to continue through end of the month. The feed rate was lowered to approximately 145 gallons per day. W&C is working on arrangement to keep equipment through the off-season months and to re-use again in 2019.
- Asset Management Accounts checkbook for tracking of expenses is ongoing weekly for year #4 [04M]. Review of account status between W&C and Hull Sewer Dept. is on-going.
- The monitoring of the plant's electrical voltage continued. The power monitor unit that was placed at ATS1 continued. To date nothing significant has been found relating to these power fluctuations. Discussions on power quality issues took place in October, and also the CZM grant for raising the electrical transformers.
- There were a number of grinder pump call outs during the month of October that the staff responded to and corrected.
- The Underground Storage Tank Removal Project/Above Ground Fuel Storage Tank work continued. The old UST was removed on October 10th. W&C worked with Comm Tank to complete site work. The location for future above ground tank being was reviewed and selected. W&C Engineering is providing oversight for this project.
- Main [lead] generator - new heat exchanger replacement installation was completed. Additional work on back-up generator planned – thermostats.
- Continued work on Pump Station 1 quotation package for the pump installation. All materials being obtained by W&C for the HSD and supplied to the contractor. Pricing for the project came in and awarded to Aqualine Utility LLC, the low bidder.
- W&C has developed scope of work for the pump station ladders, since the integrity of the current ladders is becoming diminished. That pricing also came in, but work has not been awarded yet.

Woodard & Curran strives to deliver a high-quality operations service and is responsive to our customers concerns. Please feel free to request any modifications to the format or content of this report.

2 FLOWS AND LOADINGS

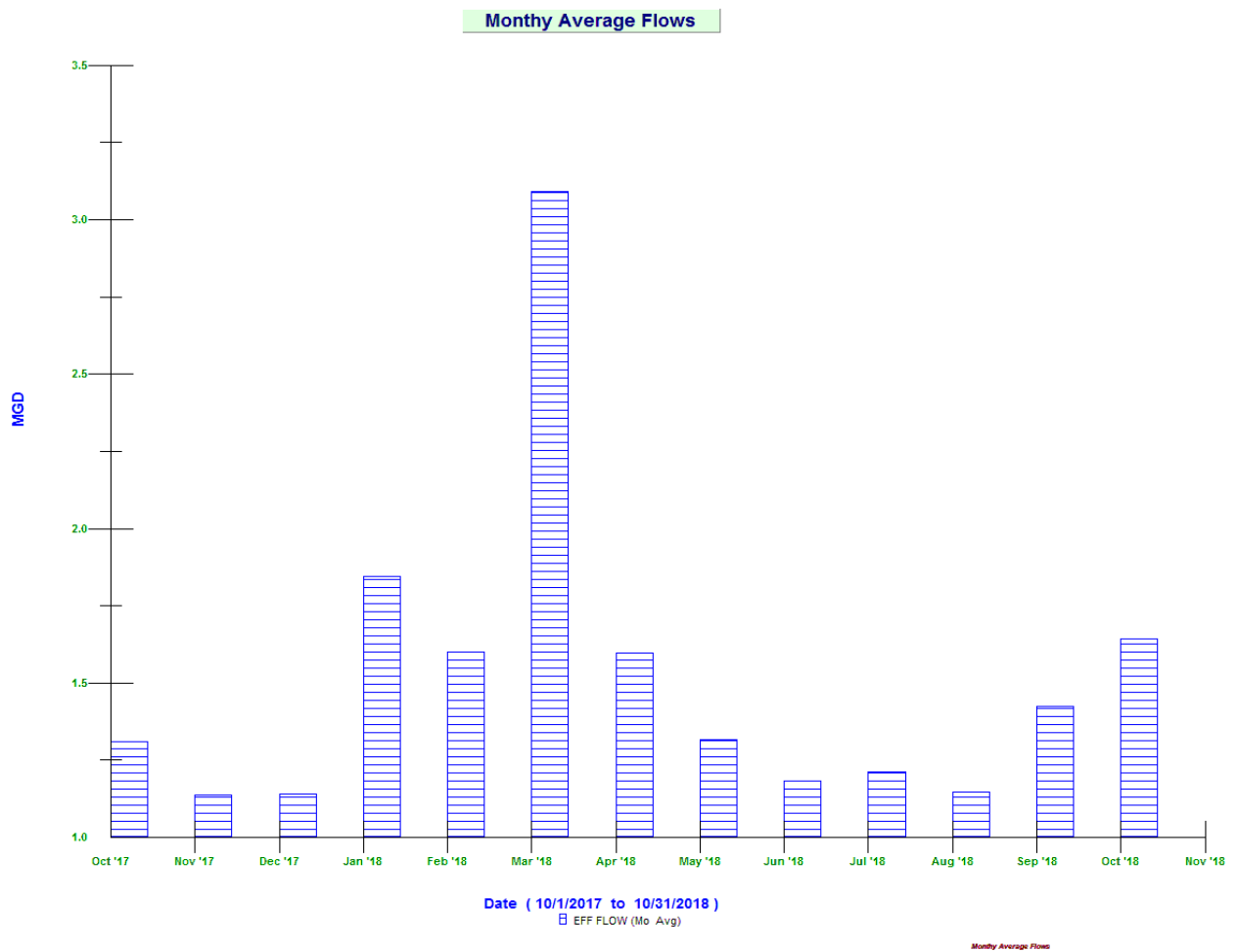


Average Daily Flows and Loadings for the Month:

	Eff Flow MGD	Inf Flow MGD	Inf BOD LBS	Inf TSS LBS	Eff BOD LBS	EFF TSS LBS
Oct 2016	1.398	1.546 *	2754	3044	115	198
Oct 2017	1.310	1.194 *	2080	2997	87	225
Oct 2018	1.643	1.906 *	1080	1337	56	109

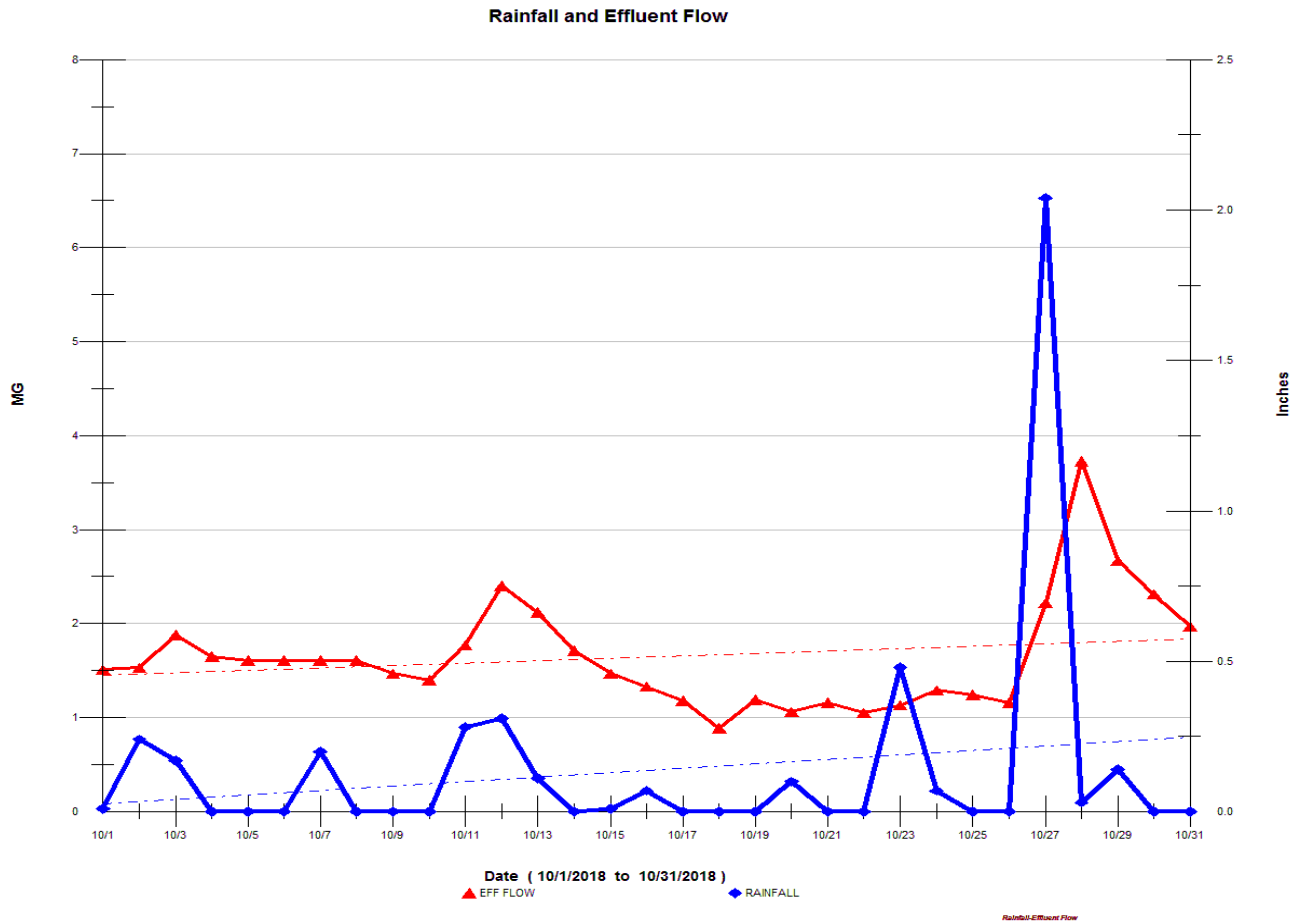
* Meter drift – influent flow meters are strap on doppler flow meters and the internal pipe condition prevents getting a strong signal. The staff adjusts accordingly and utilizes the area velocity meter in the aeration tank inlet channel as needed. All loadings are based on the effluent flow meter.

2.1 AVERAGE EFFLUENT MONTHLY FLOWS – ONE YEAR COMPARISON



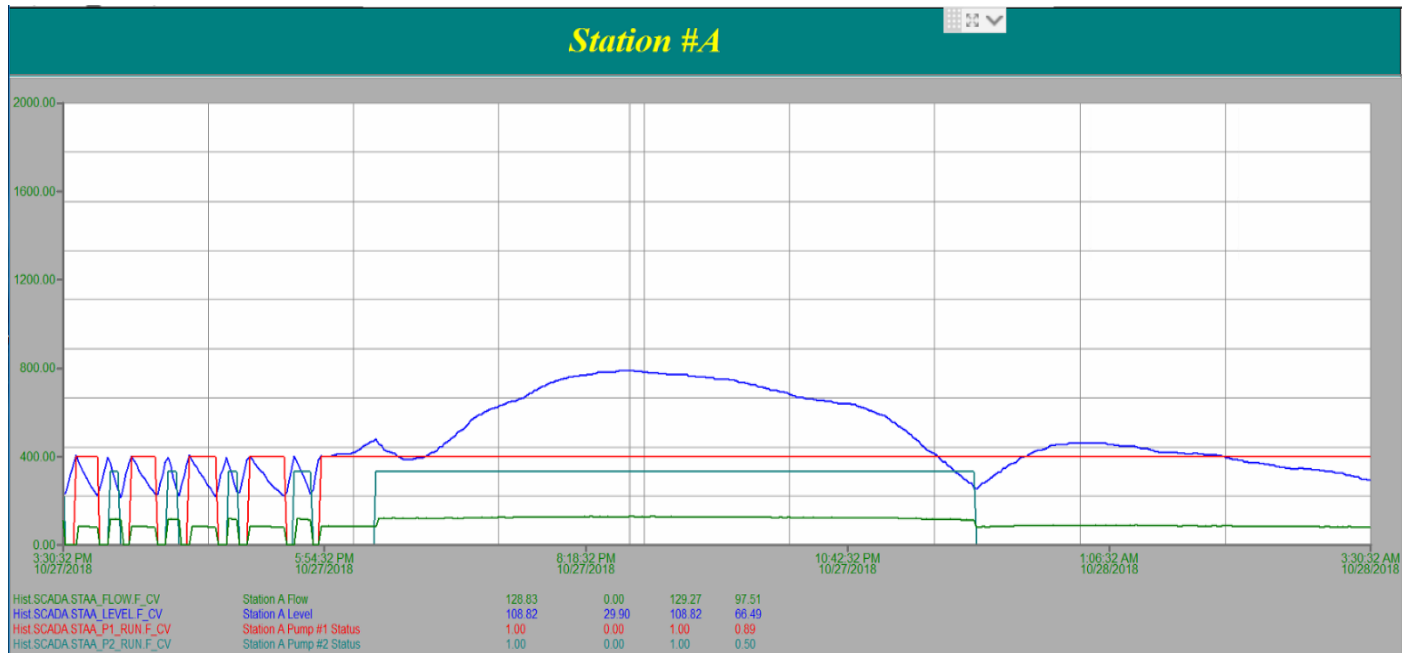
Monthly average flows trending up for September and October due to increased rainfall amounts. 2.21" of rainfall fell on 10/27-29; Rainfall total for October = 4.26"

2.2 MONTHLY SUMMARY OF RAINFALL AND THE INFLUENCE ON EFFLUENT FLOWS

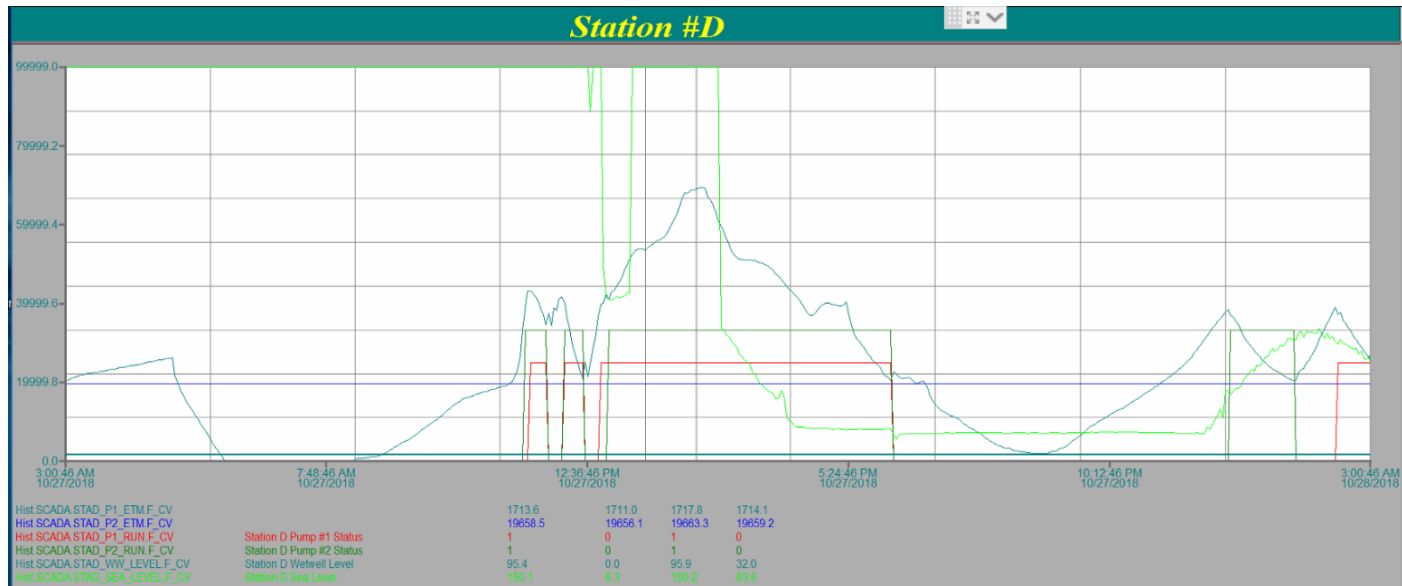


This graph provides a good indication of the influence that rainfall has on the effluent flows. Inflow and infiltration out in the collection system is noted with the increased effluent flow values when it rains. For the October 27-29th rain event, 2.21" of rainfall recorded. Influent flow into the plant was throttled by using the influent isolation gate, therefore, the plant peak was not as high for that day.

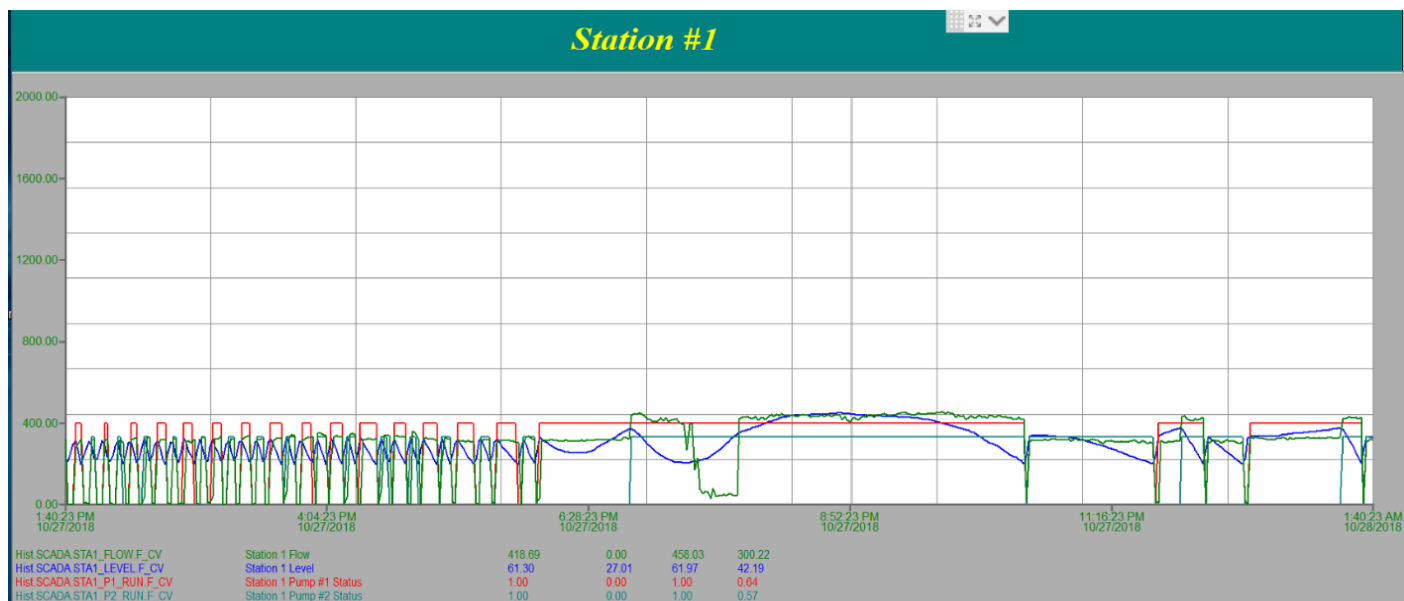
2.3 SCREENSHOTS FROM SCADA FOR 10/27-28, 2018 [rain event that caused higher plant flows].



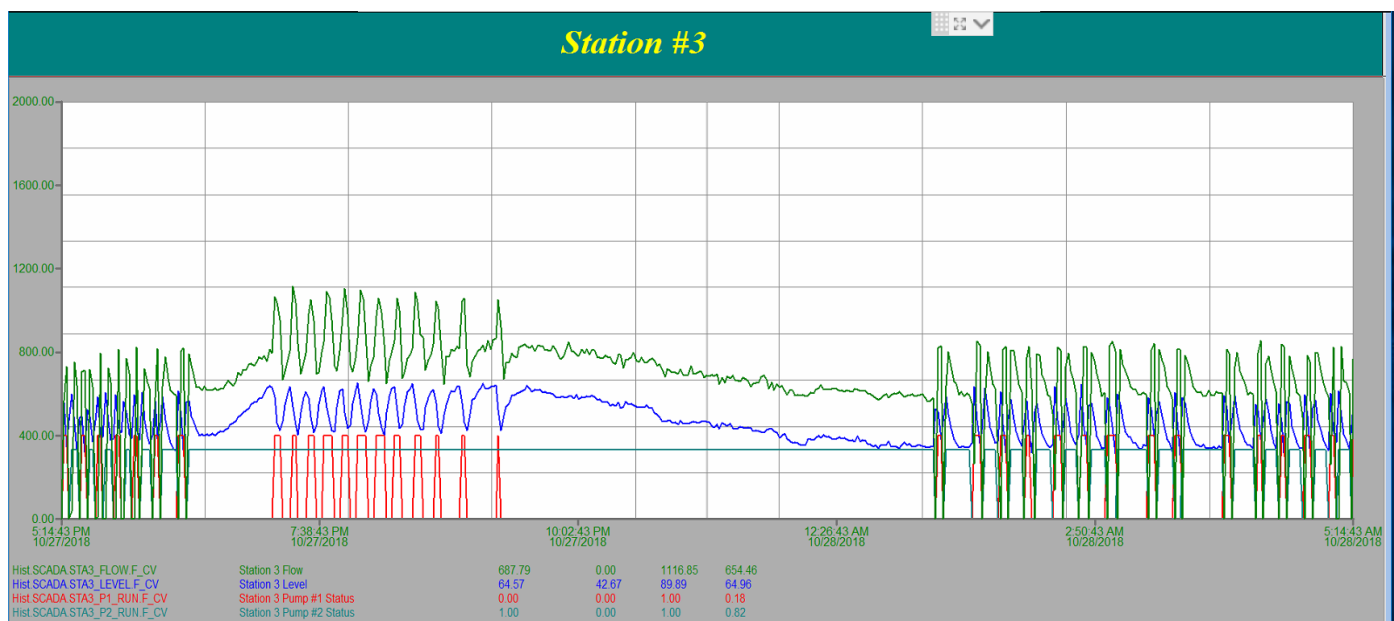
PS A – wet well high & in alarm both pumps running – from approx. 5pm to 12am



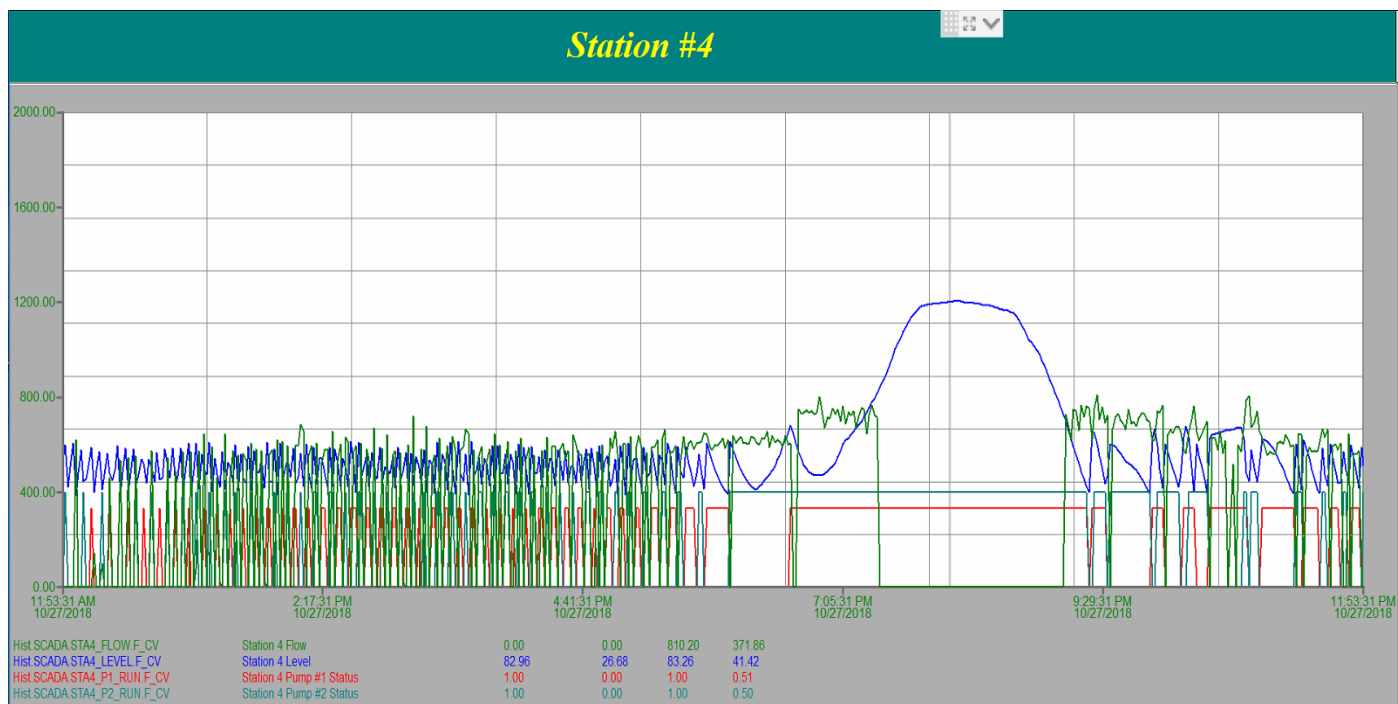
D Street – wet well high during high tide period and during heaviest rainfall period. Both pumps running & additional trash pump turned on 2 hrs before high tide and run for approx. 6 hrs.



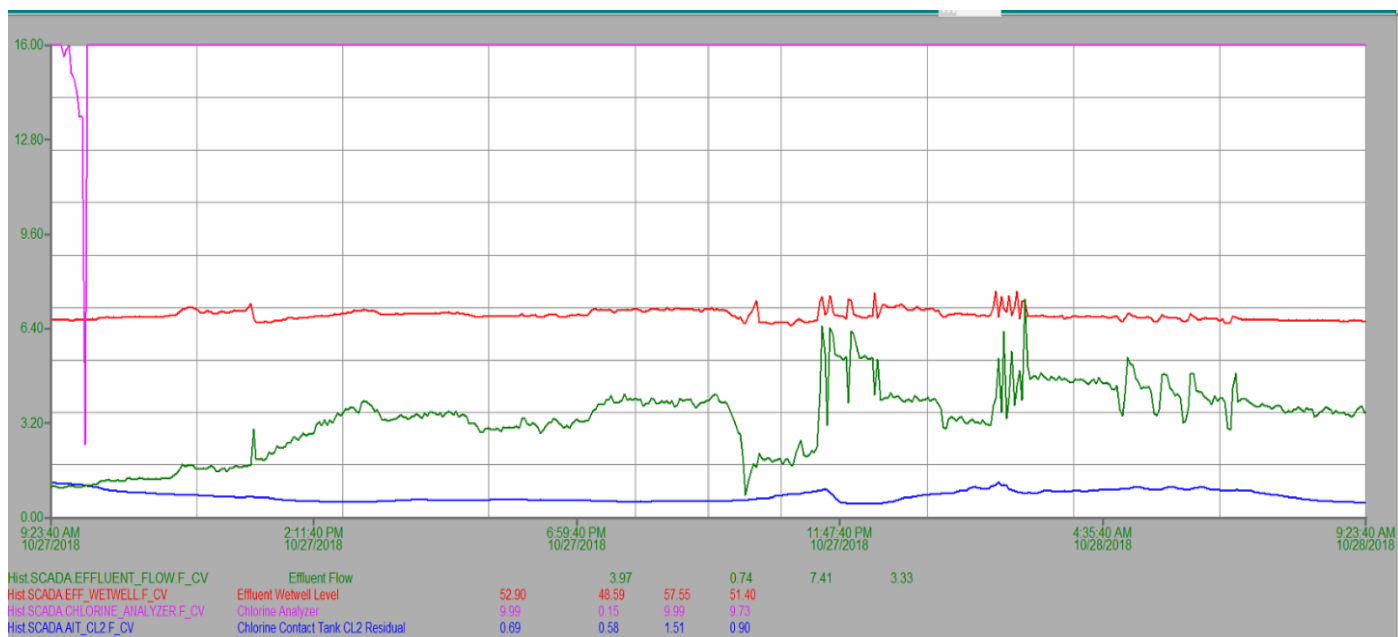
PS 1 – wet well moderately higher & both pumps running – from approx. 5pm to 11pm



PS 3 – wet well rose up, but station maintained well – from approx. 5pm to 1am



PS 4 – wet well high and in alarm & both pumps running – from approx. 6pm to 10pm



Plant effluent flow – started rising at 12pm. As tanks were put on line, the effluent flow did drop down until the tanks filled. [PC1, SC1, Aer tank 4] [approx. 750,000 gallons filled in these tanks] Highest effluent flows from approx. 12am to 3am as influent gate re-opened.

3 COMPLIANCE

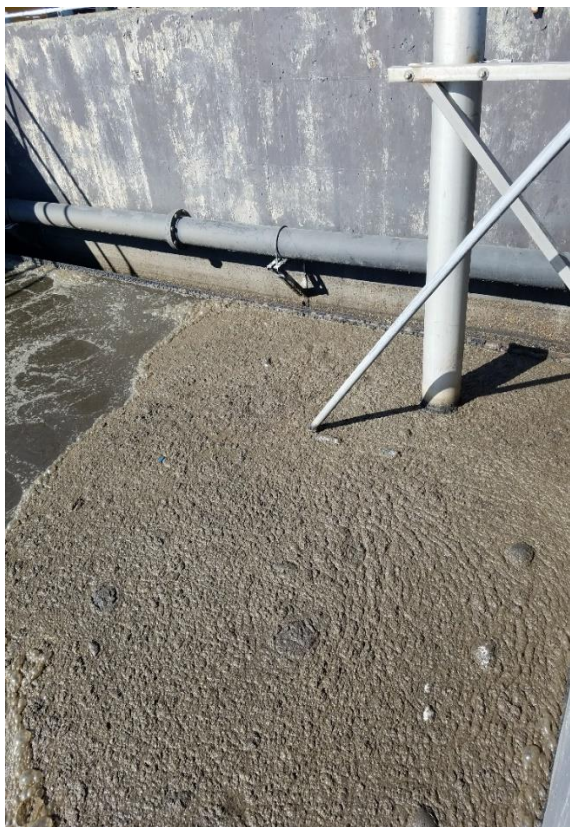


➤ Plant Effluent

- There were no exceedances for the month of October.
- Plant process conditions continue to be good & maintaining very well. Clarifier surfaces were clean/clear. Chlorination of the RAS was halted, due to some issues with the RAS pumps, and the process will be monitored to determine if the chemical addition will be restarted.
- With the heavy rainfall, came higher flows on October 27th-29th additional staffing at plant was necessary at the facility on 10/27 & 10/28, and to inspect/monitor various pump stations due to high wet well levels [PS A 1,3 4, & 9]. The influent gate was utilized to throttle the influent flow until the heaviest part of the storm had passed. This action delayed putting on additional tankage, but due to the severity of the peak flows and failure of air distribution piping in aeration tank #3, the additional primary and secondary clarifiers were placed into service, as well as aeration tank #4.
- A Copy of the NPDES report for October 2018 was submitted to the DEP and then forwarded to the Hull Sewer Dept.
- Continued working with corporate team for planning and rollout of company /process control plan/ template. Review of process flow diagrams, detention time calculations, previous performance evaluation reports. Work on development of unit process control reports and data base development. Chibby Alloway of W&C leading the plan's development.
- Drylet Trial continues and at the approximate $\frac{3}{4}$ point. To date, the facility's biological system has adapted well to the supplemental bacteria being added daily. Improved sludge settleability and clarity have been seen, while slowly increasing the overall system sludge inventory. The trial is expected to run for 90 days at a minimum, with certain solids inventory targets to be attained, as long as the effluent compliance remains good. The secondary clarifiers were able to handle the

higher plant flows with no issues on 10/27-29. Weekly calls, data exchange, and updates discussed with the Drylet Team

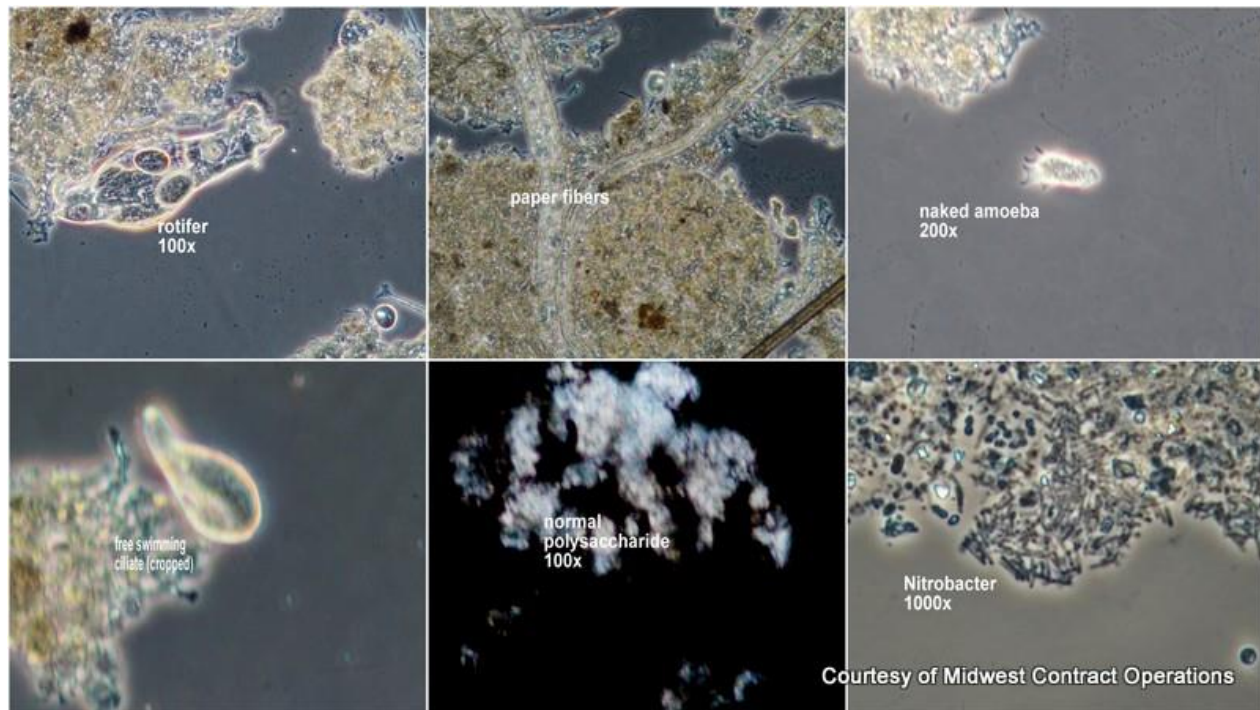
Photos below show observed effects of carrying increased solids in secondary system. These pictures were taken on 10/10, before the aeration tank 3 piping failure. Sludge age had been trending towards an older sludge.



Aeration Tank #1 - increased foam/solids



Secondary Clarifier increased floating solids



Bacteria pictures from micro-eval on 10/21. Showing higher life forms and floc.

Based on the findings, high concentrations of *Microthrix parvicella*, and dead cellular material appear to be the causative factors (dead bugs and filaments caused by fats, oils, grease). *Microthrix* appears to be a factor as this is present at significantly higher abundance in the foam than the underlying MLSS. Report recommended looking more into FOG concentrations entering the plant as this is the growth cause for *Microthrix*. Less *Microthrix* food= less *Microthrix*. *Microthrix* often prefers colder temperatures (lots of variables= difficult to

Mixed Liquor Suspend Solids

The report indicated that the sludge flocs were strong. Iron sulfide deposits were common within the flocs (this indicates septicity). Filamentous bacteria were ranked some-common in abundance and did not appear to be negatively impacting the floc structure or settling rates. Flagellates were predominant and present at abundant amounts (flagellate “bloom”). Dispersed single cell bacteria were common in the bulk liquid between the flocs. Some stalked ciliates were observed. Zoogaea bacteria were present within the flocs (some-common abundance). Polysaccharide was normal (by staining) indicating nutrients do not appear limited to the bacteria

<i>Filament</i>	<i>Rank</i>	<i>Abundance</i>	<i>Cause</i>
<i>N. limicola</i> I	1	Some-Common	Organic Acids
<i>N. limicola</i> III	2	Some	Organic Acids
<i>H. hydrossis</i>	2	Some	Low DO
<i>Thiothrix</i> II	2	Some	Organic Acids, Sulfide
<i>Microthrix parvicella</i>	2	Some	Fats, Oils, Grease
<i>Thiothrix</i> I	3	Few-Some	Organic Acids, Sulfide
Type 021N	3	Few-Some	Organic Acids, Sulfide

4 KEY PERFORMANCE INDICATORS



4.1 WATER QUALITY - OCTOBER

Parameter Info		Permit Requirements					Results				
Parameter	Units	Daily Max	Daily Min	Weekly Avg. Max	Monthly Avg. Max	Freq	Period Avg.	Period Min	Period Max	# of Samples	# of Violations
Eff TSS	MG/L	50		45	30	1 X Week	8.6	6.0	10.3	6	0
Eff TSS	LBS			1152	768	1 X Week	109	78	138		0
% TSS Rem	%		85			1 X Month	92.0				
Eff BOD	MG/L	50		45	30	1 X Week	4.2	3.0	6.7	7	0
Eff BOD	LBS			1152	768	1 X Week	56	28	90		0
% BOD Rem	%		85			1 X Month	95.0				
Eff Chlorine	MG/L	1.0			0.7	3 X Day	0.08	0.01	0.35	93	0
Eff Fecal	#/100 ML	260			88	1 X Week	10	10	10	5	0
Eff pH	SU	8.5	6.5			1X Daily	7.1	6.8	7.4	31	0
Enterococci	#/100 ML	276			35	1 X Week	10	10	10	5	0

- There were 147 effluent samples taken in the month of October with zero [0] NPDES Permit exceedances.
- Gallons Treated vs Sludge Disposed

Month	Effluent Treated, MG	Sludge Disposed, Gals
October 2016	43.34	63000
October 2017	40.61	63000
October 2018	50.93	36000

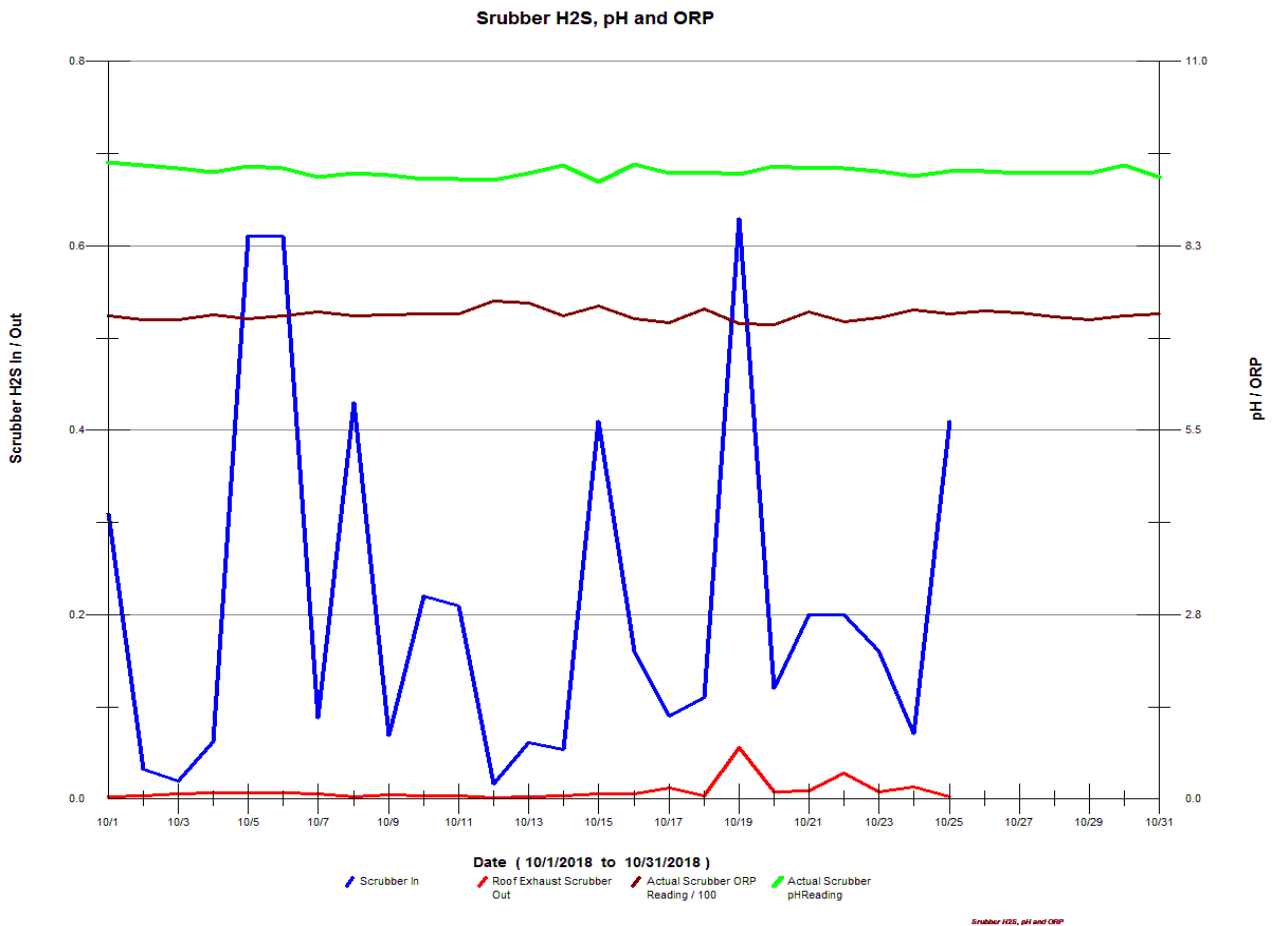
5 ODOR CONTROL

There were no odor complaints reported in October.

Additional air and mixing to the sludge holding tank continued. Changes made at PS 3 for Bioxide feed. The higher feed rate was reduced by approximately 30% in early October to 145 gpd to conserve chemical supply through late October and reduction of H₂S levels in system. Sampling data from Evoqua indicated some elevated H₂S levels at the discharge point for the PS 3 force main. As was the case last year, the elevated levels were from the PS 4 discharge to this same manhole. The sewage pumped from PS 4 is no treated for H₂S.

The gravity thickener and primary clarifier remained off line until late October. Increased plant flows and equipment issues led to placing these units back on line at the very end of October. Nearly all influent sewage flow is directed to the aeration tanks. The waste activated sludge currently is being pumped to the underground sludge holding tank #2, via the blend box. Aeration tank troughs are being flushed, to minimize build-up of odors.

The odor scrubber system was on line for the entire month. As noted last month, the scrubber media is scheduled to be replaced. The new media has been purchased and on site. The system pH and ORP probes were checked. Scrubber operation is good.

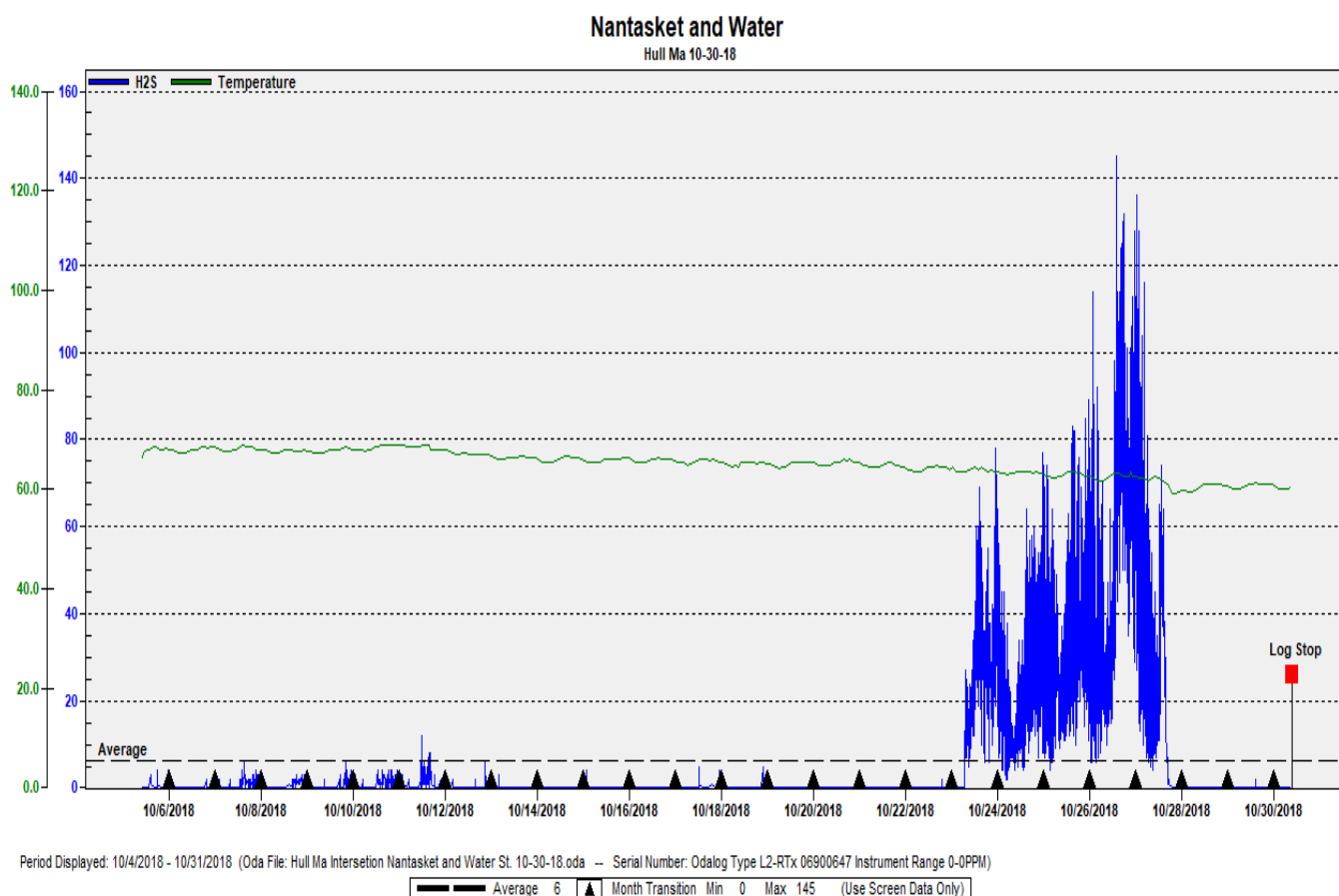


Graph shows overall lower H₂S levels in October, which correlate to higher flows in collection system, lower organic loading and gradual lowering of the ambient air temperatures. The Jerome H₂S meter was not functioning after 10/25, and a loaner unit was on order.

- “In-Pipe” bacteria addition continued with all 24 dosing stations operational. No additional actions taken for headworks sulfide reduction plan proposed by “In-Pipe. The inspection/replacement with full bottles took place on 10/4-10/5/18. All work being tracked on the Utility Cloud [UC].
- Continued the bi-weekly change outs of the bacteria bottles at three lift stations Microbe Dosing Stations (MDU's) with installation just in front of the three largest pump stations [in the wet wells or manhole just prior to the station. [PS 3, PS 5, PS 9] The re-load plan is delivering an additional 5.4 liters per month in total (1.8 liters x 3 locations). The goal is to see if we get a step change and reduce odors, while at the same time potentially reducing sludge. This change is being monitored closely over the summer months, for pump stations and at the plant.
- On-going – frequent pumping of the secondary scum wells. Tank cleaning performed as needed.
- Evoqua [Bioxide] product was being pumped into the system daily. The feed rate of almost 200 GPD at start of the month was reduced to about 135 gpd after their site visit. The sulfides are being controlled at the Nantasket Intersection. PS #4 sulfide is most likely what is seen on the graph. Nitrate residual is reaching “A - Street” which is similar to what was seen last year. Manhole H2S data-loggers that were set up at various manholes will be taken in at end of October/early November.

Below are the results of the recent sampling rounds and Odialog data [October 2017]:

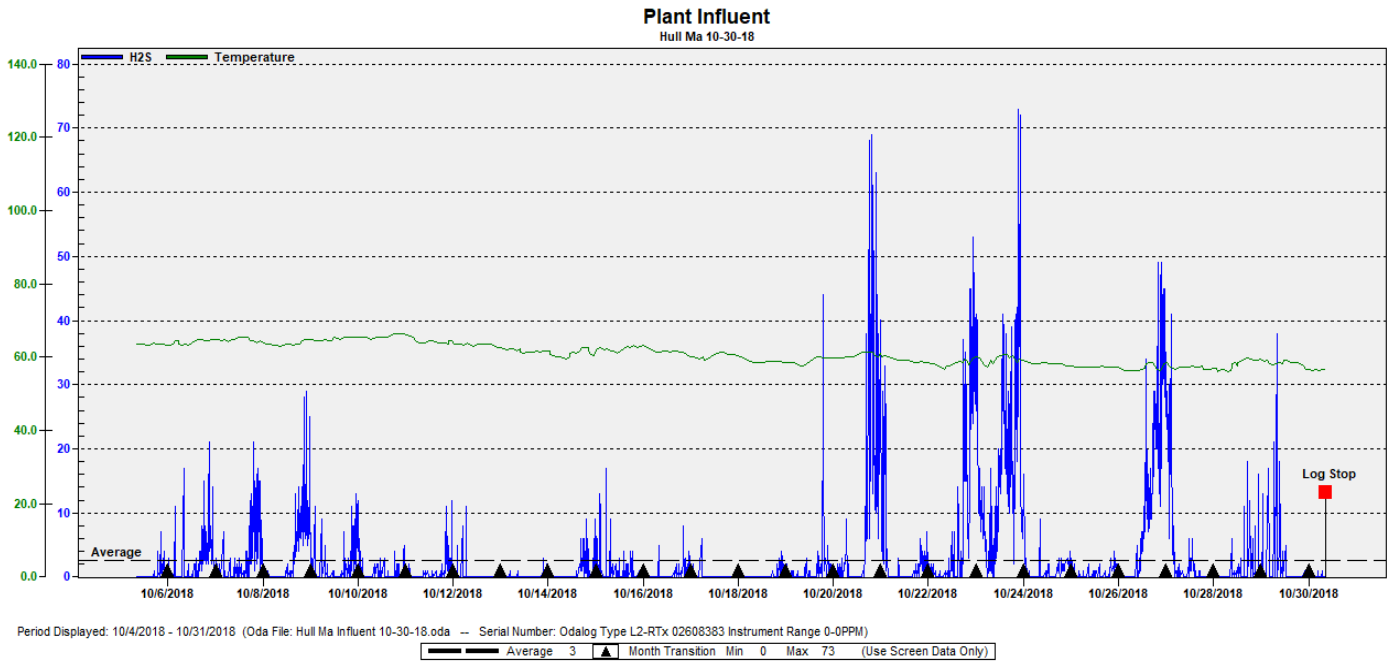
Nantasket & Water Street MH: Average H₂S 6 PPM / Peak 145 PPM



High H₂S readings at end of monitoring period correlate with running out of the chemical from the Bioxide system, and higher flows on 10/27, which caused for a scouring of the system. After the high flows on 10/27, the system H₂S dropped down to zero.

Hull WWTP Influent MH: Average 3 PPM / Peak 73 PPM

Hull WWTP Influent MH: Average 3 PPM / Peak 73 PPM



Onsite Sampling of Nantasket Waste Line and Bioxide Feed Rates by Evoqua

- System ran out of chemical in late October and was shut down for the season. Resume - spring 2019.
- **Bay Street MH**
Nitrate 0 Sulfide 0. Mg/l Ph 7.6 Temp 13.4 C Time 10:15 am
- **Nantasket Intersection & Water Street MH**
Nitrate 2 Sulfide 0 Ph 7.6 Temp 12.3 C Time 10:00 am
- **Spring Street & Nantasket Ave MH**
Nitrate 2 Sulfide 0 Ph 7.4 Temp 12.8 C Time 9:30am
- **Influent WWTP MH**
Nitrate 2 Sulfide 0 Ph 7.4 Temp 9.7 C Time 9:00am
- Mixing systems/aerators all functional at the pump stations, except for pump station #3. New Medora Gridbee mixing system for PS 3 not installed yet.
- In Progress - Vetting of ideas/discuss options for headworks area to reduce corrosion and odors. These items part of the discussion with Tighe and Bond's HVAC evaluation/upgrade.

Completed:

- Installed rubber mats to cover all channels
- Constructed frame to cover the aerated grit chamber with a tarp
- New “ducting/pipes” to connect channels to scrubber ductwork – to pull air from the room into the channel and then into the scrubber – i.e., to not let odorous air into the room ... capture it in the channel and send directly into the scrubber – channel will be under a slightly negative air pressure

Under consideration

- Possibly add hydroxyl radical ozone unit to air in above ground sludge tank ...
- Seal all pipe penetrations entering/leaking the headworks
- Remove all unused pipes
- Possibly control/reduce air flow to the aerated grit chamber, once air blower piping modifications are completed.

6 MAINTENANCE SUMMARY

6.1 TASKS COMPLETED THIS MONTH

Monthly work order summary for October compiled and a report summary can be found on page 32.

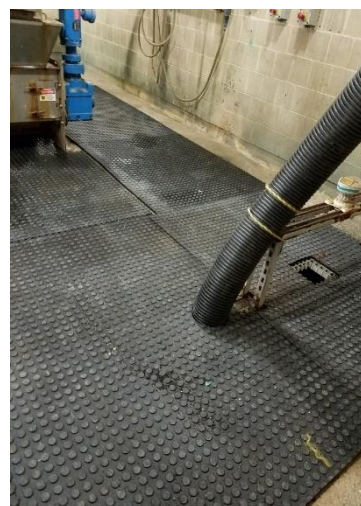
- 1) Modify headworks ventilation / cover all channels. Trial for future HVAC upgrades. All influent channels covered with rubber matting. Aerated grit tank covered with framework to support a tarp. Air vents extended down using flexible hoses down to grating to collect air to go to the scrubber. Pre and post air flows rates logged for monitoring.



Covered aerated grit tank



Matting over grating around screen



Matting and drawing in air to scrubber

- 2) Gravity thickener #1 – old motor failed. New motor ordered. WRE assist in cleaning out grit/sludge from the GT1 tank, remove debris and rotted piece of angle iron.
- 3) Automatic Alarm Co in for semi-annual inspection of the building fire alarm.
- 4) On-going de-ragging of pumps at PS 6, up until when the deragger unit was installed for pump #1 on 10/18/18. The deragger unit uses software and a reverse motor starter to reverse direction of the pump that allows for debris to be spun out and pushed forward into the force main. To date, the deragger unit has been working well. The 2nd sump pump still needs to be replaced at the station.
- 5) CCT's – chlorine contact tank piping for tank cleaning erected at discharge ends of both tanks to allow for easier hook-up/set up to clean out the tanks.



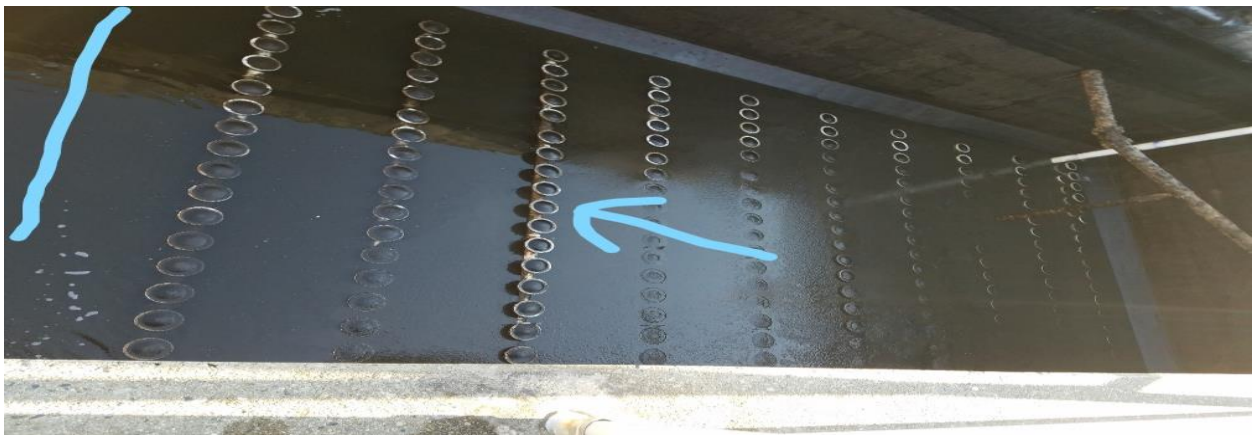
- 6) Electrician corrected the deficiencies found in the recent infra-red scanning of all electrical panels. Replaced breakers due to overheating and high temps. Panels PC6, LC4 & LC2.
- 7) Several de-rags/cleaning done on the influent composite sampler suction line. Strainer clogged inhibiting adequate samples to be drawn.
- 8) WRE in for wet well cleaning of pump station wet wells at Station 1, A, 3,4,5.
- 9) Cracked hypochlorite feed tubing caused for a small spill in the operations building basement. Less than the desired amount of Hypo made it out to the CCT's. A new tube was installed on the same day. A summary of the lower hypo addition to the the CCT's was discussed in the October monthly DMR cover letter.
- 10) Run plant's main generator under load on 10/25 in anticipation of very windy conditions and potential for power loss. No issues.
- 11) WRE assist with vac truck to clean out aeration tank #3 – accumulated grit and solids. Tank had to be cleaned out so that inspection of all hardware and damaged air distribution piping could be made. W&C staff performed the in-tank cleaning.



Tank 3 – ready to pump down – broken diffuser in background



Tank 3 – while in service with broken diffuser piping – blowout of air



Tank 3 – left side [line] where piping broke & not there; middle arrow shows another section ready to break. Hardware corrosion and failure is the cause.



- 12) Removed guard on SC1 and found drive chain broken and wrapped around drive gear. Installed new chain due to excessive wear on the old chain. Grease chain & adjusted.
- 13) Highland Power completed installation of new heat exchangers for the 750kw Kohler generator. Started work on the 520kw Detroit unit for thermostat replacements - 4 units. Also found that the heat exchanger on this generator was leaking internally. The heat exchanger was removed and brought to repair facility.



520KW unit – heat exchanger removed for repair

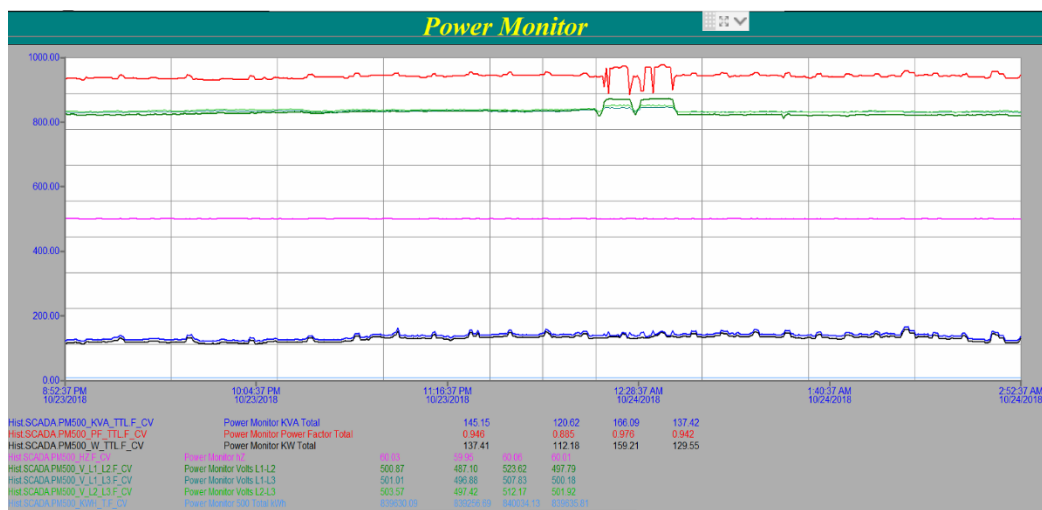


750KW unit – two new heat exchangers [black]

- 14) Pump Station “LS A” – both pumps inspected for volute condition and impeller wear. Limited debris found. Questioned if force main had a restriction, causing for the low output flows from the pumps. The Fairbanks-Morse Rep visited to inspect all pumps, spare parts, etc. Pressure tests run on discharge lines, while checking flows and performing wet well drawdown tests. Install new pressure gauges & ball valves for pump bleeders.
- 15) WRE jetted approx. 800 ft of the 4-inch discharge force main from LS A. Small increase in flow seen. MH at Atlantic Ave also cleaned where accumulated scale build-up may have been causing restricted discharge from LS A.



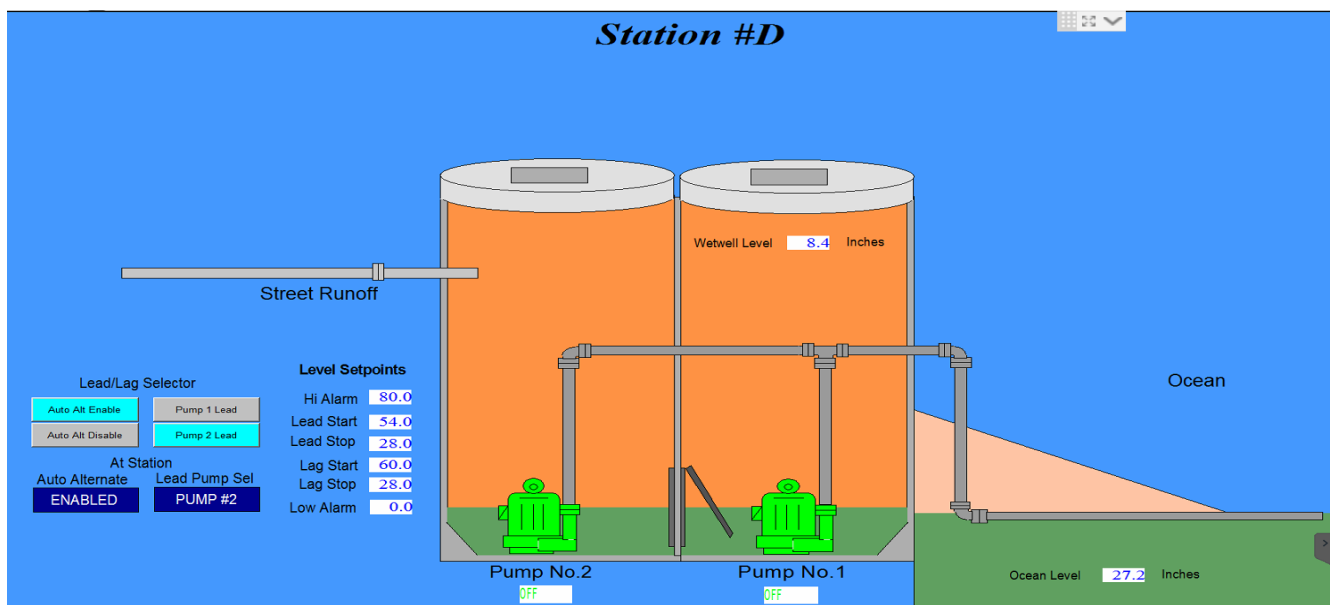
- 16) Various PM's and CM's done on all of the portable pumps. Oil changes and fuel filters changed on the 4-inch pumps, greasing done for all pumps, and control boxes re-supported, where supports had failed.
- 17) On 10/24-25 high voltage alarms callout from power monitor at WPCF at about 12:15am, two of the leg to leg voltages being monitored were high and near 525 volts. Monitor remotely for approximately an hour. Additional SCADA programming done as a result of the callout alarm condition. HMLP did not have anything unusual occur, nor was any of the facility's equipment affected.



- 18) In anticipation for weekend storm, on 10/26 the staff transported portable generator to station LS A. Ran generator according to site specific SOP to verify proper station operation on stand-by power if needed. Unit was left at station in standby position, since the transfer of power to generator, if utility power is lost, is a manual operation.



- 19) Weekly No loads and Monthly load tests completed on all generators including the portable generator and pump stations
- 20) On-going wheel replacement on the RST – Rotary Sludge Thickener.
- 21) Completed installation of re-built influent pump #1
- 22) Continued outside yard maintenance being done that includes the Hull Life Saving Museum.
- 23) Multiple visits to D Street stormwater station to run/start up back-up trash pump due to high well levels, as a result of rainfall at high tide periods. A reworking of the current hose set up is needed, since the flexible hoses currently being used are worn. In late September, Steve Rose had rewired D Street to allow for remote operation from SCADA. A high- level alarm and back-up high level float alarm were set up. Setpoints developed for remote station operation of the submersible pumps if needed.



- 24) On-going Dig-Safe mark outs completed, due to emergencies, upcoming paving projects, and responded various rattling manhole covers, broken manhole covers/rims, sunken manholes covers/rims. All work that W&C completed is documented in the monthly Work Order Report.

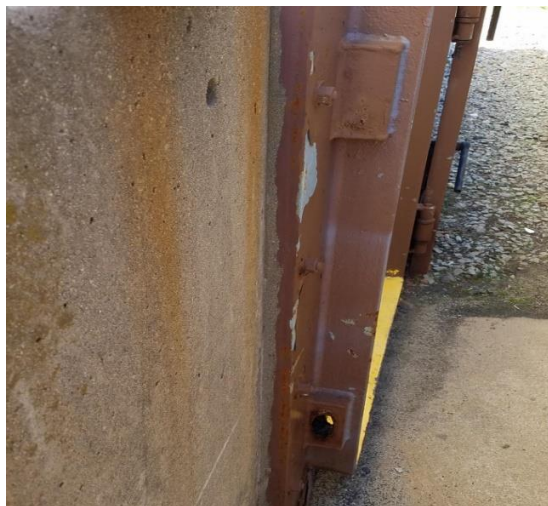
- 25) The discharge line to the above ground sludge storage tank became clogged on 10/30. The line from the water booster pump to the sludge line was modified in order to flush and clear the line. We suspect that the progressive cavity sludge transfer pump is worn and cannot build up enough pressure to move the sludge.
- 26) On-going repairs to E-1 grinder pumps by FRMahony Corp. Maintaining current spare pump inventory, as well as some stocked supplies for these systems.
- 27) There were five grinder pump call outs during the month of October.
- a. 37 Elm Ave. – Attempting to stop groundwater intrusion into pump chamber, replace pump
 - b. 19 Richards Rd. - replaced pump
 - c. 32 Richards Rd. - replaced pump
 - d. 97 N. Truro – replaced upper pump chamber section, replace cracked lid, and install new compression nut on discharge valve.
 - e. 26 Dellawanda – replace pump

6.2 ON GOING PROJECT UPDATES

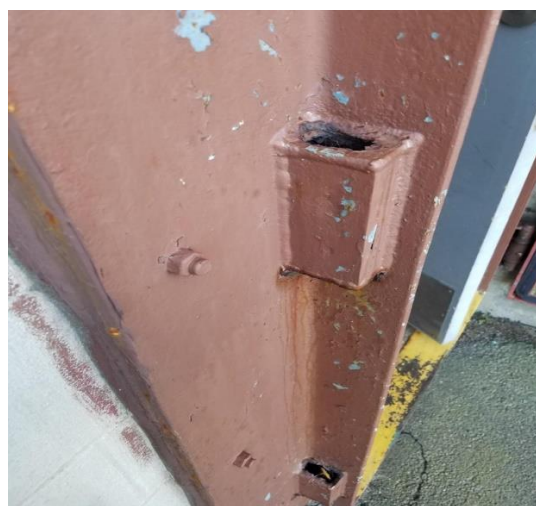


- Drylet bacterial process enhancement trial continued in October. [See effluent/compliance section]. Holding a weekly process call/meeting to discuss plant performance. Continued monitoring of the biological system and additional sampling performed during September as requested. Most significant process change was to raise target MLSS to 3500 mg/L.
- Pump Station 4, Pump Station 9, and Plant Headworks are now being evaluated together for a structural concrete repair design and bid to be done as part of an on-call services agreement with a contractor. The details are still being evaluated.. As noted before, the mechanical work is being held up at pump station 4 due to structural safety concerns. As the bidding is not possible to do through O&M team, a larger structural project concrete repair work scope is in now in discussion / planning stages.
- As a result of the two major electrical events [5/16 & 5/19] that occurred in May, the conditions that caused those significant events appear to no longer exist. There were no new incidents with the fluctuating 120-volt power load that feeds all of the programmable logic controllers [PLC's], and SCADA computers through plant back-up power supply units [UPS]. Nearly all of the UPS's were replaced with new units. The two remaining UPS's were ordered and received.
- There has been on-going plant assistance & discussions with W&C SCADA Group & electrical engineering, Boston Water & Sewer [Mark Cleary], Pioneer Electric, and EESCO. There was an additional power monitor that was installed by the W&C electrical group to monitor harmonics as well as voltage. Seth Harvey from the W&C Bangor office installed a power monitor & recorder on 9/19/18. This recorder remained on line for a month.
- Plant water basket strainer – We are still investigating a replacement unit, either the same as the current unit, or from a different Mfr. We have yet to evaluate the operating mode - manually cleaned or auto-cleaned. Also looking at where effluent water is drawn into the system, evaluating the size of the suction piping, considering other suction location for system to improve water quality – utilizing water from effluent wet well versus drawing from bottom of a manhole just after the secondary clarifiers. Hypochlorite addition continues to plant water system started in mid-July to improve water quality of plant water. Looking at the current mfr, Hellan, as well as another supplier, Eaton Products.

- The sluice gate supports for the inlet gates to primary clarifiers at the D-box. As noted previously, the supports have lifted away from the concrete and there is also cracked concrete under the supports. Quotes for the repair are on hold, and the work may be done, when the influent headworks structural repairs are performed.
- Still looking at alternative use for one of the existing primary clarifiers, especially the #1 PC, since the drive unit does not work. Conversion to a mixed tank and floating aerator are being considered. This would allow for hydraulic flow into the tank, and not restrict flow at the D-box, which is currently a concern, as having the primary tanks off line in the warmer months eliminates many of the odors around the facility.
- Pump Station #1 – Prepared scope of work for contractor bidding to install 2 new pumps and check valves. Request for quotes went out in late September, quotes received and reviewed. Work awarded to the low bidder, Aqualine Utility.
- Jim Sturgis to visit the facility in early November to inspect the inside of aeration tank #3, since the tank was emptied out for repairs. He is also assisting with the ladder scope, various structural repairs/needs and AST project.
- Flood door condition assessment made and some of the lockdown parts of the frame where it is boxed-in need to be repaired. The work is scheduled for late November.



Rotted area at bottom of frame



Rotted boxed-in areas where inside latch would catch

- Yard hydrant survey in progress and evaluating which hydrants to be replaced as needed. Four new yard hydrants received and will be held in stock, until arrangements for contractor support set up to replace [targeting early December].
- Tecta New England roofing contractor inspected the WWTF building roof selected for the inspection and repairs to the membrane roof – operations building. Details for inspection and some repairs being worked on. A safety plan must be approved and in place before a purchase order can be issued. The work is being targeted for November.

- A Request for quotation to install new ladders was sent out in late September for all of the pump stations. Bids were received in mid-October and currently under review.
- Failed heaters in the primary and secondary pump rooms to be replaced in November.
- Co-ordination calls & project management for the Horizon Gap2 Energy grant. Horizon solutions working on obtaining the materials and services for Odor control fan VFD, Engine block heater – heat pump unit, and Aeration system piping modifications.
- Meeting at WPCF to discuss new transformers and power quality issues – 10/18. Pat Halpin reviewing with HMLP transformer placement, wiring, connections into building, etc. EESCO was also at plant. Also met to discuss power quality issues, power monitoring, harmonics, effluent pump room flood proofing and electrical scope/needs.
- HFMP – Worked and updating checklist to provide plant status updates during times of severe weather conditions and in response to “Situational Awareness” alerts. See attached.
- Looking at selecting and installing a weather station on the Operations building roof to replace a failed unit, no longer at the facility. Presently a new manual collection type rain gauge was installed out in the yard by the secondary clarifiers.
- Source Registration for 2016 via eDEP electronic filing system completed for air emissions requirements. Assisted by Tomas Ennis of W&C.
- DMR QAQC Study 38 – complete requirements for submittal of results from the contracted outside labs that we use.

7 SAFETY



It is Woodard & Curran's policy to maintain a safe and healthy work environment for every employee and to comply with applicable occupational health and safety regulations.

- No lost-time incidents for the month of October.
- Service truck – crane inspection completed.
- Daily safety briefing meetings, review site safety policies with sub-contractors, safety tailgate topics.
- Pure Safety – October – Continuously Improve for Safety Excellence
- Continued working with Andy Rowe on pump station ladder standards & specifications for replacement. AR on site 10/16 to review PS1 work and other safety related issues.
- Working with Andy Rowe on safety plan for roof inspection – Operations building.
- Discuss Storm Event Readiness Checklist developed by Bill B.
- Gas Meters – portable sensor replacements – installed and recalibrated units by Jim G.
- Bill B met with the Hull Fire Department for confined space rescue questions & concerns, as they relate to pump station corrective maintenance repairs. The HFD does not have the necessary equipment to perform confined space rescue, but they are available to provide first aid services. Also, in discussion with HFD for future joint training exercises.
- Jerome meter for H₂S readings is out-of-service and a loaner unit has been requested.
- Monthly staff safety meeting conducted on 10/31/18
 - Space Heater safety
 - Limiting use of cell phones while perform work related tasks 'Cutting the cord'
 - September 2018 Lessons Learned, and safety observations discussed – Near misses and incidents from other company projects.
 - Confined Space Entry work at pump stations & ladder replacement plans
- Planning to replace defective chainfalls [3] and address PM needs for facility hoists in November.

8 STAFF DEVELOPMENT

Training is an important part of any operation to ensure employee health and safety is assured, quality standards are maintained, staff skills are improved, career opportunities become available, and higher productivity is achieved.

Listed is a general outline of training that the staff received over the course of the month:

- Monthly staff Safety training – completed – Pure Safety and monthly safety meeting.
- Operational updates and process control discussions, especially with recent electrical issues and plant shut-downs, pump station operations, odor issues, dig-safes, etc.
- W&C “near-miss” incidents at all projects for September discussed.
- On-going training for various staff – cyber security
- Mandatory – Managing Bias in the workplace.

Staffing related items:

- Continue involvement with Mass Maritime [MM] internship program/career fair for future interns. Contacting students for early 2019 co-op period [6 weeks – late January through March] W&C attended the Fall Career Fair at MM in October. Had one student interview at the plant, and that person was selected for the Jan-Mar internship 2019.
- Sunday rotation schedule in place for next several months through early December with Jim Gagliard working every other Sunday, and remaining weekends being filled by Roger B., Aram V., and Bill B. When Bill is not scheduled for a Sunday, he will be on a Monday-Friday schedule.
- Supplementing staff needs with O&M tech support where needed. Jim G and Jody S providing coverage when staff levels are lower due to sickness, vacation, or training.

9 COLLECTION SYSTEM

9.1 WET WELL CLEANING

The actual schedule for wet well cleaning: May 2018 to April 2019:

(X-Cleaned) - (Orange – Inspected) - (Green – Cleaned See notes) - (blank – no work done)

Frequency of cleaning	Pump Station							
	A	1	3	4	5	6	9	D
May, 2018		X			*1	*1		
June, 2018					X	X		
July, 2018					*2			
Aug., 2018					X			
Sept. 2018				#3	#3		#3	
Oct., 2018	Cleaned X	Cleaned X	Cleaned X	Cleaned X	Cleaned X	inspected	Cleaned X	inspected
Nov, 2018								
Dec., 2018								
Jan., 2019								
Feb., 2019								
March 2019								
April 2019								

All pump stations except for Pump Station 3 and Station D have an aerator/mixer in the wet wells

- *1 Inspected and needs to be cleaned in June**
- *2 Inspected and needs to be cleaned in August**
- *3 Inspected and needs to be cleaned in October**

9.2 COLLECTION SYSTEM MAINTENANCE

Woodard & Curran assisted/conducted camera work in the Hull collection system at the following areas during the month of September.

23 Bay Street
MH 20826.
Mayflower Rd. [for DPW]
Edgewater Rd. [for DPW]

25 Summit Ave.
25 Orleans [E1 valve MH]
Duck Lane [for DPW]
Nantasket Ave

10 PROJECT MANAGEMENT & ADMINISTRATION



10.1 ON-GOING PROJECTS AND SUPPORT ITEMS

- Asset management checkbook for tracking of expenses. Review of account status between W&C and Hull Sewer Dept. is on-going. [04M]
- On-going UST/AST work:
 - CommTank removed the UST on 10/10/18 and the removal was observed by the Hull Fire Department as well as Katie Nadolny (Insurance Company representative). All soils above, around the sides and at the bottom of the tank excavation registered 0 ppm on the PID meter. Groundwater was encountered and no sheen was present. The tank was disposed of properly at the Hyde Park facility by CommTank. Compaction of area after clean fill brought in for the hole. No contamination found. HFD on site for the actual tank removal and inspection.
 - The chainwall platform is currently being fabricated. For the chainwall platform only installation bids were received from two (2) contractors – CommTank, Inc. and Hart Engineering.
 - Northeast Geotechnical will need to be present during the installation to make sure the compaction requirements etc. are followed per their recommendations from their geotechnical report.
 - Looking at tank monitoring system and tie into SCADA and what the needs are to get this accomplished.
 - The mechanical scope of work and drawings will be sent out to bid after the completion of the RFP documents.
- Peter Lyons had inquiries with a number of companies for upcoming Gunrock area sewer line cleaning work, manhole inspections, and CCTV inspection, which would be in advance of the 2019 paving program. The work is scheduled for late November into early-mid December. The work is expected to take 10-12 days to complete. Debris will be managed and disposed of at the Town landfill, after decanting is done.

The recommendation was to use National Water Main Cleaning [NWMC], as W&C has had good experiences with them in Hull in the past, their pricing is below average, they've included MH inspections, and they are a larger contractor more capable of handling more difficult field conditions. This would also be a good trial for next spring/summer when there is the planned large-scale sewer system evaluation study [SSES]. There will be oversight to ensure that adequate cleaning is done prior

to CCTV. NWMC provided a price of approximately \$40,000 to complete the work. An independent contractor agreement [ICA] will be in place through the project. The disposal quantity is expected to be low, with no additional disposal needed.

Companies that bid the work were: National Water Main, Windriver Environmental, BMC Corp, and EST Associates.

The current on-call services for sewer jetting and cleaning and vactor truck services is still being worked on. However, Windriver Environmental is currently providing the routine cleaning and jetting assignments. In the event that emergency services are needed, all of the contractors listed above, as well as others in the area are on the contact list.

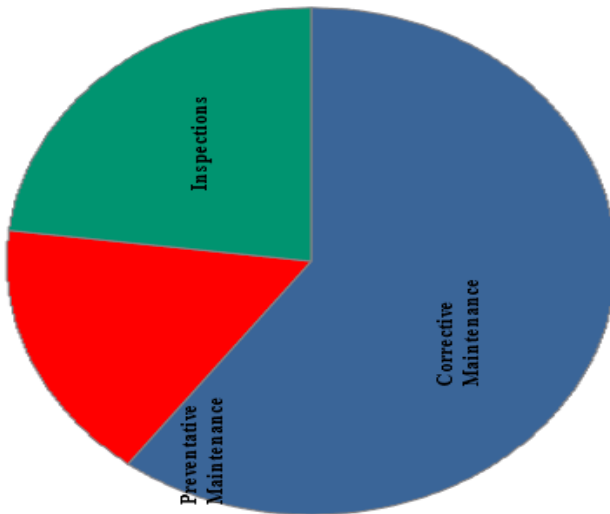
- Utility Cloud planning and implementation progressing. Tie card Update: Tie cards were continued to be scanned and files named for uploading to utility cloud base, for the month of October we reached 75% completion. Uploading with associated map/lot parcel. Also tracking manhole frame and cover inspections in the UC.
- Utility Cloud now successfully being used for multiple different work order types in the collection system.
- In discussions with Evoqua to rent the current equipment at PS 3 for the next year through 10/31/19. The rental fee would be the same, with the exception, that costs would be spread out over the 12-month period, to ensure that the equipment would stay at the current location.
- Met with O'Connor Safety team for confined space rescue needs at PS 1 for upcoming work. The Hull Fire Department also met with O'Connor to review what they provide for services & training.
- Several support meetings to discuss engineering task orders, CZM grants, capital planning, effluent outfall pipe assessment, SRF fundings, resiliency upgrades, etc.
- Looking at the possibility for the Duperon flex rake screening unit to run with a smaller bar screen opening. The current spacing between the bars is 3/8-inch, and the new proposed spacing would be 0.25 inches. The screen unit was found to be able to handle the higher flows with the smaller spacing. The vendor has provided a quote for the replacement, and W&C is still evaluating.

11 WORK ORDER SUMMARY [OCT 2018]

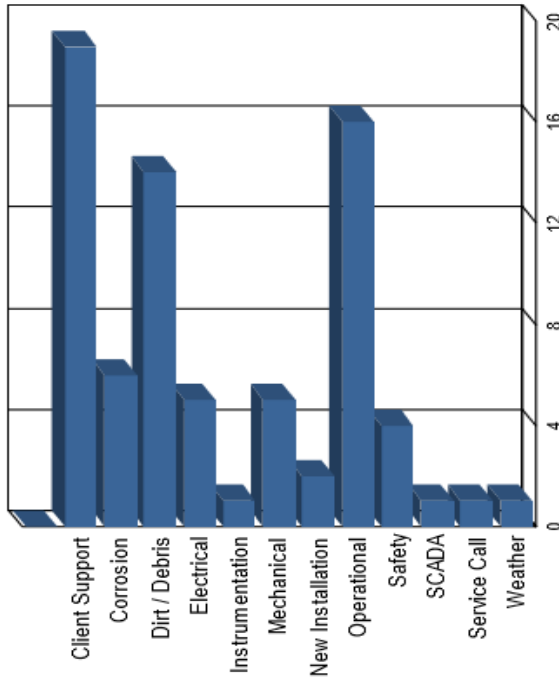
WOODARD
& CURRAN

Work Order History By Type

Corrective Maintenance	47
Inspections	18
Preventative Maintenance	13
Total Work Orders	78

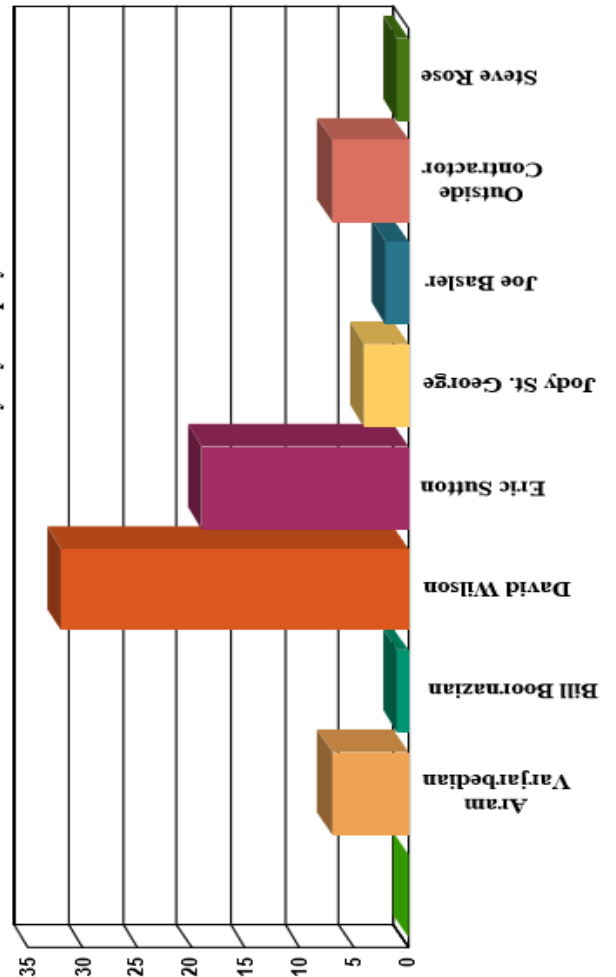


Work Order History by Reason



Employee	WO Count	Labor Hours
Aram Varjarbedian	7	11
Bill Boornazian	1	2
David Wilson	32	33
Eric Sutton	19	14
Jody St. George	4	49
Joe Basler	2	0
Outside Contractor	7	18
Steve Rose	1	2
Unassigned	5	3
Totals	78	132

Work Order History By Employee



Storm Event Preparedness



Date: 10/26 - FRI TO 10/27 SAT 2018

FORECAST STORM CONDITIONS

- | | |
|---|--|
| <input type="checkbox"/> Rain > 3-inches in 24 hours | <input checked="" type="checkbox"/> Rain < 3-inches in 24 hours |
| <input checked="" type="checkbox"/> High Winds 30+ MPH | <input type="checkbox"/> Severe Winds 50 + MPH <u>ESTIM 20-40 mph.</u> |
| <input type="checkbox"/> Moderate Coastal Flooding | <input type="checkbox"/> Severe Coastal Flooding |
| <input type="checkbox"/> Excessive Snow 12+ inches | <input checked="" type="checkbox"/> Minor Flooding Anticipated |
| <input checked="" type="checkbox"/> Duration: <u>1</u> | Start Date / Time: <u>10/27/18 SAT - ALL DAY</u> <u>10/27/18</u> <u>- MID - DAY</u> <u>HEAVY</u> |
| <input checked="" type="checkbox"/> High Tide Elevations | End Date / Time: <u>SAT - 9 PM</u> |
| <input checked="" type="checkbox"/> Affected High Tide Times: | <u>9.3' SAT 10/27</u>
<u>10.2' SAT 10/27 1:45 PM</u>
<u>9.2' Sunday 10/28 - 2:00 AM</u> |

WWTF STATUS

- | | |
|--|--|
| <input checked="" type="checkbox"/> All INF. Pumps Ready | <input type="checkbox"/> INF Pump Exceptions <u>NONE</u> |
| <input checked="" type="checkbox"/> All EFF. Pumps Ready | <input type="checkbox"/> EFF Pump Exceptions <u>NONE</u> |
| <input checked="" type="checkbox"/> Generator #1 Ready | <input checked="" type="checkbox"/> Generator #2 Ready <u>by end of day on 10/26</u> |
| <input checked="" type="checkbox"/> 4-Inch Trash Pumps Ready | <input checked="" type="checkbox"/> 6-inch Trash Pumps Ready |
| <input checked="" type="checkbox"/> Godwin Pump Ready | <input checked="" type="checkbox"/> All Portable Pumps Fueled Up |
| <input checked="" type="checkbox"/> All Flood Doors Ready | <input type="checkbox"/> Planning to close flood doors |
| <input checked="" type="checkbox"/> INF. Gate Ready <u>tested OK</u> | <input type="checkbox"/> Sandbag Transformer Needed |
| <input type="checkbox"/> Rental Pumps Needed | <input type="checkbox"/> Sandbag Electric MH's Needed |
| <input type="checkbox"/> 2,000 + Gallons in AST | <input type="checkbox"/> |

Pump Stations (*Ready Indicates Station is functioning normally)

☒ PS#1 Ready

☒ LS-A Ready

☒ PS#3 Ready

☒ PS#4 Ready

☒ PS#5 Ready

☒ PS#6 Ready

☒ PS#9 Ready

☒ D-Street Ready

☒ Portable Generator Fueled Ready

☐ Any Issues / Exceptions at Stations Note Below

To be Towed + set up AT P.S. A
Fri 10/26/18 - Tested OK

WATCH wetwell levels
AT PS 1, 3, A, + 9, D.

MISCELLANEOUS ITEMS

☐ Food / Dry Goods Purchased

☐ Sleeping Arrangements Needed

☒ W&C Trucks Ready & Fueled

☐ Additional Sandbags Ready

☐

☐

STAFFING REQUIREMENTS

☒ All Regular Hull Staff Available

☐ 24 Hour Shift Planning

AV + JB ON SHIFT FOR SATURDAY

☐ Outside Electrician Onsite

☐ 2-Person Crew to be stationed off WWTF site

☐ 1 W&C Storm Support Onsite

☐ Additional Contractor Support List Below

☐ 2 W&C Storm Support Onsite

☐ E.S. + D.W. AVAIL IF NEEDED
HEAVY RAIN due mid-day SAT thru
SAT. night; poss power loss -
plant + pump STATION.

☐ 3+ W&C Storm Support Onsite

☐

☐ Area Manager Onsite

• TRACK rainfall - our gauge

• Addit tanks avail. PC1, PC2, Aer 2 + 4
SC 1.

Completed by:
A. Vanyashina 10/26/18