

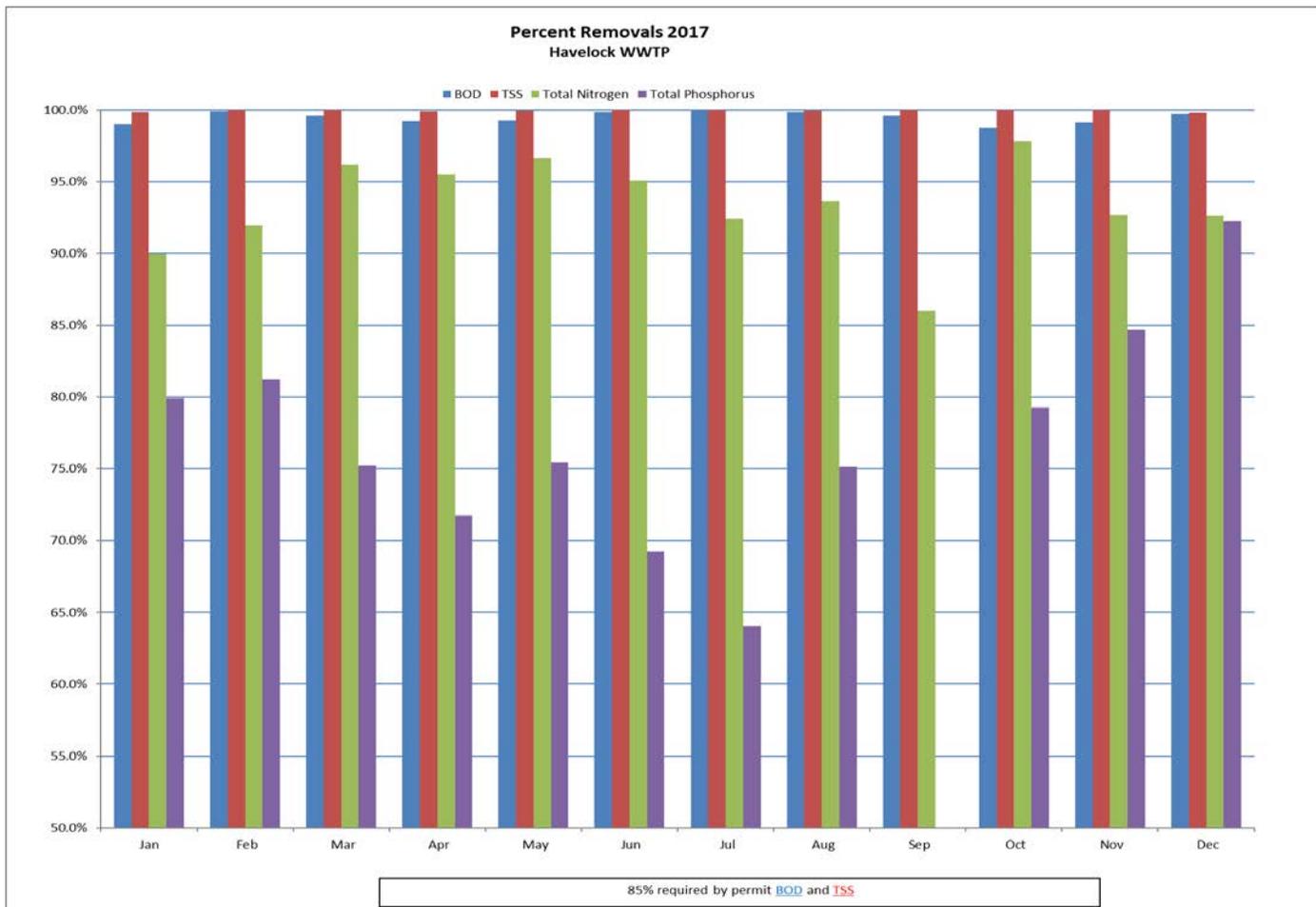


2017 City of Havelock Wastewater Treatment and Sewer Collection Facilities Report

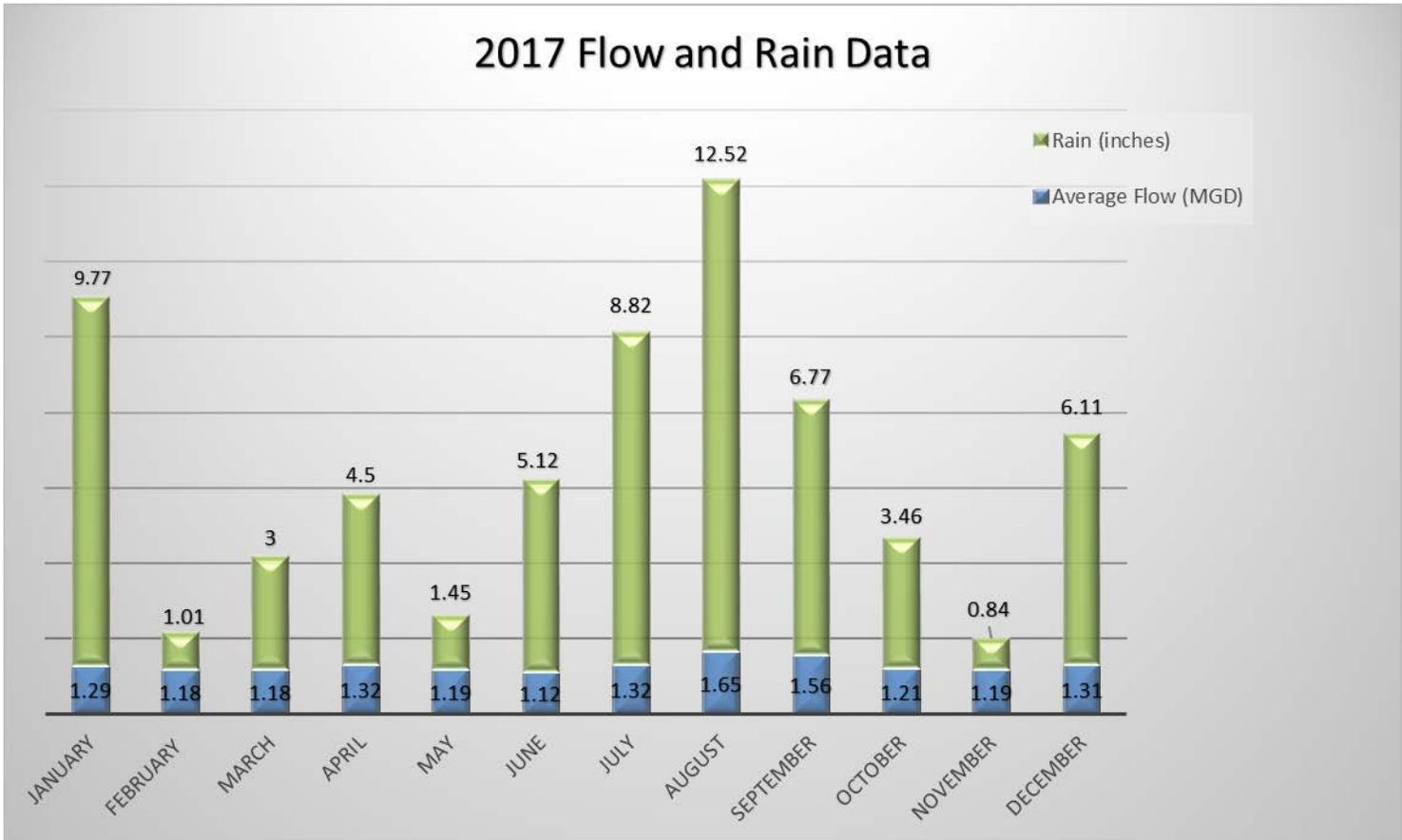
*NPDES Permit Numbers NC0021253, NC0078131, WQCS00104

WASTE WATER TREATMENT OVERVIEW

After you wash dishes, take a shower, brush your teeth, or wash a load of clothes, the used water travels through a system of pipes to Havelock’s Wastewater Treatment Plant (WWTP) where impurities are removed before returning the water to the environment. The City of Havelock has some of the most stringent wastewater discharge limits in the state. During this year 99.5% of the Biological Oxygen Demand (BOD) was removed by the Havelock WWTP. High levels of BOD removal are an indicator of the effectiveness of the wastewater treatment. The treatment process also removed 100% of the suspended solids, 93.4% of total nitrogen, and 74.6% of total phosphorous.



Havelock’s WWTP had three reportable spills in 2017. The first was on August 8th of an estimated volume of 14,000 gallons to East Prong of Slocum Creek. The second was on August 22nd of an estimated 18,500 gallons to Caps Branch. The third occurred on August 29th with an estimated volume of 14,700 gallons to Caps Branch. In all cases these spills were reported to the state as required. The chart below shows the monthly average flow and rain fall in inches for 2017.



HOW HAVELOCK’S WASTEWATER IS TREATED

Once at the treatment plant the wastewater enters a bar screen and grit removal system where rags, sticks, large inorganic particles, and grit are removed to prevent interference and excessive wear on other process equipment. The wastewater is then pumped to the complete mix aeration basins for BOD (biological oxygen demand) removal, and then flows to three second-stage aeration basins where nitrification (conversion of ammonia to nitrate nitrogen) occurs. Next, the treated wastewater flows into two final clarifiers where biosolids settle to the bottom and the clear treated water flows off the top of the clarifiers and travels to a set of three denitrification filters, which provide tertiary treatment (effluent polishing). As the water travels through the filters, any remaining fine particles are removed, and the nitrate nitrogen is converted to nitrogen gas. The clean water or effluent from the denitrification filters subsequently flows to the ultraviolet disinfection facility for the destruction of harmful microorganisms. Flow from the plant is calculated by a magnetic flow meter and effluent samples are taken per the cities NPDES permit.

The following chart (Wastewater Treatment Plant Performance) indicates the high quality of the water returned to The Neuse River during calendar year 2017.

Wastewater Treatment Plant Performance

<i>Parameter Monitored</i>	<i>*NPDES Permit Limit Summer</i>	<i>*NPDES Permit Limit Winter</i>	<i>Average for 2017 Calendar Year</i>
<i>Biochemical oxygen demand (BOD)</i>	<i>5.0 mg/L</i>	<i>10.0 mg/L</i>	<i>1.74 mg/L</i>
<i>Total Suspended Solids (TSS)</i>	<i>30.0 mg/L</i>	<i>30.0 mg/L</i>	<i>2.65 mg/L</i>
<i>Total Phosphorous</i>	<i>2.0 mg/L Quarterly Average</i>		<i>1.47 mg/L</i>
<i>Total Nitrogen lbs./Year (Annual Limit)</i>	<i>21,400 lbs. (Per calendar year)</i>		<i>12,319 TOTAL lbs.</i>
<i>Total Toxicity</i>	<i>Pass or Fail (quarterly sampling)</i>		<i>(1st Quarter- Pass) (2nd Quarter-Pass) (3rd Quarter-Pass) (4th Quarter-Pass)</i>

*National Pollutant Discharge Elimination System (NPDES)

Collections System Performance

The City’s wastewater collection system consists of approximately 73 miles of sewer lines, some as deep as 25 feet below ground. The system collects used water from the homes and businesses throughout the City and transports it by gravity lines, pump stations and force mains to the wastewater treatment plant on Jackson Drive. The collection system is maintained around the clock and the lift stations are equipped with automatic dialers that alert staff 24 hours a day of malfunctions. There were 3 reportable spills totaling 47,200 gallons for the calendar year of 2017. Many of these were contributed to severe natural conditions with extensive rainfall amounts. A large-scale video project was completed in 2017 which will allow the City to rank and prioritize collection system rehabilitation projects in an effort to reduce inflow and infiltration.

Water Plant Backwash Water Treatment System

The Water Treatment Plant has not able to consistently meet state monthly limits of 30ppm (parts per million) for total suspended residuals, causing some NOV’s for the months that were over. The Water Treatment Plant is undergoing a new project to construct a new 500,000-gallon clarifier, polishing basin, new effluent line and six drying beds. State Utilities Construction Company started the project in June 2017 for a total project cost of approximately \$3.1M. The current Schedule of Milestones is to have the new facility operational sometime around March 2018.

Note that this exceedance is separate from the drinking water distribution system and has no bearing on drinking water quality.

WHAT CAN I DO TO HELP HAVELOCK TO CONTINUE TO IMPROVE WATER QUALITY?

Limit your personal use of pesticides and fertilizers. Use and dispose of toxic chemicals properly. Take used motor oil to a recycling center.

To prevent sanitary sewer overflows, dispose of cooking oils and grease as a solid waste in your home garbage container. Never pour oil or grease into sink drains, garbage disposals, or toilets.

Repair broken clean-outs and replace broken or missing clean-out caps on your household sewer line as they occur. Make sure that none of your household gutters are transporting rainwater into the sewer system. Treating rainwater adds to every customer's cost and can lead to fines for the City.

Please do not flush disposable wipes, diapers, or any paper products other than toilet paper down the drain.

Use water wisely. Repair leaks in household plumbing promptly. Irrigate your lawn or garden only in the early morning or late evening hours. Do not let water continue to run while shaving or brushing your teeth.

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**Copies of this report are available at the City of Havelock Water Billing Office and at;
www.havelocknc.us**