



Incidents Report Form

Nature Foundation St Maarten

Incident name: Fish Die off at gutters to Belair pond (close to Learning Unlimited Round-A-bout).

Date: 18th October, 2021

Time: 12:30 pm

Staff members NFSXM involved: Star Peterson (Ranger), Melanie Meijer zu Schlochtern (Manager)

Involved organizations:

Involved persons:

NFSXM equipment used: vehicle, camera

Summary of the incident:

On October 18th, a call was received stating there were a lot of birds in the area of the gutter next to the Learning Unlimited School. It was also reported that possible dead fishes were in the pond gutters entering to Belair pond. Upon arrival it was recorded that several dead fish were found in the gutter and a significant die-off took place. This was mostly in the shallow area near the roundabout, but also alongside the hospital. Also, the water way and pond were inspected for fish die offs. Fortunately, only the shallow areas seem to be affected with no indicators of fish die offs or many birds together in any other portion of the pond.

The area was inspected, and it could not be determined what the clear reason is for the fish die-off. However, fish die offs are mostly a result of lack of oxygen in the water which are often increased during periods of high temperatures and can be caused by algae blooms initiated by for example high amounts of wastewater input.

Several pipes were seen to be ending up in the gutter and it is already known that Belair pond has very high amounts of wastewater entry from surrounding housing. Previous test has shown very large amount of nutrients present, including E. coli.

Biological and environmental info:

In general fish die offs can happen due to the lack of oxygen in the water due to rising temperatures, absence of rainfall and an increase of salt concentrations can cause the fish die off. In order to survive all fish, use their gills to extract oxygen from water helping them to breath. With a decrease in oxygen in the water, fish will struggle to survive and eventually die. Factors that can affect the amount of oxygen in the water are lack of water movement, excess waste and wastewater or certain chemical run-off into the pond.

Fecal contaminated waters can impact the environment and marine life tremendously, as high nutrient input due to poor sewage treatment creates algae blooms. Poor sewage treatment causes raw untreated sewage finding its ways into water bodies and because it is rich in nitrogen compounds such as nitrates and ammonia, it causes algal bloom. Algae blooms increase the competition for oxygen, leading to an imbalance in the aquatic ecosystem and suffocation of aquatic animals like fish and other



marine life, ending up with dead and stinky waters. Fish die offs happen due to lack of oxygen in the water body very often caused by nutrient increase and algae blooms, causing the fish to suffocate.

There are two bacterial groups; coliform and fecal streptococci, which are found in the feces of mammals and are used as indicators of water contamination by untreated sewage. Total coliforms are a group of bacteria that occur naturally in the environment. Total coliforms can be present in human and animal feces but can also be found in soil. Fecal coliform is a subgroup of total coliform that is specific to fecal matter but is still also found in other sources of waste caused by humans. E. coli is a species of fecal coliform bacteria that is specific to humans and warm-blooded animals. E. Coli is mostly used as an indicator for fecal contamination in fresh water. Another indicator of contamination is Fecal streptococci bacteria which are found in the digestive systems of humans and warm-blooded animals. Enterococci is a subgroup of bacteria within fecal streptococci that can survive in saltwater. This type of bacteria is also more specific to humans; therefore, this is an indicator of fecal contamination in saltwater. (5.11 Fecal Bacteria, 2012).

Pumping raw sewage into the marine environment can lead to serious health issues for surrounding inhabitants. Swimming, diving or walking in water contaminated with fecal bacteria can result in gastrointestinal illness (diarrhea or vomiting), respiratory illness, and infections of the skin, ear, eye, sinus, and wound infections.

Legislation:

According to the National Waste Ordinance (AB 2013, GT nr. 135) and the National Ordinance Wastewater (AB 2013, GT no. 142, COUNTRY REGULATION) it is prohibited to discharge and or store environmentally untreated, damaging and or dangerous substances (liquids) into the soil or surface waters

(https://decentrale.regelgeving.overheid.nl/cvdr/xhtmloutput/historie/Sint%20Maarten/208544/208544_3.html).

Recommendations:

It is recommended to remove the dead fish from the area, to stop any potential spread to occur. If the fish remain it could be a spread of disease and it could further deteriorate the water quality by decreasing the oxygen availability. It is recommended to investigate the pipes ending up in the pond and gutter, from the pictures the water is clearly contaminated and flowing directly into the water way. These pipes and their source can cause the deterioration of the gutter and pond water, affecting the wildlife and fishes.

It is likely that the current fish die of at Belair Pond gutters is caused due to high wastewater input in combination with the high summer temperatures. This will have caused a depletion of oxygen in the water, leaving the fish with no oxygen to survive. Wastewater input from the Belair area should be minimized and controlled. Frequent water quality testing should be performed to investigate the source of wastewater contamination and to create a healthy pond for us, the wildlife and birds.

Pictures:



Several dead fishes found in the gutters around Belair pond



Dead fish in the gutters entering to the Belair pond



Inspecting the location of the gutters close to Belair pond and its surrounding.



Water gutters leading to Belair pond