NONPOINT SOURCE SUCCESS STORY

Northern Mariana Islands

How NPS Monitoring Efforts Informed Improvements to North Susupe's Water Quality

Waterbody Improved

The North Susupe watershed (Segment CN18A) is on the island of Saipan within the Commonwealth of the Northern Mariana Islands (CNMI) in the western Pacific Ocean. The watershed was first listed as impaired on the 2004 Clean Water Act (CWA) section 303(d) list for exceeding bacteria (Enterococci). The primary source of bacteria was identified as stormwater/urban runoff through the Commonwealth Utility Corporation's (CUC) municipal sewer system. Repair work of the sewer system began in 2009. CUC has now completed the needed municipal sewer system upgrades in the North Susupe watershed. The results showed a marked reduction in bacteria in the surface water over the past 5 years, leading to the removal of 2.4 coastal miles from the 303(d) list as impaired for Enterococci in 2020.

Problem

Saipan is the most highly developed and densely populated island in the CNMI archipelago. Susupe's watershed on Saipan's west coast has the largest wetland area in the CNMI and the only lake on Saipan, Susupe Lake (2020 CNMI Integrated Report). Susupe is a developed urban area with several large resorts, public beaches, recreational areas, two farmers markets, restaurants, stores and gas stations. The CUC's municipal sewer system runs adjacent to Saipan Lagoon along the watershed length (Figure 1). Susupe is divided into north and south subwatersheds.

North Susupe watershed extends from Chalan Laulau Beach to Saipan Community School; it includes 2.4 coastal miles with six beach monitoring sites. It contains half the largest wetland area in the CNMI, with several ephemeral streams in the upper watershed. Like the surrounding watersheds, the entire North Susupe watershed's coastline is more developed than the middle and upper portions of the watershed, except areas immediately adjacent to roads where homes are located. These homes rely on onsite wastewater treatment (septic) systems due to a lack of lateral lines to the municipal sewer system.

In 2004, the North Susupe watershed (Segment CN18A) was listed under CWA section 303(d) for exceeding the CNMI water quality standard (WQS) for Enterococci bacteria, which also meant that it was not attaining its recreation designated use. The WQS is violated when a single water sample result exceeds the Enterococci statistical threshold value of 130 most

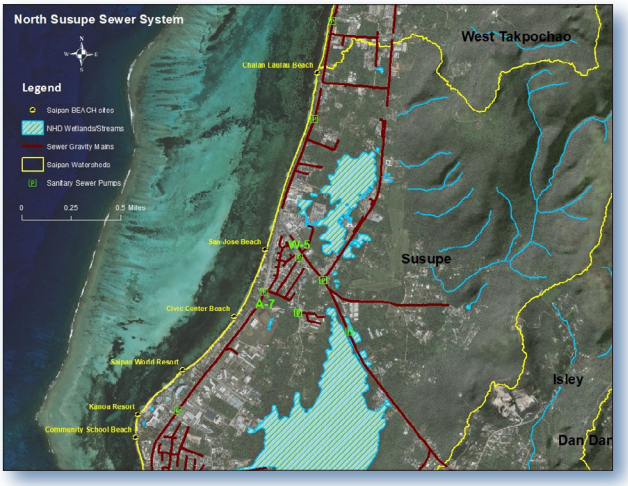

Figure 1. North Susupe watershed is on the island of Saipan.

probable number per 100 milliliters (MPN/100 mL) or the geometric mean is calculated over 30 days and the single sample result is >35 MPN/100 mL. A single exceedance in WQS for bacteria triggers a public beach advisory. A waterbody moves to an impaired status for Enterococci when at least one monitoring site has over 10% beach advisories annually. In 2002–2003, these sites exceeded the CNMI WQS 15% of the time on average, triggering the 2004 impairment listing.

The CNMI Bureau of Environmental and Coastal Quality (BECQ) identified this watershed as a priority area for sewer system upgrades and communicated this recommendation to CUC and the U.S. Environmental Protection Agency (EPA). BECQ identified the contamination source as stormwater/urban runoff into the CUC municipal sewer system through

maintenance hole covers during periods of inundation from storm events, especially during the rainy season (July–October). The inundation caused sewage overflows into the adjacent Saipan Lagoon. In 2009, the CNMI Superior Court stipulated that CUC rehabilitate the entire municipal system, which was done through a cooperative agreement by CNMI and EPA. A 2018 total maximum daily load (TMDL) was developed to address bacteria in Saipan's coastal waters. The TMDL recommendations were narrative rather than numeric. North Susupe's recommendations directed local agencies to determine the types of wastewater infrastructure improvements and methods of maintenance that were needed and to continue funding the utility infrastructure upgrades to meet demands.

Story Highlights

CUC has been working on system upgrades for Saipan on a priority basis. CUC completed significant improvements in the North Susupe watershed in 2017. The upgrades cost over $1.6 million and included rehabilitating Lift Stations A-7 and W-5, installing a new gravity main between the two, installing a new sewer force main, and eliminating the old W-4 lift station. These sewer infrastructure improvements occurred between the San Jose and Civic Center beaches, resulting in fewer sewer overflows during heavy rain events.

Results

Since 2014, all water quality monitoring sites have met the CNMI WQS for Enterococci 90% of the time or better (Figure 2). This successful collaboration between CUC and BECQ led to 2.4 coastal miles of the North Susupe watershed being delisted for Enterococci in the 2020 CNMI Integrated Report. The water now supports its recreation designated use (Figure 3).

Partners and Funding

Multiple agencies work collaboratively to identify sources of contamination, strategize best management practices (BMPs) to address pollution sources, and prioritize plans and funding to restore water quality. CUC is responsible for prioritizing and conducting upgrades to rehabilitate the CNMI municipal sewer system. Over 5 years, CUC used over $1.6 million in CWSRF funds for five sewer system upgrade projects in the watershed. BECQ is responsible for permitting,

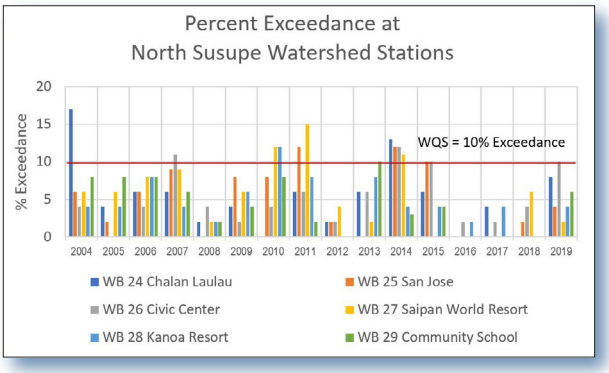

Figure 2. North Susupe bacteria data (2004–2019).

Figure 3. Coastal waters once again support recreational uses such as this outrigger canoe trip.

regulating, and monitoring CNMI coastal, surface, and groundwater quality. Over 5 years, BECQ's Water Quality Surveillance/Nonpoint Source (NPS) branch used an estimated $101,556 in CWA 106 funding and $21,317 of CWA 406 (BEACH Act) funding to monitor coastal waters in the watershed and to develop the 2018 bacteria TMDL. BECQ's NPS branch used $10,127 of CWA 319 funding to investigate and monitor NPS pollution issues in the watershed.

BECQ's Wastewater, Earthmoving and Erosion Control (WEEC) branch has reciprocity to permit and regulate the CUC municipal sewer system and onsite wastewater treatment systems. BECQ's WEEC works closely with the BECQ NPS branch to determine causes and sources of impairments. WEEC also conducts sanitary surveys to determine the location of illicit discharges and sewer system failures. Over 5 years, WEEC used an estimated $86,335 of CWA 106 funding to permit and regulate sewerline construction and maintenance in the watershed. WEEC also used an estimated $20,253 of CWA 319 funding to investigate stormwater pollution sources, conduct sanitary surveys, and review construction-related BMPs.

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