



Village of North Palm Beach
MS4 Permit No. FLS000018-003
Part V. – Monitoring Requirements;
Sub-part A. – Assessment Program

Assessment Program Objective

The purpose of this assessment program is to provide information for the Village of North Palm Beach to determine the overall effectiveness of its Stormwater Management Program (SWMP) in reducing stormwater pollutant loadings from its Municipal Separate Storm Sewer System (MS4) to receiving water bodies.

Assessment Program Components

As required by the MS4 Permit, the following parts make up this Assessment Program:

- A. **A Water Quality Monitoring Plan** – The water quality monitoring plan is intended to identify local sources where urban stormwater is adversely affecting surface water resources.
- B. **A Pollutant Loading Estimate Plan** – The pollutant loading exercise is to estimate the Pollutant Loading from the MS4 contributing area, based on land uses and BMPs.
- C. **An Evaluation and Response Plan** – The response plan is the plan of action to be taken based on the results from A. and B. and will be used to:
 1. evaluate trends in pollutants loading from the MS4
 2. evaluate trends in water quality (of discharge from the MS4)
 3. identify portions of the MS4 to be targeted for loading reduction/corrective action

Part A – Water Quality Monitoring Plan

The Village's MS4 lies within the Lake Worth Lagoon Watershed with discharges into the C-17 and the Lake Worth Lagoon. (see Figure 1). The MS4 has 6 major outfalls, two of which directly impact the Lake Worth Lagoon watershed. The Village intends to make use of the ambient water quality monitoring collected by Palm Beach County Environmental Resource Management (ERM) at monitoring stations 11 and 13. The table in the following section identifies this monitoring station, along with relevant information about the location.

Monitoring Location

Based on the location of the outfalls of the Village's MS4, the following ambient water quality monitoring station will be used in this assessment program. The monitoring station along with relevant information its location is identified in the following table:

MS4 Monitoring Stations Table

Monitoring Station Number	Location Description	Northing /Easting	Receiving Water Body	Verified Impaired?	Adopted TMDL?
11	U.S. 1 (Parker Bridge)	908969.28/ 962655.71	Lake Worth Lagoon (North Segment)	No	No
13	U.S. 1 and Earman River	900706.79/ 964049.58	Lake Worth Lagoon (North Segment)	No	No

Sampling Method

Palm Beach County Environmental Resource Management (ERM) performs the sampling at monitoring stations 11 and 13. This site is sampled and initially analyzed in-situ by ERM staff using a multi-parameter water quality-monitoring instrument. Water samples are collected, preserved and stored according to the DEP's Standard Operating Procedures. Quality assurance / quality control measures include pre-cleaned equipment blanks, field-cleaned equipment blanks, field spikes, and the collection of duplicate samples. Further analysis of samples from all ERM-monitored sites is conducted by an independent laboratory under contract with ERM.

The parameters sampled at monitoring stations 11 and 13 are shown in the table below.

Parameters and Sampling Table

Monitoring Station #s	Monitoring Parameters	Type of Monitoring	Collection Method	Sampling Frequency
11 & 13	Arsenic	Ambient Water Quality	Grab Samples	Quarterly
11 & 13	Cadmium	Ambient Water Quality	Grab Samples	Quarterly
11 & 13	Chlorophyll-a	Ambient Water Quality	Grab Samples	Monthly
11 & 13	Copper	Ambient Water Quality	Grab Samples	Quarterly
11 & 13	Dissolved Oxygen	Ambient Water Quality	Grab Samples	Monthly
11 & 13	Lead	Ambient Water Quality	Grab Samples	Quarterly
11 & 13	Nitrogen, Ammonia	Ambient Water Quality	Grab Samples	Monthly
11 & 13	Nitrogen, Nitrate-Nitrite	Ambient Water Quality	Grab Samples	Monthly
11 & 13	Nitrogen, Total	Ambient Water Quality	Grab Samples	Monthly
11 & 13	pH	Ambient Water Quality	Grab Samples	Monthly
11 & 13	Phosphorous, Orthophosphate	Ambient Water Quality	Grab Samples	Monthly

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11 & 13	Phosphorous, Total Kjeldahl	Ambient Water Quality	Grab Samples	Monthly
11 & 13	Salinity	Ambient Water Quality	Grab Samples	Monthly
11 & 13	Specific Conductivity	Ambient Water Quality	Grab Samples	Monthly
11 & 13	Temperature	Ambient Water Quality	Grab Samples	Monthly
11 & 13	Turbidity	Ambient Water Quality	Grab Samples	Monthly
11 & 13	Zinc	Ambient Water Quality	Grab Samples	Quarterly

The location of the monitoring station to be used in this Assessment Program is shown in **Figure 1** below.

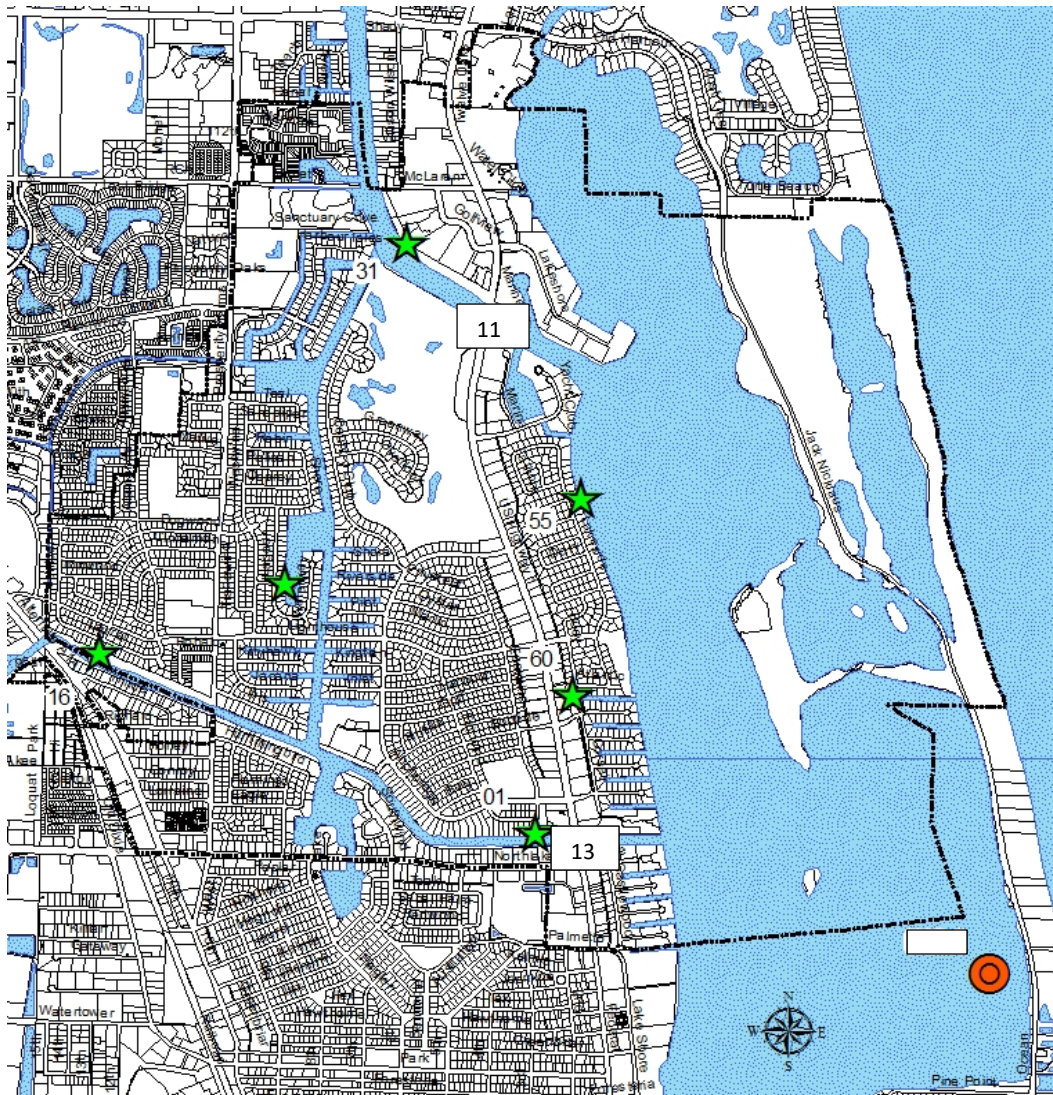


Figure 1: Village of North Palm Beach Assessment Program – Monitoring Station Location 11 & 13

Part B – Pollutant Loading Estimate Plan

The Palm Beach County MS4 permittee group will be developing pollutant loading estimates during the 3rd year of this permit cycle, using the SIMPLE protocol. In order to provide each permittee with pollutant loading estimates that reflect their respective MS4 areas, the group effort will provide the loading estimates “by MS4,” in addition to “by watershed” (as was done in past permit cycles). During Year 3, the Village of North Palm Beach will participate in this effort by reviewing its MS4 contributing areas to each receiving water, and will provide updated information on the area extents and the land uses located therein. In addition, any water quality best management practices (BMPs) that are in place within the MS4 area, will be identified, along with their geospatial extent.

Information on the pollutant load estimates and event mean concentration values for various land uses is reported in the group’s Joint Annual Report (Year 3).

The group's estimated pollutant loading results will be provided to the Village of North Palm Beach for use in this assessment effort.

To determine a practical estimate of the current pollutant loading, the Village of North Palm Beach will use the land use based pollutant loading estimates provided by the group as the starting point from which pollutant load reductions will be subtracted. The pollutant load reductions will be estimated based on the BMPs that have been put in place within the MS4 contributing areas. In this way, when future estimates are done, and potentially additional reduction measures or BMPs are put in place, the estimated pollutant loading will reflect the reductions.

Part C – Evaluation and Response Plan

Once the Assessment Program is approved by FDEP, presumably sometime during Year 3 of the permit cycle, the Village of North Palm Beach will extract sampling information for Sites 11 and 13 from prior joint annual reports for use moving forward. The first annual report on the Assessment Program will be concurrent with the Year 3 Annual Report Form (March 2020).

Water quality monitoring results will be available annually, and the most recent year's data will be compared to that which came before, with respect to sampling Site 11 and 13, which monitors the Lake Worth Lagoon within the Village's MS4. A summary of the water quality monitoring data, with respect to our MS4 will be developed and included in Assessment Program Annual Report.

The pollutant loading estimates developed during Year 3 of the permit cycle will be reviewed and adjusted based on the Village's Stormwater Management Programs (litter control, public education, etc.).

Receiving water trending reports/graphs for nutrients (Total Nitrogen and Total Phosphorus), as presented in the Joint Annual Report, will be reviewed, and a discussion will be included in Village of North Palm Beach's Annual Assessment Report.

Based on the data from the water quality monitoring and the pollutant loading estimates, an effort will be made to determine if one portion of the MS4 should be targeted for additional loading reduction efforts, or additional pollutant control measures.