

Long-term Prioritization from 2016 to 2022 of Puerto Rico's Waters

Consistent with the new EPA's vision, Puerto Rico Environmental Quality Board (PREQB) identify those assessment units (AU) for priority restoration and protection activities. This prioritization provides a framework to focus the location and timing for the development of, alternative restoration, protection plans and TMDLs. Those alternatives should include:

- Identification of specific impairment addressed by an alternate approach.
- Planning, development and implement effectiveness monitoring programs.
- Revisions, and amendments to the existing regulations.

Recently, PREQB update its Non-Point Source Management Program (NPSMP). One of the most important parts of this NPSMP is the development and implementation of a Priority System. This Priority System will be used as a priority based system in the long-term vision of the assessment restoration and protection under the CWA section 303(d). The main purpose will be standardizing the priority systems and the basic criteria used for a more effective assessment of island's water quality.

Priority Ranking Criteria System

The Priority Ranking Criteria System is based on the awarding of points, distributed in 10 criteria, which will identify the priority. To establish the degree of priority for the protection and restoration the evaluation will be by AU. The selected criteria are:

1. Segment Classification (description)

Under this criterion was established six (6) categories to which a score is assigned considering where it drains the segment into the basin or sub-basin. The highest score in this criteria is awarded to the lake itself and in descending order to its tributaries according to its draining on the basin or sub-basin. Each AU will be classified as follow:

- Stream or Channel not related to river or lakes
- Tributary of main river not flowing into a lake
- Main river not flowing into lake
- Tributary of the main river, which flows into a lake
- Main river which runs into a Lake
- Lake

2. Population Density

The population density is an important criterion to determine which segments are in the greatest need for protection in relation to each other. The relationship of people with respect to the surface space they occupy an area allows us to anticipate where we can find more activity that involves activities with a potential impact on the basins or sub-basins.

The ranges of population density used are the following:

- 160-499
- 500-749
- 750-999
- 1,000-1,349
- 1,350-2,999
- 3,000-9,1000

3. Mean Annual Rainfall

Precipitation generates run-off waters that run on the ground, which have the potential to drag and transport sediment and other pollutants into waterbodies. Those areas in which the precipitation is high, have a greater potential impact on surface water (AU). Therefore, as part of the prioritization system is included the mean annual rainfall as a criterion to assign the priority level of protection of AU. For this criteria were established five classification based on ranges that are shown below:

- 35-49 in
- 50-69 in
- 70-89 in
- 90-99 in
- 100 in or more

4. Predominant Special Activities

The surface water that are impacted, sometimes can be associated to certain contaminant activities. Those activities that are related to specific pollutants have been identified and included under predominant activities criteria. This criterion is intended to give priority to surface water with such activities present in the AU. The classification established are the following:

- Agriculture
- Industrial

5. Monitory Station

Monitoring stations are essential to gather data on water quality and keep it updated. The lack of water quality data, limits the analysis and monitoring that can be performed on a waterbody. The existence of a sampling station is essential to carry out successfully the monitoring of the AU. Therefore, this approach is essential in determining whether it is potential candidate or not to be protected. The criteria of monitoring station will be:

- Exist
- Do not exist

6. Known Potential Pollution Source

The potential pollution sources, affect significantly the water quality. The recognition of knowns potential pollution sources on the watershed or sub- basin, imparts a greater certainty in the prioritization process. Therefore, the identification of that sources, will allow to establish the priority order to protect the AU as needed. The classification under this criterion are the following:

- Superfund Site
- Non active landfill
- Active landfill
- Underground storage tanks (UIC)
- Wastewater pump stations (Bypass)
- CES projects
- Livestock Enterprises
- Presence of communities without sanitary sewerage

7. AU frequency on 303(d) List

This criterion was based on the analysis of the 2014 303(d) list. The value of percentage ranges increases according to the frequency the AU was included in the 303(d) List in each evaluation cycles.

- 100-90%
- 89-80%
- 79-70%
- 69-60%
- 59-0%

8. Priority Watersheds

It will be considered if the AU is part of one of the 18 priority watersheds identified in the *Puerto Rico Unified Watershed Assessment and Restoration Activities (PRUWA)* document.

9. Sensitives Natural Area

The presence of sensitive areas in an AU is a criterion that is also important to consider as a matter of priority, since runoff can impact it with many potential pollutants. Therefore, we establish the following criteria:

- None
- Proposed area for conservation
- Designed Natural Reserve
- Natural Reserve designed with proposed area for conservation

10. Water intake from Puerto Rico Aqueduct and Sewer Authority (PRASA)

Water Intakes in the AU will be taken in consideration as a priority criterion.

11. Valuable Coral Reef Areas (Coastal Sensitive Area)

Assessments units that drains to an area identified as valuable coral threatened areas will be established as priority criteria to be manage with a higher priority. On this criterion are considered two categories: For coral reef areas, PREQB took in consideration the information of the National Oceanic and Atmospheric Administration and DNER.

- AU do not drain to a valuable coral reef area (No)
- AU drains to a valuable coral reef area (Yes)

Detail Point of the Priority Ranking System

In order to establish the priority ranking each one of the AU for the inland waters was evaluated considering the following point system (Table 1).

Table 1: Detailed Point System

Criteria Detailed and element	Points
1. Segment Clasification	
• Stream or Caño not related to river or lakes	1
• Tributary of a main river not flowing into a Lake	2
• Main river not flowing into a Lake	3
• Tributary of the main river, which flows into a lake	4
• Main river which runs into a Lake	5
• Lake	6
Points to be considered in the percentage calculation	6
2. Population Density	
• 160-499	1
• 500-749	2
• 750-999	3
• 1,000-1,349	4

Criteria Detailed and element	Points
• 1,350-2,999	5
• 3,000-9,100	6
Points to be considered in the percentage calculation	6
3. Mean Annual Rainfall	
• 35-49 in.	1
• 50-69 in.	2
• 70-89 in.	3
• 90-99 in.	4
• 100 in or more	5
Points to be considered in the percentage calculation	5
4. Predominant Special Activities	
• Industrial	1
• Agriculture	2
Points to be considered in the percentage calculation	3
5. Monitory station	
• No	0
• Yes	2
Points to be considered in the percentage calculation	2
6. Known Potential Pollution Sources	
• Superfund Site	1
• Non active landfills	2
• Active landfill	3
• Underground storage tanks (UIC)	4
• Wastewater pump stations (Bypass)	5
• CES projects	6
• Livestock Enterprises	7
• Presence of communities without sanitary sewerage	8
Points to be considered in the percentage calculation	36
7. AU frequency on 303 (d) List	
• 0% (not listed)	0
• 1-59%	1
• 60-69%	2
• 70-79%	3
• 80-89%	4
• 90% or more	5
Points to be considered in the percentage calculation	5
8. Priority Watersheds	
• No	0
• Yes	2
Points to be considered in the percentage calculation	2
9. Sensitive Natural Area (Ecological sensitive area)	
• None	0

Criteria Detailed and element	Points
• Proposed area for conservation according to Planning Board	2
• Designed Natural Reserve	4
• Designed Natural Reserve with Proposed area for conservation	6
Points to be considered in the percentage calculation	6
10. Water intake from AAA	
• None	0
• 1	2
• 2	4
• 3	6
• 4 or more	8
Points to be considered in the percentage calculation	8
11. Valuable Coral Reef Areas (Coastal Sensitive Area)	
AU do not drains to a valuable coastal area (No)	0
AU drains to a valuable coastal area (Yes)	5
Points to be considered in the percentage calculation	5
TOTAL POINT TO CALCULATE PRIORITY PERCENTAGE	84

Once the evaluation is completed for each one of the assessment unit; to summarize the priority order in which the AU will be address the following categories were established:

High Priority (H): are assessment units that have a ranking between 100 to 70 percentages (adjusted).

Moderate Priority (M): are assessment units that have a ranking between 70 to 32 percentages (adjusted)

Low Priority (L): are assessment units that have a ranking between 32 to 0 percentages (adjusted).

Others Consideration for Prioritization

Phosphorus impairments

Due to the fact that the nutrient criteria are much needed for rivers and stream as endpoint for developing TMDL, PREQB had intended to adopt rivers and streams nutrient criteria first. It is likely that the criteria will be adopted for all water of appropriate classes, islandwide.

PREQB amended the Puerto Rico Water Quality Standard Regulation (PRWQSR) to incorporate the new standards for Total Phosphorus and Total Nitrogen applicable to the rivers and streams of PR. It was adopted on August 19, 2014. Actually, PREQB is in the process of complete the development and adoption of the numeric nutrient criteria (TP and TN) for lakes/reservoirs.

The development of the Puerto Rico Nutrient Standard Plan (PRNSP) describes the approach to addressing nutrient over-enrichment, along with the plan to refine its current nutrient criteria in

response to the USEPA requirements that states/territories adopt nutrient criteria for their waterbodies.

However, in addition to those AU identified by the priority system the following AU will be included as part of the priority watersheds for the parameter of Phosphorus (Table 2):

Table 2: Additional AU due to Phosphorus Impairments

ASSESSMENT UNIT	CAUSES NAME
PRER14H	Phosphorus
PRSR67A	Phosphorus
PRSR68A1	Phosphorus
PRWR94A	Phosphorus

San Juan Bay Estuary System

The AU (PREE13A2) will be considered as priority, it's belongs to the San Juan Estuary System. This Estuary was designated in 1992 as part of National Estuary Program for which it's developed the Comprehensive Conservation and Management Plan (CCMP), to improved and maintain the integrity of the San Juan Bay Estuary and its designated uses (Table 3).

Table 3: AU of the San Juan Bay Estuary System

AU ID	CAUSES OF IMPARMENTS
PREE13A2	Dissolve Oxygen , Ammonia, Oil and Grease, pH, Thermal Modification, Total Coliforms, Turbidity, NO ₂ +NO ₃ , Surfactants, Lead, Copper, Cyanide

Long-Term Priorities AU

The PREQB uses the river basins system for planning activities and implementation of restoration efforts. In order to achieve these efforts in a more effective manner, we have replaced the old system based on the segmentation of small portions of rivers and individual creeks by basin segmentation system that has been implemented since the 2006 reporting cycle. The non-contributions basins are those areas, contribute to the coastal shoreline instead of the inland waters. Under this system, each main river basin it is divided in assessment units that consist of complete sub-basins. The smaller river basins have been maintained as a single assessment unit or, at the most, it may be segmented in two assessment units. A total of 194 AU for rivers and streams water bodies; 18 AU for the lakes or reservoirs; and 62 for estuaries (Please refers to Table 4) are delimited in the inland water off Puerto Rico.

Table 4: AU and water bodies size per Type of Water body

WATER BODY TYPE	ASSESSMENT UNITS	SIZES OF WATER TYPE
Rivers/Streams	194	5,052.8 miles
Lakes/Reservoirs	18	7,323 acres
Estuary	62	3,430.3 acres

After evaluated each one of the AU taking in consideration the criteria and the other considerations above mentioned the AU included in Table 5 are the long term priorities areas.