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DRAFT GUIDELINES FOR THE CLASSIFICATION OF WATERS

This meeting is being convened virtually. Delegates are kindly requested to access all meeting documents electronically for download as necessary.

INSTITUTE OF MARINE AFFAIRS

ACTIVITY 1: PRELIMINARY DRAFT REPORT

**WATER CLASSIFICATION SYSTEMS AND IMPLEMENTATION ACCORDING TO THE
LBS PROTOCOL**

SMALL SCALL FUNDING AGREEMENT

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1.0 INTRODUCTION

The Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region, commonly known as the Cartagena Convention, aims to control existing environmental problems and prevent new ones through regional cooperation. In 1999, The Protocol Concerning Pollution from Land-Based Sources and Activities (LBS Protocol) was adopted to the Cartagena Convention.

To date, there are 18 Contracting Parties that have either ratified or acceded to this Protocol. The LBS Protocol established the foundation for regional implementation of assessment and monitoring procedures of domestic and industrial wastewater discharges, as well as indirect sources of pollution into marine and aquatic ecosystems, resulting from human activity. Anchored in the articles of the LBS Protocol are the guidelines for Contracting Parties to development the necessary strategic and technical framework to achieve the long-term goals of pollution monitoring and prevention in the Wider Caribbean Region (WCR).

The main objective of this study is to develop clearer guidelines to effectively classify bodies of water throughout the countries in the WCR under the LBS Protocol (Figure 1). Under Annex II of the protocol, there are two water classifications, i.e. Class I and Class II, which deliver a general outline for waters containing sensitive ecosystems and aquatic habitats, as opposed to a lesser delicate waters. Due to inherent disparities of Contracting Parties from landform to legislation, it would be beneficial to enhance and refine these definitions to aid the water classification process regionally.

This work is important because it would encourage the identification of ecologically sensitive marine area and enhance the spatial land use process within planning agencies of Contracting Parties throughout the region.

The methodology of this study consisted of a review of existing water classifications in the Wider Caribbean Region, United States and globally. The Regional Activity Centre- Engineering and Environmental Management of Coasts and Bays in Cuba (RAC CIMAB) provided support by reviewing the documents from Spanish speaking countries in the WCR. A questionnaire on water classification systems was issued to the national focal points of Contracting Parties to gain insight of the legislative instruments and/or existing processes of each country.



FIGURE 1: MAP OF WIDER CARIBBEAN – REMOTE SENSING UNIT, IMA

A desk study was completed to further supplement the understanding of water classification systems regionally, aiming to provide additional clarity and build enhanced guidelines in the identification of water bodies to ultimately better protect marine ecosystems. The results obtained in this sub-regional study will be integrated with a similar one for the Spanish-speaking countries (RAC CIMAB) and presented under a single regional report.

This activity was financially supported through a Small Scale Funding Agreement (SSFA) with the United Nations Environment Programme (UNEP) and the Swedish International Development Agency (SIDA).

2.0 CLASSIFICATION OF MARINE & COASTAL WATERS

While there is no precise definition for a coastal zone, it can be described as the part of the land affected by its proximity to the sea, and that part of the sea affected by its proximity to the land as the extent to which man's land-based activities have a measurable influence on water chemistry and marine ecology (US Commission on Marine Science, Engineering and Resources, 1969). The importance of the coast to human activity is vital as approximately 37 per cent of the world's population lives within 100 km of the coast, at a population density twice the global average (UNEP, www.unep.org). In the Wider Caribbean region (WCR) over 100 million people live on or near the coast (SOCAR, 2020). Furthermore, the Caribbean Sea is essential to the regional economy generating revenues from fisheries, tourism and shipping with an estimated economic value of over US \$400 billion. A significant percentage of this value is derived directly from coastal and marine ecosystems (Patil *et al.*, 2016).

2.1 IMPORTANCE OF COASTAL ZONES

The coastal zone is essential to marine life and supports a large part of the world's living marine resources. Within its wetlands, lagoons, seagrass beds, coral reefs and shallow bays are nursery or feeding areas for most coastal and many oceanic species. This zone has the highest biological diversity of any part of the sea, (Clark, 1992). The wider Caribbean covers approximately 5.9 million km² and within this area coral reefs, mangroves and seagrass beds can be found . (UNEP-CEP, 2020).

2.2 CLASSIFICATION OF COASTAL MARINE WATER ACCORDING TO THE LBS PROTOCOL

According to Annex III of the LBS Protocol, there are two classifications for water, namely Class I and Class II, which are generally defined to encompass all regions of significance within the Convention area. Class I waters are outlined as waters containing:

- i. coral reefs, seagrass beds, or mangroves;
- ii. critical breeding, nursery or forage areas for aquatic and terrestrial life;
- iii. areas that provide habitat for species protected under the Protocol Concerning Specially Protected Areas and Wildlife to the Convention (the SPAW Protocol);
- iv. protected areas listed in the SPAW Protocol; and
- v. waters used for recreation.

Class II waters are outlined as waters in the Convention area, other than Class I waters, that due to oceanographic, hydrologic, climatic or other factors, are less sensitive to the impacts of domestic wastewater and where humans or living resources that are likely to be adversely affected by the discharges are not exposed to such discharges.

3.0 STATUS OF THE CLASSIFICATION OF COASTAL MARINE WATERS: (Water Classification according to LBS Protocol of English Speaking Countries)

3.1 ANTIGUA AND BARBUDA

Antigua and Barbuda is a twin island state located approximately 402km southeast of Puerto Rico with a combined land area of 440 km² and population of just over 96,000. The coastline of Antigua is indented with numerous islands, creeks, inlets, associated sand bars and wetlands. A large portion of the surrounding coasts are protected by fringing reefs. The coastline of Barbuda holds less variation to its sister isle, but has extensive reef systems especially off the east coast. The Codrington Lagoon is bordered by mangroves and sand ridges. This area is of significant importance to the fisheries and wildlife of Barbuda.

The Environment Management and Protection Act (EPMA) 2015, included water classification, however, the Act was revised in 2019 to modify the scope of the National Environmental Policy. The Act encompasses the management of pollution and environmental remediation as stated in Section 3 (1)(b):

“provide preventive and remedial measures for the control and mitigation of all forms of environmental degradation or pollution including the management of hazardous substances and wastes for the purposes of protecting human health and maintaining the quality of the environment”

Further to this, Schedule VII - Water Quality Management Criteria and Guidelines of the EPMA (2019) include water classification criteria for coastal, fresh and ground waters. Coastal waters are categorised into three classes (AA, A and B) in accordance with the respective uses to be protected.

CLASS AA WATERS

- i. the uses to be protected in this class of water are oceanographic research, the support and propagation of shellfish and other marine life, conservation of coral reefs and wilderness areas, compatible recreation and other aesthetic enjoyment;
- ii. it is the objective that this class of waters remain as near to their natural state as possible with an absolute minimum of pollution from any source;
- iii. to the extent possible, the wilderness character of such areas shall be protected;
- iv. no point source discharge will be permitted in these waters, nor will destruction of reefs, aquatic habitats or other resources be permitted;

- v. the classification of any water areas as Class AA shall not preclude other uses of such waters compatible with these objectives and in conformance with the standards applicable to them

CLASS A WATERS

- i. the uses to be protected in this class of waters are recreational (including swimming, bathing, and other water contact sports), aesthetic enjoyment, and the support and propagation of aquatic life;
- ii. it is the objective that this class of waters be used for recreational purposes and aesthetic enjoyment shall not be limited in any way;
- iii. Class A waters shall be kept clean of any trash, solid materials or oil, and shall not act as receiving waters for any effluent which has not received the highest degree of treatment or control practicable under existing technological and economic conditions and shall be compatible with the standards established for this class

CLASS B WATERS

- i. waters within such areas are to be used for ports, small boat harbours, industrial activities, mining, commercial and industrial shipping, compatible recreation, the support and propagation of aquatic life, and aesthetic enjoyment;
- ii. it is the objective for this class of water that discharge of any pollutant be controlled to the maximum extent possible and that sewage and industrial effluent receive the highest degree of treatment practicable under existing technological and economic conditions, and shall be compatible with the standards established for this class;
- iii. the Class B designation should apply only to a limited area next to commercial or industrial facilities, and the rest of the water area in such bay or harbour shall be Class A unless given some other specific designation.

3.2 THE BAHAMAS

The Bahamas archipelago comprises of thirteen major islands and seven hundred smaller islands and two hundred cays that altogether have a total land area of 13,934 km². The islands span a distance of over 1,400 km from the eastern coast of Florida to the northern coast of Cuba. Though approximately 30 islands are inhabited, the coastal areas are of major importance to the population and economic activity (National Environmental Policy, 2005). The windward side of the islands have notable patch reefs on the interior banks as well as an extensive network of fringing coral reefs and sea grass beds. Collectively the Bahamian shallow seas provide the largest body of coral reefs and other marine organisms in the Atlantic and Caribbean regions (National Assessment Report, 2004).

While The Bahamas ratified the LBS Protocol in 2010, there is not yet an established water classification system. However, there are two significant legislative instruments which work towards water classification and further integration of the LBS Protocol. Firstly, the Ministry of Environment Act (2019) serves to establish its namesake with the functions of management, protection and conservation of all land, water, air and living resources of the Bahamas and to determine the process by which environmental policies are developed and implemented. Under this Act the Ministry consolidated the responsibility of existing government agencies such as environmental health services, national geographic information services, public park and beaches forestry, environmental impact assessments (EIAs) and multilateral environmental agreements.

Secondly, the Environmental Planning and Protection Act (2019) focuses on policy development and implementation for environmental management and conservation. The Act seeks to establish the Framework of the National Environment Policy which comprises several measures including a national beach and coastal management policy and national coral reef conservation plan. Other conservation plans are to include surface waters, ground waters and wetlands, as well as, providing oversight and approval for water management agencies. Furthermore, the Department of Environmental Planning and Protection established under this Act is tasked with the coordination and implementation of international conventions, treaties and protocols relating to the environment.

3.3 BARBADOS

Barbados is the most eastward island in the Caribbean and sits as an outlier of the archipelagic chain. The island has a total land area of approximately 432 km² (UNEP, 2010). The eastern coast is exposed to the Atlantic Ocean and these stronger, rougher waters see less coral reefs as opposed to the calmer waters of the west coast. As a result, beaches, coastal wetlands, seagrass beds and offshore reefs are located between the western and southern coastline (Barbados State of the Environment Report, 2000).

Barbados became the most recent signatory to the LBS Protocol having completed ratification in 2019. While there is not yet a designated water classification system similar to that of the LBS Protocol, several existing fragments of legislation provide a measure of regulations in this regard. The Marine Pollution Control Act (1998) aims to manage marine water quality to stem the deleterious effects on fisheries and marine ecosystems from anthropogenic sources such as land based sources, sea bed activities, and dumping.

In addition, the Coastal Zone Management Act (2000) includes the development of a coastal management plan which would include standards for water quality in coastal and marine areas

to effect the maintenance, rehabilitation and enhancement of coastal and marine habitats. The Coastal Zone Management Authority (CZMA) also makes provisions for preservation and enhancement of marine areas through regulations for beach protection and coral reef protection. Under the CZMA an Integrated Coastal Zone Plan was drafted with National Policy Framework to implement plans through legislation over a 10-year period (2020 - 2030). The Cartagena Convention (LBS Protocol) is to be used as a guideline for policy development, among other international conventions.

3.4 BELIZE

Belize is located in Central America bordered by Mexico and Guatemala and has a land area of 22,963 km² including approximately 1,000 small islands or cays. The country has an estimated population of 404,900, highlighting its generally low population density. Approximately 7% of land is used for agriculture in comparison to the 60% that remains forested. Belize is home to one of the largest barrier reefs globally and has approximately 765km² of mangrove forest.

The Environmental Protection Act (1995) established the Department of Environment as the agency mandated to execute the regulations made within. Amongst its functions is the prevention and control of pollution by the coordination of activities leading to waste discharge into the environment, conditioned licensing and registration of wastes, discharges and emissions. Effluent Limitation Regulations also accompanied the Act, which established Schedules as a guideline to specifically control discharges of sewage and industrial effluents into inland waters or the marine environment. The Effluent Limitation Regulations were subsequently amended in 2009 to include the water classification guidelines as specified within the LBS Protocol. Also, the Government of Belize is currently developing a National Wastewater Management Policy regarding water classification as it relates to discharge of wastewater.

The Coastal Zone Management Act of Belize (1998) establishes and defines the functions of the Coastal Zone Management Authority, an autonomous statutory body that advises the Government of Belize on all matters regarding development and utilization of coastal resources. Under this body, the Coastal Zone Management Plan was developed to include guidelines for coastal development, land or water use in the coastal zone, establishment of marine protected areas, recreation and tourism, environmental monitoring and policy strengthening, *inter alia*.

3.5 GRENADA

The country consists of a tri-island state namely Grenada, Carriacou and Petit Martinique with a total land area of 340 km². Grenada, the largest and most populated island, has a coast that is characterised by coral reefs, seagrass beds, and mangrove swamps. The marine environment suffers degradation from sewage and domestic wastewater (UNEP, 2010). In St. George's, only

crude separation of waste is performed as a means of treatment by the sewerage facilities before discharge via an outfall. Coastal water quality is also impacted by the use of pesticides, agrochemicals and agricultural activities along rivers and watersheds (UNEP, 2010).

The National Water and Sewerage Authority (NAWASA) Act (2008) established the National Water and Sewerage Authority and its mandate. NAWASA's responsibility includes management of the water supply to the population, as well as the construction and/or connection to the sewer systems to both households and industries in Grenada. Within the NAWASA Regulations, there is the prohibition of discharge of sewage or industrial waste to a natural outlet or the ocean, but no further classification is stated regarding coastal waters.

Grenada's Integrated Coastal Zone Management Act (2019) defines the coastal zone as an area possessing coastal resources, where these resources include beaches, wetlands, coral reefs, seagrass beds and other shoreline ecosystems. The ICZM Policy (2015) makes reference to the implementation of Grenada's ratified Multilateral Environmental Agreements as a strategy to fulfil transboundary obligations and attain policy objectives as part of achieving the overarching goal of coastal management. The policy also aims to prevent, reduce, or mitigate the discharge of pollutants into nearshore areas, that are derived from human activities (agriculture, housing development) within the coastal zone. The policy states the need for the establishment of domestic and industrial wastewater effluent standards for discharge into the coastal zone and the enforcement of these standards to achieve and maintain coastal water quality to international standards.

The National Water Policy highlights the need for action as the coastal waters of Grenada have been compromised by human activity and land based pollution. As part of its strategic focus, implementation of the Cartagena Convention LBS Protocol (Annex III) is to be used as one of the guiding principles to develop legislation, policies and regulations for protection of coastal water resources.

3.6 GUYANA

Guyana lies within the northerly region of the South American continent holding an expansive land area of 215,000 km². Bordered by Venezuela, Brazil and Suriname, Guyana forms part of the North Brazil Shelf Large Marine Ecosystem with coastal areas characterised by mangroves and offshore corals (State of Environment Guyana, 2016). The coastal areas are most densely populated. The capital, Georgetown, is central to infrastructure development as well as the industrial activity. However, inadequate sewerage facilities results in the discharge of domestic wastewater and untreated sewage into rivers. Various industries are located on the Demerara river basin that discharge untreated wastewater into drainage systems that ultimately traverse

into rivers (UNEP 2010). As a result, the water quality of rivers and coastal waters are severely impacted by these as well as runoff from agricultural use of pesticides and mining activities.

At present, there is no classification of receiving waters (Class I and Class II) as required under Annex III of the LBS Protocol. The Guyana Environmental Protection Agency (EPA) operates under the Environmental Protection Regulations for the establishment of effluent parameter limits that may be discharged into coastal or inland waters. However, the Regulations do not possess established limits for domestic wastewater discharge. With respect to Industrial discharge limits, the Guyana National Bureau of Standards collaborated with the EPA to develop interim guidelines for industrial wastewater discharge, specifying parameter limits for a range of industries. However, a key limitation of these guidelines is that at present, they do not apply to mining and forestry operations, agricultural infiltration, seepage and run-off as these activities are deemed primary contributors to pollution (Prudent-Phillip 2013).

The Environmental Protection Act of Guyana (1996) established the Environmental Protection Agency and its functions as well as Regulations for Water Quality and other Environmental Protection Regulations (Air Quality, Hazardous Waste, Noise Management and Authorisation). The Water Quality Regulations (2000) include the prohibition of effluent discharge to inland or coastal waters from an industry, commercial, agriculture, institutions or sewage related facility. In addition, sewage discharge from vessels, in transit or otherwise, to inland or coastal waters are also prohibited. However, the EPA has the authority to allow for discharge into Guyana's waters through licensed authorisation. An important exception listed is housing or commercial development (or both) that are less than 30 units. In the absence of adequate enforcement of the Act and Regulations, it is difficult to surmise that unplanned settlements in greater numbers than the prescribed limit occurring along rivers or watercourses in less urban or rural areas, are within the legislation (Policy Review of the Guyana Environmental Protection Act, 2020).

3.7 JAMAICA

Jamaica is the third largest island of the Caribbean, possessing a land area of 10,990 km². The island is made up of coastal lowlands, a limestone plateau and the Blue Mountains. Coral reefs, seagrass beds and mangroves are part of Jamaica's marine and coastal ecosystem. These are impacted by improperly treated sewage discharged into coastal waters, industrial effluents discharged into rivers and agricultural runoff from agrochemicals (Jamaica National Report, 2001).

The National Environment and Planning Agency (NEPA) operates as the lead government agency with the mandate for environmental protection, natural resource management, land use and spatial planning in Jamaica. The establishment of NEPA was principally to execute the mandate

of the Natural Resources Conservation Authority (NRCA) along with two other statutory bodies, the Town and Country Planning Authority and the Land Development and Utilisation Commission.

The Natural Resources Conservation Authority (NRCA) is a statutory body established through the Natural Resources Conservation Authority Act (1991) with primary responsibility for environmental management and conservation. The Act makes provisions for the designation of marine parks/protected areas. The discharge of effluents into ground waters were allowed through licences granted by the Authority. However, there were no accompanying water quality standards and no mention of coastal waters at this time. Subsequently, the Wastewater and Sludge Regulations Amendment in 2013 included water classification parallel to those of the Cartagena Convention LBS Protocol for Class I and Class II waters. These Regulations include defined standards for sewage and trade effluents.

3.8 SAINT LUCIA

Saint Lucia forms part of an archipelago of islands located in the Eastern Caribbean and is about 616km² in area. The island has multiple ridges, with the highest peak at 850ft above sea level. There are nearshore reefs, fringing mangroves and seagrass beds around Saint Lucia's coastline. Coral reef and mangrove ecosystems are more prevalent on the western coast of the island due to the calmer waters of the Caribbean Sea compared to that of the eastern coastline, which is open to the rougher Atlantic Ocean. In addition to readily accessible beaches, the majority of the island hotels are seen to be located on the western coast (St Lucia Environmental Profile, 2005).

The main contributors of pollution into water systems is derived from inadequate disposal and treatment of sewage. The capital city of Castries and neighbouring Gros Islet district is serviced by the solitary central sewage system that only provides primary treatment of waste before disposal via harbour outfall. Furthermore, a decrease in banana production, the islands prime export crop, resulted in an agriculture shift to livestock. This led to a proliferation of piggery farms along riverbanks which resulted in sewage contamination of St. Lucia's river systems. Increased fishing and pressure from land based pollution is directly affecting fisheries stock in nearshore and coastal areas (UNEP 2010).

There is currently no classification of receiving waters as outlined under Annex III of the LBS Protocol in Saint Lucian legislation. However, there are existing regulatory instruments that provide support. The Public Health (Water Quality Control) Regulations (1978) prohibits the discharge of sewage, industrial and trade waste into a water course, streams, rivers and seas. Additionally, in 2009 the Saint Lucia Bureau of Standards developed Guidelines for Recreational

Water Quality which established effluent limits consistent with those of Class I waters in Annex III.

3.9 TRINIDAD AND TOBAGO

The twin island state of Trinidad and Tobago (T&T), which has a total land area of 5130km², is situated at the south eastern end of the Caribbean archipelago. Trinidad features three mountainous ranges in the northern, central and southern parts of the island with mangroves swamps on both eastern and western coasts. The landscape of Tobago has a mountainous ridge located centrally on the island and mangroves and offshore coral reefs at its south western end.

The Environmental Management Authority (EMA) is the statutory agency responsible for T&T's policy development and implementation, pollution prevention, control and monitoring and environmental conservation, *inter alia*. While the EMA was established in 1995 under the Environmental Management Act, which prohibits the release of any water pollutants into the environment, the amendment to the Act in 2000 does not contain the LBS Protocol water classification guidelines. However, the Water Pollution Rules (WPR) 2001 that accompany the Act and amended in 2019, further prohibits the release of pollutants into waters designated for human consumption where the treatment is limited to disinfection, i.e. use of chemical or technique for removal of microorganisms. Schedule II of the WPR establishes effluent discharge limits in line with Annex III of the Protocol and divides T&T's receiving waters into four categories or classes:

- 1. Environmentally Sensitive Areas and/or Groundwater** - The designation of a defined portion of the environment requiring special protection / The water below the earth's surface, usually in porous rock formations
- 2. Inland Surface Waters** - Water from rivers, creeks, tidal waters, estuaries, swamps, streams, lakes and impounded reservoirs that flows over or rests upon the land surface of Trinidad and Tobago and in dry conditions includes the area over which such waters flow or rest.
- 3. Coastal Nearshore Waters** - The area of the marine environment which extends no more than three nautical miles from the high water mark
- 4. Marine Offshore Waters** - That area of the marine environment seaward of the coastal nearshore. The Environmentally Sensitive Areas and/or Groundwater category is consistent with Class I waters under Annex III of the Protocol, while the remaining categories can be seen as sub-divisions of Class II waters.

3.10 UNITED STATES OF AMERICA

Within the United States (US), the south-eastern state of Florida neighbours the Caribbean Sea forming part of the WCR and the Cartagena Convention. Off the southern coast of Florida, lies coral reefs spanning over 560km and mangroves forests estimated near 2,500km². In addition, six different species of seagrass beds exist throughout the coastal areas of the State. Commercial and recreational activities, land based pollution and coastal development of Florida's densely populated coastline are major contributors to the decline of the coastal and marine habitat (Florida Department of Environmental Protection, www.floridadep.gov).

The US Environmental Protection Agency (EPA) is the statutory body responsible for ensuring the Federal government mandate is executed to prevent threats against water quality and other environmental challenges, as well as developing and enforcing regulations. The Clean Water Act, 2021 (CWA) regulates discharges of pollutants in US waters. Under the CWA, the EPA developed national water quality standards for surface water and implemented wastewater standards for industrial discharge. The Act also prohibits discharge of any pollutant into navigable waters which are defined to include ocean and coastal waters or waters that are subject to the ebb and flow of the tide and were formerly/presently used to transport interstate or foreign commerce. Additionally, the Safe Drinking Water Act established minimum standards required for public water systems supplying tap water designated for consumption and sourced from above or below ground. The Marine Protection, Research and Sanctuaries Act, 2021 (Ocean Dumping Act) prohibits dumping of material into the ocean that will degrade or endanger human health, welfare, or the marine environment.

The Water Quality Standards (WQS) establishes the benchmark goals required under the CWA for all water bodies in the US. The WQS designates the uses of US waters and the required standards to protect them. These uses are Public Water Supply, Protection and Propagation of Fish, Shellfish and Wildlife, Recreation, Agriculture and Industry, Navigation and other uses that States may adopt, where necessary. Subsequently, States may adopt certain designations applicable to its water bodies and then establish water classification through the adopted uses. For instance, in Florida the water classification is arranged according to water quality criteria from most (Class I) to least (Class V) stringent and is defined as follows:

- **Class I** - Potable Water Supplies
- **Class II** - Shellfish Propagation or Harvesting
- **Class III** - Fish Consumption; Recreation, Propagation and Maintenance of a Healthy, Well-Balanced Population of Fish and Wildlife

- **Class III-Limited** - Fish Consumption; Recreation or Limited Recreation; and/or Propagation and Maintenance of a Limited Population of Fish and Wildlife
- **Class IV** - Agricultural Water Supplies
- **Class V** - Navigation, Utility and Industrial Use

3.11 EXPERIENCES OF OTHER REGIONS OR COUNTRIES

3.11.1 SOUTH AFRICA

South Africa lies at the southernmost point of the African continent and has a land area of 1.2 million km² with a coastline stretching over 3000km. The coast is uniquely surrounded by two oceans, with the southern Atlantic Ocean in the west and the Indian Ocean in the east. South Africa has a large number of conservation and protected areas to safeguard its wetlands and coral reefs. Amendments to The National Water Act 1998 laid Regulations for a water resource classification system in 2010 to ensure ecological sustainability of significant water resources. (South Africa National Water Act Regulations, 2010).

- **Class I** - Waters that are minimally used and the configuration of ecological categories of the water resources within a catchment result in an overall water resource condition that is minimally altered from its pre-development condition.
- **Class II** - Waters that are moderately used and the configuration of ecological categories of the water resources within a catchment result in an overall water resource condition that is moderately altered from its pre-development condition.
- **Class III** - Waters that are heavily used and the configuration of ecological categories for the water resources within a catchment result in an overall water resource condition that is significantly altered from its pre-development condition.

4.0 GUIDELINES FOR CLASSIFICATION OF COASTAL AND MARINE WATERS

Contracting Parties of the LBS Protocol are at different stages of implementation. However, ratification of the LBS Protocol must be seen as the first step towards protection of the countries' marine and coastal resources. The following guidelines are put forth to harmonise the status of Contracting Parties:

- The LBS Protocol Annex III should be incorporated into the environmental protection/management legislation of each Contracting Party and should be key to establishing a baseline for classification.
- Development of new and/or updating existing policy framework supporting environmental legislation and capacity building to ensure protection the marine environment.
- The inclusion of Effluent Limitation Regulations consistent with or stricter than those of the LBS Protocol must be established to supplement environmental legislation by Contracting Parties to ensure consistency in determination of water quality for coastal areas.

5.0 FINAL CONSIDERATIONS

There is no simple formula to implement and enforce the LBS Protocol water classification as there are numerous challenges faced and different variables from country to country. Marine ecosystems do provide economic, tourism and recreational resources to the Caribbean, but all face the same threats. Contracting Parties must recognize the value of an ICZM and work towards establishment of legislation and institutional capacity to effectively manage respective marine and coastal ecosystems. Sensitive environmental areas and shoreline ecosystems must be designated and protected by law to safeguard, restore and effectively manage these areas. All statutory bodies related to water-based and coastal resources must continually work in concert to ensure proper waste management, responsible agricultural practices and regulated coastal development.

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