



**Address of the Hon. Adrian Gibson, M.P. / Executive Chairman to the Water and Sewerage Corporation, Bahamas**

**16<sup>th</sup> High-Level Forum for Caribbean Ministers Responsible for Water  
“Building the Caribbean Water Sector Resilience in the face of a Pandemic and Natural Disasters: The RSAP in Action”**

***Bahamas Intervention:***

**Recovery from Hurricane Dorian, The Bahamas Experience – Lessons Learnt**

**Intro Video.**

**Protocols (To be corrected in consultation with CWWA Secretariat)**

President CWWA

Executive Director

My Colleague MPs, Ministers (namely, Ministers Stanislas (St. Lucia), Croal (Guyana), Brand (St Kitts), Joseph (Montserrat), Gonzales (Trinidad)) and Heads of Water Utilities

The International and Regional Development Banks (IDB, CDB)

Other Regional & International Partners

Participants and Observers

Members of the Media

**Good Morning!**

**Greetings:**

On behalf of the Government of the Commonwealth of the Bahamas (and Minister of Works, the Hon. Desmond Bannister) it is indeed a pleasure to participate in these very important deliberations.

For myself personally, this is the third consecutive HLF that I have had the pleasure of participating. As I stated yesterday, this is one of my all-time favourite conferences and I am always keen to see our brothers and sisters in the regions and forge ahead with ways we can



collaborate and assist each other with best practices. As the saying goes, “more hands make work light” and, in our region, there is a deep reservoir of sectoral knowledge.

I also want to congratulate the organizers and sponsors. I especially congratulate the CWWA for evolving this forum to a virtual one. It shows the resiliency of us as a Caribbean people. I also want to commend the organizers and partners for their continued participation and the conference’s growth of the involvement of so many additional regional and international partners.

## **Recovery from Hurricane Dorian, The Bahamas Experience – Lessons Learnt**

### **(POST HURRICANE DORIAN INITIAL ASSESSMENT AND RESTORATION EFFORTS IN THE ABACOS AND THE WAY FORWARD)**

#### **BACKGROUND - THE WATER & SEWERAGE CORPORATION**

The national Corporation was established in 1976, with a current staff of 400 plus

WSC is a complex water utility with a network of some 50 plus sites on some 25 Islands and cays

Our Supply Sources are both Wellfields (23 sites)  
and Reverse Osmosis Plants (29 sites)

And, of course, the complementary Treatment and Storage Tanks, Pumping Stations,  
and associated facilities.

Associated Distribution Mains & Service Connections (about 65,000,000 customers)

#### **CAPITAL CITY OF NEW PROVIDENCE**

- 700 plus Miles Mains, 40,000 plus Customers, population of 300,000
- 2 Reverse Osmosis Plants
- Total production capacity of some 12 million imperial gallons per day.

#### **FAMILY ISLANDS (50 plus Separate Systems, 20,000 Accounts)**

- Many small, scattered and diverse rural systems
- Systems ranging from 600,000 IGPD to service 5,000 people
- to systems as small as 3,000 imperial gallons per day to serve 25 people
- Totalling some 5 plus million imperial gallons per day overall for rural communities on the Family of Islands



- On the Family Islands though, overall Sewerage Collection, Treatment, Disposal is less than 15% - that remains a work in progress.

### **WSC IMPACTED AREA – ABACO (GRAND BAHAMA OPERATED BY PRIVATE ENTITIES)**

Prior to the passage of Hurricane Dorian, the Corporation (WSC) operated the following systems as part of its Abaco Operations: -

1. Grand Cay Water Supply System which supplies this small northern cay. The water supply source is a desalination plant.
2. Sweetings Cay Water Supply System which supplies the community on this cay of east Grand Bahama. The water supply source is a desalination plant.
3. Cedar Harbour Water Supply System which supplies the settlements of Cedar Harbor, Wood Cay, Mount Hope, Fox Town and Crown Haven on the mainland of Abaco. The water supply source is a wellfield.
4. Blackwood Water Supply System which supplies the settlements of Blackwood, Fire Road and Coopers Town on the mainland of Abaco. The water supply source is a wellfield.
5. Treasure Cay Water Supply System which supplies Treasure Cay and Green Turtle Cay via underwater main on mainland Abaco Island. The water supply source is a wellfield.



6. Marsh Harbour Water Supply System which supplies the Marsh Harbour, Spring City, Dundas Town, Murphy Town, Central Pines, Pelican Shores and Eastern Shores communities, the city center of Abaco. The water supply source is a wellfield.
7. Casaurina Water Supply System which supplies this community in the south of Abaco. The water supply source is a wellfield.
8. Cherokee Water Supply System which supplies this community on south Abaco. The water supply source is the Winding Bay Development Desalination Plant.
9. Crossing Rocks Water Supply System which supplies this community in the south.
10. Sandy Point Water Supply System which supplies this community, also in the south of Abaco. The water supply source is a wellfield.
11. Moores Island Water Supply System which supplies this southern remote island cay. The water supply source is a desalination plant.
12. The Treasure Cay Sewerage System, which is the second city center on Abaco.
13. The Spring City Sewerage System.
14. Commercial Offices in Marsh Harbour, Treasure Cay, Coopers Town and Green Turtle Cay.

**See video on damage**



**Hurricane Dorian** affected the northern Bahamas between 1<sup>st</sup> September and 3<sup>rd</sup> September 2019, leaving catastrophic damage injuries and loss of lives in its wake (both Grand Bahama and Abaco).

## INITIAL DAMAGE ASSESSMENT

On Wednesday 4th September, 2019, I led an assessment team to Abaco. Upon arriving at the Sandy Point airport, we sought to inspect our systems within the coverage area of Sandy Point to Marsh Harbour. We met some staff members and members of the community and heard harrowing accounts of their struggle to survive during this most traumatic experience. Our observation of the absolute destruction of public infrastructure, homes, businesses and the loss of life won't easily be forgotten.

Hurricane Dorian caused significant damage to the Corporation's water and sewerage infrastructure, both on the mainland and those surrounding cays that are serviced by the Corporation. These areas include: Grand Cay, Green Turtle Cay, Moores Island and Sweetings Cay (off of east Grand Bahama, which is managed as a part of the Abaco Operations).

Two of WSC's largest wellfields are situated in Abaco. These wellfields suffered extensive salt water intrusion due to a reported 30-plus feet storm surge. As a result, both the Marsh Harbour and Treasure Cay wellfields were inundated and subject to massive flooding. Combined, these wellfields produce some two million imperial gallons of water per day. Additionally, WSC suffered substantial damage to its water resources and infrastructure, its vehicular fleet, heavy equipment and multiple offices.

Again on Saturday, 7th September, 2019, I led an assessment team to Grand Bahama to meet with the Grand Bahama Utility Company given their request for assistance, to assess their losses and to discuss collaborative efforts to restore and reconstruct Grand Bahama and those affected islands, for which WSC has oversight. Upon conclusion of that meeting and site inspection, the team journeyed to Abaco to assess our systems in Treasure Cay, Coopers Town, Blackwood and Cedar Harbour.

WSC's Abaco Operations consist of seven (7) pumping stations on the main land and four (4) separate operations on nearby cays. The daily average water production for Abaco Operations is approximately 2.4 million imperial gallons. Approximately 100K imperials gallons is produced daily from reverse osmosis plants.

The damage to WSC's Marsh Harbour and Treasure Cay water and sewerage systems were particularly severe. Both the 500,000 and 250,000 imperial gallon storage tanks in Marsh Harbour were severely damaged and the 500,000 imperial gallon storage tank in Treasure Cay was totally destroyed. Leaks in the system were too numerous to count.

The Treasure Cay and Spring City sewerage systems sustained substantial damage to all of their above ground infrastructure such as control panels, housings, power, etc.



Water storage tanks on Green Turtle Cay and Moores Island also sustained structural damage and the storage tanks on Grand Cay and Sweetings Cay were destroyed.

As per the video, many of our buildings suffered varying degrees of damage as a result of both flooding and wind related damage to their roofs.

Flooding damaged many of our electrical/mechanical systems including our pumping station pumps, wellfield pumps and standby generators. Similarly, our entire vehicular fleet was damaged ranging from major to total destruction as a result of flooding and flying debris.

Our underwater mains between mainland Abaco and Green Turtle Cay also suffered damage.

WSC's commercial office in Treasure Cay was totally destroyed and the commercial offices in Marsh Harbour, Green Turtle Cay and Coopers Town sustained varying degree of damage.

Previously WSC Operated three full-time commercial offices, and a part-time office on Green Turtle Cay. All of the Offices have been severely impacted either by wind or water damage.

These include:

ITEM	LOCATION	CUSTOMER Count	STATUS
1	Marsh Harbour	2,757	Roof Damage, No City Power
2	Treasure Cay	1,057	Totally Destroyed (to be relocated)
3	Green Turtle Cay	243	Partially Destroyed
4	Cooper's Town	627	Wind and Water Damage

The overall initial damage assessment was in the order of \$15Mn to \$20Mn. Over the last year, with on-going works by ourselves and independent contractors and in-depth assessments, we note that that figure has increased by \$13 to \$15 million and I have indicated to government that we will be seeking more funding in an effort to reconstruct and fully restore Abaco systems.



### STAFFING

WSC employed twenty-five (25) employees as part of our Abaco Operations prior to Hurricane Dorian. Unfortunately, many of them suffered extensive damage to their homes, vehicles and personal belongings during the passage of Hurricane Dorian. WSC took a series of steps to assist our staff in the aftermath of Hurricane Dorian including but not limited to paid leave, financial assistance, care packages and counselling. Some employees opted to temporarily relocate to New Providence or other islands and some soon returned to Abaco to assist with the restoration and rebuilding. Of the twenty-five (25), ten (10) have opted to remain in the Abacos including eight (8) on the mainland and one (1) each on Grand Cay and Moores Island. Of the fifteen (15) who have opted to relocate, one (1) our Sweetings Cay employee, was temporarily assigned to the Grand Bahama Utility Company on Grand Bahama.

### COMMERCIAL IMPACTS

Pre-Dorian (January thru August) Abaco collections were up 14%, or \$254,359.15. For the months of September, October, November, and December revenue was down 71%, 48%, 68% and 58% respectively for a total of US\$1,326,717.72 (end of 2019) or an average of \$331,679.43 per month.

Water and Sewerage Corporation (WSC) is facing unprecedented challenges due to a combination of circumstances.

Two contributing factors are:

- a. Hurricane Dorian - The loss of WSC second highest revenue generator, has greatly impacted our cash flow. Abaco's cash collection has decreased by 89% from \$2,116,698 YTD September 2019 to \$225,638 for the same period of 2020.
- b. Covid-19 – Covid-19 has had a devastating impact on WSC cash flow. There was an overall decrease in cash collection of \$15,034,912 or 31% from \$48,758,686 YTD September 2019 to \$33,723,773 for the same period of 2020.

With the onset of Covid-19, WSC was directed to not disconnect residential customer's accounts. This has resulted in a shortfall of Residential Customer's payments for the period March – September 2020 of **\$9 million**. Notably, there is an additional shortfall of **\$3.6 million** for Commercial Customer's accounts for the same period (\$12.6 million in total).





### RESTORATION OF INTERIM WATER SUPPLY

As of today, WSC has been able to restore water supply to all our eleven (11) water supply systems in The Abacos. However, two systems on the mainland and two systems on remote islands/cays are especially challenging only still receive supply between the ours of 6am and 10 pm. more on the remote island only during peak usage hours, while reconstruction works continue. Regular power supply at one facility has not yet been restored; however, full-time back generation is in place. Two (2) water tanker trucks were also at one point being utilized to tanker water to critical locations on the mainland.

### WATER QUALITY

Given the devastation in some of our wellfields and the surrounding communities, Marsh Harbour in particular, WSC Laboratory technicians collected samples and continued to collect samples for thorough testing ensuring that all local and international water quality parameters were met prior to recommissioning any water supply source. These tests included water chemistry, microbiology, trace metals and hydrocarbons with testing done both at the WSC Laboratory in New Providence and at an international Laboratory with the assistance of the Pan American Health Organization (PAHO). These were especially important during restoration.





### ABACO POST-DORIAN RESTORATION

With the aid of a Contingent Loan for Natural Disaster Emergencies between the Government of The Bahamas and the Inter-American Development Bank (IDB), WSC shifted its focus from restoration to major reconstruction commencing with the procurement for the reconstruction of its water and sewerage systems utilizing a \$15Mn allocation.

### POST DORIAN RESTORATION AND RECONSTRUCTION WORKS IN ABACO

Key total contractual expenditure to date stands at nearly \$15M, with the following works done or in progress:

- A. Land Clearing, Refurbishment of Existing Pumping Stations and Related Building and Construction of New Buildings
- B. Desalination
- C. Distribution System Restoration
- D. Fleet and Heavy Plant Replacements
- E. Storage Tank Replacements and Repairs
- F. Sewerage
- H. Other Procurements inclusive of IT, Trailers, Chlorination, Support of the Solarization Project, etc.

WSC thanks the IDB for stepping in providing this most needed support. We also thank our many other partners such as UNICEF, Samaritan's Purse, Water Missions, and IsrealAid, The International Red Cross, and other international, Regional, and Local NGO's, and of course the Bahamas Government whom have have provided counterpart funding.

We will also now be seeking additional funding of a minimum of some \$13 Million, including \$8.0Mn of sewerage works inclusive of a new tertiary level wastewater treatment plant for Treasure Cay with the goal of providing tertiary treated wastewater for the Treasure Cay golf course and a further \$3.6Mn of distribution system restoration and improvement works.

*Committed to Growth. Committed to Quality.*



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## MARSH HARBOUR WELLFIELDS AND PUMPING STATION SOLARIZATION PROJECT

We want to highlight our Solarization Project in Abaco. The Water Corporation and our international partners have committed that all infrastructural systems rebuilt in The Abacos must be stronger and more climate resilient to withstand potential future storms. As part of this commitment, WSC partnered with the United Nations Children’s Fund (UNICEF) and the international non-governmental organization (NGO) WaterMission to design and construct a 120 kilowatt solar field for our Marsh Harbour wellfields and a 216 kilowatt solar field for our Marsh Harbour pumping station.

Works on both solar fields are progressing well despite many supply-chain and logistical challenges in The Abaco’s post Hurricane Dorian and the global impact of COVID 19. It is projected that the wellfields solar field will be commissioned later this year and the pumping station solar field will be commissioned thereafter. When completed, these solar fields will substantially reduce WSC’s demand for power supply in the Marsh Harbour area, the major population center, and they will work in conjunction with the Bahamas Power and Light (BPL) grid supply and WSC onsite standby generators to provide uninterrupted power supply for our Marsh Harbour operations.

The Corporation supports this estimated \$2.5 million project and gives gratitude to both UNICEF and Water Mission for the excellent teamwork in the design and execution of this project.

We are also now in discussions for solar extensions to Treasure Cay the 2<sup>nd</sup> population center.

## Summary of Lessons Learnt

(Note to self – Ad lib)

- Water is still critical to life!!! – hospitals, drinking, washing, rich, poor and immigrants
- Standby power is critical – WSC became a secondary power provider
- Sea damage from waves and surges – water resources/wellfields, and tanks inundated ...current and future construction highlights the significant of building with climate change at the fore of one's mind.
- Vulnerability of other structures (bridges, roads, electricity, communications, private wells)
- Backup storage tanks, chlorine reserves and other consumables are critical
- Communication are critical (local, national and international), Satellite phones as back-up
- Improved national & International coordination, list of officials, Incident Command Systems
- Constantly improve (ongoing process), capacity building and drills – Keep simple with checklists
- Educate & train constantly – (staff & public)
- Hurricanes damage affects weak/antiquated works – old tanks, and systems were the first to be destroyed – they were built without factoring in climate change
- Undertake assets reviews
- Modernization/ build back-up capacity – build back stronger
- Logistics - damage resulted in significant logistical challenges due to extensive damage to rental housing and hotels. Limited power, heavy equipment and trucking services due to extensive damage and many weeks of material and building supplies backed up. The way forward – hurricane planning is super important; ensuring generators are filled, etc.
- Insurance – covered all islands, making the deductible much higher to meet; we have now renegotiated that, with their be particular focus upon each island.

Partnerships are critical – I thank the CWWA, CAWASA, other Caribbean Utilities, International and Local NGO's, Regional and international governments.



## **Final Greetings:**

I thank our team for their wonderful efforts here today. I want to recognize moderator Mr. Cyprian Gibson for his efforts.

I thank all of you, in our region, who have assisted in our recovery and offered moral support.

I especially thank the CWWA Secretariat for this wonderful annual conference and their partners for their financial contributions towards our recovery.

END

