water World

A QUARTERLY PUBLICATION OF THE WATER AND SEWERAGE AUTHORITY OF TRINIDAD AND TOBAGO

Here's how you rated us

24/7 in 2014

Results of a Customer Satisfaction Survey conducted by HHB & Associates Limited Media and Market Research Consultants in November 2013 show that the Water and Sewerage Authority of Trinidad and Tobago has shown significant improvement in several categories.

Highlights of the survey include the following gains in five key areas.

Here's our scorecard:

CORPORATE IMAGE	As a well-run organisation with transparent policies and expert personnel, the way we are perceived by the public is important to us.	WASA's Corporate Image score climbed to **49.25%** up from 42.5% in 2008
WATER SUPPLY	The delivery of a consistent 24/7 water supply is crucial to our citizens and our nation.	**50%** of our customers now receive a **24/7 water supply** up from 18% in 2008
OVERALL QUALITY OF SERVICE	The dependability of the water supply is the primary way you judge our quality of service.	WASA's Quality Service score rose to **65%** up from 54% in 2008
STAFF & THE CUSTOMER SERVICE EXPERIENCE	We are committed to total customer satisfaction which includes meeting the needs of our customers and continually enhancing the customer experience.	WASA's Staff & the Customer Service Experience score rose to **67%** up from 61% in 2008
OVERALL SATISFACTION	How we deliver on all our services is the way we earn high marks in overall satisfaction.	WASA's Overall Satisfaction score climbed to **69%** up from 55% in 2008

"Water Security for Every Sector. Deliver it. Sustain it."

Our goal is to use the 2013 Customer Satisfaction Survey to build upon what we already do well and improve in the areas where our customers say we can do better.

CONTENTS

ISSUE 3 • MARCH 2014

Cover Image - Anthony Farrell
Hollis Reservoir - Valencia

05. Taking on a Customer Care Turnaround

08. Desalination and its Impact on WASA's Water Supply

13. Improving Water Supply to Central and South Trinidad

18. Towards Water For All

20. WASA Delivering on Water and Wastewater Services

23. Environmental Legislation – Changing the way WASA Operates

26. The Psychology of Human Error

27. Promoting and institutionalising Social Dialogue at WASA

29. Climate Change and the Caribbean

33. WASA's Enhanced Hydrological Data Monitoring and Processing Programme

35. WASA Upgrades its Information and Communication Technology

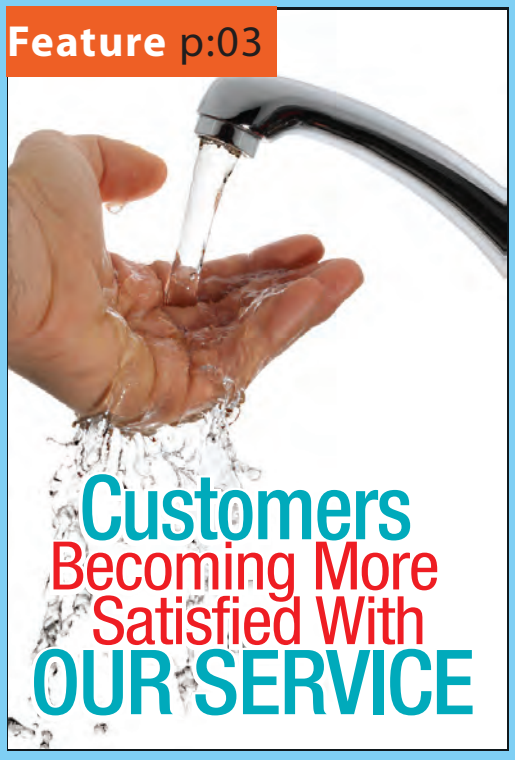
37. Simplifying the Procurement Process

38. Internal Audit's Contribution to WASA's Transformation

40. PEC Tobago - 2nd of its kind in the Caribbean

41. WASA Employee Activities, ends on a High in 2013

Feature p:03



EDITOR'S NOTE

Since the last time we shared our story with you – there has been a lot of positive new developments taking place in the sector. We have been working hard and diligently at improving on our approach towards customer service and the overall customer experience.

So what have we been doing? Aiming to reduce the waiting time for new water service connections; doing away with the requirement for obtaining clearance certificates for businesses; extending our business days to include Saturday openings; and in the second quarter of this calendar year, online payments will be possible. There has also been greater attention on having billing queries and other forms of queries and complaints resolved in a much shorter timeframe.

We have been placing greater focus on staff training and development in an attempt to enliven the customer interface at primary touch points such as the Customer Service Centres and the Customer Call Centres, which handles on average, 800 calls per day. Our focus in this area has proven quite successful. In a national Customer Satisfaction Survey, conducted by HHB and Associates - Media and Market Research Consultants, our overall customer satisfaction rating went up to 69% from 55% a few years earlier. There was also good reason to be proud, on the overall quality of service index, as we performed admirably in that area too - moving to a 65% ranking from 54%. In terms of staff and the customer service experience this had a showing of 67% from 61%.

But that's good news on the soft side of the business. What about the actual delivery of the product to you? The goal is to fill the gap in demand and supply which now stands at 29.4 million gallons of water per day. Based on the outcome of the survey and the internal system of service verification, our service level has tripled since 2010 from an 18% baseline receiving a 24/7 service in 2010, to 50% in Trinidad and 67% in Tobago in 2013.

The objective for 2014 is full service to our customers in Tobago by July and for Trinidad by December. Our strategy for meeting consumer demand is quite straight forward – win new water (surface and ground); replacement of leaky and aged mains; introduction of water reuse and expansion of desalination.

From what we have accomplished thus far and what has been proposed to bridge the gap, we are confident that 24/7 target is well within our reach.

Until the next time, enjoy your issue of WaterWorld!

Ellen Lewis
Head Corporate Communications

WaterWorld
A QUARTERLY PUBLICATION OF THE WATER AND SEWERAGE AUTHORITY

ISSUE 3
MARCH 2014

Publisher
Water and Sewerage Authority
of Trinidad and Tobago

Editor
Ellen Lewis
Head Corporate Communications

Contributors

Doodnath Bohola
Director Corporate Services

Ken Mahabir
Director Human Resources

Wendell Diaz
Ag. Director Corporate Services

Dial Ramkissoon
Head Information and Communication Management

Anand Jaggernath
Head South Operations

Eric Lewis
Head Technical Services

Roger Karim
Senior Manager HSE

Randy Marcano
Senior Manager Internal Audit and Compliance

Majid Mohammed
Senior Manager Customer Care

Sharon Archie
Manager Water Resources Agency

Gregory Roxborough
Asst. Manager Corporate Communications

Lisa Chin Chuck
Corporate Services

Meiling Wong
Corporate Services

Anthony A. Bagalue
Publisher, CDRM

Proofreading
Daniel Plenty
Manager Corporate Communications

Advertising Inquiries
Allysa la Touche
Corporate Communications

Art Direction/ Design
Kenneth Henry

Photography
Warren Bourne
WASA Stock Footage

Printer
Scrip - J

Contact information
Water and Sewerage Authority
of Trinidad and Tobago
Head Office:
Farm Road, St Joseph
Trinidad and Tobago. WI
Ph: 868-662-2302-7 Ext. 2310
Fax: 868-662-8184

Waterworld is published by the
Water and Sewerage Authority
of Trinidad and Tobago
Corporate Communications Department

Customers Becoming More Satisfied With OUR SERVICE

Gerard Yorke
Ag. Chief Executive Officer

Water Supply	Delivery of a consistent 24/7 water supply.	50% of our customers now receive a 24/7 water supply, up from 18% in 2008.
Corporate Image	How customers view WASA as a good corporate citizen.	49.25%, up from 42.5% in 2008.
Overall Quality of Service	Dependability of our water supply.	65%, up from 54% in 2008.
Overall Satisfaction	Satisfaction with all our services.	69%, up from 55% in 2008.
Staff & the Customer Service Experience	Enhancement of the Customer Service Experience	67%, up from 61% in 2008.

Over the last three years, WASA has made tremendous strides along the path toward improving the level of service delivered to its customers. This is in keeping with Government's mandate to provide a 24/7 service to customers by 2014 and WASA's vision to be a high quality utility service provider for the people of Trinidad and Tobago. It is, however, important to measure and track the performance of the Authority as we progress towards Government's dictate and our vision.

In this regard, the Authority commissioned the conduct of a Customer Satisfaction Survey, by HHB and Associates Ltd., Media and Market Research Consultants, in November 2013. The survey measured the performance of the organization in a number of key success areas.

The following table highlights the Authority's scorecard in 2013, relative to the scores obtained in 2008:

The above-mentioned survey results, have confirmed to WASA that its efforts in several areas meant to improve the service to customers, is in fact

32% point increase in the number of customers receiving a 24/7 water supply to 50% up from 18%

creating the desired effects. The most substantial and significant effect being the 32 percentage point increase in the number of customers receiving a 24/7 water supply to 50% up from 18%. This result provides empirical proof that the Authority's vigorous programme of water improvement works, over the last three years in particular, has placed the organization on course to achieving Government's mandate of a 24/7 supply for all by 2014.

Another survey result that supports this position is the 50% of customers who indicated that they observed infrastructural work in their area, of which, 70% saw an improved supply as a result. This is also reflected in the 11 percentage point increase in the overall quality of service delivered by WASA, which was recorded at 65%, up from 54% in 2008. It is important to note that the training provided to staff and improvements made to WASA's facilities, in order to enhance the customer service experience, have also delivered positive results, with an increase to 67%, up from 61% in 2008.

The results of the survey in the areas referenced above, among others, have combined to provide WASA with its highest ever overall customer satisfaction rating of 69%, which represents a 14 percentage point increase above the 55% recorded in 2008.

Though these results appear positive, the Authority is cognizant of the results in its entirety, which means accepting the fact that we are only halfway toward the goal of 24/7 and that most of those who rated the Authority poorly, did so because of a poor service. WASA's Management Team is therefore encouraged, but not satisfied, since there is yet much to be done to accomplish the 24/7 in 2014 goal.

In light of this, the Authority has embarked on a programme of works designed specifically to build on the advances made thus far. This continuation of the ongoing infrastructural development programme will see the completion of a number of key projects across Trinidad and Tobago. When completed, these projects are expected to result in the delivery of 24/7 in Tobago by July 2014, in the first instance and 24/7 in Trinidad, by December 2014.

It is anticipated that by the next Customer Satisfaction Survey, the Authority would be able to record further significant improvements in its level of customer satisfaction. This, as we press towards our vision of becoming "a high quality utility service provider for the people of Trinidad and Tobago and thereafter to be the center of excellence within the water sector in the Caribbean."

Taking On a Customer Care Turnaround

Doodnath Bhola
Director Customer Care

New Sangre Grande Customer Service Centre located at River Street

Think of the time when you felt that WASA was not overly concerned about serving customer needs, for example, when your no water complaints went unanswered or the waiting period for a new service connection took almost twelve (12) weeks.

At WASA, we always strive for nothing less than excellence in our service. While we have been working to meet our customers' water and wastewater needs, our steadfast focus on the customer experience has allowed us to get tough on the softer side of things, in order to break through the bottleneck in our customer service process.

A noteworthy breakthrough moment for us here in WASA, is the timeframe taken to process a new service application. Previously, the process was a long and bureaucratic one, but it has been since been simplified.

Our goal is one that touches many lives, and we ensure that all our employees feel connected to it and empowered to help achieve the delivery of consistent, reliable, quality water and wastewater services. To do so, we have created an environment of continuous learning and improvement for our front line staff members, so that they can better relate to our customers.

We have created an environment of continuous learning and improvement for our front line staff members so that they can better relate to our customers

Senator the Honourable Ganga Singh, Minister of the Environment and Water Resources, cuts the ribbon to formally open the new Sangre Grande Customer Service Centre while being assisted from left by Director Customer Care, Doodnath Bhola, Chairman Sangre Grande Regional Corporation, Terry Rondon, Minister of Science and Technology, and MP for Toco/Sangre Grande, Dr. the Honourable Rupert Griffith, MP for Cumuto/Manzanilla, the Honourable Collin Partap and acting WASA CEO, Gerard Yorke.

Our business turnaround approach is different and it depends on connecting directly with our customers. We have recognized the importance of developing innovative approaches to reach all our customers and encourage feedback that lets us know, not only how well we are doing, but to raise the bar of our own performance while making advancements for customer service improvements.

In particular, we have been reaching out to communities in Tobago, in areas such as Bacolet and Mason Hall through our Customer Care Caravan, which serves as a mobile customer platform enabling customers to pay their bills and have any problem with their service addressed.

Additionally, we have had our Customer Response Team visit approximately 373 communities throughout the 41 electoral districts in Trinidad and Tobago, under the 24/5 Service Level Monitoring Exercise. The aim of this exercise was to receive feedback on actual water supply levels.

We have placed focus on reaching out to our customers in water-stressed areas across the country, particularly those persons who are currently receiving a 24 hour 2 day per week supply, one person at a time, to find out what it takes to meet their needs.

We have been able to directly engage our customers in discussions on customer service issues through town meetings in different areas including Biche, Guayaguayare and Santa Cruz with the aim of establishing effective lines of communication with our customers.

We are constantly looking for new ways to improve our service levels and expand our customer relationships, through our Customer Service Centres. To this end, WASA has made it easier for residents of north-east Trinidad to access customer services when, in December 2013, the Authority formally opened the new Trincity Customer Service Centre, located at Golden Grove Road, next to Bhagwansingh's Hardware.

We are excited to further expand our reach, and make it easier than ever before for the residents of Sangre Grande and environs to access our full range of services from one convenient location, with the opening of the Sangre Grande Customer Service Centre on Feburuary 5th 2014. This brand new facility provides residents with a good service that reduces their travel time between Sangre Grande to Arima or Trincity.

Looking toward another level of the customer experience to ensure our business meets the customers' need, we have extended our business hours as of February 1st, 2014 to include being open to the public on Saturdays. Our customers have since taken advantage of this opportunity of an extra day to do business with us.

We are responding to one of the most frequently asked questions about online payment facility for WASA bills and we are pleased to announce that we will be introducing this online facility in the 2nd quarter of 2014. This new facility will provide an added convenience since it will be available 24/7. Customers will be able to make an electronic payment on their WASA bill from their home, office or even while away on a vacation by simply using a credit card when this facility goes live.

Turnarounds usually happen from the inside out and we have adopted a number of strategies to help drive these changes. We have galvanized every employee to focus on the customer in order to provide a satisfying experience, while ensuring that a pipe borne supply of water is available to meet their basic needs.

Bringing Fresh Water to the People of Southern Trinidad

September 4, 2013 - The Honourable Ganga Singh, Minister of the Environment and Water Resources, and Keith Gilges, Head of the Economic Section of the Embassy of the United States, unveil the cornerstone marking the commissioning of the Seven Seas Water desalination plant at Point Fortin.

Seven Seas Water (Trinidad) Unlimited
www.sevenseaswater.com

SEVEN SEAS WATER

Desalination and its impact on WASA'S WATER SUPPLY

By Eric Lewis
Head Technical Services

Initial concerns, including climate change, drought and pollution, to WASA's thrust to providing a pipe-borne water supply twenty four hours a day, seven days a week (24/7) were some of the diverse reasons that led to the utilization of desalination as an alternative reliable potable water source. Surface water sources experience seasonal fluctuations in quantity and quality of raw water while ground water yields are limited by the capacity of respective aquifers to deliver on a sustained basis. The use of desalination technology has intensified because of the fresh water shortage due to population growth, climate change, pollution and industrial development. Worldwide, over 15,000 desalination facilities have been built, in just 45 years the desalination industry has grown from virtually zero to production of over 60,000,000 cubic metres daily.

For WASA, the need for introduction of alternative supplies was highlighted during the rupture in 1998 of its Caroni South Trunk Main. This incident resulted in the shutdown of the Point Lisas Industrial Estate due to a lack of water supply. It highlighted the need for introduction of redundancy to mitigate such risk given the importance of potable water to the country's economy. The option of Desalination was viewed as feasible because of the following:-

1. Access to a large volume of raw water in close proximity to the area of demand (i.e. the Point Lisas Industrial Estate).
2. Improved security of supply to the Point Lisas Industrial Estate.
3. Additional water could be made available to the distribution systems in South Trinidad.
4. Economically feasible based on the application of a Water Improvement Rate.

A Build-Own-Operate-Transfer (BOO[T]) contract was signed in 1999 with the Desalination Company of Trinidad and Tobago (DESALCOTT) to construct a desalination plant at Point Lisas to provide the Industrial Estate with a dedicated supply of potable water. At the time of construction, this desalination plant was the largest seawater Reverse Osmosis system in the Western Hemisphere with a rated capacity of twenty-four million imperial gallons daily (24mgd) and a maximum capacity of 27.6 mgd.

With the injection of this desalinated water into the Industrial Estate, additional supply was made available to customers served by the Caroni South Transmission system benefitting approximately 470,000 persons from Cunupia to Santa Flora.

Subsequent consideration was given to the establishment of three (3) large desalination plants (each of capacity of 20 mgd) but was suspended due to the high capital expenditure required. However, the Meteorological Drought in Trinidad and Tobago in 2010, and limited fresh water reserves, highlighted a need for development of water supplies in critical areas. WASA therefore sought the establishment of another desalination plant. Point Fortin offered the best option to construct a desalination plant given existing infrastructure at the Petrotrin Trinmar Terminal Facility and proximity to the area of demand in the South West Peninsula of Trinidad.

A Build, Own and Operate (BOO) contract was entered into with Seven Seas Water (Trinidad) Unlimited in 2010 to provide 4.6 mgd of potable water to WASA. After overcoming a number of permitting, design and construction challenges, the Point Fortin Desalination Plant was commissioned in September 2013. The water from this facility supplies over 30,000 residents of Point Fortin and parts of La Brea with a 24/5 pipe-borne water supply with customers in some communities enjoying a 24/7 service. Prior to this project, customers experienced levels of service between 24/1 and 24/2. The injection of this additional supply into the network

DESALCOTT was the first desalination plant constructed at Point Lisas to provide the Industrial Estate with a dedicated supply of potable water. At the time of construction, this desalination plant was the largest seawater Reverse Osmosis system in the Western Hemisphere

permitted the redirection of supplies from other sources to benefit additional communities including Erin, Santa Flora, Quarry, Los Bajos and Palo Seco.

In its continued drive to provide customers with a 24/7 supply, WASA has embarked on increasing its production capacity, as well as strengthening its distribution infrastructure. Due to limitations in the availability of additional supply from traditional sources and concerns with climate change, WASA has again turned its focus to non-conventional sources, employing the following strategies:-

1. Expansion of the Point Lisas Desalination Plant operated by DESALCOTT from the original contracted daily volume of 24 mgd to 40mgd, scheduled to be on stream by April of 2014.

limitations in the availability of additional supply from traditional sources and concerns with Climate Change, WASA has again turned focus to non-conventional sources of water

2. Apart from ground water, surface water and desalinated water, Water Re-use utilizing the effluent from the Beetham Wastewater Treatment Plant is being pursued to produce 10 mgd. The intent of this project is to supply water for industrial use to customers in the Point Lisas Industrial Estate. The project is being undertaken by the National Gas Company of Trinidad and Tobago Limited (NGC) with the water to be supplied to WASA for distribution to customers in the Point Lisas Industrial Estate for industrial applications.

3. WASA has published a request for Expression of Interest for the construction of a reverse osmosis sea water desalination facility at La Brea. This desalination plant will be contracted utilizing a Design, Finance, Build, Own and Operate with an option to transfer with production of 6 mgd, and accommodation to be upgraded to 10 mgd. This desalination plant has become necessary to meet the growing needs of the LABIDCO and Union Industrial Estates.

Non-traditional sources of potable water now account for approximately 15% of WASA's total production. With the addition of the La Brea Desalination and the Beetham Water Re-use Plants, this figure will rise to about 25% which represents a significant component in WASA's production portfolio. The diversification of sources will permit a reduction in the dependency on surface water in particular which is subject to seasonal fluctuations in availability. It is consistent with WASA's drive towards 24/7 in 2014 and the Authority's motto "Water Security for Every Sector. Deliver it. Sustain It."

DRA CONSULTING

...for results that last

Dawn Richards
Principal Consultant

HOW DO YOU GET YOUR ORGANIZATION TO DELIVER CUSTOMER CARE THAT IS WORLD CLASS AND EXCEPTIONAL?

- **Create an "Eager To Serve" attitude amongst your staff**
- **Create Customer Care Standards**
- **Introduce A Customer Care Model that is designed around World Class Customer Care**
- **Train your staff to deliver an "Exceptional" first impression**

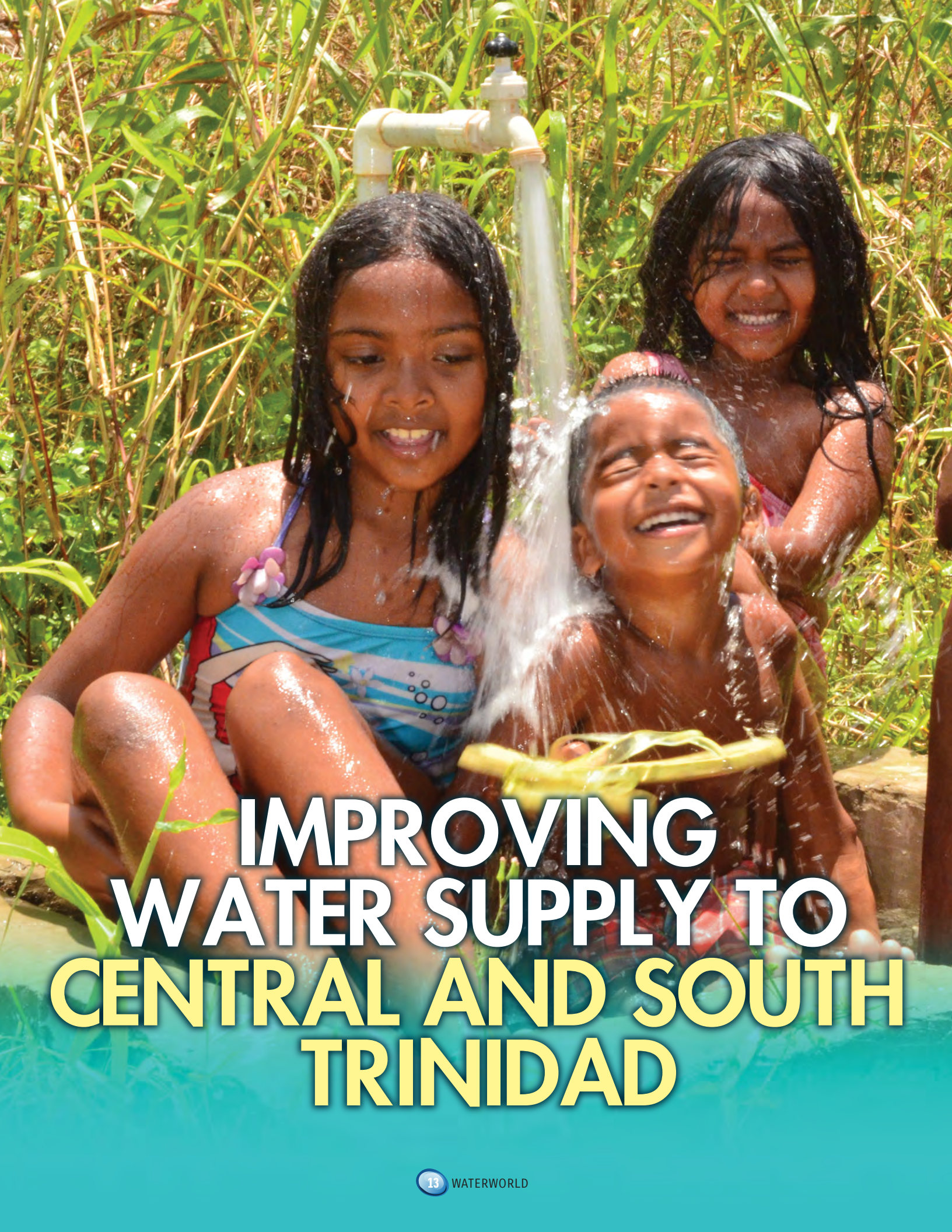
Make the move today that will start shifting your organization to a customer centric style of doing business tomorrow !!

Call us today, 624 8881

We'll be happy to show you how we can tailor a program to suit your company's needs !!

1 De Verteuil Street, Woodbrook, Port of Spain, Republic of Trinidad and Tobago
Tel/Fax: **1 (868) 624 8881**
Email: **drdraconsulting@gmail.com**

We are DRA Consulting, Customer Care Consultants with a track record of creating solutions to our clients' customer service challenges and of transforming organizations into "Cultures of Service"



IMPROVING WATER SUPPLY TO CENTRAL AND SOUTH TRINIDAD

Anand Jaggernath
Head South Operations

The South Region provides water to approximately 693,000 people

24/7 Water Supply

The South Region encompasses Central, South East and South West Trinidad. The four core functional areas of operation are Water Distribution, Water Production, Asset Maintenance and Wastewater.

WASA is currently working toward providing a 24/7 water supply for all its customers. A paradigm shift is occurring from supply management to demand management utilising pressure management and leakage management strategies, as well as promotion of water efficient technologies. Presently, the level of "unaccounted-for" or Non-revenue water (UFW/NRW) exceeds 35 percent, where high per capita demand and an aged distribution system are the major contributors. An integrated approach to urban water management is essential for our social, economic and environmental sustainability.

Customers of Potable Water

Our customers can be placed in four (4) categories:

- Domestic – homeowners where water is used to drink, cook, clean etc. The South Region provides water to approximately 693,000 people.
- Non domestic – restaurants, schools, hospitals, places of work etc.
- Industrial – Pt. Lisas, Fredrick Settlement, Otahiete, La Brea, Pt. Fortin and Galeota Industrial estates where water is used as a raw material and for cooling purposes
- Agricultural – water would be used as a raw material and for domestic purposes.

The nature of the water use by customers is the driving mechanism behind how a water distribution system behaves. Water use can vary over time both in the long term (seasonal) and the short term (daily), and over space.

1) Water Distribution Systems

Moving water from the source to the customer requires a network of pipes, pumps, valves, and other appurtenances.

Storing water to accommodate fluctuations in demand due to varying rates of usage and fire protection needs requires storage facilities such as tanks and reservoirs. Distribution systems naturally fluctuate between periods of high and low water usage thus the storage reservoirs store excess water during low demands and deliver it during periods of peak demand. Piping, storage, and the supporting infrastructure are together referred to as the water distribution system (WDS).

Approximately 50% of our customers currently receive an intermittent or scheduled water supply due to one or a combination of the following:

1. **Supply does not match demand** - When the production from a water source is less than the demand for the area, customers will receive an intermittent water supply consistent with the established water distribution schedules. High per capita demand is also a major concern.
2. **Distribution network is undersized -** There are areas where the pipelines and/or booster stations do not have the capacity to transmit the amount of water required to supply the area. These booster stations and pipelines are restrictions on the system.
3. **Distribution network is underdeveloped -** At present WASA's distribution system lacks adequate storage and as a result all the elements of the distribution system will experience fluctuations in pressure due to diurnal water demand patterns. For this reason some areas may experience the loss of their water supply during high demand periods (morning) and return of supply during low demand periods (night time).

The following projects have been implemented to address the above mentioned problems:

Supply does not match demand

a) Optimising Localised Systems

In an effort to achieve a 24/7 supply to all customers one of the strategies adopted is to rationalise the optimal output from a production source with an appropriate geographical area whereby all customers within the zone can receive a

regular supply of water. This is supported by the establishment of a transmission grid with enough capacity to transfer water between neighbouring water supply zones.

This has been successfully done for:

- **Las Lomas Water Works (WW) supply zone –** A 400mm grid was established between the Caroni system and the Las Lomas WW. Las Lomas WW now supplies Las Lomas #1, 2 and 3 only. Areas such as Madras Road, Chin Chin Road and El Carmen are now supplied from the Caroni system via the transmission grid.

- **Carlsen Field WW supply zone –** A 300mm grid was established between the Caroni system and Carlsen Field WW. Carlsen Field now supplies Carlsen Field, Arena Road, Siewdass Road and a part of the Freeport Mission Road. Areas such as Chase village, Calcutta #4 and a part of Freeport Mission Road are now supplied from the Caroni system via the grid.

- Freeport WW supply zone is being optimized presently

b) Production Increases

The major recent production increases within the South Region are:

- Point Fortin Desalination Plant, Clarke Road Package Plant and La Fortune Package Plant were constructed and supply an additional 5.46iMGD of water.
- Navet WTP - Replacement of raw water pumps which resulted in Plant Capacity being increased to 20.4IMG. (0.6IMGD more from Design Capacity of 19.8IMGD).
- Carlsen Field WW - Two New Wells were commissioned, Caparo #2 and #3, with a combined production of 0.5iMGD
- Trinity Plant - Upgrade of Raw Water system and Clarifier pumps resulted in an increased production from 0.3iMGD to 0.5iMGD
- Maloney WW – Upgrade of the pump on Maloney Well#1 and replacement of the 75mm discharge line with a 150mm line increased production from 0.36iMGD to 0.47imGD

Distribution network is undersized

a) Mains Replacement/Upgrade

To achieve a 24/7 supply, the replacement of high-leakage mains and upgrade of the pipeline network within the South Region is ongoing. Within the past year 40km of transmission mains and 89.2km of distribution mains have been installed in the South Region.

b) Booster Stations

The new South Oropouche Booster Station was commissioned in 2012, to replace an older, undersized station. The new station has improved the water supply and reliability to South Oropouche, Otaheite, Rousillac, La Brea, Avocat and areas served by the Thick Village Booster.

Mains Installation project in Barrackpore

Cap-de-Ville Booster was constructed in 2013 and is also an upgrade to an older, existing station. This new station has improved the level of service to Erin, Rancho Quemado, Palo Seco and Bennett Village.

Biche Booster was constructed in 2013 to replace a smaller non-functional station and has improved the level of service to Biche and Plum Mitan.

Tulip Booster was constructed in 2012. It supplies the Springland Booster Station and has improved the supply to Plaisance Park and parts of Gasparillo.

Alleyne Road Booster was constructed in 2012 and supplies the community of Brasso Venado. This area previously did not have a pipe borne water supply.

Gran Chemin Booster was constructed in 2012 and supplies the communities of Gran Chemin, La Lune and Marac. Naparima Booster is a proposed booster station that will be constructed at the Naparima Reservoir to improve the level of service to the communities of Upper and Lower Hillside, Marry at St and San Fernando Hill.

Distribution network is underdeveloped

Mayaro Reservoir was constructed 2013 and has a capacity of 0.5iMGD. The tank serves to buffer the fluctuations in demand on the system and to provide a consistent water supply to customers even during peak demand periods. The tank supplies Mayaro, Plaisance, along the Manzanilla Mayaro Road up to Ortoire including Peterhill, Resthouse, St Joseph Estate and Coconut Grove. The tank also stores water for periods of high usage such as during vacation time when beach houses in Mayaro are in constant use.

Pressure Management

a) PRV installations

A number of Pressure Reducing Valves (PRV) have been installed within the South Region in the past 2 years to assist with pressure management. These include:

- (2,461) ¾" PRVs
- (68) 2" PRVs
- (28) 4" PRVs

Establishment of Pressure Zones

Pressure zones are being reviewed and established in an effort to provide a sustainable and reliable supply of water to customers on the Navet Water Distribution System. This system will be managed using four pressure zones. A pressure zone is a group of communities with similar pressure demands. It is expected that the development of these zones will be completed within the next six months. The areas of Piparo, Whiteland, Mayo, Poonah, New Grant, Tableland, St. Julien, Hindustan, Indianwalk, 5th and 6th Company, St Mary's, Cumuto, Bhattan, Mandingo and Craignish are more elevated and require higher pressures to supply customers. Therefore an individual pressure zone is being created to supply these areas. The second pressure zone will supply the less elevated areas requiring lower pressures from Trinidad Consolidated Oildfields (TCO) to St. Clements such as Rio Claro, Mayaro, Tabaquite, Sisters Rd, Buen Intento, Malgretoute, Barrackpore, Diamond, Debe, Palmyra, Reform and Williamsville. The third pressure zone is the Princes Town zone which requires higher pressures to adequately supply areas such as Princes Town, St. Croix, Lengua, Cunjal and Jaipaulsingh.

The fourth pressure zone on the Navet system is from St. Clements to Marabella and includes areas such a Corinth, Retrench, Marabella, Vistabella and Tarouba.

2) Areas less than 24/7

The following are some of the areas within the South Region which are presently receiving a supply less than 24/7:

Penal	Debe Mon	Stewart	Reform
Williamsville	Esperance	Diamond	Picton
Phillipine	Sunkist	La Romaine	Siparia
Quarry	Santa Flora	Caparo	Mamoral
Mayo	Parts of Freeport		Gran Couva
Brasso	Flanagin Town		San Fernando
Marabella	Rio Claro	Poole	San Pedro
Cushe	Agostini	Mafeking	Cunjal
Tableland	Cumuto	Mandingo	Moruga
Mayaro			

3) Improvement Works to be undertaken by WASA:

The major increase in supply to the South Region will be an additional 10iMGD of water from the Pt. Lisas Desalination Plant.

In anticipation of this additional water, the water distribution systems will be upgraded as follows:

- Installation of 5km of 200mm PVC main from Reform Road to Malgretoute Booster along Naparima Mayaro Road.
- Installation of 320m of 100mm PVC mains along Mohogany Trace and Corporation Road
- Replacement of 700m of 50mm GWI mains with 100mm PVC main along Devin Drive off Railway Road Rio Claro
- Replacement of 1km of 50mm GWI mains with 100mm PVC mains along Roble Grove Rio Claro
- Installation of 600m of 100mm PVC mains along Ortorie Road, Biche
- Installation of 400m of 100mm PVC mains along Cushe Village Street, Cunapo Southern Main Road, Rio Claro.
- Installation of 600m of 100mm PVC mains along Idu Trace off Riverside Road, Poole
- Installation of 220m of 100mm PVC mains along Beharry Trace off Pariag Trace, Libertville Rio Claro
- Installation of 5km of 300mm and replacement of 5km of 200mm AC main with 200mm PVC main from Persad's Junction, New Grant to George Village along Naparima Mayaro Road
- Replacement of 1.4km of 100mm Cl mains with 150mm PVC mains along Sandstone Road, Poonah, Whiteland
- Installation of 350m of 100mm PVC mains along Ciparini Trac, Piparo
- Installation of 200m of 100mm PVC mains along Moses Trace, Sancho Road, New Grant
- Installation of 400m of 100mm PVC mains along Piparo Trace off Stone Road, Piparo
- Installation of 300m of 100mm PVC mains along Gafoor Trace, Tableland
- Installation of 2km of 100mm PVC mains along Martiste Road to Fredrick 3rd Branch, Hindustan
- Replacement of 500m 150mm Cl mains from M2 Ring Road to Top Street along Manahambre Road with 200mm PVC.
- Replacement of 220m of 100mm Cl mains from Cipero Road to Golconda Settlement Road with 200mm PVC
- Replacement of 300m of 100mm Cl along Golconda Settlement Road with 100mm PVC.
- Replacement of 900m of 100mm Cl mains from Lallbeharry Trace to Cemetery Street along Papourie Road, Barrackpore with 200mm PVC.
- Installation of 260m of 100mm PVC mains along Perry Young Road off Lengua Road, Princes Town
- Installation of 1.8km of 100mm PVC mains along Brasso Tamana Road, Tabaquite

Water We Need...

Don't waste it!

tip

Don't leave your hose running while you wash your car.

By conserving water today, you help secure your water supply for tomorrow.

WATER
Use only what you need.

Check out our website **www.wasa.gov.tt**

Add us on Facebook
Wasa Trinidad Tobago

Follow us on Twitter
@wasatnt

wasa

"Water Security for Every Sector. Deliver it. Sustain it."

In order to to sustain a 24/7 supply to customers it is important that all Water Treatment Plants and Booster Stations operate optimally

- Installation of 250m of 100mm PVC main along Saudia Avenue off St Croix Extension, Barrackpore
- Installation of 2.1km of 200mm PVC mains along Guaracara Road to Guaracara Reservoir

To improve the level of service to Debe and Penal, a transmission grid has to be created by linking the transmission main on the S. S. Erin Road to the transmission main on the New Colonial Road by:

- Installation of 8km of 300mm DI main from S. S. Erin Road to New Colonial Road along Mohess Road, Sanahie Trace, Lawrence Hill and Wilson Road

The following projects will also assist in improving the supply to customers in the Penal/Debe areas:

- Installation of 200m of 100mm PVC mains along Gopie Branch Trace #2
- Installation of 300m of 100mm PVC mains along Spur Trace, Suchit Trace
- Replacement of 200m of 50mm GWI mains along Faraday Avenue Penal With 100mm PVC

In the Caparo/ Mamoral/ Flanagin Town area, the aged 200mm pipeline is undersized and is presently being upgraded by the installation of 5km of a 300mm DI main and 5km of a 200mm PVC main from Todds Road Booster to Mamoral Crossing along the Caparo Valley Road.

The following are additional pipeline projects to improve the levels of service to customers on the Caroni system:

- Installation of 250m of 100m PVC along Chocolate City from Cedar Hill Road to end of street.
- Replacement of 5km of a 125mm/150mm CI main with 200mm PVC mains from Corner Mahaica Junction (Health Centre) to Kernaham Trace
- Installation of 100m of 100mm PVC along Durant Lane from Hassrath Extension to end of street.
- Installation of 400m of 100mm PVC along Palm Drive from Marchin Road to end of street.
- Replacement of 400m of AC mains with 100mm PVC along Maraj Street, Perseverance
- Replacement of 340m of AC mains with 100mm PVC along Maraj Sreet, Perseverance
- Installation of 700m of 100mm PVC mains along St. Thomas Village, Dore, Ashby, Newton, Woodford and Waterman Streets.
- Installation of 350m of 100mm PVC mains along Irvin Avenue, Chase Village
- Replacement of 700m of 100mm CI Mains from Mon Desir Delhi Road to Highway site along Grants Trace. Ext with 150mm PVC.
- Replacement of 2.4km of 100mm CI main from Delhi Road with 200mm PVC main.
- Replacement of 200m of 100mm CI main from Silverstream to the highway site along Grants Trace Extension with 100mm PVC
- Replacement of 700m of 50mm PVC mains from Phillipine Road to S.S. Erin Rd along Moonridge Road with 150mm PVC.
- Installation of 300m of 100mm PVC mains along Sirju Trace, Hermitage.
- Installation of 300m of 100mm PVC mains along Pundit Trace, Dumfries.

Sustainability

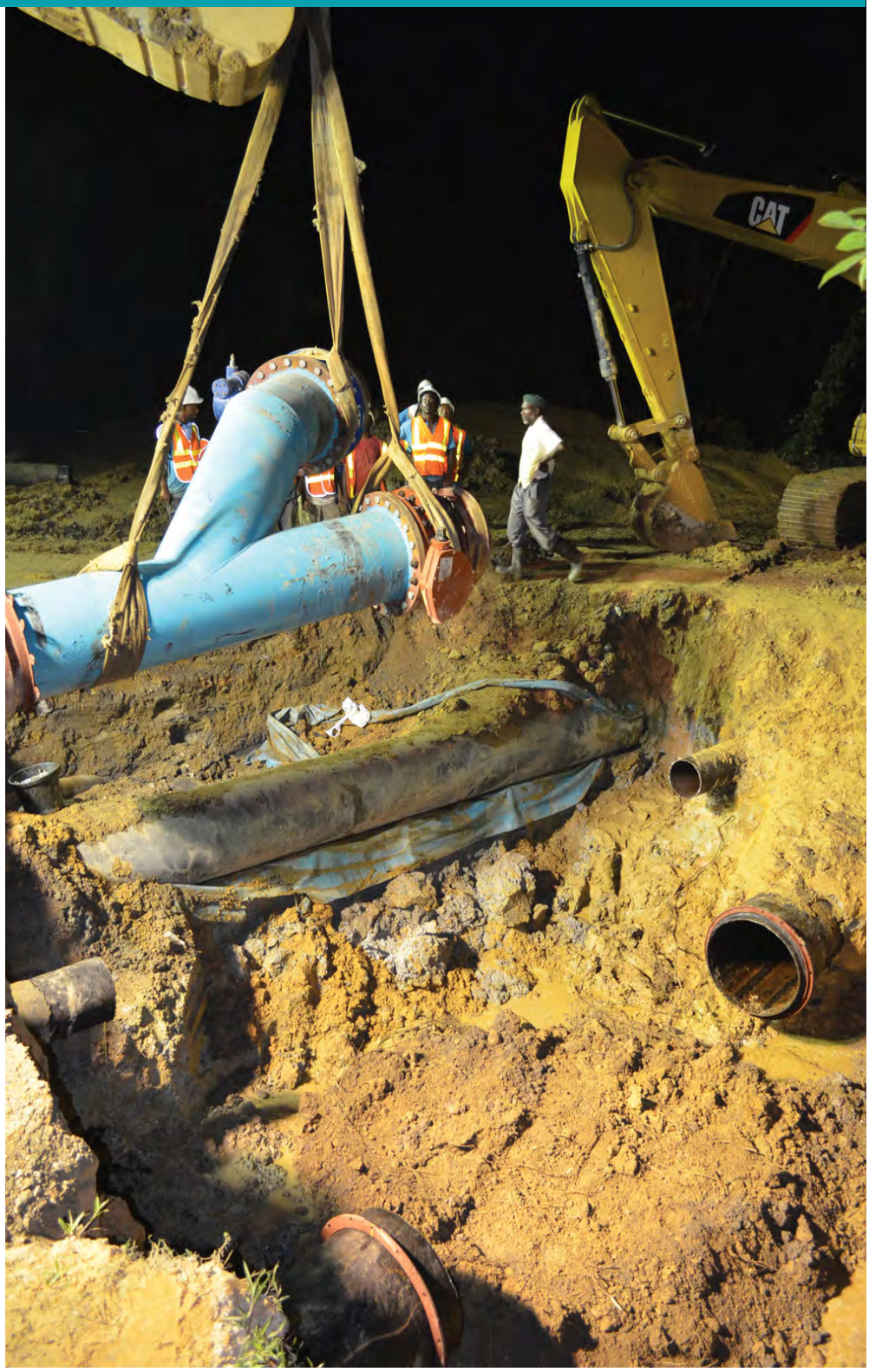
In order to to sustain a 24/7 supply to customers it is important that all Water Treatment Plants and Booster Stations operate optimally. An Asset Inventory was done identifying the status of equipment and the critical equipment required at Water Treatment Plants, Wastewater Plants and Booster Stations. In instances where there isn't adequate spare capacity available, equipment will be procured to ensure there is sufficient redundancy to minimise impact on water supply to customers in the event of equipment failure. Another key aspect of sustaining a 24/7 supply is proper supply monitoring and continuous analysis of the water distribution network which leads to provision of feedback for required infrastructure upgrades as population increases and water demand grows.

Majid Mohammed
Senior Manager Customer Care

WASA Delivering on Water and Wastewater Services

The Government of Trinidad and Tobago, and the Ministry of the Environment and Water Resources, through line agency WASA, is continuing the aggressive pursuit of providing a sustainable supply of water to all citizens and every sector of the country. This approach is consistent with the United Nations Millennium Development Goals of reducing the number of people globally, without sustainable access to safe drinking water by 50% by the year 2015.

WASA is working towards a target of providing a **24/7** water supply in Tobago by July 2014 and in Trinidad, by December 2014



To achieve this milestone in our country's history, where areas such as Biche received pipe borne water for the first time, WASA, as the Government's executing agency, successfully undertook a number of projects which provided some villages with water for the first time while other areas received an improvement in their existing supply. Some of these projects included the construction of four portable water treatment plants at Talparo, Matura, Penal and Point Fortin, in addition to, the drilling of six wells at Freeport, Valsayn, Point Fortin, Chatam, Cape-de-Ville and Louis D'Or in Tobago.

A major milestone in 2013 was the construction of a desalination plant at Point Fortin which significantly improved the lives of customers. In addition to these projects which increased our production capacity, 578 pipeline projects were executed resulting in the laying of 415km of pipelines. These projects resulted in significant improvements in the service to our customers in areas such as L'Anse Mitan Carenage, Covigne, Diego Martin, Union and Bristol Villages in Mayaro and Brasso Venado, Biche, Plum Mitan, Cushe, Navet and Tabaquite where residents experienced pipe borne water for the first time.

Communities such as Otaheitte to La Brea and Avocat to Erin are now boasting of significant improvements in their water supply since the construction of a new Booster Station in South Oropouche, while South West Tobago experienced similar improvements in their water supply due to the installation of a brand new transmission pipeline from Courland to Buccoo.

Successful completion of all the above stated projects is testimony of WASA's commitment to achieving its mandate; and there is further evidence of this with the ongoing works to replace the old Hollis Trunk Main from Valencia to Port of Spain. Once completed customers along the East-West Corridor will experience an

WASA is committed to ensuring the delivery of a safe, sustainable supply of water to all citizens of Trinidad and Tobago

improvement in their supply. WASA is also rehabilitating the Caroni, Navet, North Oropouche, Hollis, Courland and Richmond Water Treatment Plants.

However the journey is not yet completed. In 2014, WASA is working toward a target of providing a 24/7 water supply in Tobago by July 2014 and in Trinidad, by December 2014. We have taken into account the needs of all stakeholders involved in order to undertake the water improvement projects.

In Tobago, several pipeline projects will be embarked on in areas such as from the Bloody Bay Water Treatment Plant to Bloody Bay Junction; Bloody Bay Junction to Englishman's Bay and from Culloden Junction to Board Road in Mt. Moriah. In addition, the Charlotteville Intake will be upgraded to a Water Treatment Plant ultimately resulting in a 24/7 water supply to customers throughout Tobago.

In Trinidad, several projects will be executed to achieve our target of 24/7 water supply by December 2014. These projects include an increase by 10.mgd in production by the Desalination Plant at Point Lisas; the drilling of seven (7) new wells at Diego Martin, Port of Spain, Santa Cruz and Point Fortin. The Authority is also working with the National Gas Company to utilize the effluent from the Beetham Waste Water Treatment Plant to produce industrial grade water for use by customers in the Point Lisas Industrial Estate.

WASA remains committed to the expansion of the collection and wastewater treatment facilities and through the Ministries of Planning and Sustainable Development and the Environment and Water Resources; a US$546 million loan was secured from the Inter-American Development Bank to develop the wastewater sector.

Work is already in progress to integrate eight wastewater system in Maloney and two in Cunupia. Works are being carried out off the Scarborough Wastewater Treatment Plant to connect 215 properties to the collection systems. Further, rehabilitation is also being done to other wastewater plants in Maracas, Santa Cruz, Arima and San Fernando.

Another milestone achieved, is completion of works to reduce pollution of the environment from a leaking submarine sewer main at Williams Bay Chaguaramas. This pipeline was re-routed to the Point Gourde Wastewater Treatment Plant to allow for proper treatment and safe discharge of effluent which will positively impact the environment.

WASA is committed to ensuring the delivery of a safe, sustainable supply of water to all citizens of Trinidad and Tobago. We continue to demonstrate that we are a good corporate entity by championing the need for strong environmental management. Our wastewater projects further support our commitment to the environment as we strive to develop innovate approaches to treat wastewater and reuse for industrial purposes. We stand committed to continue to be a customer focused utility always striving to develop innovative approaches to improve the customer experience and address the needs of the business environment.

Environmental Legislation – changing the way WASA Operates

Environmental regulations can impact a business at any time. Whether you produce products that could potentially harm the environment or need to dispose of pollutants or hazardous or non-hazardous waste – you must comply with the law. Businesses impacted by disasters such as flooding or fire, are also required to implement cleanup plans to avoid pollutants entering and damaging the environment. Since the establishment of the Environmental Management Authority in 1995 and subsequent promulgation of a number of subsidiary legislation or environmental rules in 2001, the Water and Sewerage Authority (WASA) through its Environmental and Regulatory Compliance Department (ERCD) has been actively working toward ensuring that the operations of the Authority are conducted in compliance with environmental legislation, and in so doing, also ensure that WASA is practicing good corporate social responsibility and environmental stewardship.

The primary environmental legislation to which the Authority is required to abide is the Environmental Management Act, 2000 (EM Act, 2000) which is enforced by the Environmental Management Authority (EMA). Under this umbrella legislation, the three main Rules that are regularly applied to WASA are:

- Certificate of Environmental Clearance Rules, 2001 (CEC Rules, 2001)
- Water Pollution Rules, 2001 (as amended) (WPR, 2001)
- Noise Pollution Control Rules, 2001 (NPCR, 2001)

Over the years, these various rules have increasingly impacted on the way in which the Authority conducts its operations in a number of ways. In accordance with the **CEC Rules, 2001** certain proposed projects require a Certificate of Environmental Clearance (CEC) before any works can commence. A CEC signifies the environmental acceptability of the proposed project as well as stipulates monitoring, mitigation and environmental management measures that must be implemented. As such, from as early as the planning stage of the project, there must be environmental considerations included - such as additional costs that may be required to conduct environmental surveys and studies, time required to obtain a CEC, costs of mitigation measures and monitoring programmes, as well as implications of a failure to comply with the CEC Rules such as stoppages of the projects and fines levied against the Authority.

> There has been some confusion by persons engaging in land development about the process required for the installation of water infrastructure and wastewater disposal systems

A number of typical WASA project activities such as the **establishment of water treatment plants, wastewater treatment plants, desalination plants, wells, surface impoundments such as reservoirs and dams as well as the installation of pipelines (both water and sewage) in excess of one (1) kilometer require a CEC before they can be executed.** As such the ERCD works closely

with the various Departments within WASA to screen projects and guide the Project Managers through the process of not only acquiring the CEC but ensuring compliance with the terms and conditions.

Additionally, even projects that do not require CECs are still provided with environmental best practices and guideline documents developed by the ERCD to ensure that they are executed in an environmentally sound manner.

The **WPR, 2001** are applied to all facilities, existing and proposed, that discharge an effluent to the aquatic environment. There are two major processes under the WPR, 2001 (as amended) – Source Registration and Water Pollution Permitting. While both processes require the monitoring of the effluent to determine discharge characteristics, a more stringent, structured approach is required under the Water Pollution Permitting.

In an effort to meet with the requirements of these Rules, several Departments will be required to adjust the way in which works are conducted. The Authority's Quality Control Department has had the need to modify its existing sampling and monitoring schedules and operations to facilitate the 8-hour daily cycle monitoring programmes required under the Permits; the ERCD is in the process of developing environmental awareness training programmes aimed primarily at personnel stationed at the permitted facilities to ensure that they are aware of what is required of them under the law as it applies to environmental issues. Additionally, the ERCD will now also be taking a more active role in the monitoring of effluent from Source Registered facilities and auditing of the operations at these facilities with the view of improving their environmental performance. Meanwhile, WASA's Operations Division will be required to ensure that their facilities are well maintained and in good working order. It can therefore be seen that compliance with the WPR, 2001 will require extensive co-ordination and communication between the various key Departments and Divisions.

As with the CEC Rules, 2001, failure to comply with the WPR, 2001 (as amended) can result in the levying of fines against the Authority as well as closure of the facilities found to be in violation of the Rules. To date the Authority has fifty-seven (57) Source Registered facilities and twelve (12) permitted facilities – six (6) wastewater facilities and six (6) water treatment plants.

The impact of the NPCR, 2001 on the Authority is quite limited as the majority of the works conducted by the Authority are exempt from the **NPCR, 2001**, however there are cases where the noise that will be generated by the proposed activities will result in non-compliance with the Rules. These cases are usually anticipated and the requisite Noise Variation obtained prior to the execution of works and/or activities. Additionally there may be instances where the Authority has received complaints about noise emanating from facilities that are in operation. Following preliminary investigations and the conduct of noise surveys, if the facility is found to be in contravention of the NPCR, 2001, mitigation actions will be required such as the switching of the noisy machinery to a quieter model, use of noise dampeners or other attenuating devices or construction of noise barriers.

Although environmental considerations under the legislation may require additional costs and time, their implementation only serves to better the Authority's environmental performance, a factor that is becoming increasingly important on an international scale and which can affect the Authority competitiveness for business investments and eligibility for funding from international lending bodies.

The YSI Meter used to collect in-situ water quality data from the Caroni River

The Partech TSS Meter to monitor TSS of the Black River

Recording Field data

Collection of ex-situ sample from the Caroni River

KAIZEN TRADING LIMITED

- Heavy Equipment Rentals
- Road Paving & Road Restoration
- Bridge Construction
- Drain Construction
- Building Construction & other Civil Engineering works
- Suppliers of Aggregate, Hotmix & Premix Concrete
- Suppliers of Hardware & Building Materials
- Pipeline Maintenance & Installation

34 D CENTRAL WAREHOUSING COMPLEX,
CORNER OF BABOONIA TRACE & WARNER VILLAGE,
CHARLIEVILLE, CHAGUANAS, TRINIDAD, W.I.,
CELL: 290-9480 / 776-2847 TEL: 299-1025,
FAX: 672-5634,
EMAIL:kaizentradingltd@live.com

THE PSYCHOLOGY OF HUMAN ERROR – PERSPECTIVE FOR SAFETY MANAGEMENT

Roger Karim
Senior Manager, Regulatory Management

As capable and ingenious as humans are, we do err and make mistakes, even the "best ones". Errors are actions that unintentionally depart from an expected behaviour and done with no forethought or malice. It is often a result of a mismatch between human limitations and environmental conditions at the job site, including inappropriate management and leadership practices and organizational weaknesses that set up the conditions for performance.

An understanding of what is behind human error will help us better compensate for those events through more rigorous use of error reduction tools and by improving controls. In assessing errors, we need to appreciate how workers process information since an error is a function of how the brain processes information related to the performance of an activity. Therefore, depending on the activity, a person's performance mode is either skills based, rule based or knowledge based.

Slips and lapses are errors that occur when in skills based mode i.e. performing routine tasks. As those actions are usually executed from memory without significant conscious thought, mistakes occur due to memory loss, loss of attention or loss of concentration and not due to levels of training, experience or motivation. Typical examples are reading the wrong dial, leaving a forklift unattended or failing to carry out particular actions as part of a work procedure. Therefore, redesigning the job to minimize distractions, use of checklists or alarms to signal the omission of a step can reduce these types of errors.

Too often, workers involved in skill-based performance who err are scheduled for retraining but retraining workers to do work that is already basically memorized and routine will not be effective since those types of error were not intended in the first place. Use of job observations to gather data about the worker behaviour, the job-site conditions, and organizational support may provide better insight into the circumstances surrounding the event and what, if anything, changed in the work environment or with the individual. The error may have been provoked by fatigue and stress or change in the workplace such as temperature, ventilation, unreasonable completion target, etc.

Rules based mistakes occur when a rule or procedure is remembered or applied incorrectly. This usually happen when due to some error or change, the rule that is normally used, no longer applies. Since the worker is required to apply more conscious thought in this less familiar situation, he draws upon rules that may have been learnt through formal training or by working with experienced workers. Minimizing these errors require task review, pre-job briefing or seeking confirmation from a supervisor or someone who knows.

Errors that occur when working in rule-based performance may be corrected through retraining. Generally, the worker has either misinterpreted a rule, has applied a bad rule to a given application or conversely, has used a good rule in a wrong application. In these instances, understanding requirements and knowing where and under what circumstances those requirements apply is cognitive in nature and must be learned or acquired in some way. Therefore peer review and supervision are also useful in correcting these errors.

Knowledge based errors are those which result from inappropriate use of well-established methods or calculations e.g. in calculating shoring requirements, the formula used for clayey soil is used for sandy soil thereby causing an unsafe condition.

Corrective action to reduce knowledge-based mistakes is more complicated. Training or retraining could help but other factors such as lack of competency, error in decision making, over confidence, team errors also contribute to this type of error.

No doubt knowing the kinds of errors individuals tend to make while working in those various modes, can be extremely useful. Managers responsible for establishing and maintaining effective controls can make good use of this information in assessing the right corrective action.

Promoting and Institutionalising Social Dialogue at WASA

Agreements being signed by members of the Public Services Association (P.S.A.) - Anthony Guerra, General Secretary, WASA Section, PSA, Leroy Baptiste, Chairman WASA Section, PSA, and members of WASA's Executive Management Team Dion Abdool, Corporate Secretary and General Counsel and Ken Mahabir, Director, Human Resources

The transformational activities currently taking place at the Authority are not solely aimed at infrastructural improvements, but also at the creation of an enabling environment that is characterized by good governance and industrial peace. The channel through which this will be accomplished is the collaborative and democratic process referred to as 'Social Dialogue'.

Social Dialogue requires respect for the fundamental rights of freedom of association and collective bargaining, strong representative and independent partners, the will and commitment to engage in effective dialogue and appropriate institutional support.

Throughout 2014, the Human Resources Division will continue to actively promote this initiative to ensure its institutionalization throughout the Authority. Since the introduction of the Social Dialogue approach in 2011, meetings have been held with Senior Managers and Officials of the three recognized Unions within the Authority, the Public Services Association (PSA), National Union of Government and Federated Workers (NUGFW), as well as the Estate Police Association (EPA) to ensure this concept is fully understood and firmly enshrined in our way forward. To date, management's relationship with all three (3) Unions has been excellent.

BENEFITS OF SOCIAL DIALOGUE

Social Dialogue is a value adding and trust-building activity involving all key stakeholders. It allows for:

Figure 1: Benefits of Social Dialogue

THE WAY FORWARD

To further promote the concept of Social Dialogue in the Authority, the Human Resources Division will continue its series of workshops with executive management, senior managers, union executives and shop stewards, inter alia focused on the role of Social Dialogue in creating a High Performance Organization. Participating at our upcoming workshop would be the Director, International Labour Organization (ILO) and Senior Specialist, Social Dialogue and Labour Relations at the ILO as well as the Permanent Secretary, Ministry of Labour and Small and Micro Enterprise Development. Additionally, discussions have begun with the German Embassy to advance the concept of information and experience sharing of our colleagues in the Water and Wastewater Sector in Germany.

Further to this, advocates will be identified and trained to facilitate the promotion of Social Dialogue and address any related concerns or issues. Within the first quarter of 2014, the Human Resources Division aims at establishing a Social Dialogue Committee consisting of management and representative unions whose first task will be the development and implementation of a Social Dialogue policy.

In becoming a High Performance Organization, it is agreed that the approach to Industrial Relations issues and resolving conflict in the workplace must be redefined. Social Dialogue must become a routine part of our organizational landscape. Its success is dependent on the commitment and participation of all stakeholders - management, unions and employees, thereby creating and sustaining industrial peace and stability.

Figure 2: The way forward with Social Dialogue

Social Dialogue must become a routine part of our organizational landscape

Agreement being signed by President General of the National Union of Government and Federated Workers, Senator James Lambert and members of Executive Management, Dion Abdool, Corporate Secretary and General Counsel and Ken Mahabir, Director, Human Resources

CLIMATE CHANGE AND THE CARIBBEAN

The Caribbean islands from Jamaica to Trinidad and Tobago each have their own climate, geology, topography, industries, and culture, but impacts of climate change could bring similar challenges to all island communities.

Many of the climate change impacts are likely to affect island communities throughout the Greater and Lesser Antilles, which includes higher sea levels, more powerful tropical storms, and warmer, more acidic coastal waters. Unique island ecosystems, such as coral reefs and mangrove forests, are already facing stress from human development and pollution, making them particularly sensitive to additional stresses from climate change. Buildings and important infrastructure on the coasts could also be particularly sensitive to climate change impacts.

Anthony A. Bagalue
Publisher, Caribbean/Latin America
Disaster Readiness Manual

The Caribbean is likely to experience significant warming in the next century, with projections for warming by 2100 range from approximately 2.5°F to over 6°F, depending on global greenhouse gas emissions throughout the 21st century. In the Caribbean, precipitation is projected to decrease overall, however summer precipitation and the frequency of heavy downpours is projected to increase. Rising sea levels are also likely to increase the frequency and severity of floods during storms, as well as to erode and inundate coastlines.

Impact on Water Resources

Climate change will likely affect the availability of water on some islands, particularly on the smaller islands. Ground and surface waters on many small islands are recharged by rainfall, but some islands are projected to experience decreases in precipitation, while others may see increases.

Many island communities depend on freshwater lenses, which are recharged by precipitation. The amount of water contained by a freshwater lens is determined by the size of the island, the amount of rainfall, rate of water withdrawal, the permeability of the rock beneath the island and salt mixing due to storm- or tide-induced pressure. Freshwater lenses can be as shallow as 4 to 8 inches or as deep as 65 feet.

In the Caribbean, where rainfall is projected to decrease, water supplies are likely to be reduced. Sea level rise and coastal erosion can also reduce water availability by inundating land with saltwater, contaminating freshwater and preventing recharge of the freshwater supply. On islands where populations are growing, or where infrastructure is old or poorly constructed and maintained, the impact of climate change may be especially severe.

Though increases in precipitation may help ensure a supply of freshwater, heavy rainfall events could lead to flooding and landslides, which can reduce water quality and cause damage. In addition, the water infrastructure systems of some islands could be overloaded during heavy rainfall, affecting their ability to distribute drinking water or safely process wastewater.

In some South American countries close to Trinidad and Tobago, heavy rainfall is projected to increase, which may lead to more frequent flooding mainly in Trinidad that could compromise the quality of water supplies and affect crop yields. Flooding events can cause sewage or agricultural pollution to flow into water supplies, which can present risks to human health.

In light of the above-mentioned challenges likely to be brought on by climate change, another issue of concern in the region is the threat of diffuse pollution on rivers, swamps, groundwater and coastal waters.

What is diffuse water pollution?

Water pollution can come from either diffuse or point sources. An example of point source pollution is treated sewage effluent discharged from a sewage treatment works. Point source pollution can be controlled by regulation.
Diffuse source pollution typically comes from unlicensed sources and dispersed land-use activities. It often occurs after rainfall and its composition is extremely variable. Common examples of diffuse water pollution include:
• Contaminated run-off from roads • drainage from housing • accidental chemical and oil spills from transport and industrial sites • surplus nutrients, pesticides and eroded soils from farmland. Emissions of gases into the air from transport, industry and agriculture can also eventually cause diffuse water pollution.

Diffuse water pollution is mainly related to the way we use and manage land and soil. It can affect rivers, lakes, coastal waters and groundwater.

High quality water
is vital to rural economies and is at the centre of urban regeneration

Groundwater is vulnerable from, and can be affected by, pollutants that leach from the land surface and from areas of contaminated land. Surface water can be affected by rainfall that washes over and off the land (run-off).

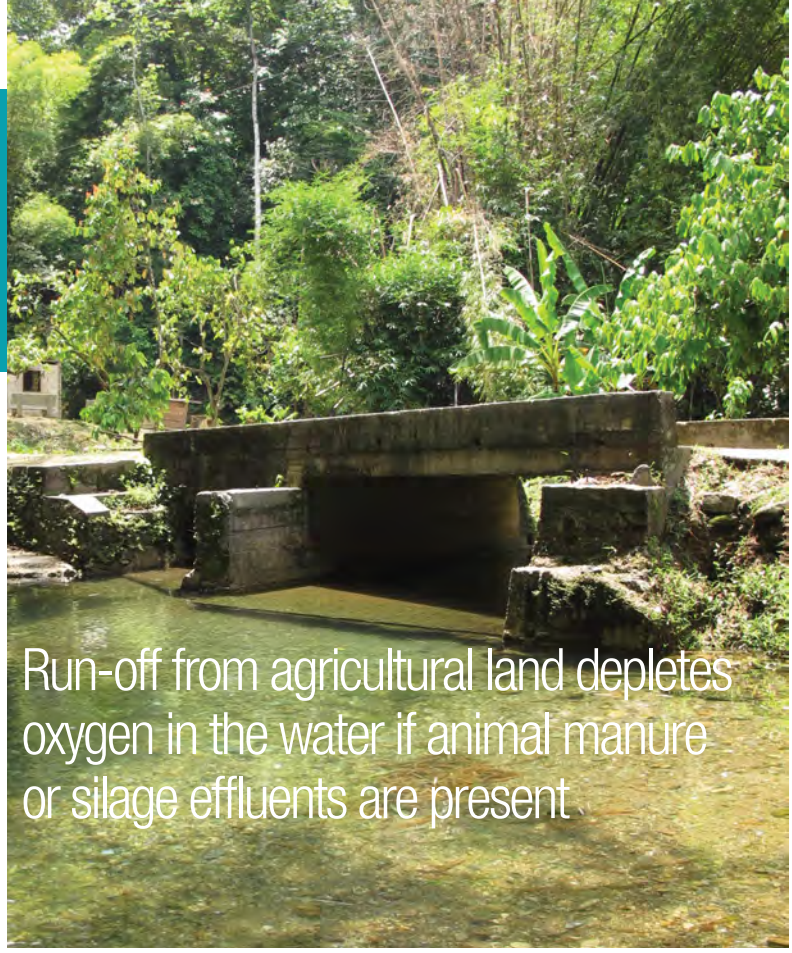
Rivers can also be influenced by springs and seepages from groundwater that contribute to their flow. If the groundwater connection with surface waters is high, pollution can pass from one to affect the other.

Run-off has increased as we build more roads and houses and intensify agricultural activities. This often happens where we have degraded the natural permeability of the landscape and reduced its capacity to retain water. Unlike point source pollution, we cannot easily control diffuse pollution by issuing licenses or permits. Regulatory approaches have to be more subtle and in many cases need to be well connected to the land use planning system.

Diffuse pollution tends to arise from sites not directly regulated by Environment Agencies. However, we need to continue to pursue water quality improvements by tackling diffuse pollution issues, through the adoption of innovative ways of controlling the risks from diffuse sources.

There is also need for a significant new piece of environmental legislation that will help protect our watershed areas and allow for all inland and coastal waters to regain good status. This is in light of the prognosis that “by 2015 nearly half the world's population — more than 3 billion people — will live in countries that are "water-stressed" — have less than 1,700 cubic meters of water per capita per year mostly in Africa, Caribbean, the Middle East, South Asia, and northern China. Source: (Global Trends 2015, NIC 2000-02, National Intelligence Council, Washington, DC, December 2000, p. 27) At the same time ,the potential effects of climate change also create uncertainty about future water availability and use, the report said. Most climate experts expect global warming to create more droughts and more extreme storms.

In view of this, we are establishing river basin districts within which demanding environmental objectives will be set, including ecological targets for surface waters. As part of this initiative, we are refocusing our monitoring to provide better information on the impacts of diffuse pollution, so that we can develop targeted measures to improve water quality.



Run-off from agricultural land depletes oxygen in the water if animal manure or silage effluents are present

We need to tackle both urban and rural sources of pollution. In urban areas run-off from roads and other surfaces, foul drains wrongly connected to surface drains, leaking sewers, spilled chemicals, oil and fuel, pollute rivers and groundwater. We need sustainable drainage systems that intercept pollutants and reduce flood risk, to become a common feature of our urban design.

Farming can also be a major source of diffuse pollution. Inorganic fertilizer use is significantly higher than fifty years ago and has contributed to elevated levels of nutrients in our water. Run-off from agricultural land depletes oxygen in the water if animal manure or silage effluents are present. Soil erosion, as well, can be caused by inappropriate cultivation, trampling of riverbanks by livestock, construction and other land disturbance leading to sediment build-up in rivers and lakes.

Further measures that are needed include the safe storage of chemicals, better maintenance of pollution control equipment and more training and education to raise awareness about the risks of pollution.

On its own, each source of diffuse pollution may be of little significance; but when they occur together, for example in an urban area, they can create significant problems.

In conclusion, it is important to reduce the social, economic and environmental cost of contaminated water sources, degraded urban rivers, and declining biodiversity and fisheries. High quality water is vital to rural economies and is at the centre of urban regeneration. For the sake of current and future generations we need to safeguard the purity and quantity of our water against irresponsible mineral development. We need to ensure the best pollution prevention strategies are employed in cases where the risks can be managed.

Saturday Openings

Water and Sewerage Authority of Trinidad and Tobago (WASA) Customer Service Centres nationwide are now open to the public for business on

Saturdays from 9:00 a.m. - 3:00 p.m.

This is in keeping with WASA's mandate to bring its services closer to the public and enhance our customers' experience with more convenience.

Our Customer Service Centres are at the following convenient locations:

Golden Grove Road, Piarco
Farm Road, St. Joseph
Kew Place, Port of Spain
Sorzano Street, Arima
Mon Chagrin Street, San Fernando
Market Street, Chaguanas
128 Southern Main Road, Couva
17 King Street, Princes Town
26 Guapo Road, Point Fortin
River Street, Sangre Grande
Crooks River, Scarborough, Tobago

24/7 in 2014

"Water Security for Every Sector. Deliver it. Sustain it."

Customers now have greater convenience to:

- Apply for a water service connection
- Regularise account status
- Pay bills via cash, LINX or credit card
- Make billing queries
- Acquire account statements

800-4H2O (800-4420/4426) | wasa.gov.tt | SMS 9272 | WASA Trinidad & Tobago | @wasatnt | YouTube WASATrinidadTobago

WASA's Enhanced Hydrological Data Monitoring and Processing Programme

Sharon Archie
Manager Water Resources Agency

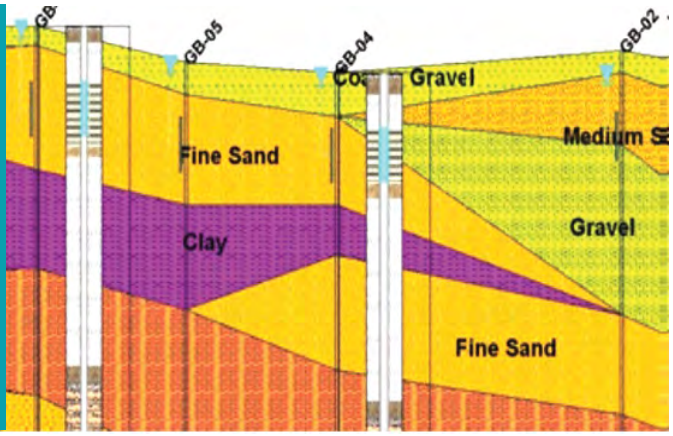
Although Trinidad and Tobago is not water scarce, challenges to water availability and sustainability can threaten the continued development of the islands. Consequently, an organized structure for monitoring and reporting on its water resources, plays an integral role in the sustainable management of the resource for both present and future demand. Hydrologic data helps us to understand and manage this precious resource. It is essential to assess surface and groundwater systems in order to meet the water demands of society, mitigate water-related hazards, and enhance the environment.

A Hydrological monitoring network has been in existence in Trinidad and Tobago for over eighty (80) years with the oldest rainfall gauge in the region located at the Royal Botanic Gardens in Port of Spain. The station has been recording rainfall data from February 1st 1927 to present. The current network is much larger and includes automated and real time monitoring stations.

The present network comprises one hundred and thirteen (113) rainfall recording stations, sixteen (16) Streamflow Recording Gauges, four (4) Evaporation Stations and two hundred and fifty one (251) Ground Water Observation Wells. Twenty-five (25) modern recording stations inclusive of Data Loggers and Real Time Monitoring stations will be installed in 2014.

Water Resources Agency (WRA) in collaboration with Schlumberger Water Services has also initiated the development and implementation of the National Water Resources Database (NWRD) Project (a Web based and GIS enabled central database) for Trinidad and Tobago. The NWRD is the first of its kind in the region and is a clear

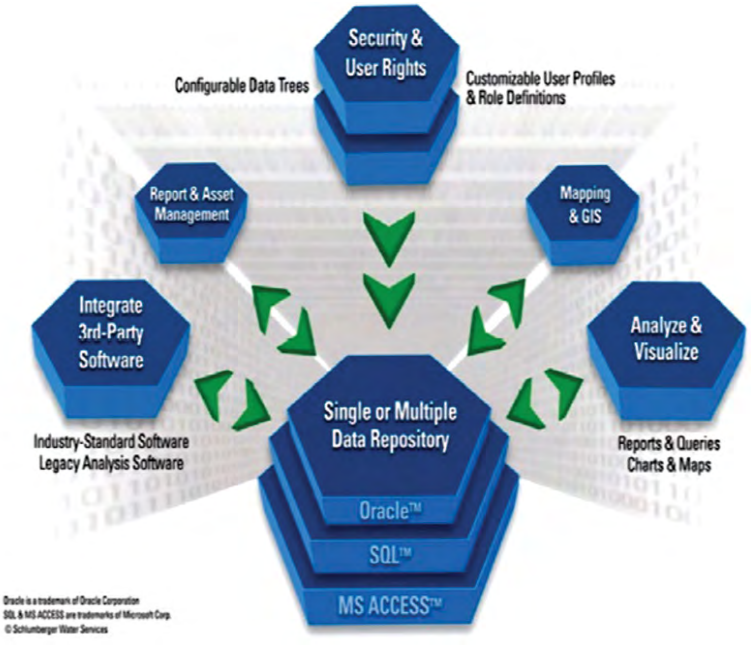
Hydrological monitoring network has been in existence in Trinidad and Tobago for over eighty (80) years with the oldest rainfall gauge in the region located at the Royal Botanic Gardens in Port of Spain.

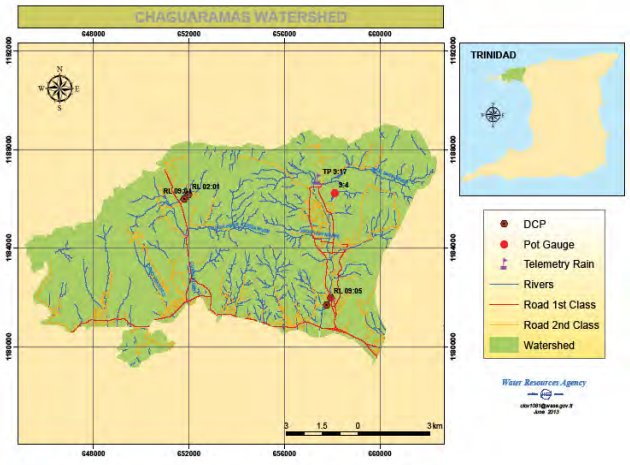


demonstration of the commitment by the Government to improve water resources management in the country. The NWRD is an invaluable tool for communicating the state of the water resources to the general public.

As the environment faces additional challenges due to development and increases in water demand there are likely to be additional impacts on the water resources. This creates a greater need for increased or enhanced monitoring to assist with the regulatory and technical programmes to evaluate cumulative water resource impacts. The Authority's enhancements of the hydrological network will be an essential tool for evaluating and managing the resource and ensuring its sustainability for the future.

As we move towards achieving water security for every sector, resource management decisions must be based on the best information available, which requires efficient, comprehensive and reliable water resources monitoring systems.





Dial Ramkissoon
Head Information and Communication Management

WASA Upgrades its Information and Communication Technology

The Information and Communication Management (ICM) Department of the Corporate Services Division recently concluded two (2) major technology upgrades i.e., Microsoft Exchange Server 2007 to Microsoft Exchange Server 2013 and the Private Branch Exchange (PBX) System to the Voice over Internet Protocol (VoIP) System. The primary objective is to improve efficiency while optimizing the use of modern systems.

Microsoft Exchange Server Upgrade

In 2013, the Microsoft Exchange Server 2007 was upgraded to Microsoft Exchange Server 2013 as the former was experiencing high latency, lack of storage capacity and reliability as it neared end-of-life. An upgrade of the hardware and software was necessary to maintain the level of performance and availability of email services which are mission-critical to the Authority. The process involved planning the solution architecture, testing the new system in a lab environment to ensure its stability and operational readiness and deployment throughout the Authority. Microsoft Exchange Server 2013 has been redesigned for simplicity of scale, hardware utilization and failure isolation.

The upgrade has resulted in improved email services due to increased storage capacity, increased mailbox sizes for standard users from 50MG to 1GB, unified messaging and voice mail and full redundancy at the Authority's Disaster Recovery site. In addition, an archive mailbox is now available which allows users to access their archived emails from any computer. Other benefits include greater integration with SharePoint and Microsoft Lync and the addition of a new feature, Data Loss Prevention, which helps protect sensitive data and informs users of internal compliance policies.

Private Branch Exchange (PBX) System Upgrade

WASA recently completed the implementation a Voice over Internet Protocol (VoIP) System which became fully operational in December 2013, replacing the legacy Private Branch Exchange (PBX) System. VoIP uses WASA's Local Area Network (LAN) and the internet for phone calls, instead of traditional phone lines.

The PBX system at the Head Office location which has been utilized by the Authority for the past two (2) decades was decommissioned mid-December 2013. In 2007 the system had reached end-of-life and became increasingly difficult to maintain. Consequently, a decision was taken to begin the process of installing the necessary infrastructure to accommodate the new VoIP system. The gradual implementation of the VoIP system has resulted in an approximately 58% reduction in telecommunication costs over the period 2009 to 2013.

Currently, there are over twelve hundred and seventy (1270) VoIP telephones in forty-five (45) locations throughout the Authority which are managed by a single call control entity. The new systems offers ease of management due to the use of a single network, user-friendly remote administration, redundancy in telecommunication services and reduction in the workspace for the infrastructure.

Sustaining the Flow

The Water and Sewerage Authority of Trinidad and Tobago remains focused on its mandate to provide a safe and reliable potable water supply to the people of Trinidad and Tobago as part of a wider commitment to our nation's socio-economic development.

Check out our website **www.wasa.gov.tt**

Like us on Facebook
WASA Trinidad & Tobago

Follow us on Twitter
@wasatnt

wasa

"Water Security for Every Sector. Deliver it. Sustain it."

Simplifying

THE PROCUREMENT PROCESS

Wendell Diaz
Ag. Director Corporate Services

The Water and Sewerage Authority is on a continuous course of reviewing all business processes, with the specific intent to improve the level of service provided to both internal and external customers, while simultaneously improving efficiency, maintaining transparency, accountability and bolstering its corporate image. One of the cornerstones involved is Procurement. With this in mind, the Director - Corporate Services has assumed the responsibility of championing a review of the slate of rules, practices and procedures associated within this critical area, which can impact directly on the success or failure of projects.

After a series of stakeholder meetings that provided valuable inputs, the following recommendations received the requisite approvals and were subsequently implanted:

- The authorization values for purchase requisitions were revised and aligned to the present Executive Structure. This facilitates greater utilization of the functional authorization levels of each signatory and reduces the time taken to complete the procurement of goods and services.

- Standardization of the procurement process for goods and services within a particular price range, which has significantly reduced the time taken to initiate works.

- Increase of the Chief Executive Officer's approval limit for non-competitive procurement

- Waiver of the preparation of contract agreements for awards within a fixed value, where risks to the Authority are minimal. This has resulted in significant time savings for the commencement of projects.

- A seventy-two hour window for contractors to submit documents for administrative compliance after tender closing. This allows for an increase of competitive bids for goods and services.

- Acceptance of Management Statement of Accounts in lieu of Audited Financial Statements for goods and services estimated up to the value $3M.

- Establishment of a standard pass mark of seventy percent for all tenders.

- Establishment of standard criteria and weightings for all tenders.

- Approval to enter into cost discussions with the lowest compliant bidder.

- The conduct of vendor registration solely by the Procurement Department thereby reducing the timeframe for completion of the process.

- The members of the Registration Committee assigned to review and approve all registration packages, has been increased from four to five committee members, which comprises two mandatory and one optional.

- The engagement of Price Waterhouse Coopers to conduct a full review of the Procurement Process and implementation of approved recommendations. This project begins in January 2014 and will be completed within six months.

The changes highlighted above have already yielded enhanced benefits to the operations of the Procurement Department and by extension the organization.

Further improvements are expected under the highly committed and focus driven procurement team with the support and guidance from the Director Corporate Services.

INTERNAL AUDIT'S Contribution to WASA's Transformation

The primary objective of any Internal Audit Department or activity is to add value to the operations of an organization and it is no different for WASA's Internal Audit & Compliance Department. Internal auditing is an integral part of the Governance arm of the Authority, established by the Board to support its oversight function. Many though are confused as to the Department's real role and purpose in an organization. What then is Internal Auditing all about and how specifically does it contribute to WASA's transformation?

The best place to start is with the definition. The Institute of Internal Auditors defines Internal Audit as "an independent, objective assurance and consulting activity designed to add value and improve an organization's operations. It helps an organization accomplish its objectives by bringing a systematic, disciplined approach to evaluate and improve the effectiveness of risk management, control, and governance processes."

While this definition may sound like a mouthful,

Randy Marcano
Senior Manager Internal Audit and Compliance

Over the years WASA's Internal Audit & Compliance Department has been working assiduously to achieve its mandate to the benefit of the Authority

it does identify two significant tenets: (1) that Internal Auditors have a number of different key roles to play in an organization and (2) that their purpose is to add value and promote what's best for the Authority as a whole. Let's discuss these roles in greater detail.

Internal Audit provides the Board and Management with independent and objective assurance (or level of comfort) that the Authority is operating in the way its primary stakeholders intend. It also consults with Management in order to provide insights into how to improve WASA's controls, systems, procedures and performance, while reducing expenses, enhancing revenue and stakeholder value and improving sustainability. In these ways Internal Audit can contribute to improvements in the Authority's Governance, Risk Management and Control processes in accomplishing the following:

- Achievement of WASA's strategic objectives that support and align with its mission;
- Appropriate ethics and values are promoted within the Authority and monitored through well designed ethics and compliance programmes;

- The identification, assessment and timely reporting of significant risks facing WASA
- Evaluation of Risk exposures relating to governance, operations and information systems and controls to deter the occurrence of fraud risks;
- Ensuring reliability and integrity of the financial and operational information;
- There is effectiveness and efficiency of operations and programmes;
- The Authority's assets are safeguarded; and
- Adherence to relevant laws, regulations, policies, procedures, and contracts.

To accomplish all of these and more, Internal Auditors are required to have a variety of skills, educational background and expertise as well as broad knowledge of the operations of WASA. The department must also be and appear to be independent and objective in that it must be free of undue influence and restrictions in performing its work. In WASA this is accomplished through a dual reporting relationship where Internal Audit reports functionally to the Audit Committee of the Board and administratively to the Chief Executive Officer. This means that the Audit Committee of the Board, approves the Department's Charter, Annual Risk Based Plans, Resource Plan and Budget. On the other hand, the administrative reporting relationship with the Chief Executive Officer, facilitates the day to day operations including human resource administration, internal communications, information flows, budgeting and management accounting.

Over the years WASA's Internal Audit & Compliance Department has been working assiduously to achieve its mandate to the benefit of the Authority. The department has recommended, lobbied and provided consulting services for a number of initiatives aimed at improving WASA's operations; and it is heartening to note that a number of these transformational initiatives have either been implemented or are currently being implemented. These initiatives include but are not limited to the following:

Initiative/Activity	IACD Role
Development of over 20 key organizational policies e.g. Safety & Health Policy and Ethics and Business Conduct Policies	**Reviewing Policies &Procedures for alignment to best practices and adequacy of controls etc.**
Implementation of an Enterprise-wide Integrated Information Systems (i.e. ERP) across the Authority	**Recommending & lobbying for implementation of an integrated information reporting system. Head, IA&C member of the Steering Committee.**
Development of a Disaster Recovery and Business Continuity Program for the Authority to improve our preparedness for and response to natural and other disasters	**Recommending & lobbying for implementation of BCM. IA&C staff included on the Technical Advisory team for the ongoing BCM consultancy**
Introduction of Enterprise Risk Management (ERM) into the operations of the Authority in order to identify, evaluate and mitigate against key business risks	**Recommending & lobbying for implementation of ERM. IA&C staff included on the Technical Advisory team for the ongoing ERM consultancy**
Corporate Governance Task Force (CGTF) which aims to improve the Governance structure and processes of WASA towards Corporatisation	**Head IA&C is a member of the CGTF. IACD responsible for implementing specific activities under the CG Action Plan.**
Identifying cost savings opportunities for the Authority	**IACD Validates outstanding claims made by Contractors to ensure accuracy and validity**
Directly assisting the External Auditors in order to reduce the cost of external audit fees to WASA	**Utilising in-house IACD staff to directly assist the External Auditors in performing audit work**
Providing training to WASA staff and other stakeholders in the areas of ethics, fraud and compliance etc.	**Developing and delivering training sessions to staff and other stakeholders such as License Sanitary Constructors**

Of course much credit must go to individual Managers and their departments for the implementation of some the above initiatives as Internal Audit and Compliance acts in an advisory and consulting role. It is the commitment of the Internal Audit and Compliance Department to continue working along with all stakeholders as we strive toward the achievement of the Authority's strategic goals and objectives.

PEC Tobago - 2nd of its kind in the Caribbean

Perched on the hill and overlooking the Hillsborough Dam and Water Treatment Plant is the Public Education Centre, Tobago located at Mt. St. George. This is the 2nd facility of its kind in the Caribbean on the water and wastewater sectors. The beautiful artwork which drapes the PEC-Tobago reflects the flora and fauna to be found within the Hillsborough environment. Eight years after the opening of PEC-Trinidad; PEC –Tobago is set to open its doors to the general public soon.

PEC-Tobago is unique in its own way. It is the first centre in the Caribbean located on a water treatment plant and the first of its kind in Tobago. It is also at the site of Hillsborough Dam, an important historical landmark, and the island's only dam. The Hillsborough Dam and Water Treatment Plant produces 1.7 million gallons of water per day serving the residents of Mt. St. George, Concordia, Whim, Mary's Hill, Union, Arnos Vale, Orange Hill, Plymouth and Providence.

PEC-Tobago despite its smallness captures almost all aspects of the water and wastewater areas within Trinidad and Tobago, with special emphasis on Tobago. The centre also houses all information on the Hillsborough Dam including data from the Authority's archives, which are featured through publications, models, newspaper collages and short films.

PEC- Tobago was established with the aim of sensitizing the wider public about the Hillsborough Dam and other facilities, as well as general operation and topics related to the Authority in a fun and exciting way.

Prior to being transformed into a place of learning, the building had been used as housing for the Superintendent WASA, Tobago Water Supply. Refurbishment work on the facility commenced in 2012 and was completed in 2013.

Some key objectives of the PEC are:

- To provide a platform, to educate our internal and external publics.
- Showcase the history and general information of the Dam in a fun and exciting way.
- To improve the public image of the Authority through increased awareness and involvement with stakeholders.

WASA Employee Activities ends on a High in 2013

One of the most anticipated events on the Authority's employee calendar took place on Sunday 8th December 2013, with the staging of the Authority's 4th Annual Children's Christmas Treat.

Over 2,000 children attended the event, which was staged simultaneously in both Trinidad and Tobago, at Head Office Grounds, Farm Road, St. Joseph and at WASA's Lowlands Complex, Tobago under the theme "Watershed Wonderland".

The children, ranging in ages 3-12 years, accompanied by parents and guardians were treated to a host of events in a festive atmosphere that included organized events such as face painting, choo choo train rides, bouncy castle, video games arcade, costumed characters, double shot basketball and a petting zoo.

Those in attendance were also entertained by performances from the Bishop's East High School Parang Band "Las Estrellas del Cielo", JJ and Friends as well as spoken word artistes Charnell Lucien and Romero Gowrie.

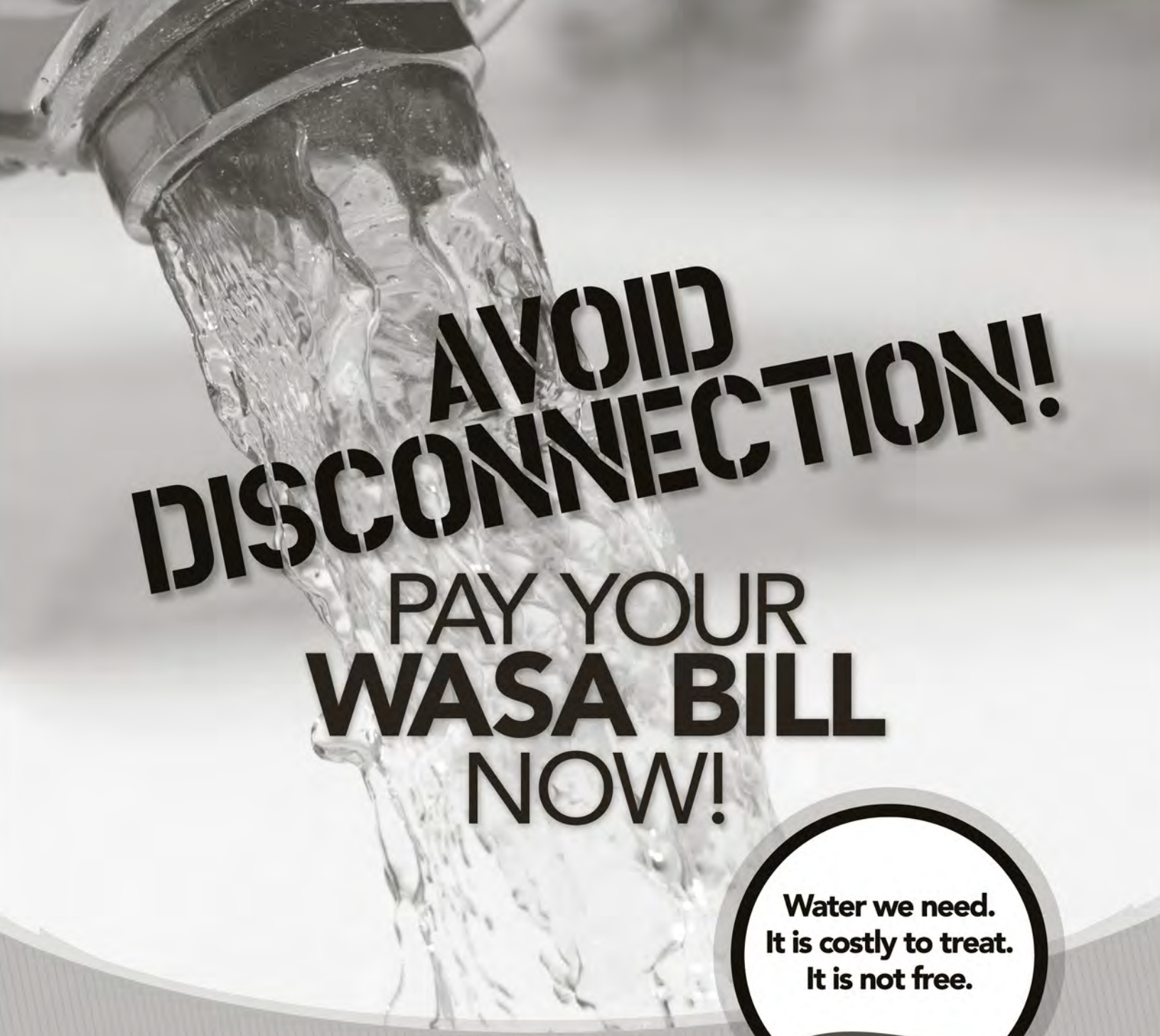
The event culminated with the arrival of Santa and Mrs. Claus, who arrived at the venue in a specially outfitted flat –bed truck, complete with sleigh. The children were then given the opportunity to meet the famous couple and receive their gifts.

This year's Children's Treat proved to be a resounding success and brought the curtain down on a successful year of employee activities.

In 2014, staff members can look forward to the members of Team WASA venturing to the sister isle of Tobago for the staging of WASA's Annual Sports and Family Day that is proposed to be held in June 2014. It will be the first time the event will be held in Tobago since 2006.

This will be preceded by the WASA Sports and Cultural Club's hosting of the 25th Annual Caribbean Utilities Employees Association (C.U.E.A.) Easter Festival from April 17th to 21st 2014.

Over three hundred employees from various utilities throughout the Caribbean are expected in Trinidad and Tobago for this Annual Festival.



AVOID DISCONNECTION!

PAY YOUR WASA BILL NOW!

Water we need.
It is costly to treat.
It is not free.

Customers can pay their bills at
WASA Customer Service Centres:

- King Street, Princes Town
- Market Street, Chaguanas
- Cor. Millard Street and Southern Main Road, Couva
- Guapo Road, Point Fortin
- Sorzano Street, Arima
- Trincity Regional Centre, Golden Grove Road, Arouca
- Head Office, Farm Road, St Joseph
- Mon Chagrin Street, San Fernando
- Crooks River, Scarborough, Tobago
- Kew Place, Port of Spain

OR any commercial bank, Via, SurePay or Western Union

WASA Trinidad & Tobago | @wasatnt

800-4H2O (800-4420/4426) | wasa.gov.tt | SMS 9272

wasa

"Water Security for Every Sector. Deliver it. Sustain it."