

20th AfWA International Congress and Exhibition 2020

Breaking new grounds to accelerate access to water and sanitation for all in Africa

EFFECTIVE WATER QUALITY MONITORING IN THE DEVELOPING WORLD: A CASE OF NWSC.

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PRESENTATION OUTLINE



- Introduction
- The Case for NWSC Uganda
 - Water Quality Foot Print
 - Water quality Monitoring Plan
 - Success Factors
 - Challenges

INTRODUCTION



- Water for domestic purpose should be free from any harmful chemicals or micro-organisms that could be hazardous to human health
- WQMP In drinking water supply utilities its an essential tool for ensuring safe supply of domestic water to customers

International Organization for Standardization (ISO): The Programmed process of sampling, measurement and subsequent recording of various water characteristics with the aim of assessing conformity to specified objectives

● INTRODUCTION CONTINUED

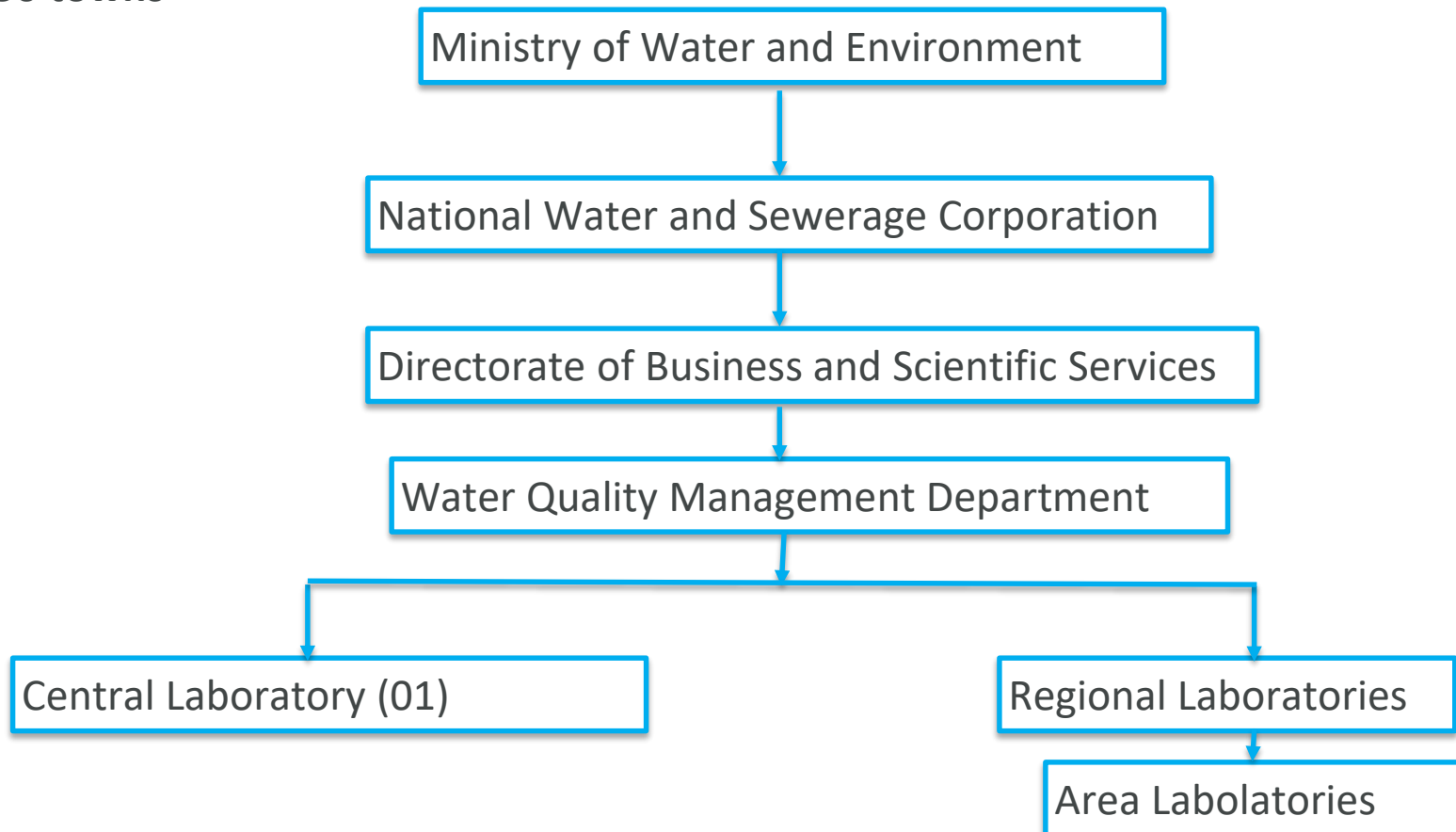


- A number of developing countries have not been able to achieve comprehensive water quality monitoring
- Common Issues - Lack of financial resources, inadequate technical capacities, and poor institutional policies.
- The lack of it remains a major reason for a number of water related health problems arising from water utilities.

THE CASE OF NWSC UGANDA



NWSC, is a Public Corporation fully owned by the Government of Uganda, mandated to provide water and sewerage services in Areas under its jurisdiction. Now in over 250 towns

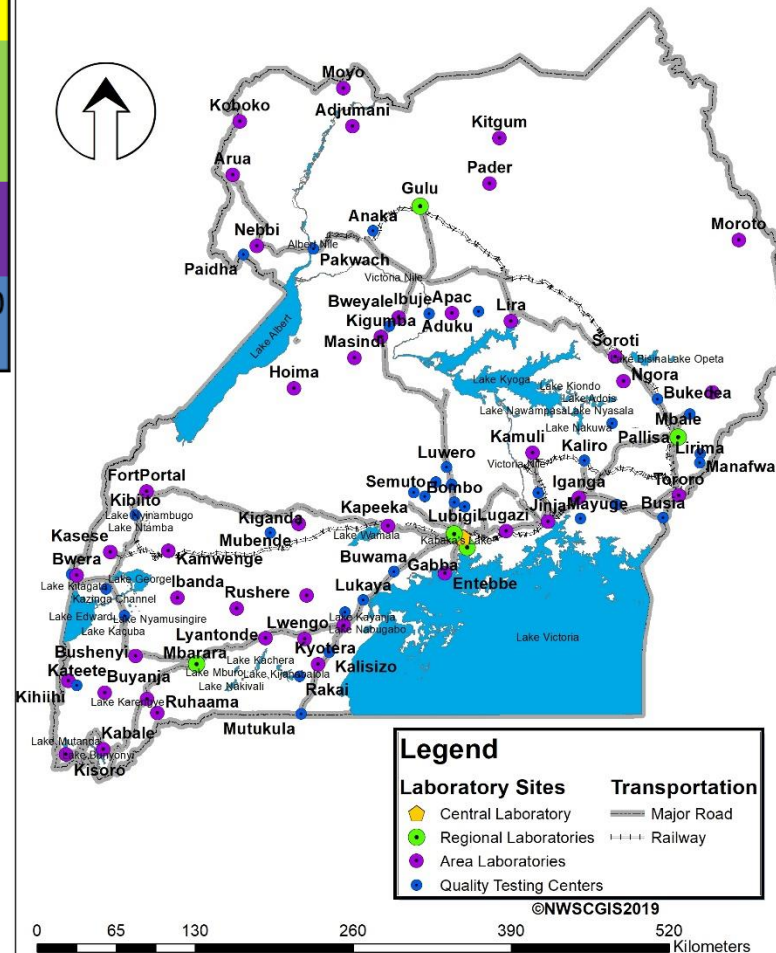


WATER QUALITY FOOT PRINT



Class	Description (Total of 72 Labs)
A	01 No Central Laboratory , Handles all water quality parameters & External clients in central Region
B	05 No. Regional Laboratories (02 KW, 01 Central, 01 N&NE, 01 W&SW)
C	48 No. Areas Labs (14 Central, 16 N&NE, 18 W&SW)
D	18 No. Branch Labs (04 Central, 10 N&NE, 04 W&SW)

NWSC WATER QUALITY TESTING FOOTPRINT ACROSS THE COUNTRY



MONITORING PLAN



1 *Developing the monitoring strategy*

2 *Resource determination*

3 *Selecting sampling sites*

4 *Developing standard operating procedures*

5 *Developing quality assurance plans*

6 *Data management and reporting*

7 *Monitoring plan, Modifications and Updates*

MONITORING PLANS



Available Resources



MONITORING PLAN



Monitoring the Water Supply Network



MONITORING PLAN



Selecting sampling sites and developing SOPs

C18 Water works

Water quality monitoring Schedule																	
				Week 1							Week 2						
SN	Zone	CP category	Sampling/control Point station	Mon	Tue	Wed	Thu	Fr	Sat	Sun	Mon	Tue	Wed	Thu	Fr	Sat	Sun
1	KWZ	Water works	Raw water Ggaba 1														
2	KWZ	Water works	Clarified water Ggaba 1														
3	KWZ	Water works	Filtered water Candy Ggaba 1														
4	KWZ	Water works	Filtered water Old Mannesman Ggaba 1														
5	KWZ	Water works	Filtered water New mansesman Ggaba 1														
6	KWZ	Water works	Filtered water Patterson Ggaba 1														
7	KWZ	Water works	Final water high level Ggaba 1														
8	KWZ	Water works	Final water low level Ggaba 1														
9	KWZ	Water works	Namasuba supply Tank														
10	KWZ	Water works	Raw water Ggaba 2														
11	KWZ	Water works	Clarified water Ggaba 2														
12	KWZ	Water works	Filtered water Ggaba 2														
13	KWZ	Water works	Final water Ggaba 2														
14	KWZ	Water works	Service water Ggaba 2														
15	KWZ	Water works	Raw water Ggaba 3														
16	KWZ	Water works	Clarified water Ggaba 3														
17	KWZ	Water works	Filtered water Ggaba 3														

Zone 2 Sampling schedule | Plants Sampling schedule | Sewage Sampling Schedule | Overall Sat ...

Water quality monitoring Schedule																													
					Week 2							week 3							week 4										
S	Zone	Region	Area	CP category	Sampling/control Point station	F	Si	Su	Mon	Tue	Wei	Thu	Fr	Si	Su	Mon	Tue	Wei	Thu	Fr	Si	Su	Mon	Tue	Wei	Thu	Fr	Sat	Su
1	KEZ	Northern		Tertiary Point	Akright rd Seeta Near Hill #75																								
2	KEZ	Northern	Gun Hill High Level	Tertiary Point	44-Akadid Islamic Sch. Mulago																								
3	KEZ	Northern		Tertiary Point	All Saint's Cathedral Nakasero																								
4	KEZ	Northern		Tertiary Point	All Luzira Quarters																								
5	KEZ	Northern		Tertiary Point	Arua Park																								
6	KEZ	Northern		Service Booster	Banda Booster																								
7	KEZ	Northern		Tertiary Point	Banda Market																								
8	KEZ	Northern		Tertiary Point	Banda Stage																								
10	KEZ	Northern		Tertiary Point	Binja Catholic Church																								
11	KEZ	Northern		Tertiary Point	Bugolobi Hospital																								
12	KEZ	Northern		Tertiary Point	Bugolobi Market																								
13	KEZ	Northern		Tertiary Point	Bugolobi Sewerage works																								
14	KEZ	Northern		Tertiary Point	Bukasa - Kimya																								
15	KEZ	Northern		Tertiary Point	Bukoto Flats																								
16	KEZ	Northern		Tertiary Point	Butabika Stand Pipe (Hospital)																								
17	KEZ	Northern		Secondary Valve	Butabika SV																								
18	KEZ	Northern		Tertiary Point	Buwala Community																								
19	KEZ	Northern		Tertiary Point	Buwala washing Bay																								
20	KEZ	Northern	Gun Hill High Level	Tertiary Point	Bwaise - Industrial Area Zone																								
21	KEZ	Northern	Mulago	Tertiary Point	Bwaise - Kamalimali Zone																								
22	KEZ	Northern	Mulago	Tertiary Point	Bwaise - Mayinga Zone																								
23	KEZ	Northern	Mulago	Tertiary Point	Bwaise Central																								
24	KEZ	Northern	Gun Hill High Level	Tertiary Point	Bwaise Happy Hours																								
25	KEZ	Northern	Gun Hill High Level	Tertiary Point	Bwaise Kazo zone																								
26	KEZ	Northern	Gun Hill High Level	Tertiary Point	Bwaise Kimombasa																								
27	KEZ	Northern		Tertiary Point	Bwaise Kusulu																								
28	KEZ	Northern		Tertiary Point	Bwaise Market																								
29	KEZ	Northern		Tertiary Point	Bwaise St. Kizito																								
30	KEZ	Northern		Tertiary Point	Bwaise Washing Bay																								
31	KEZ	Northern		Tertiary Point	Bweyogerere Kazinga																								
32	KEZ	Northern		Tertiary Point	Bweyogerere Market																								
33	KEZ	Northern		Tertiary Point	Bweyogerere Butto																								

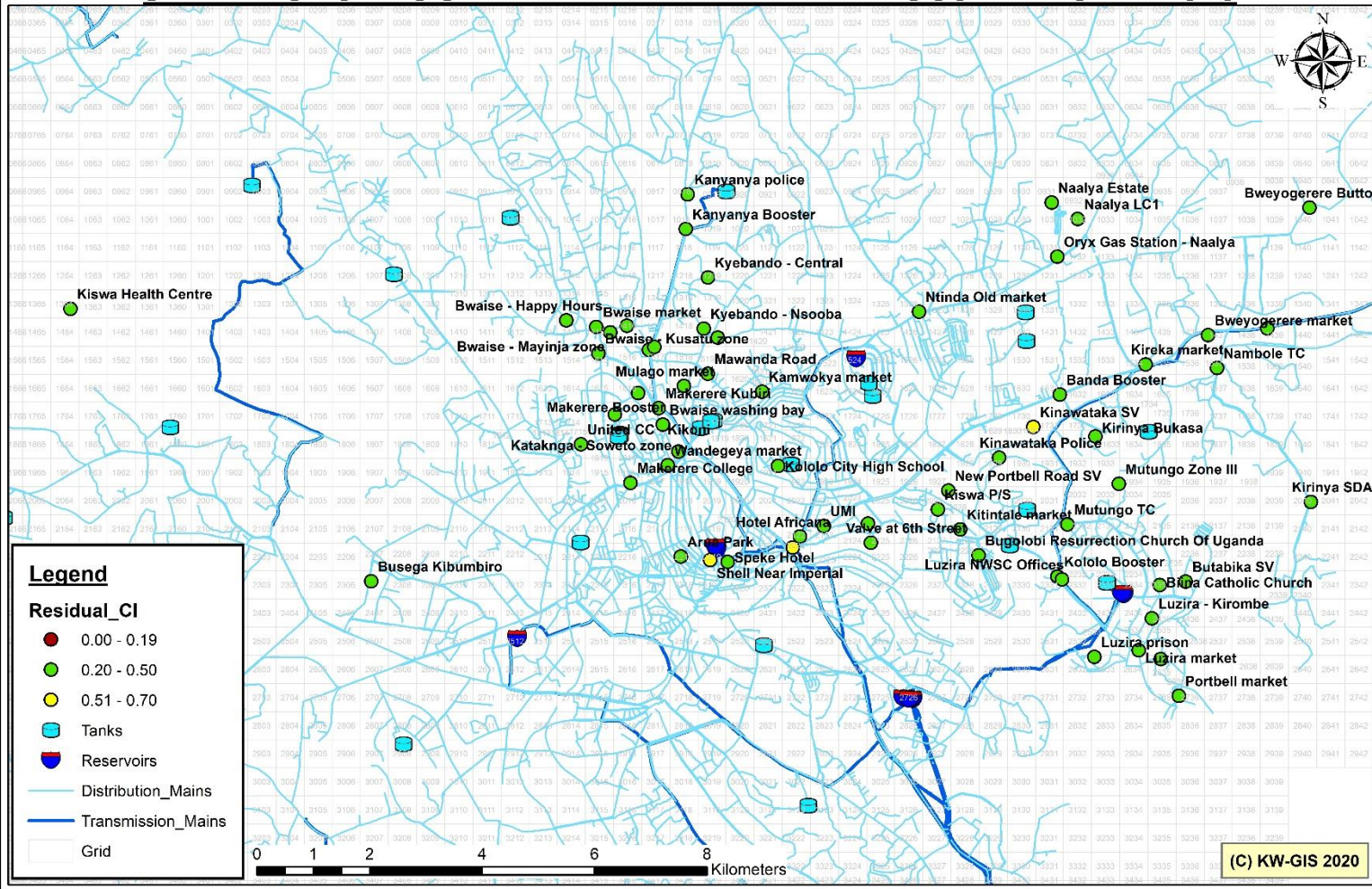
Zone 1 Sampling schedule | Zone 2 Sampling schedule | Plants Sampling schedule | Sewage San ...

MONITORING PLAN



Presentation of Results from monitoring

RESIDUAL CHLORINE LEVELS IN WATER AT SOME KAMPALA WATER EASTERN ZONE SAMPLING POINTS SAMPLED IN THE WEEK ENDING 9th FEBRUARY 2020



MONITORING PLAN

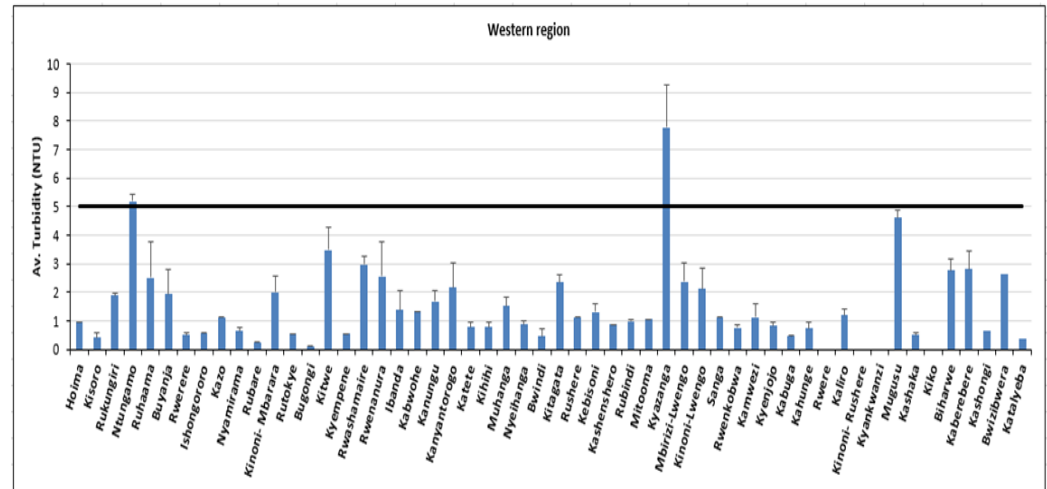
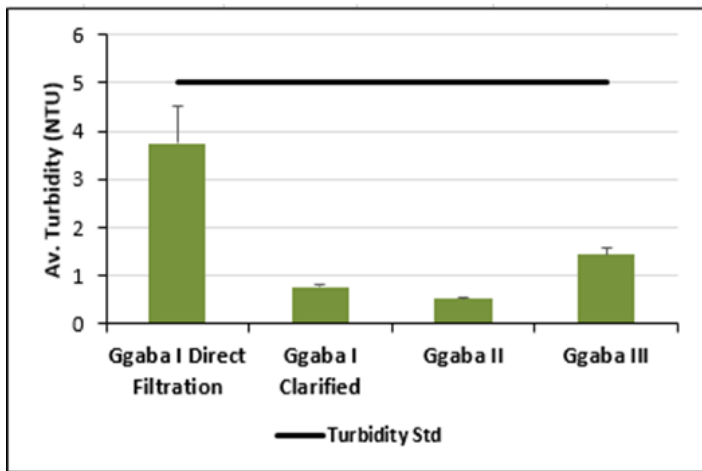
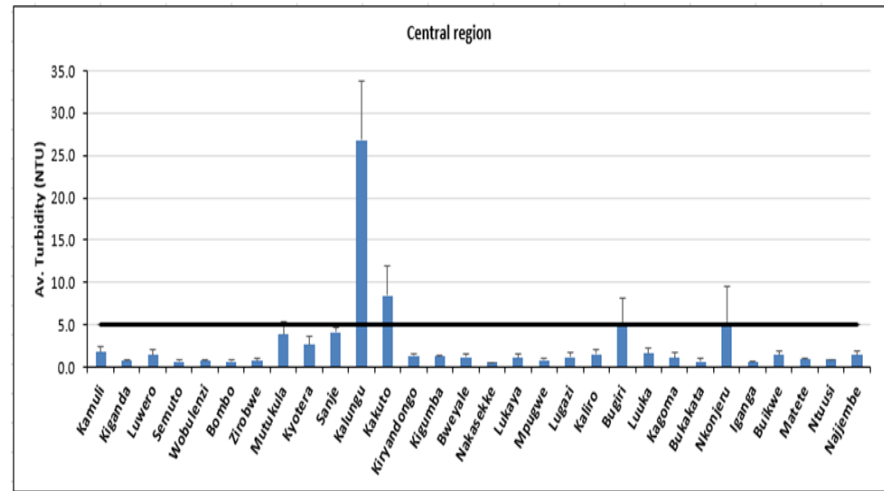
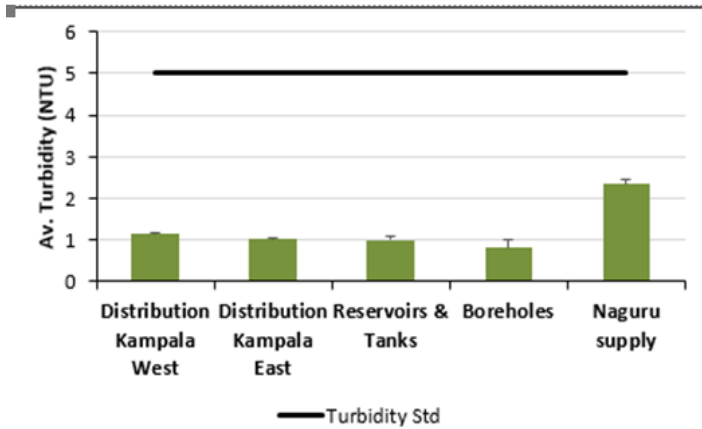


Figure 3b. Average Turbidity for water in distribution for Central and West/South Western Region for July – September 2019, CTP BH – Borehole



SUCCESS FACTORS FOR NWSC WQMP

NWSC Management support

- Funding of WQMD budget (over 540,000 dollars per year)
- Well equipped Labs
- Adequate and Competent staff
- Continuous training of staff with Updated technologies

External Services offered and Income generated

- Central Lab testing and consultancies generates over 180,000 dollars per year

Innovations to ease work and resolve issues

- Use of social Media platforms (watsup)
- Closed User Group
- Rapid Response teams to handle customer complaints
- Manual Chlorine dosing systems

Reliability of Results

- Accreditation of Central Lab testing and Gaba Labs
- Proficient tests internal and External (Nam water)
- Audits – (Internal and External)

Collaborations with stakeholders

- Collaborations with MWE, UNBS, Private Labs, Government Labs for Joint monitoring and audits of the water supply system.
- Accountable to the public (Toll free calls, publishing weekly WQM results on website, customer survey and engagements)

CHALLENGES



Vandalism or destruction of installments

- Reservoirs covers, critical control points

Inaccessible sampling points

- Points covered by construction works
- Hard to reach Areas due to seasonal changes

Beauracracy in procurement that delays servicing of equipment



20th AfWA CONGRESS

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