

Water Quality Monitoring Report



Ministry staff through collaborations with QRCS undertaking the water quality testing at the Ministry of energy and water resource laboratory- Kimayu

Monitoring Period: 4th to 8th November 2024

Overview

This report summarizes the water quality monitoring conducted at four different sites. The focus is on key parameters such as Electrical Conductivity (EC), Total Dissolved Solids (TDS), Salinity, and Free Residual Chlorine (FRC). Two of the monitored sites exhibited concerning levels of EC, TDS, and salinity, alongside low FRC levels.

Water Quality Monitoring Results

Objective

The purpose of this monitoring report is to assess and compare the water quality of four sites, focusing on parameters such as Electrical Conductivity (EC), Total Dissolved Solids (TDS), pH, acidity, salinity, and Free Residual Chlorine (FRC). This report highlights areas of concern, particularly at sites where water quality is severely impacted.

Sites Monitored

Site 1: Yoontoy Shallow Well/ Yontoy

Site 2: Istanbul Water Tracking Kiosk /Istanbul

Site 3: Qamqam RDSA Kiosk /Qamqam

Site 4: Barkada Shariifada Shallow Well /Barkada Shariifada

Key Parameters Monitored

- Electrical Conductivity (EC): Measures the water's ability to conduct electrical current, indicating the concentration of dissolved salts (ions) in the water.
- Total Dissolved Solids (TDS): Indicates the total concentration of dissolved substances in water, often related to the salinity and pollution levels.
- PH: Measures the acidity or alkalinity of water.
- Acidity: Refers to the concentration of hydrogen ions in water. An over-range acidity indicates severe water pollution.
- Salinity: Reflects the concentration of dissolved salts, which is crucial for assessing water suitability for various uses.
- Free Residual Chlorine (FRC): The concentration of chlorine remaining in the water after treatment, indicating disinfectant levels.

Summary of Findings:

1. Site 1: Yoontoy Shallow Well (Highly Polluted)

- **EC:** 2311 $\mu\text{S}/\text{cm}$ (High)
- **TDS:** 1123 mg/L (High)
- **pH:** 6.7 (Neutral)
- **Salinity:** 2426 ppt (Above acceptable limits)
- **FRC:** 0.00 mg/L (Not Acceptable)
- **Conclusion:** This site shows severe water pollution, with high EC, TDS, and acidity levels, suggesting significant contamination likely from agricultural sources. The absence of Free Residual Chlorine (FRC) indicates a failure in disinfection processes, making the water unsafe for most uses.

2. Site 2: Istanbul Water Tracking Kiosk (Highly Good Quality)

- **EC:** 1388 $\mu\text{S}/\text{cm}$ (Normal)
- **TDS:** 671 mg/L (Normal)
- **pH:** 7.5 (Neutral)
- **Salinity:** 1043 ppt (Normal)
- **FRC:** 0.3 mg/L (Within range)
- **Conclusion:** This site appears to have acceptable water quality overall, with no significant issues. However, the water should still be monitored, as contamination may still be present at low levels.

3. Site 3: Qaamqaam RDSA Kiosk (Good Quality)

- **EC:** 918 $\mu\text{S}/\text{cm}$ (Normal)
- **TDS:** 452 mg/L (Normal)
- **pH:** 7.4 (Neutral)
- **Salinity:** 959 ppt (Normal)
- **FRC:** 0.2 mg/L (Normal)
- **Conclusion:** This site exhibits good water quality with all parameters in the acceptable range. The water is safe for use, but continued monitoring is recommended.

4. Site 4: Barkadda Shariifadda Shallow Well (Highly Polluted)

- **EC:** 5329 $\mu\text{S}/\text{cm}$ (Very High)
 - **TDS:** 2955 mg/L (Extremely High)
 - **pH:** 6.3 (Acidic)
 - **Salinity:** 5623 ppt (Very High)
 - **FRC:** None detected
 - **Conclusion:** This site is highly polluted with very high EC, TDS, and salinity, along with an acidic pH level, suggesting contamination from industrial or heavy metal sources. The absence of FRC highlights inadequate disinfection, making the water unsuitable for use without treatment.
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Comparative Analysis:

- **Most Polluted Sites:** Site 1 and Site 4 exhibit the highest levels of pollution, with high EC, TDS, salinity, and acidic pH levels. Both sites also show no Free Residual Chlorine, indicating poor or nonexistent disinfection, and require urgent remediation.
 - **Best Water Quality:** Site 2 and 3 has the best water quality, with all parameters within safe and acceptable ranges. The only potential concern is the slightly elevated salinity, which should be monitored over time to ensure it does not become a larger issue.
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Recommendations:

1. **Sites 1 and 4 (Highly Polluted):**
 - **Immediate Actions:** Investigate pollution sources (agricultural runoff, industrial waste) and identify the contaminants contributing to high EC, TDS, salinity, and acidity.
 - **Water Treatment:** Implement solutions to neutralize acidity and reduce salinity, such as chemical treatments, filtration, and sedimentation processes.
 - **Disinfection:** Ensure effective water disinfection, including maintaining appropriate levels of Free Residual Chlorine (FRC).
 - **Rehabilitation:** Consider long-term rehabilitation efforts to restore water quality.
 2. **Site 2:**
 - **Monitoring:** Continue monitoring to detect potential pollution levels and ensure FRC levels remain within acceptable limits.
 - **Investigation:** Investigate possible sources of contamination to ensure the water remains safe for use.
 3. **Site 3:**
 - **Ongoing Monitoring:** Continue regular monitoring of water quality and salinity levels. While the site is within acceptable limits, the slightly elevated salinity should be tracked to prevent long-term issues.
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Overall Conclusion:

- **Sites 1 and 4** exhibit severe pollution and require immediate intervention to restore water quality and ensure safety for users.
- **Site 2 and 3** maintains good water quality and only requires continued monitoring, with particular attention to the slightly elevated salinity.

General Recommendations Across All Sites:

1. **Increase Public Awareness:**

For all sites, it's essential to engage with the local community regarding the importance of water quality, proper sanitation practices, and pollution prevention strategies. Providing educational materials on water safety can help reduce contamination risks.

2. **Implement Sustainable Water Management Practices:**

Encourage water conservation practices, such as rainwater harvesting and efficient irrigation, to preserve water resources. This is especially crucial in areas where groundwater is the primary source of water.

3. **Enhance Water Treatment Infrastructure:**

Ensure that each site has reliable and adequate water treatment infrastructure in place. This could involve introducing filtration systems, disinfection methods (e.g., chlorination), and chemical treatments to address issues like high salinity and acidity.

4. **Collaborative Efforts for Pollution Control:**

Collaboration with local governments, environmental agencies, and the community is essential for identifying pollution sources and implementing strategies for pollution reduction. This includes enforcing regulations on industrial discharge, waste management, and agricultural runoff.

Through addressing these recommendations, these sites can improve water quality, ensure public health and safety, and build a more sustainable water resource management framework for the future.

End of Report

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Organization: Ministry of Energy and Water Resources

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Photos





Lower Juba, Somalia

Latitude
-0.117679
Local 10:53:05 AM
GMT 07:53:05 AM
Note: Yoontooy

Longitude
42.562652
Altitude 6.5 meters
Monday, 11/04/2024



Lower Juba, Somalia

Latitude
-0.117676
Local 10:53:46 AM
GMT 07:53:46 AM
Note: Yoontooy

Longitude
42.562621
Altitude 4.4 meters
Monday, 11/04/2024



