

# City of Denmark Water Quality Report



## IMPORTANCE OF INDEPENDENT SAMPLING

Edisto Riverkeeper (ERK) acknowledges the distrust that some Denmark residents may have in water quality analysis provided by State agencies. For this reason, we wish to emphasize the importance of our role as an independent organization, as our water sampling, lab testing, and analysis were conducted independently of the Department of Health and Environmental Control (DHEC) and the University of South Carolina (USC).

In order to ensure that each partner's sampling and analysis was properly coordinated, a sampling plan was devised, which included independent sampling by DHEC, ERK, and USC, using three independent laboratories so as to provide unbiased data sets from multiple sources.

## Water Quality Sampling

**In response to water quality concerns voiced by residents of Denmark, Edisto Riverkeeper conducted an independent analysis of the City's source water wells.**

Edisto Riverkeeper is pleased to present its drinking water sampling results and drinking water system analysis for the City of Denmark, South Carolina. This informational report shall serve as a method of transparency, ensuring that the citizens of Denmark have access to an accurate and unbiased survey of the drinking water quality within their City. ERK's mission is to ensure equal access to clean water throughout the Edisto River Basin and the communities that it serves. We are committed to protecting and improving the integrity of water within the basin, holding polluters accountable, and working towards better water policy at the local, state and federal levels. Guided by the principles of advocacy, engagement, and protection, ERK seeks to encourage local and state agencies, private industries, and citizens to participate in working to establish more sustainable water conservation and quality management plans, because everybody needs water.

## Background

**After learning of citizen concerns regarding water quality, ERK met with City of Denmark officials**

ERK became aware of concerns voiced by citizens regarding the quality of their drinking water in January 2018. After learning that Virginia Tech professor, Marc Edwards, had been denied access

to obtain independent samples of City source water, ERK arranged a meeting with city officials. Independent water sampling services were offered by ERK in order to provide an unbiased analysis of Denmark’s water quality. This meeting resulted in water sampling access being granted to ERK by the City of Denmark in order to provide an independent sampling analysis, outside of sampling reports provided by state agencies.

## Partnership Formed

While DHEC has confirmed that contaminant levels are within EPA limits, Denmark residents have continued to experience water discoloration and staining created by the low levels of iron and manganese found in the water. It was then determined that this ongoing issue would be best addressed through obtaining independent analysis outside of DHEC. As a result, a public/private partnership was formed among DHEC, ERK, South Carolina Rural Water Association, (SRWA) and USC to assess the history of the City’s water quality and determine a path forward.

## Independent Water Sampling Conducted

An initial round of water sampling was conducted on April 16, 2018, with all three partners taking separate samples from each of the 4 City drinking water wells, with the following goals met:

- All partners collect and analyze an untreated and treated pH sample
- All partners collect an untreated and treated bacteria sample
- All partners collect an untreated and treated metals sample

Acacia-Well 1 Water Sampling	ERK Results
Iron (Fe) Untreated	0.171
Iron (Fe) Treated	0.154
Lead (Pb) Untreated	<0.001
Lead (Pb) Treated	<0.001
Manganese (Mn) Untreated	0.010
Manganese (Mn) Treated	0.010
Total Coliform Untreated	Absent
Total Coliform Treated	Absent
E.Coli Untreated	Absent
E.Coli Treated	Absent

Voorhees-Well 2 Water Sampling	ERK Results
Iron (Fe) Untreated	0.031
Iron (Fe) Treated	0.024
Lead (Pb) Untreated	<0.001
Lead (Pb) Treated	<0.001
Manganese (Mn) Untreated	0.010
Manganese (Mn) Treated	0.009
Total Coliform Untreated	Absent
Total Coliform Treated	Absent
E.Coli Untreated	Absent
E.Coli Treated	Absent

Cox Mill-Well 3 Water Sampling	ERK Results
Iron (Fe) Untreated	0.022
Iron (Fe) Treated	<0.020
Lead (Pb) Untreated	<0.001
Lead (Pb) Treated	<0.001
Manganese (Mn) Untreated	0.009
Manganese (Mn) Treated	0.005
Total Coliform Untreated	Absent
Total Coliform Treated	Absent
E.Coli Untreated	Absent
E.Coli Treated	Absent

West Voorhees-Well 4 Water Sampling	ERK Results
Iron (Fe) Untreated	0.130
Iron (Fe) Treated	0.140
Lead (Pb) Untreated	<0.001
Lead (Pb) Treated	<0.001
Manganese (Mn) Untreated	0.030
Manganese (Mn) Treated	0.030
Total Coliform Untreated	Absent
Total Coliform Treated	Absent
E.Coli Untreated	Absent
E.Coli Treated	Absent

## Summary and Recommendations

Upon review of all water sampling data, ERK has compiled recommendations for the City of Denmark in order to improve and maintain better quality and therefore improve the quality of life of its citizens

All analysis of ERK water samples were conducted by independent, state certified laboratory, and are therefore actionable, with all results reported in units of mg/L. Water samples were taken following proper sampling techniques and chain of custody. All ERK water samples results were found to be within the primary and secondary contamination limits as set forth by EPA and SCDHEC. Based on results of ERK's water samples levels of iron and manganese in the water pose no immediate health concerns, however if the concerns and priority of the community continues to be discoloration of the water, then alternative treatment options can be investigated. Due to the higher levels of metals found in the treated and untreated samples drawn from Wells 1 and 4, the addition of a filtration system on these wells would address the most common complaint from Denmark residents, being discolored or brown water.

ERK encourages Denmark residents to thoroughly read the annual consumer confidence report in order to understand water quality and sampling methods, which is available through the City as well as DHEC. We also encourage residents to read science-based publications as an additional source of information for any contaminants that may be of concern. For residents that may reside in older homes, particularly those constructed prior to 1978, ERK recommends that residents check their plumbing for lead and solder copper lines. Replacing household faucets with lead-free

fixtures is an additional measure to be taken by residents who may be concerned with lead inside the piping of their homes.

Sedimentation build up has the ability to occur when water has been sitting in pipes. For this reason, ERK recommends that not only the City of Denmark implement a more rigorous flushing schedule but also that residents experiencing water discoloration run their water faucets for at least two minutes in the morning, prior to using for cooking or drinking. As always, any water quality concerns should be immediately reported to the Denmark Utilities office as well as the DHEC regional office.

In order to ensure that best management practices and efficiency are implemented in regard to maintaining water quality and transparency with the City of Denmark water users, ERK urges the City of Denmark to continue to engage the public and adequately address all concerns. We strongly recommend the establishment of a citizen complaint system in order to provide a method of logging and responding to concerns of residents. We believe that addressing complaints in a timely and professional manner is a positive method of restoring consumer confidence, which also aligns with the overall goal of assuring healthy quality of life for residents. We sincerely hope that the City of Denmark will consider the recommendations made by all partners and encourage residents to continue to stay engaged on the subject of drinking water quality.

Respectfully Submitted by:

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