



February 23, 2017

Town of Denmark
Attn: Dr. Gerald Wright
4768 Carolina Highway
Denmark, SC 29042

RE: Sanitary Survey
System # 0510002

Dear Dr. Wright:

On February 15, 2017, a sanitary survey was conducted on the public water system serving the Town of Denmark. The intent of the sanitary survey is to evaluate the public water system's ability to provide a continuous supply of safe drinking water to its customers.

The Town of Denmark public water system received an overall rating of **Satisfactory**. Enclosed is a copy of the survey and a report, which includes a description of the public water system and specific findings made during the sanitary survey. This survey and the report should be kept on file for no less than ten (10) years and be made available to the public or DHEC upon request. It is requested that all parties responsible for the operation and maintenance of the water system review this report promptly.

If you have any questions or if I can be of any assistance, please call me at (803) 533-5490.

Sincerely,

Lewis Rourk
Low Country EA - Orangeburg
1550 Carolina Avenue
Orangeburg, SC 29115-4944
Phone (803) 533-5490 Fax (803) 268-5784

cc: Marty Chaney, Bureau of Water

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Bureau of Water
Drinking Water Protection Division

SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL
LOW COUNTRY EA - ORANGEBURG

SANITARY SURVEY REPORT

*Town of Denmark
Water System # 0510002
Bamberg County*

Introduction

The South Carolina Department of Health and Environmental Control recently conducted a sanitary survey of the Town of Denmark public water system. This survey consisted of a review of the Department files and an on-site inspection by a representative of the Department on February 15, 2017. The following persons participated in the on-site inspection:

Lewis Rourk	SCDHEC - Low Country EA - Orangeburg
Cedric Hudson	Town of Denmark, Public Works Director
Travis Clark	Town of Denmark

System Description

The Town of Denmark owns and operates a groundwater facility and associated potable water distribution system that serves a population of approximately 3,500 residents and approximately 1,393 students and staff at Voorhees College and Denmark Tech by 1501 service connections - 1,417 residential and 84 commercial. The Cox Mill well has an iron bacteria treatment system which consist of an automatic injection of HaloSan tablets into the well. Information on the system's wells is given in the table below. The Town of Denmark system has a total capacity of 1,351,680 gallons per day.

Well	Well Type	Pump (HP)	Yield (GPM)	Regulated Capacity	Treatment
Well Two Voorhees	Turbine	60	330	316.80 TGD	Gaseous Chlorine
Well Four Cox Mill	Turbine	50	350	336.00 TGD	Gaseous Chlorine HaloSan tablets
Well Five Acacia Street	Submersible	40	403	386.88 TGD	Gaseous Chlorine
Well Six W. Voorhees	Submersible	40	325	312.00 TGD	Gaseous Chlorine

Well One - Brooker Center and Well Three - Legare Street are no longer in service. Two elevated storage tanks with a total volume of approximately 375,000 gallons - Nibco Tank

250,000 gallons and Voorhees Tank 125,000 gallons - serve the Town of Denmark public water system. The City Hall Tank was taken off line and physically disconnected from the system in late 2011. An emergency connection exists with the Town of Bamberg.

Currently, the Town of Denmark public water system has the following operators:

Operator	License	Certification #	Operator Grade
Cedric Hudson	Treatment	5044	A
	Distribution	785	A
Tim Freeman	Treatment	6651	D
	Distribution	1830	G

Findings and Recommendations

1. The system received a **Satisfactory** rating for **Water Quality**. The purpose of this item is to ensure that a water system consistently produces water which complies with established water quality standards. Recently the Department has not received many complaints of discolored water. In addition, sampling performed within the distribution system in 2016 showed that the drinking water is without total coliform bacteria. **Considering the history of poor drinking water quality in Denmark, this item will be closely evaluated during each subsequent Sanitary Survey.**
2. The system received a **Satisfactory** rating for **Fire Flow**. The purpose of this item is to ensure that the water system can provide adequate flow to protect the integrity of their water system when fire protection is provided. Hydrants must be flow tested at a minimum of once every three years with a minimum flow required for fire protection of 500 gpm. All fire hydrants were tested from December 22, 2015 through May 26, 2016. The flow was greater than 500 gpm at all of the hydrants.
3. The system received a **Satisfactory** rating for **Flushing Program**. The purpose of this item is to ensure that the system's routine flushing program is adequate to help maintain a disinfectant residual throughout the system, as well as to help prevent water quality issues associated with stagnant, discolored, and sediment laden water over the long term. Two types of flushing programs are recommended for public water systems: 1) a system-wide flushing, where scouring velocities are maintained to clean the water lines, and 2) low velocity flushing used to maintain chlorine residuals in the distribution system. All of the fire hydrants were flushed during the fire flow testing. The system is doing a good job of routinely flushing their system and documenting flushing activities. Records documented that the dead end lines were flushed at least three times in 2016. The flushing events seem to be improving water quality and preventing customer complaints. It is important to continue communicating flushing events with the customers so that they will be prepared for potential discoloration.

4. The system received a **Satisfactory** rating for **Monitoring and Record Keeping**. The purpose of this item is to ensure the water system is monitoring their treatment process and maintaining records that verify that they are checking equipment operation and drinking water quality on a routine basis. Daily inspections are being performed as required.
5. The system received a **Satisfactory** rating for **Sample Siting Plan**. The plan has a map denoting all bacteriological monitoring locations. Records indicated that these locations were being sampled as scheduled in the plan. There are 15 representative locations that are sampled on a quarterly schedule. The system samples five of these locations on a monthly rotating schedule. The sampling plan is meeting the requirements of the Revised Total Coliform Rule.

Conclusions

The Town of Denmark public water system is being operated in a safe and reliable manner. The Department would like to thank Mr. Cedric Hudson and Travis Clark for their assistance in conducting the sanitary survey. The Department looks forward to working with the system to ensure that the residents of Denmark continue to receive the highest quality drinking water.