



C. Earl Hunter, Commissioner

Promoting and protecting the health of the public and the environment.

August 13, 2008

Town of Denmark
Attn: Carrie Simmons
4768 Carolina Highway
Denmark, SC 29042

RE: Sanitary Survey
System #0510002
Bamberg County

Dear Ms. Simmons:

On August 5, 2008 a sanitary survey was conducted on the Town of Denmark public water system. 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 **Unsatisfactory**. Enclosed is a copy of the survey and a report, which includes a description of the public water system, specific findings made during the sanitary survey, and recommendations for correcting any deficiencies. 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) 641-7670.

Sincerely,

Jennifer Hughes
Region 5 EQC, Aiken

cc: Marty Chaney, Bureau of Water Compliance Assurance Division

SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL
CONTROL
REGION 5 EQC

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 (Water System # 0510002). This survey consisted of a review of the Department files and an on-site inspection by Department personnel on August 5, 2008. The following persons participated in the on-site inspection:

Jennifer Hughes	SCDHEC – Region 5 EQC, Aiken
Travis Fuss	SCDHEC – Region 5 EQC, Aiken
Ben Buchanan	SCDHEC – Region 5 EQC, Aiken
Heyward Robinson	Town of Denmark
Daniel Norton	Town of Denmark
J.P. Robinson	Town of Denmark

This report includes a description of the water system, a list of findings and recommendations noted during the survey.

System Description

The Town of Denmark owns and operates a groundwater facility and associated potable water distribution system that serves approximately 3800 by approximately 1501 service connections. Information on the system's wells is given in the table below.

Well Information

	Type	Horsepower	Yield	Regulated Capacity	Treatment
Well One Brooker Center	NOT IN SERVICE				
Well Two Voorhees	Turbine	60	330 gpm	316.80 TGD	Gaseous Chlorine

Well Three Legare Street	NOT IN SERVICE				
Well Four Cox Mill	Turbine	50	350 gpm	336 TGD	Gaseous Chlorine Iron Bacteria Removal

Three (3) elevated storage tanks with a total volume of approximately 475,000 gallons serve the Town of Denmark public water system.

Storage Capacity

Tank	Capacity (gallons)
City Hall Elevated Tank	100,000
Nibco Elevated Tank	250,000
Voorhees Elevated Tank	125,000

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

Operator	License	Certification #	Class
Daniel Norton	Distribution	03182	T
JP Robinson	Treatment	02418	D
	Distribution	00472	D

Due to the Cox Mill Well recently being placed into operation, the town is no longer purchasing water from Bamberg. However, the emergency connection is still in place and can be used when needed.

The town recently was awarded the Community Development Block Grant to install two new groundwater sources. The town is currently in the process of having ERC do the preliminary work to plan for the two new wells. The Department looks forward to assisting with planning of the water system improvements. The Department is also in full support of the plan of a regional water system for Bamberg County.

Findings and Recommendations

- 1) The system maintained an Unsatisfactory rating for Protection from Contamination. The town has taken two wells out of service. Samples taken in 2006 from two of the town's three wells detected contamination above an EPA established Maximum Contaminant Level (MCL). Neither well has exceeded the MCL in the past. The Brooker Center Well results showed slightly elevated levels of tetrachloroethylene, also known as PCE. PCE is

commonly used as a dry cleaner solvent. The Brooker Center well is within 1200 feet of the closed Colonial Dry Cleaners, which is a potential source for this PCE contamination. The site is in the process of being cleaned up. The Legare Street/Clark Street well has shown contamination of trichloroethylene, also known as TCE. The town, along with DHEC, is actively investigating the source of the contamination.

- 2) The system received an Unsatisfactory rating for Source Security. At the time of the inspection, chlorine cylinders were found at both Brooker and Legare Street wells. Both of these wells have been taken out of service for over a year. The chlorine cylinders must be safely removed and stored at a secure location as soon as possible.
- 3) The system received a Needs Improvement rating for Wellhead Piping. Wellhead piping must be configured in such a way as to minimize the potential for contamination of the source while also providing for proper testing and control of the well. The blowoff at both Voorhees and Cox Mill wells must have a screen or weighted flap installed on the end. In addition, a raw water sample tap must be installed at the Voorhees well. The sample tap should be a smooth-nosed type tap without interior or exterior threads. The sample tap must be easily accessible and located at least 12 inches above the floor.
- 4) The system received an Unsatisfactory rating for Chemical Storage and Handling. At the time of the inspection, several old bags of fluoride were being stored by the maintenance building. The old bags of fluoride were covered by a tarp but showed signs of deterioration. The town needs to properly dispose of the fluoride. Documentation must be provided to the Department showing the proper removal and disposal of the fluoride.
- 5) The system received an Unsatisfactory rating for Chemical Feed. The following three deficiencies were noted during the inspection:
 - A chlorine leak detection and alarm system must be installed at the Cox Mill well.
 - The chlorine fan at the Voorhees well must be repaired.
 - At both wells, chemical feed lines must be color coded and labeled properly to include pipe contents and the direction of flow. Various color schemes are used and almost any is acceptable as long as it is consistent throughout the water system.
- 6) The system received a Needs Improvement rating for Water Quality. Over the past few months the Department has received complaints regarding discolored water as well as objectionable tastes and odors. In addition, there have been several Boil Water Advisories (BWA) issued by the system. The BWA have been issued for line breaks, loss of pressure at Voorhees well and most

accounted for in the water audit. The system must also maintain leak repair documentation .

- 13) The system received a Needs Improvement rating for System Map. Please note that a system map must include all sources, treatment plants, storage tanks, distribution lines with sizes, pumping facilities, valves, hydrants, and blow-offs. The system map must be current and up-to-date and needs to include the addition of Cox Mill Well.
- 14) The system received a Satisfactory for Sample Siting Plan. With the recent complaints, the system needs to ensure that the current sample siting plan is adequate to ensure that there is no place in the distribution system where microbiological contamination could persist indefinitely with little chance of detection.
- 15) The system maintained a Needs Improvement for Storage Appurtenances. The Town of Denmark has been extending overflow pipes to within the required distance of 12 to 24 inches when maintenance is scheduled at the tanks. The Voorhees Tank overflow pipe still needs to be extended. In addition, the level indicator on the Voorhees Tank must be repaired.
- 16) The system received a Needs Improvement for Storage Maintenance. The purpose of this item is to ensure that the water system's storage tanks are properly maintained to guarantee their good working condition. The system needs to develop a written maintenance plan for each of the storage tanks to ensure proper maintenance is planned for accordingly. The system needs to maintain records on each storage tank.
- 17) The system received an Unsatisfactory rating for Monitoring/Records. The purpose of this item is to ensure that 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. The Cox Mill Well has the iron bacteria treatment system. Even though the wellhouse had a copy of the iron bacteria instruction manual, the current operators were very unfamiliar with the operation of the treatment system. There was no record keeping for the addition of tablets to the system. It is important that the current operators receive proper training on the treatment system and proper record keeping is maintained.
- 18) The system received a Needs Improvement rating for Supplies and Spare Parts Inventory. Due to an inadequate stock of spare parts to repair the chlorine treatment system at Voorhees well, the system went under a BWA until spare parts could be obtained and the repair completed.
- 19) The system maintained a Satisfactory rating for Procedure Manual. The purpose of this item is to ensure that the water system maintains written procedures for the operation and maintenance of the system. Due to the current transition in operators, the Procedures Manual needs to be reviewed to

ensure that it is current and relevant to the operation and maintenance of the system.

- 20) The system received a Satisfactory rating for Emergency Plan. The purpose of this item is to ensure that the water system has an up-to-date Emergency Preparedness Plan which addresses who to contact and any arrangements that would be necessary in the event that there is an emergency involving the treatment facility, the treatment process, or the distribution system. Once again, due to the current transition in operators, the Emergency Plan needs to be reviewed to ensure it is current and accurate.

Conclusions

The overall rating for the sanitary survey is **Unsatisfactory**. The unsatisfactory rating is due to the numerous deficiencies mentioned in the survey. These deficiencies can affect the safety and/or reliability of the water system. The system must take the necessary steps to address the deficiencies. A follow-up survey will be scheduled within the next sixty (60) days. Failure to correct the deficiencies will result in an enforcement referral. The Department is aware of the transition in operators for the water system, we are committed to working with the system to ensure all deficiencies are properly addressed in a timely manner. The Department will continue to work with the water system in the future to ensure that the residents of Denmark receive the highest quality of drinking water.