MISSISSIPPI STATE DEPARTMENT OF HEALTH

REPORT OF INSPECTION OF DRINKING WATER SUPPLY

PWS: 0240084 **Class:** D

An inspection of the CITY OF BILOXI-NORTH water supply in HARRISON county was made on 09/20/2016. Present at the time of inspection was TRACEY L FOREHAND, OPERATOR; BRENT HODGE, OPERATOR; WRITER. Official Address PO BOX 429 BILOXI MS 39533 W.W. Operator TRACEY L FOREHAND Address P O BOX 429 BILOXI MS 39533 No. Connections 4292 No. Meters Population Served 11159 Field Chemical Analysis: pH ___ Cl2(free) 0.1 Cl2(total) 0.1 H2S N/A Iron ___ Fluoride ___ Point of Sampling DISTRIBUTION Water Rates ___

COMMENTS

Technical: 5 Managerial: 5 Financial: 5

OVERALL CAPACITY RATING: 5.0 / 5.0

1. At the time of inspection, the water system appeared to be well maintained and operating properly.

2. The design capacity calculations attached to this report and the table below give the required minimum chlorine residual near each entry point. Should system officials choose to conduct 4-log virus inactivation to comply with the Groundwater Rule, the free chlorine residual will have to be measured and recorded continuously at or before the first customer near each entry point and must meet the minimum residuals given below.

Location	Required minimum
Well #1 First Connection	6.2 mg/l(too high)
Well #4 First Connection	4.8 mg/l(too high)
Well #5 First Connection	0.4 mg/l
Well #6 First Connection	28.0 mg/l(too high)
Well #7 First Connection	1.0 mg/l
Well #8 First Connection	0.2 mg/L

3. For Well #1, #4, and #6, the minimum chlorine residuals exceed the MCL of 4.0 mg/l. There is not enough contact time between chlorination and the first connection to achieve 4-log virus inactivation. If system officials choose to conduct 4-log, then additional contact time will be needed at these wells.

4. No pressure problems were reported at the time of inspection.

5. When repairs are made on the water distribution system, all lines affected should be properly chlorinated and flushed before they are placed back in service.

6. Whenever system pressure is lost, even for brief periods of time, contaminants may be introduced to the system through back-siphonage and back flow. When this occurs, system officials should notify all customers in the affected area to boil their drinking water until clear bacteriological samples have been obtained.

7. Before any improvements are made on the water system, plans and specifications must be submitted by a Registered Professional Engineer licensed to practice in Mississippi. Plans and specifications must be approved by the Mississippi Department of Health-Bureau of Public Water Supply before any construction can begin.

8. In 2009 the MS State Board of Health passed a regulation requiring that community water systems serving a population of at least two thousand (2,000) or more "shall be required to acquire and install fluoridation treatment capable of maintaining fluoride levels within the optimal range." Based on previous water quality tests, your system does not have a natural level of fluoride within the recommended control range. Because this public water supply serves a population of at least 2,000, and does not have a natural fluoride level within the recommended range, steps should be taken to implement a fluoridation treatment program. This could be performed in conjunction with the installation of new infrastructure to reduce costs or independently as funds become available. Grant funds are available through the MSDH's Community Water Fluoridation Program.

9. In order to continue to receive full credit for T4 in the future, pump tests must be conducted on the wells at least once every two years to determine changes in pumping capacity and to assess the overall mechanical condition of the well and pump.

10. The Security Vulnerability Self-Assessment and Emergency Response Plan must be updated annually. This will be reviewed at each annual inspection.

11. During the next inspection, we will need to check the records that the system maintains in accordance with the requirements of the Safe Drinking Water Act. These records should be in separate folders and include the following:

    -Bacti Site Plan with Map & Bacteriological sample results - 5 yrs.
    -Other water quality analysis - 10 yrs.
    (nitrates, inorganics, P-Chems, fluoride, radiological, VOC's)
    -Lead and Copper Site Plan & Lead and Copper results - 12 yrs.
    -Inspection Reports - 10 yrs.
    -Annual Report - 3 yrs.
    -Operator's Logbook - 5 yrs.
    -Actions taken by the system to correct violations - 3 yrs.
    -Records concerning a variance or exemption - 5 yrs.
    -All other Mississippi Department of Health correspondence - 3 yrs.

12. On several of the wells, the packing was leaking excessively and should be repaired.

13. At the Disinfection Byproducts sampling site, the free chlorine residual was 0.1 mg/L and the total chlorine residual was 0.1 mg/L. The chlorine feed rate or flushing schedule should be increased to ensure adequate chlorine residual at the ends of the distribution system.

Completed by Wendy Ferrill, P.E. on 09/22/2016.

Reviewed by Ralph Hayes, P.E. on 09/23/2016.

If you have any questions, please call (228)297-5187.

pc:

TRACEY L FOREHAND, OPERATOR

STANDARD FORM

Mississippi Department of Health
Bureau of Public Water Supply

FY 2017 Public Water System Capacity Assessment Form

NOTE: This form must be completed whenever a routine sanitary survey of a public water system is conducted by a regional engineer of the Bureau of Public Water Supply

PWS ID#: 0240084 Class: D Survey Date: 09-20-2016 County: HARRISON
Public Water System: CITY OF BILOXI-NORTH Conn: 4292
Certified Waterworks Operator: TRACEY L FOREHAND Pop: 11159

CAPACITY RATING DETERMINATION

Technical (T) Capacity Rating: [5] Managerial (M) Capacity Rating [5] Financial (F) Capacity Rating [5]

Capacity Rating = $\frac{T+M+F}{3} = \frac{15}{3} = 5$

Overall Capacity Rating = 5.0

Completed by Wendy Ferrill, P.E. on 09/22/2016
Reviewed by Ralph Hayes, P.E. on 09/23/2016

Comments: _____

Technical Capacity Assessment	Point Scale	Point Award
[T1] Does the water system have any significant deficiencies? [Y (N)]	N - 1pt. Y - 0pt.	1
[T2] 1) Was the water treatment process functioning properly? [(Y) N] (i.e. Is pH, iron, free chlorine, fluoride, etc. within acceptable range?) **2)** Was needed water system equipment in place and functioning properly at the time of survey? [(Y) N] (**NOTE:** Equipment deficiencies must be identified in survey report.) **3)** Were records available to the regional engineer clearly showing that all water storage tanks have been inspected and cleaned or painted (if needed) within the past 5 years? [(Y) N NA] (**NOTE:** All YESs required to receive point)	All Y - 1 pt. Else - 0 pt.	1
[T3] 1) Was the certified waterworks operator or his/her authorized representative present for the survey? [(Y) N] **2)** Was log book up to date and properly maintained and did it show that MSDH Minimum JOB Guidelines for W. W. Operators were being met? [(Y) N] **3)** Was the water system properly maintained at the time of survey? [(Y) N] **4)** Did operator satisfactorily demonstrate to the regional engineer that he/she could fully perform all water quality tests required to properly operate this water system? [(Y) N] (**NOTE:** All YESs required to receive point)	All Y - 1 pt. Else - 0 pt.	1
[T4] 1) Does water system routinely track water loss and were acceptable water loss records available for review by the regional engineer? [(Y) N] **2)** Is water system overloaded? (i.e. serving customers in excess of MSDH approved design capacity)? [Y (N)] **3)** Was there any indication that the water system is/has been experiencing pressure problems in any part(s) of the distribution system? [Y (N)] (based on operator information, customer complaints, MSDH records, other information) **4)** Are well pumping tests performed routinely? [(Y) N NA] (**NOTE:** YES FOR #1 & YES OR N/A FOR #4 AND NOs FOR #2 & #3 required to receive point)	1)Y - pt. 2)N - pt. 3)N - pt. 4)Y - pt.	1
[T5] 1) Does the water system have the ability to provide water during power outages? (i.e. generator, emergency tie-ins, etc.) [(Y) N] **2)** Does the water system have a usable backup source of water? [(Y) N] (**NOTE:** Must be documented on survey report)	All Y - 1 pt. Else - 0 pt.	1
TECHNICAL CAPACITY RATING = [5] (Total Points)		

Public Water System: CITY OF BILOXI-NORTH PWS ID #: 0240084

FY 2017 Public Water System Capacity Assessment Form Survey Date: 09-20-2016

Managerial Capacity Assessment	Point Scale	Point Award
[M1] Were all SDWA required records maintained in a logical and orderly manner and available for review by the regional engineer during the survey? [(Y) N]	Y - 1pt. N - 0pt.	1
[M2] 1) Have acceptable written policies and procedures for operating this water system been formally adopted and were these policies available for review during the survey? [(Y) N] **2)** Have all board members (in office more than 12 months) completed Board Member Training? [(Y) N NA] **3)** Does the Board of Directors meet monthly and were minutes of Board meetings available for review during the survey? (**NOTE:** Quarterly meetings allowed if system has an officially designated full time manager) [(Y) N NA] (**NOTE:** ALL YESs or NAs required to receive point. NA - Not Applicable)	All Y - 1 pt. Else - 0 pt.	1
[M3] Has the water system had any SDWA violations since the last Capacity Assessment? [Y (N)]	N - 1pt. Y - 0pt.	1
[M4] Has the water system developed a long range improvements plan and was this plan available for review during the survey? [(Y) N]	Y - 1pt. N - 0pt.	1
[M5] 1) Does the water system have an effective cross connection control program in compliance with MSDH regulations? [(Y) N] **2)** Was a copy of the MSDH approved bacti site plan and lead/copper site plan available for review during the survey and do the bacti results clearly show that this approved plan is being followed? [(Y) N] (**NOTE:** All YESs required to receive point)	All Y - 1 pt. Else - 0 pt.	1
MANAGERIAL CAPACITY RATING = [5] (Total Points)		

Financial Capacity Assessment	Point Scale	Point Award
[F1] Has the water system raised water rates in the past 5 years? [(Y) N] (**NOTE:** Point may be awarded if the water system provides acceptable financial documentation clearly showing that a rate increase is not needed, i.e. revenue has consistently exceeded expenditures by at least 10%, etc.)	Y - 1pt. N - 0pt.	1
[F2] Does the water system have an officially adopted policy requiring that water rates be routinely reviewed and adjusted as appropriate and was this policy available for review during the survey? [(Y) N]	Y - 1pt. N - 0pt.	1
[F3] Does the water system have an officially adopted cut-off policy for customers who do not pay their water bills, was a copy of this policy available for review by the regional engineer, and do system records (cut-off lists, etc.) clearly show that the water system effectively implements this cut-off policy? [(Y) N]	Y - 1pt. N - 0pt.	1
[F4] Was a copy of the water system's officially adopted annual budget available for review by the regional engineer and does the water system's financial accounting system clearly and accurately track the expenditure and receipt of funds? [(Y) N]	Y - 1pt. N - 0pt.	1
[F5 - Municipal Systems] 1) Is the municipality current in submitting audit reports to the State Auditor's Office? [(Y) N] **2)** Was a copy of the latest audit report available for review at the time of the survey? [(Y) N] **3)** Does this audit report clearly show that water and sewer fund account(s) are maintained separately from all other municipal accounts? [(Y) N] (**NOTE:** Yes answer to all questions required to receive point.)	All Y - 1 pt. Else - 0 pt.	1
[F5 - Rural Systems] 1) Has the rural water system filed the required financial reports with the State Auditor's Office and were these reports available for review? [Y N] **2)** Does the latest financial report show that receipts exceeded expenditures? [Y N] (**NOTE:** Yes answer to both questions required to receive point)	All Y - 1 pt. Else - 0 pt.	
FINANCIAL CAPACITY RATING = [5] (Total Points)		

Generated September 23, 2016, 8:53 AM CST.

MISSISSIPPI DEPARTMENT OF HEALTH
BUREAU OF PUBLIC WATER SUPPLY
DESIGN CAPACITY SHEET

System: **CITY OF BILOXI-NORTH**
ID: **0240084** Class: **D** County: **HARRISON**

Date Completed: **09/22/2016**
Connections - Actual: **4292** Equivalent: **5537**
Design Capacity: **9246** Percent Design Capacity: **5537/9246 = 59.9%**

Design Capacity = Well Capacity + (Elevated Storage / 200)

Well Capacity = 480 + 330 + 913 + 1300 + 300 + 1300
Well Capacity = 4623

Elevated Storage = 2,000,000

Design Capacity = 4623 + (2,000,000 / 200)
Design Capacity = 4623 + 10,000
Design Capacity = 14,623

** The Design Capacity is limited to twice the well capacity

Design Capacity = 4623 * 2
Design Capacity = 9,246

Total # of Connections (metered + unmetered) = 4292

From data provided on the high users:
The Average Commercial & Industrial Use = 67,876,000 / Month
Total Average Use = 116,893,000 / Month
(Information taken from 500 top users report for MS0240084 and MS0240001 combined.)

Ciu = Average Commercial & Industrial Use / Total Average Use
Ciu = 67,876,000 / 116,893,000
Ciu = 0.58

Equivalent Connections = # of Connections + (# of Connections * 0.5 Ciu)
Equivalent Connections = 4292 + [4292 * (0.5)(0.58)]
Equivalent Connections = 4292 + 1245
Equivalent Connections = 5537

% of Design Capacity = (# of existing connections / design capacity) * 100
% of Design Capacity = (5537 / 9246) * 100
% of Design Capacity = 60

MISSISSIPPI DEPARTMENT OF HEALTH
BUREAU OF PUBLIC WATER SUPPLY
DESIGN CAPACITY SHEET

CITY OF BILOXI-NORTH 09/22/2016

GROUNDWATER RULE CALCULATIONS:

Well #1: T = 68F + 9 = 77F
CT = 2.0mg*min/L
C = 2.0mg*min/L / ((30ft*2.6gal/ft)/480GPM + (15ft*2.6gal/ft)/240GPM)
C = 6.2mg/L *THIS RESIDUAL EXCEEDS THE MCL OF 4.0MG/L FOR CHLORINE. ADDITIONAL CONTACT TIME BEFORE THE FIRST CONNECTION MUST BE PROVIDED TO ACHIEVE 4-LOG.

Well #4: T = 68F + 6 = 74F
CT = 2.3mg*min/L
C = 2.3mg*min/L / ((25ft*1.5gal/ft)/330GPM + (40ft*1.5gal/ft)/165GPM)
C = 4.8mg/L *THIS RESIDUAL EXCEEDS THE MCL OF 4.0MG/L FOR CHLORINE. ADDITIONAL CONTACT TIME BEFORE THE FIRST CONNECTION MUST BE PROVIDED TO ACHIEVE 4-LOG.

Well #5: T = 68F + 9 =77F
CT = 2.0mg*min/L
C = 2.0mg*min/L / ((100ft*10.4gal/ft)/913GPM + (300ft*5.9gal/ft)/457GPM)
C = 0.4mg/L *Therefore, the minimum residual of free chlorine at the tank should be 0.4mg/L.

Well #6: T = 68F + 9 = 77F
CT = 2.0mg*min/L
C = 2.0mg*min/L / ((10ft*4.1gal/ft)/1300GPM + (5ft*5.9gal/ft)/750GPM)
C = 28.0mg/L *THIS RESIDUAL EXCEEDS THE MCL OF 4.0MG/L FOR CHLORINE. ADDITIONAL CONTACT TIME BEFORE THE FIRST CONNECTION MUST BE PROVIDED TO ACHIEVE 4-LOG.

Well #7: T = 68F + 9 = 77F
CT = 2.0mg*min/L
C = 2.0mg*min/L / ((15ft*0.7gal/ft)/300GPM + (200ft*1.5gal/ft)/150GPM)
C = 1.0mg/L *Therefore, the minimum residual of free chlorine at the tank should be 1.0mg/L.

Well #8: T = 68F + 9 = 77F
CT = 2.0mg*min/L
C = 2.0mg*min/L / ((15ft*4.1gal/ft)/1300GPM + (300ft*5.9gal/ft)/750GPM +
(750ft*5.9gal/ft)/375GPM + (500ft*5.9gal/ft)/188GPM)
C = <0.2mg/L *Therefore, the minimum residual of free chlorine at the tank should be 0.2mg/L.

MISSISSIPPI STATE DEPARTMENT OF HEALTH
DIVISION OF WATER SUPPLY
PUBLIC WATER SUPPLY - MASTER DATA SHEET

Name of Supply: City of Biloxi – North **Owner:** City **County:** Harrison

PWS ID# 0240084 **Class:** D **Date of Last Inspection:** 09-20-2016 **Master Meter:** Yes

Actual Connections: 4292 **Equivalent Connections:** 5537 **Design Capacity:** 9246

% of Design Capacity: 60 **GWR Status:** Triggered Monitoring

Source Supply: **Purchase** _____ **Surface** _____ **Ground** X **Number of Wells:** Eight

Well ID	Location	Year Constructed	Capacity (gpm)	Pressure (psi)	Casing (in)	Screen (in)	Depth (ft)	Cl2 Setting
0240084-01	Rustwood North	1966	480	60	12	8	892	22
0240084-02	Ancient Oaks	1966	105	60	4	3	850	**Abandoned**
0240084-03	Rustwood South	1972	600		12	8	564	**Abandoned**
0240084-04	South Hill	1981	330	70	8	6	593	20
0240084-05	Popps Ferry	1985	913	60	16	10	845	105
0240084-06	Vee St.	1999	1300		20	10	900	85
0240084-07	Cedar Lake	1971	300		10	6	846	15
0240084-08	Biloxi Rec Complex	2005	1300	60	20	10	875	120

Treatment: **Iron** _____ **Softening** _____ **Corrosion** _____ **Chlorine** X **Fluoride** _____

Treatment:	No	Location	Type	Capacity (max)	Settings	Remarks
Chlorinator	2		Advance 480	50 ppd		Switchover
	1		Hydro	100 ppd		Switchover
	3		Advance 200	200 ppd		Ton Cylinders

Storage:	Location	Year Constructed	Material	Capacity (gallons)	Remarks	Inspection Date
Elevated	Popps Ferry		Steel	1,000,000		02-25-2016
Elevated	Home Depot		Steel	1,000,000		04-01-2014

Generator:	Type	Location	Rating	Fuel	Routine