

June 30, 2017

Mr. W. Allen Hardy Engineering Supervisor
Public Water Supply Section
Raleigh Regional Office
NCDEQ
1628 Mail Service Center
Raleigh, NC 27699-1628

Re: Notice of Deficiency
Iron and Manganese Concentration
Bayleaf Master System
Wake County
WSF ID Nos. P12, P16, P19, P28, P39, P63, P75, P76, P92, P3B, P4B, P7B
Water System No: NC0392373

Dear Mr. Hardy:

Aqua North Carolina, Inc. (Aqua) received the above-referenced letter dated July 12, 2016, regarding elevated concentrations of Iron (Fe) and Manganese (Mn) at Bayleaf Master System P12, P16, P19, P28, P39, P63, P75, P76, P92, P3B, P4B, P7B. The Bayleaf Master water system is comprised of 122 active wells and 117 points of entry (POE). The current number of customers served is 6,112 and the system is approved to serve 6,356 connections. The table below outlines the run time and the latest iron and manganese concentrations collected as part of the ongoing Inorganic Chemical Analyses (IOC) samples collected at WSF ID Nos. P12, P16, P19, P28, P39, P63, P75, P76, P92, P3B, P4B, P7B.

Due to the number of wells associated with our Bayleaf Master System NODs, Aqua North Carolina has compiled the requested information in a table format on the following pages that is more manageable and trackable.

- Table 1 provides a summarization of well specifications, sample results, and customer complaints since the last quarterly update.
- Table 2 provides a summary of completed and planned action items.

Bayleaf Master System
 Wake County
 WSF ID Nos. P12, P16, P19, P28, P39, P63, P75, P76, P92, P3B, P4B, P7B

Table 1 - Well and Customer Complaint Data:

Well Name and No.	Approved (gpm)	Date	Ave. Run Time	mg/L		NTU*		Customer Complaints Since Last Quarter 2017
				Fe	Mn	Well Head	Entry Pt.	
Swans Mill Well #1 (P16)	80	3/24/2015	0	7.8	0.02			2
	80	12/20/2016	13.5	-	-	0.18	0.13	
	80	3/23/2017	5.7			<.10	0.10	
	80	6/8/2017	10.2			0.15	0.26	
Barony Well #5 (P63)	77	1/6/2014	11	1.0	0.47	-	-	0
	77	9/20/2016	14.9	-	-	4.4	1.6	
	77	3/23/2017	5.5	-	-	14	1.4	
	77	6/8/2017	8.5	-	-	6.2	2	
Enclave at Barton Creek Bluffs Well #18 (P75)	75	10/9/2013	8.1	1.0	2.9	-	-	1
	75	12/20/2016	12.8	-	-	3.2	1.5	
	75	3/23/2017	6.9	-	-	2.6	2.4	
	75	4/26/2017	6.4	-	-	13	3.1	
	75	6/8/2017	7.6			6	5.1	
Hawthorne Well #1 and Well #2 (P76)	73	5/19/2016	10.7	1.01	0.53	-	-	0
	73	9/20/2016	14.2	-	-	22	1.7	
	73	3/23/2017	10.3	-	-	14	3.9	
	73	6/8/2017	0	-	-	12	11	
Woodvalley #9 (P92)	38	10/7/2015	8.39	0.8	0.5	-	-	0
	38	12/19/2016	12.9	-	-	4	0.91	
	38	3/23/2017	7.3	-	-	11	2.9	
	38	6/16/2017	0	-	-	0.1	0.1	
Carlyle Manor Well #4 (P3B)	73	10/7/2015	8.5	2.0	0.67	-	-	2
	73	9/20/2016	11.7	-	-	18	1.3	
	73	3/23/2017	5.6	-	-	5,1	2.6	
	73	6/9/2017	8.6	-	-	2.4	2.3	
Seville Well #1 (P4B)	44	1/9/2016	7.25	1.0	0.5	-	-	1
	44	9/20/2016	14.1	-	-	3.8	0.84	
	44	3/23/2017	5.8	-	-	2.3	0.85	
	44	6/8/2017	8.5	-	-	2.5	3.6	

Bayleaf Master System
 Wake County
 WSF ID Nos. P12, P16, P19, P28, P39, P63, P75, P76, P92, P3B, P4B, P7B

George's Grant Well #1 (P7B)	66	4/23/2015	6.16	1.3	0.63	-	-	0
	66	12/20/2016	15	-	-	15	2.4	
	66	3/23/2017	5.5	-	-	6.4	2.7	
	66	6/8/2017	8.5	-	-	9.6	7.2	

* Aqua uses a performance indicator of 1.0 Nephelometric Turbidity Unit (NTU) or less as a measure to the effectiveness of the SeaQuest.

Table 2 - Completed Activities, Customer Complaints, and Planned Activities

Well Name and No.	Completed Activities	Planned Activities
Swans Mill Well #1 (P16)	<ul style="list-style-type: none"> Sept 2015 - Started Using SeaQuest Jan - April 2016 -Flushed System 	<ul style="list-style-type: none"> Q1 2018 – Perform annual flushing We will continue to optimize SeaQuest based on quarterly turbidity testing.
<p>Comments: Several Bayleaf system wells are interconnected. The recent replacement and upgrade completed on the filter at Coachman's Trail Well #4 has generally improved water in the Bayleaf system, including Swan's Mill.</p> <p>The low turbidity results also support the fact that SeaQuest is working effectively.</p>		
Barony Well #5 (P63)	<ul style="list-style-type: none"> Sept. 2015 Started Using SeaQuest Jan.-April 2016 Flushed System 	<ul style="list-style-type: none"> Q1 2018 – Perform annual flushing Installation of a cartridge filter; ordered June 23, 2017; installation is planned for Q3, 2017 We will continue to optimize SeaQuest based on quarterly turbidity testing
<p>Comments: Several Bayleaf system wells are interconnected. The recent replacement and upgrade completed on the filter at Coachman's Trail Well #4 has generally improved water in the Bayleaf system, including Barony.</p> <p>It should additionally be noted that Aqua intended to install a cartridge filter in Barony on well #5 in Q2. Installation was delayed as typical cartridge filters are not rated to handle the level of water pressure produced at this well. A higher pressure cartridge filter (rated for 210 psi) was recently located and ordered. We anticipate delivery and installation of this filter in Q3, 2017</p>		

Bayleaf Master System
 Wake County
 WSF ID Nos. P12, P16, P19, P28, P39, P63, P75, P76, P92, P3B, P4B, P7B

Enclave at Barton Creek Bluffs Well #18 (P75)	<ul style="list-style-type: none"> Oct. 2015 - Started Using SeaQuest Jan - April 2016 - Flushed System Feb. 2017 - Flushed System June 16, 2017 - Installed cartridge filter 	<ul style="list-style-type: none"> Q1 2018 – Perform annual flushing Determine effectiveness of cartridge filter with ongoing monitoring We will continue to optimize SeaQuest based on quarterly turbidity testing
<p>Comments: Several Bayleaf system wells are interconnected. The recent replacement and upgrade completed on the filter at Coachman's Trail Well #4 has generally improved water in the Bayleaf system, including Enclave at Barton Creek Bluffs.</p>		
Hawthorne Well #1 and (P76)	<ul style="list-style-type: none"> Feb. 2016 -Started Using SeaQuest Jan - April 2016 - Flushed System Feb. 2017 -Flushed System 	<ul style="list-style-type: none"> Q1 2018 – Perform annual flushing Installation of cartridge filter was completed on June 30, 2017 Determine effectiveness of cartridge filter with ongoing monitoring We will continue to optimize SeaQuest based on quarterly turbidity testing
<p>Comments: Well #1 is currently offline due to pump/motor change out. Parts for repair were ordered and received. The well repair is scheduled to be completed before the end of Q3. Well #2 is offline with no plans to bring it back on line (so as to limit the amount of heightened Fe and Mg coming from well #2)</p>		
Woodvalley #9 (P92)	<ul style="list-style-type: none"> Feb. 2016 - Started Using SeaQuest Jan.-April 2016 - Flushed System Feb. 2017 - Flushed System June 19, 2017 - Installed cartridge filter 	<ul style="list-style-type: none"> Q1/Q2 2018 – Perform annual flushing Determine effectiveness of cartridge filter with ongoing monitoring We will continue to optimize SeaQuest based on quarterly turbidity testing
<p>Comments: Well #9 is currently back online as of July 3rd due to a pump/motor change out.</p>		
Carlyle Manor Well #4 (P3B)	<ul style="list-style-type: none"> Sept. 2015 - Started Using SeaQuest Jan.-April 2016 - Flushed System Feb. 2017 - Flushed System June 9, 2017 - Installed cartridge filter 	<ul style="list-style-type: none"> Q1 2018 – Perform annual flushing Determine effectiveness of cartridge filter with ongoing monitoring We will continue to optimize SeaQuest based on quarterly turbidity testing

Bayleaf Master System
 Wake County
 WSF ID Nos. P12, P16, P19, P28, P39, P63, P75, P76, P92, P3B, P4B, P7B

<p>Comments: Several Bayleaf system wells are interconnected. The recent replacement and upgrade completed on the filter at Coachman's Trail Well #4 has generally improved water in the Bayleaf system, including Carlyle Manor.</p> <p>Addition of filters at Coachman's Trail Well #4, Devon wells #1 and #3, Stonebridge Well #17, and Stone Creek #18 has improved water quality.</p>		
Seville Well #1 (P4B)	<ul style="list-style-type: none"> • Aug. 2015 - Started Using SeaQuest • Jan.-April 2016 - Flushed System 	<ul style="list-style-type: none"> • Q1 2018 – Perform annual flushing • We will continue to optimize SeaQuest based on quarterly turbidity testing
<p>Comments: Several Bay leaf system wells are interconnected. The recent replacement and upgrade completed on the filter at Coachman's Trail Well #4 has generally improved water in the Bayleaf system, including Seville.</p> <p>Addition of filters at Coachman's Trail Well #4, Devon wells #1 and #3, Stonebridge Well #17, and Stone Creek #18 has improved water quality.</p>		
George's Grant Well #1 (P7B)	<ul style="list-style-type: none"> • Oct. 2015 - Started Using SeaQuest • Jan.-April 2016 - Flushed System • June 7, 2017 - Installed cartridge filter 	<ul style="list-style-type: none"> • Q1 2018 – Perform annual flushing • We will continue to optimize SeaQuest based on quarterly turbidity testing
<p>Comments: Several Bayleaf system wells are interconnected. The recent replacement and upgrade completed on the filter at Coachman's Trail Well #4 has generally improved water in the Bayleaf system, including George's Grant.</p> <p>Addition of filters at Coachman's Trail Well #4, Devon wells #1 and #3, Stonebridge Well #17, and Stone Creek #18 has improved water quality.</p>		

Related to all wells above using a sequestering treatment:

Sequestering with a polyphosphate does not physically remove iron and manganese; hence the reason for the elevated iron and manganese concentrations which are shown in the last IOC result. The intention of sequestering is to hold these two naturally occurring minerals in solution and prevent them from being oxidized by chlorine. Also, there is the intention of improving clarity and reducing and or eliminating customer complaints of the discolored water they may experience.

Bayleaf Master System
Wake County
WSF ID Nos. P12, P16, P19, P28, P39, P63, P75, P76, P92, P3B, P4B, P7B

Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact me at (919) 653-6964.

Sincerely,



Moses A. Thompson
Director of Operations
Aqua North Carolina, Inc.

MAT/rl



June 30, 2017

Mr. W. Allen Hardy
 Engineering Supervisor
 Public Water Supply Section
 Raleigh Regional Office, NCDEQ
 1628 Mail Service Center
 Raleigh, NC 27699-1628

Re: Notice of Deficiency - Quarterly Update
 Iron and Manganese Concentration
 Avocet Subdivision, Wake County
 WSF ID No.: Well #1, PO1
 Water System No: NC4092107

Dear Mr. Hardy:

Aqua North Carolina, Inc. (Aqua) received the above-referenced letter dated July 12, 2016, regarding elevated concentrations of Iron (Fe) and Manganese (Mn) at Avocet Well #1, PO1. The Avocet water system is comprised of four active wells and three points of entry (POE). The current number of customers served is 135 and the system is approved to serve 155 connections. The table below outlines the run time and the latest iron and manganese concentrations collected as part of the ongoing Inorganic Chemical Analyses (IOC) samples collected at Well #1, PO1.

**UPDATED QUARTERLY STATUS
 REPORT**

TABLE 1: Run Time and IOC Analysis

Well Name and No.	Capacity (gpm)	12-Month Avg. Pump Runtime (hrs/day)	Most Recent Inorganic Sampling Results	
	Approved		Fe (mg/L)	Mn (mg/L)
Avocet, Well #1, PO1 (Samples collected on 4/26/16)	32	5.5	1.60	0.112
Avocet, Well #1, PO1 (Samples collected on 11/07/16)	32	0.0	<u>Raw</u> 35 NTU	<u>POE</u> 16 NTU
Avocet, Well #1, PO1 (Samples collected on 4/14/17)	32	0.0	<u>Raw</u> 9.2 NTU	<u>POE</u> 2.0 NTU

Page Two
Avocet Subdivision, Well #1, P01
June 30, 2017

System Flushing

The Avocet water system was last flushed in April 2017 and is scheduled to be flushed again in July 2017.

Discolored Water Complaints

Aqua has received 23 customer complaints from the Avocet water system since the last update provided in March 2017. Aqua received these calls for discolored water beginning April 14, 2017. Upon investigation by Aqua it was discovered that Well #2 had mechanical issues that deemed it non-operational and caused the heightened customer call volume. Aqua's technician flushed off Well #2 at the wellhead. The greensand filter at Well #2 was not functioning properly due to age and inferior engineering design. A new filter has been ordered and will be online in the third quarter 2017. See additional corrective actions below.

Corrective Action

On Wednesday, April 19, 2017, a cartridge filter was installed at Well #2. A second cartridge filter was additionally installed in series in June to temporarily address high mineral concentrations in well #2 until the replacement greensand filter can be installed.

Additionally, well #12 is a new well that is expected to be placed on-line in 2017. This well will be interconnected with well #2 (pre-filter) to benefit from the greensand filtration, which will allow Aqua to further minimize the use of well #1 and realize improved water quality.

Aqua began feeding SeaQuest in September 2015. Analysis of the sampling of the iron and manganese of Well #1 shows the levels to be elevated. The distribution system was flushed in April 2017 and will continue to be flushed aggressively until the replacement greensand filtration system comes online, at that point we will revert back to annual flushing. Samples were collected on April 14, 2017, from the raw water and the point of entry and the results are shown in the table above. Aqua will only run well #1 as needed and will rely on production from Wells #2, #3, and #4 to meet system demand. Aqua will continue to collect quarterly raw and point of entry samples at this entry point to determine the effectiveness of the treatment. Aqua plans to use a performance indicator of 1.0 Nephelometric Turbidity Unit (NTU) or less as a measure to the effectiveness of the SeaQuest.

Sequestering with a polyphosphate does not physically remove iron and manganese; hence the reason for the elevated iron and manganese concentrations which are shown in the last IOC result. The intention of sequestering is to hold these two naturally occurring minerals in solution and prevent them from being oxidized by chlorine. Also, there is the intention of improving clarity and reducing and/or eliminating customer complaints of the discolored water they may experience.

Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact me at (919) 653-6964.

Sincerely,

Moses A. Thompson
Director of Operations
Aqua North Carolina, Inc.

MAT/rl

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Sep 19 2018



June 30, 2017

Mr. W. Allen Hardy
 Engineering Supervisor
 Public Water Supply Section
 1628 Mail Service Center
 Raleigh, NC 27699-1628

Re: Notice of Deficiency
 Iron and Manganese Concentration
 Bayleaf Master System
 WSF ID No.: Barton Creek Bluffs Well #10 - P67
 WSF ID No.: Woodvalley Well #11 - P93
 Water System No: NC0392373
 Wake County

Dear Mr. Hardy:

Aqua North Carolina, Inc. (Aqua) received the above-referenced letter dated February 24, 2016, regarding elevated concentrations of Iron (Fe) and Manganese (Mn) at the following wells in the Bayleaf Master System: Barton Creek Bluffs Well #10 – P67 and Woodvalley Well #11 – P93. The Bayleaf Master System/Barton Creek Bluffs/Ravenwood/Woodvalley water systems are comprised of 120 active wells and 109 points of entry (POE). The current number of customers served is 5,930 and the system is approved to serve 6,246 connections. The table below outlines the run time and the latest iron and manganese concentrations collected as part of the ongoing Inorganic Chemical Analyses (IOC) samples collected at Well #10 – P67 and Well #11 – P93.

UPDATED QUARTERLY STATUS REPORT

TABLE 1: Run Time and IOC Analysis

Well Name and No.	Capacity (gpm)	12-Month Avg. Pump Runtime (hrs/day)	Most Recent Inorganic Sampling Results	
	Approved		Fe (mg/L)	Mn (mg/L)
Woodvalley Well #11 – P93 (Samples collected December 10, 2015)	29	7.3	0.18	0.285

Barton Creek Bluffs Well #10 - P67
 Woodvalley Well #11 - P93
 June 30, 2017

Woodvalley Well #11 – P93 Well Head (Samples collected September 22, 2016)	29	9.7	ND	0.151
Barton Creek Bluffs IOC Well #10 – P67 (Samples collected June 2013)	15	9.4	0	0.2
Barton Creek Bluffs IOC Well #10 – P67 (Samples collected May 31, 2016)	15	9.8	0	0.232

Table 2: Turbidity Results

<u>Well Name and No.</u>	<u>Date Collected</u>	<u>Raw Water</u>	<u>Entry Turbidity Result</u>
Woodvalley #11 – P93 (Samples collected 3/6/2017)	29	10	Raw 0.61 NTU
Woodvalley #11 – P93 (Samples collected 4/26/2017)	29	8	Raw 0.41 NTU
Woodvalley #11 – P93 (Samples collected 5/24/17)	29	8.4	Raw .22 NTU
Woodvalley #11 – P93 (Samples collected 6/9/17)	29	7.6	Raw .36 NTU
Barton Creek Bluffs Well Head Well #10 P67 (Samples collected 4/26/2017)	15	5.7	Raw 3.5 NTU
Barton Creek Bluffs Well Head Well #10 P67 (Samples collected 5/17/2017)	15	5.7	Raw .25 NTU
Barton Creek Bluffs Well Head Well #10 P67 (Samples collected 6/8/2017)	15	10.5	Raw .15 NTU

Woodvalley Well #11, P93

Updated samples were collected June 8, 2017, and the results are shown in the table above. Aqua began feeding SeaQuest at Well #11 in December 2016. Aqua will evaluate its effectiveness by collecting monthly turbidity samples at the point of entry. Samples were last collected on June 9, 2017 and the results are shown in the table above. Aqua will continue monthly turbidity sampling in an effort to optimize the effectiveness of the SeaQuest.

Barton Creek Bluffs Well #10 - P67
Woodvalley Well #11 - P93
June 30, 2017

Discolored Water Complaints

Aqua has received no customer complaints from the Woodvalley water system since the last update provided in March 2017.

Based on the information provided above, Aqua requests that the requirement to submit further quarterly status reports for Woodvalley Well #11 to be discontinued.

Barton Creek Bluffs Well #10, P67

Updated samples were collected on June 8, 2017, and the results are shown in the table above. Aqua began feeding SeaQuest at Well #10 in March 2016 to ensure the optimal chemical feed rate of the sequestering agent. Turbidity samples from the well head and point of entry will be collected on a monthly basis going forward.

Discolored Water Complaints

Aqua has received one customer complaints from the Barton Creek Bluffs water system since the last update provided in March 2017.

Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact me at (919) 653-6964.

Sincerely,



Moses A. Thompson
Director of Operations
Aqua North Carolina, Inc.

MAT/rl



June 30, 2017

Mr. W. Allen Hardy
 Engineering Supervisor
 Public Water Supply Section
 Raleigh Regional Office, NCDEQ
 1628 Mail Service Center
 Raleigh, NC 27699-1628

Re: Notice of Deficiency
 Iron and Manganese Concentration
 Belle Ridge Subdivision, Wake County
 WSF ID No.: Well #2, P02
 Water System No: NC0392358

Dear Mr. Hardy:

Aqua North Carolina, Inc. (Aqua) received the above-referenced letter dated July 12, 2016, regarding elevated concentrations of Iron (Fe) and Manganese (Mn) at Belle Ridge Well #2, P02. The Belle Ridge water system is comprised of two active wells and two points of entry (POE). The current number of customers served is 55 and the system is approved to serve 55 connections. The table below outlines the run time and the latest iron and manganese concentrations collected as part of the ongoing Inorganic Chemical Analyses (IOC) samples collected at Well #2, P01.

TABLE 1: Run Time and IOC Analysis

Well Name and No.	Capacity (gpm)	12-Month Avg. Pump Runtime (hrs/day)	Most Recent Inorganic Sampling	
	Approved		Fe (mg/L)	Mn (mg/L)
Belle Ridge, Well #2, P02 (sample collected on 10/23/13)	30	1.5	1.0	0.22
Belle Ridge, Well #2, P02 (sample collected on 7/27/16)	30	1.14	.48	.21
Belle Ridge, Well #2, P02 (Samples collected on 12/22/16)	30	2.55	Well Head Turbidity 1.1	Entry Point Turbidity .71

Page Two
Belle Ridge Subdivision, Well #2, P02
June 30, 2017

Belle Ridge, Well #2, P02 (Samples collected on 4/20/17)	30	1.73	<u>Well Head</u> Turbidity 2.0 NTU	<u>Entry Point</u> Turbidity 0.40 NTU
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System Flushing

The Belle Ridge water system was last flushed in June 2017 and is scheduled to be flushed again in June 2018.

Discolored Water Complaints

Aqua has received zero customer complaints from the Belle Ridge water system since the last update provided in March 2017.

Corrective Actions

Analysis of the iron and manganese levels reveals the well has high levels of iron and manganese at Well #2. In an effort to ensure that the drinking water was not discolored due to the presence of the minerals, Aqua started feeding SeaQuest in August 2015. Aqua has limited the use of this well and relies more on Well #1 for meeting system demand. Aqua collected special samples on April 20, 2017, for turbidity from the wellhead and from the point of entry and the results are shown in the table above. Aqua is using a performance indicator of 1.0 Nephelometric Turbidity Unit (NTU) or less as a measure to the effectiveness of the SeaQuest; based on the result above this is less than 1.0 and appears the SeaQuest is effective.

A cartridge filter was scheduled to be installed at Well #2 in the second quarter of 2017; however, based on the effectiveness of SeaQuest as noted above, this project was deferred to the third quarter of 2017 to allow for prioritization of other filter installation projects. Quarterly turbidity samples will continue to be collected to determine the effectiveness of the treatment.

Sequestering with a polyphosphate does not physically remove iron and manganese; hence the reason for the elevated iron and manganese concentrations which are shown in the last IOC result. The intention of sequestering is to hold these two naturally occurring minerals in solution and prevent them from being oxidized by chlorine. Also, there is the intention of improving clarity and reducing and or eliminating customer complaints of the discolored water they may experience.

Based on the low turbidity results and no complaints, Aqua requests that the requirement to submit further quarterly status reports for this well be discontinued.

Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact me at (919) 653-6964.

Sincerely,



Moses A. Thompson
Director of Operations
Aqua North Carolina, Inc.

MAT/rl



June 30, 2017

Mr. W. Allen Hardy
 Engineering Supervisor
 Public Water Supply Section
 Raleigh Regional Office, NCDEQ
 1628 Mail Service Center
 Raleigh, NC 27699-1628

Re: Notice of Deficiency – Quarterly Update
 Iron and Manganese Concentration
 Branston Subdivision, Wake County
 WSF ID No.: Well #2, TP1
 Water System No: NC4092076

Dear Mr. Hardy:

Aqua North Carolina, Inc. (Aqua) received the above-referenced letter dated July 12, 2016, regarding elevated concentrations of Iron (Fe) and Manganese (Mn) at Branston Well #2, TP1. The Branston water system is comprised of one active well and one point of entry (POE). The current number of customers served is 43 and the system is approved to serve 44 connections. The table below outlines the run time and the latest iron and manganese concentrations collected as part of the ongoing Inorganic Chemical Analyses (IOC) samples collected at Well #2, TP1.

UPDATED QUARTERLY STATUS REPORT

TABLE 1: Run Time and IOC Analysis

Well Name and No.	Capacity (gpm)	12-Month Avg. Pump Runtime (hrs/day)	Most Recent Inorganic Sampling Results	
	Approved		Fe (mg/L)	Mn (mg/L)
Branston, Well #2, TP1 (Samples collected on 1/5/16)	49	6.5	.70	0.30
Branston, Well #2, TP1 (Samples collected on 11/7/16))	49	3.0	0.73 NTU	

Page Two
Branston Subdivision, Well #2, TP1
June 30, 2017

Branston, Well #2, TP1 (Sample collected 3/12/17)			<0.50 NTU	
Branston, Well #2, TP1 (Sample collected 4/20/17)	49	4.5	<0.79 NTU	.382

System Flushing

The Branston water system is flushed on an annual basis and was most recently flushed in September 2016 and is scheduled to be flushed again in September 2017.

Discolored Water Complaints

Aqua has received zero customer complaints from the Branston water system since the update provided in March 2017.

Corrective Actions

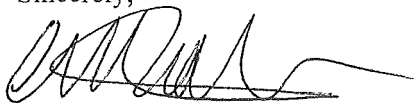
Analysis reveals the well has elevated concentrations of iron and manganese at Well #2. In an effort to ensure that the drinking water was not discolored due to the presence of the minerals, Aqua started feeding SeaQuest in July 2013. Since Aqua began feeding SeaQuest, the distribution system has been flushed annually and will continue to flush the distribution system at this reoccurring frequency. Aqua collected a special sample for turbidity from the entry point on April 20, 2017, and the results are shown in the table above. Aqua is using a performance indicator of 1.0 Nephelometric Turbidity Unit (NTU) or less as a measure to the effectiveness of the SeaQuest; based on the result above this is less than 1.0 and appears the SeaQuest is effective.

Sequestering with a polyphosphate does not physically remove iron and manganese; hence the reason for the elevated iron and manganese concentrations which are shown in the last IOC result. The intention of sequestering is to hold these two naturally occurring minerals in solution and prevent them from being oxidized by chlorine. Also, there is the intention of improving clarity and reducing and or eliminating customer complaints of the discolored water they may experience.

Based on the updated information provided above, Aqua requests that the requirement to submit further quarterly status reports be discontinued.

Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact me at (919) 653-6964.

Sincerely,

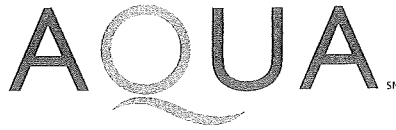


Moses A. Thompson
Director of Operations
Aqua North Carolina, Inc.

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Sep 19 2018



June 30, 2017

Mr. W. Allen Hardy
 Engineering Supervisor
 Public Water Supply Section
 Raleigh Regional Office, NCDEQ
 1628 Mail Service Center
 Raleigh, NC 27699-1628

Re: Notice of Deficiency – Quarterly Update
 Iron and Manganese Concentration
 Briarwood/Kildaire Subdivision, Wake County
 WSF ID No.: Well #1, P04
 Water System No: NC0392383

Dear Mr. Hardy:

Aqua North Carolina, Inc. (Aqua) received the above-referenced letter dated July 12, 2016, regarding elevated concentrations of Iron (Fe) and Manganese (Mn) at Briarwood/Kildaire Well #1, P04. The Briarwood/Kildaire water system is comprised of five active wells and five points of entry (POE). The current number of customers served is 156 and the system is approved to serve 168 connections. The table below outlines the run time and the latest iron and manganese concentrations collected as part of the ongoing Inorganic Chemical Analyses (IOC) samples collected at Well #1, P04.

UPDATED QUARTERLY STATUS REPORT

TABLE 1: Run Time and IOC Analysis

Well Name and No.	Capacity (gpm)	12-Month Avg. Pump Runtime (hrs/day)	Most Recent Inorganic Sampling Results	
	Approved		Fe (mg/L)	Mn (mg/L)
Briarwood/Kildaire, Well #1, P04 (Samples collected on 1/6/16)	30	5.8	0.95	0.17
Briarwood/Kildaire, Well #1, P04 (Samples collected on 11/8/16)	30	7.5	Raw = <0.50 NTU	POE = <.50 NTU
Briarwood/Kildaire, Well #1, P04 (Samples collected on 4/18/17)	30	6.9	2.3	1.6 NTU

Page Two
Briarwood/Kildaire Subdivision, Well #1, P04
June 30, 2017

System Flushing

The Briarwood/Kildaire water system is flushed on an annual basis and was most recently flushed the week of June 12, 2017.

Discolored Water Complaints

Aqua has received one customer complaint from the Briarwood/Kildaire water system since the update provided in March 2017.

Corrective Actions

Analysis of the iron and manganese levels reveals the well has some iron and an elevated concentration of manganese at Well #1. In an effort to ensure that the drinking water was not discolored due to the presence of the minerals, Aqua started feeding SeaQuest in June 2015. Since then Aqua has flushed the distribution system annually and will continue to flush the distribution system at this reoccurring frequency. An automatic blow-off will be installed at the wellhead, which is equipped with a solenoid valve and actuator to discharge water at the beginning of each pump cycle. The installation of this equipment will allow the water to clear before entering treatment, subsequently allowing the treatment to be more effective. This project was deferred to the third quarter of 2017 to allow for prioritization of other filter installation projects.

Aqua collected special turbidity samples on April 18, 2017, from the raw water and from the point of entry and the results are shown in the table above. Aqua is using a performance indicator of 1.0 Nephelometric Turbidity Unit (NTU) or less as a measure to the effectiveness of the SeaQuest.

Sequestering with a polyphosphate does not physically remove iron and manganese; hence the reason for the elevated iron and manganese concentrations which are shown in the last IOC result. The intention of sequestering is to hold these two naturally occurring minerals in solution and prevent them from being oxidized by chlorine. Also, there is the intention of improving clarity and reducing and or eliminating customer complaints of the discolored water they may experience.

Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact me at (919) 653-6964.

Sincerely,



Moses A. Thompson
Director of Operations
Aqua North Carolina, Inc.

MAT/rl



June 30, 2017

Mr. W. Allen Hardy Engineering
 Supervisor Public Water Supply
 Section 1628 Mail Service
 Center Raleigh, NC 27699-1628

Re: Notice of Deficiency- Quarterly Status Report
 Iron and Manganese Concentration,
 Cotesworth Down/Kensington Manor Well# 2, P05
 Wake County, Water System No: NC0392125

Dear Mr. Hardy:

Aqua North Carolina, Inc. (Aqua) received the above-referenced letter dated February 8, 2016, regarding elevated concentrations of iron (Fe) and manganese (Mn) at Cotesworth Down/Kensington Manor Well #2, P05. The Cotesworth Down/Kensington Manor master system is comprised of four wells and four points of entry (POE). The current number of customers served is 192 and the system is approved to serve 192 connections. The table below outlines the run time and the latest iron and manganese concentration collected as part of the ongoing Inorganic Chemical Analyses (IOC) at Well #2, P05.

UPDATED QUARTERLY STATUS REPORT

TABLE 1: Run Time and IOC Analysis

Well Name and No.	Capacity (gpm)	12-Month Avg Pump Runtime (hrs/day)	Most Recent Inorganic Sampling Results	
	Approved		Fe (mg/L)	Mn (mg/L)
Cotesworth Down, Well #2, P05 (Samples collected on 2/14/14)	33	4.2	0.8	0.20
Cotesworth Down, Well #2, P05 (Turbidity samples collected on 1/16/17)	33	3.9	<u>Raw</u> 5.7 NTU	<u>POE</u> 0.047 NTU
Cotesworth Down, Well #2, P05 (Samples collected for Fe and Mn on 2/6/17)	33	4.1	<u>Fe</u> 1.17	<u>Mn</u> 0.232
Cotesworth Down, Well #2, P05 (Turbidity samples collected 5/10/17)	33	3.8	<u>Raw</u> 6.5 NTU	<u>POE</u> .46 NTU

Page Two
Cotesworth Down/Kensington Manor Well #2, P05
June 30, 2017

System Flushing

The Cotesworth Downs distribution system was most recently flushed the week of April 10, 2017 and is scheduled to be flushed again during the spring of 2018.

Discolored Water Complaints

Aqua received three customer complaints from the Cotesworth water system since the last update in March 2017.

Corrective Actions

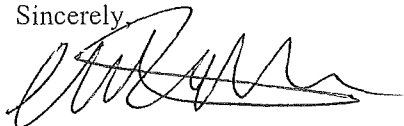
Analysis of the iron and manganese levels reveals the well has elevated levels of iron and manganese at Cotesworth Down/Kensington Manor Well #2 (P05). Since then Aqua has flushed the distribution system annually and will continue to flush the distribution system at this reoccurring frequency. In an effort to ensure that the drinking water was not discolored due to the presence of the minerals, Aqua started feeding SeaQuest in February 6, 2014. A cartridge filter was also installed in 2014 to better manage the high concentrations of iron and manganese.

Aqua postponed the cleaning and inspection of the 5,400 gallon hydro pneumatic tank at located at Well #1 after the POE samples revealed no problems. The tank cleaning and inspection will be reassessed following the next round of sampling.

Aqua collected special turbidity samples on May 10, 2017, from the raw water and from the point of entry and the results are shown in the table above. Aqua is using a performance indicator of 1.0 Nephelometric Turbidity Unit (NTU) or less as a measure to the effectiveness of the SeaQuest. Sequestering with a polyphosphate does not physically remove iron and manganese; hence the reason for the elevated iron and manganese concentrations which are shown in the last IOC result. The intention of sequestering is to hold these two naturally occurring minerals in solution and prevent them from being oxidized by chlorine. Also, there is the intention of improving clarity and reducing and or eliminating customer complaints of the discolored water they may experience.

Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact me at (919) 653-6964.

Sincerely,



Moses A. Thompson
Director of Operations
Aqua North Carolina, Inc.

MAT/rl



June 30, 2017

Mr. W. Allen Hardy
 Engineering Supervisor
 Public Water Supply Section
 Raleigh Regional Office, NCDEQ
 1628 Mail Service Center
 Raleigh, NC 27699-1628

Re: Notice of Deficiency – Quarterly Update
 Iron and Manganese Concentration
 Duncan Ridge Subdivision, Wake County
 WSF ID No.: Well #5, P05
 Water System No: NC4092063

Dear Mr. Hardy:

Aqua North Carolina, Inc. (Aqua) received the above-referenced letter dated July 12, 2016, regarding elevated concentrations of Iron (Fe) and Manganese (Mn) at Duncan Ridge Well #5, P05. The Duncan Ridge water system is comprised of three active wells and two points of entry (POE). The current number of customers served is 87 and the system is approved to serve 90 connections. The table below outlines the run time and the latest iron and manganese concentrations collected as part of the ongoing Inorganic Chemical Analyses (IOC) samples collected at Well #5, P05.

UPDATED QUARTERLY STATUS REPORT

TABLE 1: Run Time and IOC Analysis

Well Name and No.	Capacity (gpm)	12-Month Avg. Pump Runtime (hrs/day)	Most Recent Inorganic Sampling	
	Approved		Fe (mg/L)	Mn (mg/L)
Duncan Ridge, Well #5, P05 (Samples collected on 4/29/15)	33	2.8	1.08	0.3
Duncan Ridge, Well #5 PO5 (Samples collected on 11/8/16)	33	.97		POE = 6.3 NTU
Duncan Ridge, Well #5 PO5 (Samples collected on 3/8/17)	33	.97		POE = 1.8 NTU

Page Two
Duncan Ridge Subdivision, Well #5, P05
June 30, 2017

Duncan Ridge, Well #5 P05 (samples collected on 6/16/17)	33	1.66	<u>Raw</u> 9.1 NTU	<u>POE</u> 0.83 NTU
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System Flushing

The Duncan Ridge water system was flushed in April 2017 and is scheduled to be flushed again in April 2018.

Discolored Water Complaints

Aqua received zero customer complaints from the Duncan Ridge water system since the last update in March 2017.

Corrective Actions

Analysis of the iron and manganese levels reveals the well has elevated concentration levels of iron and manganese at Well #5. In an effort to ensure that the drinking water was not discolored due to the presence of the minerals, Aqua began feeding SeaQuest in August 2014. Since then, Aqua has flushed the distribution system annually and will continue to flush the distribution system at this reoccurring frequency. The use of Well #5 is limited in use due to system demand. On March 3, 2017, Aqua installed an automatic blow-off at the wellhead, which is equipped with a solenoid valve and actuator to discharge water at the beginning of each pump cycle. The installation of this equipment will allow the water to clear before entering the treatment, subsequently allowing the treatment to be more effective.

On May 16, 2017 Aqua collected a special point of entry sample for turbidity and the results are shown in the table above. Aqua is using a performance indicator of 1.0 Nephelometric Turbidity Unit (NTU) or less as a measure to the effectiveness of the SeaQuest. Aqua will continue to collect and monitor monthly raw and point of entry turbidity samples.

Sequestering with a polyphosphate does not physically remove iron and manganese; hence the reason for the elevated iron and manganese concentrations which are shown in the last IOC result. The intention of sequestering is to hold these two naturally occurring minerals in solution and prevent them from being oxidized by chlorine. Also, there is the intension of improving clarity and reducing and or eliminating customer complaints of the discolored water they may experience.

Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact me at (919) 653-6964.

Sincerely,

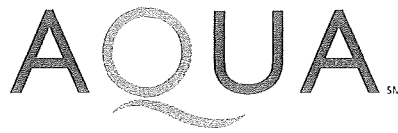


Moses A. Thompson
Director of Operations
Aqua North Carolina, Inc.

MAT/rl

OFFICIAL COPY

Sep 19 2018



June 30, 2017

Mr. W. Allen Hardy
 Engineering Supervisor
 Public Water Supply Section
 Raleigh Regional Office, NCDEQ
 1628 Mail Service Center
 Raleigh, NC 27699-1628

Re: Notice of Deficiency – Quarterly Update
 Iron and Manganese Concentration
 Eagle Creek Subdivision, Wake County
 WSF ID No.: Well #3, P03
 Water System No: NC4392128

Dear Mr. Hardy:

Aqua North Carolina, Inc. (Aqua) received the above-referenced letter dated July 12, 2016, regarding elevated concentrations of Iron (Fe) and Manganese (Mn) at Eagle Creek Well #3, P03. The Eagle Creek water system is comprised of three active wells and three points of entry (POE). The current number of customers served is 89 and the system is approved to serve 89 connections. The table below outlines the run time and the latest iron and manganese concentrations collected as part of the ongoing Inorganic Chemical Analyses (IOC) samples collected at Well #3, P03.

UPDATED QUARTERLY STATUS REPORT

TABLE 1: Run Time and IOC Analysis

Well Name and No.	Capacity (gpm)	12-Month Avg. Pump Runtime (hrs/day)	Most Recent Inorganic Sampling	
	Approved		Fe (mg/L)	Mn (mg/L)
Eagle Creek, Well #3, P03 (Samples collected on 2/19/14)	29	9.7	0.9	0.13
Eagle Creek, Well #3 (collected 11/11/2016)	29	6.75	<0.50 NTU	

System Flushing

The Eagle Creek water system was flushed in April 2017 and is scheduled to be flushed again in April 2018.

Page Two
Eagle Creek Subdivision, Well #3, P03
June 30, 2017

Discolored Water Complaints

Aqua received one customer complaint from the Eagle Creek water system since the update provided in March 2017. This complaint was received on April 21, 2017, which was during the time of the annual flushing and not necessarily indicative of the current on-going water quality in this system.

Corrective Actions

Analysis reveals the well has elevated concentration levels of iron and manganese at Well #3. In an effort to ensure that the drinking water was not discolored due to the presence of the minerals, Aqua began feeding SeaQuest in September 2015. Since then Aqua has flushed the distribution system annually and will continue to flush the distribution system at this reoccurring frequency. Due to annual flushing and the switch to SeaQuest, the number of customer complaints has decreased over the last 18 months. Aqua planned to install an automatic blow-off at the wellhead, which is equipped with a solenoid valve and actuator to discharge water at the beginning of each pump cycle; however, based on the effectiveness of SeaQuest as noted above, this project was deferred to the third quarter of 2017 to allow for prioritization of other filter installation projects. The installation of this equipment will allow the water to clear before entering treatment, subsequently allowing the treatment to be more effective.

Aqua collected a special sample for turbidity from the point of entry and the result is reflected in the table above. Aqua is using a performance indicator of 1.0 Nephelometric Turbidity Unit (NTU) or less as a measure to the effectiveness of the SeaQuest.

Sequestering with a polyphosphate does not physically remove iron and manganese; hence the reason for the elevated iron and manganese concentrations which are shown in the last IOC result. The intention of sequestering is to hold these two naturally occurring minerals in solution and prevent them from being oxidized by chlorine. Also, there is the intention of improving clarity and reducing and or eliminating customer complaints of the discolored water they may experience.

Based on the updated information provided above, Aqua requests that the requirement to submit further quarterly status reports be discontinued.

Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact me at (919) 653-6964.

Sincerely,



Moses A. Thompson
Director of Operations
Aqua North Carolina, Inc.

MAT/rl



June 30, 2017

Mr. W. Allen Hardy
 Engineering Supervisor
 Public Water Supply Section
 1628 Mail Service Center
 Raleigh, NC 27699-1628

Re: Notice of Deficiency – Quarterly Status Report
 Iron and Manganese Concentration
 Fairview Wooded Acres Subdivision, Wake County
 WSF ID No.: Well #2, P02
 Water System No: NC0392129

Dear Mr. Hardy:

Aqua North Carolina, Inc. (Aqua) received the above-referenced letter dated February 24, 2016, regarding elevated concentrations of Iron (Fe) and Manganese (Mn) at Fairview Wooded Acres Well #2, P02. The Fairview Wooded Acres water system is comprised of four active wells and three points of entry (POE). The current number of customers served is 119 and the system is approved to serve 134 connections. The table below outlines the run time and the latest iron and manganese concentrations collected as part of the ongoing Inorganic Chemical Analyses (IOC) samples collected at Well #2, P02.

UPDATED QUARTERLY STATUS REPORT

TABLE 1: Run Time and IOC Analysis

Well Name and No.	Capacity (gpm)	12-Month Avg. Pump Runtime (hrs/day)	Most Recent Inorganic Sampling Results	
	Approved		Fe (mg/L)	Mn (mg/L)
Fairview Well #2, P02 (Samples collected January 20, 2015)	16	0	1.24	.0642
Updated Information (Samples collected January 20, 2015)	16	0	Same as above	Same as above

Aqua collected IOC compliance samples on January 20, 2015, and the results are shown in the table above. Well #2 does not run on a regular basis because of system demand and operates in back-up mode. In the event a back-up well is needed, the well will be ready for use if it needs to be placed into service.

Page Two
Fairview Wooded Acres Subdivision Well #2, P02
June 30, 2017

Flushing

Fairview Wooded Acres was last flushed in June 2016, and is planned to be flushed again in the summer of 2017.

Customer Complaints

Aqua has received zero customer complaints from the Fairview Wooded Acres water system since the last updated provided in March 2017.

Based on the information provided above, Aqua requests that this Notice of Deficiency be rescinded as well as the requirement to submit further quarterly status reports.

Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact me at (919) 653-6964.

Sincerely,



Moses A. Thompson
Director of Operations
Aqua North Carolina, Inc.

MAT/rl



June 30, 2017

Mr. W. Allen Hardy
 Engineering Supervisor
 Public Water Supply Section
 Raleigh Regional Office, NCDEQ
 1628 Mail Service Center
 Raleigh, NC 27699-1628

Re: Notice of Deficiency – Quarterly Update
 Iron and Manganese Concentration
 Forrest Glen Subdivision, Wake County
 WSF ID No.: Well #1, P01
 Water System No: NC4392142

Dear Mr. Hardy:

Aqua North Carolina, Inc. (Aqua) received the above-referenced letter dated July 12, 2016, regarding elevated concentrations of Iron (Fe) and Manganese (Mn) at Forrest Glen Well #1, P01. The Forrest Glen water system is comprised of two active wells and two points of entry (POE). The current number of customers served is 108 and the system is approved to serve 109 connections. The table below outlines the run time and the latest iron and manganese concentrations collected as part of the ongoing Inorganic Chemical Analyses (IOC) samples collected at Well #1, P01.

UPDATED QUARTERLY STATUS REPORT

TABLE 1: Run Time and IOC Analysis

Well Name and No.	Capacity (gpm)	12-Month Avg. Pump Runtime (hrs/day)	Most Recent Inorganic Sampling	
	Approved		Fe (mg/L)	Mn (mg/L)
Forrest Glen Master, Well #1, P01 (Samples collected on 4/13/15)	34	0.9	1.39	0.155

Page Two
Forrest Glen Master System, Well #1, P01
June 30, 2017

System Flushing

At a minimum, Aqua flushes the Forrest Glen water system on an annual basis with the most recent flushing occurring March 28 through 31, 2017.

The hydro-pneumatic tank was cleaned in February 2015.

Discolored Water Complaints

Aqua has received one customer complaint regarding discolored water from the Forrest Glen water system since the last update provided in March 2017.

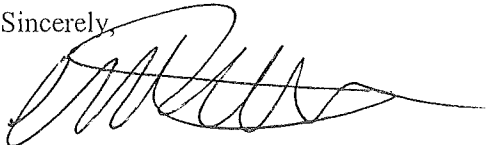
Corrective Actions

Analysis reveals the well has elevated concentration levels of iron and manganese at Well #1. In an effort to ensure the drinking water is not discolored due to the presence of these minerals, Aqua began feeding SeaQuest in June 2014. Harmsco particulate filters (5 micron) were additionally installed at both wells in February 2015. The amount of minerals collected on these filters caused each filter to collapse within one week of installation; Aqua elected to utilize and installed a 20 micron filter at that time. Aqua prepared a request to the Public Staff of the North Carolina Utilities Commission for a greensand filtration system at Well #2, which has the larger capacity of the two wells. This information was provided by Aqua on July 18, 2016 and additional filtration is still being considered but Aqua and the Public Staff have not yet reached agreement to proceed. Aqua intends to limit the use of Well #1, which will be used as a backup well. Aqua will continue to flush the system at least annually and optimize the sequestration at Well #1 and #2 in Forrest Glen. Since there is no planned regular use of Well #1, Aqua will not be collecting special water samples for turbidity.

Sequestering with a polyphosphate does not physically remove iron and manganese; hence the reason for the elevated iron and manganese concentrations which are shown in the last IOC result. The intention of sequestering is to hold these two naturally occurring minerals in solution and prevent them from being oxidized by chlorine. Also, there is the intention of improving clarity and reducing and or eliminating customer complaints of the discolored water they may experience.

Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact me at (919) 653-6964.

Sincerely,



Moses A. Thompson
Director of Operations
Aqua North Carolina, Inc.

MAT/rl



June 30, 2017

Mr. W. Allen Hardy
 Engineering Supervisor
 Public Water Supply Section
 Raleigh Regional Office, NCDEQ
 1628 Mail Service Center
 Raleigh, NC 27699-1628

Re: Notice of Deficiency – Quarterly Update
 Iron and Manganese Concentration
 Galloway Subdivision, Wake County
 WSF ID No.: Well #2, P02
 Water System No: NC4092027

Dear Mr. Hardy:

Aqua North Carolina, Inc. (Aqua) received the above-referenced letter dated July 12, 2016, regarding elevated concentrations of Iron (Fe) and Manganese (Mn) at Galloway Well #2, P02. The Galloway water system is comprised of two active wells and two points of entry (POE). The current number of customers served is 91 and the system is approved to serve 91 connections. The table below outlines the run time and the latest iron and manganese concentrations collected as part of the ongoing Inorganic Chemical Analyses (IOC) samples collected at Well #2, P02.

UPDATED QUARTERLY STATUS REPORT

TABLE 1: Run Time and IOC Analysis

Well Name and No.	Capacity (gpm)	12-Month Avg. Pump Runtime (hrs/day)	Most Recent Inorganic Sampling Results	
	Approved		Fe (mg/L)	Mn (mg/L)
Galloway, Well #2, P02 (Samples collected on 4/23/15)	31	.25	1.7	.27
Well#2 PO2 (Samples collected 12/21/2016)	31	0.0	1.54	.34

Page Two
Galloway Well #2, P02
June 30, 2017

Sample collected 2/1/17	31	0	Raw 9.0	
Sample collected 4/27/17	31	.6	<u>Raw</u> <u>11</u>	<u>POE</u> 1.8

System Flushing

The Galloway water system is flushed on an annual basis with the most recent flushing occurring during the week of June 5, 2017. Aqua will continue to flush the distribution system annually.

The hydropneumatic tank was cleaned in February 2016.

Discolored Water Complaints

Aqua has received two customer complaints since the update provided in March 2017.

Corrective Actions

Analysis of the iron and manganese levels reveals the well has elevated concentration of iron and manganese at Well #2. In an effort to ensure that the drinking water was not discolored due to the presence of the minerals, Aqua started feeding SeaQuest in September 2015. In April 2017, Aqua collected a sample for turbidity and the result is shown in the table above. Well #2 only runs when there is very low pressure experienced at the Galloway water system. Going forward, Aqua will collect both a raw and point of entry turbidity sample to determine the effectiveness of the cartridge filter, which was installed as a temporary solution in case Well #2 was needed during high peak demands in the Galloway water system. Engineering plans and specifications were initially planned to be submitted to NCDEQ in the 2nd quarter of 2017 for the addition of a greensand filter at Well #2; however, Aqua identified a more cost effective solution incorporating the use of a drip irrigation system for the backwash water that required a change to the permitting and its timing. This filter is now scheduled to be completed in the fourth quarter of 2017.

Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact me at (919) 653-6964.

Sincerely,



Moses A. Thompson
Director of Operations
Aqua North Carolina, Inc.

MAT/rl



June 30, 2017

Mr. W. Allen Hardy
 Engineering Supervisor
 Public Water Supply Section
 1628 Mail Service Center
 Raleigh, NC 27699-1628

Re: Notice of Deficiency – Quarterly Update
 Iron and Manganese Concentration
 Glendale Master System Subdivision
 WSF ID No.: Well #1 (Glendale) P01 and Well #1 (Chari Heights) P02
 Water System No: NC0392293

Dear Mr. Hardy:

Aqua North Carolina, Inc. (Aqua) received the above-referenced letter dated July 12, 2016, regarding elevated concentrations of Iron (Fe) and Manganese (Mn) at Glendale Master System Well #1, (Glendale) P01 and Well #1 (Chari Heights) P02. The Glendale Master System is comprised of six active wells and six points of entry (POE). The current number of customers served is 250 and the system is approved to serve 253 connections. The table below outlines the run time and the latest iron and manganese concentrations collected as part of the ongoing Inorganic Chemical Analyses (IOC) samples collected at Well #1, (Glendale) P01 and Well #1 (Chari Heights) P02.

UPDATED QUARTERLY STATUS REPORT

TABLE 1: Run Time and IOC Analysis

Well Name and No.	Capacity (gpm)	12-Month Avg. Pump Runtime (hrs/day)	Most Recent Inorganic Sampling Results	
	Approved		Fe (mg/L)	Mn (mg/L)
Glendale Master Well #1, P01 (Samples collected October 2014)	45	0	1.3	0.175
Chari Heights, Well #1, P02 (TP#1)(Samples collected October 2014)	40	3.5	1.99	0.024

Glendale Well #1 PO1 and Chari Heights Well #1 PO2
 June 30, 2017

Chari Heights, Well #1, P02 (Samples collected November 4, 2016)	40	5.0	Well Head Turbidity <0.5	
Chari Heights, Well #1, P02 (Sample collected Jan. 6, 2017)	40	5.0	Raw = 1.4 NTU	
Chari Heights Well #1, P02 (Samples collected April 18, 2017)	40	5.7	Raw = 1.6 NTU	POE <0.50 NTU

Flushing

The Glendale Master System was flushed in March 2017, and is scheduled to be flushed again during the first part of 2018.

Discolored Water Complaints

Aqua received zero customer complaints from the Glendale Master System since the last update provided in March 2017.

Corrective Actions

Analysis of the iron and manganese levels reveals the well has some manganese and an elevated concentration of iron at both wells. In an effort to ensure that the drinking water was not discolored due to the presence of the minerals, Aqua started feeding SeaQuest in September 2015. Since then Aqua has flushed the distribution system annually and will continue to flush the distribution system at this reoccurring frequency.

Aqua limits the use of Glendale Well #1, which does not run on a regular basis and operates in back-up mode. In the event a back-up well is needed, the well will be ready for use if it needs to be placed into service.

Installation of a cartridge filter at Chari Heights Well #1 was completed on March 28, 2017.

Samples will be collected from the raw water and from the point of entry on a quarterly basis. Glendale Well #1 is currently offline, therefore, no samples have been taken, samples for Chari Heights Well #1 were taken April 18, 2017, and the results are shown in the table above. Aqua plans to use a performance indicator of 1.0 Nephelometric Turbidity Unit (NTU) or less as a measure to the effectiveness of the SeaQuest.

Sequestering with a polyphosphate does not physically remove iron and manganese; hence the reason for the elevated iron and manganese concentrations which are shown in the last IOC result. The intention of sequestering is to hold these two naturally occurring minerals in solution and prevent them from being oxidized by chlorine. Also, there is the intention of improving clarity and reducing and or eliminating customer complaints of the discolored water they may experience.

Based on the lack of customer complaints, the effectiveness of SeaQuest and the corresponding low turbidity result, Aqua requests that the requirement to submit further quarterly status reports be discontinued.

Glendale Well #1 PO1 and Chari Heights Well #1 PO2
June 30, 2017

Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact me at (919) 653-6964.

Sincerely,



Moses A. Thompson
Director of Operations
Aqua North Carolina, Inc.

MAT/rl



June 30, 2017

Mr. W. Allen Hardy
 Engineering Supervisor
 Public Water Supply Section
 1628 Mail Service Center
 Raleigh, NC 27699-1628

Re: Notice of Deficiency – Quarterly Update
 Iron and Manganese Concentration
 Glendale Master System Subdivision
 Wake County WSF ID No.: Well # 1, TPI
 Water System No: NC0392293 Dear

Dear Mr. Hardy:

Aqua North Carolina, Inc. (Aqua) received the above-referenced letter dated February 24, 2016, regarding elevated concentrations of Iron (Fe) and Manganese (Mn) at Glendale Master System Well #1, TPI. The Glendale Master System is comprised of six active wells and six points of entry (POE). The current number of customers served is 250 and the system is approved to serve 253 connections. The table below outlines the run time and the latest iron and manganese concentrations collected as part of the ongoing Inorganic Chemical Analyses (IOC) samples collected at Well #1, TPI.

UPDATED QUARTERLY STATUS REPORT

TABLE 1: Run Time and IOC Analysis

Well Name and No.	Capacity (gpm)	12-Month Avg. Pump Runtime (hrs/day)	Most Recent Inorganic Sampling Results	
	Approved		Fe (me/L)	Mn (me/L)
Glendale Master Hickory Creek Well # 1 (TP#1) (Samples collected October 2014)	45	0	1.3	0.175
Glendale Master Hickory Creek Well #1 (TP#1) (Samples collected October 6, 2016)	45	4.36	0.72	0.085

Page Two
Glendale Master System Well #1, TP1
June 30, 2017

Glendale Master Hickory Creek Well #1 (TP#1) (Samples collected 11/4/2016	45	4.36		POE= \leq 0.5 NTU
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System Flushing

The Glendale Master System was flushed the week of March 6, 2017, and is scheduled to be flushed again in first part of 2018.

Discolored Water Complaints

Aqua received zero customer complaints from the Glendale Master System since the last update provided in March 2017.

Corrective Actions

Glendale Well #1 exceeded the secondary maximum contaminant level (sMCL) for iron and manganese. Samples were collected at the entry point for Hickory Creek Well #1 on October 6, 2016, and the results are shown in the table above. Aqua also collected a special sample for turbidity from the point of entry on November 4, 2016, and the result is shown in the table above. Aqua is using a performance indicator of 1.0 Nephelometric Turbidity Unit (NTU) or less as a measure to the effectiveness of the SeaQuest.

Based on the lack of customer complaints, effectiveness of SeaQuest and the corresponding low turbidity result, Aqua requests that the requirement to submit further quarterly status reports be discontinued.

Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact me at (919) 653-6964.

Sincerely,



Moses A. Thompson
Director of Operations
Aqua North Carolina, Inc.

MAT/rl

OFFICIAL COPY

Sep 19 2018



June 30, 2017

Mr. W. Allen Hardy
 Engineering Supervisor
 Public Water Supply Section
 Raleigh Regional Office, NCDEQ
 1628 Mail Service Center
 Raleigh, NC 27699-1628

Re: Notice of Deficiency
 Iron and Manganese Concentration
 Hampton Park Subdivision, Wake County
 WSF ID No.: Well #6, TP2
 Water System No: NC4092084

Dear Mr. Hardy:

Aqua North Carolina, Inc. (Aqua) received the above-referenced letter dated July 12, 2016, regarding elevated concentrations of Iron (Fe) and Manganese (Mn) at Hampton Park Well #6, TP2. The Hampton Park water system is comprised of two active wells and two points of entry (POE). The current number of customers served is 101 and the system is approved to serve 101 connections. The table below outlines the run time and the latest iron and manganese concentrations collected as part of the ongoing Inorganic Chemical Analyses (IOC) samples collected at Well #6, TP2.

Updated Quarterly Status Report

TABLE 1: Run Time and IOC Analysis

Well Name and No.	Capacity (gpm)	12-Month Avg. Pump Runtime (hrs/day)	Most Recent Inorganic Sampling Results 1/12/15	
	Approved		Fe (mg/L)	Mn (mg/L)
Hampton Park, Well #6, TP2 (Samples collected on 1/12/15)	88	1.3	0.9	0.23
Hampton Park, Well #6, TP2 (Special raw samples collected on 5/26/16)	88	1.5	1.28	0.23

Page Two
Hampton Park Subdivision, Well #6, TP2
June 30, 2017

System Flushing

The Hampton Park water system is flushed on an annual basis with the most recent flushing occurring in November 2016. The next scheduled flushing is for the winter of 2017.

Discolored Water Complaints

Aqua has received zero customer complaints from the Hampton Park water system since the last update provided in March 2017.

Corrective Actions

Analysis of the iron and manganese levels reveals the well has some iron and an elevated concentration of manganese at Well #6. In an effort to ensure that the drinking water was not discolored due to the presence of the minerals, Aqua began feeding SeaQuest in October 2014. Since then Aqua has flushed the distribution system annually and will continue to flush the distribution system at this reoccurring frequency. On December 30, 2016, Aqua filed for approval from the North Carolina Utilities Commission (Commission) for the installation of a filtration system at Hampton Park Well #6. This request was approved by the Commission in the Order issued January 18, 2017. Anticipated completion date for the installation of the filtration system is March 2018.

Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact me at (919) 653-6964.

Sincerely,



Moses A. Thompson
Director of Operations
Aqua North Carolina, Inc.

MAT/rl



June 30, 2017

Mr. W. Allen Hardy
 Engineering Supervisor
 Public Water Supply Section
 Raleigh Regional Office, NCDEQ
 1628 Mail Service Center
 Raleigh, NC 27699-1628

Re: Notice of Deficiency – Quarterly Update
 Iron and Manganese Concentration
 High Grove Subdivision, Wake County
 WSF ID No.: Well #1, P01
 Water System No: NC4092096

Dear Mr. Hardy:

Aqua North Carolina, Inc. (Aqua) received the above-referenced letter dated July 12, 2016, regarding elevated concentrations of Iron (Fe) and Manganese (Mn) at High Grove Well #1, P01. The High Grove water system is comprised of three active wells and three points of entry (POE). The current number of customers served is 142 and the system is approved to serve 155 connections. The table below outlines the run time and the latest iron and manganese concentrations collected as part of the ongoing Inorganic Chemical Analyses (IOC) samples collected at Well #1, P01.

UPDATED QUARTERLY STATUS REPORT

TABLE 1: Run Time and IOC Analysis

Well Name and No.	Capacity (gpm)	12-Month Avg. Pump Runtime (hrs/day)	Most Recent Inorganic Sampling Results	
	Approved		Fe (mg/L)	Mn (mg/L)
High Grove, Well #1, P01 (Samples collected on 5/4/2016)	48	3.2	0.369	0.177
High Grove, Well #1, PO1 (Samples collected on 10/13/16)	48	0	Raw <0.50 NTU	POE = 0.72 NTU
High Grove, Well #1, PO1 (Samples collected on 3/8/2017)	48	0	Raw <0.50 NTU	POE = <0.50 NTU

Page Two
High Grove Subdivision, Well #1, P01
June 30, 2017

System Flushing

The High Grove water system is flushed on an annual basis with the most recent flushing occurred May 8 through 12, 2017. The next scheduled flushing is Q2 2018.

Discolored Water Complaints

Aqua received four customer complaints from the High Grove water system since the last update provided in March 2017. Aqua is in the process of putting together a submittal package to the Public Staff of the North Carolina Utilities Commission for consideration of installing a greensand filtration system. We anticipate completing our formal submittal by July or August 2017.

Corrective Actions

Analysis reveals the well has elevated concentration of iron and manganese at Well #1. In an effort to ensure that the drinking water was not discolored due to the presence of the minerals, Aqua started feeding SeaQuest in September 2015. Since then Aqua has flushed the distribution system annually and will continue to flush the distribution system at this reoccurring frequency. Aqua collected special samples for turbidity from the wellhead and from the point of entry and the results are shown in the table above. Aqua is using a performance indicator of 1.0 Nephelometric Turbidity Unit (NTU) or less as a measure to the effectiveness of the SeaQuest.

Sequestering with a polyphosphate does not physically remove iron and manganese; hence the reason for the elevated iron and manganese concentrations which are shown in the last IOC result. The intention of sequestering is to hold these two naturally occurring minerals in solution and prevent them from being oxidized by chlorine. Also, there is the intention of improving clarity and reducing and or eliminating customer complaints of the discolored water they may experience.

Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact me at (919) 653-6964.

Sincerely,



Moses A. Thompson
Director of Operations
Aqua North Carolina, Inc.

MAT /rl

OFFICIAL COPY

Sep 19 2018



June 30, 2017

Mr. W. Allen Hardy
 Engineering Supervisor
 Public Water Supply Section
 Raleigh Regional Office, NCDEQ
 1628 Mail Service Center
 Raleigh, NC 27699-1628

Re: Notice of Deficiency – Quarterly Update
 Iron and Manganese Concentration
 High Meadows Subdivision, Wake County
 WSF ID No.: Well #2, TM1
 Water System No: NC0392334

Dear Mr. Hardy:

Aqua North Carolina, Inc. (Aqua) received the above-referenced letter dated July 12, 2016, regarding elevated concentrations of Iron (Fe) and Manganese (Mn) at High Meadows Well #2, TM1. The High Meadows water system is comprised of two active wells and one point of entry (POE). The current number of customers served is 133 and the system is approved to serve 149 connections. The table below outlines the run time and the latest iron and manganese concentrations collected as part of the ongoing Inorganic Chemical Analyses (IOC) samples collected at Well #2, TM1.

UPDATED QUARTERLY STATUS REPORT

TABLE 1: Run Time and IOC Analysis

Well Name and No.	Capacity (gpm)	12-Month Avg. Pump Runtime (hrs/day)	Most Recent Inorganic Sampling	
	Approved		Fe (mg/L)	Mn (mg/L)
High Meadows, Well #2, TM1 (Samples collected on 4/23/15)	64	4.7	.95	.13
High Meadows, Well #2, TM1 (Samples collected on 12/20/2016)	64	5.5 Aug – Nov.	Turbidity Well Head 8.7	Turbidity POE .95
High Meadows, Well #2 (Samples collected on 3/7/2017)	64	3.6	Turbidity Well Head 6.0 NTU	Turbidity POE 1.1 NTU

Page Two
High Meadows Subdivision, Well #2, TM1
June 30, 2017

High Meadows, Well #2 (Samples collected on 6/16/17)	64	4.2	Turbidity Well Head 16 NTU	Turbidity POE .60 NTU
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System Flushing

The High Meadows water system is flushed on an annual basis with the most recent flushing occurring in April 2017. The next scheduled flushing will be during the spring of 2018.

Discolored Water Complaints

Aqua received zero customer complaints for discolored water from the High Meadows water system since the last update in March 2017.

Corrective Actions

Analysis reveals the well has elevated concentration of iron and manganese at Well #2. In an effort to ensure that the drinking water was not discolored due to the presence of the minerals, Aqua began feeding SeaQuest in October 2013. Since then Aqua has flushed the distribution system annually and will continue to flush the distribution system at this reoccurring frequency. A cartridge filter was installed in September 2014. Aqua collected special samples for turbidity from the wellhead and from the point of entry in December 2016, March 2017 and most recently on June 16, 2017. The results are shown in the table above. Aqua is using a performance indicator of 1.0 Nephelometric Turbidity Unit (NTU) or less as a measure to the effectiveness of the SeaQuest.

Based on the effectiveness of the SeaQuest and the cartridge filter and the corresponding turbidity results at the point of entry, Aqua proposed taking one more quarterly sample in the second quarter of 2017 to determine the effectiveness of the SeaQuest, which was taken June 17, 2017, and the results are shown in the table above.

Sequestering with a polyphosphate does not physically remove iron and manganese; hence the reason for the elevated iron and manganese concentrations which are shown in the last IOC result. The intention of sequestering is to hold these two naturally occurring minerals in solution and prevent them from being oxidized by chlorine. Also, there is the intention of improving clarity and reducing and or eliminating customer complaints of the discolored water they may experience.

Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact me at (919) 653-6964.

Sincerely,



Moses A. Thompson
Director of Operations
Aqua North Carolina, Inc.

SVB/rl

OFFICIAL COPY

Sep 19 2018



June 30, 2017

Mr. W. Allen Hardy
 Engineering Supervisor
 Public Water Supply Section
 Raleigh Regional Office, NCDEQ
 1628 Mail Service Center
 Raleigh, NC 27699-1628

Re: Notice of Deficiency – Quarterly Update
 Iron and Manganese Concentration
 Middle Creek Acres Subdivision, Wake County
 WSF ID No.: Well #1, P01
 Water System No: NC0392370

Dear Mr. Hardy:

Aqua North Carolina, Inc. (Aqua) received the above-referenced letter dated July 12, 2016, regarding elevated concentrations of Iron (Fe) and Manganese (Mn) at Middle Creek Acres Well #1, P01. The Middle Creek Acres water system is comprised of one active well and one point of entry (POE). The current number of customers served is 12 and the system is approved to serve 23 connections. The table below outlines the run time and the latest iron and manganese concentrations collected as part of the ongoing Inorganic Chemical Analyses (IOC) samples collected at Well #1, P01.

UPDATED QUARTERLY STATUS REPORT

TABLE 1: Run Time and IOC Analysis

Well Name and No.	Capacity (gpm)	12-Month Avg. Pump Runtime (hrs/day)	Most Recent Inorganic Sampling	
	Approved		Fe (mg/L)	Mn (mg/L)
Middle Creek Acres, Well #1, P01 (Samples collected on 11/12/14)	Not specified, currently 15 gpm.	1.6	1.13	ND

Middle Creek Acres Subdivision, Well #1, P01
 June 30, 2017

TABLE 2: Turbidity Analyses

<u>Well Name and No.</u>	<u>Date Collected</u>	<u>Raw Water</u>	<u>Entry Turbidity Result</u>
Middle Creek Acres Well #1, P01	7/29/2016	26 NTU	17 NTU
Middle Creek Acres Well #1, P01	12/16/2016	1.5 NTU	1.7 NTU
Middle Creek Acres Well #1, P01	3/9/2017	1.2 NTU	0.61 NTU
Middle Creek Acres Well #1, P01	4/24/2017	1.1 NTU	<0.50 NTU
Middle Creek Acres Well #1, P01	5/10/2017	5.5 NTU	1.3 NTU

System Flushing

The Middle Creek Acres water system is flushed on an annual basis with the most recent flushing occurring the week of October 6, 2016. The next scheduled flushing will be during the fall of 2017.

Discolored Water Complaints

Aqua has received zero customer complaints from the Middle Creek Acres water system since the last update provided in March 2017.

Corrective Actions

Analysis of the iron and manganese levels reveals the well has elevated levels of iron concentration and no manganese at Well #1. In an effort to ensure that the drinking water was not discolored due to the presence of the minerals, Aqua started feeding SeaQuest in September 2015. Since then Aqua has flushed the distribution system annually and will continue to flush the distribution system at this reoccurring frequency. Samples for turbidity were collected from the wellhead and from the point of entry and are shown in the table above. In March, 2017 Aqua began monthly turbidity sampling and the results are shown in the table above. Aqua plans to use a performance indicator of 1.0 Nephelometric Turbidity Unit (NTU) or less as a measure to the effectiveness of the SeaQuest.

Sequestering with a polyphosphate does not physically remove iron and manganese; hence the reason for the elevated iron and manganese concentrations which are shown in the last IOC result. The intention of sequestering is to hold these two naturally occurring minerals in solution and prevent them from being oxidized by chlorine. Also, there is the intention of improving clarity and reducing and or eliminating customer complaints of the discolored water they may experience.

In October 2016, Aqua installed an automatic blow off that flushes the water from the well to the ground for a period of time before the water enters the distribution system. By doing this, Aqua has seen a reduction in the raw turbidity sample results which were 26 NTU in July 2016 to 5.5 NTU on May 10, 2017. Aqua continues to test the effectiveness of this flushing valve and adjusting the time to optimize the water quality. In addition, the SeaQuest feed rate has been increased, which is based on more recent inorganic analyses. On March 23, 2017, a cartridge filter was installed at Well #1.

Middle Creek Acres Subdivision, Well #1, P01
June 30, 2017

Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact me at (919) 653-6964.

Sincerely,

A handwritten signature in black ink, appearing to read 'M. Thompson', with a long horizontal flourish extending to the right.

Moses A. Thompson, Director of Operations
Aqua North Carolina, Inc.



June 30, 2017

Mr. W. Allen Hardy
 Engineering Supervisor
 Public Water Supply Section
 Raleigh Regional Office, NCDEQ
 1628 Mail Service Center
 Raleigh, NC 27699-1628

Re: Notice of Deficiency – Quarterly Update
 Iron and Manganese Concentration
 Northgate Subdivision, Wake County
 WSF ID No.: Well #1, P01
 Water System No: NC0392217

Dear Mr. Hardy:

Aqua North Carolina, Inc. (Aqua) received the above-referenced letter dated July 12, 2016, regarding elevated concentrations of Iron (Fe) and Manganese (Mn) at Northgate Well #1, P01. The Northgate water system is comprised of one active well and one point of entry (POE). The current number of customers served is 30 and the system is approved to serve 39 connections. The table below outlines the run time and the latest iron and manganese concentrations collected as part of the ongoing Inorganic Chemical Analyses (IOC) samples collected at Well #1, P01.

UPDATED QUARTERLY STATUS REPORT

TABLE 1: Run Time and IOC Analysis

Well Name and No.	Capacity (gpm)	12-Month Avg. Pump Runtime (hrs/day)	Most Recent Inorganic Sampling	
	Approved		Fe (mg/L)	Mn (mg/L)
Northgate, Well #1, P01 (Samples collected on 5/24/2016)	Not Specified	1.1	1.43	0.393
Northgate, Well #1 PO1 (Samples collected on 9/1/16)		.8		<u>POE</u> 0.75 NTU
Northgate, Well #1 PO1 (Samples collected on 12/20/2016)		0.85	<u>Raw</u> 4.2 NTU	<u>POE</u> 0.82 NTU

Northgate Subdivision, Well #1, P01
 June 30, 2017

Northgate, Well #1 PO1 (Samples collected on 03/8/2017)		0.83	<u>Raw</u> 5.8 NTU	<u>POE</u> 0.75 NTU
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System Flushing

The Northgate water system is flushed on an annual basis with the most recent flushing being September 2016. The next flushing is scheduled for the Fall of 2017.

Discolored Water Complaints

Aqua received one customer complaint from the Northgate water system since the last update provided in March 2017.

Corrective Actions

Analysis reveals the well has elevated concentration levels of iron and manganese at Well #1. In an effort to ensure that the drinking water was not discolored due to the presence of the minerals, Aqua began feeding SeaQuest in September 2015. Since then Aqua has flushed the distribution system annually and will continue to flush the distribution system at this reoccurring frequency. On December 20, 2016, and March 8, 2017, Aqua collected turbidity samples from the raw and point of entry and the results are shown in the table above. Aqua is using a performance indicator of 1.0 Nephelometric Turbidity Unit (NTU) or less as a measure to the effectiveness of the SeaQuest. Aqua has additionally installed a cartridge filter on this well in March 2017; however, Aqua is concerned that the GAC filter's replacement cycle may be shortened or become inoperable due to the levels of insoluble iron.

Aqua filed for approval from the North Carolina Utilities Commission (Commission) for the installation of a filtration system at Northgate Well #1 on December 30, 2016. This request was approved by the Commission in the Order issued January 18, 2017. This project to install green sand filtration has been placed on hold. This well is located near the Guilford Fibers Facility ("Facility"), which is subject to a Remedial Action Plan being formulated by the owner of the Facility with the Division of Waste Management of the North Carolina Department of Environmental Quality. The Facility's owner recently contacted Aqua to request that Aqua's well be closed so as to limit any impact it may have on the remedial activities. The Facility owner also claims to have arranged for alternative water service to Aqua's customers through the water system operated by the Town of Fuquay Varina, which is within feet of Aqua's distribution system. Aqua is trying to clarify whether the closing of this well will facilitate the Remedial Action Plan, whether an alternative water supply is – in fact – available and the proposed timing for providing alternative water service to Aqua's customers. While Aqua has not yet determined whether it is appropriate to close this well and allow customers to be served through an alternative source, we believe it would not be prudent to proceed with adding additional filtering for this system until we have had a chance to determine fully review what the Facility Owner is proposing. (Please note that we believe the current filtering on the well is working and addressing the removal of potential contaminants from the facility.

Northgate Subdivision, Well #1, P01
June 30, 2017

Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact me at (919) 653-6964.

Sincerely,



Moses A. Thompson
Director of Operations
Aqua North Carolina, Inc.

MAT/rl



June 30, 2017

Mr. W. Allen Hardy
 Engineering Supervisor
 Public Water Supply Section
 Raleigh Regional Office, NCDEQ
 1628 Mail Service Center
 Raleigh, NC 27699-1628

Re: Notice of Deficiency – Quarterly Update
 Iron and Manganese Concentration
 Olde South Trace Subdivision, Wake County
 WSF ID No.: Well #1, P01
 Water System No: NC4392131

Dear Mr. Hardy:

Aqua North Carolina, Inc. (Aqua) received the above-referenced letter dated July 12, 2016, regarding elevated concentrations of Iron (Fe) and Manganese (Mn) at Olde South Trace Well #1, P01. The Olde South Trace water system is comprised of one active well and one point of entry (POE). The current number of customers served is 30 and the system is approved to serve 32 connections. The table below outlines the run time and the latest iron and manganese concentrations collected as part of the ongoing Inorganic Chemical Analyses (IOC) samples collected at Well #1, P01.

UPDATED QUARTERLY STATUS REPORT

TABLE 1: Run Time and IOC Analysis

Well Name and No.	Capacity (gpm)	12-Month Avg. Pump Runtime (hrs/day)	Most Recent Inorganic Sampling	
	Approved		Fe (mg/L)	Mn (mg/L)
Olde South Trace, Well #1, P01 (Samples collected on 7/16/16)	34	1.9	1.33	0.3
Olde South Trace, Well #1, P01 (Samples collected on 11/11/16)	34	2		POE = 7.6 NTU
Olde South Trace, Well #1, P01 (Samples collected on 4/20/17)	34	2.2	Raw = 14 NTU	POE = 0.81 NTU

Page Two
Olde South Trace Subdivision, Well #1, P01
June 30, 2017

System Flushing

The Olde South Trace water system is flushed on an annual basis with the most recent flushing being December 2016. The next scheduled flushing is December 2017.

Discolored Water Complaints

Aqua has received zero complaints from the Olde South Trace water system since the last update provided in March 2017.

Corrective Actions

Analysis reveals the well has elevated concentrations of iron and manganese at Well #1. In an effort to ensure that the drinking water was not discolored due to the presence of the minerals, Aqua began feeding SeaQuest in July 2014. Aqua has committed to flushing the distribution system annually and will continue to flush the distribution system at this reoccurring frequency.

Aqua completed the installation of a cartridge filter at Well #1 on March 27, 2017. Special samples for turbidity were collected on April 20, 2017, and the results are shown in the table above. Aqua is using a performance indicator of 1.0 Nephelometric Turbidity Unit (NTU) or less as a measure to the effectiveness of the SeaQuest. Aqua will collect samples for turbidity and evaluate the effectiveness of the cartridge filter and SeaQuest.

Sequestering with a polyphosphate does not physically remove iron and manganese; hence the reason for the elevated iron and manganese concentrations which are shown in the last IOC result. The intention of sequestering is to hold these two naturally occurring minerals in solution and prevent them from being oxidized by chlorine. Also, there is the intention of improving clarity and reducing and or eliminating customer complaints of the discolored water they may experience.

Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact me at (919) 653-6964.

Sincerely,



Moses A. Thompson
Director of Operations
Aqua North Carolina, Inc.

MAT/rl



June 30, 2017

Mr. W. Allen Hardy
 Engineering Supervisor
 Public Water Supply Section
 Raleigh Regional Office, NCDEQ
 1628 Mail Service Center
 Raleigh, NC 27699-1628

Re: Notice of Deficiency – Quarterly Update
 Iron and Manganese Concentration
 River Oaks Subdivision, Wake County
 WSF ID No.: Well #3, P02
 Water System No: NC0392096

Dear Mr. Hardy:

Aqua North Carolina, Inc. (Aqua) received the above-referenced letter dated July 12, 2016, regarding elevated concentrations of Iron (Fe) and Manganese (Mn) at River Oaks Well #3, P02. The River Oaks water system is comprised of two active wells and two points of entry (POE). The current number of customers served is 47 and the system is approved to serve 47 connections. The table below outlines the run time and the latest iron and manganese concentrations collected as part of the ongoing Inorganic Chemical Analyses (IOC) samples collected at Well #3, P02.

UPDATED QUARTERLY REPORT

TABLE 1: Run Time and IOC Analysis

Well Name and No.	Capacity (gpm)	12-Month Avg. Pump Runtime (hrs/day)	Most Recent Inorganic Sampling Results 5/31/16	
	Approved		Fe (mg/L)	Mn (mg/L)
River Oaks, Well #3, P02 (Samples collected (Collected 05/31/2016)	50	0	1.0	.077
River Oaks, Well #3, P02 (Samples collected (Collected 12/5/2016)	50	0.20	Raw 13 NTU	POE 13 NTU
River Oaks, Well #3, P02 (Samples collected (Collected 03/07/2017)	50	0.0	Raw 21 NTU	POE 36 NTU

Page Two
River Oaks Subdivision, Well #3 P02
June 30, 2017

River Oaks, Well #3, P02 (Samples collected on 5/26/17)	50	0.0	Raw <.50	POE .51
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System Flushing

The River Oaks water system is flushed on an annual basis with the most recent flushing being May 30 through June 2, 2017. The next scheduled flushing will be in 2018.

Discolored Water Complaints

Aqua has received zero customer complaints from the River Oaks water system since the last update provided in March 2017.

Corrective Actions

Analysis of the iron and manganese levels reveals the well has elevated concentrations of iron and manganese at Well #3. In an effort to ensure that the drinking water was not discolored due to the presence of the minerals, Aqua began feeding SeaQuest in September 2015. Since then Aqua has flushed the distribution system annually and will continue to flush the distribution system at this reoccurring frequency. Well #3 will operate in the lag mode and will only be used during heavy peak demand. Samples were collected in May 2017 for turbidity from the raw water and from the point of entry and these results are reflected in the table above. Aqua plans to use a performance indicator of 1.0 Nephelometric Turbidity Unit (NTU) or less as a measure to the effectiveness of the SeaQuest.

Sequestering with a polyphosphate does not physically remove iron and manganese; hence the reason for the elevated iron and manganese concentrations which are shown in the last IOC result. The intention of sequestering is to hold these two naturally occurring minerals in solution and prevent them from being oxidized by chlorine. Also, there is the intention of improving clarity and reducing and or eliminating customer complaints of the discolored water they may experience.

Based on the well operating in a lag mode and zero customer complaints received since the last update in March 2017, Aqua requests that the requirement to submit further quarterly status reports be discontinued.

Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact me at (919) 653-6964.

Sincerely,

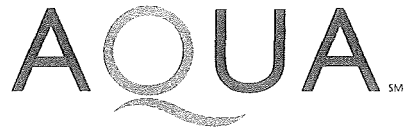


Moses A. Thompson
Director of Operations
Aqua North Carolina, Inc.

MAT/rl

OFFICIAL COPY

Sep 19 2018



June 30, 2017

Mr. W. Allen Hardy
 Engineering Supervisor
 Public Water Supply Section
 Raleigh Regional Office, NCDEQ
 1628 Mail Service Center
 Raleigh, NC 27699-1628

Re: Notice of Deficiency – Quarterly Update
 Iron and Manganese Concentration
 Saddleridge Subdivision, Wake County
 WSF ID No.: Well #20, P20
 Water System No: NC4392103

Dear Mr. Hardy:

Aqua North Carolina, Inc. (Aqua) received the above-referenced letter dated July 12, 2016, regarding elevated concentrations of Iron (Fe) and Manganese (Mn) at Saddleridge Well #20, P20. The Saddleridge water system is comprised of six active wells and five points of entry (POE). The current number of customers served is 169 and the system is approved to serve 194 connections. The table below outlines the run time and the latest iron and manganese concentrations collected as part of the ongoing Inorganic Chemical Analyses (IOC) samples collected at Well #20, P20.

UPDATED QUARTERLY STATUS REPORT

TABLE 1: Run Time and IOC Analysis

Well Name and No.	Capacity (gpm)	12-Month Avg. Pump Runtime (hrs/day)	Most Recent Inorganic Sampling	
	Approved		Fe (mg/L)	Mn (mg/L)
Saddleridge, Well #20, P20 (Samples collected on 4/14/15)	5	8.14	4.5	.032
Saddleridge, Well #20, P20 (Samples collected on 11/11/2016)	5	5.5	Raw=38 NTU	POE=25 NTU
Saddleridge, Well #20, P20 (Samples collected on 03/6/2017)	5	3.1	Raw < 0.5 NTU	POE 1.5 NTU

Page Two
Saddleridge Subdivision, Well # 20 P20
June 30, 2017

Saddleridge, Well #20, P20 (Samples collected on 4/26/17)	5	4.7	<u>Raw</u> ND	<u>POE</u> ND
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System Flushing

The Saddleridge water system is flushed on an annual basis with the most recent flushing occurring the week of June 12, 2017. The next scheduled flushing will be 2018.

Discolored Water Complaints

Aqua has received zero water quality complaints from the Saddleridge water system since the last update provided in March 2017.

Corrective Actions

Analysis reveals the well has an elevated concentration of iron at Well #20. In an effort to ensure that the drinking water was not discolored due to the presence of the minerals, Aqua began feeding SeaQuest in February 2016. The pressure settings at Well #20 have been changed to allow the well to operate in lag mode. A cartridge filter was additionally installed at this well on December 20, 2016. A special raw and point of entry sample was collected on April 26, 2017, and the results are shown in the table above. We will continue to perform quarterly turbidity samples to evaluate the effectiveness of this filter. Aqua plans to use a performance indicator of 1.0 Nephelometric Turbidity Unit (NTU) or less as a measure to the effectiveness of the SeaQuest and the cartridge filter.

Sequestering with a polyphosphate does not physically remove iron and manganese; hence the reason for the elevated iron and manganese concentrations which are shown in the last IOC result. The intention of sequestering is to hold these two naturally occurring minerals in solution and prevent them from being oxidized by chlorine. Also, there is the intention of improving clarity and reducing and or eliminating customer complaints of the discolored water they may experience.

Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact me at (919) 653-6964.

Sincerely,



Moses A. Thompson
Director of Operations
Aqua North Carolina, Inc.

MAT/rl



June 30, 2017

Mr. W. Allen Hardy
 Engineering Supervisor
 Public Water Supply Section
 Raleigh Regional Office, NCDEQ
 1628 Mail Service Center
 Raleigh, NC 27699-1628

Re: Notice of Deficiency – Quarterly Update
 Iron and Manganese Concentration
 Shadow Lakes Subdivision, Johnston County
 WSF ID No.: Well #1, P01
 Water System No: NC0351167

Dear Mr. Hardy:

Aqua North Carolina, Inc. (Aqua) received the above-referenced letter dated July 12, 2016, regarding elevated concentrations of Iron (Fe) and Manganese (Mn) at Shadow Lakes Well #1, P01. The Shadow Lakes water system is comprised of one active well and one point of entry (POE). The current number of customers served is 41 and the system is approved to serve 49 connections. The table below outlines the run time and the latest iron and manganese concentrations collected as part of the ongoing Inorganic Chemical Analyses (IOC) samples collected at Well #1, P01.

UPDATED QUARTERLY STATUS REPORT

TABLE 1: Run Time and IOC Analysis

Well Name and No.	Capacity (gpm)	12-Month Avg. Pump Runtime (hrs/day)	Most Recent Inorganic Sampling	
	Approved		Fe (mg/L)	Mn (mg/L)
Shadow Lakes Well #1, P01 (Samples collected on 10/7/2014)	68	4.0	1.06	0.267

Page Two
Shadow Lakes Well #1, P01
June 30, 2017

System Flushing

The Shadow Lakes water system was most recently flushed the week of May 22, 2017.

Discolored Water Complaints

Since the update provided in March 2017, Aqua received one customer complaint, which was during the week the flushing was being performed.

Corrective Actions

Analysis of the iron and manganese levels reveals the well has elevated concentration of iron and manganese at Well #1. In an effort to ensure that the drinking water was not discolored due to the presence of the minerals, Aqua began feeding SeaQuest in August 2015. Aqua will continue to optimize the sequestration treatment at the well and monitor the system for customer complaints. By Order dated March 1, 2016, from the North Carolina Utilities Commission, Aqua received approval to install a filtration system at Well #1. The start-up of this filtration system is scheduled for this summer, 2017. The hydro pneumatic tank was additionally cleaned on June 6, 2017.

Sequestering with a polyphosphate does not physically remove iron and manganese; hence the reason for the elevated iron and manganese concentrations which are shown in the last IOC result. The intention of sequestering is to hold these two naturally occurring minerals in solution and prevent them from being oxidized by chlorine. Also, there is the intention of improving clarity and reducing and or eliminating customer complaints of the discolored water they may experience.

Based on the information provided above, Aqua requests that the requirement to submit further quarterly status reports for this well be discontinued.

Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact me at (919) 653-6964.

Sincerely,



Moses A. Thompson
Director of Operations
Aqua North Carolina, Inc.

MAT/rl



June 30, 2017

Mr. W. Allen Hardy
 Engineering Supervisor
 Public Water Supply Section
 Raleigh Regional Office, NCDEQ
 1628 Mail Service Center
 Raleigh, NC 27699-1628

Re: Notice of Deficiency – Quarterly Update
 Iron and Manganese Concentration
 Southwood-Surry Ridge Subdivision, Wake County
 WSF ID No.: Well #1 (Southwood) P01 and Well #3 (Cary Oaks) P03
 Water System No: NC0392338

Dear Mr. Hardy:

Aqua North Carolina, Inc. (Aqua) received the above-referenced letter dated July 12, 2016, regarding elevated concentrations of Iron (Fe) and Manganese (Mn) at Well #1 (Southwood) P01 and Well #3 (Cary Oaks) P03. The Southwood-Surry Ridge water system is comprised of these two active wells and two points of entry (POE); a new Surry Point Well #3 was just re-drilled to serve this system, but is currently off-line. The current number of customers served is 121 and the system is approved to serve 154 connections. The table below outlines the run time and the latest iron and manganese concentrations collected as part of the ongoing Inorganic Chemical Analyses (IOC) samples collected at Southwood Well #1 P01 and Cary Oaks Well #3 P03.

UPDATED QUARTERLY STATUS REPORT

TABLE 1: Run Time and IOC Analysis

Well Name and No.	Capacity (gpm)	12-Month Avg. Pump Runtime (hrs/day)	Most Recent Inorganic Sampling	
	Approved		Fe (mg/L)	Mn (mg/L)
Southwood Well #1 P01 (Samples collected in April 2014)	27	16.2	1.1	0.6

Southwood- Surry Ridge Subdivision, Well #1 (Southwood) P01 and Well #3 (Cary Oaks) P03
 June 30, 2017

Cary Oaks Well #3 P03 (Samples collected in April 2014)	40	2.5	1.39	0.1
Southwood Well #1 P01 (Samples collected 9/1/2016)	27	18	Raw = 1.1 NTU	
Cary Oaks Well #3 P03 (Samples collected 11/3/2016)	40	8.5		POE = 13.0 NTU
Southwood Well #1 P01 (Sample collected 3/22/2017)	22	14	Raw = 4.8 NTU	POE= 1.8 NTU
Cary Oaks Well #3 P03 (Samples collected 3/23/2017)	21	.27	Raw=4.1 NTU	POE= 2.2 NTU
Southwood Well #1 P01 (Sample collected 4/20/2017)	27	15.5	Raw=6.7 NTU	POE= 0.71 NTU
Cary Oaks Well #3 P03 (Samples collected 4/20/2017)	21	0.5	Raw=0.92 NTU	POE= 0.69 NTU

System Flushing

The Southwood-Surry Ridge water system was flushed most recently in June 2016, with the next scheduled flushing during the summer of 2017.

Discolored Water Complaints

Aqua received two customer complaints from the Southwood-Surry Ridge water system since the update provided in March 2017.

Corrective Actions

Analysis of the iron and manganese levels reveals the well has elevated concentration of iron and manganese at Well #1 (Southwood) and Well #3 (Cary Oaks). In an effort to ensure that the drinking water was not discolored due to the presence of the minerals, Aqua began feeding SeaQuest in August 2013. Currently, Southwood Well #1 has a cartridge filter. Samples were collected from Southwood Well #1 and Cary Oaks Well #3 on April 20, 2017, and the results are shown in the table above. Aqua will continue to sample quarterly for turbidity at each well to optimize treatment. Aqua is using a performance indicator of 1.0 Nephelometric Turbidity Unit (NTU) or less as a measure to the effectiveness of the SeaQuest.

On December 30, 2016, Aqua filed for approval from the North Carolina Utilities Commission (Commission) for the installation of a filtration system at Surry Point Well #3. This request was approved by the Commission in the Order issued January 18, 2017. Anticipated completion date for the installation of the filtration system is this coming Winter. Once this is complete Well #1 (Southwood) P01 and Well #3 (Cary Oaks) P03 will be placed in a backup mode of operation. In the event a back-up well is needed, both wells will be ready for use if there is a need for these to be placed in service.

Sequestering with a polyphosphate does not physically remove iron and manganese; hence the reason for the elevated iron and manganese concentrations which are shown in the last IOC result. The intention of

Southwood- Surry Ridge Subdivision, Well #1 (Southwood) P01 and Well #3 (Cary Oaks) P03
June 30, 2017

sequestering is to hold these two naturally occurring minerals in solution and prevent them from being oxidized by chlorine. Also, there is the intention of improving clarity and reducing and or eliminating customer complaints of the discolored water they may experience.

Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact me at (919) 653-6964.

Sincerely,



Moses A. Thompson
Director of Operations
Aqua North Carolina, Inc.

MAT/rl



June 30, 2017

Mr. W. Allen Hardy
 Engineering Supervisor
 Public Water Supply Section
 Raleigh Regional Office, NCDEQ
 1628 Mail Service Center
 Raleigh, NC 27699-1628

Re: Notice of Deficiency
 Iron and Manganese Concentration
 Trapper's Creek Subdivision, Durham County
 WSF ID No.: Well #2, P02
 Water System No: NC0332132

Dear Mr. Hardy:

Aqua North Carolina, Inc. (Aqua) received the above-referenced letter dated July 12, 2016, regarding elevated concentrations of Iron (Fe) and Manganese (Mn) at Trapper's Creek Well #2, P02. The Trapper's Creek water system is comprised of two active wells and two points of entry (POE). The current number of customers served is 63 and the system is approved to serve 84 connections. The table below outlines the run time and the latest iron and manganese concentrations collected as part of the ongoing Inorganic Chemical Analyses (IOC) samples collected at Well #2, P02.

UPDATED QUARTERLY STATUS REPORT

TABLE 1: Run Time and IOC Analysis

Well Name and No.	Capacity (gpm)	12-Month Avg. Pump Runtime (hrs/day)	Most Recent Inorganic Sampling	
	Approved		Fe (mg/L)	Mn (mg/L)
Trappers Creek, Well #2, P03 (Samples collected on 4/15/14)	75	2.4	0.8	0.29
Trappers Creek, Well #2, P03 (Samples collected on 12/21/2016)	75	1.5	0.0392	0.0023
Trappers Creek, Well #2, P03 (Samples collected on 3/24/2017)	75	2	Raw Turbidity ND	POE Turbidity <0.5 NTU

Page Two
Trapper's Creek Subdivision, Well #2, P02
June 30, 2017

Trappers Creek, Well #2, P03 (Samples collected on 5/31/2017)	75	2.16	Raw Turbidity 11 NTU	POE Turbidity 9.3 NTU
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System Flushing

The Trappers Creek water system is flushed on an annual basis with the most recent flushing being in May 2017. The next scheduled flushing will be the spring of 2018.

Discolored Water Complaints

Aqua received zero customer complaints from Trapper's Creek water system since the last update provided in March 2017.

Corrective Actions

Initial analysis of the iron and manganese levels reveals the well has elevated concentration of iron and manganese at Well #2. In an effort to ensure that the drinking water was not discolored due to the presence of the minerals, Aqua began feeding SeaQuest in February 2016. Since then Aqua has begun annual flushing of the distribution system and will continue to flush the distribution system at this reoccurring frequency while continuing to optimize the sequestration at each well and monitoring for customer complaints. On December 21, 2016, Aqua collected field measurements for iron and manganese at Well #2. As shown in the table above the results show low iron and manganese concentrations. Aqua collected a new compliance IOC sample on May 31, 2017, and the results are shown in the table above. Aqua believes there was an error in the turbidity lab results and is requesting a new sample to be taken in July 2017.

Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact me at (919) 653-6964.

Sincerely,



Moses A. Thompson
Director of Operations
Aqua North Carolina, Inc.

MAT/rl

MAT/rl



June 30, 2017

Mr. W. Allen Hardy
 Engineering Supervisor
 Public Water Supply Section
 Raleigh Regional Office, NCDEQ
 1628 Mail Service Center
 Raleigh, NC 27699-1628

Re: Notice of Deficiency
 Iron and Manganese Concentration
 Tyndrum Subdivision, Durham County
 WSF ID No.: Well #1, P01
 Water System No: NC0332138

Dear Mr. Hardy:

Aqua North Carolina, Inc. (Aqua) received the above-referenced letter dated July 12, 2016, regarding elevated concentrations of Iron (Fe) and Manganese (Mn) at Tyndrum Well #1, P01. The Tyndrum water system is comprised of two active wells and two points of entry (POE). The current number of customers served is 37 and the system is approved to serve 49 connections. The table below outlines the run time and the latest iron and manganese concentrations collected as part of the ongoing Inorganic Chemical Analyses (IOC) samples collected at Well #1, P01.

TABLE 1: Run Time and IOC Analysis

Well Name and No.	Capacity (gpm)	12-Month Avg. Pump Runtime (hrs/day)	Most Recent Inorganic Sampling Results 4/10/14	
	Approved		Fe (mg/L)	Mn (mg/L)
Tyndrum, Well #1, P01 (Samples collected on 4/10/14)	17	1.4	1.3	0.4
Tyndrum, Well #1, P01 (Sample Collected on 03/21/2017)				POE=5.6 NTU

System Flushing

The Tyndrum water system is flushed on an annual basis and was last flushed in May 2017. The next scheduled flushing is Spring 2018.

Page Two
Tyndrum Subdivision, Well #1, P01
June 30, 2017

Discolored Water Complaints

Aqua has received zero customer complaints from the Tyndrum water system since the last update in March 2017.

Corrective Action

Analysis reveals the well has elevated concentrations of iron and manganese at Well #2. In an effort to ensure that the drinking water was not discolored due to the presence of the minerals, Aqua started feeding SeaQuest in February 2016. Since Aqua began feeding SeaQuest, the distribution system has been flushed annually and we will continue to flush the distribution system at this reoccurring frequency.

Aqua planned to collect special samples for turbidity beginning in September 2016; however, the well has been offline. This well was placed back into service in late February 2017 and turbidity samples were taken in March 21, 2017, and are shown in the table above. Installation of a cartridge filter for Well #1 was completed on March 29, 2017 to help address the elevated concentrations of iron and manganese. This well will continue to be monitored closely to determine the effectiveness of the filter and SeaQuest.

Sequestering with a polyphosphate does not physically remove iron and manganese; hence the reason for the elevated iron and manganese concentrations which are shown in the last IOC result. The intention of sequestering is to hold these two naturally occurring minerals in solution and prevent them from being oxidized by chlorine. Also, there is the intention of improving clarity and reducing and or eliminating customer complaints of the discolored water they may experience.

Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact me at (919) 653-6964.

Sincerely,



Moses A. Thompson
Director of Operations
Aqua North Carolina, Inc.

MAT/rl

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Sep 19 2018



June 30, 2017

Mr. W. Allen Hardy
 Engineering Supervisor
 Public Water Supply Section
 Raleigh Regional Office, NCDEQ
 1628 Mail Service Center
 Raleigh, NC 27699-1628

Re: Notice of Deficiency – Quarterly Update
 Iron and Manganese Concentration
 Upchurch Place Subdivision, Wake County
 WSF ID No.: Wells #1 and Well #4, P01
 Water System No: NC4092038

Dear Mr. Hardy:

Aqua North Carolina, Inc. (Aqua) received the above-referenced letter dated July 12, 2016, regarding elevated concentrations of Iron (Fe) and Manganese (Mn) at Upchurch Place Wells #1 and Well #4, P01. The Upchurch Place water system is comprised of two active wells and one point of entry (POE). The current number of customers served is 52 and the system is approved to serve 64 connections. The table below outlines the run time and the latest iron and manganese concentrations collected as part of the ongoing Inorganic Chemical Analyses (IOC) samples collected at Wells #1 and Well #4, P01.

UPDATED QUARTERLY STATUS REPORT

TABLE 1: Run Time and IOC Analysis

Well Name and No.	Capacity (gpm)	12-Month Avg. Pump Runtime (hrs/day)	Most Recent Inorganic Sampling Results 3/13/2013	
	Approved		Fe (mg/L)	Mn (mg/L)
Upchurch Place, Well #1 and Well #4, P01 (Samples collected on 3/13/2013)	#1 – 62 #4 – 27	#1 – 1.7 #4 – 0	1.0	0.177
Upchurch Place, Well #1 and Well #4, P01 (Samples collected on 3/10/2017)	#1 – 62 #4 – 27	#1 – 1.7 #4 – 0.0	<u>Well #1</u> Raw = 3.0 NTU <u>Well #4</u> Raw = 0.52 NTU	POE = 0.66 NTU

Page Two
 Upchurch Place Subdivision, Wells # 1 & 4, P01
 June 30, 2017

Upchurch Place, Well #1 and Well #4, P01 (Samples collected on 5/11/17)	#1 - 62 #4 - 27	#1 - 2.5 #4 - 0.0	Well #1 Raw = 2.7 NTU Well #4 Raw = 1.7 NTU	POE = <0.50 NTU
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Special Sampling

- Well #1 - 10/26/2015 - total iron 0.263 mg/L, total manganese 0.128 mg/L
- Well #1 - 9/16/2015 - total iron 0.635 mg/L, total manganese 0.150 mg/L
- Well #4 - 9/16/2015 - total iron 0.891 mg/L, total manganese 0.176 mg/L
- Well #1 - 6/29/2016 - total iron 0.325 mg/L, total manganese 0.134 mg/L
- Well #1 - 5/11/2017 - total iron 0.622 mg/L, total manganese 0.156 mg/L
- Well #4 - 5/11/2017 - total iron 1.14 mg/L, total manganese 0.199 mg/L

System Flushing

The Upchurch water system is flushed on an annual basis, and was most recently flushed in February 2017. It is scheduled to be flushed again during the summer, 2017.

The hydro pneumatic tank was cleaned in November 2015.

Discolored Water Complaints

Aqua has received zero customer complaints from the Upchurch water system since the update provided in March 2017.

Corrective Actions

Analysis reveals the well has an elevated concentration of iron and manganese at Well #1 and Well #4. In an effort to ensure that the drinking water was not discolored due to the presence of the minerals, Aqua started feeding SeaQuest in March 2014. Since then Aqua has flushed the distribution system at least annually and will continue to flush the distribution system at this reoccurring frequency. Well #1, which has the lesser levels of iron and manganese concentrations, is supplying all the water to the system at this time; Aqua only runs Well #4, which has the higher concentrations, when compliance sampling is needed. Aqua will continue to flush the system on an annual basis and optimize the current treatment. Aqua and the Public Staff continue to work together to seek approval for greensand filtration at this entry point. On May 11, 2017, Aqua collected monthly turbidity results for raw water and point of entry at Well #1 and Well #4 and the results are shown in the table above.

Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact me at (919) 653-6964.

Sincerely,



Moses A. Thompson
 Director of Operations
 Aqua North Carolina, Inc.

MAT/rl

OFFICIAL COPY

Sep 19 2018



June 30, 2017

Mr. W. Allen Hardy
 Engineering Supervisor
 Public Water Supply Section
 Raleigh Regional Office, NCDEQ
 1628 Mail Service Center
 Raleigh, NC 27699-1628

Re: Notice of Deficiency – Quarterly Update
 Iron and Manganese Concentration
 Wakefield Plantation Subdivision, Wake County
 WSF ID No.: Well #6, P06
 Water System No: NC0392155

Dear Mr. Hardy:

Aqua North Carolina, Inc. (Aqua) received the above-referenced letter dated July 12, 2016, regarding elevated concentrations of Iron (Fe) and Manganese (Mn) at Wakefield Well #6, P06. The Wakefield water system is comprised of four active wells and four points of entry (POE). The current number of customers served is 160 and the system is approved to serve 174 connections. The table below outlines the run time and the latest iron and manganese concentrations collected as part of the ongoing Inorganic Chemical Analyses (IOC) samples collected at Well #6, P06.

UPDATED QUARTERLY STATUS REPORT

TABLE 1: Run Time and IOC Analysis

Well Name and No.	Capacity (gpm)	12-Month Avg. Pump Runtime (hrs/day)	Most Recent Inorganic Sampling	
	Approved		Fe (mg/L)	Mn (mg/L)
Wakefield Well #6, P06 (Samples collected on April 25, 2016)	88	6.8	1.53	.23
Wakefield Well #6, P06 (Samples collected on Dec 21, 2016)	88	3.9 Aug – Nov 2016	1.72	.27
Wakefield Well #6, P06 (Samples collected On April 27, 2017)	88	5.7	<u>Raw</u> 2.1	<u>POE</u> ND

Page Two
Wakefield Plantation Subdivision, Well #6, P06
June 30, 2017

System Flushing

The Wakefield Plantation water system is flushed on an annual basis and was most recently flushed in March 2017. The next scheduled flushing will be in the spring, 2018.

The hydro pneumatic tanks were cleaned in March 2013.

Discolored Water Complaints

Aqua received two customer complaints from the Wakefield Plantation water system since the last update provided in March 2017.

Corrective Actions

Analysis reveals the well has elevated iron and manganese concentration levels at Well #6. In an effort to ensure that the drinking water was not discolored due to the presence of the minerals, Aqua started feeding SeaQuest in October 2014. Since then Aqua has flushed the distribution system annually and will continue to flush the distribution system at this reoccurring frequency. By Order dated March 1, 2016, from the North Carolina Utilities Commission Aqua received approval for the installation of a filtration system at Well #6 and Well #8. Because of challenges Aqua has encountered in obtaining the necessary water line easement between these two wells, installation of a filtration system has been delayed until at least 2018. Aqua will continue to optimize SeaQuest treatment based on the quarterly raw and point of entry turbidity samples, the last of which were taken April 27, 2017, and results shown in the table above.

Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact me at (919) 653-6964.

Sincerely,



Moses A. Thompson
Director of Operations
Aqua North Carolina, Inc.

MAT/rl

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Sep 19 2018