

Shannon V. Becker, President

O: 919.653.5770 • F: 919.460.1788 • SVBecker@AquaAmerica.com

March 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

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

Woodvalley Well #11 – P93 Well Head (Samples collected September 22, 2016)	29	9.7	ND	0.151
Woodvalley #11 – P93 (Samples collected on 3/6/2017)	29	10	Raw 0.61 NTU	POE 1.1 NTU
Barton Creek Bluffs 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
Barton Creek Bluffs Well Head Well #10 – P67 (Samples collected September 22, 2016)	15	9.8	1	0.102

Woodvalley Well #11, P93

Updated samples were collected September 22, 2016, 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. The first monthly sample was collected in March 2017 and the results are shown in the table above. Aqua will continue monthly turbidity sampling in an effort to determine the effectiveness of the SeaQuest.

Barton Creek Bluffs Well #10, P67

Updated samples were collected September 22, 2016, and the results are shown in the table above. Aqua began feeding SeaQuest at Well #10 in March 2016. We have ensured 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.

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 Moses Thompson at (919) 653-6964.

Sincerely,



Shannon V. Becker  
 President  
 Aqua North Carolina, Inc.

SVB/rl



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March 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.

**UPDATED QUARTERLY STATUS**

**AS FOLLOWS:**

TABLE 1. P16 - Swan's Mill Well #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)
Swans Mill Well #1 P16 (Samples collected on 3/24/2015)	80	0	7.8	0.02
Updated run time Aug. – Nov. 2016	80	13.5	Well Head Turbidity .18 (12/20/16)	Entry Point Turbidity .13 (12/20/16)

The Fe and Mn results posted in the table above were part of the IOC sample collected on March 24, 2015. The Bayleaf Master System was most recently flushed between January 6, 2016 and April 1, 2016, Aqua has received no customer complaints from Swan's Mill water system in the last 12 months.

Aqua began feeding SeaQuest in September 2015.

**March 2017 Update:**

The Bayleaf Master System, which includes Swan's Mill water system, is scheduled to be flushed in January 2018.

Due to the addition of filters at Coachman's Trail Well #4, Devon Wells #1 and #3, Stonebridge Well #17 and Stone Creek #18, the water quality has improved in the Bayleaf Master System.

Aqua has received zero customer complaints from the Swan's Mill water system since the update provided in December 2016.

Based on the updated information provided in the quarterly updates, Aqua requests that the requirement to submit further quarterly status reports for Swan's Mill Well #1, P16 be discontinued.

**TABLE 2: P63 – The Barony Well #5 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)
The Barony Well #5 P63 (Samples collected on 1/6/14)	77	11 .0	1.0	.47
Updated run time Aug. – Nov. 2016	77	14.9	Well Head Turbidity 4.4 (9/20/16)	Entry Point Turbidity 1.6 (9/20/16)
The Barony Well #5	77	5.5	Well Head Turbidity 14 (3/23/17)	Entry Point Turbidity 1.4 (3/23/17)

The Fe and Mn results posted in the table above were part of the IOC sample collected on January 6, 2014. The Bayleaf Master System was most recently flushed between January 6, 2016 and April 1, 2016. Aqua has received no customer complaints from The Barony water system in the last 12 months.

Aqua began feeding SeaQuest in September 2015.

**Corrective Action:**

Aqua plans to collect special samples for turbidity beginning in September 2016. Samples will be collected from the raw water and from the point of entry on a quarterly basis. Based on those results, Aqua will ensure optimization of the SeaQuest and continue the quarterly turbidity testing until the cartridge filter is installed. The cartridge filter will be installed by the second quarter of 2017. 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.

**March 2017 UPDATE:**

The Bayleaf Master System, which includes The Barony water system, is scheduled to be flushed in January 2018.

Due to the addition of filters at Coachman’s Trail Well #4, Devon Wells #1 and #3, Stonebridge Well #17 and Stone Creek #18, the water quality has improved in the Bayleaf Master System.

Aqua has received zero customer complaints from The Barony water system since the last update provided in December 2016.

On March 23, 2017, Aqua collected special samples for turbidity and the results are shown in the table above.

Aqua will ensure optimization of the SeaQuest and continue to test turbidity quarterly until the installation of the cartridge filter, which is scheduled for the second quarter of 2017.

**TABLE 3: P75 - Enclave at Barton Creek Bluffs Well #18 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)
Enclave at Barton Creek Bluffs Well #18 P75 (Samples collected)	75	8.10	1.0	.29
Updated run time Aug. – Nov. 2016	75	12.8	Well Head Turbidity 3.2 (12/20/16)	Entry Point Turbidity 1.5 (12/20/16)
Enclave at Barton Creek Bluffs Well #18	75	6.9	Well Head Turbidity 2.6 (3/23/17)	Entry Point Turbidity 2.4 (3/23/17)

The Fe and Mn results posted in the table above were part of the IOC sample collected on October 9, 2013. The Leesville Master system was most recently flushed between January 6, 2016 and April 1, 2016 of this year. Aqua has received eight customer complaints from the Enclave at Barton Creek Bluffs water system in the last 12 months.

Aqua began feeding SeaQuest in October 2015.

**Corrective Action:**

Aqua plans to collect special samples for turbidity beginning in September 2016. Samples will be collected from the raw water and from the point of entry on a quarterly basis. Based on those results, Aqua will ensure optimization of the SeaQuest and continue the quarterly turbidity testing until the cartridge filter is installed. The cartridge filter will be installed by the second quarter of 2017. 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. Aqua also plans to collect an IOC sample from this well in October 2016.

**March 2017 Update:**

The Leesville Master System, which includes the Enclave at Barton Creek Bluffs water system, was flushed in February 2017.

Aqua has received zero customer complaints from The Enclave at Barton Creek Bluffs water system since the last update provided in December 2016.

On March 23, 2017, Aqua collected special samples for turbidity and the results are shown in the table above.

Aqua will ensure optimization of the SeaQuest and continue to test turbidity quarterly until the installation of the cartridge filter, which is scheduled for the second quarter of 2017.

**TABLE 4: P76 – Hawthorne Wells #1 and #2 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)
Hawthorne Well#1 and Well#2P76 (Samples collected on 5/19/16)	73	10.7	1.01	.53
Updated run time Aug. – Nov. 2016	73	14.2	Well Head Turbidity 22 (9/20/16)	Entry Point Turbidity 1.7 (9/20/16)
Hawthorne Well#1 and Well#2	73	10.3	Well Head Turbidity 14 (3/23/17)	Entry Point Turbidity 3.9 (3/23/17)

The Fe and Mn results posted in the table above were part of the IOC sample collected on May 19, 2016. The Leesville Master System was most recently flushed between January 6, 2016 and April 1, 2016. Aqua has received no customer complaints from the Hawthorne water system in the last 12 months.

Currently Well #2 is offline and there are no plans to bring this well back on line. Well #1 will continue to be used. Aqua began feeding SeaQuest in February 2016.

**Corrective Action:**

Aqua plans to collect special samples for turbidity beginning in September 2016. Samples will be collected from the raw water and from the point of entry on a quarterly basis. Based on those results, Aqua will ensure optimization of the SeaQuest and continue the quarterly turbidity testing until the cartridge filter is installed. The cartridge filter will be installed by the second quarter of 2017. 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.

**March 2017 Update:**

The Leesville Master System, which includes the Hawthorne water system, was flushed in February 2017.

Aqua received one customer complaint from the Hawthorne water system since the last update provided in December 2016.

On March 23, 2017, Aqua collected special samples for turbidity and the results are shown in the table above.

Aqua will ensure optimization of the SeaQuest and continue to test turbidity quarterly until the installation of the cartridge filter, which is scheduled for the second quarter of 2017.

**TABLE 5: P92 - Woodvalley Well #9 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 #9 P92 (Samples collected on 10/7/15)	38	8.39	.8	.5
Updated run time Aug. – Nov. 2016	38	12.9	Well Head Turbidity 4.0 (9/20/16)	Entry Point Turbidity .91 (9/20/16)
Woodvalley #9	38	7.3	Well Head Turbidity 11 (3/23/17)	Entry Point Turbidity 2.9 (3/23/17)

The Fe and Mn results posted in the table above were part of the IOC sample collected on October 7, 2015. The Leesville Master System was most recently flushed between January 6, 2016 and April 1, 2016. Aqua has received two customer complaints from the Woodvalley water system in the last 12 months.

Aqua began feeding SeaQuest in February 2016.

**Corrective Action**

Aqua plans to collect special samples for turbidity beginning in September 2016. Samples will be collected from the raw water and from the point of entry on a quarterly basis. Based on those results, Aqua will ensure optimization of the SeaQuest and continue the quarterly turbidity testing until the cartridge filter is installed. The cartridge filter will be installed by the second quarter of 2017. 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.

**March 2017 Update:**

The Leesville Master System, which includes the Woodvalley water system, was flushed in February 2017.

Aqua has received one customer complaint from the Woodvalley water system since the last update provided in December 2016.

On March 23, 2017, Aqua collected special samples for turbidity and the results are shown in the table above.

Aqua will ensure optimization of the SeaQuest and continue to test turbidity quarterly until the installation of the cartridge filter, which is scheduled for the second quarter of 2017.

**TABLE 6: P3B – Carlyle Manor Well #4 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)
Carlyle Manor Well #4 P3B (Samples collected on 10/7/15)	73	8.5	2.0	.67
Updated run time Aug. – Nov. 2016	73	11.7	Well Head Turbidity 18 (9/20/16)	Entry Point Turbidity 1.3 (9/20/16)
Carlyle Manor Well #4	73	5.6	Well Head Turbidity 5.1 (3/23/17)	Entry Point Turbidity 2.6 (3/23/17)

The Fe and Mn results posted in the table above were part of the IOC sample collected on October 7, 2015. The Bayleaf Master System was most recently flushed between January 6, 2016 and April 1, 2016. Aqua has received four customer complaints from the Carlyle Manor water system in the last 12 months.

Aqua began feeding SeaQuest in September 2015.

**Corrective Action**

Aqua plans to collect special samples for turbidity beginning in September 2016. Samples will be collected from the raw water and from the point of entry on a quarterly basis. Based on those results, Aqua will ensure optimization of the SeaQuest and continue the quarterly turbidity testing until the cartridge filter is installed. The cartridge filter will be installed by the second quarter of 2017. Aqua plans to use a performance indicator of 1.0 Nephelometric Turbidity Unit (NIU) or less as a measure to the effectiveness of the SeaQuest.

**March 2017 Update:**

The Bayleaf Master System, which includes the Carlyle Manor water system, is scheduled to be flushed in January 2018.

Due to the addition of filters at Coachman’s Trail Well #4, Devon Wells #1 and #3, Stonebridge Well #17 and Stone Creek #18, the water quality has improved in the Bayleaf Master System.

Aqua has received one customer complaint from the Carlyle Manor water system since the last update provided in December 2016.

On March 23, 2017, Aqua collected special samples for turbidity and the results are shown in the table above.

Aqua will ensure optimization of the SeaQuest and continue to test turbidity quarterly until the installation of the cartridge filter, which is scheduled for the second quarter of 2017.

TABLE 7. P4B - Seville Well #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)
Seville Well#1, P4B (Samples collected on 1/9/16)	44	7.25	1.0	.50
Updated run time Aug. – Nov. 2016	44	14.1	Well Head Turbidity 3.8 (9/20/16)	Entry Point Turbidity .84 (9/20/16)
Seville Well#1	44	5.8	Well Head Turbidity 2.3 (3/23/17)	Entry Point Turbidity .85 (3/23/17)

The Fe and Mn results posted in the table above were part of the IOC sample collected on January 9, 2016. The Bayleaf Master System was most recently flushed between January 6, 2016 and April 1, 2016. Aqua received no customer complaints from the Seville water system in the last 12 months.

Aqua began feeding SeaQuest in August 2015.

**Corrective Action:**

Aqua plans to collect special samples for turbidity beginning in September 2016. Samples will be collected from the raw water and from the point of entry on a quarterly basis. Based on those results, Aqua will ensure optimization of the SeaQuest and continue the quarterly turbidity testing. 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.

**March 2017 Update:**

The Bayleaf Master System, which includes the Seville water system, is scheduled to be flushed in January 2018.

Due to the addition of filters at Coachman's Trail Well #4, Devon Wells #1 and #3, Stonebridge Well #17 and Stone Creek #18, the water quality has improved in the Bayleaf Master System.

Aqua has received no customer complaints from the Seville water system since the last update provided in December 2016.

On March 23, 2017, Aqua collected special samples for turbidity and the results are shown in the table above.

Aqua will ensure optimization of the SeaQuest and continue to test turbidity quarterly.

**TABLE 8: P7B - George's Grant Well #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)
George's Grant Well #1 P7B (Samples collected on 4/23/15)	66	6.16	1.3	.63
Updated run time Aug. – Nov. 2016	66	15.0	Well Head Turbidity 15 (12/20/16)	Entry Point Turbidity 2.4 (9/20/16)
George's Grant Well #1	66	5.5	Well Head Turbidity 6.4 (3/23/17)	Entry Point Turbidity 2.7 (3/23/17)

The Fe and Mn results. posted in the table above were part of the IOC sample collected on April 23, 2015. The Bayleaf Master System was most recently flushed between January 6, 2016 and April 1, 2016. Aqua has received Aqua received no customer complaints from the George's Grant water system in the last 12 months.

Aqua began feeding SeaQuest in October 2015.

**Corrective Action:**

Aqua plans to collect special samples for turbidity beginning in September 2016. Samples will be collected from the raw water and from the point of entry on a quarterly basis. Based on those results, Aqua will ensure optimization of the SeaQuest and continue the quarterly turbidity testing until the cartridge filter is installed. The cartridge filter will be installed by the second quarter of 2017. 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.

**March 2017 UPDATE:**

The Bayleaf Master System, which includes the George's Grant water system, is scheduled to be flushed in January 2018.

Due to the addition of filters at Coachman's Trail Well #4, Devon Wells #1 and #3, Stonebridge Well #17 and Stone Creek #18, the water quality has improved in the Bayleaf Master System.

Aqua has received zero customer complaints from the George's Grant water system since the last update provided in December 2016.

On March 23, 2017, Aqua collected special samples for turbidity and the results are shown in the table above.

Aqua will ensure optimization of the SeaQuest and continue to test turbidity quarterly until the installation of the cartridge filter, which is scheduled for the second quarter of 2017.

**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.

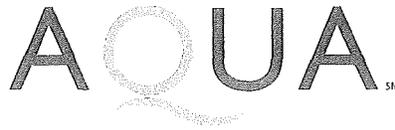
Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact Moses Thompson at (919) 653-6964.

Sincerely,



Shannon V. Becker  
President  
Aqua North Carolina, Inc.

SVB/rl



Shannon V. Becker, President

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March 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  
 Bayleaf Master System/ Ethan's Glen Well #19 and #20, P97  
 Wake County, Water System No: NC0392373

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 Bayleaf Master System / Ethan's Glen Well #19 and #20, P97. The Ethan's Glen water system is comprised of nine active wells and four points of entry (POE). The current number of customers served is 170 and the system is part of the Bayleaf Master Water System. 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 #19 and #20, P97.

**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)
Ethan's Glen Well #19 and #20, P97 (Samples collected September 17, 2014)	#19-18 gpm #20-11 gpm	#19-7.22 #20-9.6	1.87 (combined POE sample)	0.0179 (combined POE sample)
Ethan's Glen Well #19 and #20, P97 (Samples collected September 22, 2016)	#19-18 gpm #20-11 gpm	#19-10.6 #20-10.6	#19 - .080 #20- .38	#19 - .078 #20 - .035

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Bayleaf Master System Well #19 and #20, P97  
March 30, 2017

Ethans Glen Well #19 and #20, P97 (Samples collected 03/08/2017)	#19-18 gpm #20-11 gpm	#19 -7.5 #20-7.5	<u>Raw</u> <0.50 NTU	<u>POE</u> < 0.50
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Updated well head samples were collected September 22, 2016, and the results are shown in the table above.

**Flushing**

Aqua performed system-wide flushing in the Bayleaf Master System area, which includes Ethans Glen Well #19 and #20, P97, between January and April, 2016. The next scheduled flushing is March 2018.

**Customer Complaints**

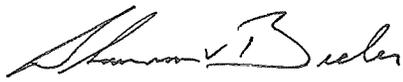
Aqua has received zero customer complaints from the Ethan's Glen water system since the last update provided in December 2016.

**Corrective Action**

Aqua began feeding SeaQuest at Wells #19 and #20 in November 2016. Aqua took turbidity samples from the well and the point of entry on March 8, 2017 and the results are shown in the table above. Aqua will evaluate the effectiveness of the sequestering agent after the results are reviewed.

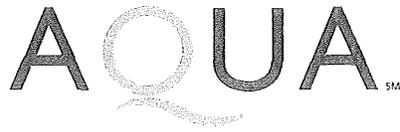
Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact Moses Thompson at (919) 653-6964.

Sincerely,



Shannon V. Becker  
President  
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SVB/rl



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March 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 Approved	12-Month Avg. Pump Runtime	Most Recent Inorganic Sampling Results	
			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	Raw 35 NTU	POE 16 NTU

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Avocet Subdivision, Well #1, PO1  
March 30, 2017

**System Flushing**

The Avocet water system was last flushed in July 2016. The next scheduled flushing is July 2017.

**Discolored Water Complaints**

Aqua has received zero customer complaints from the Avocet water system since the last update provided in December 2016.

**Corrective Action**

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 July 2016 and will continue to be flush annually. Samples were collected on November 7, 2016, from the raw water and the point of entry and the results are shown in the table above. Aqua will only run this well 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.

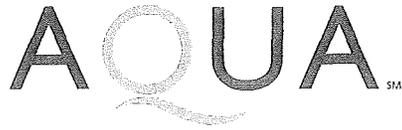
Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact Moses Thompson at (919) 653-6964.

Sincerely,



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March 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, PO2 (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  
March 30, 2017

**System Flushing**

The Belle Ridge water system was last flushed in July 2016 and is scheduled to be flushed again in July 2017.

**Discolored Water Complaints**

Aqua has received zero customer complaints from the Belle Ridge water system since the last update provided in December 2016.

**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 for turbidity from the wellhead and from the point of entry and the results are shown in the table above. A cartridge filter will be installed at Well #2 in the second quarter of 2017 and quarterly turbidity samples will be collected to determine the effectiveness of the 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; 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 low turbidity results and no complaints, Aqua requests that the requirement to submit further quarterly status reports for this well be discontinued.

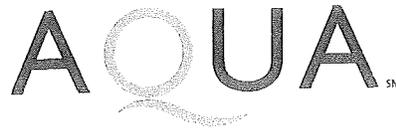
Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact Moses Thompson at (919) 653-6964.

Sincerely,



Shannon V. Becker  
President  
Aqua North Carolina, Inc.

SVB/rl



Shannon V. Becker, President

O: 919.653.5770 • F: 919.460.1788 • SVBecker@AquaAmerica.com

March 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  
March 30, 2017

Branston, Well #2, TP1 (Sample collected 3/12/17)			<0.50 NTU	
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**System Flushing**

The Branston water system is flushed on an annual basis and was most recently flushed in October 2017.

**Discolored Water Complaints**

Aqua has received zero customer complaints from the Branston water system since the update provided in December 2016.

**Corrective Actions**

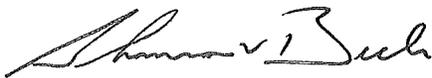
Analysis reveals the well has elevated concentrations of iron and manganese at Well #2. In an effort to ensure that the drinking water was not discolored due to the presence of the minerals, Aqua started feeding SeaQuest in July 2013. Since Aqua began feeding SeaQuest, the distribution system has been 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 March 12, 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 Moses Thompson at (919) 653-6964.

Sincerely,

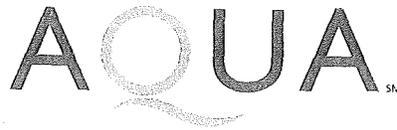


Shannon V. Becker  
President  
Aqua North Carolina, Inc.

SVB/rl

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Sep 19 2018



Shannon V. Becker, President

O: 919.653.5770 • F: 919.460.1788 • SVBecker@AquaAmerica.com

March 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

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

**System Flushing**

The Briarwood/Kildaire water system is flushed on an annual basis and was most recently flushed in July 2016. The next flushing is scheduled for July 2017.

**Discolored Water Complaints**

Aqua has received zero customer complaints from the Briarwood/Kildaire water system since the update provided in December 2016.

**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. In the second quarter of 2017, Aqua is scheduled 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. The installation of this equipment will allow the water to clear before entering treatment, subsequently allowing the treatment to be more effective.

Aqua collected special turbidity samples on November 8, 2016, 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. Based on the results, it appears that SeaQuest is being 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 demonstrated effectiveness of SeaQuest and the corresponding low turbidity result as shown above, Aqua requests that the requirement to submit further quarterly status reports be discontinued.

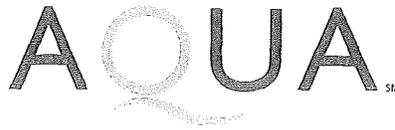
Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact Moses Thompson at (919) 653-6964.

Sincerely,



Shannon V. Becker  
President  
Aqua North Carolina, Inc.

SVB/rl



Shannon V. Becker, President

O: 919.653.5770 • F: 919.460.1788 • SVBecker@AquaAmerica.com

March 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 1/16/17)		3.9	<u>Raw</u> 5.7	<u>POE</u> 0.047

Page Two  
Mr. W. Allen Hardy  
March 30, 2016

Cotesworth Down, Well #2, P05 (Samples collected for Fe and Mn on 2/6/17)		4.1	Fe 1.17	Mn 0.232
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Currently there is no iron and manganese treatment at Cotesworth Down/Kensington Manor Well #1 (P04). On January 16, 2017, Aqua took a field measurement from the raw water and the point of entry and the results are shown in the table above.

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

Flushing

The Cotesworth Downs distribution system was most recently flushed in April 2016 and is scheduled to be flushed in April 2017.

Customer Complaints

Aqua received zero customer complaints from the Cotesworth water system since the last update in December 2016.

Aqua will continue sampling quarterly at this entry point to determine the best treatment alternative. Sampling will include raw and point of entry turbidity.

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 Moses Thompson at (919) 653-6964.

Sincerely,

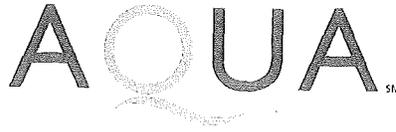


Shannon V. Becker  
President  
Aqua North Carolina, Inc.

SVB/rl

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Sep 19 2018



Shannon V. Becker, President

O: 919.653.5770 • F: 919.460.1788 • SVBecker@AquaAmerica.com

March 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

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

Duncan Ridge, Well #5 PO5 (Samples collected on 3/8/17)	33	.97		POE = 1.8 NTU
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**System Flushing**

The Duncan Ridge water system was flushed in July 2016 and is scheduled to be flushed again in July 2017.

**Discolored Water Complaints**

Aqua received zero customer complaints from the Duncan Ridge water system since the last update in December 2016.

**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 March 8, 2017, Aqua collected a special point of entry sample for turbidity 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. 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 Moses Thompson at (919) 653-6964.

Sincerely,



Shannon V. Becker  
President  
Aqua North Carolina, Inc.

SVB/rl

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Sep 19 2018



Shannon V. Becker, President

O: 919.653.5770 • F: 919.460.1788 • SVBecker@AquaAmerica.com

March 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	

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

**System Flushing**

The Eagle Creek water system was flushed in May 2016 and is scheduled to be flushed again in May 2017.

**Discolored Water Complaints**

Aqua has received zero customer complaints from the Eagle Creek water system since the update provided in December 2016.

**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. In the second quarter of 2017, Aqua is scheduled 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. 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 Moses Thompson at (919) 653-6964.

Sincerely,



Shannon V. Becker  
President  
Aqua North Carolina, Inc.

SVB/rl



Shannon V. Becker, President

O: 919.653.5770 • F: 919.460.1788 • SVBecker@AquaAmerica.com

March 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  
March 30, 2017

Flushing

Fairview Wooded Acres was last flushed between June 13 and June 17, 2016, and is scheduled to be flushed again in June 2017.

Customer Complaints

Aqua has received zero customer complaints from the Fairview Wooded Acres water system since the last updated provided in December 2016.

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.

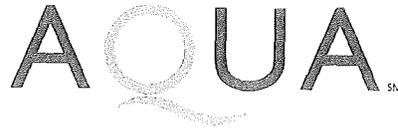
Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact Moses Thompson at (919) 653-6964.

Sincerely,



Shannon V. Becker  
President  
Aqua North Carolina, Inc.

SVB/rl



Shannon V. Becker, President

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March 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

**System Flushing**

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

At a minimum, Aqua flushes the Forrest Glen water system on an annual basis with the most recent flushing being the week of November 28 through December 2, 2016. The Forrest Glen water system is being flushed March 28 through 31, 2017.

The hydro-pneumatic tank was cleaned in February 2015.

**Discolored Water Complaints**

Aqua has received four customer complaints regarding discolored water from the Forrest Glen water system since the last update provided in December 2016.

**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 were 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; therefore, we are unable to use the particulate filters. Aqua prepared a request to the Public Staff of the North Carolina Utilities Commission for a permanent 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 as of the date of this letter, the Public Staff and Aqua have not reached agreement. Aqua intends to use Well #1 as a backup well, Aqua will continue to flush the system at least annually, optimize the sequestration at Well #1 and #2, and will limit the use of Well #1 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 Moses Thompson (919)653-6964.

Sincerely,

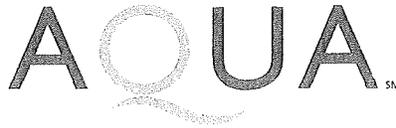


Shannon V. Becker  
President  
Aqua North Carolina, Inc.

SVB/rl

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Sep 19 2018



Shannon V. Becker, President

O: 919.653.5770 • F: 919.460.1788 • SVBecker@AquaAmerica.com

March 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	
			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  
March 30, 2017

Sample collected 2/1/17	31	0	<u>Raw Turbidity</u> 9.0	
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**System Flushing**

The Galloway water system is flushed on an annual basis with the most recent flushing being December 2016. The next scheduled flushing will be in December 2017.

The hydropneumatic tank was cleaned in February 2016.

**Discolored Water Complaints**

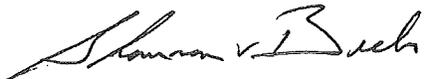
Aqua has received zero customer complaints since the update provided in December 2016.

**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. Aqua will continue to flush the distribution system annually. In February 2017, Aqua collected a sample for turbidity at the wellhead 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. Also, Aqua will be submitting engineering plans and specifications to NCDEQ in the second quarter of 2017 for the addition of a greensand filter at Well #2. Installation of this filter is scheduled to be complete by the end of the third quarter of 2017.

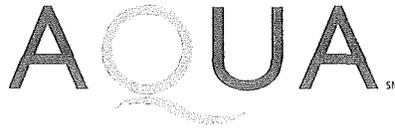
Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact Moses Thompson at (919) 653-6964.

Sincerely,



Shannon V. Becker  
President  
Aqua North Carolina, Inc.

SVB/rl



Shannon V. Becker, President

O: 919.653.5770 • F: 919.460.1788 • SVBecker@AquaAmerica.com

March 30, 2017

OFFICIAL COPY

Sep 19 2018

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

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	

**Flushing**

The Glendale Master System was flushed in March 2016, with the most recent flushing being the week of March 6, 2017.

**Discolored Water Complaints**

Aqua received zero customer complaints from the Glendale Master System since the last update provided in December 2016.

**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.

At these wells, samples will be collected from the raw water and from the point of entry on a quarterly basis. 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 effectiveness of SeaQuest and the corresponding low turbidity result, Aqua requests that the requirement to submit further quarterly status reports be discontinued.

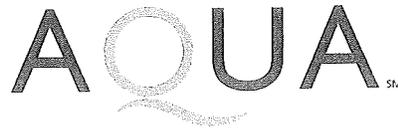
Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact Moses Thompson at (919) 653-6964.

Sincerely,



Shannon V. Becker, President  
Aqua North Carolina, Inc.

SVB/rl



Shannon V. Becker, President

O: 919.653.5770 • F: 919.460.1788 • SVBecker@AquaAmerica.com

March 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  
March 30, 2017

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

The Glendale Master System was flushed in March 2016, with the most recent flushing being the week of March 6, 2017.

**Discolored Water Complaints**

Aqua received zero customer complaints from the Glendale Master System since the last update provided in December 2016.

**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 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 Moses Thompson at (919) 653-6964.

Sincerely,

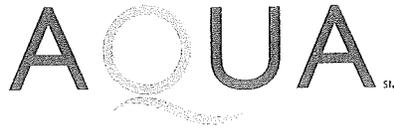


Shannon V. Becker  
President  
Aqua North Carolina, Inc.

SVB/rl

OFFICIAL COPY

Sep 19 2018



Shannon V. Becker, President

O: 919.653.5770 • F: 919.460.1788 • SVBecker@AquaAmerica.com

March 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  
March 30, 2017

**System Flushing**

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

**Discolored Water Complaints**

Aqua has received zero customer complaints from the Hampton Park water system since the last update provided in December 2016.

**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 Moses Thompson at (919) 653-6964.

Sincerely,



Shannon V. Becker  
President  
Aqua North Carolina, Inc.

SVB/rl



Shannon V. Becker, President

O: 919.653.5770 • F: 919.460.1788 • SVBecker@AquaAmerica.com

March 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

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

**System Flushing**

The High Grove water system is flushed on an annual basis with the most recent flushing being June 2016. The next scheduled flushing is June 2017.

**Discolored Water Complaints**

Aqua received zero customer complaints from the High Grove water system since the last update provided in December 2016.

**Corrective Actions**

Aqua believes this Notice of Deficiency was sent in error as the combined sampling results as of May 4, 2016 are 0.546 (Fe=0.369 and Mn=0.177).

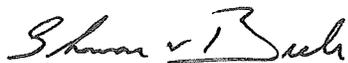
Analysis reveals the well has elevated concentration of iron and manganese at Well #1. In an effort to ensure that the drinking water was not discolored due to the presence of the minerals, Aqua started feeding SeaQuest in September 2015. Since then Aqua has flushed the distribution system annually and 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.

Based on the turbidity results above, Aqua requests that the requirements to submit further quarterly status reports be discontinued.

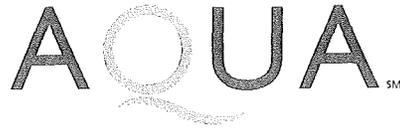
Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact Moses Thompson at (919) 653-6964.

Sincerely,



Shannon V. Becker  
President  
Aqua North Carolina, Inc.

SVB/rl



Shannon V. Becker, President

O: 919.653.5770 • F: 919.460.1788 • SVBecker@AquaAmerica.com

March 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

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

High Meadows, Well #2 (Samples collected on 3/7/2017)	64	3.6	Turbidity Well Head 6.0 NTU	Turbidity POE 1.1 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 2016. The next scheduled flushing will be April 2017.

**Discolored Water Complaints**

Aqua received three customer complaints for discolored water from the High Meadows water system since the last update in December 2016.

**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 and then most recently on March 7, 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 proposes taking one more quarterly sample in the second quarter of 2017 to determine 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 Moses Thompson at (919) 653-6964.

Sincerely,



Shannon V. Becker  
President  
Aqua North Carolina, Inc.

SVB/rl



Shannon V. Becker, President

O: 919.653.5770 • F: 919.460.1788 • SVBecker@AquaAmerica.com

March 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  
 Jamison Subdivision, Wake County  
 WSF ID No.: Well #6, P03  
 Water System No: NC4392188

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 Jamison Park Well #6, P03. The Jamison Park water system is comprised of four active wells and four points of entry (POE). The current number of customers served is 209 and the system is approved to serve 220 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, 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 Results	
	Approved		Fe (mg/L)	Mn (mg/L)
Jamison Park Well #6, P03 (Samples collected 2/11/14)	150	4.9	0.6	0.02
Jamison Park Well #6, P03 (Samples collected 3/8/16)	150	5.5	0.28	0.000
Jamison Park Well #6, P03 (Samples collected 9/22/16)	150	4.4	0.13	0.055

Page Two  
Jamison Park Subdivision Well #6, P03  
March 30, 2017

Jamison Park Well #6, P03 (Samples collected 12/13/16)	150	4.3	0.24	0.074
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Updated field samples were collected on December 13, 2016, and the results are shown in the table above.

**Flushing**

The Jamison Park water system was last flushed December 19, 2016. The next scheduled flushing is December 2017.

**Customer Complaints**

Aqua received zero customer complaints from the Jamison Park water system since the last update provided in December 2016.

Aqua has no current plans to add further treatment at Well #6. Therefore, based on the updated information provided above including the limited use of this well's supply in coordination with the remaining active wells serving this system, 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 Moses Thompson at (919) 653-6964.

Sincerely,

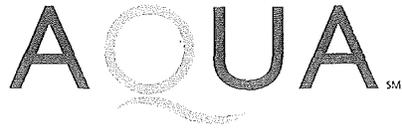


Shannon V. Becker  
President  
Aqua North Carolina, Inc.

SVB/rl

OFFICIAL COPY

Sep 19 2018



Shannon V. Becker, President

O: 919.653.5770 • F: 919.460.1788 • SVBecker@AquaAmerica.com

March 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  
 Kennebec Farms Subdivision, Wake County  
 WSF ID No.: Well #2, P01  
 Water System No: NC4092064

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 Kennebec Farms Well #2, P01. The Kennebec Farms water system is comprised of three active wells and three points of entry (POE). The current number of customers served is 164 and the system is approved to serve 173 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.

**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)
Kennebec Farms, Well #2, P01 (Samples collected on 4/6/15)	20	1.6 Zero hours run time since May 2016	1.16	0.2

Page Two  
Kennebec Farms Subdivision, Well #2, P01  
March 30, 2017

**System Flushing**

The Kennebec Farms water system is flushed on an annual basis with the most recent flushing occurring in October 2016.

The hydropneumatic tank was cleaned in October 2015.

**Discolored Water Complaints**

Aqua has received zero customer complaints from Kennebec Farms water system since the last update provided in December 2016.

**Corrective Actions**

Analysis of the iron and manganese levels 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 August 2013. Aqua has flushed the distribution system numerous times over the past three years and will continue to flush the distribution system on an annual basis and continue to optimize the sequestration at each well.

The Kennebec Master water system contains two other wells - Stamey's Walk Well #1 and Westmore Well #1, and both have greensand filtration. In addition, a Harmsco particulate filter was installed at Kennebec Well #2 in September 2015. Because system demand is adequately met consistently with the two other wells in the system, Aqua does not recommend any additional treatment at Well #2, which remains offline. Aqua will continue to manage the run times at Kennebec Well #2 to a minimum and continue to exercise the well regularly in the event a back-up well is needed, the well will be ready for use if it needs to be placed into service.

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

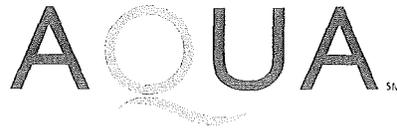
Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact Moses Thompson at (919)653-6964.

Sincerely,



Shannon V. Becker  
President  
Aqua North Carolina, Inc.

SVB/rl



Shannon V. Becker, President

O: 919.653.5770 • F: 919.460.1788 • SVBecker@AquaAmerica.com

March 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

Mr. W. Allen Hardy  
Middle Creek Acres Subdivision, Well #1, P01  
March 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	3/9/17	1.2 NTU	0.61 NTU

**System Flushing**

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

**Discolored Water Complaints**

Aqua has received zero customer complaints from the Middle Creek Acres water system since the last update provided in December 2016.

**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. 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. 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. Aqua also plans to install a cartridge filter at Well #1 in the second 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 Moses Thompson at (919)653-6964.

Sincerely,



Shannon V. Becker  
President  
Aqua North Carolina, Inc.

SVB/rl



Shannon V. Becker, President

O: 919.653.5770 • F: 919.460.1788 • SVBecker@AquaAmerica.com

March 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  
 Middle Creek Master, Wake County  
 WSF ID No.: Well #1, P01  
 Water System No: NC0392355

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 Master Well #1, P01. The Middle Creek Master water system is comprised of five active wells and four points of entry (POE). The current number of customers served is 269 and the system is approved to serve 299 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	
	Approved		Fe (mg/L)	Mn (mg/L)
Middle Creek Master, Well #1, P01	NA	0	NA	NA

Well #1 was placed on the “other” status and therefore this well is not active.

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

Page Two  
Middle Creek Master, Well #1, P01  
March 30, 2017

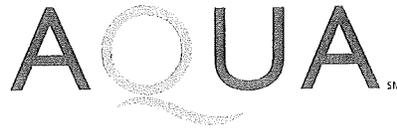
If you have any questions or comments, please contact Moses Thompson at (919) 653-6964.

Sincerely,



Shannon V. Becker  
President  
Aqua North Carolina, Inc.

SVB/rl



Shannon V. Becker, President

O: 919.653.5770 • F: 919.460.1788 • SVBecker@AquaAmerica.com

March 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		0.85	<u>Raw</u> 4.2 NTU	<u>POE</u> 0.82 NTU

Page Two  
Northgate Subdivision, Well #1, P01  
March 30, 2017

12/20/2016				
Northgate, Well #1 PO1 (Samples collected on 03/8/2017		0.83	<u>Raw</u> 5.8 NTU	<u>POE</u> 0.75 NTU

**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 September 2017.

**Discolored Water Complaints**

Aqua has received zero customer complaints from the Northgate water system since the last update provided in December 2016.

**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 installed a cartridge filter in March 2017; however, Aqua is concerned that the GAC filter's replacement cycle may be shortened or become inoperable due to the insoluble iron.

On December 30, 2016, Aqua filed for approval from the North Carolina Utilities Commission (Commission) for the installation of a filtration system at Northgate Well #1. 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.

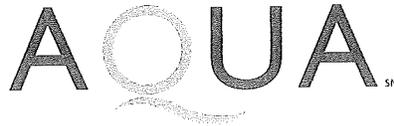
Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact Moses Thompson at (919) 653-6964.

Sincerely,



Shannon V. Becker  
President

SVB/rl



Shannon V. Becker, President

O: 919.653.5770 • F: 919.460.1788 • SVBecker@AquaAmerica.com

March 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, PO1 (Samples collected on 11/11/16)	34	2		POE = 7.6 NTU

Page Two  
Olde South Trace Subdivision, Well #1, P01  
March 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 December 2016.

**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 collected a special sample for turbidity on November 11, 2016, from the point of entry 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. Installation of a cartridge filter at Well #1 was completed on March 27, 2017. 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.

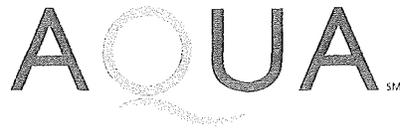
Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact Moses Thompson at (919) 653-6964.

Sincerely,



Shannon V. Becker  
President  
Aqua North Carolina, Inc.

SVB/rl



Shannon V. Becker, President

O: 919.653.5770 • F: 919.460.1788 • SVBecker@AquaAmerica.com

March 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

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

River Oaks, Well #3, P02 (Samples collected (Collected 03/07/2017)	50	0.0	<u>Raw</u> 21 NTU	<u>POE</u> 36 NTU
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**System Flushing**

The River Oaks water system is flushed on an annual basis with the most recent flushing being June 28 through June 30, 2016. The next scheduled flushing will be in June 2017.

**Discolored Water Complaints**

Aqua has received zero customer complaints from the River Oaks water system since the last update provided in December 2016.

**Corrective Actions**

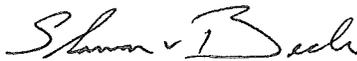
Analysis of the iron and manganese levels reveals the well has elevated concentrations of iron and manganese at Well #3. In an effort to ensure that the drinking water was not discolored due to the presence of the minerals, Aqua began feeding SeaQuest in September 2015. Since then Aqua has flushed the 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 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 December 2016, 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 Moses Thompson at (919) 653-6964.

Sincerely,



Shannon V. Becker  
President  
Aqua North Carolina, Inc.

SVB/rl

OFFICIAL COPY

Sep 19 2018



Shannon V. Becker, President

O: 919.653.5770 • F: 919.460.1788 • SVBecker@AquaAmerica.com

March 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

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

Saddleridge, Well #20, P20 (Samples collected on 03/6/2017)	5	3.1	Raw < 0.5 NTU	POE 1.5 NTU
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**System Flushing**

The Saddleridge water system is flushed on an annual basis with the most recent flushing occurring June 20 through June 24, 2016. The next scheduled flushing will be June 2017.

**Discolored Water Complaints**

Aqua has received zero water quality complaints from the Saddleridge water system since the last update provided in December 2016.

**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 has been changed to allow the well to operate in lag mode. A cartridge filter was installed at this well on December 20, 2016. Aqua will continue to flush the distribution system annually. A special raw and point of entry sample was collected on March 6, 2017, and the results are shown in the table above. We will continue to monitor 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 Moses Thompson at (919) 653-6964.

Sincerely,



Shannon V. Becker  
President  
Aqua North Carolina, Inc.

SVB/rl



Shannon V. Becker, President

O: 919.653.5770 • F: 919.460.1788 • SVBecker@AquaAmerica.com

March 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  
March 30, 2017

**System Flushing**

The Shadow Lakes water system was most recently flushed in June 2016 and the next flushing is scheduled for June 2017.

**Discolored Water Complaints**

Since the update provided in December 2016, Aqua has received three customer complaints for chlorine smell, these complaints were received in March 2017. Aqua opened the blow off and performed light flushing to help resolve these complaints.

**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. By Order dated March 1, 2016, from the North Carolina Utilities Commission, Aqua received approval to install a filtration system at Well #1, which is scheduled to be completed in December 2017. In the meantime, Aqua will continue to flush the Shadow Lakes water system on a regular basis until the installation of the filtration system is complete. Aqua will also continue to optimize the sequestration treatment at the well and monitor the system for customer complaints.

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 Moses Thompson at (919)653-6964.

Sincerely,



Shannon V. Becker  
President  
Aqua North Carolina, Inc.

SVB/rl

OFFICIAL COPY

Sep 19 2018



Shannon V. Becker, President

O: 919.653.5770 • F: 919.460.1788 • SVBecker@AquaAmerica.com

March 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  
 March 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

**System Flushing**

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

**Discolored Water Complaints**

Aqua received zero customer complaints from the Southwood-Surry Ridge water system since the August 2016 the update provided in December 2016.

**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 Well #1 on September 1, 2016, and from Well #3 on November 3, 2016, but the sample kit order was incorrect and only the raw sample for turbidity was collected at Well #1 and only a POE turbidity sample was collected from the entry point at Well #3. A sample was collected from Southwood Well #1 on March 22, 2017, and the results are shown in the table above. Samples were collected for Cary Oaks Well #3 on March 23, 2017. 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 December 2017. 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 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.

Southwood- Surry Ridge Subdivision, Well #1 (Southwood) P01 and Well #3 (Cary Oaks) P03  
March 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 Moses Thompson at (919) 653-6964.

Sincerely,



Shannon V. Becker  
President  
Aqua North Carolina, Inc.

SVB/rl



Shannon V. Becker, President

O: 919.653.5770 • F: 919.460.1788 • SVBecker@AquaAmerica.com

March 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, PO3 (Samples collected on 12/21/2016)	75	1.5	0.0392	0.0023

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

**System Flushing**

The Trappers Creek water system is flushed on an annual basis with the most recent flushing being in May 2016. The next scheduled flushing will be May 2017.

**Discolored Water Complaints**

Aqua received zero customer complaints from Trapper's Creek water system since the last update provided in December 2016.

**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 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 will collect a new compliance IOC sample in April 2017.

Based on the low results received for iron and manganese, Aqua requests that the requirement to submit further quarterly status reports be discontinued.

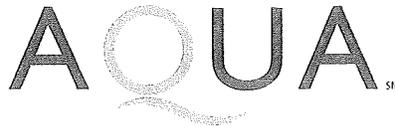
Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact Moses Thompson at (919) 653-6964.

Sincerely,



Shannon V. Becker  
President  
Aqua North Carolina, Inc.

SVB/rl



Shannon V. Becker, President

O: 919.653.5770 • F: 919.460.1788 • SVBecker@AquaAmerica.com

March 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 flushed in May 2016. The next scheduled flushing is May 2017.

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

**Discolored Water Complaints**

Aqua has received zero customer complaints from the Tyndrum water system since the last update in December 2016.

**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.

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 Moses Thompson at (919) 653-6964.

Sincerely,



Shannon V. Becker  
President  
Aqua North Carolina, Inc.

SVB/rl

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Sep 19 2018



Shannon V. Becker, President

O: 919.653.5770 • F: 919.460.1788 • SVBecker@AquaAmerica.com

March 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 – 1.7 #4 – 0.0	Well #1 Raw = 3.0 NTU Well #4 Raw = 0.52 NTU	POE = 0.66 NTU

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

**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

**System Flushing**

The Upchurch water system is flushed on an annual basis, and was most recently flushed in February 2017. Below are dates the water system was flushed in the last five years.

- July 2013
- July and December 2014
- August and November 2015
- August 2016
- February 2017

The hydropneumatic tank was cleaned in November 2015.

**Discolored Water Complaints**

Since December 2016, Aqua has received three customer complaints regarding cloudy water from the Upchurch water system. Aqua believes the cloudy water was due to air in the water which was caused by the aerated water in the storage tank due to fluctuating temperatures and unrelated to elevated concentrations of iron and manganese.

**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 annually and will continue to flush the distribution system at this reoccurring frequency. Well #1 is supplying all the water to the system at this time, and Aqua only runs Well #4, which has the higher concentration of iron, 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 March 10, 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.

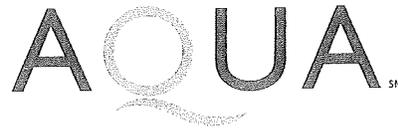
Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact Moses Thompson at (919)653-6964.

Sincerely,



Shannon V. Becker  
President  
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SVB/rl



Shannon V. Becker, President

O: 919.653.5770 • F: 919.460.1788 • SVBecker@AquaAmerica.com

March 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) Approved	12-Month Avg. Pump Runtime (hrs/day)	Most Recent Inorganic Sampling	
			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

Page Two  
Wakefield Plantation Subdivision, Well #6, P06  
March 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 April 2018.

The hydropneumatic 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 December 2016.

**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 problems 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 the liquid phosphate treatment and a quarterly raw and point of entry turbidity sample will be taken in the second 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 Moses Thompson at (919) 653-6964.

Sincerely,



Shannon V. Becker  
President  
Aqua North Carolina, Inc.

SVB/rl

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Sep 19 2018