



September 29, 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 current number of customers served is 154 and the system is approved to serve 155 connections. Four approved and active wells are needed to maintain sufficient capacity to serve this system. Well #1 along with Wells #3 and #4, which are a combined entry, are all treated with chlorine and SeaQuest. Well #2 utilizes a greensand filtration unit to address heightened contaminant levels. Use of Well #1 is minimized and only used to facilitate capacity needs during periods of high demand.

Aqua has compiled the requested information for Well #1, PO1 in a table format on the following pages:

- Table 1 provides a summarization of well specifications, sample results, and customer complaints since the last quarterly update.
- Table 2 provides a summary of POE and distribution iron and manganese samples that has begun to be taken on a bi-weekly basis starting September 2017 to further show positive results of our ongoing efforts to improve the clarity of the water we provide and eliminating customer complaints.
- Table 3 provides a summary of completed and planned action items.

UPDATED QUARTERLY STATUS REPORT

Table 1 - Well and Customer Complaint Data:								
Well Name and No.	Approved (gpm)	Date	Ave. Run Time	mg/L		NTU*		Customer Complaints In Q3 2017
				Fe	Mn	Well Head	POE	
Avocet, Well #1 (P01)	32	4/26/2016	5.5	1.60	0.112	-	-	0
		11/7/2016	0.0	-	-	35	16	
		4/4/2017	0.0	-	-	9.2	2.0	
		7/18/2017	0.0	-	-	7.6	4.6	

* NTU <1 is a measure used to determine turbidity and effectiveness of sequestration. Aqua agreed to begin taking soluble/insoluble samples to determine the effectiveness of sequestration starting in September 2017.

Table 2 - Avocet, Well #1 (P01) POE and Distribution Iron and Manganese Data:										
Date	Ave. Run Time	gpm	Total/Soluble							
			Total Fe	Sol. Fe	Total Fe	Sol. Fe	Total Mn	Sol. Mn	Total Mn	Sol. Mn
			POE	POE	Dist.	Dist.	POE	POE	Dist.	Dist.
9/13/2017	.23	32	1.54	0.187	0.302	0.083	0.103	0.0937	0.119	0.113

Comment: Recent flushing efforts have been successful in removing 73% of the total iron & manganese particulates our distribution system. Sequestration continues to aid in the process as well

Table 3 - Completed Activities and Planned Activities

Well Name and No.	Completed Activities	Planned Activities
Avocet, Well #1 (P01)	<ul style="list-style-type: none"> • September 2015 – Starting using SeaQuest • April 2017 – Flushed system • September 2017 – Started distribution and POE total and soluble sampling 	<ul style="list-style-type: none"> • Q2- 2018 – Perform annual flushing • Continue to minimize usage of this well. • We will continue to optimize SeaQuest based on bi-weekly total and soluble sampling

Comments: A greensand filter installed at Well #2 was replaced in July, 2017 at a cost of approximately \$40,000. Well #12 is a new well that is expected to be placed on-line in the fourth quarter of 2017. This well will be interconnected with Well #2 to benefit from the greensand filtration. These efforts will allow Aqua to further minimize the use of Well #1 and realize improved water quality within this system.

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

Sincerely,



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

MAT/rl

September 29, 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, P67, P75, P76, P92, P93, P97, 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.

Due to the number of wells associated with our Bayleaf Master System Notice of Deficiencies, Aqua has compiled the requested information for WSF ID Nos. P12, P16, P19, P28, P39, P63, P75, P76, P92, P3B, P4B, P7B in table format on the following pages:

- Table 1 provides a summarization of well specifications, sample results, and customer complaints since the last quarterly update.
- Table 2 provides a summary of POE and distribution iron and manganese samples that will be taken on a bi-weekly basis as of September 2017 to further show positive results of our ongoing efforts to improve the clarity of the water we provide and eliminating customer complaints.
- Table 3 provides a summary of completed and planned action items.
- Table 4 provides a summary of customer complaint information.

Table 1 - Well and Customer Complaint Data:

Well Name and No.	Approved (gpm)	Date	Ave. Run Time	mg/L		NTU*		Customer Complaints In Q3 2017
				Fe	Mn	Well Head	Entry Pt.	
Swans Mill Well #1 (P16)	80	3/24/2015	0	7.8	0.02	-	-	0
		12/20/2016	13.5	-	-	0.18	0.13	
		3/23/2017	5.7	-	-	<.10	0.10	
		6/8/2017	10.2	-	-	0.15	0.26	

* NTU <1 is a measure used to determine turbidity and effectiveness of sequestration. Aqua agreed to begin taking soluble/insoluble samples to determine the effectiveness of sequestration starting in September 2017.

Table 2 – Swans Mill Well #1 (P16) POE and Distribution Iron and Manganese Data:

Date	Ave. Run Time	gpm	Total/Soluble								
			Total Fe	Sol. Fe	Total Fe	Sol. Fe	Total Mn	Sol. Mn	Total Mn	Sol. Mn	
			POE	POE	Dist.	Dist.	POE	POE	Dist.	Dist.	
09/15/2017	10.21	80	.0409	<.022	<.022	<.022	<.001	<.001	<.001	<.001	.0016

Comments:
 Recent flushing efforts have been successful in removing 45% of the total iron & manganese particulates our distribution system. Sequestration continues to aid in the process as well

Table 3 - Completed Activities and Planned Activities

Well Name and No.	Completed Activities	Planned Activities
Swans Mill Well #1 (P16)	<ul style="list-style-type: none"> Sept 2015 - Started using SeaQuest Jan - April 2016 - Flushed system September 2017- Flushing completed September 2017 – Started Distribution and POE total and soluble sampling 	<ul style="list-style-type: none"> Q1/Q2 2018 – Perform annual flushing We will continue to optimize SeaQuest based on bi-weekly total and soluble sampling

Comments:
 Several Bayleaf system wells are interconnected. The recent replacement and upgrade completed on the filter at Coachman's Trail Well #4 has generally improved water in the Bayleaf system, including Swan's Mill.

Table 1 - Well and Customer Complaint Data:

Well Name and No.	Approved (gpm)	Date	Ave. Run Time	mg/L		NTU*		Customer Complaints In Q3 2017
				Fe	Mn	Well Head	Entry Pt.	
Barony Well #5 (P63)	77	1/6/2014	11	1.0	0.47	-	-	0
		9/20/2016	14.9	-	-	4.4	1.6	
		01/16/2017	7.43	1.35	.61	-	-	
		3/23/2017	5.5	-	-	14	1.4	
		6/8/2017	8.5	-	-	6.2	2	
		4/19/2017	6.2	1.53	.62	-	-	
		4/19/2017	6.2	-	-	22	6.7	

* NTU <1 is a measure used to determine turbidity and effectiveness of sequestration. Aqua agreed to begin taking soluble/insoluble samples to determine the effectiveness of sequestration starting in September 2017.

Table 2 - Barony Well #5 (P63) POE and Distribution Iron and Manganese Data:

Date	Ave. Run Time	gpm	Total/Soluble							
			Total Fe	Sol. Fe	Total Fe	Sol. Fe	Total Mn	Sol. Mn	Total Mn	Sol. Mn
			POE	POE	Dist.	Dist.	POE	POE	Dist.	Dist.
09/15/2017	9.93	77	1.71	<.022	.0322	.0254	.550	.424	.0156	.0044

Comments:

Aqua's installation of a cartridge filter has been successful in removing 98% of the total iron & manganese particulates from entering the distribution system. Sequestration and flushing continues to aid in this process as well.

Table 3 - Completed Activities and Planned Activities

Well Name and No.	Completed Activities	Planned Activities
Barony Well #5 (P63)	<ul style="list-style-type: none"> Sept. 2015 Started using SeaQuest Jan.-April 2016 Flushed system September 2017 – Cartridge filter installed September 2017 – Started Distribution and POE total and soluble sampling 	<ul style="list-style-type: none"> Q1/Q2 2018 – Perform annual flushing We will continue to optimize SeaQuest based on bi-weekly total and soluble sampling

Comments:

Several Bayleaf system wells are interconnected. The recent replacement and upgrade completed on the filter at Coachman's Trail Well #4 has generally improved water in the Bayleaf system, including Barony. Aqua installed a cartridge filter (rated for 210 psi) in Barony on well #5 in Q3, 2017.

Table 1 - Well and Customer Complaint Data:

Well Name and No.	Approved (gpm)	Date	Ave. Run Time	mg/L		NTU*		Customer Complaints In Q3 2017
				Fe	Mn	Well Head	Entry Pt.	
Enclave at Barton Creek Bluffs Well #18 (P75)	75	10/9/2013	8.1	1.0	.29	-	-	0
		10/12/2016	10.46	1.49	.348	-	-	
		12/20/2016	12.8	-	-	3.2	1.5	
		3/23/2017	6.9	-	-	2.6	2.4	
		4/26/2017	6.4	-	-	13	3.1	
		6/8/2017	7.6	-	-	6	5.1	

* NTU <1 is a measure used to determine turbidity and effectiveness of sequestration. Aqua agreed to begin taking soluble/insoluble samples to determine the effectiveness of sequestration starting in September 2017.

Table 2 - Enclave at Barton Creek Bluffs Well #18 (P75) POE and Distribution Iron and Manganese Data:

Date	Ave. Run Time	gpm	Total/Soluble							
			Total Fe	Sol. Fe	Total Fe	Sol. Fe	Total Mn	Sol. Mn	Total Mn	Sol. Mn
			POE	POE	Dist.	Dist.	POE	POE	Dist.	Dist.
09/13/2017	7.6	75	1.03	.151	<.022	<.022	.256	0.241	0.0304	0.027

Comments:

DIST samples show Fe and Mn are below limits. Aqua's installation of a cartridge filter has been successful in removing 96% of the total iron & manganese particulates from entering the distribution system. Sequestration and flushing continues to aid in this process as well.

Table 3 - Completed Activities and Planned Activities

Well Name and No.	Completed Activities	Planned Activities
Enclave at Barton Creek Bluffs Well #18 (P75)	<ul style="list-style-type: none"> Oct. 2015 - Started using SeaQuest Jan - April 2016 - Flushed system Feb. 2017 - Flushed system June 2017 - Installed cartridge filter September 2017 - Started Distribution and POE total and soluble sampling 	<ul style="list-style-type: none"> Q1/Q2 2018 - Perform annual flushing Determine effectiveness of cartridge filter with ongoing monitoring We will continue to optimize SeaQuest based on bi-weekly total and soluble sampling

Comments:

Several Bayleaf system wells are interconnected. The recent replacement and upgrade completed on the filter at Coachman's Trail Well #4 has generally improved water in the Bayleaf system.

Table 1 - Well and Customer Complaint Data:

Well Name and No.	Approved (gpm)	Date	Ave. Run Time	mg/L		NTU*		Customer Complaints In Q3 2017
				Fe	Mn	Well Head	Entry Pt.	
Hawthorne Well #1 and Well #2 (P76) (Well #2 is disconnected due to high FE and MN).	73	5/19/2016	10.7	1.01	0.53	-	-	0
		9/20/2016	14.2	-	-	22	1.7	
		3/23/2017	10.3	-	-	14	3.9	
		6/8/2017	0	-	-	12	11	

* NTU <1 is a measure used to determine turbidity and effectiveness of sequestration. Aqua agreed to begin taking soluble/insoluble samples to determine the effectiveness of sequestration starting in September 2017.

Table 2 – Hawthorne Well #1 and Wells #2 (P76) POE and Distribution Iron and Manganese Data:

Date	Ave. Run Time	gpm	Total/Soluble							
			Total Fe	Sol. Fe	Total Fe	Sol. Fe	Total Mn	Sol. Mn	Total Mn	Sol. Mn
			POE	POE	Dist.	Dist.	POE	POE	Dist.	Dist.
9/15/2017	16.9	73	4.02	0.246	<0.022	<0.022	0.562	0.396	0.0337	0.0324
9/28/2017	21.72		0.833	0.164	0.059	<0.022	0.531	0.184	0.0108	0.0012

Comments:

Aqua's installation of a cartridge filter has been successful in removing 95% of the total iron & manganese particulates from entering the distribution system. Sequestration and flushing continues to aid in this process as well.

Table 3 - Completed Activities and Planned Activities

Well Name and No.	Completed Activities	Planned Activities
Hawthorne Well #1 and Well #2 (P76) (Well #2 is disconnected due to high FE and MN).	<ul style="list-style-type: none"> Feb. 2016 -Started Using SeaQuest Jan - April 2016 - Flushed system Feb. 2017 -Flushed system June 2017 - Installed cartridge filter September 2017 – Started Distribution and POE total and soluble sampling 	<ul style="list-style-type: none"> Q1/Q2 2018 – Perform annual flushing Determine effectiveness of cartridge filter with ongoing monitoring We will continue to optimize SeaQuest based on bi-weekly total and soluble sampling

Comments:

Well #1 is currently offline due to pump/motor change. Parts for repair were ordered and received. The well repair is scheduled to be completed before the end of Q4. Well #2 is offline with no plans to bring it back on line (so as to limit the amount of heightened FE and MN coming from well #2).

Table 1 - Well and Customer Complaint Data:

Well Name and No.	Approved (gpm)	Date	Ave. Run Time	mg/L		NTU*		Customer Complaints In Q3 2017
				Fe	Mn	Well Head	Entry Pt.	
Woodvalley #9 (P92)	38	10/7/2015	8.39	0.8	0.5	-	-	0
		12/19/2016	12.9	-	-	4	0.91	
		3/23/2017	7.3	-	-	11	2.9	
		6/16/2017	0	-	-	0.1	0.1	

* NTU <1 is a measure used to determine turbidity and effectiveness of sequestration. Aqua agreed to begin taking soluble/insoluble samples to determine the effectiveness of sequestration starting in September 2017.

Table 2 – Woodvalley #9 (P92) POE and Distribution Iron and Manganese Data:

Date	Ave. Run Time	gpm	Total/Soluble							
			Total Fe	Sol. Fe	Total Fe	Sol. Fe	Total Mn	Sol. Mn	Total Mn	Sol. Mn
			POE	POE	Dist.	Dist.	POE	POE	Dist.	Dist.
09/14/2017	9.54	38	.221	<.022	.0910	<.022	.344	.264	.0130	.0011

Comments:

DIST samples show Fe and Mn are below limits. Cartridge Filter is working in removing some of the iron and manganese before it enters into the distribution system.

Table 3 - Completed Activities and Planned Activities

Well Name and No.	Completed Activities	Planned Activities
Woodvalley #9 (P92)	<ul style="list-style-type: none"> Feb. 2016 - Started using SeaQuest Jan.-April 2016 - Flushed system Feb. 2017 - Flushed system June 2017 – Well was treated via Aqua free June 2017 - Installed cartridge filter September 2017 – Started Distribution and POE total and soluble sampling 	<ul style="list-style-type: none"> Q1/Q2 2018 – Perform annual flushing Determine effectiveness of cartridge filter with ongoing monitoring We will continue to optimize SeaQuest based on bi-weekly total and soluble sampling We are starting the executive summary for possible green sand filtration

Comments:

Cartridge Filter is working in removing some of the iron and manganese before it enters into the distribution system.

Table 1 - Well and Customer Complaint Data:

Well Name and No.	Approved (gpm)	Date	Ave. Run Time	mg/L		NTU*		Customer Complaints In Q3 2017
				Fe	Mn	Well Head	Entry Pt.	
Carlyle Manor Well #4 (P3B)	73	10/7/2015	8.5	2.0	0.67	-	-	1
		9/20/2016	11.7	-	-	18	1.3	
		10/3/2016	10.5	1.21	.68	-	-	
		3/23/2017	5.6	-	-	5,1	2.6	
		6/9/2017	8.6	-	-	2.4	2.3	

* NTU <1 is a measure used to determine turbidity and effectiveness of sequestration. Aqua agreed to begin taking soluble/insoluble samples to determine the effectiveness of sequestration starting in September 2017.

Table 2 – Carlyle Manor Well #4 (P3B) POE and Distribution Iron and Manganese Data:

Date	Ave. Run Time	gpm	Total/Soluble							
			Total Fe	Sol. Fe	Total Fe	Sol. Fe	Total Mn	Sol. Mn	Total Mn	Sol. Mn
			POE	POE	Dist.	Dist.	POE	POE	Dist.	Dist.
9/24/2017	6.04	73	1.27	0.0475	0.491	0.0485	0.791	0.690	0.0968	0.0136

Comments:

Aqua's installation of a cartridge filter has been successful in removing 71% of the total iron & manganese particulates from entering the distribution system. Sequestration and flushing continues to aid in this process as well.

Table 3 - Completed Activities and Planned Activities

Well Name and No.	Completed Activities	Planned Activities
Carlyle Manor Well #4 (P3B)	<ul style="list-style-type: none"> Sept. 2015 - Started using SeaQuest Jan.-April 2016 - Flushed system June 2017 - Installed cartridge filter September 2017 Flushing completed September 2017 – Started Distribution and POE total and soluble sampling 	<ul style="list-style-type: none"> Q1 2018 – Perform annual flushing Determine effectiveness of cartridge filter with ongoing monitoring We will continue to optimize SeaQuest based on bi-weekly total and soluble sampling

Comments:

Several Bayleaf system wells are interconnected. The recent replacement and upgrade completed on the filter at Coachman's Trail Well #4 has generally improved water in the Bayleaf system, including Carlyle Manor. Addition of filters at Coachman's Trail Well #4, Devon wells #1 and #3, Stonebridge Well #17, and Stone Creek #18 has improved water quality.

Table 1 - Well and Customer Complaint Data:

Well Name and No.	Approved (gpm)	Date	Ave. Run Time	mg/L		NTU*		Customer Complaints In Q3 2017
				Fe	Mn	Well Head	Entry Pt.	
Seville Well #1 (P4B)	44	1/9/2016	7.25	1.0	0.5	-	-	0
		9/20/2016	14.1	-	-	3.8	0.84	
		1/19/2017	7.43	1.02	.557	-	-	
		3/23/2017	5.8	-	-	2.3	0.85	
		6/8/2017	8.5	-	-	2.5	3.6	

* NTU <1 is a measure used to determine turbidity and effectiveness of sequestration. Aqua agreed to begin taking soluble/insoluble samples to determine the effectiveness of sequestration starting in September 2017.

Table 2 – Seville Well #1 (P4B) POE and Distribution Iron and Manganese Data:

Date	Ave. Run Time	gpm	Total/Soluble							
			Total Fe	Sol. Fe	Total Fe	Sol. Fe	Total Mn	Sol. Mn	Total Mn	Sol. Mn
			POE	POE	Dist.	Dist.	POE	POE	Dist.	Dist.
09/15/2017	9.81	44	.947	.0915	.495	.246	.467	.421	.0540	.0599

Comments:

Recent flushing efforts have been successful in removing 61% of the total iron & manganese particulates our distribution system. Sequestration continues to aid in the process as well

Table 3 - Completed Activities and Planned Activities

Well Name and No.	Completed Activities	Planned Activities
Seville Well #1 (P4B)	<ul style="list-style-type: none"> Aug. 2015 - Started using SeaQuest Jan.-April 2016 - Flushed system September 2017 Flushing completed September 2017 – Started Distribution and POE total and soluble sampling 	<ul style="list-style-type: none"> Q1 2018 – Perform annual flushing We will continue to optimize SeaQuest based on bi-weekly total and soluble sampling Investigating the feasibility of installing a cartridge filter

Comments:

Several Bayleaf system wells are interconnected. The recent replacement and upgrade completed on the filter at Coachman's Trail Well #4 has generally improved water in the Bayleaf system, including Seville. Addition of filters at Coachman's Trail Well #4, Devon wells #1 and #3, Stonebridge Well #17, and Stone Creek #18 has improved water quality. Aqua is investigating the option of installing a cartridge filter at this location.

Table 1 - Well and Customer Complaint Data:

Well Name and No.	Approved (gpm)	Date	Ave. Run Time	mg/L		NTU*		Customer Complaints In Q3 2017
				Fe	Mn	Well Head	Entry Pt.	
George's Grant Well #1 (P7B)	66	7/16/2015	6.16	1.3	0.63	-	-	0
		12/20/2016	15	-	-	15	2.4	
		3/23/2017	5.5	-	-	6.4	2.7	
		6/8/2017	8.5	-	-	9.6	7.2	

* NTU <1 is a measure used to determine turbidity and effectiveness of sequestration. Aqua agreed to begin taking soluble/insoluble samples to determine the effectiveness of sequestration starting in September 2017.

Table 2 – George's Grant Well #1 (P7B) POE and Distribution Iron and Manganese Data:

Date	Ave. Run Time	gpm	Total/Soluble							
			Total Fe	Sol. Fe	Total Fe	Sol. Fe	Total Mn	Sol. Mn	Total Mn	Sol. Mn
			POE	POE	Dist.	Dist.	POE	POE	Dist.	Dist.
09/15/2017	9.46	66	1.32	.0328	1.15	.0275	.582	.484	.266	.127

Comments:
 Cartridge Filter is working in removing some of the iron and manganese before it enters into the distribution system. Sequestration is also assisting in the soluble vs insoluble deviation.

Table 3 - Completed Activities and Planned Activities

Well Name and No.	Completed Activities	Planned Activities
George's Grant Well #1 (P7B)	<ul style="list-style-type: none"> Oct. 2015 - Started Using SeaQuest Jan.-April 2016 - Flushed system June 2017 - Installed cartridge filter September 2017 Flushing completed September 2017 – Started Distribution and POE total and soluble sampling 	<ul style="list-style-type: none"> Q1 2018 – Perform annual flushing We will continue to optimize SeaQuest based on bi-weekly total and soluble sampling

Comments:
 Aqua will add hydro-pneumatic tank cleaning to this system if applicable

Table 1 - Well and Customer Complaint Data:

Well Name and No.	Approved (gpm)	Date	Ave. Run Time	mg/L		NTU*		Customer Complaints In Q3 2017
				Fe	Mn	Well Head	Entry Pt.	
Woodvalley Well #11 - P93	29	12/10/2015	7.3	.18	.285			0
		9/22/2016	9.7	-	-	ND	0.151	
		3/6/2017	7.91	-	-	10	.61	
		4/26/2017	10.13	-	-	8	.41	
		5/24/2017	10.4	-	-	8.4	.22	
		6/9/2017	11.8	-	-	7.6	.36	

* NTU <1 is a measure used to determine turbidity and effectiveness of sequestration. Aqua agreed to begin taking soluble/insoluble samples to determine the effectiveness of sequestration starting in September 2017.

Table 2 - Woodvalley Well #11 (P93) POE and Distribution Iron and Manganese Data:

Date	Ave. Run Time	gpm	Total/Soluble							
			Total Fe	Sol. Fe	Total Fe	Sol. Fe	Total Mn	Sol. Mn	Total Mn	Sol. Mn
			POE	POE	Dist.	Dist.	POE	POE	Dist.	Dist.
09/15/2017	9.74	29	<.0220	<.022	.720	.0420	.0325	.0248	.361	.0110

Comments:
 Sequestration is also assisting in the soluble vs insoluble deviation. Aqua will pursue cleaning of hydro pneumatic tanks in the system.

Table 3 - Completed Activities and Planned Activities

Well Name and No.	Completed Activities	Planned Activities
Woodvalley Well #11 - P93	<ul style="list-style-type: none"> December 2016 - Started using SeaQuest February 2017 - Flushed system September 2017 - Started distribution and POE total and soluble sampling 	<ul style="list-style-type: none"> Q1 2018 - Perform annual flushing We will continue to optimize SeaQuest based on bi-weekly total and soluble sampling Cleaning of Hydro-Pneumatic Tank

Comments:
 No new comments for this 3rd quarter response.

Table 1 - Well and Customer Complaint Data:

Well Name and No.	Approved (gpm)	Date	Ave. Run Time	mg/L		NTU*		Customer Complaints In Q3 2017
				Fe	Mn	Well Head	Entry Pt.	
Barton Creek Bluffs Well #10 - P67	15	6/2013	9.4	0	0.2	-	-	0
		5/31/2016	9.8	0	0.23	-	-	
		4/26/2017	7.82	-	-	5.7	3.5	
		5/17/2017	10.8	-	-	5.7	.25	
		6/8/2017	12.6	-	-	10.5	.15	

* NTU <1 is a measure used to determine turbidity and effectiveness of sequestration. Aqua agreed to begin taking soluble/insoluble samples to determine the effectiveness of sequestration starting in September 2017.

Table 2 - Barton Creek Bluffs Well #10 (P67) POE and Distribution Iron and Manganese Data:

Date	Ave. Run Time	gpm	Total/Soluble							
			Total Fe	Sol. Fe	Total Fe	Sol. Fe	Total Mn	Sol. Mn	Total Mn	Sol. Mn
			POE	POE	Dist.	Dist.	POE	POE	Dist.	Dist.
09/15/2017	9.56	15	.0390	<.022	<.022	<.022	.0981	.0959	<.00110	<.001

Comments:

DIST samples show Fe and Mn are below limits. Sequestration is also assisting in the soluble vs insoluble deviation.

Table 3 - Completed Activities and Planned Activities

Well Name and No.	Completed Activities	Planned Activities
Barton Creek Bluffs Well #10 - P67	<ul style="list-style-type: none"> March 2016 - Started using SeaQuest February 2017 - Flushed system September 2017 - Took soluble insoluble well head and distribution samples 	<ul style="list-style-type: none"> Q1 2018 - Perform annual flushing We will continue to optimize SeaQuest based on bi-weekly total and soluble sampling

Comments:

No new comments for this 3rd quarter response.

Table 1 - Well and Customer Complaint Data:

Well Name and No.	Approved (gpm)	Date	Ave. Run Time	mg/L		NTU*		Customer Complaints In Q3 2017
				Fe	Mn	Well Head	Entry Pt.	
Ethan's Glen Well #19, P97 (Combined well with Ethan's Glen #20)	18	9/17/2014	7.22	1.87	0.0179	-	-	0
		9/22/2016	10.6	.080	.078	-	-	
		3/8/2017	7.5	-	-	-	-	
		4/26/2017	7.8	-	-	.13	.31	

* NTU <1 is a measure used to determine turbidity and effectiveness of sequestration. Aqua agreed to begin taking soluble/insoluble samples to determine the effectiveness of sequestration starting in September 2017.

Table 2 - Ethan's Glen Well #19 (P97) – (Combined well with Ethan's Glen #20) POE and Distribution Iron and Manganese Data:

Date	Ave. Run Time	gpm	Total/Soluble							
			Total Fe	Sol. Fe	Total Fe	Sol. Fe	Total Mn	Sol. Mn	Total Mn	Sol. Mn
			POE	POE	Dist.	Dist.	POE	POE	Dist.	Dist.
09/14/2017	6.8	18	<.022	<.022	<.022	<.022	.0028	<.001	<.0011	<.001

Comments: POE and DIST samples show Fe and Mn are below limits.

Table 3 - Completed Activities and Planned Activities

Well Name and No.	Completed Activities	Planned Activities
Ethan's Glen Well #19, P97 (Combined well with Ethan's Glen #20)	<ul style="list-style-type: none"> Dec 2016 Submitted request for feeding SeaQuest September 2017 - Took soluble insoluble well head and distribution samples 	<ul style="list-style-type: none"> Q1 2018 – Perform annual flushing We will continue to optimize SeaQuest based on bi-weekly total and soluble sampling

Comments:
 Request that this system be taken off the list of NODs

Table 1 - Well and Customer Complaint Data:

Well Name and No.	Approved (gpm)	Date	Ave. Run Time	mg/L		NTU*		Customer Complaints In Q3 2017
				Fe	Mn	Well Head	Entry Pt.	
Ethan's Glen Well #20, P97 (Combined well with Ethan's Glen #19)	11	9/17/2014	9.6	1.87	0.0179	-	-	0
		9/22/2016	10.6	.38	.035	-	-	
		3/8/2017	7.5	-	-	-	-	
		4/26/2017	7.8	-	-	.51	.31	
		09/14/2017	6.3	-	-	-	-	

* NTU <1 is a measure used to determine turbidity and effectiveness of sequestration. Aqua agreed to begin taking soluble/insoluble samples to determine the effectiveness of sequestration starting in September 2017.

Table 2 – Ethan's Glen Well #20 (P97) – (Combined well with Ethan's Glen #19) POE and Distribution Iron and Manganese Data:

Date	Ave. Run Time	gpm	Total/Soluble							
			Total Fe	Sol. Fe	Total Fe	Sol. Fe	Total Mn	Sol. Mn	Total Mn	Sol. Mn
			POE	POE	Dist.	Dist.	POE	POE	Dist.	Dist.
09/14/2017	6.8	11	<.022	<.022	<.022	<.022	.00275	<.001	<.0011	<.0011

Comments: POE and DIST samples show Fe and Mn are below limits.

Table 3 - Completed Activities and Planned Activities

Well Name and No.	Completed Activities	Planned Activities
Ethan's Glen Well #20, P97 (Combined well with Ethan's Glen #19)	<ul style="list-style-type: none"> Dec 2016 Submitted request for feeding SeaQuest September 2017 - Took soluble insoluble well head and distribution samples 	<ul style="list-style-type: none"> Q1 2018 – Perform annual flushing We will continue to optimize SeaQuest based on bi-weekly total and soluble sampling

Comments:
 Request that this system be taken off the list of NODs

Table 4 – Water Quality Complaints 6/1/2017 – 9/21/2017

SO Type	CSR Notes	Date of SO	Completion Date	Address	City State Zip	Subdivision	FSR Notes
LABD-S	Brown water still, cust adv plumber will be there all day she req for you to speak with plumber. Gate broken, push only the gate on right	6/13/2017	6/15/2017	Corner of Bayleaf Church	Raleigh, NC 27614	Carlyle Manor	Cl = 1.65
							Po4 = 1.8
							pH = 7.3
							Hardness = 153.9
							Iron (Fe) = 0.13
							Manganese (Mn) = 0.035
							Customer flushing both hot. Water heaters. Was requesting a courtesy credit. I told customer I would req

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

Sincerely,



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

MAT/rl



September 29, 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.

Aqua has compiled the requested information for Well #2, PO1 in a table format on the following pages:

- Table 1 provides a summarization of well specifications, sample results, and customer complaints since the last quarterly update.
- Table 2 provides a summary of POE and distribution iron and manganese samples that will be taken on a bi-weekly basis as of September 2017 to further show positive results of our ongoing efforts to improve the clarity of the water we provide and eliminating customer complaints.
- Table 3 provides a summary of completed and planned action items.

UPDATED QUARTERLY STATUS REPORT

Table 1 - Well and Customer Complaint Data:

Well Name and No.	Approved (gpm)	Date	Ave. Run Time	mg/L		NTU*		Customer Complaints In Q3 2017
				Fe	Mn	Well Head	Entry Pt.	
Belle Ridge, Well #2 (P02)	30	10/23/2013	1.5	1.0	0.22	-	-	0
		7/27/2016	1.14	0.48	0.21	-	-	
		12/22/2016	2.55	-	-	1.1	0.71	
		4/20/2017	1.73	-	-	2.0	0.40	
		7/13/2017	1.8	-	-	1.9	0.82	

* NTU <1 is a measure used to determine turbidity and effectiveness of sequestration. Aqua agreed to begin taking soluble/insoluble samples to determine the effectiveness of sequestration starting in September 2017.

Table 2 - Belle Ridge, Well #2 (P02) POE and Distribution Iron and Manganese Data:

Date	Ave. Run Time	gpm	Total/Soluble							
			Total Fe	Sol. Fe	Total Fe	Sol. Fe	Total Mn	Sol. Mn	Total Mn	Sol. Mn
			POE	POE	Dist.	Dist.	POE	POE	Dist.	Dist.
09/14/2017	16.8	30	0.885	0.247	0.096	<0.022	0.201	0.193	0.004	<0.001
9/26/2017	1.43		1.44	0.646	0.663	0.234	0.338	0.255	0.065	0.049

Comments: Aqua's installation of a cartridge filter has been successful in removing 59% of the total iron & manganese particulates from entering the distribution system. Sequestration and flushing continues to aid in this process as well.

Table 3 - Completed Activities and Planned Activities

Well Name and No.	Completed Activities	Planned Activities
Belle Ridge, Well #2 (P02)	<ul style="list-style-type: none"> • August 2015 – Started using SeaQuest • June 2017 – Flushed System • September 2017 – Installed cartridge filter. • September 2017 – Started distribution and POE total and soluble sampling 	<ul style="list-style-type: none"> • Q2-2018 – Perform annual flushing • We will continue to optimize SeaQuest based on bi-weekly total and soluble sampling
<p>Comments: Aqua limits the use of this well and significantly relies on Well #1 to meet system demand and maintain water quality.</p>		

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

Sincerely,



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

MAT/rf



September 29, 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 44 and the system is approved to serve 44 connections.

Aqua has compiled the requested information for Well #2, TP1 in a table format on the following pages:

- Table 1 provides a summarization of well specifications, sample results, and customer complaints since the last quarterly update.
 - Table 2 provides a summary of POE and distribution iron and manganese samples that will be taken on a bi-weekly basis as of September 2017 to further show positive results of our ongoing efforts to improve the clarity of the water we provide and eliminating customer complaints.
-
- Table 3 provides a summary of completed and planned action items.
 - Table 4 provides customer complaint information.

UPDATED QUARTERLY STATUS REPORT

Table 1 - Well and Customer Complaint Data:

Well Name and No.	Approved (gpm)	Date	Ave. Run Time	mg/L		NTU*		Customer Complaints In Q3 2017
				Fe	Mn	Well Head	Entry Pt.	
Branston, Well #2 (TP1)	49	1/5/2016	6.5	.70	0.30	-	-	2
		11/04/16	3.0	-	-	0.73	-	
		3/12/2017	5.2	-	-	<0.5	-	
		4/20/2017	4.5	-	-	<0.79	0.382	
		7/18/2017	5.8	-	-	3.3	1.1	

* NTU <1 is a measure used to determine turbidity and effectiveness of sequestration. Aqua agreed to begin taking soluble/insoluble samples to determine the effectiveness of sequestration starting in September 2017.

Table 2 - Branston, Well #2 (TP1) POE and Distribution Iron and Manganese Data:

Date	Ave. Run Time	gpm	Total/Soluble							
			Total Fe	Sol. Fe	Total Fe	Sol. Fe	Total Mn	Sol. Mn	Total Mn	Sol. Mn
			POE	POE	Dist.	Dist.	POE	POE	Dist.	Dist.
9/14/2017	8.51	49	0.545	0.0413	0.174	<0.022	0.380	0.34	0.043	0.018
9/28/2017	10.94		0.470	0.101	0.2	0.0682	0.401	0.366	0.138	0.066

Comments: Recent flushing efforts have been successful in removing 76% of the total iron & manganese particulates our distribution system. Sequestration continues to aid in the process as well

Table 3 - Completed Activities and Planned Activities

Well Name and No.	Completed Activities	Planned Activities
Branston, Well #2 (TP1)	<ul style="list-style-type: none"> • July 2013 – Started using SeaQuest • September 2016 – Flushed System • March 2017 – Flushed system • July 2017 – Flushed System • September 2017 – Started Distribution and POE total and soluble sampling 	<ul style="list-style-type: none"> • Q3 2018 – Perform annual flushing • We will continue to optimize SeaQuest based on bi-weekly total and soluble sampling • Install Cartridge Filter in Q1 2018
<p>Comments: Aqua will investigate the feasibility of installing a cartridge filter in series at this location to aid in our water quality efforts.</p>		

Table 4 - Water Quality Complaints From 7/1/2017 - 9/30/2017

SO Type	CSR Notes	Date of SO	Completion Date	Address	City State Zip	Subdivision	FSR Notes
LABD-S	CUST RPTS BLACK WATER IN THE BATHROOM AND THROUGH OUT	7/11/2017	7/11/2017	2728 BRANSTON WAY	APEX, NC 27539	BRANSTON	Cl = 0.8 Po4 = 1.2 pH = 7.2 Hardness = 102 Iron (Fe) = 0.48 Manganese (Mn) = 0.206 Water was discolored Upon arrival. Flushed
							service and opened blow -off at end of cul de sac. Told customer system would be added to flushing schedule.
LABD-S: Lab Discolored Service Order							
LABD-S	BLACK WATER PLS	7/12/2017	7/12/2017	2728 BRANSTON	APEX, NC	BRANSTON	Cl = 0.9 Po4 = 1.5

	CHECK			WAY	27539		pH = 7.2
							Hardness = 85
							Iron (Fe) = 1.01
							Manganese (Mn) = 0.623
							Water is discolored upon arrival and would not clear. System needs flushed sent email to office to schedule this... Opened blow-off at end of cul de sac.

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

Sincerely,



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

MAT/rl



September 29, 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 160 and the system is approved to serve 168 connections. Aqua has compiled the requested information for Well #1, P04 in a table format on the following pages:

- Table 1 provides a summarization of well specifications, sample results, and customer complaints since the last quarterly update.
- Table 2 provides a summary of POE and distribution iron and manganese samples that will be taken on a bi-weekly basis as of September 2017 to further show positive results of our ongoing efforts to improve the clarity of the water we provide and eliminating customer complaints.
- Table 3 provides a summary of completed and planned action items.
- Table 4 provides customer complaint information.

UPDATED QUARTERLY STATUS REPORT

Table 1 - Well and Customer Complaint Data:								
Well Name and No.	Approved (gpm)	Date	Ave. Run Time	mg/L		NTU*		Customer Complaints In Q3 2017
				Fe	Mn	Well Head	Entry Pt.	
Briarwood/Kildaire Well #1 (P04)	30	1/6/2016	5.8	0.95	0.17	-	-	5
		11/8/2016	7.5	-	-	<0.50	<.50	
		4/18/2017	6.9	-	-	2.3	1.6	
		7/18/2017	-	-	-	4.3	2.9	

* NTU <1 is a measure used to determine turbidity and effectiveness of sequestration. Aqua agreed to begin taking soluble/insoluble samples to determine the effectiveness of sequestration starting in September 2017.

Table 2 - Briarwood/Kildaire Well #1 (P04) POE and Distribution Iron and Manganese Data:										
Date	Ave. Run Time	gpm	Total/Soluble							
			Total Fe	Sol. Fe	Total Fe	Sol. Fe	Total Mn	Sol. Mn	Total Mn	Sol. Mn
			POE	POE	Dist.	Dist.	POE	POE	Dist.	Dist.
9/13/2017	6.26	30	0.558	0.157	0.430	0.0269	0.151	0.128	0.118	0.0885

Comment: Recent flushing efforts have been successful in removing 23% of the total iron & manganese particulates our distribution system. Sequestration continues to aid in the process as well

Table 3 - Completed Activities and Planned Activities

Well Name and No.	Completed Activities	Planned Activities
Briarwood/Kildaire, Well #1 (P04)	<ul style="list-style-type: none"> • June 2015 – Started using SeaQuest • June 2017 – Flushed system • August 2017 – Installed Blow-off • September 2017 – Started distribution and POE total and soluble sampling 	<ul style="list-style-type: none"> • Q2-2018 – Perform annual flushing • We will continue to optimize SeaQuest based on bi-weekly total and soluble sampling
<p>Comments: An automatic blow-off was installed at the wellhead which is equipped with a solenoid valve and actuator to discharge water at the beginning of each pump cycle. The installation of this equipment will allow the water to clear before entering treatment, subsequently allowing the treatment to be more effective by lessening the mineral concentration needed to be sequestered. Aqua is looking into the feasibility of installing a cartridge filter at this site in Q1-2018.</p>		

Table 4 – Water Quality Complaints From 7/1/2017 - 9/30/2017

SO Type	CSR Notes	Date of SO	Completion Date	Address	City State Zip	Subdivision	FSR Notes
LABD-S	CUST STATES BROWN WATER	7/21/2017	7/21/2017	3304 FERRINGTON CT	APEX, NC 27539-8879	KILDAIRE ESTATES	Cl = 1.3 Po4 = 1.0 pH = 7.6 Hardness = 102 Iron (Fe) = 0.27 Manganese (Mn) = 0.44 Auto blow offs scheduled to be installed
LABD-S	BROWN WTR PLEASE INVESTIGATE	8/25/2017	8/25/2017	4125 SUMMER RIDGE CT	APEX, NC 27539-8800	KILDAIRE ESTATES	Cl = 1.4 Po4 = 0.9 pH = 7.3 Hardness = Iron (Fe) = 0.27 Manganese (Mn) = 0,033 Water was clear customer may need to flush hot water heater

LABD-S: Lab Discolored Service Order							
LABD-S	BRENT; ASSOCIATE PASTOR; CALLED REPORTING BROWN WATER; PLZ CHECK; CUSTOMER WANTS CALL AHEAD BECAUSE WANTS TO BE THERE WHEN TECHNICIAN COMES OUT.	9/13/2017	9/14/2017	4224 BROOK CROSS DRIVE 1 INCH	APEX, NC 27539	KILDAIRE ESTATES	Cl =
							Po4 =
							pH =
							Hardness =
							Iron (Fe) =
							Manganese (Mn) =
							Flushed meter out of back flow to clear from main line. Water was clear and never discolored. Training opportunity for FSR in post investigative reporting
LABD-S	SADIE REPORTED BROWN WATER WITH SEDIMENT PLS CL CUST PRIOR TO ARRIVAL	9/14/2017	9/14/2017	4232 BROOK CROSS DR	APEX, NC 27539- 8112	KILDAIRE ESTATES	Cl = 0.8
							Po4 = 1.0
							pH = 7.2
							Hardness = 85.5
							Iron (Fe) = 1.37
							Manganese (Mn) = 0.237
							After Flushing water was discolored upon arrival and A. Bailey is going to set up flush on timer to clear main to meter/to home service.
LABD-S	PAT REPORTS BROWN WATER	9/20/2017		4205 BROOK CROSS DR	APEX, NC 27539- 8111	KILDAIRE ESTATES	Cl =
							Po4 =
							pH =
							Hardness =
							Iron (Fe) =
							Manganese (Mn) =
							FSR Training Issue Identified in post investigative documentation

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

Sincerely,


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

MAT/rl



September 29, 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.

Aqua has compiled the requested information for Well #2, P05 in a table format on the following pages:

- Table 1 provides a summarization of well specifications, sample results, and customer complaints since the last quarterly update.
- Table 2 provides a summary of POE and distribution iron and manganese samples that will be taken on a bi-weekly basis as of September 2017 to further show positive results of our ongoing efforts to improve the clarity of the water we provide and eliminating customer complaints.
- Table 3 provides a summary of completed and planned action items.
- Table 4 provides a summary of customer complaint information.

UPDATED QUARTERLY STATUS REPORT

Table 1 - Well and Customer Complaint Data:

Well Name and No.	Approved (gpm)	Date	Ave. Run Time	mg/L		NTU*		Customer Complaints In Q3 2017
				Fe	Mn	Well Head	Entry Pt.	
Cotesworth Down, Well #2, P05	33	2/14/2014	4.2	0.8	0.20	-	-	6
		1/16/2017	3.9	-	-	5.7	.047	
		2/6/2017	4.1	1.17	0.232	-	-	
		5/10/2017	3.8	-	-	6.5	.46	

* NTU <1 is a measure used to determine turbidity and effectiveness of sequestration. Aqua agreed to begin taking soluble/insoluble samples to determine the effectiveness of sequestration starting in September 2017.

Table 2 - Cotesworth Down, Well #2, P05 POE and Distribution Iron and Manganese Data:

Date	Ave. Run Time	gpm	Total/Soluble							
			Total Fe	Sol. Fe	Total Fe	Sol. Fe	Total Mn	Sol. Mn	Total Mn	Sol. Mn
			POE	POE	Dist.	Dist.	POE	POE	Dist.	Dist.
09/13/2017	7.52	33	1.82	.0257	.0625	.0258	.263	.160	.0125	.00414

Comments: Aqua's installation of a cartridge filter has been successful in removing 96% of the total iron & manganese particulates from entering the distribution system. Sequestration and flushing continues to aid in this process as well.

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Sep 19 2018

Table 3 - Completed Activities and Planned Activities

Well Name and No.	Completed Activities	Planned Activities
Cotesworth Down, Well #2, P05	<ul style="list-style-type: none"> February 2014 – Started using SeaQuest February 2015 – Installed cartridge filter April 2017 – Flushed system September 2017 – Started Distribution and POE total and soluble sampling 	<ul style="list-style-type: none"> Q2-2018 – Perform annual flushing We will continue to optimize SeaQuest based on bi-weekly total and Soluble Sampling
<p>Comment: The cartridge filter installed on this well is removing significant amounts of iron and manganese. Distribution results of Fe and Mn are being managed to within water quality standards.</p> <p>Aqua reassessed the priority of cleaning of the 5,400 gallon hydro pneumatic tank located at well #1 after the Distribution samples revealed very little concentration of iron and manganese. The tank cleaning and inspection will be prioritized with the tank cleaning initiative.</p>		

Table 4 – Water Quality Complaints From 6/1/2017 - 9/21/2017

SO Type	CSR Notes	Date of SO	Completion Date	Address	City State Zip	Subdivision	FSR Notes
LABD-S	CUSTOMER REPORTS BROWN WATER	6/14/2017	6/15/2017	8612 WINDSONG VALLEY DR	WAKE FORREST, NC 27587	KIMMON PLACE	Cl = 1.19 Po4 = 1.09 pH = 7.3 Hardness = 136.8 Iron (Fe) = 0.21 Manganese (Mn) = 0.15 Flushed 2 faucets 25min until clear. Left d/h. FSR:cottonc, EVT:Lab
LABD-S	CUST STATES WATER IS STILL BROWN	6/29/2017	6/30/2017	8600 WIND SONG DR	WAKE FOREST, NC 27587	KIMMON PLACE	Cl = 0.96 Po4 = 1.01 pH = 7.3 Hardness = 136.8 Iron (Fe) = 0.00 Manganese (Mn) = 0.101 Met customer, Flushed 5min until clear. FSR:cottonc, EVT:Lab

LABD-S	WATER IS A LIGHT TAN COLOR	6/29/2017	6/30/2017	8612 SUNFLOWER MEADOWS LN	WAKE FOREST, NC 27587- 5474	KIMMON PLACE	Cl = 1.19
							Po4 = 0.98
							pH = 7.3
							Hardness = 136.8
							Iron (Fe) = 0.44
							Manganese (Mn) = 0.153
							Met customer. Flushed 15min until clear. FSR:cottonc, EVT:Lab
LABD-S	BROWN WATER...CUST T/ON SPIKET OUTSIDE TO FLUSH WATER STILL BROWN	7/20/2017	7/20/2017	8001 SHORREY PL	WAKE FOREST, NC 27587	KENSINGTON MANOR	Cl = 0.87
							Po4 = 1.21
							pH = 6.6
							Hardness = 102.6
							Iron (Fe) = 0.98
							Manganese (Mn) = 0.106
							Met customer. Water has cleared since filling kiddie pool. Home has filter FSR:cottonc, EVT:Lab
LABD-S	WATER IS DIRTY AND BROWN WATER	8/31/2017	8/31/2017	8801 SUNFLOWER MEADOWS LN	WAKE FOREST, NC 27587- 5479	KIMMON PLACE	Cl = 0.89
							Po4 = 1.21
							pH = 7.3
							Hardness = 136.8
							Iron (Fe) = 0.06
							Manganese (Mn) = 0.105
							Met customers. Flushed 15min until clear. FSR:cottonc, EVT:Lab
LABD-S	WATER IS BROWN	9/11/2017	9/11/2017	3201 DONLIN DR	WAKE FOREST, NC 27587	KIMMON PLACE	Cl = 0.88
							Po4 = 1.18
							pH = 7.3
							Hardness = 136.8
							Iron (Fe) = 0.05
							Manganese (Mn) = 0.065
							Met customer. House has been vacant 1 mo. Flushed 10min until clear. FSR:cottonc, EVT:Lab

LABD-S: Lab Discolored Service Order

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

Sincerely,



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

MAT/rl



September 29, 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 88 and the system is approved to serve 90 connections. Aqua has compiled the requested information for Well #5, P05 in a table format on the following pages:

- Table 1 provides a summarization of well specifications, sample results, and customer complaints since the last quarterly update.
- Table 2 provides a summary of POE and distribution iron and manganese samples that will be taken on a bi-weekly basis as of September 2017 to further show positive results of our ongoing efforts to improve the clarity of the water we provide and eliminating customer complaints.
- Table 3 provides a summary of completed and planned action items.

UPDATED QUARTERLY STATUS REPORT

Table 1 - Well and Customer Complaint Data:								
Well Name and No.	Approved (gpm)	Date	Ave. Run Time	mg/L		NTU*		Customer Complaints In Q3 2017
				Fe	Mn	Well Head	Entry Pt.	
Duncan Ridge, Well #5 (P05)	33	4/29/2015	2.8	1.08	0.3	-	-	0
		11/8/2016	.97	-	-	6.3	-	
		3/8/2017	.97	-	-	-	1.8	
		5/16/2017	1.66	-	-	9.1	.83	

* NTU <1 is a measure used to determine turbidity and effectiveness of sequestration. Aqua agreed to begin taking soluble/insoluble samples to determine the effectiveness of sequestration starting in September 2017.

Table 2 - Duncan Ridge, Well #5 (P05) POE and Distribution Iron and Manganese Data:										
Date	Ave. Run Time	gpm	Total/Soluble							
			Total Fe	Sol. Fe	Total Fe	Sol. Fe	Total Mn	Sol. Mn	Total Mn	Sol. Mn
			POE	POE	Dist.	Dist.	POE	POE	Dist.	Dist.
9/13/2017	2.37	33	1.59	0.114	<0.0220	<0.0220	0.407	0.299	0.115	0.0683

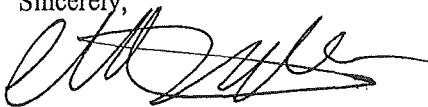
Comment: System flushing and automatic blow-off valves is aiding in lowering iron and manganese levels.

Table 3 - Completed Activities and Planned Activities

Well Name and No.	Completed Activities	Planned Activities
Duncan Ridge, Well #5 (P05)	<ul style="list-style-type: none"> • August 2014 – Starting using SeaQuest • March 2017 – Installed auto blow-off • April 2017 – Flushed system • September 2017 – Started Distribution and POE total and soluble sampling 	<ul style="list-style-type: none"> • Q2-2018 – Perform annual flushing • We will continue to optimize SeaQuest based on bi-weekly total and soluble sampling
<p>Comments: The use of well #5 is very limited. 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.</p>		

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

Sincerely,



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

MAT/rl



September 29, 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.

Aqua has compiled the requested information for Well #3, P03 in a table format on the following pages:

- Table 1 provides a summarization of well specifications, sample results, and customer complaints since the last quarterly update.
- Table 2 provides a summary of POE and distribution iron and manganese samples that will be taken on a bi-weekly basis as of September 2017 to further show positive results of our ongoing efforts to improve the clarity of the water we provide and eliminating customer complaints.
- Table 3 provides a summary of completed and planned action items.

UPDATED QUARTERLY STATUS REPORT

Table 1 - Well and Customer Complaint Data:

Well Name and No.	Approved (gpm)	Date	Ave. Run Time	mg/L		NTU*		Customer Complaints In Q3 2017
				Fe	Mn	Well Head	POE	
Eagle Creek, Well #3 (P03)	29	2/19/2014	9.7	0.9	0.13	-	-	0
		11/11/2016	6.75	-	-	<0.50	-	
		11/11/2016	4.5	-	-	1.4	1.5	

* NTU <1 is a measure used to determine turbidity and effectiveness of sequestration. Aqua agreed to begin taking soluble/insoluble samples to determine the effectiveness of sequestration starting in September 2017.

Table 2 - Eagle Creek Well #3 (P03) POE and Distribution Iron and Manganese Data:

Date	Ave. Run Time	gpm	Total/Soluble							
			Total Fe	Sol. Fe	Total Fe	Sol. Fe	Total Mn	Sol. Mn	Total Mn	Sol. Mn
			POE	POE	Dist.	Dist.	POE	POE	Dist.	Dist.
9/15/2017	4.65	29	0.710	0.599	0.328	0.259	0.142	0.126	0.032	0.022
9/27/2017	6.95		0.814	0.796	0.278	0.261	0.161	0.163	0.015	0.011

Comment: Recent flushing efforts have been successful in removing 70% of the total iron & manganese particulates our distribution system. Sequestration continues to aid in the process as well

Table 3 - Completed Activities, Customer Complaints, and Planned Activities

Well Name and No.	Completed Activities	Planned Activities
Eagle Creek, Well #3 (P03)	<ul style="list-style-type: none"> • September 2015 – Started using SeaQuest • April 2017 – Flushed system • June 2017 – Installed automatic blow-off at the well. • September 2017 – Started distribution and POE total and soluble sampling 	<ul style="list-style-type: none"> • Q2-2018 – Perform annual flushing • We will continue to optimize SeaQuest based on bi-weekly total and soluble sampling
<p>Comments: 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 treatment, subsequently allowing the treatment to be more effective.</p>		

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

Sincerely,



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

MAT/rl



September 29, 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 118 and the system is approved to serve 134 connections. Aqua has compiled the requested information for Well #2, P02 in a table format on the following pages:

- Table 1 provides a summarization of well specifications, sample results, and customer complaints since the last quarterly update.
- Table 2 provides a summary of POE and distribution iron and manganese samples that will be taken on a bi-weekly basis as of September 2017 to further show positive results of our ongoing efforts to improve the clarity of the water we provide and eliminating customer complaints.
- Table 3 provides a summary of completed and planned action items.

UPDATED QUARTERLY STATUS REPORT

Table 1 - Well and Customer Complaint Data:

Well Name and No.	Approved (gpm)	Date	Ave. Run Time	mg/L		NTU*		Customer Complaints In Q3 2017
				Fe	Mn	Well Head	POE	
Fairview Well #2, (P02)	16	1/20/2015	0	1.24	.0642			0

* NTU <1 is a measure used to determine turbidity and effectiveness of sequestration. Aqua agreed to begin taking soluble/insoluble samples to determine the effectiveness of sequestration starting in September 2017.

Table 2 - Fairview Well #2, (P02) POE and Distribution Iron and Manganese Data:

Date	Ave. Run Time	gpm	Total/Soluble										
			Total Fe	Sol. Fe	Total Fe	Sol. Fe	Total Mn	Sol. Mn	Total Mn	Sol. Mn			
			POE	POE	Dist.	Dist.	POE	POE	Dist.	Dist.			
Samples taken 09/15/2017 but have not been received.	0	16											

Comment: Sample results were not available at time report was generated.

Table 3 - Completed Activities, Customer Complaints, and Planned Activities

Well Name and No.	Completed Activities	Planned Activities
Fairview Well #2, (P02)	<ul style="list-style-type: none">• June 2016 – Flushed system• September 2017 – Started distribution and POE total and soluble sampling	<ul style="list-style-type: none">• Q2-2018 – Perform annual flushing• We will continue to optimize SeaQuest based on bi-weekly total and soluble sampling
Comments: Aqua is currently not utilizing this well to meet capacity; therefore no improvements or changes are recommended at this time.		

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

Sincerely,



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

MAT/rl



September 29, 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
Forest 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 Forest Glen Well #1, P01. The Forest 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. Aqua has compiled the requested information for Well #1, P01 in a table format on the following pages:

- Table 1 provides a summarization of well specifications, sample results, and customer complaints since the last quarterly update.
- Table 2 provides a summary of POE and distribution iron and manganese samples that will be taken on a bi-weekly basis as of September 2017 to further show positive results of our ongoing efforts to improve the clarity of the water we provide and eliminating customer complaints.
- Table 3 provides a summary of completed and planned action items.

UPDATED QUARTERLY STATUS REPORT

Table 1 - Well and Customer Complaint Data:

Well Name and No.	Approved (gpm)	Date	Ave. Run Time	mg/L		NTU*		Customer Complaints In Q3 2017
				Fe	Mn	Well Head	Entry Pt.	
Forest Glen Master Well #1, P01	34	4/13/2015	.5	1.39	0.155	-	-	8
		9/15/2015	.5	2.84	0.167	-	-	
		8/8/2017	.58	1.3 (Field)	0.2 (Field)	-	-	

* NTU <1 is a measure used to determine turbidity and effectiveness of sequestration. Aqua agreed to begin taking soluble/insoluble samples to determine the effectiveness of sequestration starting in September 2017.

Table 2 - Forest Glen Master Well #1, P01 Well Data:

Date	Ave. Run Time	gpm	Total/Soluble							
			Total Fe	Sol. Fe	Total Fe	Sol. Fe	Total Mn	Sol. Mn	Total Mn	Sol. Mn
			POE	POE	Dist.	Dist.	POE	POE	Dist.	Dist.
9/22/17	1.49	34	1.3	0.0861	2.37	0.0482	0.171	0.0647	0.193	0.0023

Comment: Recent flushing efforts have not been successful in removing the total iron & manganese particulates from this distribution system. Aqua will schedule cleaning of any hydro-pneumatic tank(s) in this system (if applicable). Sequestration efforts continue to aid in the process and recalibrations are being made. Aqua will also investigate the feasibility of installing an additional cartridge filter in series with a 10 micron filter bag.

Table 3 - Completed Activities and Planned Activities

Well Name and No.	Completed Activities	Planned Activities
Forest Glen Master, Well #1, P01	<ul style="list-style-type: none"> • June 2014 – Starting using SeaQuest • Feb 2015 - Hydro-pneumatic tank cleaned • Feb 2015 – Installed 5 micron filter (collapsed due to high concentrations of iron). • Feb 2015 – Installed 20 micron filter • July 2106 – Sent greensand filtration request to public staff. • August 2016 - Denied approval by Public Staff for Greensand Filtration. Aqua continues to express a need for this filtration and it will be looked at again in the future. • March 2017- Flushed system • March 2017 Installed auto flush valve • June 2017 – Removed auto flush Valve (caused flooding issues) • July 2017- Flushed system • September 2017 – September 2017 – Started Distribution and POE total and soluble sampling 	<ul style="list-style-type: none"> • Q3-2018 – Perform annual flushing • We will continue to optimize SeaQuest based on bi-weekly total and Soluble Sampling

Comments:

Aqua prepared a request to the Public Staff of the North Carolina Utilities Commission for a greensand filtration system at Well #2, which has the larger capacity of the two wells. This information was provided by Aqua on July 18, 2016 and additional filtration is still being considered but Aqua and the Public Staff have not yet reached agreement to proceed. Aqua intends to limit the use of well #1, which will be used as a backup well. Aqua will continue to flush the system at least annually and optimize the sequestration at well #1 and #2 in Forest Glen.


Table 4 – Water Quality Complaints From 7/1/2017 - 9/30/2017

SO Type	CSR Notes	Date of SO	Completion Date	Address	City State Zip	Subdivision	FSR Notes
LABD-S	PUC COMPLAINT DISCOLORED WATER - MUDDY AND DIRTY. PLS INVESTIGATE. TELE 919-961-6420	7/10/2017	7/10/2017	1141 FOREST GLEN DR	RALEIGH, NC 27603-7908	FOREST GLEN	Cl = Po4 = pH = Hardness = Iron (Fe) = Manganese (Mn) = Customer called the util. commisioner today/water not getting fixed/Ruining her clothes/ I cant make the fe and mn go away/ I put a new filterOn at the well
LABD-S	OVER THE WEEKEND WATER WAS THE COLOR OF CLAY MUD THIS MORNING WATER IS STILL RED	8/22/2017	8/22/2017	1141 FOREST GLEN DR	RALEIGH, NC 27603-7908	FOREST GLEN	Cl = 1.4 Po4 =0.83 pH =7.5 Hardness = Iron (Fe) =0.57 Manganese (Mn) =0.2 water was very dingy..flushed for several minutes outside tap to slghtly dingy..left door tag with fe/mn info sheet
LABD-S	DIRTY WATER PLS DELIVER IRON OUT	9/6/2017	9/6/2017	1105 FOREST GLEN DR	RALEIGH, NC 27603-7908	FOREST GLEN	Cl =1.2 Po4 =1.0 pH =7.3 Hardness = Iron (Fe) =0.4 Manganese (Mn) =0.2 Delivered 2 bottles of Iron out/ New filters installed 2 weeks ago//just replaced due to collapseFSR:moodyc, EVT:Lab
LABD-S	CUSTOMER CLD TO REPORT TODAY THE WATER IS BLACK PLS INVESTIGATE	7/13/2017	7/13/2017	6516 EGRETS NEST LN	RALEIGH, NC 27603-7944	GLEN MEADOWS	Cl = Po4 = pH = Hardness = Iron (Fe) = Manganese (Mn) = Told son we are flushing sub mon/ talked to mom 2 days ago/flushedB/ o beside house/ never cleated up/told to try and flush lnesFSR:moodyc, EVT:Lab

LABD-S	ESCALATED COMPLT FRM VP CHIEF OF STAFF CUST STATES WATER CONTINUES TOBE MUDDY. PLS INVESTIGATE AND SPEAK WITH CUST.	8/3/2017	8/3/2017	1141 FOREST GLEN DR	RALEIGH, NC 27603-7908	FOREST GLEN	Cl = Po4 = pH = Hardness = Iron (Fe) = Manganese (Mn) = We tested a few faucets/it was clear right now/I gave her a bottle to Collect a sample when it looks brown/we flushed the sub. a week ago/ It was Very brown/lt was yellow a few days ago for the bact
LABD-S	BROWN WATER OFFAND ON FOR 4 WEEKS	7/10/2017	7/10/2017	6516 EGRETS NEST LN	RALEIGH, NC 27603-7944	GLEN MEADOWS	Cl =2.6 Po4 =1.1 pH =7.6 Hardness = Iron (Fe) =2.0 Manganese (Mn) =0.5 House is at the end of a street/opened b/o/ told customer I was flushingAt b/o// just flushed system in march//getting dirty water calls weekly/ B/o dirty/ran for 15 min
LABD-L	BROWN WTR PER CHAD (CALLW/RESULTS)	7/11/2017	7/12/2017	6401 MCELVEEN CT	RALEIGH, NC 27603-7335	FOREST GLEN	Cl =0.6 Po4 =2.0 pH =7.6 Hardness = Iron (Fe) =2,3 Manganese (Mn) =>Off Scale Got w.o late tues/finished well I was at 4.45/called customer and said I Will test wed/ran faucet for 10 min/lt never cleared up/ ran b/o/not clearing up/dark brown/flush on mon
LABD-S	WATER IS BROWN	9/6/2017	9/6/2017	1105 FOREST GLEN DR	RALEIGH, NC 27603-7908	FOREST GLEN	Cl =1.2 Po4 =1.0 pH =7.3 Hardness = Iron (Fe) =0.4 Manganese (Mn) =0.2 Left Iron out/ //// FSR:moodyc, EVT:Lab

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

Sincerely,



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

MAT/rl



September 29, 2017

Mr. W. Allen Hardy
Engineering Supervisor
Public Water Supply Section
Raleigh Regional Office, NCDEQ
1628 Mail Service Center
Raleigh, NC27699-1628

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. Aqua has compiled the requested information for Well #2, P02 in a table format on the following pages:

- Table 1 provides a summarization of well specifications, sample results, and customer complaints since the last quarterly update.
- Table 2 provides a summary of POE and distribution iron and manganese samples that will be taken on a bi-weekly basis as of September 2017 to further show positive results of our ongoing efforts to improve the clarity of the water we provide and eliminating customer complaints.
- Table 3 provides a summary of completed and planned action items.

UPDATED QUARTERLY STATUS REPORT

Table 1 - Well and Customer Complaint Data:

Well Name and No.	Approved (gpm)	Date	Ave. Run Time	mg/L		NTU*		Customer Complaints In Q3 2017
				Fe	Mn	Well Head	Entry Pt.	
Galloway, Well #2, P02	31	4/23/2015	.25	1.7	.27	-	-	0
		12/21/2016	0	1.54	.34	-	-	
		2/1/2017	0	-	-	9.0	-	
		4/27/2017	.6	-	-	11	1.8	
		8/10/2017	.5	-	-	16	<.50	

* NTU <1 is a measure used to determine turbidity and effectiveness of sequestration. Aqua agreed to begin taking soluble/insoluble samples to determine the effectiveness of sequestration starting in September 2017.

Table 2 - Galloway, Well #2, P02 POE and Distribution Iron and Manganese Data:

Date	Ave. Run Time	gpm	Total/Soluble							
			Total Fe	Sol. Fe	Total Fe	Sol. Fe	Total Mn	Sol. Mn	Total Mn	Sol. Mn
			POE	POE	Dist.	Dist.	POE	POE	Dist.	Dist.
09/13/2017	0.5	31	1.16	0.321	0.0424	<0.022	0.411	0.341	0.0931	0.0454

Comment: Aqua's installation of a cartridge filter has been successful in removing 91% of the total iron & manganese particulates from entering the distribution system. Sequestration and flushing continues to aid in this process as well.

Table 3 - Completed Activities, Customer Complaints, and Planned Activities

Well Name and No.	Completed Activities	Planned Activities
Galloway, Well #2, P02	<ul style="list-style-type: none"> • September 2015 – Started using SeaQuest • February 2016 – Cleaned hydro tank • Dec. 2016 – Installed cartridge filter • June 2017 – Flushed system • September 2017 – Started Distribution and POE total and soluble sampling 	<ul style="list-style-type: none"> • Q2-2018 – Perform annual flushing • We will continue to optimize SeaQuest based on bi-weekly total and soluble Sampling • Installing drip irrigation system by Q1 - 2018
<p>Comments: Well #2 only runs when there is very low pressure experienced at the Galloway water system. Going forward, Aqua will collect both a total and soluble POE and distribution samples to determine the effectiveness of the cartridge filter, which was installed as a temporary solution in case Well #2 was needed during high peak demands in the Galloway water system. Engineering plans and specifications were initially planned to be submitted to NCDEQ in the second quarter of 2017 for the addition of a greensand filter at Well #2; however, Aqua identified a more cost effective solution incorporating the use of a drip irrigation system for the backwash water that required a change to the permitting and its timing. This filter is now scheduled to be completed in the first quarter of 2018.</p>		

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

Sincerely,



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

MAT/rl

September 29, 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 Hickory Creek 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 253 and the system is approved to serve 253 connections.

Aqua has compiled the requested information for Glendale Master Hickory Creek Well #1, TPI in table format on the following pages:

- Table 1 provides a summarization of well specifications, sample results, and customer complaints since the last quarterly update.
- Table 2 provides a summary of POE and distribution iron and manganese samples that will be taken on a bi-weekly basis as of September 2017 to further show positive results of our ongoing efforts to improve the clarity of the water we provide and eliminating customer complaints.
- Table 3 provides a summary of completed and planned action items.
- ~~Table 4 provides a summary of customer complaint information.~~

Table 1 - Well and Customer Complaint Data:								
Well Name and No.	Approved (gpm)	Date	Ave. Run Time	mg/L		NTU*		Customer Complaints In Q3 2017
				Fe	Mn	Well Head	POE	
Glendale Master Hickory Creek Well # 1 (TP#1)	45	10/2014	4.0	0.12	0.809	-	-	1
		10/6/2016	4.36	0.72	0.085	-	-	
		11/4/2016	4.36	-	-	<0.50	-	
		-	-	-	-	-	-	

* NTU <1 is a measure used to determine turbidity and effectiveness of sequestration. Aqua agreed to begin taking soluble/insoluble samples to determine the effectiveness of sequestration starting in September 2017.

Table 2 - Glendale Master Hickory Creek Well #1, TPI POE and Distribution Iron and Manganese Data:										
Date	Ave. Run Time	gpm	Total/Soluble							
			Total Fe	Sol. Fe	Total Fe	Sol. Fe	Total Mn	Sol. Mn	Total Mn	Sol. Mn
			POE	POE	Dist.	Dist.	POE	POE	Dist.	Dist.
Samples taken 09/15/2017 but have not been received	0	45								

Comment: Sample data was not available at time of report.

Table 3 - Completed Activities and Planned Activities

Well Name and No.	Completed Activities	Planned Activities
Glendale Master Hickory Creek Well # 1 (TP#1)	<ul style="list-style-type: none"> September 2015 - Starting feeding SeaQuest March 2017 – Flushed system September 2017 – Started distribution and POE total and soluble sampling 	<ul style="list-style-type: none"> Q1 2018 – Perform annual flushing We will continue to optimize SeaQuest based on bi-weekly total and soluble sampling
<p>Comments: Well is not used regularly to meet capacity. Customer complaint was for discolored water due to air in the lines, not Fe or Mn concentrations.</p>		

Table 4 – Water Quality Complaints From 7/1/2017 - 9/30/2017

SO Type	CSR Notes	Date of SO	Completion Date	Address	City State Zip	Subdivision	FSR Notes
LABD-S	CLOUDY WATER PLEASE CHECK	9/18/2017	9/18/2017	2760 BRANTLEY DR	APEX, NC 27539-9707	BELMONT	Cl = Po4 = pH = Hardness = Iron (Fe) = Manganese (Mn) = Cloudy water due to air in line.. cleared up. Need for further FSR training on post investigative reporting.

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

Sincerely,



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

MAT/rl



September 29, 2017

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

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

Dear Mr. Hardy:

Aqua North Carolina, Inc. (Aqua) received the above-referenced letter dated July 12, 2016, regarding elevated concentrations of Iron (Fe) and Manganese (Mn) at Glendale Well #1, PO1. The Glendale water system is comprised of four active wells and three points of entry (POE). The current number of customers served is 253 and the system is approved to serve 253 connections.

Aqua has compiled the requested information for Well #1 (Glendale) P01 and Well #1 (Chari Heights) P02 in table format on the following pages:

- Table 1 provides a summarization of well specifications, sample results, and customer complaints since the last quarterly update.
- Table 2 provides a summary of POE and distribution iron and manganese samples that will be taken on a bi-weekly basis as of September 2017 to further show positive results of our ongoing efforts to improve the clarity of the water we provide and eliminating customer complaints.
- Table 3 provides a summary of completed and planned action items.
- ~~Table 4 provides a summary of customer complaint information.~~

UPDATED QUARTERLY STATUS REPORT

Table 1 - Well and Customer Complaint Data:								
Well Name and No.	Approved (gpm)	Date	Ave. Run Time	mg/L		NTU*		Customer Complaints Since Last Quarter 2017
				Fe	Mn	Well Head	POE	
Glendale Master Well #1 (P01)	45	10/2014	0	1.3	0.175	-	-	0
Chari Heights Well #1 (P02)	40	10/2014	3.5	1.99	0.024	-	-	
		11/4/2016	5	-	-	<0.5	-	
		1/6/2017	5	-	-	1.4	-	
		4/18/2017	5.7	-	-	1.6	<0.50	
8/9/2017	5.9	-	-	0.88	0.81			

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**Table 2 - Chari Heights Well #1
 (P02) POE and Distribution Iron and Manganese Data :**

Date	Ave. Run Time	mg/L		Total/Soluble							
		Fe	Mn	Total Fe	Sol. Fe	Total Fe	Sol. Fe	Total Mn	Sol. Mn	Total Mn	Sol. Mn
				POE	POE	Dist.	Dist.	POE	POE	Dist.	Dist.
9/14/2017	6.36	-	-	0.758	0.135	2.28	0.572	0.0597	0.0422	0.204	0.0371

Table 3 - Completed Activities, Customer Complaints, and Planned Activities

Well Name and No.	Completed Activities	Planned Activities
	<ul style="list-style-type: none"> September 2015 – Started using SeaQuest March 2017 – Installed cartridge filter March 2017 – Flushed system September 2017 – Started Distribution and POE total and soluble sampling 	<ul style="list-style-type: none"> Q1 2018 – Perform annual flushing We will continue to optimize SeaQuest based on bi-weekly total and soluble sampling
<p>Comments: Glendale Well #1 is currently offline and operates only in back-up mode.</p>		

Table 4 – Water Quality Complaints From 7/1/2017 - 9/30/2017

SO Type	CSR Notes	Date of SO	Completion Date	Address	City State Zip	Subdivision	FSR Notes
							Cl =
							Po4 =
							pH =
							Hardness =
							Iron (Fe) =
							Manganese (Mn) =
LABD-S	CLOUDY WATER PLEASE CHECK	9/18/2017	9/18/2017	2760 BRANTLEY DR	APEX, NC 27539-9707	BELMONT	Cloudy H2o due to air in line..cleared up. FSR:taberj, EVT:Lab

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

Sincerely,



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

MAT/rl



September 29, 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.

Aqua has compiled the requested information for Well #6, TP2 in a table format on the following pages:

- Table 1 provides a summarization of well specifications, sample results, and customer complaints since the last quarterly update.
- Table 2 provides a summary of POE and distribution iron and manganese samples that will be taken on a bi-weekly basis as of September 2017 to further show positive results of our ongoing efforts to improve the clarity of the water we provide and eliminating customer complaints.
- Table 3 provides a summary of completed and planned action items.
- Table 4 provides a summary of customer complaint information.

Updated Quarterly Status Report

Table 1 - Well and Customer Complaint Data:

Well Name and No.	Approved (gpm)	Date	Ave. Run Time	mg/L		NTU*		Customer Complaints In Q3 2017
				Fe	Mn	Well Head	Entry Pt.	
Hampton Park, Well #6, TP2	88	1/12/2015	1.3	.9	.23	-	-	8
		5/26/2016	1.5	1.28	.23	-	-	
		4/27/2017	1.2	1.3	.262	-	-	

* NTU <1 is a measure used to determine turbidity and effectiveness of sequestration. Aqua agreed to begin taking soluble/insoluble samples to determine the effectiveness of sequestration starting in September 2017.

Table 2 - Hampton Park, Well #6, TP2 Well and Data:

Date	Ave. Run Time	gpm	Total/Soluble							
			Total Fe	Sol. Fe	Total Fe	Sol. Fe	Total Mn	Sol. Mn	Total Mn	Sol. Mn
			POE	POE	Dist.	Dist.	POE	POE	Dist.	Dist.
1/12/2015	1.3	88	.9	-	-	-	.23	-	-	-
5/26/2016	1.5		1.28	-	-	-	.23	-	-	-
4/27/2017	1.2		1.3	-	-	-	.262	-	-	-
09/21/2017	1.25		1.39	0.608			0.262	0.220		

Comment: Distribution readings missing at time of report

Table 3 - Completed Activities and Planned Activities

Well Name and No.	Completed Activities	Planned Activities
Hampton Park, Well #6, TP2	<ul style="list-style-type: none"> October 2014 – Starting using SeaQuest November 2016 – Flushed system December 2016 – Submitted request for greensand filtration January 2017 – Approval received for greensand filtration September 2017 – Started distribution and POE total and soluble sampling 	<ul style="list-style-type: none"> Greensand filtration system installation by Q1 - 2018 Q4-2018 – Perform annual flushing We will continue to optimize SeaQuest based on bi-weekly total and soluble sampling
<p>Comments: Installation of greensand filtration unit in Q1, 2018 is expected to improve water quality significantly.</p>		

Table 4 – Water Quality Complaints From 7/1/2017 - 9/30/2017

SO Type	CSR Notes	Date of SO	Completion Date	Address	City State Zip	Subdivision	FSR Notes
LABD-S	CUST STATES BROWN WATER	8/31/2017	8/31/2017	7933 PARKER MILL TRL	FUQUAY-VARINA, NC 27526	HAMPTON PARK	Cl = 1.1 Po4 = 2.3 pH = 7.6 Hardness = Iron (Fe) = 0.48 Manganese (Mn) = 0.157 Water was clear outside , customer flushed inside & it cleared up. Will check wells! Po4, Fe, & Mn =should not be that high will further investigate.
LABD-S	CUST STATES BROWN WTR	8/31/2017	8/31/2017	7937 PARKER MILL TRL	FUQUAY-VARINA, NC 27526	HAMPTON PARK	Cl = 1.0 Po4 = 2.3 pH = 7.5 Hardness = 153.9 Iron (Fe) = 0.46

							Manganese (Mn) = 0.148
							Water outside was clear, customer flushed inside & it cleared up. Will check wells! Po4 , Fe ,& Mn = should not be that high will further investigate
LABT-S	CUST STATES BROWN WATER	9/11/2017	9/11/2017	7933 PARKER MILL TRL	FUQUAY-VARINA, NC 27526	HAMPTON PARK	Cl = Po4 = pH = Hardness = Iron (Fe) = Manganese (Mn) = Water was clear when I got here , but I did find that contractor had open Valve to get ready for pressure test on lines @ the end of this main.
LABD-S	CUSTOMER CLD TO REPORT DISCOLORED BROWN WATER	8/10/2017	8/14/2017	1008 JENSEN GROVE CT	FUQUAY-VARINA, NC 27526	HAMPTON PARK	Cl = 0.9 Po4 = 1.9 pH = 7.7 Hardness = Iron (Fe) = 0.2 Manganese (Mn) = 0.05 Spoke with customer , water is clear now FSR:stanfir, EVT:Lab
LABD-S	WATER IS GRAY/ BROWN SEDIMENTS IN THE WATER ALSO 919-946-3664	8/18/2017	8/18/2017	4121 HAMPTON PARK WAY	FUQUAY-VARINA, NC 27526	HAMPTON PARK	Well issues (U.T. fixed) I got a B/O running over the weekend to clear up
LABD-S	CUSTOMER REPORTING BLACK WATER AGAIN ALL AREAS OF HOME; PLZ CHECK...	8/18/2017	8/18/2017	7901 PARKER MILL TRL	FUQUAY-VARINA, NC 27526	HAMPTON PARK	Well issues (U.T. fixed) I got a B/O running over the weekend to clear up
LABD-S	CUSTOMER REPORTS DISCOLORED WATER AND HE ADV IT TASTES HORRIBLE. HE ADV IT IS AFFECTING NEIGHBORS AS WELL	8/18/2017	8/18/2017	7913 PARKER MILL TRL	FUQUAY-VARINA, NC 27526	HAMPTON PARK	Well issues (U.T. fixed) I got a B/O running over the weekend to clear up
LABD-S	CUSTOMER STATES LIGHT BROWN WATER- ESPECIALLY SEEN IN TOILET	8/18/2017	8/18/2017	1008 JENSEN GROVE CT	FUQUAY-VARINA, NC 27526	HAMPTON PARK	Well issues (U.T. fixed) I got a B/O running over the weekend to clear up
LABD-S: Lab Discolored Service Order							

Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost.

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

Sincerely,

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

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

MAT/rl



September 29, 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 149 and the system is approved to serve 155 connections. Aqua has compiled the requested information for High Grove Well #1, P01 in table format on the following pages:

- Table 1 provides a summarization of well specifications, sample results, and customer complaints since the last quarterly update.
- Table 2 provides a summary of POE and distribution iron and manganese samples that will be taken on a bi-weekly basis as of September 2017 to further show positive results of our ongoing efforts to improve the clarity of the water we provide and eliminating customer complaints.
- Table 3 provides a summary of completed and planned action items.
- Table 4 provides a summary of customer complaint information.

UPDATED QUARTERLY STATUS REPORT

Table 1 - Well and Customer Complaint Data:								
Well Name and No.	Approved (gpm)	Date	Ave. Run Time	mg/L		NTU*		Customer Complaints in Q3 2017
				Fe	Mn	Well Head	POE	
High Grove, Well #1 (P01)	48	5/4/2016	3.2	0.369	0.177	-	-	1
		10/13/2016	0	-	-	<0.50	0.72	
		3/8/2017	0	-	-	<0.50	<0.50	
		8/9/2017	0.5	-	-	<0.50	<0.50	

* NTU <1 is a measure used to determine turbidity and effectiveness of sequestration. Aqua agreed to begin taking soluble/insoluble samples to determine the effectiveness of sequestration starting in September 2017.

Table 2 - High Grove Well #1, (P01) POE and Distribution Iron and Manganese Data:										
Date	Ave. Run Time	gpm	Total/Soluble							
			Total Fe	Sol. Fe	Total Fe	Sol. Fe	Total Mn	Sol. Mn	Total Mn	Sol. Mn
			POE	POE	Dist.	Dist.	POE	POE	Dist.	Dist.
9-14-2017	1.27	48	0.181	0.138	0.476	0.090	0.0734	0.063	0.281	0.0258
9-28-2017	1.30		0.182	0.037	0.810	0.106	0.095	0.081	0.609	0.0259

Comment: Recent flushing efforts have not been successful in removing the total iron & manganese particulates from our distribution system. Aqua will schedule cleaning of any hydro-pneumatic tank(s) in this system and investigate the feasibility of installing a cartridge filter. Sequestration efforts continue to aid in the process and recalibrations are being made. Higher total Iron and Manganese in Distribution System – Continue to limit well run time.

Table 3 - Completed Activities, Customer Complaints, and Planned Activities

Well Name and No.	Completed Activities	Planned Activities
High Grove, Well #1 (P01)	<ul style="list-style-type: none"> • September 2015 – Started using SeaQuest • May 2017 – Flushed system • September 2017 – Started Distribution and POE total and soluble sampling 	<ul style="list-style-type: none"> • Q2-2018 – Perform annual flushing • Executive summary for greensand filtration currently under internal review. • We will continue to optimize SeaQuest based on bi-weekly total and soluble sampling.
Comments: No new comments for this 3rd quarter response.		

Table 4 – Water Quality Complaints From 7/1/2017 - 9/30/2017

SO Type	CSR Notes	Date of SO	Completion Date	Address	City State Zip	Subdivision	FSR Notes
LABD-S	CUST STATES WATER IS DISCOLORED.	8/23/2017	8/23/2017	3121 LEBRUN PATH	FUQUAY-VARINA, NC 27526	High Grove	Cl = Po4 = pH = Hardness = Iron (Fe) = Manganese (Mn) = System needs flushed. Need for further training of the FSR in post investigative reporting

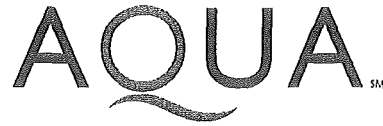
Aqua is committed to providing water to its customers that meets their expectations at a reasonable cost. If you have any questions or comments, please contact me at (919) 653-6964.

Sincerely,



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

MAT /rl



September 29, 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. Aqua has compiled the requested information for Well #2, TM1 in a table format on the following pages:

- Table 1 provides a summarization of well specifications, sample results, and customer complaints since the last quarterly update.
- Table 2 provides a summary of POE and distribution iron and manganese samples that will be taken on a bi-weekly basis as of September 2017 to further show positive results of our ongoing efforts to improve the clarity of the water we provide and eliminating customer complaints.
- Table 3 provides a summary of completed and planned action items.
- Table 4 provides a summary of customer complaint information.

UPDATED QUARTERLY STATUS REPORT

Table 1 - Well and Customer Complaint Data:

Well Name and No.	Approved (gpm)	Date	Ave. Run Time	mg/L		NTU*		Customer Complaints In Q3 2017
				Fe	Mn	Well Head	Entry Pt.	
High Meadows, Well #2, TM1	64	4/23/2015	4.7	.95	.13	-	-	1
		12/20/2016	5.5	-	-	8.7	.95	
		3/7/2017	3.6	-	-	6.0	1.1	
		6/16/2017	4.2	-	-	16	.60	

* NTU <1 is a measure used to determine turbidity and effectiveness of sequestration. Aqua agreed to begin taking soluble/insoluble samples to determine the effectiveness of sequestration starting in September 2017.

Table 2 - Well and Customer Complaint Data:

Date	Ave. Run Time	gpm	Total/Soluble								
			Total Fe	Sol. Fe	Total Fe	Sol. Fe	Total Mn	Sol. Mn	Total Mn	Sol. Mn	
			POE	POE	Dist.	Dist.	POE	POE	Dist.	Dist.	
4/23/2015	4.7	64	.95				.13				
09/15/2017	6.46		.693	.0314	.755	<0.022	.139	.0647	.0957	.0170	

Comment: Higher total Iron in Distribution System – Aqua will increase flushing of distribution system and clean hydro-pneumatic tank. Cartridge Filter is taking out some of the Manganese, Aqua will investigate decreasing micron size if possible.

Table 3 - Completed Activities, Customer Complaints, and Planned Activities

Well Name and No.	Completed Activities	Planned Activities
High Meadows, Well #2 (TM1)	<ul style="list-style-type: none"> • October 2013 – Starting using SeaQuest • September 2014 – Installed cartridge filter • April 2017 – Flushed system • September 2017 – Started distribution and POE total and soluble sampling 	<ul style="list-style-type: none"> • Q2-2018 – Perform annual flushing • We will continue to optimize SeaQuest based on bi-weekly total and soluble sampling
<p>Comments: No new comments for this 3rd quarter response.</p>		

Table 4 – Water Quality Complaints From 7/1/2017 – 9/21/2017

SO Type	CSR Notes	Date of SO	Completion Date	Address	City State Zip	Subdivision	FSR Notes
LABD-S	CUSTOMER STATES WATER IS SOMETIMES BROWN	7/13/2017	7/13/2017	7900 OLD STONE WAY	WAKE FOREST, NC 27587	HIGH MEADOWS	Cl = 0.81 Po4 = 1.82 pH = 7.0 Hardness = Iron (Fe) = 0.11 Manganese (Mn) = 0.18 cust states brown wtr after pulling mtr to flush. no one home left door hanger.

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

Sincerely,



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

MAT/rl



September 29, 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. Aqua has compiled the requested information for Well #1, P01 in a table format on the following pages:

- Table 1 provides a summarization of well specifications, sample results, and customer complaints since the last quarterly update.
- Table 2 provides a summary of POE and distribution iron and manganese samples that will be taken on a bi-weekly basis as of September 2017 to further show positive results of our ongoing efforts to improve the clarity of the water we provide and eliminating customer complaints.
- Table 3 provides a summary of completed and planned action items.

UPDATED QUARTERLY STATUS REPORT

Table 1 - Well and Customer Complaint Data:

Well Name and No.	Approved (gpm)	Date	Ave. Run Time	mg/L		NTU*		Customer Complaints In Q3 2017
				Fe	Mn	Well Head	Entry Pt.	
Middle Creek Acres, Well #1, P01	Not specified, currently 15 gpm.	11/12/2014	1.6	1.13	0	-	-	0
		7/29/2016	-	-	-	26	17	
		12/16/2016	-	-	-	1.5	1.7	
		3/9/2017	-	-	-	1.2	.61	
		4/24/2017	-	-	-	1.1	<.50	
		5/10/2017	-	-	-	5.5	1.3	
		6/5/2017	-	-	-	1.3	.89	
		7/7/2017	-	-	-	2.7	1.5	

* NTU <1 is a measure used to determine turbidity and effectiveness of sequestration. Aqua agreed to begin taking soluble/insoluble samples to determine the effectiveness of sequestration starting in September 2017.

Table 2 - Middle Creek Acres, Well #1, P01 Well and Data:

Date	Ave. Run Time	gpm	Total/Soluble							
			Total Fe	Sol. Fe	Total Fe	Sol. Fe	Total Mn	Sol. Mn	Total Mn	Sol. Mn
			POE	POE	Dist.	Dist.	POE	POE	Dist.	Dist.
8/4/2017	1.7	15	0.07		0.03		0.003		0.001	

8/30/2017	1.7	15	0.52		0.004		0.08		0.003	
9/18/17	1.68	15	0.074	0.149	0.055	0.070	0.036	.003	.0023	.0019

Comment: Aqua's installation of a cartridge filter has been successful in removing **48%** of the total iron & manganese particulates from entering the distribution system. Sequestration and flushing continues to aid in this process as well.

Table 3 - Completed Activities and Planned Activities

Well Name and No.	Completed Activities	Planned Activities
Middle Creek Acres, Well #1, P01	<ul style="list-style-type: none"> September 2015 – Started using SeaQuest October 2016 – Flushed system October 2016 - Installed auto blow-off at well head March 2017 – Installed cartridge filter September 2017 – Started Distribution and POE total and soluble sampling 	<ul style="list-style-type: none"> Q4-2018 – Perform annual flushing We will continue to optimize SeaQuest based on bi-weekly Insoluble and Soluble Sampling Continue to test the effectiveness of the flushing valve and adjusting the time to optimize the water quality
<p>Comments: The cartridge filter, flushing, and automatic blow-off are effectively removing levels of Iron to below water quality limits (POE & DIST samples of Mn are already below water quality limits).</p>		

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

Sincerely,



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



September 29, 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.

Aqua has compiled the requested information for Well #1, P01 in a table format on the following pages:

- Table 1 provides a summarization of well specifications, sample results, and customer complaints since the last quarterly update.
- Table 2 provides a summary of POE and distribution iron and manganese samples that will be taken on a bi-weekly basis as of September 2017 to further show positive results of our ongoing efforts to improve the clarity of the water we provide and eliminating customer complaints.
- Table 3 provides a summary of completed and planned action items.
- Table 4 provides a summary of customer complaint information.

UPDATED QUARTERLY STATUS REPORT

Table 1 - Well and Customer Complaint Data:

Well Name and No.	Approved (gpm)	Date	Ave. Run Time	mg/L		NTU*		Customer Complaints In Q3 2017
				Fe	Mn	Well Head	POE	
Northgate, Well #1, (P01)	Not Specified	5/24/2016	1.1	1.43	0.393	-	-	1
		9/1/2016	.8	-	-	0.7	-	
		12/20/2016	0.85	-	-	4.2	0.82	
		3/8/2017	0.83	-	-	5.8	0.75	
		7/18/2017	1.1	-	-	3.8	0.95	

* NTU <1 is a measure used to determine turbidity and effectiveness of sequestration. Aqua agreed to begin taking soluble/insoluble samples to determine the effectiveness of sequestration starting in September 2017.

Table 2 - Northgate, Well #1, (P01) POE and Distribution Iron and Manganese Data:

Date	Ave. Run Time	gpm	Total/Soluble							
			Total Fe	Sol. Fe	Total Fe	Sol. Fe	Total Mn	Sol. Mn	Total Mn	Sol. Mn
			POE	POE	Dist.	Dist.	POE	POE	Dist.	Dist.
9/13/2017	1.48	-	0.168	<0.022	0.0610	<0.022	0.440	0.303	0.386	0.293

Comment: Aqua's installation of a cartridge filter has been successful in removing 27% of the total iron & manganese particulates from entering the distribution system. Sequestration and flushing continues to aid in this process as well.

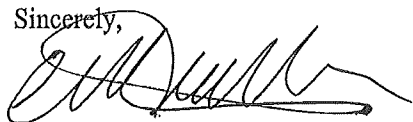
Table 3 - Completed Activities and Planned Activities

Well Name and No.	Completed Activities	Planned Activities
<p>Northgate, Well #1, (P01)</p>	<ul style="list-style-type: none"> • September 2015 – Started using SeaQuest • September 2016 – Flushed system • December 2016 – Filed for approval of greensand filtration • January 2017 – Approval received for greensand filtration • January 2017 – Greensand filtration project put on hold • March 2017 – Installed cartridge filter • June 2017 – Flushed system • September 2017 – Started distribution and POE total and soluble sampling 	<ul style="list-style-type: none"> • Q4-2018 – Perform annual flushing • We will continue to optimize SeaQuest based on bi-weekly total and soluble sampling
<p>Comments: Aqua filed for approval from the North Carolina Utilities Commission for the installation of a filtration system at Northgate Well #1 on December 30, 2016. This request was approved by the Commission in the Order issued January 18, 2017. This project to install greensand filtration has been placed on hold. This well is located near the Guilford Fibers Facility, which is subject to a Remedial Action Plan being formulated by the owner of the Facility with the Division of Waste Management of the North Carolina Department of Environmental Quality. The Facility's owner recently contacted Aqua to request that Aqua's well be closed so as to limit any impact it may have on the remedial activities. The Facility owner also claims to have arranged for alternative water service to Aqua's customers through the water system operated by the Town of Fuquay Varina, which is within feet of Aqua's distribution system. Aqua is trying to clarify whether the closing of this well will facilitate the Remedial Action Plan, whether an alternative water supply is – in fact – available and the proposed timing for providing alternative water service to Aqua's customers. While Aqua has not yet determined whether it is appropriate to close this well and allow customers to be served through an alternative source, we believe it would not be prudent to proceed with adding additional filtering for this system until we have had a chance to fully review what the Facility Owner is proposing. Discussions with the facility owner's attorneys are currently in progress. (Please note that we believe the current filtering on the well is working to effectively limit Fe from entering the system, but Mn continues to exceed water quality standards.</p>		

Table 4 – Water Quality Complaints From 7/1/2017 - 9/30/2017							
SO Type	CSR Notes	Date of SO	Completion Date	Address	City State Zip	Subdivision	FSR Notes
LABD-S	CUSTOMER REPORTED BROWN WATER	9/20/2017	9/20/2017	2009 JAMES SLAUGHTER RD	FUQUAY VARINA, NC 27526-7802	NORTHGATE	Cl = 1.3
							Po4 = 1.2
							pH = 7.2
							Hardness =
							Iron (Fe) = 0.62
							Manganese (Mn) = 0.122
water had cleared upon arrival. No issue with the well.							

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

Sincerely,



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

MAT/rl



September 29, 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. Aqua has compiled the requested information for Well #1, P01 in a table format on the following pages:

- Table 1 provides a summarization of well specifications, sample results, and customer complaints since the last quarterly update.
- Table 2 provides a summary of POE and distribution iron and manganese samples that will be taken on a bi-weekly basis as of September 2017 to further show positive results of our ongoing efforts to improve the clarity of the water we provide and eliminating customer complaints.
- Table 3 provides a summary of completed and planned action items.

UPDATED QUARTERLY STATUS REPORT

Table 1 - Well Data:								
Well Name and No.	Approved (gpm)	Date	Ave. Run Time	mg/L		NTU*		Customer Complaints In Q3 2017
				Fe	Mn	Well Head	POE	
Olde South Trace Well #1 (P01)	34	7/16/2016	1.9	1.33	0.3	-	-	0
		11/11/2016	2	-	-	7.6	-	
		4/20/2017	2.2	-	-	14	0.81	
		6/18/2017	2.4	-	-	1.6	1.4	

* NTU <1 is a measure used to determine turbidity and effectiveness of sequestration. Aqua agreed to begin taking soluble/insoluble samples to determine the effectiveness of sequestration starting in September 2017.

Table 2 - Olde South Trace Well #1 (P01) Well Data:										
Date	Ave. Run Time	gpm	Total/Soluble							
			Total Fe	Sol. Fe	Total Fe	Sol. Fe	Total Mn	Sol. Mn	Total Mn	Sol. Mn
			POE	POE	Dist.	Dist.	POE	POE	Dist.	Dist.
Samples taken 09/15/2017 but have not been received	2.20	34								

Table 3 - Completed Activities and Planned Activities

Well Name and No.	Completed Activities	Planned Activities
Olde South Trace Well #1 (P01)	<ul style="list-style-type: none">• July 2014 – Started using SeaQuest• December 2016 – Flushed system• March 2017 – Installed cartridge filter• September 2017 – Started distribution and POE total and soluble sampling	<ul style="list-style-type: none">• Q1 2018 – Perform annual flushing• We will continue to optimize SeaQuest based on bi-weekly total and soluble sampling
Comments: No new comments for this 3rd quarter response.		

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

Sincerely,



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

MAT/rl



September 29, 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.

Aqua has compiled the requested information for Well #3, P02 in a table format on the following pages:

- Table 1 provides a summarization of well specifications, sample results, and customer complaints since the last quarterly update.
- Table 2 provides a summary of POE and distribution iron and manganese samples that will be taken on a bi-weekly basis as of September 2017 to further show positive results of our ongoing efforts to improve the clarity of the water we provide and eliminating customer complaints.
- Table 3 provides a summary of completed and planned action items.
- Table 4 provides a summary of customer complaint information.

UPDATED QUARTERLY REPORT

Table 1 - Well and Customer Complaint Data:

Well Name and No.	Approved (gpm)	Date	Ave. Run Time	mg/L		NTU*		Customer Complaints In Q3 2017
				Fe	Mn	Well Head	Entry Pt.	
River Oaks, Well #3 (P02)	50	5/31/2016	0.0	1.0	.077	-	-	1
		12/5/2016	0.20	-	-	13	13	
		3/7/2017	0.0	-	-	21	36	
		5/26/2017	0.0	-	-	<.50	.51	

* NTU <1 is a measure used to determine turbidity and effectiveness of sequestration. Aqua agreed to begin taking soluble/insoluble samples to determine the effectiveness of sequestration starting in September 2017.

Table 2 - River Oaks, Well #3 (P02) Well Data:

Date	Ave. Run Time	gpm	Total/Soluble								
			Total Fe	Sol. Fe	Total Fe	Sol. Fe	Total Mn	Sol. Mn	Total Mn	Sol. Mn	
			POE	POE	Dist.	Dist.	POE	POE	Dist.	Dist.	
5/31/2016	.77	50	1.0				.077				
9/15/2017			1.23	.832	.183	<0.022	.185	.177	.0219	<0.0011	

Comment: Recent flushing efforts and minimizing the use of this well have been successful in removing **86%** of the total iron & manganese particulates our distribution system. Sequestration continues to aid in the process as well.

Table 3 - Completed Activities and Planned Activities

Well Name and No.	Completed Activities	Planned Activities
River Oaks, Well #3 (P02)	<ul style="list-style-type: none"> • September 2015 – Starting using SeaQuest • May – June 2017 – Flushed system • September 2017 – Started distribution and POE total and soluble sampling 	<ul style="list-style-type: none"> • Q2-2018 – Perform annual flushing • Greensand filtration system installation By Q1 - 2018 • We will continue to optimize SeaQuest based on bi-weekly total and soluble sampling
<p>Comments: Well #3 runs less than 1 hour per day on average. It will operate in the lag mode and is only used during heavy peak demand. The water quality in this system is effectively managed to within water quality limits as verified by the DIST samples for Fe and Mn in the tables above.</p>		

Table 4 – Water Quality Complaints From 7/1/2017 - 9/21/2017

SO Type	CSR Notes	Date of SO	Completion Date	Address	City State Zip	Subdivision	FSR Notes
LABD-S	CUST REPORTS WTR IS BLACK/STATES ISSUE IS HAPPENING IN ALL FAUCETS OF HOME/PLEASE INVESTIGATE, THANK YOU	8/2/2017	8/2/2017	1121 SILVER OAKS CT	RALEIGH, NC 27614-9359	RIVER OAKS	Cl = 2 Po4 = 0.6 pH = 7.4 Hardness = 6 Iron (Fe) = 0.09 Manganese (Mn) = 0.005 Need for further FSR training on post investigative reporting; however, samples are within limits

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

Sincerely,



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

MAT/rl



September 29, 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.

Aqua has compiled the requested information for Well #20, P20 in a table format on the following pages:

- Table 1 provides a summarization of well specifications, sample results, and customer complaints since the last quarterly update.
- Table 2 provides a summary of POE and distribution iron and manganese samples that will be taken on a bi-weekly basis as of September 2017 to further show positive results of our ongoing efforts to improve the clarity of the water we provide and eliminating customer complaints.
- Table 3 provides a summary of completed and planned action items.

UPDATED QUARTERLY STATUS REPORT

Table 1 - Well and Customer Complaint Data:

Well Name and No.	Approved (gpm)	Date	Ave. Run Time	mg/L		NTU*		Customer Complaints In Q3 2017
				Fe	Mn	Well Head	Entry Pt.	
Saddleridge, Well #20 (P20)	5	4/14/2015	8.14	4.5	.032	-	-	0
		11/11/2016	5.5	-	-	38	25	
		3/6/2017	3.1	-	-	0.5	1.5	
		4/26/2017	4.7	-	-	0.0	0.0	

* NTU <1 is a measure used to determine turbidity and effectiveness of sequestration. Aqua agreed to begin taking soluble/insoluble samples to determine the effectiveness of sequestration starting in September 2017.

Table 2 - Saddleridge, Well #20 (P20) Well Data:

Date	Ave. Run Time	gpm	Total/Soluble							
			Total Fe	Sol. Fe	Total Fe	Sol. Fe	Total Mn	Sol. Mn	Total Mn	Sol. Mn
			POE	POE	Dist.	Dist.	POE	POE	Dist.	Dist.
09/14/2017	5.83	5	.722	<0.022	<0.022	<0.022	.00232	.00122	<0.011	<0.0110

Comment: Aqua's installation of a cartridge filter has been successful in removing 95% of the total iron & manganese particulates from entering the distribution system. Sequestration and flushing continues to aid in this process as well.

Table 3 - Completed Activities, Customer Complaints, and Planned Activities

Well Name and No.	Completed Activities	Planned Activities
Saddleridge, Well #20 (P20)	<ul style="list-style-type: none"> • February 2016 – Starting using SeaQuest • June 2017 – Flushed system • December 2016 – Cartridge filter installed • September 2017 – Started distribution and POE total and soluble sampling 	<ul style="list-style-type: none"> • Q2-2018 – Perform annual flushing • We will continue to optimize SeaQuest based on bi-weekly total and soluble sampling
<p>Comments: The pressure settings at Well #20 have been changed to allow the well to operate in lag mode. As noted by the DIST sample results above, the cartridge filter, along with minimizing the usage of this well and flushing, have effectively reduced Fe and Mn levels to within water quality standards.</p>		

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

Sincerely,



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

MAT/rl



September 29, 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.

Aqua has compiled the requested information for Southwood Well #1 P01 and Cary Oaks Well #3 P03 in a table format on the following pages:

- Table 1 provides a summarization of well specifications, sample results, and customer complaints since the last quarterly update.
 - Table 2 provides a summary of POE and distribution iron and manganese samples that will be taken on a bi-weekly basis as of September 2017 to further show positive results of our ongoing efforts to improve the clarity of the water we provide and eliminating customer complaints.
-
- Table 3 provides a summary of completed and planned action items.
 - Table 4 provides a summary of customer complaint information.

UPDATED QUARTERLY STATUS REPORT

Table 1 - Well and Customer Complaint Data:

Well Name and No.	Approved (gpm)	Date	Ave. Run Time	mg/L		NTU*		Customer Complaints Since Last Quarter 2017
				Fe	Mn	Well Head	POE	
Southwood Well #1 (P01)	27	4/2014	16.2	1.1	0.6	-	-	2
		9/1/2016	18	-	-	1.1	-	
		3/22/2017	14	-	-	4.8	1.8	
		4/20/2017	15.5	-	-	6.7	0.71	
		8/9/2017	16.7	-	-	27	0.5	
Cary Oaks Well #3 (P03)	40	4/2014	2.5	1.39	0.1	-	-	
		11/3/2016	8.5	-	-	13.0	-	
		3/23/2017	.27	-	-	4.1	2.2	
		4/20/2017	0.5	-	-	0.92	0.69	
		8/9/2017	3.2	-	-	1.1	0.85	

* NTU <1 is a measure used to determine turbidity and effectiveness of sequestration. Aqua agreed to begin taking soluble/insoluble samples to determine the effectiveness of sequestration starting in September 2017.

Table 2 - Southwood Well #1 (P01) POE and Distribution Iron and Manganese Data:

Date	Ave. Run Time	gpm	Total & Soluble (mg/L)							
			Total Fe	Sol. Fe	Total Fe	Sol. Fe	Total Mn	Sol. Mn	Total Mn	Sol. Mn
			POE	POE	Dist.	Dist.	POE	POE	Dist.	Dist.
9/14/2017	16.88	27	0.553	0.114	1.12	0.0592	0.606	0.554	0.293	0.0903

Comment: Aqua's use of the existing cartridge filter has shown little success in removing total iron particulates before they enter the distribution system. Aqua is investigating the utilization of a smaller micron filter at this time before requesting a Greensand Filtration System to the Public Staff for review. Aqua will schedule cleaning of any hydro-pneumatic tank(s) in this system and investigate the feasibility of installing an additional cartridge filter in series. Sequestration and flushing continue to aid in the process and recalibrations are being made.

Table 2 - Cary Oaks #3 (P03) POE and Distribution Iron and Manganese Data:

Date	Ave. Run Time	gpm	Total & Soluble (mg/L)							
			Total Fe	Sol. Fe	Total Fe	Sol. Fe	Total Mn	Sol. Mn	Total Mn	Sol. Mn
			POE	POE	Dist.	Dist.	POE	POE	Dist.	Dist.
9/14/2017	.63	40	0.325	0.071	0.079	<0.022	0.148	0.128	0.060	0.0523

Comment: Lower total Iron & total Manganese in Distribution System. Lower Soluble of both Iron & Manganese in Distribution System. SeaQuest may be working.

Table 3 - Completed Activities and Planned Activities

Well Name and No.	Completed Activities	Planned Activities
Southwood Well #1 (P01) Cary Oaks Well #3 (P03)	<ul style="list-style-type: none"> • August 2013 – Started using SeaQuest • September 2015- Installed cartridge filter on Southwood well #1 • June 2016 – Flushed system • December 2016 – Filed for approval of greensand filtration • January 2017 – Received approval for greensand filtration • June 2017 – Flushed system • November 2017 – Greensand filter installed (start- up scheduled for 11/1/2017) • September 2017 – Started Distribution and POE total and soluble sampling 	<ul style="list-style-type: none"> • Q2-2018 – Perform annual flushing • We will continue to optimize SeaQuest based on bi-weekly total and soluble sampling
<p>Comments: On December 30, 2016, Aqua filed for approval from the North Carolina Utilities Commission (Commission) for the installation of a filtration system at Surry Point Well #3. This request was approved by the Commission in the Order issued January 18, 2017. Anticipated completion date for the installation of the filtration system is this coming Winter. Once this is complete Well #1 (Southwood) P01 and Well #3 (Cary Oaks) P03 will be placed in a backup mode of operation. In the event a back-up well is needed, both wells will be ready for use if there is a need for these to be placed in service. Addition of greensand filtration in September, along with optimization of Seaquest and regular flushing is expected to substantially address water quality issues within this system.</p>		

Table 4 – Water Quality Complaints From 7/1/2017 - 9/30/2017

SO Type	CSR Notes	Date of SO	Completion Date	Address	City State Zip	Subdivision	FSR Notes
LABD-S	WATER HAS BLACK SEDIMENT PLEASE CALL 919-3627893	9/15/2017	9/15/2017	4221 SURRY RIDGE CIR	APEX, NC 27539-7679	SURRY RIDGE	Cl =
							Po4 =
							pH =
							Hardness =
							Iron (Fe) = 0.9
							Manganese (Mn) = 0.167
							Incomplete Notes - FO Training Needed on Post Investigation Documentation
LABD-S	CUST REPORTS SEDIMENT IN THE WATER	7/10/2017	7/10/2017	4221 SURRY RIDGE CIR	APEX, NC 27539-7679	SURRY RIDGE	Cl =
							Po4 =
							pH =
							Hardness =
							Iron (Fe) = 0.05
							Manganese (Mn) = 0.156
							Incomplete Notes - FO Training Needed on Post Investigation Documentation

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

Sincerely,



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

MAT/rl



September 29, 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. Aqua has compiled the requested information for Well #2, P02 in a table format on the following pages:

- Table 1 provides a summarization of well specifications, sample results, and customer complaints since the last quarterly update.
- Table 2 provides a summary of POE and distribution iron and manganese samples that will be taken on a bi-weekly basis as of September 2017 to further show positive results of our ongoing efforts to improve the clarity of the water we provide and eliminating customer complaints.
- Table 3 provides a summary of completed and planned action items.
- Table 4 provides a summary of customer complaint information.

UPDATED QUARTERLY STATUS REPORT

Table 1 - Well and Customer Complaint Data:

Well Name and No.	Approved (gpm)	Date	Ave. Run Time	mg/L		NTU*		Customer Complaints In Q3 2017
				Fe	Mn	Well Head	POE	
Trappers Creek, Well #2 (P03)	75	4/15/2014	2.4	0.8	0.29	-	-	1
		12/21/2016	1.5	0.0392	0.0023	-	-	
		3/24/2017	2	-	-	0.0	<0.5	
		5/31/2017	2.16	-	-	11	9.3	
		7/21/2017	1.3	-	-	2.7	3.2	

* NTU <1 is a measure used to determine turbidity and effectiveness of sequestration. Aqua agreed to begin taking soluble/insoluble samples to determine the effectiveness of sequestration starting in September 2017.

Table 2 - Trappers Creek, Well #2 (P03) Well Data:

Date	Ave. Run Time	gpm	Total/Soluble								
			Total Fe	Sol. Fe	Total Fe	Sol. Fe	Total Mn	Sol. Mn	Total Mn	Sol. Mn	
			POE	POE	Dist.	Dist.	POE	POE	Dist.	Dist.	
12/21/2016	1.5	75	.0392				.0023				
9/15/2017	0.0		0.598	0.032	0.501	<0.22	0.313	0.30	0.314	0.331	
9/28/2017	10.07		0.355	0.063	0.426	0.025	0.301	0.308	0.311	0.294	

Comment: Recent flushing efforts have not been successful in removing the total iron & manganese particulates from our distribution system. Aqua will schedule cleaning of any hydro-pneumatic tank(s) in this system and investigate the feasibility of installing a cartridge filter. Sequestration efforts continue to aid in the process and recalibrations are being made.

Table 3 - Completed Activities and Planned Activities

Well Name and No.	Completed Activities	Planned Activities
Trappers Creek, Well #2 (P03)	<ul style="list-style-type: none"> • February 2016 – Started using SeaQuest • May 2017 – Flushed system • September 2017 – Started distribution and POE total and soluble sampling 	<ul style="list-style-type: none"> • Q2-2018 – Perform annual flushing • We will continue to optimize SeaQuest based on bi-weekly total and soluble sampling • Cleaning of Hydro-Pneumatic Tank • Feasibility of Installing Cartridge Filter Q1-2018
<p>Comments: No Aqua will schedule cleaning of any hydro-pneumatic tank(s) in this system and investigate the feasibility of installing a cartridge filter. Sequestration efforts continue to aid in the process and recalibrations are being made.</p>		

Table 4 – Water Quality Complaints From 7/1/2017 - 9/30/2017

SO Type	CSR Notes	Date of SO	Completion Date	Address	City State Zip	Subdivision	FSR Notes
LABD-S	DIRTY WATER PLS CHECK	7/14/2017	7/14/2017	111 N RIVERDALE DR	DURHAM, NC 27712- 2067	TRAPPER~S CRBEK	Cl = 1.0 Po4 = 1.2 pH = 7.1 Hardness = 6 Iron (Fe) = 0.09 Manganese (Mn) = 0.002 Spoke to cust.

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

Sincerely,



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

MAT/rl



September 29, 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.

Aqua has compiled the requested information for Well #1, P01 in a table format on the following pages:

- Table 1 provides a summarization of well specifications, sample results, and customer complaints since the last quarterly update.
- Table 2 provides a summary of POE and distribution iron and manganese samples that will be taken on a bi-weekly basis as of September 2017 to further show positive results of our ongoing efforts to improve the clarity of the water we provide and eliminating customer complaints.
- Table 3 provides a summary of completed and planned action items.

UPDATED QUARTERLY STATUS REPORT

Table 1 - Well and Customer Complaint Data:

Well Name and No.	Approved (gpm)	Date	Ave. Run Time	mg/L		NTU*		Customer Complaints In Q3 2017
				Fe	Mn	Well Head	POE	
Tyndrum, Well #1 (P01)	17	4/10/2014	1.4	1.3	0.4	-	-	0
		3/21/2017	1.0	-	-	5.6	-	
		8/28/2017	-	-	-	4.5	20	
		-	-	-	-	-	-	

* NTU <1 is a measure used to determine turbidity and effectiveness of sequestration. Aqua agreed to begin taking soluble/insoluble samples to determine the effectiveness of sequestration starting in September 2017.

Table 2 - POE and Distribution Iron and Manganese Data:

Date	Ave. Run Time	gpm	Total/Soluble							
			Total Fe	Sol. Fe	Total Fe	Sol. Fe	Total Mn	Sol. Mn	Total Mn	Sol. Mn
			POE	POE	Dist.	Dist.	POE	POE	Dist.	Dist.
9/14/2017	0	17	0.437	0.049	0.0474	<0.022	0.0752	0.052	0.0307	0.00184

Comment: Recent flushing efforts along with minimizing well run time have been successful in removing **85%** of the total iron & manganese particulates our distribution system. Sequestration continues to aid in the process as well

Table 3 - Completed Activities and Planned Activities

Well Name and No.	Completed Activities	Planned Activities
Tyndrum, Well #1 (P01)	<ul style="list-style-type: none"> • February 2016 – Started using SeaQuest • May 2017 – Flushed system • September 2017 – Started distribution and POE total and soluble sampling 	<ul style="list-style-type: none"> • Q2-2018 – Perform annual flushing • We will continue to optimize SeaQuest based on bi-weekly total and soluble sampling

Comments:

As noted by the DIST sample results above, minimized use of Well #1 along with flushing have effectively reduced Fe and Mn levels to within water quality standards.

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

Sincerely,



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

MAT/rl



September 29, 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.

Aqua has compiled the requested information for Upchurch Place Wells #1 and Well #4, P01 in table format on the following pages:

- Table 1 provides a summarization of well specifications, sample results, since the last quarterly update.
- Table 2 provides a summary of POE and distribution iron and manganese samples that will be taken on a bi-weekly basis as of September 2017 to further show positive results of our ongoing efforts to improve the clarity of the water we provide and eliminating customer complaints.
- Table 3 provides a summary of completed and planned action items.
- Table 4 provides a summary of customer complaint information.

UPDATED QUARTERLY STATUS REPORT

Table 1*

Table 2 - POE and Distribution Iron and Manganese Data:										
Date	gpm	Ave. Run Time	Total/Soluble							
			Total Fe	Sol. Fe	Total Fe	Sol. Fe	Total Mn	Sol. Mn	Total Mn	Sol. Mn
			POE	POE	Dist.	Dist.	POE	POE	Dist.	Dist.
9/13/2017 - #1	62	2.8	1.190	0.129	0.607	0.102	0.225	0.224	0.281	0.037
9/25/2017 - #1	62	2.75	1.100	0.465	0.288	0.029	0.238	0.238	0.041	0.007
9/25/2017 - #4	27	0	1.100	0.465	0.288	0.029	0.238	0.238	0.041	0.007

Comments: Lower concentration of Iron & Manganese in the distribution system post flushing in September shows that the flushing initiative has helped in decreasing the mineral buildup in the system.

Table 3 - Completed Activities, Customer Complaints, and Planned Activities

Well Name and No.	Completed Activities	Planned Activities
Upchurch Place, Well #1 and Well #4 (P01)	<ul style="list-style-type: none"> March 2014 – Started using SeaQuest November 2015 – Flushed hydro tank February 2017 – Flushed system July 2017 – Flushed system September 2017 – Flushed system 	<ul style="list-style-type: none"> Q1-2018 – Perform annual flushing We will continue to optimize SeaQuest based on bi-weekly total and soluble sampling

Comments:
 Well #1, which has the lesser levels of iron and manganese concentrations, is supplying all the water to the system at this time; Aqua limits the run time at Well #4, which has the higher concentration of iron and manganese. Aqua only runs Well #4, 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.

*Table 1 was omitted from this report since it did not align with the new data gathering and formatting direction

Table 4 – Water Quality Complaints From 7/1/2017 - 9/30/2017

SO Type	CSR Notes	Date of SO	Completion Date	Address	City State Zip	Subdivision	FSR Notes
LABD-S	CUSTOMER IS AWARE OF FLUSHING BUT WANTED TO SPEAK TO WATER QUALITY ANYWAYS REGARDING BROWN WATER	7/7/2017	7/7/2017	1559 UPCHURCH WOODS DR	RALEIGH, NC 27603	UPCHURCH PLACE	Cl = Po4 = pH = Hardness = Iron (Fe) = Manganese (Mn) = New customer/water is bad/wants filters/wants to talk to supervisor and State representative about why we can't have them after testing and Samples show fe and mn
LABD-S	CUST ADV WATER IS BROWN IN HER TOILET.	7/6/2017	7/6/2017	1512 UPCHURCH WOODS DR	RALEIGH, NC 27603	UPCHURCH PLACE	Cl = Po4 = pH = Hardness = Iron (Fe) = Manganese (Mn) = Sub. is being flushed/left door hanger/knocked on door/no answer/told Them to call if they did not get notified/told them to flush their lines at the end of the day
LABD-S	CUST REPORTS SEDIMENT IN WATER WAS ADVISED FROM SEPTIC PLS CHECK.	8/4/2017	8/4/2017	1512 UPCHURCH WOODS DR	RALEIGH, NC 27603	UPCHURCH PLACE	Cl = Po4 = pH = Hardness = Iron (Fe) = Manganese (Mn) = She will contact Lorrie on Monday about water quality/she knows about denr/She use to be a commissionerFSR:moodyc, EVT:Lab
LABD-S	CUSTOMER IS REPORTING BROWN WTR AND NEIGHBORS HAVING SAME ISSUE EVEN AFTER FILTERS WERE EXCHANGE AND IS CONSISTENLY BROWN	8/11/2017	8/11/2017	2021 SAGE LEAF CT	RALEIGH, NC 27603	UPCHURCH PLACE	Cl = 1.23 Po4 = 1.1 pH = 7.3 Hardness = 3 Iron (Fe) = 0.53 Manganese (Mn) = 0.014 LEFT TAG/ SPOKE WITH CUST.FSR:rhinerb, EVT:Lab
LABD-S	EMAIL FROM LOUIS REPORTING DARK BROWN WATER FILLED WITH DEBRISCUST STATES HOT WATER TANK HAS BEEN FLUSHED GETTING WORST	9/21/2017	9/21/2017	1409 UPCHURCH WOODS DR	RALEIGH, NC 27603	UPCHURCH PLACE	Cl = 0.8 Po4 = 2.8 pH = Hardness = Iron (Fe) = 2.8 Manganese (Mn) = mn could not be read//too high//I will open b/o In this cul de Sac for 2 days//told customer about plan

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

Sincerely,



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

MAT/rl



September 29, 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.

Aqua had compiled the requested information for Wakefield Well #6, P06 in table format on the following pages:

- Table 1 provides a summarization of well specifications, sample results, and customer complaints since the last quarterly update.
- Table 2 provides a summary of POE and distribution iron and manganese samples that will be taken on a bi-weekly basis as of September 2017 to further show positive results of our ongoing efforts to improve the clarity of the water we provide and eliminating customer complaints.
- Table 3 provides a summary of completed and planned action items.
- Table 4 provides a summary of customer complaint information.

UPDATED QUARTERLY STATUS REPORT

Table 1 - Well and Customer Complaint Data:								
Well Name and No.	Approved (gpm)	Date	Ave. Run Time	mg/L		NTU*		Customer Complaints In Q3 2017
				Fe	Mn	Well Head	Entry Pt.	
Wakefield Well #6, (P06)	88	4/25/2016	6.8	1.53	.23	-	-	1
		12/21/2016	3.9	1.72	.27	-	-	
		4/27/2017	5.7	-	-	2.1	0.0	
		8/10/2017	3.39	-	-	4.8	.75	

* NTU <1 is a measure used to determine turbidity and effectiveness of sequestration. Aqua agreed to begin taking soluble/insoluble samples to determine the effectiveness of sequestration starting in September 2017.

Table 2 - POE and Distribution Iron and Manganese Data:										
Date	Ave. Run Time	gpm	Total/Soluble							
			Total Fe	Sol. Fe	Total Fe	Sol. Fe	Total Mn	Sol. Mn	Total Mn	Sol. Mn
			POE	POE	Dist.	Dist.	POE	POE	Dist.	Dist.
09/13/2017	3.39	88	1.84	0.137	1.40	0.317	0.200	0.252	0.126	0.0989

Comment: Continue to flush system until Greensand Filtration System is installed

Table 3 - Completed Activities, Customer Complaints, and Planned Activities

Well Name and No.	Completed Activities	Planned Activities
Wakefield Well #6, (P06)	<ul style="list-style-type: none"> • March 2013 – Cleaned hydro tank • October 2014 – Starting using SeaQuest • March 2016 – Received approval for greensand filtration • March 2017 – Flushed system • September 2017 – Started Distribution and POE total and soluble sampling 	<ul style="list-style-type: none"> • Q1-2018 – Perform annual flushing • Greensand filtration system installation By – 2018 • We will continue to optimize SeaQuest based on bi-weekly total and soluble sampling
<p>Comments: Because of challenges Aqua has encountered in obtaining the necessary water line easement between these two wells, installation of a filtration system has been delayed until at least 2018.</p>		

Table 4 – Water Quality Complaints From 7/1/2017 - 9/30/2017

SO Type	CSR Notes	Date of SO	Completion Date	Address	City State Zip	Subdivision	FSR Notes
LABD-S	CUST STATED DISCOLORED WTR PLEASE INVESTIGATE	7/7/2017	7/10/2017	6200 STONEY BLUFF CT	WAKE FOREST, NC 27587-6206	WAKEFIELD PLANTATION	Cl = 0.17 Po4 = 1.52 pH = 6.9 Hardness = 0.00 Iron (Fe) = 0.11 Manganese (Mn) = 0.016 Water clear at this time. Must have filter/softener. Left d/h.FSR:cottonc, EVT:Lab

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

Sincerely,



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

MAT/rl