

SANFORD LAW OFFICE, PLLC
Jo Anne Sanford, Attorney at Law

October 12, 2018

Ms. M. Lynn Jarvis, Chief Clerk
North Carolina Utilities Commission
4325 Mail Service Center
Raleigh, North Carolina 27699-4325

Via Electronic Delivery

Re: Docket No. W-218, Sub 497
Third Quarter 2018 Notice of Deficiency Reports to NCDEQ

Dear Ms. Jarvis:

Attached for electronic filing please find Aqua North Carolina, Inc.'s 2018 third quarter Notice of Deficiencies updates that were provided to NCDEQ and the Public Staff on September 28, 2018.

As always, thank you and your office for your assistance and please feel free to contact me if there are any questions.

Electronically Submitted

/s/Jo Anne Sanford

State Bar No. 6831

Attorney for Aqua North Carolina, Inc.

c: David Drooz, Chief Counsel, Public Staff
William Grantmyre, Staff Attorney, Public Staff
Elizabeth Culpepper, Staff Attorney, Public Staff
Megan Jost, Staff Attorney, Public Staff
Parties of Record

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Oct 12 2018

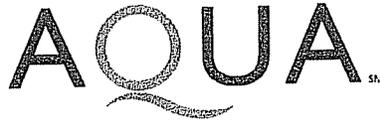
CERTIFICATE OF SERVICE

I hereby certify that I have served a copy of the **Third Quarter 2018 Notice of Deficiency Reports to NCDEQ**, filed by Aqua North Carolina, Inc. in Docket No. W-218, Sub 497, on the parties of record in accordance with North Carolina Utilities Commission Rule R1-39, either by United States mail, first class postage pre-paid; by hand delivery; or by means of electronic delivery upon agreement of the receiving party.

This the 12th day of October 2018.

Electronically Submitted
/s/Jo Anne Sanford
North Carolina State Bar No. 6831

SANFORD LAW OFFICE, PLLC
sanford@sanfordlawoffice.com
Tel: 919.210.4900
Attorney for Aqua North Carolina, Inc.



September 28, 2018

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
WDF ID No.: Well #1, PO1
Water System No: NC4092107

Dear Mr. Hardy:

Aqua North Carolina, Inc. (Aqua) received the above-referenced letter dated July 12, 2016, regarding elevated concentrations of Iron (Fe) and Manganese (Mn) at Avocet Well #1, PO1. The Avocet water system is comprised of four active wells and three points of entry (POE). The current number of customers served is 155 and the system is approved to serve 155 connections.

Aqua has compiled the requested information in a table format as follows:

- Table 1 provides a summary of well information, completed activities and planned activities.
- Table 2 (Attachment 2) provides a summary of raw, POE and distribution iron and manganese samples collected as part of the ongoing Inorganic Chemical Analyses (IOC).
- Table 3 (Attachment 3) provides a summary of customer complaint information.

UPDATED QUARTERLY STATUS REPORT

Table 1 – Well Information, Completed Activities and Planned Activities

<u>Well Name and No.</u>	<u>Completed Activities</u>	<u>Planned Activities</u>
Avocet, Well #1 (P01)	<ul style="list-style-type: none"> • September 2015 – Started using SeaQuest • April 2017 – Flushed system • September 2017 – Started distribution and POE total and soluble sampling • December 2017 – Started raw sampling • December 2017 – Cleaned hydropneumatic storage tank • April 2018 - Flushed system • September 2018 – Special samples taken for wells #3 and #4 as requested by Shawn Guyer. Awaiting results. 	<ul style="list-style-type: none"> • Investigate interconnection of well #1 with wells #3 and #4 to benefit from the future greensand filtration • 2018 - Submit executive summary for greensand filtration. • Continue to minimize usage of this well until greensand filtration is approved and installed. • Continue water main flushing efforts
Approved GPM (32)		
Avg. Quarterly Runtime (0.0)		

Comments:

Aqua is running well #1 only as needed and will rely on production from wells #2, #3, and #4. A new well, well #12, will be interconnected with well #2 (pre-filter) to benefit from the upgraded greensand filtration that was completed in 2017. Monthly operating reports prove that this filter is functioning effectively. The developer informed Aqua that the startup of the well will be done in the fourth quarter of 2018. The developer is currently correcting a short punch list of Aqua identified items that will need to be resolved prior to acceptance of this well. April flushing efforts showed improvement in the distribution system. When well #12 is online, Aqua will be able to improve the flushing of the system with the additional volume from well #12. Aqua has also taken special iron and manganese samples for wells #3 and #4 and will include in future reports. Aqua is evaluating combining entry points TM1 and P01 for the installation of one greensand filter located at well #3. At a minimum, an executive summary for greensand filtration at well #1 will also be submitted in 2018 as part of the Aqua water quality plan.

Mr. W. Allen Hardy
September 28, 2018
Avocet Subdivision Quarterly Update

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) 653-6982.

Sincerely,



Robert Krueger
Area Manager
Aqua North Carolina, Inc.

cc: David Furr
State of North Carolina
Department of Commerce
Utilities-Public Staff

AVOCET-4092107

Date	Avg. Sample Week Run Time	P01R-Well-1 Raw-Fe Lab	P01R-Well-1 Raw-Fe Diss	P01-Well-1-Fe Lab	P01-Well-1-Fe-Diss	D01-Distribution System-Fe Lab	D01-Distribution System-Fe-Diss	P01R-Well-1 Raw-Mn Lab	P01R-Well-1 Raw-Mn-Diss	P01-Well-1-Mn Lab	P01-Well-1-Mn-Diss	D01-Distribution System-Mn Lab	D01-Distribution System-Mn-Diss
10/3/2017	0			1.19	0.324	0.388	0.183			0.0978	0.0954	0.169	0.159
10/17/2017	0			3.11	1.43	0.271	0.156			0.124	0.125	0.14	0.137
11/1/2017	0			9.21	0.156	0.561	0.172			0.175	0.174	0.13	0.143
11/15/2017	0			0.286	0.134	0.31	0.131			0.0915	0.091	0.0999	0.0973
12/19/2017	0	8.14	1.07	3.49	0.334	0.296	0.116	0.283	0.278	0.343	0.338	0.1	0.0948
1/11/2018	0	3.78	0.0581	0.778	0.413	0.263	0.118	0.356	0.335	0.104	0.0972	0.0981	0.0904
3/6/2018	0	7.94	0.148	4.23	0.0389	0.285	0.113	0.186	0.293	0.629	0.596	0.0902	0.0854
4/3/2018	0	8.68	<0.022	5.55	0.0569	0.267	0.108	0.216	0.186	0.522	0.517	0.0882	0.0806
5/1/2018	0	1.64	<0.022	0.762	0.0862	0.19	0.0711	0.254	0.247	0.213	0.2	0.19	0.0343
6/15/2018	0	4.17	0.107	0.212	0.064	0.213	0.0657	0.168	0.169	0.0719	0.0643	0.072	0.0643
7/3/2018	0	16.5	<0.0220	2.02	0.251	0.271	0.125	0.215	0.222	0.116	0.09	0.0898	0.0827
8/1/2018	0	5.2	0.754	0.237	0.102	0.252	0.108	0.175	0.177	0.0618	0.0564	0.0641	0.0579

* All units are in mg/L

* Lab is Total Metals

Table 3 - Avocet Well #1 Customer Complaints

SO	SO Type	CSR Notes	Date of SO	Completion Date	Premise	Address	City	State	Zip	Subdivision	FSR Notes
10753395	LABD-S	ANTHONY REPORTS DISCOLORED WATER ALONG WITH AIR IN LINES WATER BROWN WITH AIR; NEIGHBORS TOO FOR LAST TWO DAYS; CONTINUOUS CALL KRUEGER FIELD SK-4-PIES - WELL 3 AND HOME; FLUSH LINE	8/28/2018	8/28/2018	1417326	7025 REX RD	HOLLY SPRINGS, NC	NC	27540	AVOCET WATER	CL 1.4 pp4 1.2 pH 7.0 Fe .27 MN .038 hardness 51.3 tested with customer. Water had cleared still had a little air in the lines FSR@johnson, EYT:Lab
10739523	LABD-S	PLEASE PROVIDE QUALITY REPORTEREMAIL TANYA.BRINSON@MOVEMENT.COM	8/20/2018	8/27/2018	1447317	7056 REX RD	HOLLY SPRINGS, NC	NC	27540	AVOCET WATER	Sent customer most recent COC. FSR@johnson, EYT:Lab
10728632	LABD-S	CLD TO REPORT BROWN WATER THE COLOR OF ICE TEA - JUST NOTICED TODAY WHEN GOT BACK FROM VACATION	8/13/2018	8/13/2018	1424648	7008 REX RD	HOLLY SPRINGS, NC	NC	27540	AVOCET WATER	CL 1.1 pp4 1.3 pH 7.0 Fe .24 MN .031 hardness 51.3 put jumper in to flush. Service line water was clear after quick flushing. FSR@johnson, EYT:Lab
10697705	LABD-S	BROWN WATER/ WHOLE HOME FILTER CHANGED LAST WEEKY HAS LARGE BLACK CHUNKS OF SOME MATERIAL AND LARGE WHITE SLUSHY CHUNKS ALSO/ PLS CALL/ CLIST HAS PICTURES. CLIST IS HOME/ WANTS FSR TO KNOCK UPON ARRIVAL	7/26/2018	7/27/2018	1186473	6345 CARDINAUX LN	HOLLY SPRINGS, NC	NC	27540	AVOCET WATER	Customer called in last week as well put jumper in water was brown. And then cleared right up left jumper in so customer can flush hot water heater and her service line
10680898	LABD-S	BLACK SPECKS LIKE PEPPER IN WATER, ALSO WATER IS SLIMY AND DOESNT RINSE SOAPOFF, SINCE YESTERDAY AFTERNOON - DAVID	7/17/2018	7/17/2018	1186473	6345 CARDINAUX LN	HOLLY SPRINGS, NC	NC	27540	AVOCET WATER	CL 5 pp4 .6 pH 7.0 Fe .02 MN .013 hardness 68.4 water looked good. Recommended customer to flush hot water heater. FSR@johnson, EYT:Lab
10676924	LABD-S	EMAIL FROM CHRISTINE CLIST ROST ANY TEST RESULTS DUE TO OUTAGE FOR LAST THREE YEARS NEEDS WQR FOR 2015 AND 2016	7/16/2018	7/16/2018	1373558	5716 LUMIERE ST	HOLLY SPRINGS, NC	NC	27540	AVOCET WATER	CL 5 pp4 .6 pH 7.0 Fe .01 MN .019 hardness 51.3 water looked good. Customer just wanted it checked to see about getting a filter. FSR@johnson, EYT:Lab
10674493	LABD-S	EMAIL FROM DIANA REPORTS WATER SOUNDS AND LOOKS CARBONATED STATES LOTS OF AIR IN PIPES AND ENTIRE NEIGHBORHOOD IS EXPERIENCING SAME PROBLEM	7/13/2018	7/20/2018	1431499	6645 CHEVALIER LN	HOLLY SPRINGS, NC	NC	27540	AVOCET WATER	Checked residuals (look @ picture for results) & spoke with cust. FSR@stanfir, EYT:Lab
10672784	LABD-S	WATER IS DISCOLORED AND SMELLY	7/12/2018	7/20/2018	1325990	6433 CARDINAUX LN	HOLLY SPRINGS, NC	NC	27540	AVOCET WATER	Checked residuals (results on picture) & left cust a D.H. with results FSR@stanfir, EYT:Lab
10660289	LABD-S	WATER IS WHITE MILKY PLEASE CHECK	7/5/2018	7/5/2018	1423620	6629 CHEVALIER LN	HOLLY SPRINGS, NC	NC	27540	AVOCET WATER	CL 7 pp4 1.2 pH 7.0 Fe .18 MN .033 air in the lines do to run time On wells talked with customer and explained FSR@johnson, EYT:Lab



September 28, 2018

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, P19, P28, P39, P63, P67, P75, P76, P92, P93, P97,
P3B, P4B, P7B
Water System No: NC039233

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, 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 in a table format as follows:

- Table 1 provides a summarization of well information, completed activities and planned activities.
- Table 2 (Attachment 2) provides a summary of raw, POE and distribution iron and manganese samples collected at WSF ID Nos. P12, P16, P19, P28, P39, P63, P75, P76, P92, P3B, P4B, P7B as part of the ongoing Inorganic Chemical Analyses (IOC).
- Table 3 (Attachment 3) provides a summary of customer complaint information.

UPDATED QUARTERLY STATUS REPORT

Table 1 – Well Information, Completed Activities and Planned Activities

<u>Well Name and No.</u>	<u>Completed Activities</u>	<u>Planned Activities</u>
Barony Well #5 (P63)	<ul style="list-style-type: none"> • September 2015 - Started using SeaQuest • Jan - Apr 2016 - Flushed system • Sept - Nov 2017 - Flushed system • September 2017 – Cartridge filter installed • September 2017 – Started Distribution and POE total and soluble sampling • March 2018 - Annual flushing complete • December 2017 – Added raw sample data • Q1-2018 - system flushed • Q4-2018 – Received greensand filtration recommendation from the Public Staff and currently awaiting final approval from the North Carolina Utilities Commission 	<ul style="list-style-type: none"> • Continue cartridge filter replacement operations • Continue water main flushing efforts • Q4-2018 – Engineering submittal to PWSS • Q1-2019 – Installation of Greensand Filter
Approved GPM (77)		
Avg. Quarterly Runtime (5.15)		
<p><u>Comments:</u></p> <p>The greensand filtration at The Barony well #5 has been recommended by the Public Staff to the North Carolina Utilities Commission (NCUC). Aqua is currently awaiting the final decision by the NCUC.</p>		

Table 1 – Well Information, Completed Activities and Planned Activities

<u>Well Name and No.</u>	<u>Completed Activities</u>	<u>Planned Activities</u>
Enclave at Barton Creek Bluffs Well #18 (P75)	<ul style="list-style-type: none"> • October 2015 - Started using SeaQuest • Jan - Apr 2016 - Flushed system 	<ul style="list-style-type: none"> • Continue cartridge filter replacement operations • Continue flushing efforts
Approved GPM (75)	<ul style="list-style-type: none"> • February 2017 - Flushed system • June 2017 - Installed cartridge filter 	
Avg. Quarterly Runtime (12.29)	<ul style="list-style-type: none"> • September 2017 – Started Distribution and POE total and soluble sampling • December 2017- Added raw sample data • Q2-2018 System flushed • August 2018 – Submitted executive summary to Public Staff for approval of greensand filtration 	
<p><u>Comments:</u></p> <p>Aqua has submitted the executive summary for greensand filtration at well #18 as part of the Aqua water quality plan. Upon approval, Aqua will begin engineering in 2018 and plan installation of the filter in 2019.</p>		

Table 1 – Well Information, Completed Activities and Planned Activities

<u>Well Name and No.</u>	<u>Completed Activities</u>	<u>Planned Activities</u>
Hawthorne Well #1 & #2 (P76)	<ul style="list-style-type: none"> • February 2016 -Started Using SeaQuest • Jan - Apr 2016 - Flushed system 	<ul style="list-style-type: none"> • 2018 – Complete executive summary for greensand filtration
Approved GPM (73)	<ul style="list-style-type: none"> • February 2017 - Flushed system • June 2017 - Installed cartridge filter 	<ul style="list-style-type: none"> • Continue cartridge filter replacement operations • Continue flushing efforts
Avg. Quarterly Runtime (9.94)	<ul style="list-style-type: none"> • September 2017 – Started Distribution and POE total and soluble sampling • December 2017 - Added raw sample data • March 2018 - Storage tank was cleaned • Q2-2018 system flushed • July 2018 - Adjusted Seaquest feed rate 	

Comments:

The NOD was originally issued due to high concentrations of Fe and Mn. Field investigation and sample results confirm the high concentrations of Fe and Mn. Seaquest feed rates have been adjusted. Aqua will continue to monitor the sample results. This is a temporary solution as these elevated levels of Fe and Mn qualify this well to have an executive summary created and submitted for greensand filtration. The executive summary for greensand filtration will be completed in 2018.

Table 1 – Well Information, Completed Activities and Planned Activities

<u>Well Name and No.</u>	<u>Completed Activities</u>	<u>Planned Activities</u>
Woodvalley #9 (P92)	<ul style="list-style-type: none"> • February 2016 - Started using SeaQuest • Jan - Apr 2016 - Flushed system 	<ul style="list-style-type: none"> • Start engineering on new greensand filter if approved by Public Staff and NCUC
Approved GPM (38)	<ul style="list-style-type: none"> • February 2017 - Flushed system • June 2017 - Well was treated via Aqua free 	<ul style="list-style-type: none"> • Continue cartridge filter replacement operations • Q4-2018 – Engineering submittal to PWSS
Avg. Quarterly Runtime (14.16)	<ul style="list-style-type: none"> • June 2017 - Installed cartridge filter • September 2017 - Started Distribution and POE total and soluble sampling • December 2017 – Added raw sample data • Q2-2018 System flushed • Q3-2018 Executive summary completed and submitted to Public Staff/NCUC 	<ul style="list-style-type: none"> • Q1-2019 – Installation of Greensand Filter
<p><u>Comments:</u></p> <p>Aqua has submitted the executive summary for greensand filtration at well #9 as part of the Aqua water quality plan. Upon approval, Aqua will begin engineering in 2018 and plan installation of the filter in 2019.</p>		

Table 1 – Well Information, Completed Activities and Planned Activities

<u>Well Name and No.</u>	<u>Completed Activities</u>	<u>Planned Activities</u>
Carlyle Manor Well #4 (P3B)	<ul style="list-style-type: none"> • September 2015 - Started using SeaQuest • Jan - Apr 2016 - Flushed system 	<ul style="list-style-type: none"> • Continue flushing efforts
Approved GPM (73)	<ul style="list-style-type: none"> • June 2017 - Installed cartridge filter • September - Nov 2017 - Flushed system 	
Avg. Quarterly Runtime (9.625)	<ul style="list-style-type: none"> • September 2017 - Started Distribution and POE total and soluble sampling • December 2017 – Added raw sample data • Q1-2018 System flushed • Q3-2018 – Submitted executive summary to Public Staff 	
<p><u>Comments:</u></p> <p>Aqua has submitted the executive summary for greensand filtration at well #4 as part of the Aqua water quality plan. Upon approval, Aqua will begin engineering in 2018..</p>		

Table 1 – Well Information, Completed Activities and Planned Activities

<u>Well Name and No.</u>	<u>Completed Activities</u>	<u>Planned Activities</u>
Seville Well #1 (P4B)	<ul style="list-style-type: none"> • August 2015 - Started using SeaQuest • Jan - Apr 2016 - Flushed system • Sep - Nov 2017 - Flushed system • September 2017 - Started Distribution and POE total and soluble sampling • Dec 2017 –Added raw sample data • Q1- 2018 Flushing Complete • Q3 – 2018 – Submitted executive summary to Public Staff 	<ul style="list-style-type: none"> • Start engineering on new greensand filter if approved by Public Staff and NCUC • Continue water main flushing efforts
Approved GPM (44)		
Avg. Quarterly Runtime (10.04)		
<p><u>Comments:</u></p> <p>Aqua has submitted the executive summary for greensand filtration at well #1 in 2018 as part of the Aqua water quality plan. Upon approval, Aqua will begin engineering in 2018.</p>		

Table 1 – Well Information, Completed Activities and Planned Activities		
<u>Well Name and No.</u>	<u>Completed Activities</u>	<u>Planned Activities</u>
George's Grant Well #1 (P7B)	<ul style="list-style-type: none"> • Oct 2015 - Started Using SeaQuest • Jan - Apr 2016 - Flushed system • Jun 2017 - Installed cartridge filter • Sep - Nov 2017 - Flushed system • Sep 2017 – Started Distribution and POE total and soluble sampling • Feb. 2018 Flushing complete • Dec 2017 Started Raw, Entry Point and Distribution Soluble and Insoluble Iron • Q1-2018 System flushed • Q3 – 2018 Submitted executive summary to Public Staff 	<ul style="list-style-type: none"> • Q4–2018 – Engineering submittal to PWSS • Q1-2019 – Installation of Greensand Filter • Continue cartridge filter replacement operations • Continue water main flushing efforts
Approved GPM (66)		
Avg. Quarterly Runtime (9.62)		
<p><u>Comments:</u></p> <p>Aqua has submitted the executive summary for greensand filtration at well #1 as part of the Aqua water quality plan.</p>		

Table 1 – Well Information, Completed Activities and Planned Activities		
<u>Well Name and No.</u>	<u>Completed Activities</u>	<u>Planned Activities</u>
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 • December 2017 – Added raw sample data • Q2-2018 System flushed 	<ul style="list-style-type: none"> • Continue manganese POE monitoring • Continue water main flushing efforts
Approved GPM (29)		
Avg. Quarterly Runtime (12.39)		
<p><u>Comments:</u></p> <p>The most current sample results after the well was put back online show manganese levels dropping. Aqua will continue to monitor the manganese results to see if we can keep the manganese under the sMCL.</p>		

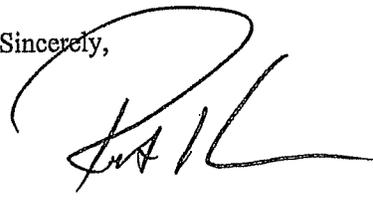
Table 1 – Well Information, Completed Activities and Planned Activities		
<u>Well Name and No.</u>	<u>Completed Activities</u>	<u>Planned Activities</u>
Barton Creek Bluffs Well #10 (P67)	<ul style="list-style-type: none"> • March 2016 – Started using SeaQuest • February 2017 – Flushed system • September 2017 – Took soluble and insoluble well head and distribution samples • December 2017 – Added raw sample data distribution soluble and insoluble iron • Q2 – 2018 Flushed system • July 2018 - Adjusted SeaQuest feeds. 	<ul style="list-style-type: none"> • Continue water main flushing efforts • Monitor SeaQuest feeds
Approved GPM (15)		
Avg. Quarterly Runtime (12.46)		
<p><u>Comments:</u></p> <p>The NOD was originally issued due to high concentrations of iron and manganese. Sample results confirm the high concentrations of iron and manganese. The elevated iron levels are insoluble; however, the manganese levels show to be fully soluble. SeaQuest feed rates do seem inadequate and have been readjusted. Aqua will continue to monitor the sample results.</p>		

Table 1 – Well Information, Completed Activities and Planned Activities

<u>Well Name and No.</u>	<u>Completed Activities</u>	<u>Planned Activities</u>
Ethan's Glen Well #19 and #20 (P97)	<ul style="list-style-type: none"> • Dec 2016 - Started feeding SeaQuest • Sep - Nov 2017 - Flushed system • Sep 2017 - Took soluble insoluble well head and distribution samples • Dec 2017 Started Raw, Entry Point and Distribution Soluble and Insoluble Iron • Q1- 2018 Annual Flushing Complete • SeaQuest has been optimized for these wells. 	<ul style="list-style-type: none"> • Continue water main flushing efforts
Approved GPM (18/11)		
Avg. Quarterly Runtime (12.36)		
<p><u>Comments:</u></p> <p>With higher runtimes and sample results showing iron and manganese still below the sMCL; Aqua respectfully requests that this system be removed from the required quarterly updates.</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) 653-6982.

Sincerely,



Robert Krueger
Area Manager
Aqua North Carolina, Inc.

Cc: David Furr
State of North Carolina
Department of Commerce
Utilities-Public Staff

Well Name	Date	Avg. Sample Week Run Time	Fe Raw Total	Fe Raw Sol	Mn Raw Total	Mn Raw Sol	Total Fe POE	Total Fe FOE	Total Fe Dist.	Sol Fe Dist.	Total Mn POE	Total Mn FOE	Total Mn Dist.	Sol Mn Dist.	Raw NTU	POE NTU	
Barton Creek Bluffs #10	6/1/2013	9.4															
	5/31/2016	9.8									0.2						
	4/26/2017	7.82									0.232				5.7	3.5	
	5/17/2017	10.8													5.7	0.25	
	6/18/2017	12.6													10.5	0.15	
	9/15/2017	9.56															
	9/27/2017	10.38															
	10/5/2017	17.59															
	10/23/2017	1.33															
	12/12/2018		0.13	<0.0220	<0.0220	0.216	0.216	0.128	<0.0220	0.511	0.518	0.0451	0.36	0.543	0.015		
	1/22/2018	9.7	0.0969	<0.0220	<0.0220	0.23	0.224	0.198	<0.0220	0.553	0.634	0.263	0.234	0.0293	0.0076		
	2/8/2018	7.3	0.107	<0.0220	<0.0220	0.163	0.156	0.152	<0.0220	0.184	0.164	0.0489	0.0228				
	3/15/2018	7.4	0.322	<0.0220	<0.0220	0.141	0.137	0.368	<0.0220	0.068	0.333	0.171	0.139	0.0061	0.0064		
	4/18/2018	12.68	0.102	<0.0220	<0.0220	0.255	0.251	0.784	<0.0220	0.505	<0.0220	0.241	0.178	0.203	0.0934		
	5/9/2018	9.57	0.409	<0.0220	<0.0220	0.232	0.221	0.784	<0.0220	0.056	<0.0220	0.221	0.218	0.0142	0.0097		
	6/21/2018	13.39	0.0373	<0.0220	<0.0220	0.223	0.218	0.0354	0.0335	0.501	<0.0220	0.207	0.205	0.0595	0.0098		
	7/12/2018	13.01	0.0353	<0.0220	<0.0220	0.208	0.207	0.0428	0.0368	0.501	<0.0220	0.207	0.205	0.0595	0.0098		
9/8/2018	10.98	<0.0220	<0.0220	0.148	0.153	<0.0220	<0.0220	0.253	0.681	0.151	0.079	0.0546	0.0352				
Ethan's Glen #19	9/17/2014	7.22															
	9/22/2016	10.6					1.87				0.0179						
	3/8/2017	7.5					0.08				0.078						
	4/26/2017	7.8													0.13	0.31	
	9/14/2017	6.8															
	9/27/2017	9.29															
	10/5/2017	19.38															
	10/23/2017	12.65															
	11/8/2017	10.07															
	11/17/2017	7.71															
	12/13/2018	7.2	0.0698	<0.022	<0.022	0.0052	0.0052	0.121	<0.0220	0.723	<0.0220	0.0037	<0.001	0.0072	<0.001		
	1/8/2018	7.5	<0.022	<0.022	0.0032	0.0032	0.0868	<0.0220	<0.0220	<0.0220	<0.0220	0.0026	<0.001	0.0023	<0.001		
	2/2/2018	6	0.0283	<0.022	0.0023	0.0023	0.0021	0.0635	<0.0220	<0.0220	<0.0220	0.0018	<0.001	0.0012	<0.001		
	3/2/2018	6.55	0.0476	<0.022	0.0431	<0.022	0.0431	0.0718	<0.0220	0.0351	<0.0220	0.0024	0.0012	0.0023	0.0011		
	4/6/2018	6.66	0.0622	<0.022	0.0022	0.0021	0.0021	0.0288	<0.0220	0.144	<0.0220	0.0019	0.0034	0.0018	0.0009		
	5/2/2018	7.85	<0.0220	<0.0220	0.0026	0.0026	0.0016	0.0529	<0.0220	0.211	<0.0220	0.0021	<0.0150	<0.0150	<0.0150		
	6/13/2018	13.54	0.174	<0.022	0.0019	0.0019	0.0053	0.0529	<0.0220	0.211	<0.0220	<0.0150	<0.0150	<0.0150	<0.0150		
8/2/2018	12.57	0.0261	<0.022	<0.0015	<0.0015	<0.0015	<0.0220	<0.0220	<0.0220	<0.0220	0.002	0.0015	0.0017	<0.0150			
9/8/2018	10.97	0.0343	<0.022	0.0021	0.0021	0.0021	<0.0220	<0.0220	<0.0220	<0.0220	0.002	0.0015	0.0017	<0.0150			

* All units are in mg/L
* Lab is Total Metals

Well Name	Date	Avg. Sample Week Run Time	Fe Raw Total	Fe Raw Sol	Mn Raw Total	Mn Raw Sol	Total Fe POE	Total Fe Dist.	Sol Fe POE	Total Fe Dist.	Total Mn POE	Total Mn Dist.	Sol Mn POE	Total Mn Dist.	Sol Mn Dist.	Raw NTU	POE NTU
Ethan's Glen #20	9/17/2014	9.6					1.87										
	9/22/2017	10.6					0.38										
	3/8/2017	7.5														0.51	
	4/26/2017	7.8															0.31
	9/14/2017	6.3															
	9/14/2017	6.8															
	9/27/2017	9.29															
	10/5/2017	19.38															
	10/23/2017	12.65															
	11/8/2017	10.07															
	11/17/2017	7.71															
	12/13/2018	7.2	0.0739	<0.022	0.0025	0.0016	0.121	<0.0220	0.0293	0.723	0.0026	0.0023	<0.001	0.0023	<0.001		
	1/8/2018	7.5	<0.0220	<0.0220	0.0016	0.0015	0.121	<0.0220	0.0293	0.723	0.0026	0.0023	<0.001	0.0023	<0.001		
	2/2/2018	6	0.217	0.022	0.002	0.0013	0.0635	<0.0220	0.0351	<0.0220	0.0018	0.0014	<0.001	0.0014	<0.001		
	3/2/2018	6.55	0.0476	<0.0220	0.048	<0.0220	0.0431	<0.0220	0.0351	<0.0220	0.0024	0.0022	0.0012	0.0022	0.0011		
	4/6/2018	6.66	0.08	<0.0220	0.0021	0.0018	0.0718	<0.0220	0.0351	<0.0220	0.0024	0.0022	0.0012	0.0022	0.0011		
	5/2/2018	7.85	0.0174	<0.0220	0.0016	0.0024	0.0288	<0.0220	0.0144	0.144	0.0019	0.0018	0.0034	0.0018	0.0009		
	6/13/2018	0	<0.022	<0.022	0.0016	<0.0150	0.0529	<0.0220	0.21	<0.0220	0.0021	0.0046	<0.0150	0.0046	<0.0150		
	8/2/2018	0	0.0892	<0.022	<0.0150	<0.0150	<0.0220	<0.0220	0.21	<0.0220	<0.0150	<0.0150	<0.0150	<0.0150	<0.0150		
	9/8/2018	0	0.0341	<0.022	<0.0150	<0.0150	<0.0220	<0.0220	0.002	0.002	0.002	0.0015	0.0015	0.0017	<0.0150		

* All units are in mg/L
* Lab is Total Metals

Table 3 - Bayleaf Customer Complaints

SO	SO Type	CSR Notes	Date of SO	Completion Date	Premise Address	City State Zip	Subdivision	FSR Notes
10782122	LABD-S	SCOTT REPORTS WATER HAS BLACK PARTICLES/13 cust and neighbors experiencing, started	9/13/2018	9/13/2018	542918 NORWOOD CREST CT	RALEIGH, NC 27614-7212	NORWOOD CREST	Cl2 .72
10778975	LABD-S	CUST STATES BROWN WATER DONNA. contacted 9/12. disc since last night>Please flush lines. Thanks.	9/12/2018	9/12/2018	530301 BRASS KETTLE RD	RALEIGH, NC 27614-8442	CHATSWORTH	Pre flush Cl2 0 Left fe/MN information sheet Water cleared in a few minutes. Customer has a filter system. Left door tag
10777396	LABD-S	EMAIL FROM FRANKIE REPORTING BROWN COLORED WATER,contacted cust 9/11. a few blocks from Coachmen's. adv her of well.says disc about a week. Please flush	9/11/2018	9/12/2018	555057 TROTTERS RIDGE DR	RALEIGH, NC 27614-9621	TROTTERS RIDGE (114)	Air in line causing cloudy/milky water FSR:hawleyt, EVT:Lab
10774019	LABD-S	BROWN WATER- RAN WATER FOR 30MINS AND STILL BROWN. cust says techcame out and sampled last night but req bacteria test. Please contact customer to collect bacteria sample today and then flush dead end afterwards	9/10/2018	9/10/2018	527407 NEW ARDEN WAY	RALEIGH, NC 27613-6102	WOODVALLEY /GRALYN	W/O already completed FSR:wallr, EVT:Lab
10770801	LABD-S	CUST REPORTING GREY WATER PER KALEENA/6 Left vm please flush	9/6/2018	9/6/2018	556589 212 DUNSTABLE CT	RALEIGH, NC 27614-9750	COACHMAN~ S TRAIL	Talked with customer and water was clearer. Let her know we had some issueAt one of wells causing the air in the line. Let know if wasn't better To call back and would check
10770697	LABD-S	PER WENDI BROWN WATER THANK YOU. cust is in area of pump shutdownon Coachman's the other day. Please flush water main. left message to customer	9/6/2018	9/6/2018	583420 500 SEASONS DR	RALEIGH, NC 27614-8425	TIMBERLINE NORTH	Before flushing: Cl2-0.69/PO4-0.53/pH-7.6/Fe-0.23/Mn-0.043/Hrd-205.2After flushing: Cl2-0.43/PO4-0.44/pH-7.6/Fe-0.07/Mn-0.011/Hrd-205.2Water clear before flushing.
10770221	LABD-S	TIMOTHY REPORTS BROWN WATER/6 On and off past 6	9/6/2018	9/6/2018	524270 101 TROTTERS RIDGE DR	RALEIGH, NC 27614-9621	TROTTERS RIDGE (114)	Cl2 .80 pH 7.3
10770977	LABD-S	CUST STILL HAS DISCOLORED WATER. PLEASE CHECK LEVELS AND FLUSH CALL AHEAD 919-844-8749	9/6/2018	9/6/2018	567196 301 PAPRIKA CT	RALEIGH, NC 27614-9151	TIMBERLINE NORTH	Customer states Aqua personnel have already visited & flushed line. Reports water is clear now.Asked about Iron out. Will deliver in the

10767052	LABC-S	WATER REALLY SMELLS BAD.	9/5/2018	9/18/2018	591979	6008 WILD ORCHID TRL	RALEIGH, NC 27613-8555	BARTON CREEK BLUFFS	LM 9/5/18 with my ph# about bad smell. after hrs call - presumed satisfied FSR:evansr, EVT:Lab
10767187	LABD-S	CUST REPORTING BLACK WATER WHEN SHE RUNS HER WATER, FLUSHES TOILET ETC, ALL OVER HOUSE SINCE THIS MORNING9/5 left vm chlorine pump issue at well house please	9/5/2018	9/5/2018	530410	11033 COACHMAN S WAY	RALEIGH, NC 27614-9530	COBBLE CREEK (123)	Water was slightly discolored but cleared up within 5 minutes of flushing Faucets, CHL. 1.06 , pH 7.0 , po-4 0.65 , iron 0.06 , mang 0.003 , left a Door tag with results and a voice message with customer
10767264	LABD-S	BROWN WATER9/5 notified cust of flushing today cust reports backwashing after filterchange pushes dirty water to her house please be aware	9/5/2018	9/5/2018	532597	11304 COACHMAN S WAY	RALEIGH, NC 27614-9738	COACHMAN~ S TRAIL	Water was clear when I arrived at the outside faucets, Customer highly upseCHL. 1.09, pH 7.3 , po-4 .64 , iron 0.03 , mang 0.006 Customer continued Pull out saved jugs of water from several weeks ago
10767342	LABD-S	BROWN WATER SINCE THIS MORNING, NO NEW OUTAGES, RECURRING ISSUES - KAREN	9/5/2018	9/5/2018	569361	320 SEASONS DR	RALEIGH, NC 27614-9160	TIMBERLINE NORTH	Pump in well house went down causing disc water notified customer flushingwill occur todayFSR:khuuj, EVT:Lab
10767051	LABT-S	WATER SMELLS LIKE SULFER	9/5/2018	9/7/2018	1403649	4317 BRINLEYS COVE CT	RALEIGH, NC 27614	BRINLEYS COVE	pump failure. water smells. left msg 9/5 with # about failure- pump fixedwe are flushing system. adv to cb if still an issueFSR:evansr, EVT:Lab
10767145	LABD-S	BROWN WATER PER HOLLIS	9/5/2018	9/5/2018	555714	209 TRAILS END CT	RALEIGH, NC 27614-8428	COACHMAN~ S TRAIL	9/5 Contacted - disc. water - pump went down - we are flushing - customer satisfied.FSR:dreyera, EVT:Lab
10768638	LABD-S	MARIE CLD TO REPORT DISCOLORED WATER TEA COLORED	9/5/2018	9/5/2018	526531	104- OLD LOWERY CT	RALEIGH, NC 27614-9797	COACHMAN~ S TRAIL	Cl .9 po4 2.75 pH 7.1 Fe .17 MN .028 hardness 119.7 water was Clear upon arrivalFSR:johnsos, EVT:Lab
10767039	LABD-S	DISCOLORED WATER	9/5/2018	9/6/2018	530173	11004 COACHMAN S WAY	RALEIGH, NC 27614-9529	COBBLE CREEK (123)	Per Banner account notes line was flushed ON 9/2 FLUSHED LINES AND CLEARED FSR:khuuj, EVT:Lab
10767755	LABD-S	CHUCK STATED WATER IS BROWN	9/5/2018	9/5/2018	570951	336 SANDHURS T RD	RALEIGH, NC 27615-1625	BAYTREE	9/5 told cust we are flushing, cust asked about callm, directed to call main number and ask to submit FSR:longc, EVT:Lab
10767681	LABD-S	BROWN WATER	9/5/2018	9/5/2018	569929	324 SANDHURS T RD	RALEIGH, NC 27615-1625	BAYTREE	9/5 told cust we were flushing, cust satisfied. FSR:longc, EVT:Lab

10767855	LABD-S	TIMOTHY CALLED ABOUT BROWN WATER AND DAMAGE TO CLOTHES/5 Cust needs flushed issue is from today but on and off over the past year	9/5/2018	9/5/2018	524562	1013 ANDIRON LN	RALEIGH, NC 27614-9537	BRASSFIELD	Flushed Customer line, clear when I Left, CHL .91 , pH 7.2 , po-4 0.86 ,Iron 0.05 , mang 0.019 Spoke to customer suggested flushing the house and hot water heater
10767989	LABD-S	SHARON CALLED TO REPRT DARK WATER/9/5 cust flushed inside and out but water is getting darker please flushcust wants fsr contact pls knock left sample of water on front porch	9/5/2018	9/5/2018	573611	3701 WHITE CHAPEL WAY	RALEIGH, NC 27615-1657	CROSSGATE (135)	Before flushing: C12-0.55/PO4-0.25/pH-7.4/Fe-0.56/Mn-0.121/Hrd-119.7After flushing: C12-0.87/PO4-0.28/pH-7.4/Fe-0.73/Mn-0.106/Hrd-119.7Water lost discoloration after flushing, however Fe & Mn still high.
10768328	LABD-S	BROWN WATER/ PLS CHECKSOCIAL MEDIA POST FOR NEIGHBORHOOD HAS ABOUT 18 COMPLAINTS	9/5/2018	9/5/2018	556589	212 DUNSTABLE CT	RALEIGH, NC 27614-9750	COACHMAN~S TRAIL	9/5 Notified cust of pump failure and flushing in area FSR:khuuj, EVT:Lab
10768455	LABT-S	CUST REPORTS SULFUR SMELL	9/5/2018	9/5/2018	1263878	2001 NARROW WATER LN	RALEIGH, NC 27614	ROSE HALL	Cust states in hot water only. Possibly issue with heater, cust will speak with builder for further assistance.FSR:khuuj, EVT:Lab
10768608	LABD-S	MARLEE HAS BROWN WATER	9/5/2018	9/5/2018	555540	208 TRAILS END CT	RALEIGH, NC 27614-9531	COACHMAN~S TRAIL	CL .7 po4 .4 pH 7.0 Fe .27 MN .039 hardness 119.7 water was clear uponArrivalFSR:johnsos, EVT:Lab
10768321	LABD-S	PER FERN/ WATER HAS BEEN BROWN FOR 2 DAYS/	9/5/2018	9/7/2018	532593	11302 RUMSHILL RD	RALEIGH, NC 27614-9615	COACHMAN~S TRAIL	disc water. pump failure in area. LM 9/5 with # adv of this and that we are flushing area. to cb if still an issue.FSR:aveast, EVT:Lab
10768242	LABD-S	REDDISH BROWN WATER PLEASE CALL HEATHER	9/5/2018	9/7/2018	532642	11313 COACHMAN S.WAY	RALEIGH, NC 27614-8410	COACHMAN~S TRAIL	disc water. cont 9/5. pump failure. adv fixed and we are flushingto cb if still an issue.FSR:aveast, EVT:Lab
10767037	LABD-S	BROWN WATER DISCOLORATION	9/4/2018	9/7/2018	555619	209 DUNSTABLE CT	RALEIGH, NC 27614-9500	COACHMAN~S TRAIL	disc water after pump shutdown. cust says water is clear now. operator is flushing system. cont 9/2.FSR:aveast, EVT:Lab
10763418	LABD-S	CUSTOMERS STATES WATER COMING OUT OF TAP IS "LIKE MILK"	9/1/2018	9/2/2018	567196	301 PAPRIKA CT	RALEIGH, NC 27614-9151	TIMBERLINE NORTH	9/2 Flushing service line, cust satisfied. FSR:longc, EVT:Lab
10761724	LABD-S	VINCENT REPORTS BROWN WATER/ SAYS NEIGHBOR HAS THE YARD BIENG DUG UPAND THINKS IT DELATED	8/31/2018	9/4/2018	537670	124 TRAILS END CT	RALEIGH, NC 27614-9618	CEDAR VALLEY	Aqua had break in area. Cust reports water cleared after break was repaired FSR:khuuj, EVT:Lab

10762284	LABD-S	PER VALERIE/ WATER IS BLACK/31 Recommended cust flush from outside spigot to clear discoloration. Also reports stained fabrics please provide rust out and followup on discoloration	8/31/2018	8/31/2018	569073	316 SEASONS DR	RALEIGH, NC 27614-9160	TIMBERLINE NORTH	Before flushing: Cl2-1.55/PO4-0.60/pH-7.4/Fe-0.09/Mn-0.199/Hard-85.5 After flushing: Cl2-1.17/PO4-0.43/pH-7.2/Fe-0.17/Mn-0.260/Hard-102.6 Collected sample. tested subsample for Mn- 0.8 mg/l.
10756316	LABD-S	EMAIL FROM SARAH REPORTING BROWN WATER WITH PHOTO OF TUB FILLED WITH BROWN WATER	8/29/2018	8/29/2018	530150	11000 PACER CT	RALEIGH, NC 27614-9604	TROTTERS RIDGE (114)	8/29 - Contacted - disc. Monday night but clear now - only in hot water. Customer satisfied. EPT:Lab
10756474	LABD-S	BROWN WATER PLEASE CHECK PER GLENDA 8/29 Mailbox full - please go investigate	8/29/2018	8/29/2018	575872	400 CHOWNIN G PL	RALEIGH, NC 27614-9528	COBBLE CREEK (123)	Cl2 .53 pH 7.3 Po4 .47 Fe .13 MN .030 Pre flush Fe .27 MN .035 Water started clear but then turned light brown. Flushed for about 5 minutes
10756145	LABD-S	SOCIAL MEDIA POST STATES DISCOLORED WATER DESCRIPTION WATER LOOKS LIKE "TEA" PLS INVESTIGATE. PLS KNOCK AND SHARE RESULTS WITH CUSTOMER. 919-623-6316 OR BROWN WATER PER MARILEE FOR THE 3RD TIME THIS WEEK	8/29/2018	8/29/2018	540861	132 TRAILS END CT	RALEIGH, NC 27614-9618	CEDAR VALLEY	Spoke to customer, ran spigot after talking to customer service Monday and water cleared. Did not want a FSR sent out to sample, just wanted issue documented since it happens sporadically.
10750365	LABD-S	BROWN WATER PER MARILEE FOR THE 3RD TIME THIS WEEK	8/27/2018	8/27/2018	555540	208 TRAILS END CT	RALEIGH, NC 27614-9531	COACHMAN~ S TRAIL	Cl2 1.23 pH 7.0 Po4 .19 Fe .11 MN .024 Water brown from spigot. Cleared within a minute. Left door and Fe/MN Info sheet
10750809	LABD-S	PER REECE THEY HAVE BROWN WATER	8/27/2018	8/27/2018	532597	11304 COACHMAN S WAY	RALEIGH, NC 27614-9738	COACHMAN~ S TRAIL	Cl2 .94 pH 7.0 Po4 .22 Fe .11 MN .034 Water had cleared!! EPT:Lab

10752167	LABD-S	EMAIL FROM KAREN WITH PHOTO OF ICE TEA COLORED WATER SAFETY CONCERN	8/27/2018	8/27/2018	537380	12309 SKEENES CT	RALEIGH, NC 27614- 9400	SWAN~S MILL (135)	Customer said they called in 3 days ago / email.no one responded until today When I arrived. Water is clear. CHL 0.88, po-4 2.40, pH 7.7, iron 0.0Mang 0.146. Customer wanted me to test a jug of water 3 days old or older
10748574	LABD-S	BROWN WATER- PER SHARON ... PLEASE INVESTIGATE NOTHING ON INFOSTREAM	8/24/2018	8/27/2018	524792	1017 ANDIRON LN	RALEIGH, NC 27614- 9537	BRASSFIELD	Checked water and it was clear at front faucet when I arrived, tested the wCHL 1.19, pH 7.3, po-4 .68 , iron 0.07, mang 0.028, installed a jumper in Meter box Flushed outside faucets left a door tag and voice
10748352	LABD-S	WATER IS BROWN/ADV THAT THIS HAS HAPPENED BEFORE PER REECE	8/24/2018	8/24/2018	532597	11304 COACHMAN S WAY	RALEIGH, NC 27614- 9738	COACHMAN~ S TRAIL	CHL 1.31 , pH 7.3 , po-4 , iron 0.11, mang 0.023 , water clear upon arrivaSpoke to customer he said water cleared up this morning after he ran waterA little while. Had a couple jugs of old water from
10748197	LABT-S	WATER SMELLS LIKE SULPHUR FROM ALL WATER OUTLETS/ PLS CHECK/ PLS CALL PETER PRIOR TO ARRIVAL @ 607-725-0000	8/24/2018	8/24/2018	555532	208 SEASONS DR	RALEIGH, NC 27614	TIMBERLINE NORTH	Cl2-0.87/pH-7.2/PO4-0.37/Fe-0.06/Mn-0.025/Hrd-154Will follow up with customer on Monday 8/27/2018.FSR:jacksob, EVT:Lab
10743682	LABD-S	EMAIL FROM CRAIG WITH PHOTO OF BROWN WATER IN TOILET BOWL, DOG BOWLCOFFEE POT STATES WATER IS BROWN, TASTE GRITTY AND LIKE MUD	8/22/2018	8/22/2018	532653	11317 COACHMAN S WAY	RALEIGH, NC 27614- 8410	COACHMAN~ S TRAIL	Cl2 .33 pH 7.3 Po4 .36 Fe .11 MN .036Customer has whole filter system Left door hanger and fe/MN info sheet
10743815	LABD-S	CUST REPORTED BROWN WATER OVER ENTIRE HOUSE ON 08-18 AND 08-21 - PLS CHECKCUST SAID OTHERS IN THE NEIGHBORHOOD AS WELL HAS BROWN WTR	8/22/2018	8/22/2018	534075	11600 TROTTEH AM ST	RALEIGH, NC 27614- 9629	COACHMAN~ S TRAIL	Cl2 .47 pH 7.6 Po4 .88 Fe .04 MN .013Left door tag and fe/MN info sheet Water had cleared
10739407	LABD-S	EMAIL FROM ANDREA REPORTING BROWN WATER WITH SEDIMENT	8/20/2018	8/20/2018	532394	1113 BENEDICT LN	RALEIGH, NC 27614- 9602	WEDGEFIELD	Cl2 .21 Po4 .77 pH 7.2 Fe .13 MN .030Water was clear from spigot!! Left door hanger and fe/MN info sheetFSR:hawleyt, EVT:Lab

10739596	LABD-S	EMAIL FROM BART WITH PHOTO OF BROWN WATER AND CHOCALATE BROWNELLER 2ND.	8/20/2018	8/20/2018	581452	TWINWOOD D CT	RALEIGH, NC 27613-6115	WOODVALLEY /GRALYN	Cus has to change filter every 3 instead of 6 months. Water is clear.FSR:wallr, EVT:lab
10737344	LABT-S	CUST STATES WATER HAS VERY STRONGSMELL OF ROTTEN EGG FOR THE PAST FEW DAYS BUTTODAY IT HAS GOTTEN WORSE PLEASE INVESTIGATE	8/17/2018	8/20/2018	593415	CARLYLE DR	RALEIGH, NC 27614-8947	CARLYLE MANOR	Ci2 .46 pH 7.3 p04 1.36 Fe .21 MN .028Ci2 little low so going to bump up ci2 and check back with Customer.Wednesday/Thursday
10718345	LABD-S	CUSTOMER HAS BROWN WATER, PER DISPATCH PLACE ORDER	8/7/2018	8/7/2018	537369	12308 SKEENES CT	RALEIGH, NC 27614-9400	SWAN~S MILL (135)	Cold pull ci2 .40 ph 7.4 p04 .71 fe 0.21 mn 0.019 5 min ci2 .8 ph 7.4 p04 1.3 fe 0.09 mn 0.002Left tag and out out water clear both pull
10715742	LABD-S	DISCOLORED WATER FOR MONTHS	8/6/2018	8/6/2018	555606	209 CLAFLIN CT	RALEIGH, NC 27614-9404	SWAN~S MILL (135)	Cold pull ci2 .81 ph 7.5 p04 0.28 fe 0.27 mn 0.0125 min pull ci2 1.06 ph 7.5 p04 .79 fe 0.06 mn 0.006 Left out out and out
10716038	LABD-S	CUST REPORTED DISCOLORED WATER	8/6/2018	8/6/2018	530209	1101 BASLOW BROOK CT	RALEIGH, NC 27614-8863	CHATSWORTH H	Already did this FSR:hawleyt, EVT:Lab
10716946	LABD-S	DONNELL IS EXPERIENCING MUDDY WATER PLEASE INVESTIGATE	8/6/2018	8/6/2018	523332	1001 MEGSON CT	RALEIGH, NC 27615	SHEFFIELD MANOR I+II	Cold pull ci2 .76 ph 7.4 p04 0.41 fe 0.06 mn 0.009 5 min pull ci2 1.2 ph 7.4 p04 1.1fe 0.01 mn 0.005Del report and out out
10714468	LABD-S	CUSTOMER REPORTING DIRTY AND VERY BROWN WATER PER BEGGY	8/3/2018	8/3/2018	586570	5300 CHAMISAL PI	RALEIGH, NC 27613	WOODVALLEY /GRALYN	Customer stated water now clear. Air in line flushed.Customer satisfied.FSR:wallr EVT:Lab
10711090	LABD-S	CUST IS REPORTING BLACK PARTICALS IN THE WTR COMING FROM ALL FAUCETS PLEASE CHECK	8/2/2018	8/2/2018	615012	8508 SOUTHFIELD D PL	RALEIGH, NC 27615-1834	HERITAGE POINT	Customer reports black specks in water. collected sample. FSR:jacksob, EVT:Lab
705528	LABD-S	CUST REPORT DISCOLORED WATER	7/31/2018	7/31/2018	537380	12309 SKEENES CT	RALEIGH, NC 27614-9400	SWAN~S MILL (135)	cold pull ci2 .74 ph 7.4 p04 .47 fe 0.70 mn 0.053 5 min pull ci2 1.33 ph 7.5 p04 .88 fe 0.08 mn 0.003 FSR:jacksob EVT:lab
10702594	LABD-S	CUST DAVE RPT DISCOLORED WATER AND ITS STAINING HIS TOILETS	7/30/2018	7/30/2018	547306	1605 DOGWOOD VIEW LN	RALEIGH, NC 27614	BAYLEAF FARMS	Cold pull ci2 .59 ph 7.2 p04 .31 fe 0.78 mn 0.051 5 min ci2 1.06 ph 7.2 p04 0.60 fe 0.09 mn 0.021 FSR:jacksob EVT:lab
10700163	LABT-S	STRONG CHEMICAL SMELL TO WTR PER JOEL PLEASE CHECK	7/30/2018	7/30/2018	584512	508 KAYWOOD V CT	RALEIGH, NC 27615-1534	BRIDGEPT N+S/STONE CREEK	Customer states chlorine smell on friday. smell gone by saturday. FSR:jacksob EVT:Lab
10699485	LABD-S	CUST REPORTED DISCOLORED WATER PLS CHECK	7/27/2018	7/27/2018	592365	604 HAWTCK RD	RALEIGH, NC 27615-1241	BRIDGEPT N+S/STONE CREEK	Ci2-0.00, P04-0.15, pH-7.6, Fe-0.00, Mn-0.014, Hard-119.7 FSR:jacksob, EVT:Lab
10699160	LABT-S	JAMIE CLD WATER IS BROWN AND SMELLS LIKE SULFAR	7/27/2018	7/27/2018	1132437	6020 VALENCIA	RALEIGH, NC 27614	SEVILLE	Ci2 1.68 pH 7.1

10692489	LABD-S	CUST REPORTED VERY BROWN WATER THAT BEGAN ON SUNDAY - PLS CHECK - SHE HAS PICTURES AND WANTS WATER	7/24/2018	7/24/2018	581811	4748 SHARPSTO NE LN	RALEIGH, NC 27615- 1680	CROSSGATE (135)	Cl2 1.36 ph 7.3 po4 .84 fe 0.03 mn 0.000Water crystal clear first pullFSR:rhinerb, EVT:Lab will clear	Po4 2.0 Fe .19 MIN .348 Well pumping brown water so flushing with system to see if it will clear
10690424	LABD-S	WATER IS COMPLETELY BROWN PER PARIS WIFE	7/23/2018	7/24/2018	585131	512 PENDLETO N LAKE RD	RALEIGH, NC 27614- 9092	PENDLETON LAKE (135)	1st pullCl2 .6 ph 7.2 po4 .30 fe 0.12 mn 0.0082nd pull c2 1.03 ph 7.2 po4 0.92 fe 0.05 mn 0.004FSR:rhinerb, EVT:Lab	
10689776	LABU-S	MOON CALLED TO REPORT PURPLISH COLORED WATER	7/23/2018	7/23/2018	527891	10609 BADEN PL	RALEIGH, NC 27613- 6300	WOODVALLEY /GRALYN	Cust said it cleared up after 30 seconds. Cl2.77 PH 7.0 po4,1.21Fe.0043 Mn .0031 hardness 1.10.70Water clear. Lab db	
10688724	LABD-S	AIR AND SEDIMENT IN LINE	7/23/2018	7/23/2018	535116	11925 RAVEN RIDGE RD.	RALEIGH, NC 27614- 9322	RAVEN CREEK		
10685671	LABD-S	WATER IS BROWN, HAS BEEN BROWN MORE OFTEN THEN NOT FOR 3 MONTHS PER LIZZIE	7/19/2018	7/19/2018	557240	216 CLAFIN CT	RALEIGH, NC 27614- 9404	SWAN~S MILL (135)	Cold pull c2 .70 ph 7.5 po4 0.28 fe 0.46 mn 0.0225 min pull c2 1.18 ph 7.5 po4 .77 fe 0.05 mn 0.009Cust on main feed thru. water quality is bad	
10679539	LABD-S	BOB REPORTS WTR IS BROWN /ISSUE BEGAN THIS MORNING	7/17/2018	7/17/2018	523605	1004 OLD LANTERN CT	RALEIGH, NC 27614- 9533	BRASSFIELD	Cust sample c2 .87 ph 7.0 po4 .74 fe 0.47 mn 0.206Hose bib pull c2 1.2 ph 7.0 po4 .81 fe 0.11 mn 0.005Left tag. cust watched	
10679487	LABD-S	CUSTOMER REPORTING DISCOLORED WATER	7/17/2018	7/17/2018	536551	12137 LOCKHART LN	RALEIGH, NC 27614- 8006	SWAN~S MILL (135)	Cold pull c2 .60 ph 7.3 po4 .30 fe 0.26 mn 0.015C2 1.10 ph 7.4 po4 0.71 fe 0.06 mn 0.008Rang door. no ans. Called no ans. left vm detailing	
10676990	LABD-S	CUSTOMER FLUSHED LINES WANTS TECH TO TAKE A LOOK	7/16/2018	7/17/2018	534126	11613 TROTTEHN AM ST	RALEIGH, NC 27614- 8430	COACHMAN~ S TRAIL	Cold pull c2 .72 ph 7.5 po4 .17 fe 0.05 mn 0.011 5 min pull c2 1.46 ph 7.5 po4 .66 fe 0.02 mn 0.000Spoke to cust left door tag	
10669983	LABD-S	CUST REPORT CLOUDY WATER	7/11/2018	7/11/2018	538258	12520 SHALLOWF CRD DR	RALEIGH, NC 27614- 9664	HUNTERS LANDING	Left door tag explaining dissolved oxygen FSR:rhinerb, EVT:Lab	

10664703	LABD-S	SOCIAL MEDIA COMPLAINT DISCOLORED WATER. PLS INVESTIGATE AND PROVIDE CUST WITH FINDINGS TELE# 919-744-8643	7/9/2018	7/9/2018	557240	216 CLAFLIN CT	RALEIGH, NC 27614- 9404	SWAN~S MILL (135)	Water clear at front faucet when I arrived. Mang. 0.052, iron 0.01, pH 7.3, Po-4 1.35. CHL 0.86. ran 15 min retested. Mang 0.048, iron 0.01, pH 7.3 Po-4 1.38.chl. 0.91. water photo on left 1:40pm right photo 1:55 pm
10662569	LABD-S	WATER IS BROWN PLEASE CHECK WATER CALL CUSTOMER	7/6/2018	7/6/2018	537305	12300 LOCKHART LN	RALEIGH, NC 27614- 9407	SWAN~S MILL (135)	Cold pull ph 7.3 fe 0.21 mn 0.039 5 min ph 7.3 fe 0.05 mn 0.008Tried to call no ans
10662667	LABD-S	RICHARD REPORTS WTR THAT LOOKS LIKE TEA WITH PARTICLES IN IT, PLS CK	7/6/2018	7/6/2018	567145	301 CLOVES CT	RALEIGH, NC 27614- 9186	TIMBERLINE NORTH	Cold pull c2 .8 ph7.4 po4 .20 fe 0.56 mn 0.0105 min c2 1.1 ph 7.5 po4 .70 fe 0.09 mn 0.000Wtr clear. left
10662932	LABD-S	CUST CONTACT VIA CUST SERV EMAIL. STATES DISCOLORED WTR PLEASE INVESTIGATE CUST TELE# 919-846-4835.	7/6/2018	7/6/2018	565104	2816 SUNNYSTO NE WAY	RALEIGH, NC 27613	BARTON CREEK BLUFFS	Customer has charcoal activated filter & water softener on home outside faucets attached to the filter.chl.0 removed by filter, pH 7.3, Po-4, 0.46, Iron 0.00, mang, 0.000, hardness 0. Spoke to RS.
10659979	LABD-S	BROWN WATER PLEASE INVESTIGATE	7/5/2018	7/5/2018	557426	217 TRAILS END CT	RALEIGH, NC 27614- 8428	COACHMAN~ S TRAIL	C2 .8 ph 7.2 po4.70 fe 0.04 mn. 0.001 Water clear. del report, fe info and rust outSR:rhinerb, EVT:Lab
10660622	LABD-S	CUST SERV EMAIL BOX REC'D TWO EMAILS FROM CUST REGARDING DISCOLORED WTR SPOKE WITH DIVISION. AS A FOLLOW-UP WILL HVE FSR VISIT PROPERTY TO TAKESAMPLES. OK. R. TUPPS	7/5/2018	7/5/2018	565104	2816 SUNNYSTO NE WAY	RALEIGH, NC 27613	BARTON CREEK BLUFFS	
10660286	LABD-S	SYAL REPORTS BROWN WATER	7/5/2018	7/5/2018	558166	221 JANSMITH LN	RALEIGH, NC 27615- 1329	CHELSEA	C2 1.18 ph 7.3 po4 .66 fe 0.06 mn 0.002 Water clear. del report, fe info SR:rhinerb, EVT:Lab
10657229	LABD-S	EMAIL FROM REECE REPORTING BROWN WATER FOR A FEW DAYS REPORTS NOT FIT TO DRINK OR BATHE IN	7/3/2018	7/3/2018	532597	11304 COACHMAN S WAY	RALEIGH, NC 27614- 9738	COACHMAN~ S TRAIL	C2 1.26 ph 7.4 po4 1.13 fe 0.06 mn 0.001Water clear on first pull. satisfactory residuals on first pull.Delivered report, fe info and rust out. cust rep discolored on sunday.
10657847	LABD-S	CUST STATES WATER IS VERY BROWN PLEASE INVESTIGATE	7/3/2018	7/3/2018	584311	1505 BRITTANY BAY W	RALEIGH, NC 27614	COACHMAN~ S TRAIL	Cold pull c2 1.10 ph 7.4 po4 1.28 fe 0.18 mn 0.009 5 min pull c2 1.19 ph 7.4 po4 1.43 fe 0.02 mn 0.000Water clear both pulls. cust rep flushed line

10655461	LABD-S		7/2/2018	7/2/2018	569598	321 SANDHURS T RD	RALEIGH, INC 27615- 1626	BAYTREE	C12 1.3 ph 7.3 po4 0.71 fe 0.05 mn 0.010 hard 9 gpg Caused by stonebridge 17FSR:rhinerp, EVT:Lab
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September 28, 2018

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 57 and the system is approved to serve 55 connections.

Aqua has compiled the requested information in a table format as follows:

- Table 1 provides a summary of well information, completed activities and planned activities.
- Table 2 (Attachment 2) provides a summary of raw, POE and distribution iron and manganese samples collected as part of the ongoing Inorganic Chemical Analyses (IOC).
- Table 3 (Attachment 3) provides a summary of customer complaint information.

UPDATED QUARTERLY STATUS REPORT

Table 1 – Well Information, Completed Activities and Planned Activities

<u>Well Name and No.</u>	<u>Completed Activities</u>	<u>Planned Activities</u>
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 • December 2017 – Added raw sample data • February 2018 - Hydropneumatic storage tank cleaned 	<ul style="list-style-type: none"> • 2018 - Submit executive summary for greensand filtration • Continue the limited use of this well until greensand filtration is approved • Continue cartridge filter replacement operations
Approved GPM (30)		
Avg. Quarterly Runtime (0 hrs)		
<p><u>Comments:</u></p> <p>Aqua does not run Belle Ridge well #2 and relies on well #1 for meeting system demand. Sample results show that the distribution system has elevated iron and manganese levels. Until Aqua has well #2 fully online with a greensand filter, we will not have enough volume to correctly flush the system.</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) 653-6982.

Sincerely,



Robert Krueger
 Area Manager
 Aqua North Carolina, Inc.

Cc: David Furr
 State of North Carolina
 Department of Commerce
 Utilities-Public Staff

BELLE RIDGE-0392358

Date	Avg. Sample Week Run Time	P02R-Well-2 Raw-Fe Lab	P02R-Well-2 Raw-Fe-Diss	P02-Well-2 Fe Lab	P02-Well-2 Fe-Diss	D01-Distribution System-Fe Lab	D01-Distribution System-Fe-Diss	P02R-Well-2 Raw-Mn Lab	P02R-Well-2 Raw-Mn-Diss	P02-Well-2 Mn Lab	P02-Well-2 Mn-Diss	D01-Distribution System-Mn Lab	D01-Distribution System-Mn-Diss
10/13/2017	2			0.588	0.357	0.403	0.181			0.197	0.171	0.0999	0.0655
10/18/2017	1.15			0.574	0.0275	0.381	0.179			0.207	0.13	0.177	0.141
11/2/2017	0.5			0.931	0.151	0.0876	0.0303			0.173	0.108	0.022	0.0134
11/15/2017	2.9			0.467	<0.022	0.159	0.0237			0.194	0.108	0.0573	0.0305
12/14/2017	0.5	1.82	1.21	0.869	0.0793	0.578	0.205	0.253	0.248	0.246	0.166	0.0478	0.0197
1/5/2018	0.625	0.337	0.0361	0.348	0.0634	0.368	0.0813	0.375	0.367	0.37	0.33	0.38	0.332
3/8/2018	0.5	1.68	1.09	1.01	0.125	0.976	0.0613	0.285	0.284	0.319	0.228	0.315	0.229
4/3/2018	0	2.31	1.31	1.32	0.109	1.27	0.0262	0.322	0.319	0.386	0.298	0.395	0.297
5/3/2018	0.25	4.31	0.0683	1.52	0.0972	1.49	0.079	0.321	0.29	0.323	0.293	0.353	0.318
6/13/2018	0.04	2.37	<0.0220	1.44	0.0429	1.26	0.027	0.287	0.278	0.375	0.356	0.357	0.341
7/12/2018	0.014	2.2	0.0668	1.27	0.0396	1.01	0.028	0.258	0.254	0.301	0.281	0.028	0.279
8/2/2018	0.014	1.95	1.51	1.44	0.417	1.26	0.479	0.257	0.259	0.312	0.299	0.302	0.304
9/6/2018	0.014	2.23	0.0647	1.16	0.385	1.12	0.443	0.285	0.26	0.334	0.251	0.336	0.246

* All units are in mg/L

* Lab is Total Metals

Table 3 - Belle Ridge Customer Complaints									
SO	SO Type	CSR Notes	Date of SO	Completion Date	Premise	Address	City State Zip	Subdivision	FSR Notes
Aqua received zero complaints for this system in Q-3 of 2018									



September 28, 2018

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 in a table format as follows:

- Table 1 provides a summary of well information, completed activities and planned activities.
- Table 2 (Attachment 2) provides a summary of raw, POE and distribution iron and manganese samples collected as part of the ongoing Inorganic Chemical Analyses (IOC).
- Table 3 (Attachment 3) provides a summary of customer complaint information.

UPDATED QUARTERLY STATUS REPORT

Table 1 – Well Information, Completed Activities and Planned Activities

<u>Well Name and No.</u>	<u>Completed Activities</u>	<u>Planned Activities</u>
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 • Continue distribution and POE soluble and insoluble sampling • December 2017 – Added raw sample data • December 2017 – Cleaned hydropneumatic storage tank • July 2018 - Flushed system 	<ul style="list-style-type: none"> • 2018 - Submit executive summary for greensand filtration • Continue water main flushing efforts
Approved GPM (49)		
Avg. Quarterly Runtime (5.14)		
<p><u>Comments:</u></p> <p>Based on this system having a single well and the consistent sample results indicating elevated iron and manganese, Aqua will be submitting the executive summary for greensand filtration at well #2 in 2018 as part of the Aqua water quality plan.</p>		

Mr. W. Allen Hardy
September 28, 2018
Branston Subdivision Quarterly Update

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) 653-6982.

Sincerely,



Robert Krueger
Area Manager
Aqua North Carolina, Inc.

Cc: David Furr
State of North Carolina
Department of Commerce
Utilities-Public Staff

BRANSTON-4092076

Date	Avg. Sample Week Run Time	TP1R-Well-2 Raw-Fe Lab	TP1R-Well-2 Raw-Fe-Diss	TP1-Well-2 Fe Lab	D01-Distribution System-Fe Lab	D01-Distribution System-Fe-Diss	TP1R-Well-2 Raw-Mn Lab	TP1R-Well-2 Raw-Mn-Diss	TP1-Well-2 Mn Lab	D01-Distribution System-Mn Lab	D01-Distribution System-Mn-Diss
10/13/2017				0.441	0.311	0.152			0.412	0.39	0.379
10/17/2017	8.41			3.2	0.351	0.204			0.623	0.413	0.44
11/1/2017	6.9			0.387	0.289	0.16			0.388	0.359	0.34
11/15/2017	4.71			0.383	0.245	0.0718			0.198	0.269	0.214
12/14/2017	4.5	0.371	0.0292	0.321	2.2	0.0815	0.328	0.312	0.314	1.21	0.279
1/5/2018	5.4	1.82	1.33	0.877	0.534	0.0794	0.256	0.254	0.25	0.0839	0.172
3/8/2018	3.5	0.436	<0.022	0.421	0.435	0.0382	0.326	0.317	0.341	0.288	0.246
4/11/2018	2.16	0.402	<0.022	0.404	0.369	0.0739	0.357	0.349	0.347	0.329	0.296
5/7/2018	3.29	0.545	0.401	0.481	0.516	0.0166	0.463	0.401	0.392	0.449	0.275
6/13/2018	3.09	0.441	<0.0220	0.353	0.363	<0.0220	0.419	0.437	0.347	0.387	0.326
7/12/2018	6.7	0.423	<0.0220	0.326	0.309	<0.0220	0.431	0.442	0.392	0.368	0.305
8/3/2018	2.83	0.383	0.0377	0.374	0.356	0.0774	0.404	0.395	0.392	0.325	0.283
9/6/2018	4.05	0.331	0.0548	0.243	0.32	0.0707	0.421	0.436	0.256	0.369	0.332

* All units are in mg/L

* Lab is Total Metals

Table 3 - Branston Well #2 Customer Complaints

SO Type	CSR Notes	Date of SO	Completion Date	Premise	Address	City State Zip	Subdivision	FSR Notes
Zero customer complaints in Q3-2018								



September 28, 2018

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
Brayton Park Subdivision, Wake County
WSF ID No.: PO1
Water System No: NC4393164

Dear Mr. Hardy:

Aqua North Carolina, Inc. (Aqua) received the above-referenced letter dated June 26, 2017 regarding elevated concentrations of Iron (Fe) and Manganese (Mn) at Brayton Park Well #1, PO1. The Brayton Park water system is comprised of one active well and one point of entry (POE). The current number of customers served is 22 and the system is approved to serve 65 connections. The table below outlines the run time and the latest iron and manganese concentrations collected as part of the ongoing Inorganic Chemical Analyses (IOC) samples collected at Well #1, PO1.

Aqua has compiled the requested information in a table format on the following pages:

- Table 1 provides a summary of well information, completed activities and planned activities.
- Table 2 (attachment 2) provides a summary of raw, POE and distribution iron and manganese samples.
- Table 3 (attachment 3) provides a summary of customer complaint information.

UPDATED QUARTERLY STATUS REPORT

Table 1 – Well Information, Completed Activities and Planned Activities		
Well Name and No.	Completed Activities	Planned Activities
Brayton Park, Well #1 (P01)	<ul style="list-style-type: none"> • Q3 2016-Cartridge filter installed • April 2017 - cleaned hydropneumatic tank • Q4 2016 –Well #2 was abandoned via an NCDOT TIP project • A secondary interconnect with the Town of Holly Springs was completed 11/23/2017 • July of 2018 – Flushed System 	<ul style="list-style-type: none"> • Continue water main flushing efforts • Continue cartridge filter replacement operation • Q4-2018 – Engineering submittal to PWSS • Q2-2019 – Installation of Greensand Filter
Approved GPM (85)		
Avg. Quarterly Runtime (2 hpd)		
<p><u>Comments:</u></p> <p>The Utilities Commission approved the installation of a new filter at the Brayton Park well #1 on April 2, 2018. The filter design is currently being engineered and is expected to be installed in Q2 of 2019.</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) 653-6982.

Sincerely,


Robert Krueger
 Area Manager
 Aqua North Carolina, Inc.

cc: David Furr
 State of North Carolina
 Department of Commerce
 Utilities-Public Staff

Table 3 - Brayton Park Well #1 Customer Complaints

SO	SO Type	CSR Notes	Date of SO	Completion Date	Premise Address	City State Zip	Subdivision	FSR Notes
Zero customer complaints in Q3-2018								



September 28, 2018

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 161 and the system is approved to serve 168 connections.

Aqua has compiled the requested information in a table format as follows:

- Table 1 provides a summary of well information, completed activities and planned activities.
- Table 2 (Attachment 2) provides a summary of raw, POE and distribution iron and manganese samples collected as part of the ongoing Inorganic Chemical Analyses (IOC).
- Table 3 (Attachment 3) provides a summary of customer complaint information.

UPDATED QUARTERLY STATUS REPORT

Table 1 – Well Information, Completed Activities and Planned Activities

<u>Well Name and No.</u>	<u>Completed Activities</u>	<u>Planned Activities</u>
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 • December 2017 – Added raw sample data • December 2017 – Cleaned hydropneumatic storage tank • December 2017 installed cartridge filters at Well #1 and #2. 	<ul style="list-style-type: none"> • Continue water main flushing efforts • Continue cartridge filter replacement operations • Continue investigation efforts
Approved GPM (30)		
Avg. Quarterly Runtime (0 hrs. per day)		
<p><u>Comments:</u></p> <p>Aqua is not running well #1. It was originally stated that an executive summary for greensand filtration will be completed in 2018 for this well. Due to success with operational changes, this executive summary has been put on hold.</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) 653-6982.

Sincerely,



Robert Krueger
 Area Manager
 Aqua North Carolina, Inc.

Cc: David Furr
 State of North Carolina
 Department of Commerce
 Utilities-Public Staff

Table 2 - Briarwood Kildaire Well #1 Sample Data

Date	Avg. Sample Week Run Time	Fe Raw Total	Fe Raw Sol	Mn Raw Total	Mn Raw Sol	Total Fe POE	Sol. Fe POE	Total Fe Dist.	Sol. Fe Dist.	Total Mn POE	Sol. Mn POE	Total Mn Dist.	Sol. Mn Dist.	Raw NTU	POE NTU
1/6/2016	5.8					0.95				0.17				<0.50	<0.50
1/18/2016	7.5													2.3	1.6
4/18/2017	6.9													4.3	2.9
7/18/2017	7.5														
9/13/2017	6.26					0.558	0.157	0.43	0.0269	0.151	0.128	0.118	0.0885		
10/2/2017	8					0.32	0.0911	0.195	0.075	0.0931	0.102	0.102	0.069		
10/17/2017	6					0.198	0.022	0.186	<0.0220	0.094	0.0322	0.0756	0.0278		
11/1/2017	6.5					0.183	0.0705	0.182	0.0815	0.0828	0.0612	0.0814	0.0665		
11/15/2017	6					0.797	0.0575	0.317	0.0247	0.197	0.203	0.133	0.0312		
12/19/2017	0	0.431	0.0415	0.114	0.118					0.255	0.0547	0.254	0.065		
1/1/2018	0	1.66	0.0374	0.733	0.737					0.691	0.0371	0.678	0.0399		
2/7/2018	0	4.05	0.0225	0.348	0.33					2.16	0.0352	2.1	0.0269		
3/6/2018	0	1.47	<0.0220	0.22	0.217					1.09	0.0417	1.37	0.0647		
4/3/2018	0	1.2	<0.0220	0.388	0.369	4.58	<0.0220	1.46	0.0362	0.44	0.365	0.314	0.245		
5/1/2018	0	0.396	0.00855	0.07	0.0672	0.374	0.0463	0.37	0.0568	0.0615	0.0533	0.0616	0.0526		
6/15/2018	0	0.437	<0.0220	0.122	0.119	0.275	0.0316	0.275	0.0337	0.0566	0.0538	0.0572	0.0541		
7/3/2018	0	0.4	0.0229	0.134	0.137	0.561	0.083	0.547	0.0252	0.0957	0.083	0.0956	0.0819		
8/2/2018	0	0.865	0.241	0.191	0.192	0.254	0.0594	0.253	0.0469	0.0592	0.0577	0.0587	0.0583		

* All units are in mg/L
 * Lab is Total Metals

Table 3 - Briarwood Kildaire Well #1 Customer Complaints

SO	SO Type	CSR Notes	Date of SO	Completion Date	Premise Address	City State Zip	Subdivision	FSR Notes
Zero customer complaints for Q3- 2018								



September 28, 2018

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 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 in a table format as follows:

- Table 1 provides a summary of well information, completed activities and planned activities.
- Table 2 (Attachment 2) provides a summary of raw, POE and distribution iron and manganese samples collected as part of the ongoing Inorganic Chemical Analyses (IOC).
- Table 3 (Attachment 3) provides a summary of customer complaint information.

Table 1 – Well Information, Completed Activities and Planned Activities

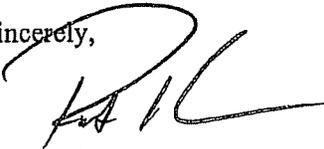
<u>Well Name and No.</u>	<u>Completed Activities</u>	<u>Planned Activities</u>
Cotesworth Down Well #2 (P05)	<ul style="list-style-type: none"> • February 2014 – Started using SeaQuest • February 2015 – Installed cartridge filter • April 2017 – Flushed system • September 2017 – Started distribution and POE total and soluble sampling • December 2017 – Added raw sample data • February 2018 – Cleaned hydro pneumatic tank • May 2018 – Flushed system 	<ul style="list-style-type: none"> • 2018 – Submit executive summary for greensand filtration • Continue cartridge filter replacement operations
Approved GPM (33)		
Avg. Quarterly Runtime (5.76 hrs. per day)		

Comments:

Aqua will be submitting an executive summary to the public staff for greensand filtration approval in 2018 as part of the Aqua water quality 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) 653-6982.

Sincerely,



Robert Krueger
 Area Manager
 Aqua North Carolina, Inc.

Cc: David Furr
 State of North Carolina
 Department of Commerce
 Utilities-Public Staff

Table 2 - Cotesworth Well #2 Sample Data

Date	Avg. Sample Week Run Time	Fe Raw Total	Fe Raw Sol	Mn Raw Total	Mn Raw Sol	Total Fe POE	Sol Fe POE	Total Fe Dist.	Sol Fe Dist.	Total Mn POE	Sol Mn POE	Total Mn Dist.	Sol Mn Dist.	Raw NTU	POE NTU
2/14/2017	4.2					0.8				0.2				5.7	0.047
1/16/2017	3.9					1.17				0.232					
2/6/2017	4.1														
5/10/2017	3.8													6.5	0.46
9/13/2017	7.52					1.82	0.0257	0.0625	0.0258	0.263	0.16	0.0125	0.00414		
9/28/2017	8.36					0.924	0.13	0.589	0.215	0.199	0.11	0.134	0.0954		
10/5/2017	10.52					0.733	0.32	0.573	0.0766	0.233	0.203	0.17	0.135		
10/23/2017	8.46					3.59	0.116	0.515	0.258	0.377	0.151	0.124	0.106		
12/16/2017	4.34					0.897	0.0464	0.806	0.388	0.262	0.206	0.172	0.149		
12/14/2017	4.12	0.58	0.322	0.22	0.261	0.758	0.0251	1.96	0.157	0.233	0.193	0.392	0.121		
1/25/2018	4.45	0.979	0.304	0.242	0.234	2.91	0.068	0.54	0.148	0.859	0.206	0.0384	0.0749		
2/15/2018	5.1	0.997	0.145	0.245	0.243	0.952	0.0614	0.582	0.0738	0.243	0.195	0.0427	0.0227		
3/19/2018	3.5	0.955	0.347	0.224	0.282	1.03	0.221	0.429	0.178	0.232	0.15	0.0338	0.218		
4/23/2018	3.29	1.01	0.143	0.235	0.231	0.899	0.0243	0.676	0.0502	0.235	0.173	0.133	0.0184		
5/21/2018	3.5	0.892	0.0509	0.225	0.23	0.87	<0.0220	0.33	0.0239	0.219	0.156	0.0556	0.00607		
6/21/2018	4.63	0.886	<0.0220	0.289	0.289	1.02	0.0244	0.937	0.0241	0.265	0.204	0.246	0.187		
7/9/2018	8.32	1.2	0.0542	0.243	0.244	1.15	0.0391	0.102	<0.0220	0.234	0.198	0.0183	0.00949		
8/8/2018	4.35	0.906	0.294	0.23	0.242	1.1	0.248	0.164	<0.0220	0.217	0.185	0.0329	0.0119		

* All units are in mg/L
 * Lab is Total Metals

Water_Quality_Complaints From 7/1/2018 - 9/30/2018

Cotesworth Downs NC4392125

SO	SO Type	CSR Notes	Date of SO	Completion Date	Premise Address	City State Zip	Subdivision	FSR Notes
10686724	LABD-S	BROWN WATER FOR 1 DAY	7/20/2018	7/20/2018	562204 2517 COTESWORTH DR	WAKE FOREST, NC 27587-5409	KIMMON PLACE	C12-1.21 ph-6.8 p04-1.32 fe-.53 mn-.05496 psi at home owner possibly wants pressure volume testFSR:carterm, EVT



September 28, 2018

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 in a table format as follows:

- Table 1 provides a summary of well information, completed activities and planned activities.
- Table 2 (Attachment 2) provides a summary of raw, POE and distribution iron and manganese samples collected as part of the ongoing Inorganic Chemical Analyses (IOC).
- Table 3 (Attachment 3) provides a summary of customer complaint information.

UPDATED QUARTERLY STATUS REPORT

Table 1 – Well Information, Completed Activities and Planned Activities

<u>Well Name and No.</u>	<u>Completed Activities</u>	<u>Planned Activities</u>
Duncan Ridge, Well #5 (P05)	<ul style="list-style-type: none"> • August 2014 – Started using SeaQuest • March 2017 – Installed auto blow-off • April 2017 – Flushed system • September 2017 – Started Distribution and POE total and soluble sampling • December 2017 – Added raw sample data • January 2018 – Cleaned hydropneumatic storage tank 	<ul style="list-style-type: none"> • 2018 – Submit executive summary for greensand filtration. • Continue water main flushing efforts
Approved GPM (33)		
Avg. Quarterly Runtime (1.56 hrs. per day)		
<u>Comments:</u>		
Aqua will be submitting the executive summary for greensand filtration at well #5 in 2018 as part of the Aqua water quality 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) 653-6982.

Sincerely,


Robert Krueger
 Area Manager
 Aqua North Carolina, Inc.

Cc: David Furr
 State of North Carolina
 Department of Commerce
 Utilities-Public Staff

DUNCAN RIDGE-4092063

Date	Avg. Sample Week Run Time	P05R-Well-5 Raw-Fe Lab	P05R-Well-5 Raw-Fe-Diss	P05-Well-5 Fe Lab	P05-Well-5 Fe-Diss	D01-Distribution System-Fe Lab	D01-Distribution System-Fe-Diss	P05R-Well-5 Raw-Lab Mn	P05R-Well-5 Raw-Lab Mn-Diss	P05-Well-5 Mn Lab	P05-Well-5 Mn-Diss	D01-Distribution System-Mn Lab	D01-Distribution System-Mn-Diss
10/3/2017	2			1.48	0.594	1.45	0.645			0.394	0.361	0.404	0.369
10/17/2017	1			1.67	<0.022	1.66	0.095			0.419	0.334	0.451	0.359
11/1/2017	0			1.63	0.139	<0.022	<0.022			0.404	0.309	0.139	0.138
11/15/2017	0			1.37	0.491	1.11	0.274			0.352	0.302	0.374	0.281
12/19/2017	0.5	1.12	0.0435	1.59	<0.022	1.13	0.213	0.358	0.387	0.372	0.269	0.361	0.249
1/11/2018	0.77	1.2	0.104	1.05	0.0909	1.04	0.128	0.35	0.368	0.331	0.112	0.327	0.121
3/6/2018	0.96	1.43	0.0659	1.29	<0.022	1.22	0.0587	0.382	0.372	0.365	0.176	0.344	0.181
4/3/2018	1	1.49	0.0683	1.34	0.0731	1.12	0.0403	0.395	0.394	0.381	0.209	0.326	0.182
5/1/2018	1.67	1.29	0.114	1.17	0.0075	1.13	<0.006	0.368	0.356	0.365	0.00618	0.35	0.00104
6/15/2018	1.23	0.378	0.139	0.0516	0.0276	0.0377	0.0221	0.906	0.9	0.721	0.697	0.72	0.712
7/3/2018	5.4	2.02	0.0432	1.38	<0.0220	1.46	0.0253	0.407	0.401	0.391	0.239	0.42	0.241
8/1/2018	0.81	1.35	0.0527	1.29	0.228	1.32	0.414	0.36	0.355	0.36	0.247	0.365	0.267

* All units are in mg/L

* Lab is Total Metals

Table 3 - Duncan Ridge Customer Complaints

SO	SO Type	CSR Notes	Date of SO	Completion Date	Premise	Address	City State Zip	Subdivision	FSR Notes
AQUA received zero customer complaints for the Q3- 2018									



September 28, 2018

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 in a table format as follows:

- Table 1 provides a summary of well information, completed activities and planned activities.
- Table 2 (Attachment 2) provides a summary of raw, POE and distribution iron and manganese samples collected as part of the ongoing Inorganic Chemical Analyses (IOC).
- Table 3 (Attachment 3) provides a summary of customer complaint information.

UPDATED QUARTERLY STATUS REPORT

Table 1 – Well Information, Completed Activities and Planned Activities

<u>Well Name and No.</u>	<u>Completed Activities</u>	<u>Planned Activities</u>
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 • December 2017 – Cleaned hydropneumatic storage tank • December 2017 – Added raw sample data • Installed cartridge filter Q2-2018 	<ul style="list-style-type: none"> • Continue investigation efforts • Continue cartridge filter replacement operations • Continue water main flushing efforts
Approved GPM (29)		
Avg. Quarterly Runtime (3.28 hrs. per day)		
<p><u>Comments:</u></p> <p>The field investigation in Q-2 of 2018 determined that the treatment was set-up properly; however, the SeaQuest was not fully optimized. The operator re-ran the calculations which proved to be the case. However, current sample results taken through Q3 – 2018 show no improvement in the optimization of SeaQuest. Special sampling and investigation for this well will continue to determine best path forward.</p>		

Mr. W. Allen Hardy
September 28, 2018
Eagle Creek Subdivision Quarterly Update

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) 653-6982.

Sincerely,



Robert Krueger
Area Manager
Aqua North Carolina, Inc.

Cc: David Furr
State of North Carolina
Department of Commerce
Utilities-Public Staff

Date	Avg. Sample Week Run Time	P03R-Well-3 Raw-Fe Lab	P03R-Well-3 Raw-Fe-Diss	P03-Well-3 Fe Lab	P03-Well-3 Fe-Diss	D01-Distribution System-Fe Lab	D01-Distribution System-Fe-Diss	P03R-Well-3 Raw-Mn Lab	P03R-Well-3 Raw-Mn-Diss	P03-Well-3 Mn Lab	P03-Well-3 Mn-Diss	D01-Distribution System-Mn Lab	D01-Distribution System-Mn-Diss
10/16/2017	2.3		0.773	0.389	1.07	0.171				0.145	0.103	0.101	0.0305
11/3/2017	6		0.219	0.486	0.75	0.654				0.112	0.0931	0.151	0.128
11/16/2017	4		0.823	0.774	0.395	0.335				0.157	0.151	0.0196	0.0157
12/18/2017	4.5		0.785	0.71	0.334	0.525				0.139	0.141	0.0284	0.0442
1/11/2018	3.6	0.82	0.909	0.559	0.799	0.107		0.153	0.158	0.145	0.0253	0.0883	0.0172
3/5/2018	2.97	0.896	0.751	0.532	0.642	0.129		0.143	0.142	0.112	0.0822	0.0521	0.0103
4/6/2018	2.16	0.91	0.856	0.83	0.678	0.487		0.16	0.159	0.153	0.153	0.0511	0.0361
5/2/2018	5.29	0.807	0.763	0.616	0.599	0.432		0.149	0.145	0.146	0.132	0.0475	0.0357
6/19/2018	3.03	0.756	0.773	0.262	0.92	0.23		0.144	0.142	0.144	0.105	0.235	0.0238
7/24/2018	2.575	0.643	0.705	0.389	0.146	0.125		0.187	0.182	0.123	0.0904	0.066	0.0654
8/2/2018	0.483	0.792	0.839	0.0859	1.04	0.36		0.175	0.17	0.135	0.0687	0.295	0.234

* All units are in mg/L

* Lab is Total Metals

Table 3 - Eagle Creek Customer Complaints

SO	SO Type	CSR Notes	Date of SO	Completion Date	Premise	Address	City State Zip	Subdivision	FSR Notes
10726259	LARD-5	CUSTOMER CALLED TO REPORT DISCOLORED, BROWNISH WATER WITH A SEWAGE ODOR - CONTACT #5919-886-9138 AND 919-278-4276 . CUSTOMER SAID IT IS NOT CONSISTENT THAT SOMETIMES WATER IS CLEAR BUT THIS HAS BEEN HAPPENING FOR THE PAST MONTH.	8/10/2018	8/13/2018	556835	2101 GARDEN OAKS CT	RALEIGH, NC 27606-9962	EAGLE CREEK	add cust left mess. 1st sam fe-05-mr-009-c2-77-ppt-2.67-wr ch- (baseline- 2nd sam fe-07-mr-009-c2, 8-ppt-2.38, 1.61) to cust and left th.wr mess dt.



September 28, 2018

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 in a table format as follows:

- Table 1 provides a summary of well information, completed activities and planned activities.
- Table 2 (Attachment 2) provides a summary of raw, POE and distribution iron and manganese samples collected as part of the ongoing Inorganic Chemical Analyses (IOC).
- Table 3 (Attachment 3) provides a summary of customer complaint information.

UPDATED QUARTERLY STATUS REPORT

Table 1 – Well Information, Completed Activities and Planned Activities

<u>Well Name and No.</u>	<u>Completed Activities</u>	<u>Planned Activities</u>
Forest Glen Master Well #1 (P01)	<ul style="list-style-type: none"> • June 2014 - Started using SeaQuest • Feb 2015 - Hydropneumatic tank cleaned • Feb 2015 - Installed 5 micron filter (collapsed due to high concentrations of iron) 	<ul style="list-style-type: none"> • 2018 – Submit executive summary for greensand filtration. • Continue cartridge filter replacement operations • Continue system flushing efforts
Approved GPM (33)	<ul style="list-style-type: none"> • Feb 2015 - Installed 20 micron filter • July 2106 - Sent greensand filtration request to Public Staff, NCUC • Denied approval by Public Staff, NCUC, for greensand filtration. 	
Avg. Quarterly Runtime (0.29 hrs.)	<ul style="list-style-type: none"> • 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 –Started distribution and POE total and soluble sampling • October 2017 – Flushed system • December 2017- Aqua began adding raw sample data to the report • March 2018 – Flushed system • June 2018 – Flushed system 	

Comments:

Aqua does not use well #1. Although the well does report run time, the well does not currently feed the distribution system. It is set up to flush to the ground. The sum of total iron and total manganese is consistently greater than one. Based on this information, this well has been included in Aqua’s water quality plan. The executive summary for approval of a greensand filter will be submitted to the Public Staff and the North Carolina Utilities Commission in 2018.

Mr. W. Allen Hardy
September 28, 2018
Forest Glen Subdivision Quarterly Update

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) 653-6982.

Sincerely,



Robert Krueger
Area Manager
Aqua North Carolina, Inc.

Cc: David Furr
State of North Carolina
Department of Commerce
Utilities-Public Staff

FOREST GLEN-4392142

Date	Avg. Sample Week Run Time	P01R-Well-1 Raw-Fe Lab	P01R-Well-1 Raw-Fe Diss	P01-Fe Lab	P01-Fe-Diss	D01-Distribution System-Fe Lab	D01-Distribution System-Fe-Diss	P01R-Well-1 Raw-Mn Lab	P01R-Well-1 Raw-Mn-Diss	P01-Mn Lab	P01-Mn-Diss	D01-Distribution System-Mn Lab	D01-Distribution System-Mn-Diss
10/2/2017	0.67			1.06	0.454	1.08	0.184			0.151	0.137	0.372	0.00968
10/20/2017	3.6			1.35	0.385	4.68				0.169	0.0998	1.04	
11/7/2017	0.68			1.07	1.06	1.48				0.16	0.152	0.108	
11/28/2017	0.79			1.18	0.843	1.23				0.163	0.138	0.06	
12/13/2017	0.35	2.18	1.72	1.75	1.16	1.24	0.66	0.165	0.158	0.155	0.128	0.0989	0.0442
12/19/2017	0.56					0.333	0.0421					0.126	0.0462
1/31/2018	0.99	1.41	1.32	1.18	0.603	1.24	0.385	0.164	0.159	0.138	0.132	0.0773	0.0326
2/20/2018	0.32	2.8	2.94	1.87	1.76	1.44	0.402	0.194	0.19	0.177	0.176	0.147	0.0543
3/19/2018	0					2.76	< 0.022					9.7	0.00429
4/9/2018	0.29			1.33						0.158			
5/8/2018	0.26	3.41	1.63	2.34	0.612	1.16	<0.0220	0.196	0.197	0.174	0.16	0.0483	0.00276
6/13/2018	0.13	1.61	1.66	2.28	1.04	2.38	1.22	0.164	0.166	0.177	0.157	0.181	0.16
7/9/2018	0.26	1.58	1.45	1.25	0.683	2.15	0.0225	0.184	0.183	0.176	0.159	0.407	0.00859
8/15/2018	0.2	2.22	1.49	1.17	0.896	1.51	0.757	0.164	0.159	0.142	0.131	0.0864	0.0623

* All units are in mg/L
 * Lab is Total Metals

**Table 3: Forest Glen
Water_Quality_Complaints From 7/1/2018 - 9/30/2018**

SO	SO Type	CSR Notes	Date of SO	Completion Date	Premise	Address	City State Zip	Subdivision	FSR Notes	FSR Comments

Zero customer complaints for Q-3 2018



September 28, 2018

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 #2, P02
Water System No: NC4392142

Dear Mr. Hardy:

Aqua North Carolina, Inc. (Aqua) received the above-referenced letter dated March 7, 2018 regarding elevated concentrations of Iron (Fe) and Manganese (Mn) at Forest Glen Well 2, P02. 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 in a table format as follows:

- Table 1 provides a summary of well information, completed activities and planned activities.
- Table 2 (Attachment 2) provides a summary of raw, POE and distribution iron and manganese samples collected as part of the ongoing Inorganic Chemical Analyses (IOC).
- Table 3 (Attachment 3) provides a summary of customer complaint information.

UPDATED QUARTERLY STATUS REPORT

Table 1 – Well Information, Completed Activities and Planned Activities

<u>Well Name and No.</u>	<u>Completed Activities</u>	<u>Planned Activities</u>
Forest Glen Master Well #2 (P02)	<ul style="list-style-type: none"> • June 2014 - Started using SeaQuest • Feb 2015 - Hydropneumatic tank cleaned • Feb 2015 - Installed 5 micron filter (collapsed due to high concentrations of iron) 	<ul style="list-style-type: none"> • Continue to monitor customer complaints to assess the effectiveness of the sequestration and change in chemical order. • Continue cartridge filter replacement operations.
Approved GPM (84)	<ul style="list-style-type: none"> • Feb 2015 - Installed 20 micron filter (collapsed due to high concentrations of iron) 	<ul style="list-style-type: none"> • Continue water main flushing efforts
Avg. Quarterly Runtime (2.69 hrs.)	<ul style="list-style-type: none"> • July 2106 - Sent greensand filtration request to Public Staff, NCUC • Denied approval by Public Staff, NCUC, for greensand filtration. • March 2017- Flushed system • July 2017- Flushed system • October 2017 – Flushed system • February 2018 – Started distribution, raw and POE total and soluble sampling March 2018 – Flushed system • 3/20/18 switched the chemical feed in an attempt to hold the soluble iron and manganese in suspension rather than oxidize it and capture in the cartridge filter. • Hydropneumatic tank cleaned April 10, 2018 • March 2018 – Flushed system • June 2018 – Flushed system 	

~~Mr. W. Allen Hardy~~
September 28, 2018
Forest Glen Subdivision Quarterly Update

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 however, Aqua and the Public Staff could not reach an agreement to proceed. On March 20, 2018 Aqua switched the order of the chemical feed at Well #2 in an attempt to hold the soluble iron and manganese in suspension rather than oxidize it and capture it with the Harmsco cartridge filter. Unfortunately, these efforts were unsuccessful based on our customer complaint history, and the current laboratory results. This well will be added to Aqua's water quality plan to determine the necessary level of treatment needed going forward.

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

Sincerely,



Robert Krueger
Area Manager
Aqua North Carolina, Inc.

Cc: David Furr
State of North Carolina
Department of Commerce
Utilities-Public Staff

FOREST GLEN-4392142													
Date	Avg. Sample Week Run Time	P02R-Well-2 Raw-Fe Lab	P02R-Well-2 Raw-Fe-Diss	P02-Well-2-Fe Lab	P02-Well-2-Fe-Diss	D01-Distribution System-Fe Lab	D01-Distribution System-Fe-Diss	P02R-Well-2 Raw-Mn Lab	P02R-Well-2 Raw-Mn-Diss	P02-Well-2-Mn Lab	P02-Well-2-Mn-Diss	D01-Distribution System-Mn Lab	D01-Distribution System-Mn-Diss
10/2/2017	2.5			0.326	< 0.022	1.08	0.184			0.156	0.071	0.372	0.00968
10/20/2017	8.47		0.265			4.68			0.0172			1.04	
11/7/2017	2.53		0.682			1.48			0.0318			0.108	
11/28/2017	2.54		0.783			1.23			0.0469			0.06	
12/13/2017	2.17					1.24	0.66					0.0989	0.0442
12/19/2017	2.45	0.358	0.31	0.299	< 0.022	0.333	0.0421	0.178	0.169	0.204	0.0784	0.126	0.0462
1/31/2018	2.43					1.24	0.385					0.0773	0.0326
2/20/2018	3.6	0.391	0.378	0.319	0.0441	1.44	0.402	0.195	0.196	0.168	0.122	0.147	0.0543
3/19/2018	2.28	0.375	0.355	0.356	< 0.022	2.76	< 0.022	0.184	0.192	0.201	0.078	9.7	0.00429
4/9/2018	2.00			0.393						0.18			
5/8/2018	3.13	0.34	0.207	0.15	0.144	0.18	< 0.022	0.192	0.194	0.188	0.19	0.231	0.0167
6/13/2018	2.07	0.268	0.136	0.271	0.146	0.261	0.146	0.181	0.18	0.185	0.186	0.18	0.182
7/9/2018	2.78	0.362	0.312	0.262	0.227	0.216	0.0271	0.201	0.201	0.205	0.203	0.0986	0.00291
8/15/2018	2.63	0.279	0.262	0.147	0.141	0.197	0.0317	0.172	0.173	0.168	0.17	0.226	0.00702

* All units are in mg/L

* Lab is Total Metals

**Table 3: Forest Glen
Water_Quality_Complaints From 7/1/2018 - 9/30/2018**

SO	SO Type	CSR Notes	Date of SO	Completion Date	Premise	Address	City State Zip	Subdivision	FSR Notes	FSR Comments
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Aqua received no customer complaints for Q-3 2018



September 28, 2018

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

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

Dear Mr. Hardy:

Aqua North Carolina, Inc. (Aqua) received the above-referenced letter dated July 12, 2016, regarding elevated concentrations of Iron (Fe) and Manganese (Mn) at Glendale Master System Well #1, (Glendale) P01 and Well #1 (Chari Heights) P02. The Glendale Master System is comprised of six active wells and six points of entry (POE). The current number of customers served is 253 and the system is approved to serve 253 connections.

Aqua has compiled the requested information in a table format as follows:

- Table 1 provides a summary of well information, completed activities and planned activities.
- Table 2 (Attachment 2) provides a summary of raw, POE and distribution iron and manganese samples collected as part of the ongoing Inorganic Chemical Analyses (IOC).
- Table 3 (Attachment 3) provides a summary of customer complaint information.

UPDATED QUARTERLY STATUS REPORT

Table 1 – Well Information, Completed Activities and Planned Activities

<u>Well Name and No.</u>	<u>Completed Activities</u>	<u>Planned Activities</u>
Well #1 (Chari Heights) P02	<ul style="list-style-type: none"> • September 2015 – Started using SeaQuest • March 2017 – Installed cartridge filter • March 2017 – Flushed system • December 2017 – Hydro tank cleaned • Stated pulling raw, Fe, and Mn samples data to the report • December 2017 – Added raw sample data • December 2017 – Cleaned hydropnuematic tank • Flushed system in April 2018 	<ul style="list-style-type: none"> • Investigate an interconnection with Hickory creek well # 1 to benefit both wells with one filter • Continue cartridge filter replacement operations • Continue water main flushing efforts
Approved GPM (40)		
Avg. Quarterly Runtime (7.30 hrs. per day)		
<p><u>Comments:</u></p> <p>This well falls under the group two designation in the Aqua water quality plan. We are currently investigating the possibility of interconnecting this well with the Hickory Creek well to benefit from the greensand filter that we propose to be installed at Hickory Creek.</p>		

Mr. W. Allen Hardy
 September 28, 2018
 Glendale Master Subdivision Quarterly Update
 Well #1 (Glendale) P01 and Well #1 (Chari Heights) P02

OFFICIAL COPY
 Oct 12 2018

<u>Table 1 – Well Information, Completed Activities and Planned Activities</u>		
<u>Well Name and No.</u>	<u>Completed Activities</u>	<u>Planned Activities</u>
Well #1 (Glendale) P01	<ul style="list-style-type: none"> • September 2015 – Started using SeaQuest • December 2017 – Cleaned hydro-pneumatic tank • April 2018 – Flushed system 	<ul style="list-style-type: none"> • 2018 – Submit executive summary for greensand filtration • Continue water main flushing efforts
Approved GPM (45)		
Avg. Quarterly Runtime (0,0)		
<p><u>Comments:</u></p> <p>Aqua will be submitting an executive summary to the public staff for greensand filtration approval in 2018 as part of the Aqua water quality plan.</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) 653-6982.

Sincerely,



Robert Krueger
 Area Manager
 Aqua North Carolina, Inc.

Cc: David Furr
 State of North Carolina
 Department of Commerce
 Utilities-Public Staff

Table 2 - Glendale Master Well Sample Data Glendale Well#1 P01

Date	Avg. Sample Week Run Time	Fe Raw Total	Fe Raw Sol	Mn Raw Total	Mn Raw Sol	Total Fe POE	Sol. Fe POE	Total Fe Dist.	Sol Fe Dist.	Total Mn POE	Sol Mn POE	Total Mn Dist.	Sol Mn Dist.	Raw NTU	POE NTU
10/1/2014	0					1.3				0.175					<0.50
10/6/2016	4					0.72				0.085					0.81
11/4/2016	4													<0.50	
4/4/2018	0	3.78	<0.0220	0.125	0.119										
5/10/2018	0	2.61	0.022	0.156	0.143										

Table 2 - Glendale Master Well Sample Data Chari Heights Well# 1 P02

Date	Avg. Sample Week Run Time	Fe Raw Total	Fe Raw Sol	Mn Raw Total	Mn Raw Sol	Total Fe POE	Sol. Fe POE	Total Fe Dist.	Sol Fe Dist.	Total Mn POE	Sol Mn POE	Total Mn Dist.	Sol Mn Dist.	Raw NTU	POE NTU
10/1/2014	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	
8/9/2017	5.9													0.88	
9/14/2017	5.5					0.758	0.135	2.28	0.572	0.0597	0.0422	0.204	0.0371		
9/27/2017	6					0.73	0.0652	2.35	0.36	0.0196	0.00481	0.842	0.0227		
10/3/2017	8					0.832	0.402	1.25	0.352	0.0621	0.0399	0.0375	0.0311		
10/19/2017	5					5.05	0.448	1.01	0.161	0.0285	0.0427	0.0321	0.0383		
11/8/2017	6					0.719	0.317	0.716	0.102	0.0355	0.0263	0.0352	0.0187		
11/17/2017	5					0.616	0.116	0.613	0.234	0.0394	0.0187	0.0322	0.0246		
12/13/2017	5.25	0.902	0.611	0.11	0.11	0.949	0.0486	1.23	0.391	0.107	0.0762	0.117	0.0894		
1/10/2018	7.61	3.24	0.647	0.0286	0.0305	1.09	0.242	1.12	0.0546	0.073	0.0492	0.0753	0.0456		
2/8/2018	5.3	0.644	<0.0220	0.0208	0.021	0.314	0.114	0.288	0.0617	0.0206	0.0082	0.0203	0.00461		
3/8/2018	5.33	0.708	0.0465	0.0212	0.0209	0.518	0.0533	0.702	0.0537	0.0273	0.00316	0.0345	0.00368		
4/4/2018	6.8	7.28	0.0328	0.0306	0.0308	0.705	0.0351	0.715	<0.0220	0.0279	0.00426	0.0513	0.0148		
5/9/2018	8.7	0.732	0.0667	0.0228	0.0238	0.409	0.0332	0.324	0.0704	0.0218	0.0143	0.0216	0.0219		
6/12/2018	8.93	1.4	0.467	0.023	0.0223	0.503	0.103	0.517	0.0822	0.0206	0.0142	0.0416	0.0269		
7/25/2018	9.2	0.86	0.0426	0.0193	0.0188	0.194	0.0172	0.417	0.0382	0.0182	0.0172	0.042	0.0316		
8/14/2018	6.29	0.11	0.0356	0.019	0.0189	0.0636	0.166	0.437	0.0523	0.0186	0.0433	0.055	0.0185		
9/5/2018	6.26	0.0998	<0.0220	0.0183	0.0192	0.0369	0.027	0.0289	0.0573	0.0177	0.0176	0.018	0.0331		
* All units are in mg/L															
* Lab is Total Metals															

Table 3 - Glendale Master Customer Complaints

SO	SO Type	CSR Notes	Date of SO	Completion Date	Premise Address	City State Zip	Subdivision	FSR Notes
10725166	LABI-S	CHRISTINE CALLED STATED HAS CLOUDY WATER STATED PRESSURE IS OK	8/10/2018	8/10/2018	565054 2813 CORNERSTONE RIDGE DR	APEX, NC 27502	FAIRSTONE	Explained to cust air in line due to over pumped well C12 .80 Ph 7.2 Fe 0.00 Mn 0.000FSR:taberj, EVT:Lab
10725881	LABD-S	JUDY CLD TO REPORT CLOUDY BUBBLY WATER // PLEASE CALL	8/10/2018	8/10/2018	564939 2808 CORNERSTONE RIDGE DR	APEX, NC 27502	FAIRSTONE	Explained to cust cloudy water air in line due to well over pump clear in 2C12 .80 Ph 7.2 Fe 0.00 Mn 0.000FSR:taberj, EVT:Lab
10726252	LABD-S	CLOUDY WATER	8/10/2018	8/10/2018	578687 4300 GLEN ARBOR DR	APEX, NC 27539-7925	GLENDALE	Explained to cus cloudy water due to air in line clear few days C12 .80 Ph 7.2 Fe 0.00 Mn 0.000FSR:taberj, EVT:Lab
10723127	LABI-S	BARABARA STATED THERES AIR IN THE LINES SHE LET THE WATER RUN	8/9/2018	8/9/2018	578977 4312 NEW BRIGHTON DR	APEX, NC 27539-8624	BRIGHTON WOODS	Explained to cus. cloudy water due to over pumping of local well do to com.Over pumping local well due to com.fail of joint well wrong /cus. ph.numbeC12 .97 Fe 0.02 Mn 0.000
10723052	LABI-S	ANGELA CLD IN SAID WATER IS MUDDY AND CLOUDY	8/9/2018	8/9/2018	563175 2613 NEW OXFORD DR	APEX, NC 27539-8626	BRIGHTON WOODS	Cloudy water due to local well over pumping do to com.failWater was clear /cloudy C12 1.0 ph 7.5 Fe0.02 Mn0.003
10723153	LABD-S	Customer reports white cloudy water	8/9/2018	8/9/2018	565103 2816 RINGGOLD DR	APEX, NC 27539-7430	GLENDALE	Explained to cust. cloudy water due to com. fail at a joint well Overpump local well due to com.fail at joint well causing air in line . C12 .80 Ph 7.0 Fe 0.00 Mn 0.000



September 28, 2018

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

Re: Notice of Deficiency – Quarterly Update
Iron and Manganese Concentration
Glendale Master System Subdivision
Wake County
WSF ID No.: Well # 1, TP1
Water System No: NC0392293

Dear Mr. Hardy:

Aqua North Carolina, Inc. (Aqua) received the above-referenced letter dated February 24, 2016, regarding elevated concentrations of Iron (Fe) and Manganese (Mn) at Glendale Master System Well #1, TP1. 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 in a table format as follows:

- Table 1 provides a summary of well information, completed activities and planned activities.
- Table 2 (Attachment 2) provides a summary of raw, POE and distribution iron and manganese samples collected as part of the ongoing Inorganic Chemical Analyses (IOC).
- Table 3 (Attachment 3) provides a summary of customer complaint information.

Mr. W. Allen Hardy
 September 28, 2018
 Glendale Master Subdivision Quarterly Update
 Well # 1, TP1

UPDATED QUARTERLY STATUS REPORT

Table 1 – Well Information, Completed Activities and Planned Activities

<u>Well Name and No.</u>	<u>Completed Activities</u>	<u>Planned Activities</u>
Glendale Master Hickory Creek Well # 1 (TP #1)	<ul style="list-style-type: none"> • September 2015 - Started feeding SeaQuest • March 2017 – Flushed system • September 2017 – Started distribution and POE total and soluble sampling • Stated pulling raw, Fe, and Mn samples data to the report • December 2018 – added raw sample data • December 2017 – cleaned hydro-pneumatic tank • April of 2018 – Flushed system 	<ul style="list-style-type: none"> • 2018 - Submit executive summary for greensand filtration. • Continue water main flushing efforts
Approved GPM (45)		
Avg. Quarterly Runtime (6.521 hrs. per day)		
<u>Comments:</u>		
Aqua will be submitting an executive summary in 2018 for greensand filtration as part of Aqua's water quality 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) 653-6982.

Sincerely,



Robert Krueger
 Area Manager
 Aqua North Carolina, Inc.

Cc: David Furr
 State of North Carolina
 Department of Commerce
 Utilities-Public Staff

Table 2 - Glendale Master Hickory Well #1 Creek Well Sample Data

Date	Avg. Sample Week Run Time	Fe Raw Total	Fe Raw Sol	Mn Raw Total	Mn Raw Sol	Total Fe POE	Sol. Fe POE	Total Fe Dist.	Sol Fe Dist.	Total Mn POE	Sol Mn POE	Total Mn Dist	Sol Mn Dist.	Raw NTU
10/1/2014						1.3				0.175				
10/6/2016	4.36					0.72				0.085				
11/4/2016	4.36													<0.50
9/15/2017	6													
10/4/2017	7					1.29	0.0387	0.955	0.0393	0.12	0.0911	0.12	0.0512	
10/19/2017	7					1.21	0.0422	0.933	0.03	0.115	0.0795	0.112	0.0415	
11/8/2017	6.5					0.893	0.0363	0.842	0.0318	0.113	0.081	0.106	0.0318	
11/17/2017	6					1.12	0.0533	1.52	0.0476	0.113	0.0893	0.118	0.0897	
12/13/2018	5.5	1.35	0.935	0.0227	0.025	0.978	0.57	0.973	0.483	0.0219	0.014	0.0238	0.0122	
1/10/2018	6.9	1.1	0.437	0.127	0.12	1.04	0.299	0.938	0.0372	0.114	0.135	0.118	0.902	
2/8/2018	6.3	0.982	0.336	0.112	0.115	0.931	0.077	0.938	0.0293	0.131	0.0785	0.12	0.0768	
3/8/2018	6.5	1.14	0.148	0.125	0.114	1.05	0.169	2.56	0.0765	0.118	0.0922	0.125	0.087	
4/4/2018	9.4	1.06	0.209	0.125	0.122	1.82	0.0939	3.67	0.0903	0.136	0.077	0.152	0.0722	
5/9/2018	7.27	1.2	0.0268	0.129	0.124	1.12	<0.0220	1.04	<0.0220	0.122	0.0794	0.124	0.0814	
6/12/2018	6.75	0.977	0.401	0.118	0.119	0.915	0.0405	0.924	0.048	0.113	0.0797	0.119	0.079	
7/25/2018	6.71	1.04	0.556	0.116	0.122	0.917	0.0223	0.855	0.287	0.11	0.0841	0.106	0.0907	
8/14/2018	5.75	0.859	0.308	0.11	0.11	0.901	0.0374	0.847	0.258	0.112	0.0849	0.11	0.0916	
9/5/2018	6.95	1.14	0.208	0.121	0.121	0.878	0.081	0.937	0.43	0.112	0.081	0.114	0.0931	

* All units are in mg/L

* Lab is Total Metals

Table 3 - Glendale Master Customer Complaints

SO	SO Type	CSR Notes	Date of SO	Completion Date	Premise Address	City State Zip	Subdivision	FSR Notes
10725166	LABI-S	CHRISTINE CALLED STATED HAS CLOUDY WATER STATED PRESSURE IS OK	8/10/2018	8/10/2018	565054 2813 CORNERSTONE RIDGE DR	APEX, NC 27502	FAIRSTONE	Explained to cust air in line due to over pumped well C12 .80 Ph 7.2 Fe 0.00 Mn 0.000FSR:taberj, EVT:Lab
10725881	LABD-S	JUDY CLD TO REPORT CLOUDY BUBBLY WATER // PLEASE CALL	8/10/2018	8/10/2018	564939 2808 CORNERSTONE RIDGE DR	APEX, NC 27502	FAIRSTONE	Explained to cust cloudy water air in line due to well over pump clear in 2C12 .80 Ph 7.2 Fe 0.00 Mn 0.000FSR:taberj, EVT:Lab
10726252	LABD-S	CLOUDY WATER	8/10/2018	8/10/2018	578687 4300 GLEN ARBOR DR	APEX, NC 27539-7925	GLENDALE	Explained to cus cloudy water due to air in line clear few days C12 .80 Ph 7.2 Fe 0.00 Mn 0.000FSR:taberj, EVT:Lab
10723127	LABI-S	BARABARA STATED THERES AIR IN THE LINES SHE LET THE WATER RUN	8/9/2018	8/9/2018	578977 4312 NEW BRIGHTON DR	APEX, NC 27539-8624	BRIGHTON WOODS	Explained to cus. cloudy water due to over pumping of local well do to com.Over pumping local well due to com.fail of joint well wrong /cus. ph.numbeC12 .97 Fe 0.02 Mn 0.000
10723052	LABI-S	ANGELA CLD IN SAID WATER IS MUDDY AND CLOUDY	8/9/2018	8/9/2018	563175 2613 NEW OXFORD DR	APEX, NC 27539-8626	BRIGHTON WOODS	Cloudy water due to local well over pumping do to com.failWater was clear /cloudy C12 1.0 ph 7.5 Fe0.02 Mn0.003
10723153	LABD-S	Customer reports white cloudy water	8/9/2018	8/9/2018	565103 2816 RINGGOLD DR	APEX, NC 27539-7430	GLENDALE	Explained to cust. cloudy water due to com. fail at a joint well Overpump local well due to com.fail at joint well causing air in line . C12 .80 Ph 7.0 Fe 0.00 Mn 0.000



September 28, 2018

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 69 and the system is approved to serve 101 connections.

Aqua has compiled the requested information in a table format as follows:

- Table 1 provides a summary of well information, completed activities and planned activities.
- Table 2 (Attachment 2) provides a summary of raw, POE and distribution iron and manganese samples collected as part of the ongoing Inorganic Chemical Analyses (IOC).
- Table 3 (Attachment 3) provides a summary of customer complaint information.

UPDATED QUARTERLY STATUS REPORT

Table 1 – Well Information, Completed Activities and Planned Activities

<u>Well Name and No.</u>	<u>Completed Activities</u>	<u>Planned Activities</u>
Hampton Park Well #6 (TP2)	<ul style="list-style-type: none"> • October 2014 – Started using SeaQuest • November 2016 – Flushed system • December 2016 – Submitted request for greensand filtration to NCUC 	<ul style="list-style-type: none"> • Continue system flushing • Monitor effectiveness of the new greensand filter
Approved GPM (88 gpm)	<ul style="list-style-type: none"> • January 2017 – Approval received for greensand filtration • September 2017 – Started quarterly POE total and soluble sampling • October 2017 – Flushed system • December 2017 – Cleaned hydropneumatic storage tank 	
Average Quarterly Runtime (3.58 hrs. per day)	<ul style="list-style-type: none"> • April 2018 – Flushed System • September 2018 – Greensand filter start-up 	
<p><u>Comments:</u></p> <p>The greensand filtration system has been installed and start-up of the new filter on 9-24-2018. Special iron and manganese sampling will continue after filter installation to monitor the results of the new filter.</p>		

Mr. W. Allen Hardy
September 28, 2018
Hampton Park Subdivision Quarterly Update

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) 653-6982.

Sincerely,



Robert Krueger
Area Manager
Aqua North Carolina, Inc.

Cc: David Furr
State of North Carolina
Department of Commerce
Utilities-Public Staff

Date	Avg. Sample Week Run Time	TP2R-Well-6 Raw-Fe Lab	TP2R-Well-6 Raw-Fe-Diss	TP2-Well-6-Fe Lab	TP2-Well-6-Fe-Diss	TP2R-Well-6 Raw-Mn Lab	TP2R-Well-6 Raw-Mn-Diss	TP2-Well-6-Mn Lab	TP2-Well-6-Mn-Diss
1/12/2015	1.1			0.914				0.232	
10/10/2017	4.2			1.15	0.169			0.211	0.191
10/30/2017	4.55								
12/18/2017	0.83	1.42	0.776	1.41	0.0972	0.304	0.291	0.25	0.209
2/6/2018	0.04	1.43	0.633	1.48	0.0763	0.298	0.309	0.282	0.214
2/26/2018	2.1			1.42				0.242	
4/9/2018	3.1	1.5	1.27	1.39	0.249	0.247	0.254	0.262	0.126
7/5/2018	6.2	1.65	0.945	1.62	0.149	0.267	0.274	0.256	0.118

* All units are in mg/L

* Lab is Total Metals

Table 3 - Hampton Park Well #6 Customer Complaints

SO	SO Type	CSR Notes	Date of SO	Completion Date	Premise	Address	City State Zip	Subdivision	FSR Notes
10736647	LABD-S	BROWN WATER	8/17/2018	8/17/2018	1037490	7937 PARKER MILL TRL	FUQUAY-VARINA, NC 27526	HAMPTON PARK	Iron & Mag. was high (had B/O flushing ALL day) Have dropped residuals by Half , but still high , so I leaving B/O flushing over the week-end Before (fe= 2.42 / mn = 0.251) After (fe = 1.27 / mn= 0.172)
10676017	LABD-S	BROWN WATER	7/16/2018	7/16/2018	1266772	7941 PARKER MILL TRL	FUQUAY-VARINA, NC 27526	HAMPTON PARK	Cust. said water was dirty last night & they flushed outside spigot It was clear today , left D.H. with results & sheet with info about Fe & Mn Cl2=0.76/Po4=2.16/Ph=7.5(natural)/Fe=0.31/Mn=0.057/ Fe& Mn up some



September 28, 2018

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 in a table format as follows:

- Table 1 provides a summary of well information, completed activities and planned activities.
- Table 2 (Attachment 2) provides a summary of raw, POE and distribution iron and manganese samples collected as part of the ongoing Inorganic Chemical Analyses (IOC).
- Table 3 (Attachment 3) provides a summary of customer complaint information.

UPDATED QUARTERLY STATUS REPORT

Table 1 – Well Information, Completed Activities and Planned Activities

<u>Well Name and No.</u>	<u>Completed Activities</u>	<u>Planned Activities</u>
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 • November 2017 – Hydropneumatic tank cleaned • December 2017 – added raw sample data • August 2018 - Installed cartridge filter 	<ul style="list-style-type: none"> • Continue water main flushing efforts • Continue cartridge filter replacement operations • Continue investigation efforts
Approved GPM (48)		
Avg. Quarterly Runtime (7.88 hours per day)		
Comments:		
Based on the field investigation, Aqua will continue to work with the ORC of the system and truly optimize SeaQuest. Sampling efforts will continue to understand the effectiveness of the new cartridge filter.		

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) 653-6982.

Sincerely,


Robert Krueger
 Area Manager
 Aqua North Carolina, Inc.

Cc: David Furr
 State of North Carolina
 Department of Commerce
 Utilities-Public Staff

HIGH GROVE-4092096

Date	Avg. Sample Week Run Time	P01R-Well-1 Raw-Fe Lab	P01R-Well-1 Raw-Fe-Diss	P01-Well-1-Fe Lab	P01-Well-1-Fe-Diss	D01-Distributi on System-Fe Lab	D01-Distributi on System-Fe-Diss	P01R-Well-1 Raw-Mn Lab	P01R-Well-1 Raw-Mn-Diss	P01-Well-1-Mn Lab	P01-Well-1-Mn-Diss	D01-Distributi on System-Mn Lab	D01-Distributi on System-Mn-Diss
10/2/2017				0.168	0.0758	0.266	0.123			0.106	0.0931	0.127	0.0425
10/19/2017	0.267			0.131	0.0378	1.73	0.0357			0.0515	0.0357	0.326	0.0352
11/9/2017	0.54			0.138	0.0418	0.132	0.0973			0.0376	0.018	0.0383	0.0324
11/17/2017	0.45			0.18	0.0892	0.179	0.0916			0.0261	0.0192	0.0259	0.0196
12/12/2017	0.5	0.168	0.135	0.183	0.173	0.18	0.172	0.128	0.136	0.144	0.144	0.138	0.134
1/8/2018	0.035	0.264	0.225	0.171	0.157	0.176	0.168	0.166	0.168	0.126	0.123	0.131	0.131
3/5/2018	0.512	0.171	0.12	1.22	0.137	0.182	0.162	0.117	0.123	0.22	0.126	0.141	0.137
4/2/2018	3.5	0.305	0.167	0.373	0.0416	1.28	<0.022	0.127	0.132	0.136	0.0931	0.214	0.0368
5/10/2018	5.27	0.403	0.0843	0.266	<0.0220	2.1	<0.0220	0.108	0.0843	0.12	0.108	0.165	0.035
6/11/2018	4.35	0.248	0.169	0.27	0.221	0.221	<0.0220	0.104	0.105	0.119	0.112	0.0933	0.0802
7/30/2018	3.97	2.82	0.0431	1.4	<0.0220	0.304	0.0565	0.207	0.195	0.198	0.195	0.198	0.171
8/7/2018	8.8	1.01	0.0373	0.434	0.103	0.265	<0.0220	0.206	0.198	0.2	0.197	0.172	0.142

* All units are in mg/L

* Lab is Total Metals

Table 3 - High Grove Customer Complaints									
SO	SO Type	CSR Notes	Date of SO	Completion Date	Premise	Address	City State Zip	Subdivision	FSR Notes
10785217	LABD-S	EMAIL FROM BELINDA REPORTING TUB FULL OF BROWN-TEA COLORED WATER AS	9/17/2018		1351478	5117 SHIRLAND RD	FUQUAY-VARINA, NC 27526	High Grove	
10689696	LABD-S	MARK CLD TO REPORT THE WATER HAS EXCESSIVE IRON IN IT TURNS EVERYTHING ORANGE	7/23/2018	7/23/2018	1421413	3101 LEBRUN PATH DR	FUQUAY-VARINA, NC 27526	High Grove	C12 0.5 po4 0.9 hard 102 ph 7.1 fe 0.08/0.04 MN 0.064/0.009 Water was clear upon arrival and never discolored took out meter and flushedService and then home bibe
10676209	LABT-S	SHERRY REPORTS CHLORINE SMELL TO WATER	7/16/2018	7/16/2018	1337649	5008 BOYLSTON DR	FUQUAY-VARINA, NC 27526	High Grove	C12 .70 Ph 7.0 Fe 0.03 Mn 0.008 Po4 1.1I could not detect C12 smell FSR:taberj, EVT:Lab
10655202	LABD-S	BLACK SEDIMENT IN TOILET PLEASE ASSIST	7/2/2018	7/3/2018	1363006	5020 DARCY WOODS LN	FUQUAY-VARINA, NC 27526	High Grove	C12 .70 Ph 7.0 P04 1.0 Fe 0.07 Mn. 0.005 Phone con. 6/2 water ok stained toilets, told cust. ld bring Fe out 6/36/3 I brought Fe out, gave to cust. tesred H2o good



September 28, 2018

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 in a table format as follows:

- Table 1 provides a summary of well information, completed activities and planned activities.
- Table 2 (Attachment 2) provides a summary of raw, POE and distribution iron and manganese samples collected as part of the ongoing Inorganic Chemical Analyses (IOC).
- Table 3 (Attachment 3) provides a summary of customer complaint information.

UPDATED QUARTERLY STATUS REPORT

Table 1 – Well Information, Completed Activities and Planned Activities

<u>Well Name and No.</u>	<u>Completed Activities</u>	<u>Planned Activities</u>
High Meadows, Well #2 (TM1)	<ul style="list-style-type: none"> • October 2013 – Started using SeaQuest • September 2014 – Installed cartridge filter • April 2017 – Flushed system • September 2017 – Started distribution and POE total and soluble sampling • December 2017 – added raw sample data • February 2018 - Hydropneumatic tank cleaned • June 2018 – Flushed system 	<ul style="list-style-type: none"> • Continue well operation investigation • Continue cartridge filter replacement operations • Continue water main flushing efforts • Continue sampling efforts
Approved GPM (64)		
Avg. Quarterly Runtime (3.72 hrs. per day)		
<p><u>Comments:</u></p> <p>It was originally stated that an executive summary for greensand filtration will be completed in 2018 for this well. Due to inconsistent sampling results along with no actual customer complaints, the executive summary has been put on hold. Special sampling and investigation will continue for well #2 to better understand the best path forward.</p>		

Mr. W. Allen Hardy
September 28, 2018
High Meadows Subdivision Quarterly Update

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) 653-6982.

Sincerely,



Robert Krueger
Area Manager
Aqua North Carolina, Inc.

Cc: David Furr
State of North Carolina
Department of Commerce
Utilities-Public Staff

HIGH MEADOWS-0392334

Date	Avg. Sample Week Run Time	TM1R-Well-2 Raw-Fe Lab	TM1R-Well-2 Raw-Fe-Diss	TM1-Well-2&3-Fe Lab	TM1-Well-2&3-Fe-Diss	D01-Distribution System-Fe Lab	D01-Distribution System-Fe-Diss	TM1R-Well-2 Raw-Mn Lab	TM1R-Well-2 Raw-Mn-Diss	TM1-Well-2&3-Mn Lab	TM1-Well-2&3-Mn-Diss	D01-Distribution System-Mn Lab	D01-Distribution System-Mn-Diss
10/3/2017	5.87			0.696	0.253	0.189	0.0424			0.151	0.128	0.0187	0.0475
10/17/2017	3.9			0.708	0.022	0.172	0.0647			0.163	0.0591	0.0189	0.00934
11/2/2017	4.36			0.703	0.308	0.389	0.0992			0.153	0.113	0.0532	0.013
11/14/2017	3.89			0.697	0.075	0.481	<0.022			0.156	0.0994	0.0351	0.00124
12/19/2017	3.48	1.12	0.0303	0.591	0.261	0.426	0.026	0.214	0.232	0.14	0.134	0.0325	0.00952
1/8/2018	4.34	1.43	0.313	0.592	0.0426	0.36	0.44	0.225	0.216	0.132	0.0855	0.0604	0.042
2/20/2018	3.58	3.24	0.224	0.986	0.0809	2.69	0.936	0.234	0.2	0.216	0.0895	0.205	0.0672
3/19/2018	3.48	1.34	0.123	1.06	0.0421	8.05	3.57	0.195	0.192	0.193	0.135	0.741	0.25
4/25/2018	3.91	1.52	<.00600	0.704	0.00975	0.274	<.00660	0.191	0.188	0.146	0.0818	0.025	0.0298
6/20/2018	4.28	<.0220	<.0220	0.751	<.0220	1.96	<.022	0.217	0.0135	0.139	<.00150	0.315	0.00275
7/25/2018	4.52	1.08	0.668	0.717	<.0220	0.716	0.16	0.189	0.191	0.131	0.0892	0.0883	0.0568
8/28/2018	2.36	0.412	0.0747	0.487	0.0336	0.487	<.022	0.109	0.0812	0.139	0.11	0.133	0.0891
* All units are in mg/L													
* Lab is Total Metals													

Table 3 - High Meadows Customer Complaints

SO	SO Type	CSR Notes	Date of SO	Completion Date	Premise	Address	City State Zip	Subdivision	FSR Notes
10694709	LABD-S	SEDIMENT IN WATER/ WATER BROWN	7/25/2018	7/25/2018	611754	8116 ROUND OAK RD	RALEIGH, NC 27616-9525	HIGH MEADOWS	Customer said it was the hot water heater FSR:cowleyl, ETC:Lab



September 28, 2018

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 in a table format on the following tables:

- Table 1 provides a summary of well information, completed activities and planned activities.
- Table 2 (Attachment 2) provides a summary of raw, POE and distribution iron and manganese samples collected as part of the ongoing Inorganic Chemical Analyses (IOC).
- Table 3 (Attachment 3) provides a summary of customer complaint information.

UPDATED QUARTERLY STATUS REPORT

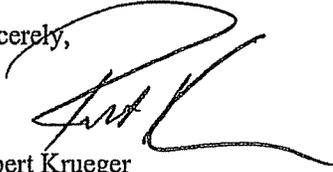
Table 1 – Well Information, Completed Activities and Planned Activities

<u>Well Name and No.</u>	<u>Completed Activities</u>	<u>Planned Activities</u>
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 	<ul style="list-style-type: none"> • Continue to test the effectiveness of the flushing valve and adjusting the time to optimize the water quality • Continue cartridge filter replacement operations
Approved GPM (Not specified – currently 12)	<ul style="list-style-type: none"> • March 2017 – Installed cartridge filter • August 2017 – Flushed system • September 2017 – Started distribution and POE total and soluble sampling • December 2017 – cleaned hydropneumatic storage tank 	<ul style="list-style-type: none"> • Investigate flushing activities/possibilities to improve the distribution water quality
Avg. Quarterly Runtime (1.93 hours per day)	<ul style="list-style-type: none"> • December 2017 - Aqua added raw sample data to the report. • February 2018 – Flushed system 	
<p><u>Comments:</u></p> <p>There were zero customer complaints received in all of 2017, and zero complaints have been received in Q1, Q2 and Q3-2018. Aqua will continue to research a more effective flushing technique. This is a single well system and the current volume needed to scour the distribution is not available. However, with the completed activities listed above, zero customer complaints and the recent samples showing Fe and Mn being below the sMCL for the POE, Aqua respectively requests that this well be taken off the quarterly NOD reporting.</p>		

Mr. W. Allen Hardy
September 28, 2018
Middle Creek Acres Subdivision Quarterly Update

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) 653-6982.

Sincerely,



Robert Krueger
Area Manager
Aqua North Carolina, Inc.

Cc: David Furr
State of North Carolina
Department of Commerce
Utilities-Public Staff

MIDDLE CREEK ACRES-0392370

Date	Avg. Sample Week Run Time	P01R-Well-1 Raw-Fe Lab	P01R-Well-1 Raw-Fe-Diss	P01-Well-1-Fe Lab	P01-Well-1-Fe-Diss	D01-Distribution System-Fe Lab	D01-Distribution System-Fe-Diss	P01R-Well-1 Raw-Mn Lab	P01R-Well-1 Raw-Mn-Diss	P01-Well-1-Mn Lab	P01-Well-1-Mn-Diss	D01-Distribution System-Mn Lab	D01-Distribution System-Mn-Diss
10/11/2017	1.41			0.378	0.104	1.47	0.441			0.00354	0.00213	0.0183	0.00603
10/25/2017	1.29			0.0885	0.0386	0.53	0.0443			0.002	0.00171	0.00613	<0.0011
11/1/2017	1.44			0.131						0.00234			
11/8/2017	1.34			0.219	0.126	0.331	0.0589			0.00351	0.00318	0.00394	<0.0011
11/22/2017	1.64			0.252	0.0483	0.085	0.0437			0.00239	0.00126	<0.0011	<0.0011
12/19/2017	2.57	0.209	<0.022	0.163	0.113	0.363	0.117	0.00404	0.00196	0.00229	0.00226	0.00539	0.00169
1/10/2018	1.73	0.626	0.0586	0.206	0.0402	1.18	0.0685	0.00682	0.00326	0.00308	0.00148	0.016	0.00167
2/22/2018	1.56	0.622	<0.022	0.374	0.0867	0.27	0.0737	0.00447	0.00429	0.00439	0.0024	0.0026	0.00128
3/27/2018	1.38	0.266	<0.022	0.235	0.117	0.166	0.111	0.00308	0.00306	0.00311	0.00292	0.00137	0.0012
4/12/2018	1.35	0.177	<0.022	0.132	0.0473	1.08	0.0856	0.00287	0.00305	0.00287	0.00211	0.0129	0.00128
5/10/018	1.54	1.18	<0.022	1.31	0.0506	1.66	0.0594	0.00643	0.00666	0.0054	0.00249	0.0138	<0.0011
6/11/2018	2.34	0.181	<0.022	0.157	0.0559	0.0801	0.0505	0.00271	0.00241	0.00278	0.00181	0.00203	<0.0011
7/11/2018	1.96	0.191	<0.022	0.192	0.15	0.22	0.0561	0.00306	0.0029	0.00302	0.00318	0.00241	0.0045
8/6/2018	1.75	0.92	<0.022	0.995	0.0373	0.462	0.0602	0.00391	0.00414	0.00628	<0.0011	0.00603	<0.0011
9/11/2018	1.53	0.2	<0.022	0.126	0.0738	0.384	0.0596	0.00267	0.00254	0.00267	0.00274	0.00524	<0.0011

* All units are in mg/L

* Lab is Total Metals

Table 3 - Middle Creek Well Sample Data

SO	SO Type	CSR Notes	Date of SO	Completion Date	Premise	Address	City State Zip	Subdivision	FSR Notes
Zero customer complaints for Q-3 of 2018.									



September 28, 2018

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 in a table format on the following tables:

- Table 1 provides a summary of well information, completed activities and planned activities.
- Table 2 (Attachment 2) provides a summary of raw, POE and distribution iron and manganese samples collected as part of the ongoing Inorganic Chemical Analyses (IOC).
- Table 3 (Attachment 3) provides a summary of customer complaint information.

UPDATED QUARTERLY STATUS REPORT

Table 1 – Well Information, Completed Activities and Planned Activities

<u>Well Name and No.</u>	<u>Completed Activities</u>	<u>Planned Activities</u>
Northgate, Well #1 (P01)	<ul style="list-style-type: none"> • September 2015 – Started using SeaQuest • September 2016 – Flushed system • December 2016 – Filed for approval of greensand filtration 	<ul style="list-style-type: none"> • Continue cartridge filter replacement operations • Continue water main flushing efforts
Approved GPM (not specified)	<ul style="list-style-type: none"> • January 2017 – Approval received for greensand filtration • January 2017 – Greensand filtration project put on hold 	
Avg. Quarterly Runtime (0.987 hour per day)	<ul style="list-style-type: none"> • March 2017 – Installed cartridge filter • June 2017 – Flushed system • September 2017 – Started distribution and POE total and soluble sampling • December 2017 – Added raw sample data 	

Comments:

Aqua filed for approval from the North Carolina Utilities Commission (NCUC) for the installation of a greensand filtration system at Northgate well #1 on December 30, 2016. This request was approved by the NCUC in the Order issued January 18, 2017; the project to install the 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 contacted Aqua in 2017 to request the purchase and closing of Aqua's well 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 close proximity of Aqua's distribution system.

Q-2 2018 Update – Discussion to sell the system and close Aqua's Northgate well are active. If the sale of the system is transacted, well #1 would be abandoned and the system interconnected to Fuquay Varina's distribution system to provide water service to customers in Northgate. Based on this, proceeding with the installation of a greensand filter in this system is not appropriate, and therefore, the project continues to be on hold.

Q-3 2018 Update - Discussion to sell the system and close Aqua's Northgate are still active.

Mr. W. Allen Hardy
September 28, 2018
Northgate Subdivision Quarterly Update

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) 653-6982.

Sincerely,



Robert Krueger
Area Manager
Aqua North Carolina, Inc.

Cc: David Furr
State of North Carolina
Department of Commerce
Utilities-Public Staff

NORTHGATE-0392217

Date	Avg. Sample Week Run Time	P01R-Well-1 Raw-Fe Lab	P01R-Well-1 Raw-Fe-Diss	P01-Well-1-Fe Lab	P01-Well-1-Fe-Diss	D01-Distribution System-Fe Lab	D01-Distribution System-Fe-Diss	P01R-Well-1 Raw-Mn Lab	P01R-Well-1 Raw-Mn-Diss	P01-Well-1-Mn Lab	P01-Well-1-Mn-Diss	D01-Distribution System-Mn Lab	D01-Distribution System-Mn-Diss
10/3/2017	1			0.145	<0.022	0.148	0.0567			0.389	0.317	0.388	0.345
10/17/2017	1			0.649	0.177	0.596	0.0287			0.434	0.359	0.437	0.338
11/1/2017	1			1.11	0.265	1.04	0.747			0.389	0.351	0.399	0.38
11/15/2017	1			1.29	0.282	1.31	0.223			0.414	0.406	0.412	0.393
12/19/2017	0.768	1.34	1.26	1.31	0.0442	1.34	0.26	0.389	0.384	0.398	0.289	0.403	0.303
1/11/2018	0.112	1.29	1.17	1.27	0.0765	1.29	0.302	0.398	0.362	0.378	0.296	0.387	0.314
3/6/2018	0.868	1.82	1.28	1.36	0.0391	1.42	0.179	0.4	0.413	0.387	0.332	0.401	0.281
4/3/2018	1	1.38	1.31	1.49	0.147	1.47	0.0375	0.427	0.433	0.431	0.255	0.423	0.331
5/1/2018	0.67	1.33	1.29	1.62	0.017	1.35	0.014	0.41	0.402	0.415	0.132	0.364	0.096
6/15/2018	0.52	1.29	0.887	1.29	<0.0220	1.31	<0.0220	0.379	0.373	0.374	0.268	0.373	0.315
7/3/2018	1.08	1.5	0.628	1.51	<0.0220	1.49	<0.0220	0.43	0.425	0.422	0.33	0.417	0.378
8/1/2018	0.94	1.31	1.24	1.72	0.642	1.34	0.655	0.383	0.384	0.39	0.351	0.38	0.342

* All units are in mg/L

* Lab is Total Metals

Table 3 - Northgate Well #1 Customer Complaints

SO	SO Type	CSR Notes	Date of SO	Completion Date	Premise	Address	City State Zip	Subdivision	FSR Notes
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There were zero customer complaints in Q-3 2018



September 28, 2018

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 in a table format on the following tables:

- Table 1 provides a summary of well information, completed activities and planned activities.
- Table 2 (Attachment 2) provides a summary of raw, POE and distribution iron and manganese samples collected as part of the ongoing Inorganic Chemical Analyses (IOC).
- Table 3 (Attachment 3) provides a summary of customer complaint information.

UPDATED QUARTERLY STATUS REPORT

Table 1 – Well Information, Completed Activities and Planned Activities

<u>Well Name and No.</u>	<u>Completed Activities</u>	<u>Planned Activities</u>
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 • December 2017- hydropneumatic storage tank cleaned • December 2017 – added raw sample data 	<ul style="list-style-type: none"> • 2018-Complete executive summary for greensand filtration • Continue cartridge filter replacement operations • Continue water main flushing efforts
Approved GPM (34)		
Avg. Quarterly Runtime (2.33 hrs. per day)		
<u>Comments:</u>		
Aqua will be submitting the executive summary for greensand filtration at well #1 in 2018 as part of Aqua's water quality 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) 653-6982.

Sincerely,



Robert Krueger
 Area Manager
 Aqua North Carolina, Inc.

Cc: David Furr
 State of North Carolina
 Department of Commerce
 Utilities-Public Staff

OLDE SOUTH TRACE-4392131

Date	Avg. Sample Week Run Time	P01R-Well-1 Raw-Fe Lab	P01R-Well-1 Raw-Fe-Diss	P01-Well-1-Fe Lab	P01-Well-1-Fe-Diss	D01-Distribution System-Fe Lab	D01-Distribution System-Fe-Diss	P01R-Well-1 Raw-Mn Lab	P01R-Well-1 Raw-Mn-Diss	P01-Well-1-Mn Lab	P01-Well-1-Mn-Diss	D01-Distribution System-Mn Lab	D01-Distribution System-Mn-Diss
10/16/2017	2.5			0.947	0.527	0.468	0.311			0.273	0.252	0.103	0.0367
10/30/2017	2			1.27	0.488	0.624	0.0855			0.268	0.247	0.058	0.0084
11/3/2017	2.5			0.783	0.365	1.02	0.437			0.266	0.217	0.286	0.247
11/16/2017	2			1.08	0.288	0.64	0.185			0.297	0.243	0.056	0.0236
12/18/2017	2.012	2.12	0.285	0.912	0.627	0.623	0.159	0.282	0.287	0.285	0.249	0.0756	0.0143
1/11/2018	2.14	1.92	0.463	0.963	0.309	0.686	0.256	0.248	0.267	0.281	0.195	0.0784	0.0353
3/5/2018	2.19	6.37	0.197	1.14	0.731	0.66	0.177	0.278	0.279	0.259	0.234	0.0554	0.0201
4/6/2018	2.07	2.59	0.173	1.09	0.623	0.33	0.045	0.326	0.315	0.303	0.281	0.058	0.00384
5/2/2018	2.1	2.52	0.658	0.813	0.629	0.581	0.0329	0.264	0.294	0.258	0.248	0.0549	0.0329
6/19/2018	1.57	1.62	0.146	0.89	0.236	0.566	0.0287	0.288	0.29	0.285	0.236	0.0888	0.0439
7/24/2018	2.12	0.858	0.0775	0.995	0.382	<0.0220	<0.0220	0.245	0.248	0.26	0.248	0.00278	0.00269
8/2/2018	2.56	1.03	0.836	0.989	0.166	0.284	0.224	0.29	0.289	0.273	0.227	0.0865	0.0807

* All units are in mg/L

* Lab is Total Metals

Table 3 - Olde South Trace Customer Complaints									
SO	SO Type	CSR Notes	Date of SO	Completion Date	Premise	Address	City State Zip	Subdivision	FSR Notes
Zero customer complaints in the Q3- 2018.									



September 28, 2018

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
Ridgebrook/Westbury Subdivision, Wake County
WSF ID No.: P03
Water System No: NC4392101

Dear Mr. Hardy:

Aqua North Carolina, Inc. (Aqua) received the above-referenced letter dated May 24, 2017 regarding elevated concentrations of Iron (Fe) and Manganese (Mn) at Westbury Well #1, P03 (also called Ridgebrook Well #3). The Ridgebrook/Westbury water system is comprised of three active wells and three points of entry (POE). The current number of customers served is 92 and the system is approved to serve 108 connections. The table below outlines the run time and the latest iron and manganese concentrations collected as part of the ongoing Inorganic Chemical Analyses (IOC) samples collected at Well #, P03.

Aqua has compiled the requested information in a table format as follows:

- Table 1 provides a summary of well information, completed activities and planned activities.
- Table 2 (attachment 2) provides a summary of raw, POE and distribution iron and manganese samples.
- Table 3 (attachment 3) provides a summary of customer complaint information.

UPDATED QUARTERLY STATUS REPORT

Table 1 – Well Information, Completed Activities and Planned Activities

Well Name and No.	Completed Activities	Planned Activities
Ridgebrook/Westbury, Well #1 (P03) Approved GPM (33) Avg. Quarterly Runtime (5.25 hrs. per day)	<ul style="list-style-type: none"> • June 2017 - cleaned the hydropneumatic tank • June 2017 - cartridge filter installed • June 2017 - service lines were replaced at 3824 and 3828 Westbury Lake Dr. • June 2017 - distribution system flushed • July 2017 - service lines replaced at 3732, 3736, 3740m 3744 Westbury Lake Dr. • September 2017 - distribution system flushed • June 2018 – Flushed system 	<ul style="list-style-type: none"> • Continue cartridge filter replacement operations • Continue water main flushing efforts • Q4-2018 – Engineering submittal to PWSS • Q1-2019 -Install greensand filtration
<p>Comments:</p> <p>Sequestering the Mn levels at this well has proven unsuccessful. Therefore, on 11/29/2017 the Public Staff of the North Carolina Utilities Commission recommended approval for the installation of greensand type (i.e. manganese oxide) filtration. Engineering for the filter begin in 2018 and installation of this filter is expected to be complete in 2019.</p>		

Mr. W. Allen Hardy
September 28, 2018
Ridgebrook/Westbury Subdivision Quarterly Update

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) 653-6982.

Sincerely,



Robert Krueger
Area Manager
Aqua North Carolina, Inc.

Cc: David Furr
State of North Carolina
Department of Commerce
Utilities-Public Staff

Table 2 - Ridgebrook-Westbury Sample Data															
Date	Avg. Sample Week Run Time	Fe Raw Total	Fe Raw Sol	Mn Raw Total	Mn Raw Sol	Total Fe POE	Sol Fe POE	Total Fe Dist.	Sol Fe Dist.	Total Mn POE	Sol Mn POE	Total Mn Dist	Sol Mn Dist.	Raw NTU	POE NTU
9/14/2016	9					0.0647				0.0105					
10/2/2017	7.5					<0.0220	<0.0220	<0.0220	<0.0220	0.913	0.905	0.00305	<0.00110		
10/19/2017	4					<0.0220	<0.0220	<0.0220	<0.0220	0.954	0.963	0.0115	0.00269		
11/7/2017	3.5					<0.0220	<0.0220	<0.0220	<0.0220	0.852	0.833	0.0434	0.04		
11/17/2017	8					0.0274	<0.0220	<0.0220	<0.0220	0.786	0.799	0.787	0.734		
12/13/2017	6.5	<0.0220	<0.0220	0.964	0.958	<0.0220	<0.0220	<0.0220	<0.0220	1.07	1.06	1.08	1.09		
1/10/2018	13.4	<0.0220	<0.0220	1.2	1.17	0.0462	<0.0220	<0.0220	<0.0220	0.886	0.912	1.12	1.21		
2/7/2018	2.05	<0.0220	<0.0220	1.36	1.33	<0.0220	<0.0220	<0.0220	<0.0220	1.21	1.24	1.18	1.2		
3/6/2018	1.21	<0.0220	<0.0220	1.28	1.25	<0.0220	<0.0220	0.0296	<0.0220	0.085	0.0833	0.0834	0.08		
4/4/2018	2.48	<0.0220	<0.0220	1.2	0.2	0.108	<0.0220	<0.0220	<0.0220	0.909	0.713	0.886	0.796		
5/9/2018	0.82	0.11	<0.0220	1.39	1.55	<0.0220	<0.0220	<0.0220	<0.0220	0.984	0.97	0.996	0.984		
6/12/2018	2.1	<0.0220	<0.0220	1.3	0.31	0.0842	<0.0220	<0.0220	<0.0220	1.130	1.15	1.13	1.13		
7/25/2018	15.38	<0.0220	<0.0220	1.11	1.11	<0.0220	<0.0220	<0.0220	<0.0220	0.865	0.862	0.773	0.762		

* All units are in mg/L

* Lab is Total Metals

Table 3 - Ridgebrook-Westbury Customer Complaints									
SO Type	CSR Notes	Date of SO	Completion Date	Premise	Address	City State Zip	Subdivision	FSR Notes	FSR Comments
Zero customer complaints in Q3-2018									



September 28, 2018

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 in a table format as follows:

- Table 1 provides a summary of well information, completed activities and planned activities.
- Table 2 (Attachment 2) provides a summary of raw, POE and distribution iron and manganese samples collected as part of the ongoing Inorganic Chemical analyses (IOC).
- Table 3 (Attachment 3) provides a summary of customer complaint information.

UPDATED QUARTERLY REPORT

Table 1 – Well Information, Completed Activities and Planned Activities

<u>Well Name and No.</u>	<u>Completed Activities</u>	<u>Planned Activities</u>
River Oaks, Well #3 (P02)	<ul style="list-style-type: none"> • September 2015 – Started using SeaQuest • May – June 2017 – Flushed system • September 2017 – Started distribution and POE total and soluble sampling • December 2017 – Added raw sample data • February 2018- Hydropneumatic tank cleaned • August 2018 – Flushed system 	<ul style="list-style-type: none"> • 2018 - Complete executive summary for greensand filtration • Continue water main flushing efforts
Approved GPM (50)		
Avg. Quarterly Runtime (0.0 hrs. per day)		
<u>Comments:</u> Well #3 will operate in the lag mode and will only be used during heavy peak demand. Aqua will be submitting the executive summary for greensand filtration at well #3 in 2018 as part of the Aqua water quality 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) 653-6982.

Sincerely,



Robert Krueger
 Area Manager
 Aqua North Carolina, Inc.

Cc: David Furr
 State of North Carolina
 Department of Commerce
 Utilities-Public Staff

RIVER OAKS-0392096

Date	Avg. Sample Week Run Time	P02R-Well-3 Raw-Fe Lab	P02R-Well-3 Raw-Fe-Diss	P02-Well-3-Fe Lab	P02-Well-3-Fe-Diss	D01-Distribution System-Fe Lab	D01-Distribution System-Fe-Diss	P02R-Well-3 Raw-Mn Lab	P02R-Well-3 Raw-Mn-Diss	P02-Well-3-Mn Lab	P02-Well-3-Mn-Diss	D01-Distribution System-Mn Lab	D01-Distribution System-Mn-Diss
10/3/2017	2.1			0.676	0.663	0.664	< 0.022			0.144	0.15	0.183	0.132
10/23/2017	1.05			0.922	0.86	0.197	< 0.022			0.137	0.133	0.196	0.199
11/8/2017	0.6			1.02	0.925	0.432	< 0.022			0.0994	0.0941	0.0252	0.015
12/8/2017	0			3.1	3.04	2.06	2			0.173	0.172	0.157	0.154
12/15/2017	0	2.48	1.85	2.62	1.92	< 0.022	< 0.022	0.158	0.174	0.167	0.169	0.0247	< 0.0011
1/16/2018	0	4.91	1.03	4.96	0.757	4.13	1.11	0.216	0.219	0.213	0.212	0.187	0.211
2/13/2018	0	2.21	1.89	2.08	1.95	< 0.022	< 0.022	0.173	0.172	0.168	0.174	0.00128	0.00188
3/9/2018	0	12	1.92	4.37	1.43	0.0983	< 0.022	0.247	0.225	0.183	0.176	0.186	0.00794
4/13/2018	0	2.16	<0.0220	2.35	<0.0220	0.0296	< 0.022	0.134	0.134	0.133	0.128	0.0226	0.0113
5/1/2018	0	2.71	1.46	2.81	1.34	2.32	1.54	0.178	0.169	0.178	0.164	0.171	0.174
6/15/2018	0	7.05	0.337	1.46	0.771	0.593	< 0.022	0.203	0.182	0.132	0.131	0.0683	0.012
8/8/2018	0	7.38	1.65	5.42	2.92	4.95	3.25	0.169	0.148	0.141	0.144	0.133	0.137

* All units are in mg/L

* Lab is Total Metals

Table 3 -River Oaks Customer Complaints										
SO	SO Type	CSR Notes	Date of SO	Completion Date	Premise	Address	City State Zip	Subdivision	FSR Notes	FSR Notes
Zero customer complaints for Q3 - 2018										



September 28, 2018

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
Saddle Run, Wake County
WSF ID No. P05
Water System No: NC0392080

Dear Mr. Hardy:

Aqua North Carolina, Inc. (Aqua) received the above-referenced letter dated August 3, 2017, regarding elevated concentrations of Iron (Fe) and Manganese (Mn) at Stanstead Well #2 P05. The Saddle Run water system is comprised of five active wells and four points of entry (POE). The current number of customers served is 229 and the system is approved to serve 230 connections. The table below outlines the run time and the latest iron and manganese concentrations collected as part of the ongoing Inorganic Chemical Analyses (IOC) samples collected at Well #2, P05.

Aqua has compiled the requested information in a table format as follows:

- Table 1 provides a summary of well information, completed activities and planned activities.
- Table 2 (attachment 2) provides a summary of raw, POE and distribution iron and manganese samples.
- Table 3 (attachment 3) provides a summary of customer complaint information.

UPDATED QUARTERLY STATUS REPORT

Table 1 – Well Information, Completed Activities and Planned Activities

Well Name and No.	Completed Activities	Planned Activities
Stanstead, Well #2 (P05)	<ul style="list-style-type: none"> • April 2017 - System flushed • November 2017 - Aqua completed repairs of fencing around the sand bed. • December 2017 - the sand beds were cleaned and a roofing structure was placed over the entire sand bed to minimize leaf litter in the filter bed that was causing blinding issues • Filter storage tankage installation have been completed and currently in service 	<ul style="list-style-type: none"> • Continue water main flushing efforts
Approved GPM (90)		
Avg. Quarterly Runtime (8.82)		
<p>Comments:</p> <p>With the addition of the sludge storage tanks and the roof over the sand filter, this system has been producing consistently clear water. We are not experiencing the short wash cycles that we were previously experiencing. Current sample results show that the POE is consistently under the sMCL for iron and manganese.</p> <p>Based on the current upgrades to this well system along with the recent sample results, Aqua respectively requests that this well be removed from the quarterly reporting.</p>		

Mr. W. Allen Hardy
September 28, 2018
Saddle Run Subdivision Quarterly Update

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) 653-6982.

Sincerely,



Robert Krueger
Area Manager
Aqua North Carolina, Inc.

Cc: David Furr
State of North Carolina
Department of Commerce
Utilities-Public Staff

Table 2 -Saddle Run Well (Stanstead Well #2 (PO5) Sample Data

Date	Avg. Sample Week Run Time	Fe Raw Total	Fe Raw Sol	Mn Raw Total	Mn Raw Sol	Total Fe POE	Sol Fe POE	Total Fe Dist.	Sol Fe Dist.	Total Mn POE	Sol Mn POE	Total Mn Dist.	Sol Mn Dist.	Raw NTU	POE NTU
9/14/2016 (IOC)						0.064				0.0105					
7/21/2017 (Special)		7.7		2.12											
12/19/2017 (Special)	5.1	10.4		2.25											
3/28/2018	4.4	11.5	0.684	2.13	2.68	0.337	0.0707	0.0404	0.0576	0.0163	0.005	0.0138	0.0138		
4/6/2018	5.45	14	0.565	4.92	0.103	0.189	<0.0220	1.27	0.0239	0.0108	<0.00110	0.395	0.00197		
5/8/2018	11.58	6.86	4.15	1.44	1.43	0.0363	<0.0220	0.072	<0.0220	0.00244	<0.00110	0.00686	<0.00110		
6/18/2018	12.21	6.77	5.1	1.34	1.35	0.087	<0.0220	0.121	<0.0220	0.00851	<0.00110	0.0122	<0.00110		
7/24/2018	9.06	4.83	4.33	0.808	0.781	0.0222	<0.0220	0.0228	<0.0220	<0.00150	<0.00150	<0.00150	<0.00150		

* All units are in mg/L
 * Lab is Total Metals

Table 3 -Saddleridge Customer Complaints

SO	SO Type	CSR Notes	Date of SO	Completion Date	Premise	Address	City State Zip	Subdivision	FSR Notes
10774018	LABT-S	WATER SMELLS STRONGLY OF CHLORINE AND IT'S YELLOW9/10 does not smell anymore but still has yellow water was flushed Sat nightbut yellow again as	9/10/2018	9/10/2018	585771	5201 RED WING CT	FUQUAY VARINA, NC 27526-9058	SADDLE RUN	On call tech handled this wo. Brandon Rhiner FSR:mahaffd, EVT:Lab
10774286	LABD-S	Cust reports yellow water as of 8:45AM today ongoing from last night please flush	9/10/2018	9/10/2018	585771	5201 RED WING CT	FUQUAY VARINA, NC 27526-9058	SADDLE RUN	Flushed out service line. no discoloration present. FSR:meierk, EVT:Lab
10750900	LABD-S	BROWN WATER	8/27/2018	8/27/2018	623840	4916 OAKWEALTH CT	FUQUAY-VARINA, NC 27526	SUNSET LAKE	Cld cust bld # left dh. be. fe.29,mn.009,po4.84,ph7.2, wtr clr, flushed, Af, fe.16,mn.007,po4.41,ph7.0,d2.48 wtr clr left dhFSR:darket, EVT:Lab
10699853	LABD-S	BROWN WATER PER LIBBY NOTHING ON INPOSTREAM..	7/27/2018	7/27/2018	580167	4505 GREENBREEZE LN	FUQUAY VARINA, NC 27526-6865	SUNSET LAKE	CL 1.4 po4 .8 pH 7.1 Fe .49 MN .122 left door tagAlso checked the wells no issues foundFSR:johnsos, EVT:Lab



September 28, 2018

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 in a table format as follows:

- Table 1 provides a summary of well information, completed activities and planned activities.
- Table 2 (Attachment 2) provides a summary of raw, POE and distribution iron and manganese samples collected as part of the ongoing Inorganic Chemical Analyses (IOC).
- Table 3 (Attachment 3) provides a summary of customer complaint information.

UPDATED QUARTERLY STATUS REPORT

Table 1 – Well Information, Completed Activities and Planned Activities

<u>Well Name and No.</u>	<u>Completed Activities</u>	<u>Planned Activities</u>
Saddleridge Well #20 (P20)	<ul style="list-style-type: none"> • February 2016 – Started using SeaQuest • December 2016 – Cartridge filter installed • June 2017 – Flushed system • September 2017 – Started distribution and POE total and soluble sampling • December 2017 – Added raw sample data • August 2018 – System flushed 	<ul style="list-style-type: none"> • Hydro tank at well #1 scheduled to be cleaned Q4 2018 • Continue cartridge filter replacement operations
Approved GPM (5)		
Avg. Quarterly Runtime (8.24 hrs. per day)		
<p><u>Comments:</u></p> <p>The use of SeaQuest as well as the installation of a cartridge filter has shown the POE results to be consistently under the sMCL. Q-3 additional monitoring as requested by NCDEQ has also proven that we can operate this well providing water quality well below the sMCL.</p> <p>Based on the data supplied and steps Aqua has taken; we respectfully request that this system be removed from the required quarterly updates.</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) 653-6982.

Sincerely,



Robert Krueger
 Area Manager
 Aqua North Carolina, Inc.

Cc: David Furr
 State of North Carolina
 Department of Commerce
 Utilities-Public Staff

Table 2 -Saddleridge Well Sample Data

Date	Avg. Sample Week Rnn Time	Fe Raw Total	Fe Raw Sol	Mn Raw Total	Mn Raw Sol	Total Fe POE	Sol. Fe POE	Total Fe Dist.	Sol Fe Dist.	Total Mn POE	Sol Mn POE	Total Mn Dist	Sol Mn Dist.
10/3/2017	13.68					0.022	0.22	<0.022	<0.022	<0.011	<0.0110	0.00256	
10/23/2017	11.07					0.429	0.0662	0.0624	0.045	0.0361	0.0245	<0.00110	
11/7/2017	4.24					0.022	0.22	<0.022	<0.022	0.00653	0.00817	0.00656	
11/16/2017	3.07					0.022	0.22	0.0244	<0.022	0.0067	0.00601	0.00808	
12/20/2017	3.12	0.0531	0.0374	0.0282	0.028	0.0544	0.036	0.0454	0.0371	0.0289	0.0238	0.0265	0.0243
1/8/2018	2.46	0.132	0.0931	0.0102	0.00754	0.0334	<0.022	0.0275	<0.022	0.00763	0.00735	0.00706	0.00745
2/5/2018	3.8	0.0428	0.0255	0.00505	0.00498	0.0257	<0.022	0.632	0.0256	0.00614	0.0046	0.0049	0.0127
3/2/2018	2.87	0.109	<0.022	0.00527	0.00669	0.0352	<0.022	0.0369	<0.022	0.00599	0.00596	0.00628	0.00471
4/6/2018	2.77	0.0523	0.0275	0.0072	0.00681	0.0324	0.00667	0.0408	0.00726	0.00765	0.00667	0.0075	0.00726
5/4/2018	5.07	0.0766	0.0195	0.00417	0.00418	0.0156	0.00345	0.0232	0.00769	0.00348	0.00345	0.00331	0.00155
6/15/2018	5.28	0.18	<0.022	0.00433	0.004	<0.022	<0.022	0.148	<0.022	0.00328	0.00322	0.00896	<0.00150
8/8/2018	11.2	0.0864	<0.022	0.00331	0.00315	<0.022	<0.022	<0.022	0.0233	0.00186	0.00167	<0.00150	<0.00150

* All units are in mg/L
 * Lab is Total Metals

Table 3 -Saddleridge Customer Complaints									
SO	SO Type	CSR Notes	Date of SO	Completion Date	Premise	Address	City State Zip	Subdivision	FSR Notes

Zero customer complaints during Q-3 2018



September 28, 2018

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. The current number of customers served is 121 and the system is approved to serve 154 connections.

Aqua has compiled the requested information in a table format as follows:

- Table 1 provides a summary of well information, completed activities and planned activities.
- Table 2 (Attachment 2) provides a summary of raw, POE and distribution iron and manganese samples collected as part of the ongoing Inorganic Chemical analyses (IOC).
- Table 3 (Attachment 3) provides a summary of customer complaint information.

UPDATED QUARTERLY STATUS REPORT

Table 1 - Completed Activities, Customer Complaints, and Planned Activities

<u>Well Name and No.</u>	<u>Completed Activities</u>	<u>Planned Activities</u>
Southwood Well #1 (P01)	<ul style="list-style-type: none"> • August 2013 – Started using SeaQuest • September 2015- Installed cartridge filter on Southwood well #1 • June 2016 – Flushed system • June 2017 – Flushed system • September 2017 – Started distribution and POE total and soluble sampling • December 2017 – Fixed pressure switch • December 2017 – Hydropneumatic tank cleaned • December 2017 – Flushed system 	<ul style="list-style-type: none"> • 2018 – Submit executive summary for greensand filtration • Continue cartridge filter replacement operations • Continue water main flushing efforts
Approved GPM (27)		
Average Quarterly Runtime (0 hrs. per day)		
<p><u>Comments:</u></p> <p>With the addition of the Greensand filter at Surry Point well #1, Aqua is limiting the production from this well. Aqua will be submitting the executive summary for greensand filtration at well #1 in 2018 as part of the Aqua water quality plan</p>		

UPDATED QUARTERLY STATUS REPORT

Table 1 - Completed Activities, Customer Complaints, and Planned Activities

<u>Well Name and No.</u>	<u>Completed Activities</u>	<u>Planned Activities</u>
Cary Oaks Well #3 (P03)	<ul style="list-style-type: none"> • August 2013 – Started using SeaQuest • June 2016 – Flushed system • June 2017 – Flushed system • September 2017 – Started distribution and POE total and soluble sampling • December 2017 – Added raw sample data • December 2017 – Cleaned hydropneumatic tank 	<ul style="list-style-type: none"> • Continue water main flushing efforts
Approved GPM (40)		
Average Quarterly Runtime (0) hrs. per day		
<p><u>Comments:</u></p> <p>With the addition of the Greensand filter at Surry Point well #1, Aqua is limiting the production from this well. It was originally stated that an executive summary for greensand filtration will be completed in 2018 for this well. Due to inconsistent sampling results, the executive summary has been put on hold. Special sampling and investigation will continue for well #3 to better understand the best path forward.</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) 653-6982.

Sincerely,



Robert Krueger
 Area Manager
 Aqua North Carolina, Inc.

Cc: David Furr
 State of North Carolina
 Department of Commerce
 Utilities-Public Staff

Table 2 -Southwood-Surry Ridge Well Sample Data Southwood Well #1

Date	Avg. Sample Week Run Time	Fe Raw Total	Fe Raw Sol	Mn Raw Total	Mn Raw Sol	Total Fe POE	Sol. Fe POE	Total Fe Dist.	Sol Fe Dist.	Total Mn POE	Sol Mn POE	Total Mn Dist.	Sol Mn Dist.	Raw NTU	POE NTU
4/1/2014	16.2					1.1				0.5					
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
9/14/2017	16.88					0.553	0.114	1.12	0.0592	0.606	0.554	0.293	0.0903		
10/19/2017	22					0.0429	0.0842	<0.0220	<0.0220	0.561	0.548	0.0764	0.0689		
11/6/2017	21					0.677	0.11	0.671	0.094	0.588	0.542	0.587	0.548		
11/17/2017	24					0.933	0.276	0.92	0.421	0.653	0.642	0.64	0.621		
12/12/2017	0.61	1.99	0.0312	0.223	0.127	0.507	0.0393	2.39	0.039	0.0701	0.0261	0.283	0.0192		
1/8/2018	0.41	0.213	<0.0220	0.316	0.455	0.0391	<0.0220	0.223	0.0861	0.00667	0.00263	0.0853	0.0929		
2/8/2018	0.682	0.899	<0.0220	0.258	0.299	0.477	<0.0220	0.159	<0.0220	0.266	0.282	0.464	0.0486		
3/5/2018	0.02	0.449	<0.0220	0.753	0.979	0.107	<0.0220	0.0775	<0.0220	0.0164	0.0148	0.0225	0.0187		
4/2/2018	0.02	0.575	<0.0220	0.44	0.784	0.356	<0.0220	0.0704	<0.0220	1.06	0.345	0.0261	0.0219		
5/8/2018	0	3	<0.0220	0.644	0.537										
5/8/2018	0	3	<0.0220	0.644	0.537										
6/11/2018	0	1.02	<0.0220	0.73	0.766										
7/23/2018	0	1.05	0.0856	0.999	1.01										
8/7/2018	0	0.164	<0.0220	0.984	0.893										
9/10/2018	0	6.62	0.364	2.61	1.82										

Table 2 -Southwood-Surry Ridge Well Sample Data Cary Oaks Well # 3

Date	Avg. Sample Week Run Time	Fe Raw Total	Fe Raw Sol	Mn Raw Total	Mn Raw Sol	Total Fe POE	Sol. Fe POE	Total Fe Dist.	Sol Fe Dist.	Total Mn POE	Sol Mn POE	Total Mn Dist.	Sol Mn Dist.	Raw NTU	POE NTU
4/1/2014	2.5					1.39				0.1					
11/3/2016	8.5													13	
3/23/2017	0.27													4.1	2.2
4/20/2017	0.5													0.92	0.69
8/9/2017	3.2													1.1	0.85
9/14/2017	0.63					0.325	0.0713	0.0788	<0.0220	0.148	0.128	0.0601	0.0523		
10/19/2017	8.3					0.382	0.164	0.0478	0.0492	0.182	0.168	0.0834	0.0895		
11/6/2017	0					0.33	0.166	0.336	0.153	0.18	0.172	0.184	0.166		
11/17/2017	14					0.337	0.168	0.342	0.162	0.212	0.192	0.214	0.195		
12/20/2018	1.02	0.688	<0.0220	0.0413	0.0245	0.324	0.0811	0.313	0.069	0.124	0.062	0.1	0.0652		
1/8/2018	0.98	0.337	<0.0220	0.332	0.392	0.0403	<0.0220	0.145	0.107	0.00647	0.00236	0.0485	0.0741		
2/5/2018	0.52	0.271	<0.0220	0.324	0.333	0.627	<0.0220	0.117	<0.0220	0.277	0.255	0.129	0.0296		
3/5/2018	0.692	0.449	<0.0220	0.753	0.979	0.107	<0.0220	0.0775	<0.0220	0.0164	0.0148	0.0225	0.0187		
4/2/2018	0	0.586	<0.0220	1.4	1.31	0.412	<0.0220	0.0675	<0.0220	1.07	1.23	0.0259	0.0209		
5/8/2018	0	0.902	0.0309	1.02	0.309	0.411	0.0133	0.141	<0.0220	0.288	0.274	0.0471	0.0207		
6/11/2018	0	0.427	<0.0220	0.893	1.08	0.267	0.876	0.14	<0.0220	0.316	0.876	0.0291	0.00357		
7/23/2018	0	0.412	0.0296	0.159	0.161										
8/7/2018	0	0.781	0.0445	0.813	0.721										
9/10/2018	0	0.776	<0.0220	0.347	0.278										

* All units are in mg/L

* Lab is Total Metals

Table 3 -Southwood-Surry Ridge Customer Complaints

SO	SO Type	CSR Notes	Date of SO	Completion Date	Premise	Address	City State Zip	Subdivision	FSR Notes
10758964	LABD-S	PER DIANE HAD DARK/BROWN WATER CUST REQ LINE TO BE FLUSHED PLEASE LOOK INTO ISSUE PH#314 302 7586	8/30/2018	8/30/2018	576348	4024 BAMBURGH LN	APEX, NC 27539	SURRY POINT	Fish meter fish cust house B4 fish Fe 0.05 Mn 0.006 afr flush Fe 0.02 Mn 0.002 Cl2 0.70 Ph 7.0FSR:taberj, EVT:Lab
10758690	LABD-S	BROWN WATER PLEASE INVESTIGATE FOR TWO DAYS GRAY WATER YESTERDAY 8/30Contacted - brown muddy water since last night - please	8/30/2018	8/30/2018	576378	4029 BAMBURGH LN	APEX, NC 27539	SURRY POINT	B4 fl Fe 0.06 Mn 0.005 Aft fl Fe 0.02 Mn 0.002 Cl2 .70 Ph 7.0fish meter fish cust house water ran clearFSR:taberj, EVT:Lab
10668273	LABD-S	PER LAURA/ WATER IS DARK AND SEDIMENT IS IN THE WATER/	7/10/2018	7/11/2018	578246	4220 HOLLY STREAM CT	APEX, NC 27539-7682	CARY OAKS	Cl2 0.8 po4 0.3 ph 7.1 fe 0.97/0.11 MN 0.308/0.039 hard 85 Water was discolored upon arrival pulled meter and flushed out side discolo30 min system needs flushed, property at dead end main wtr never CLRD 100%
10667368	LABD-S	LEAK IN DITCH, DISCOLORED WATER. PLEASE DISPATCH TECH TODAY.	7/10/2018	7/10/2018	576253	4016 SAINT EDMUNDS LN	APEX, NC 27502	SURRY POINT	No discolored water . water line leak Aqua side. repair has been dispatche FSR:taberj, EVT:Lab



September 28, 2018

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 in a table format as follows:

- Table 1 provides a summary of well information, completed activities and planned activities.
- Table 2 (Attachment 2) provides a summary of raw, POE and distribution iron and manganese samples collected as part of the ongoing Inorganic Chemical Analyses (IOC).
- Table 3 (Attachment 3) provides a summary of customer complaint information.

UPDATED QUARTERLY STATUS REPORT

Table 3 – Well Information, Completed Activities and Planned Activities

<u>Well Name and No.</u>	<u>Completed Activities</u>	<u>Planned Activities</u>
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 • December 2017 – Added raw sample data • March 2018 – Cleaned hydro-pneumatic tank • March 2018 – Flushed system • July 2018 - Installed a new well pump at well #2 • August 2018 – Flushed system 	<ul style="list-style-type: none"> • 2018 – Complete executive summary for greensand filtration • Continue water main flushing efforts • Continue investigation efforts
Approved GPM (75)		
Avg. Quarterly Runtime (1.193 hrs. per day)		
<u>Comments:</u>		
Aqua will be submitting the executive summary for greensand filtration at well #2 in 2018 as part of the Aqua water quality plan.		

Mr. W. Allen Hardy
September 28, 2018
Trapper's Creek Subdivision Quarterly Update

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) 653-6982.

Sincerely,



Robert Krueger
Area Manager
Aqua North Carolina, Inc.

Cc: David Furr
State of North Carolina
Department of Commerce
Utilities-Public Staff

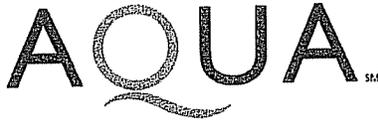
TRAPPERS CREEK-0332132

Date	Avg. Sample Week Run Time	P02R-Well-2 Raw-Fe Lab	P02R-Well-2 Raw-Fe-Diss	P02-Well-2-Fe Lab	P02-Well-2-Fe-Diss	D01-	D01-	P02R-Well-2 Raw-Mn Lab	P02R-Well-2 Raw-Mn-Diss	P02-Well-2-Mn Lab	P02-Well-2-Mn-Diss	D01-	D01-
						Distributio n System-Fe Lab	Distributio n System-Fe-Diss	Distributio n System-Mn Lab	Distributio n System-Mn-Diss				
10/13/2017	1			0.388	0.11	0.389	0.104			0.291	0.299	0.303	0.301
10/19/2017				0.378	0.0575	0.358	0.058			0.316	0.325	0.31	0.328
11/3/2017	1			0.431	<0.022	0.362	0.0724			0.287	0.302	0.303	0.303
11/17/2017	9			0.815	0.0626	1.1	<0.022			0.332	0.295	0.333	0.315
12/19/2017	7.1	0.302	<0.022	0.316	<0.022	0.3	<0.022	0.318	0.328	0.34	0.343	0.334	0.335
1/26/2018	6.82	0.371	<0.022	0.341	<0.022	0.362	<0.022	0.324	0.325	0.331	0.324	0.332	0.327
3/7/2018	1.73	0.751	<0.022	0.35	<0.022	0.33	<0.022	0.306	0.31	0.292	0.279	0.289	0.289
4/11/2018	0.43	0.605	<0.022	0.709	<0.022	0.689	<0.022	0.333	0.324	0.337	0.33	0.333	0.328
5/5/2018	7.1	0.534	<0.0220	0.365	<0.0220	0.389	<0.0220	0.315	0.291	0.308	0.293	0.317	0.287
6/27/2018	4.3	1.06	<0.0220	1.35	<0.0220	0.0313	<0.0220	0.359	0.336	0.395	0.281	0.123	0.0971
7/23/2018	0.783	0.198	<0.0220	0.203	0.276	0.0452	<0.0220	0.285	0.291	0.275	0.276	0.0734	<0.0015
8/15/2018	1.25	0.178	<0.0220	0.217	0.0555	<0.0220	<0.0220	0.178	0.275	0.301	0.259	0.00167	<0.00150

* All units are in mg/L

* Lab is Total Metals

Table 3 -Trappers Creek Customer Complaints									
SO	SO Type	CSR Notes	Date of SO	Completion Date	Premise	Address	City State Zip	Subdivision	FSR Notes
10778894	LABD-S	MUDDY WATERS	9/11/2018	9/12/2018	568260	309 N RIVERDALE DR	DURHAM, NC 27712-2071	TRAPPER'S CREEK	Well#1was water logged FSR:alston m, EVT:Lab



September 28, 2018

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 in a table format as follows:

- Table 1 provides a summary of well information, completed activities and planned activities.
- Table 2 (Attachment 2) provides a summary of raw, POE and distribution iron and manganese samples collected as part of the ongoing Inorganic chemical Analyses (IOC).
- Table 3 (Attachment 3) provides a summary of customer complaint information.

UPDATED QUARTERLY STATUS REPORT

Table 1 – Well Information, Completed Activities and Planned Activities

<u>Well Name and No.</u>	<u>Completed Activities</u>	<u>Planned Activities</u>
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 • December 2017 – Added raw sample data • March 2018 - Cleaned the hydro tank • Q2 – 2018 Installed HARMSCO cartridge filter • August of 2018 – Flushed system 	<ul style="list-style-type: none"> • Continue cartridge filter replacement operations • Continue investigation efforts • Continue water main flushing efforts
Approved GPM (17)		
Avg. Quarterly Runtime (5.54 hrs. per day)		
<p><u>Comments:</u></p> <p>The NOD was originally issued due to high concentrations of Fe and Mn. The hydropneumatic tank was cleaned in Q2 of 2018 along with an installation of a cartridge filter. These efforts have reduced the Fe levels but we were still seeing issues with Mn concentrations. An onsite investigation revealed that the SeaQuest feed rate was inadequate. Adjustments were made and we have shown improvement in the water quality. Aqua will continue to monitor sample results through Q-4</p>		

Mr. W. Allen Hardy
September 28, 2018
Tyndrum Subdivision Quarterly Update

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) 653-6982.

Sincerely,



Robert Krueger
Area Manager
Aqua North Carolina, Inc.

Cc: David Furr
State of North Carolina
Department of Commerce
Utilities-Public Staff

TYNDRUM-0332138

Date	Avg. Sample Week Run Time	P01R-Well-1 Raw-Fe Lab	P01R-Well-1 Raw-Fe-Diss	P01-Well-1-Fe Lab	P01-Well-1-Fe-Diss	D01-Distribution System-Fe Lab	D01-Distribution System-Fe-Diss	P01R-Well-1 Raw-Mn Lab	P01R-Well-1 Raw-Mn-Diss	P01-Well-1-Mn Lab	P01-Well-1-Mn-Diss	D01-Distribution System-Mn Lab	D01-Distribution System-Mn-Diss
10/6/2017				1.24	< 0.022	< 0.022	< 0.022			0.0791	0.0273	0.0066	0.00345
10/19/2017	0			0.0923	0.0248	0.0899	0.0271			0.022	0.014	0.0214	0.0137
11/3/2017	0			0.868	0.0741	0.476	< 0.022			0.0644	0.0225	0.197	0.128
11/20/2017	0			0.695	0.251	0.0554	0.0482			0.0573	0.0282	0.0125	0.00595
12/22/2017	0	1.65	< 0.022	1.55	0.137	0.0571	< 0.022	0.382	0.386	0.347	0.269	0.0584	0.029
1/26/2018	0	1.02	< 0.022	0.52	0.0364	0.153	0.104	0.124	0.121	0.0853	0.0402	0.0306	0.0159
2/20/2018	0	0.48	0.269	0.773	< 0.022	0.162	< 0.022	0.0809	0.0792	0.0897	0.0449	0.137	0.101
3/27/2018	0.25	0.0643	< 0.022	0.0751	< 0.022	0.549	< 0.022	0.101	0.101	0.102	0.0945	0.119	0.00353
4/27/2018	0	0.25	< 0.0220	0.423	< 0.0220	0.126	0.0672	0.087	0.0812	0.104	0.0337	0.0172	0.0102
5/24/2018	0.75	3.39	< 0.0220	3.74	< 0.0220	0.66	< 0.0220	0.514	0.6	0.806	0.375	0.775	0.213
6/20/2018	1.03	1.17	< 0.0220	0.886	< 0.0220	0.0278	< 0.0220	0.442	0.441	0.46	0.252	0.00534	0.0025
7/28/2018	4.74	0.0573	< 0.0220	0.0508	< 0.0220	< 0.0220	< 0.0220	0.0667	0.0621	0.0745	0.0667	0.00429	0.002
7/30/2018	6.75	0.0416	< 0.0220	< 0.0220	< 0.0220	< 0.0220	< 0.0220	0.0432	0.0402	0.026	0.0207	0.00221	< 0.00150
8/30/2018	6.93	0.0343	< 0.0220	< 0.0220	< 0.0220	0.127	0.0615	0.0363	0.0344	0.041	0.00472	0.0349	0.015

* All units are in mg/L

* Lab is Total Metals

Table 3 -Tyndrum Customer Complaints									
SO	SO Type	CSR Notes	Date of SO	Completion Date	Premise	Address	City State Zip	Subdivision	FSR Notes
Zero complaints in the Q3 - 2018.									



September 28, 2018

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 62 and the system is approved to serve 64 connections.

Aqua has compiled the requested information in a table format as follows:

- Table 1 provides a summary of well information, completed activities and planned activities.
- Table 2 (Attachment 2) provides a summary of raw, POE and distribution iron and manganese samples collected as part of the ongoing Inorganic Chemical Analyses (IOC).
- Table 3 (Attachment 3) provides a summary of customer complaint information.

UPDATED QUARTERLY STATUS REPORT

Table 1 – Well Information, Completed Activities, and Planned Activities

<u>Well Name and No.</u>	<u>Completed Activities</u>	<u>Planned Activities</u>
Upchurch Place Well #1 and Well #4 (P01)	<ul style="list-style-type: none"> • March 2014 – Started using SeaQuest • November 2015 – Cleaned hydro tank • February 2017 – Flushed system • July 2017 – Flushed system • September 2017 – Flushed system • November 2017 – Installed cartridge filters at both wells • December 2017- Aqua added raw sample data to the report • April 2018 – Flushed system • June 2018 – Flushed system 	<ul style="list-style-type: none"> • Continue engineering efforts for new greensand filter • Continue water main flushing efforts • Hydropneumatic tank will be cleaned Q4 - 2018.
Approved GPM Well #1 – 62 gpm Well #4 – 27 gpm		
Avg. Quarterly Runtime Well #1 – 3.08 hrs per day Well #4 – 0.05 hrs per day		

Comments:

Well #1, which has the lesser levels of iron and manganese concentrations, is currently supplying all the water to the system. Aqua limits the run time at well #4 to limit the amount of mineral concentrations entering the distribution system. Two smart pumps have been installed to better regulate sequestration dosing, however, laboratory results show that SeaQuest still does not adequately solve the problems of iron and manganese in this system. The sum of total iron and total manganese is consistently greater than one. Although public staff originally denied the installation of greensand filtration, Aqua requested that the Public Staff of the North Carolina Utilities Commission re-evaluate their decision. Aqua has now received recommendation from the Public Staff but still awaiting approval from the North Carolina Utilities Commission for the installation of this filter. Engineering of this filter has begun and installation is scheduled for 2019.

Mr. W. Allen Hardy
September 28, 2018
Upchurch Subdivision Quarterly Update

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) 653-6982.

Sincerely,



Robert Krueger
Area Manager
Aqua North Carolina, Inc.

Cc: David Furr
State of North Carolina
Department of Commerce
Utilities-Public Staff

UPCHURCH PLACE-4092038

Date	Avg. Sample Week Run Time	TM1R-Well-1 Raw-Fe Lab	TM1R-Well-4 Raw-Fe Lab	TM1R-Well-1 Raw-Fe-Diss	TM1R-Well-4 Raw-Fe-Diss	TM1-Well-1&4-Fe Lab	TM1-Well-1&4-Fe-Diss	D01-Distribution System-Fe Lab	D01-Distribution System-Fe-Diss	TM1R-Well-1 Raw-Mn Lab	TM1R-Well-1 Raw-Mn-Diss	TM1R-Well-4 Raw-Mn Lab	TM1R-Well-4 Raw-Mn-Diss	TM1-Well-1&4-Mn Lab	TM1-Well-1&4-Mn-Diss	D01-Distribution System-Mn Lab	D01-Distribution System-Mn-Diss
3/13/2013	1.04 / 0					1								0.177			
1/8/2016	1.53 / 0					0.452								0.123			
10/2/2017	2.73 / 0					1.09	0.379	0.328	0.108					0.193	0.199	0.0713	0.0373
10/17/2017	2.53 / 0					1.08	0.547	0.409	0.151					0.213	0.208	0.0815	0.0457
11/7/2017	2.3 / 0					1.09	0.742	0.496	0.183					0.217	0.216	0.0739	0.0362
11/28/2017	2.24 / 0					1.23	<0.022	0.281	0.0878					0.208	0.131	0.0602	0.0351
12/12/2017	2.43 / 0	0.275	0.92	0.171	0.493	0.911	0.191	0.365	<0.022	0.139	0.142	0.199	0.197	0.196	0.139	0.12	0.0142
1/31/2018	1.08 / 0	0.809	1.28	0.383	1.11	0.861	0.0633	0.135	0.0961	0.158	0.173	0.22	0.202	0.177	0.14	0.0514	0.0468
2/20/2018	2.19 / 0	0.616	1.43	0.521	1.37	0.624	0.0344	0.237	<0.022	0.186	0.189	0.224	0.228	0.176	0.133	0.076	0.0213
3/20/2018	2.38 / 0	0.434	1.11	0.222	0.218	0.386	0.0425	1.04	0.0433	0.132	0.133	0.234	0.221	0.15	0.111	0.845	0.0296
5/16/2018	3.53 / 0.03	0.679	1.13	0.439	0.957	0.381	<0.022	0.126	0.0786	0.185	0.183	0.199	0.196	0.143	0.119	0.0242	0.0164
6/19/2018	3.58 / 0	0.527	1.01	0.0882	0.248	0.267	<0.022	3.31	0.0537	0.127	0.114	0.217	0.218	0.131	0.101	10	0.00557
7/10/2018	2.9 / 0	0.398	0.973	0.0373	0.29	0.426	<0.022	0.841	<0.022	0.0997	0.107	0.209	0.207	0.138	0.0898	0.322	0.0997
* All units are in mg/L																	
* Lab is Total Metals																	

Table 3 - Upchurch Well Sample Data

SO	SO Type	CSR Notes	Date of SO	Completion Date	Premise	Address	City State Zip	Subdivision	FSR Notes
10786264	LABD-S	REBECCA SENT PHOTO OF TUB FILLED WITH BROWN WATER TRYING TO PREPARE FOR HURRICANE	9/17/2018		1366550	5912 SALT BUSH CT	RALEIGH, NC 27603	UPCHURCH PLACE	
10739529	LABD-S	EMAIL FROM KIM REPORTING DIRTY WATER THROUGHOUT HOME INCLUDING TOILETS	8/20/2018	8/20/2018	546192	1536 UPCHURCH WOODS DR	RALEIGH, NC 27603	UPCHURCH PLACE	Spoke with customer in person//she said no need to test//she flushed for many hrs. and it cleared up some//i gave her iron out to clean her Toilet tanks//she knows about 1 yr plan to install filters
10713439	LABD-S	SOCIAL MEDIA COMPLAINT CUST STATES SYSTEM FLUSHED 3 WEEKS AGO WATER QUALITY HAS GOTTEN WORST. PLS INVESTIGATE. 919-843-5049	8/3/2018	8/3/2018	1049480	1413 UPCHURCH WOODS DR	RALEIGH, NC 27603	UPCHURCH PLACE	Cl2 1.1//ph 7.8//fe 2.0//mn to high to read/po4 1.7////told customer to Try flushing lines//she knew filters were approved for sub//wandered Timeline for install//spoke with customer in person
10676280	LABD-S	EMAIL FROM MARCIA REPORTING BROWN SMELLY WATER THROUGHOUT HOME	7/16/2018	7/16/2018	546460	1556 UPCHURCH WOODS DR	RALEIGH, NC 27603	UPCHURCH PLACE	Cl2 1.1 ph 7.4 po4 1.05 fe .37 mn .115...water was clear..flushed outside tap..advised to flush hot water heater..spoke with customer FSR:hawleyj, EVT:Lab



September 28, 2018

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 has compiled the requested information in a table format as follows:

- Table 1 provides a summary of well information, completed activities and planned activities.
- Table 2 (Attachment 2) provides a summary of raw, POE and distribution iron and manganese samples collected as part of the ongoing Inorganic Chemical analyses (IOC).
- Table 3 (Attachment 3) provides a summary of customer complaint information.

UPDATED QUARTERLY STATUS REPORT

Table 1 – Well Information, Completed Activities and Planned Activities

<u>Well Name and No.</u>	<u>Completed Activities</u>	<u>Planned Activities</u>
Wakefield Well #6, (P06)	<ul style="list-style-type: none"> • March 2013 – Cleaned hydro tank • October 2014 – Started using SeaQuest • March 2016 – Received approval for greensand filtration • March 2017 – Flushed system • September 2017 – Started distribution and POE total and soluble sampling • December 2017 – added raw sample data • July 2018 – Flushed system • June/July 2018 – Adjusted SeaQuest feed 	<ul style="list-style-type: none"> • 2018 - Complete executive summary for greensand filtration • Continue water main flushing efforts
Approved GPM (88)		
Avg. Quarterly Runtime (7.1) Avg. per qtr.)		
<p><u>Comments:</u></p> <p>The original plan to improve the water quality on both well #6 and well #8 was to interconnect these two wells and install greensand filtration at well #6 to filter both wells at one location. This project was dependent on Aqua acquiring an easement from an outside party. Aqua has not been able to secure this easement so the next step is to install greensand filtration at well #6. The executive summary for approval of greensand filtration will be completed in 2018.</p>		

Mr. W. Allen Hardy
September 28, 2018
Wakefield Plantation Subdivision Quarterly Update

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) 653-6982.

Sincerely,



Robert Krueger
Area Manager
Aqua North Carolina, Inc.

Cc: David Furr
State of North Carolina
Department of Commerce
Utilities-Public Staff

Table 2 -Wakefield Well #6 Sample Data

Date	Avg. Sample Week Run Time	Fe Raw Total	Fe Raw Sol	Mn Raw Total	Mn Raw Sol	Total Fe POE	SoL Fe POE	Total Fe Dist.	Sol Fe Dist.	Total Mn POE	Sol Mn POE	Total Mn Dist	Sol Mn Dist.	Raw NTU	POE NTU
4/25/2016	6.8					1.53				0.23					
12/21/2016	3.9					1.72				0.27					
4/27/2017	5.7													2.1	
8/10/2017	3.39													4.8	0.75
9/13/2017	3.39					1.84	0.137	1.4	0.317	0.2	0.252	0.126	0.0989		
9/28/2017	4.08					0.841	<0.0220	1.29	<0.0220	0.157	0.124	0.165	0.127		
10/5/2017	4.4					1.94	0.297	1.6	0.519	0.258	0.231	0.235	0.192		
10/23/2017	3.18					2.88	0.634	1.36	0.224	0.254	0.163	0.186	0.149		
12/6/2017	2.01					0.904	0.168	1.77	0.193	0.168	0.143	0.189	0.107		
12/14/2017	2.14	1.31	0.235	0.197	0.275	1.87	0.65	1.65	0.0486	0.263	0.229	0.198	0.161		
2/1/2018	3.27	1.72	0.5	0.239	0.247	1.19	0.0825	1.2	0.0536	0.184	0.134	0.151	0.0669		
3/14/2018	2.45	3.84	0.293	0.3	0.25	2.13	0.136	15	2.06	0.216	0.163	0.988	0.171		
4/9/2018	1.71	2.17	0.168	0.306	0.287	1.84	0.0781	14.2	2.36	0.265	0.19	0.81	0.171		
5/10/2018	6.41	1.13	<0.0220	0.165	0.154	2.35	<0.0220	2.16	<0.0220	0.235	0.192	0.0189	<0.00150		
6/11/2018	9.64	1	0.12	0.177	0.183	1.01	0.0722	14.2	<0.0220	0.17	0.14	0.954	0.0637		
7/25/2018	7.36	1.16	0.198	0.156	0.161	2.39	0.845	1.12	0.0332	0.23	0.223	0.0921	0.00358		
8/7/2018	4.38	0.887	0.333	0.15	0.153	2.57	0.45	1.23	0.444	0.243	0.182	0.162	0.0247		

* All units are in mg/L
* Lab is Total Metals

Table 3 -Wakefield Customer Complaints

SO	SO Type	CSR Notes	Date of SO	Completion Date	Premise	Address	City State Zip	Subdivision	FSR Notes
30942	LABD-S	PER ASHLEY WATER IS BROWN STILL AND DRAIN /TAP WAS LEFT OPEN AFTER PRIOR TECHCAME OUT TO	8/14/2018	8/14/2018	1436177	2220 HOLLY BEND LN	WAKE FOREST, NC 27587	WAKEFIELD ESTATES	Cl2 .63 ph 7.1 po4 1.4 fe 1.69 mn .149 FSR:carterm, EVT:Lab
10725935	LABD-S	ANDREA; CALLED REPORTING BLACK WATER IN HER BATHROOMS; STATED NOTICED LAST WEEK AND AGAIN TODAY THIS MORING...PLEASE CHECK	8/10/2018	8/15/2018	596293	6401 MOUNTAIN GROVE LN	WAKE FOREST, NC 27587-9576	WAKEFIELD ESTATES	Cl2 .68 ph 7.4 po4 1.01 fe 2.02 mn .293Poor source water quality elevated levels of iron and manganese coming fromWells 8 and 6