

TO:	WORKS COMMITTEE, CHAIRMAN BOBBITT
FROM:	S. M. HATCHER, P. Eng., CAO
DATE:	DECEMBER 20, 2023
RE:	WARD2 WELL 2, WELL 3 – MAINTENACE INTERVENTION

Your Worship and members of Council,

I wish to update and advise Sussex Council of Town Administrations progress in completing successful intervention of the water quality issues on the water supply wells, Well 2 and Well 3 in Ward 2. The following is a summary of events and milestones in the lead up to the completion of the required intervention and preventive maintenance to be scheduled in Ward 2.

To provide background:

- 1. The Village of Sussex Corner was issued an Approval to Operate by the New Brunswick Department of the Environment. W-1832 was issued on March 23, 2020, and this document provided approval to operate a Drinking Water Distribution System in the period of April 01, 2020 to May 31, 2025 in accordance paragraph 8 (1) of the Water Quality Regulation 93-203 under the Clean Water Act.*
- 2. The Village submitted a water quality sampling plan pursuant to the COA W-1832 for approval pursuant to Regulation 93-203 to both the Department of Health and the Department of the Environment and Local Government. Approval was granted to this sampling plan.*
- 3. The test result of the laboratory is certified and was sent to the Village, the New Brunswick Department of Health and the New Brunswick Department of the Environment pursuant to Regulation 93-203. This has been normal practice in New Brunswick for decades. Test results for 2019, 2021, 2022 and 2023 showed increasingly elevated manganese results and appropriate intervention should have been introduced in 2021, and with expeditious speed following the 2022 test result once received and reviewed bythe Village. Clearly the trend was at issue.*

2019	2020	2021	2022	2023
14	21	70	91	146

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- I draw Committee's attention to the trends of the manganese testing results for 2019, 2020, 2021, 2022 and 2023. A clear trend was evident, and an intervention of preventative maintenance was warranted once the aesthetic objective (AO) of 20 micrograms per liter was surpassed, and as well, a clear trending upward many times the AO annually is also clearly evident. These elevated readings would have been reported and included in the Village's annual report sent to the Director in accordance with Article 20 of COA W-1832 for each year the village operated its water distribution system. Such a significant report reporting to the Provincial Director the Village's Water Quality should have been reviewed at the Village's operations committee at the very least, and clear merit to review this report at the Council level to assess and implement corrective actions.*

What is being done by Sussex Council to mitigate the issues that have been identified?

The Town's work plan as approved by Sussex Council is currently nearing completion. All necessary in well interventions have now been completed and the Town is now focused on monitoring equipment installation and connection of the continuous monitors to the Town's Supervisory Control and Data Acquisition (SCADA) system. The SCADA system is a computer automated system of continuously monitored changes in the state of operational equipment - 24 hours a day, 7 days a week, 365 days each year. This system can auto dial maintenance work once programmed triggers are reached and programmed into the Town's system.

To summarize our ongoing project steps and to provide insight on the status of the work plan and progress in execution thus far on the Ward 2 water supply wells, the following is provided for information:

1. Ward 2 water system upgrade on Leonard Drive is complete and has been fully operational since November 01, 2023. The new Town now has options to feed potable water in areas of the new community should changes be necessary in both Wards of the new Town.
2. The temporary changeover of the supply wells from Ward 2 to the Ward 1 supply has been completed and the change in water supply has been in service since October 24<sup>th</sup>, 2023. The service area experiencing this change in service is described as the subdivisions off Main Street from All Seasons Restaurant to Sussex Corner Elementary School. The water distribution system change has provided the opportunity to complete needed preventative maintenance on the Ward 2 - Well 3. All calls related to water color

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have ended. The Town will continue this method of operation until the first week of January 2024 and at which time the Town will reverse the operational changes necessary and bring online Well 3 in Ward 2. It is believed a switchover during the week of Christmas may introduce operational issues and minor service interruptions that are not needed during the holiday season.

3. Well 3 remediation efforts ended on Friday December 8<sup>th</sup>, 2023. The pump and poly feed lines were reinserted in Well 3 early in December. A new pump assembly was installed and as well the existing pump has been refurbished and placed onsite as an operational backup unit should the Town have issues with the new pump system. The Town's operations staff have begun testing requirements to insure potability of the water supply on December 11, 2023, and our efforts are nearing completion as of December 19<sup>th</sup>, 2023.
4. Mitigation efforts on Well 3 have been able to increase specific capacity of this well by 57% to a value near when the original well was commissioned in 2003. Specific capacity is a measure of the pumping rate (yield, production) divided by the drawdown. It is a very valuable number that can be used to provide the design pumping rate or maximum yield for the production well.
5. Assessment of the 2023 mitigation will establish a future preventive maintenance schedule of intervention will be scheduled to prevent reoccurrence, if possible, and it is believed the Well 3 process completed in fall of 2023 should be scheduled every 5 to 7 years. A review of the former Village of Sussex Corner maintenance records provided no tangible information of any preventative maintenance practices on Well 3 apart from the required potability testing. While testing was completed no analysis of the testing results was evident nor recorded for exceedances beginning in 2021, and any discussion of necessary intervention steps that would normally be triggered in the summer of 2021 were never contemplated. Correction of these practices began on July 29<sup>th</sup>, 2023, and will continue as standard operating procedure in the new Town in Ward 2.
6. Future assessment, operational changes and recommendations of all three production wells in Ward 2 will be reviewed with Sussex Council in the first quarter of 2024 following receipt of the consultant's report and internal review by Sussex Water System Operators.

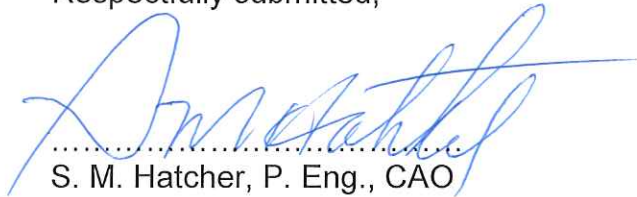
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7. Ward 2 - Well 2 has been successfully remediated and our consultants believe they have successfully addressed the turbidity issues experienced when operating this production well. A continuous turbidity monitor has been purchased and is now installed. The Town has completed underground piping changes necessary to add a new Chlorine monitor on Well 2. This equipment has been required since April 2020 and was installed in late November 2023.
8. Ward 2 - Well 2 will be operated and the water production will be sent to waste to begin the process of establishing a continuous record of water quality parameters and to provide time for the Town's water operators to assess live data prior to deciding to place this production well back in service. Operationally the Town wishes to secure 1 to 2 months of data prior to placing Well 2 back in service.
9. Work on the installation of a turbidity monitor and chlorine monitor for Ward 2 - Well 1 has now been completed and the well is in service. This equipment has been required since April 2020 and was installed in November 2023.
10. Work on the turbidity monitor and chlorine monitor for Ward 2 - Well 3 is nearing completion. The monitors are installed in the Well House and are currently being connected and programmed prior to Well 3 being placed back in in service. This equipment has been required since April 2020 but had not been installed.
11. Early in January the Town will complete the necessary SCADA programming to begin the recording of testing results of all online recording equipment for both chlorine and turbidity and send this information to our central computers. All three production well's monitoring systems will be operational, and the trending recording will be programmed at the same time by a third-party consultant specializing in PLC programing logic.
12. Ongoing work with the Departments of Health and Environment and Local Government to consolidate both the former Town's and former Village Approval to Operate a Water Distribution System is underway.
13. The Town to date has spent \$381,896.57 on mitigation and preventative maintenance efforts on all three water production wells in Ward 2 in 2023. This expenditure includes the purchase, installation, and programming of the required monitoring equipment for all three production wells.

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This necessary intervention has assisted in correcting water quality issues that were not addressed by the former Village of Sussex Corner as their reported testing began to exceed water quality parameters in late 2020, 2021 and 2022. The analysis and the consultants' final reporting will be used as the bases for future preventative intervention and continuously scheduled maintenance to address water quality issues in future years and to establish a systematic preventative maintenance program on the Ward 2 water distribution system.

Respectfully submitted,



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S. M. Hatcher, P. Eng., CAO