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TO: Chair and Members of the Environment and Climate Change Committee

DESTINATAIRE : Président et membres du Comité de l'environnement et du changement climatique

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SUBJECT: Annual Drinking Water Source Protection Status Update - 2022

OBJET: Compte rendu annuel concernant la protection des sources d'eau potable --
2022

PURPOSE

The purpose of this memorandum is to provide the Environment and Climate Change Committee, with an annual status update on the City's Drinking Water Source Protection Program.

Source Protection Municipal Implementation and Risk Management Official (RMO) Reports are required to be submitted to the Source Protection Authorities (Conservation Authorities) by February 1 of each calendar year, as legislated under the *Clean Water Act*.

BACKGROUND

Drinking Water Source Protection safeguards public health from drinking water threats by raising awareness and protecting our groundwater and surface water resources. Ontario's *Clean Water Act* requires municipalities to implement Source Protection Plans to protect existing and future sources of municipal drinking water from various threats.

The City of Ottawa lies within two Source Protection Regions, each with their own locally-developed, science-based source protection plan that contain policies to protect municipal drinking water resources:

- [Mississippi-Rideau Source Protection Plan](#) (effective date January 1, 2015); contains policies related to the Intake Protection Zones (IPZs) for the Britannia and Lemieux Island surface water systems and the Wellhead Protection Areas (WHPAs) for the groundwater wells at Carp, Munster, Richmond King's Park and Richmond West.
- [Raisin-South Nation Source Protection Plan](#) (effective date April 1, 2015); contains policies related to the WHPAs for the groundwater wells Vars and Greely - Shadow Ridge Subdivision.
- Attachment 1 shows a map with the City of Ottawa's Drinking Water Protection Zones.

The City has a proactive approach to raising public awareness and managing threats to drinking water resources as part of the Source Water Protection Program, this includes developing risk management plans for existing or new activities that may be a threat to drinking water resources as well as outreach and communications to impacted residents.

Notable work accomplished in 2022 to support the City's Source Protection program:

1. Lemieux Island Water Purification Plant Source Protection updates: The City is undergoing a project to relocate the primary intake for the Lemieux Island Water Purification Plant (WPP) within the Ottawa River due to issues related to frazil ice buildup at the existing intake; the new intake will be located deeper within the Ottawa River.

Source protection technical work to map an Intake Protection Zone (IPZ) for the new intake is required, as per the *Clean Water Act*, prior to issuance of the Drinking Water Works Permit by the Ontario Ministry of the Environment, Conservation and Parks (MECP). An IPZ is an area of land and water around a municipal intake pipe that contributes source water to a drinking water system, it is the area where source protection policies apply. Source protection technical studies were completed by the City and submitted in January 2021 and deemed complete to the satisfaction of the Rideau Valley Source Protection Authority. The Rideau Valley Source Protection Assessment Report and the Mississippi-Rideau Source Protection Plan were revised by the Source Protection Region to include the new IPZ, in consultation with the City and the MECP. A 35-day public consultation period began on September 23, 2022, with concurrent early engagement and consultation with implementing bodies. The revised source protection reports were submitted to the MECP for approval on December 22, 2022.

The new intake for the Lemieux Island WPP is located on the Quebec side of the Ottawa River. Regulations to protect source water within Quebec follow Quebec's Water Withdrawal and Protection Regulation, administered by the Ministère de l'Environnement et de la Lutte contre les changements climatiques (MELCC). The City conducted a review of Quebec's *Water Withdrawal and Protection Regulation* versus local Source Protection Plan policies developed under the Ontario's *Clean Water Act* to determine differences and risks of implementing one regulation versus the other. In general, potential drinking water threats would be comparably managed by implementing the Quebec or Ontario regulations for the new Lemieux Island WPP Intake. The City formally requested that the MELCC implement source protection regulations within Quebec to protect the new drinking water intake (letter dated March 23, 2021). The MELCC confirmed they will protect the intake based on Quebec regulations (letter dated June 21, 2021). Detailed information was requested by the MELCC related to the water taking permit application, including information related to source protection. Information was submitted to the MELCC in

February 2022, who reviewed the submission and provided comments with additional data requests in October 2022. The City is currently preparing a response to the MELCC request for information, expected by Q4 2023.

2. Greely – Shadow Ridge Municipal Well Update: The existing municipal supply wells for the Shadow Ridge development in Greely extract water from the overburden sand aquifer. The supply wells have experienced issues related to elevated nitrate levels (approaching, but not exceeding, half of the Maximum Acceptable Concentration for drinking water). The nitrate source is likely anthropogenic due to shallow contamination potentially from private septic systems, agricultural nutrient application (manure or chemical fertilizer) and storage of non-agricultural source material (i.e. compost) within the existing wellhead protection area.

The Raisin-South Nation Source Protection Plan includes a policy which recommends that the City of Ottawa explore the opportunity to deepen the Shadow Ridge Municipal Well to the Nepean Aquifer to reduce the significant threats related to septic systems and septic system holding tanks in the Village of Greely (Policy SEWG-4c).

The City of Ottawa initiated the Nepean Aquifer Study in December 2016 to explore the potential to deepen the Shadow Ridge Municipal well system to the Nepean Aquifer and gain information about the hydrogeologic properties of the Nepean Aquifer within Greely. Early results indicate that the Nepean Aquifer is a viable and prolific groundwater source and interim project deliverables were used to support the new municipal well system design. The Nepean Aquifer Study is still underway and will provide additional information about the regional aquifer and expected to be completed in Q1 2023. In 2019, the City acquired land to construct the new municipal wells for Shadow Ridge, adjacent to the existing pumping station and municipal water treatment and distribution facility.

Since the municipal system will draw groundwater from a different aquifer, an Environmental Assessment (EA) was identified as a requirement by the MECP. A public information session for the EA was held in April 2022 and the EA Notice of Commencement was published in May 2022. It is

expected that the EA will be finalized in 2023 and a second information session will be held in late fall 2023.

The City moved forward with drilling two new deeper production wells. The first well will be completed early in Q1 2023, a second production well will be drilled in late Q1 2023. Aquifer testing (pump tests) will be completed in Q2 2023. If the testing identifies that another well is required to support the yield, then a third well will be drilled and tested later in 2023. Data from well testing will support the detailed design of the pump station modifications and upgrades, as well as the source protection technical work.

A Notice under subsection 48 (1.1) of Ontario Regulation 287/07 under *the Clean Water Act* was sent to the Source Protection Authority (SPA) on January 28, 2022 to inform the Source Protection Region of the new municipal well project and request notification from the SPA once the source protection technical work is completed to their satisfaction, required as part of amended Drinking Water License prior to the provision of water. A Terms of Reference was developed for the source protection technical work and a consultant was selected to complete the work. Source protection technical work includes the delineation of a Wellhead Protection Area (WHPA) for the new well system and the identification of existing significant drinking water threat activities within the new WHPA. Source protection technical studies will commence following the pump tests on the new production wells, expected in the first half of 2023. It is anticipated the source protection technical work will be completed in the first half of 2024.

3. Official Plan and Zoning By Law Conformity – The City of Ottawa’s Official Plan was amended and passed by City Council on October 27, 2021, and adopted by Council as of November 24, 2021. The Plan was approved by the Ministry of Municipal Affairs and Housing on November 4, 2022. Source protection policies in the City’s new Official Plan conform to local Source Protection Plans and can be found in Section 4.9.5 of under the heading “Implement the policies of the Mississippi-Rideau Source Protection Plan and the Source Protection Plan for the Raisin-South Nation Source Protection Region”. Source protection policies were developed in consultation with the local Source Protection Regions.

Following approval of the new Official Plan, the City has initiated the process of amending zoning by-laws to conform to source protection policies, draft amendments are expected in 2023. Source Protection Regions will be consulted on zoning by-law amendments related to source protection policies.

4. Risk Management Plans and the Fuel Tank (Home Heating Oil) Incentive Program: Risk Management Plans (RMPs) are a requirement of Source Protection Plans policies for certain activities taking place within drinking water protection zones near municipal wells or intakes. A RMP is a document that outlines measures to reduce or eliminate the risk that an activity will contaminate municipal drinking water. RMPs focus on prevention and they are site-specific.

Home heating oil (fuel storage) is considered a significant drinking water threat within the highest vulnerable areas near municipal supply wells. Local Source Protection Plans policies require RMPs for fuel storage within these zones to manage the threat; the RMP requires that the fuel tanks meet specific design and operational standards and are inspected regularly. Once a RMP is in place, there is a need to monitor in perpetuity to ensure ongoing compliance, thus eliminating fuel existing tank threats will ultimately save homeowner and staff time, as well as protect the drinking water supply in the long-term.

Ten RMPs have been negotiated with landowners within Ottawa since 2017; four RMPs relate to commercial chemical storage and handling, and six RMPs relate to residential fuel storage (home heating oil).

There are currently 12 residences with home heating oil tanks that are considered significant drinking water threats to municipal well systems. Six are managed through RMPs and six do not currently have RMPs due to non-responsive or non-compliant landowners. City staff and Conservation Authority staff have been working towards RMP negotiations since 2017 using a 'soft approach' (politely requesting compliance, multiple visits). Options to move forward with managing the existing fuel threats are enforcement (i.e. enforce a RMP) or revise the approach to work cooperatively with the landowners and provide additional incentives to remove the fuel oil tanks.

The Fuel Tank Incentive Program offers financial incentives to remove existing fuel oil tanks that are located near municipal wells and replace them with an alternate heating source (air source heat pump or natural gas), that are not considered a

significant drinking water threat. Additional incentives will be provided to support a green energy option (air source heat pump), to coincide with the City's climate change initiatives. The goal of the fuel tank incentive program is to eliminate the existing fuel threats and protect rural communal drinking water resources.

The Fuel Tank Incentive Program was approved by the [Agricultural and Rural Affairs Committee on May 5, 2022](#) and Council on May 11, 2022. The program is expected to be complete by 2024.

More information about Drinking Water Source Protection and the City's Source Protection Program can be found at: www.Ottawa.ca/SourceProtection

2022 ANNUAL REPORTS

In accordance with the regulations of the *Clean Water Act*, the City is required to provide an annual report to local Source Protection Authorities describing Source Protection Plan implementation. More specifically the reports must include updates of the following:

- 1) Activities performed by the City's Risk Management Official, which include screening development applications for potential significant threat activities or working with landowners to develop risk management plans for existing significant threat activities, for example fuel storage.
- 2) Implementation of Source Protection Plan policies that include actions directed at municipalities; this includes activities the City must undertake at its physical plants and sanitary sewer infrastructure, operational practices as well as outreach and education efforts.

As required, attached are the Risk Management Official's Reports and Municipal Implementation Reports for the 2022 reporting period, to be submitted to the Source Protection Authorities by the reporting deadline of February 1, 2023.

Overview of Reports:

The implementation of activities by the Risk Management Official as well as municipal activities is ongoing and the City is compliant with Source Protection Plan policies. Negotiation of Risk Management Plans with private landowners engaged in significant drinking water threat activities is expected to be complete by 2024.

There are several non-legally binding source protection policies that the City can implement to protect municipal drinking water sources, such as updating emergency response plans, installing signage on municipal roads and waterways, and oversight of geothermal systems near municipal supply wells. The City is developing workplans to implement non-legally binding policies, where feasible, and will provide an update in the 2023 Annual Report.

The MECP transitioned to an optional electronic reporting format this year (2023) for annual source protection reports and the Mississippi-Rideau Source Protection Region is currently participating. As such, source protection program updates for the City have been entered into MECP's electronic forms and print-outs of the reports are attached for reference. The Raisin-South Nation Source Protection region provided an electronic template for annual reporting, which is attached.

Should you require further information, please contact Susan Johns, Director, Asset Management at 613-580-2424, extension 16003.

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(She, Her, Elle)

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Original signed by

cc: Senior Leadership Team

SUPPORTING DOCUMENTATION

Document 1 Map of Drinking Water Protection Zones in the City of Ottawa

Document 2 Mississippi-Rideau Source Protection 2022 Electronic Annual Report 1 – Municipal Report

Document 3 Mississippi-Rideau Source Protection 2022 Electronic Annual Report 2 – Policy Implementation

Document 4 South Nation Source Protection 2022 Annual Report – RMO and Municipal Implementation