

Well Water Research Project and Program Update

To: Chair and Members of the Board of Health

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Recommendations

It is recommended that the Board of Health:

1. Receive this report for information.

Key Points

- **Web-based, Interactive, System for your Evidence-based** decision making (WISE) is a web-based system to support private well water testing.
- The WISE rollout is planned for spring 2021, depending on the COVID-19 response.
- The Wellington-Dufferin-Guelph Public Health (WDGPH), Health Protection team, is working with Public Health Ontario for a paperless/touchless sample submission process.

- WDGPH is working on a collaborative research project with the University of Guelph to identify local risk factors for bacterial contamination of well water to support customized messaging to well owners through the WISE system.

Discussion

This Report provides an update on WDGPH's Well Water Research Project and Program otherwise known as WISE (**W**eb-based, **I**nteractive, **S**ystem *for your* **E**vidence-based decision making). This Report also provides a brief update on ongoing research examining local data to identify risk factors for bacterial contamination of private well water. Background information on this project is available in four (4) previous Board of Health Reports.¹⁻⁴

Review of Rationale for and Benefits of WISE

The rationale for developing WISE was outlined in WDGPH's Well Water Research Project and Program Update provided in 2019.⁴ Evidence indicates an elevated risk for those who take their drinking water from private wells and testing rates for private wells are low. Findings from a survey of local private wells owners revealed that well owners report the intent to test their wells, but forget to do so, and are interested in receiving email reminders to test.

Key benefits to registered users of the WISE program are outlined in detail in the program update provided in 2019, which include:

- Ease of sample submission
- Fewer samples rejected
- Test results emailed
- View historical results
- Reminder to test emails

WISE Development Update

The development of WISE was contracted out to a third-party web development agency selected through a Request for Proposals Process. It is anticipated that the live website will be ready to launch later this year . However, because of COVID-19, public release and promotion will be postponed until spring 2021. Spring is an important time to test private wells (because of the increased probability of contamination from spring run-off and flooding) and consequently, a logical timeframe for promotion of WISE.

In the absence of WISE, the process for submitting a water sample involves filling out a paper sample submission form each time a sample is submitted and subsequently calling Public Health Ontario Laboratories (PHOL) for test results (or waiting for those test results to arrive by regular mail). Historical results are not tracked for well owners.

WDGPH is working with PHOL to set up an application program interface (API) to allow the data on the sample submission form to be submitted directly to the PHOL database to eliminate the need for a paper form and subsequent manual keying in of the data by PHOL. This would improve data quality by eliminating human transcription errors.

The key features of WISE that support sample submission and results access/sharing are visualized in Figure 1, below, and listed here (numbers in list correspond to numbers shown in Figure 1):

1. Private well owners register with WISE to create a user account. Residents can register multiple wells with a single user account.
2. When submitting a water sample, users log into their account, select “Submit Sample” and WISE will prepare a completed pdf of the sample submission form for users to print and submit with the sample bottle at sample drop-off locations. Each WDGPH office will have a Kiosk for users to complete this step when a sample is dropped off.
3. Once results are available, WISE automatically extracts test results directly from PHOL’s database and assigns test results to the correct user by matching the well address in the test result to the well address in a WISE user account. These results appear in a user account under “My Results”.
4. When a test result is assigned to a WISE user account, an email notice is sent.
5. When WISE receives an adverse test result:
 - a. WISE sends a public health inspector (PHI) an email notification about the adverse result (WISE automatically selects the PHI assigned to the area corresponding to address associated with the test result).
 - b. The PHI will complete follow-up calls to well owners with adverse test results (users can choose to opt out of receiving phone calls). PHIs can add/view follow-up notes in each test result.
6. WISE sends emails to remind users to test their well. Currently, a reminder email is triggered when a user has a well that has not been sampled within the past 120 days.

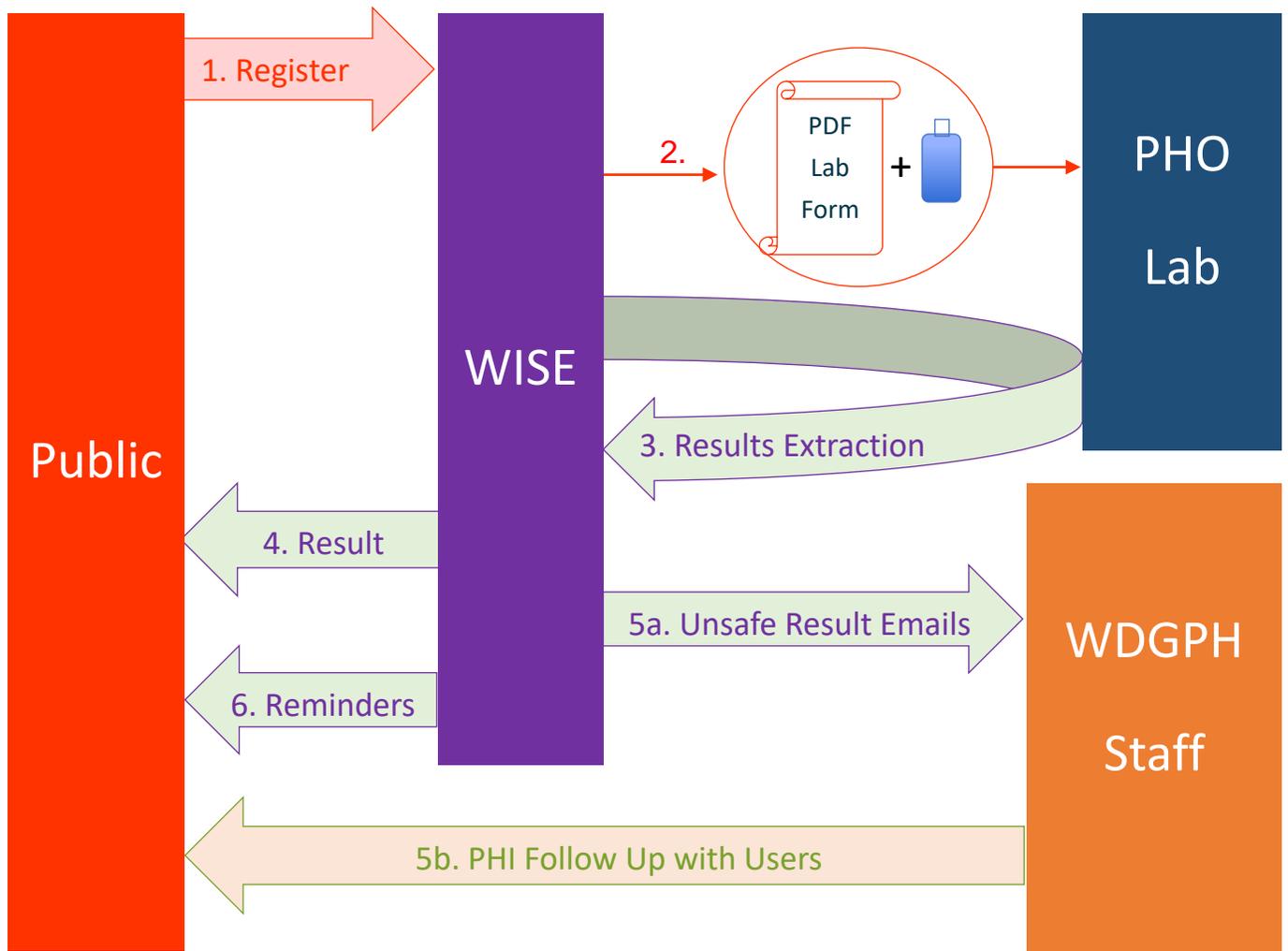


Figure 1: Schematic of WISE features supporting sample submission and results sharing

Video instructions are being created for WISE users and will be posted on the WISE website to ensure WISE is accessible to all private well owners, including those who may be less comfortable using online forms and websites. The current paper-based submission form will continue to be offered, as needed.

Identification of risk factors using local data

In parallel to the development of WISE, further study of well characteristics and water quality of local private wells continues to build upon past work outlined in previous reports.¹⁻⁴ In collaboration with the University of Guelph, an investigation into the spatial distribution of adverse well water test results and the risk factors for private well water bacterial contamination is ongoing.

The main objective of this study is to identify potential risk factors by examining well-owner reported data on well characteristics, obtained via a survey conducted in

2018-2019, for approximately 800 privately-owned wells. ⁴ This data is being analyzed alongside test results for the past several years for those wells (where owners submitted samples for routine testing) as well as geological and land-use data.

The project will help identify private wells that may be at increased risk of contamination due to risk factors such as well characteristics, proximity to surface water, or other sources of contamination. This will allow for targeted well owner education and customized email reminders to WISE users based on the risk determined for each well.

Conclusion

The WISE program was developed to make it easier for residents to submit well water samples and access their test results. It is anticipated that WISE will be ready for public release for spring 2021.

An ongoing collaboration with the University of Guelph is investigating local risk factors for bacterial contamination of private well water. This work will support targeted education as well as customized messaging to well owners through WISE.

Ontario Public Health Standard

Safe Water Program Standard.

2020 WDGPH Strategic Direction(s)

- Service Delivery:** We will provide our programs and services in a flexible, modern and accessible manner, and will ensure they reflect the immediate needs of our Clients and our role in the broader sector.
- System Transformation:** We will equip the Agency for change in all aspects of our work so that we are ready for transformational system change when the time comes.
- Knowledge Transfer:** We will ensure that our decision-making and policy development efforts are always informed by meaningful health data.

Health Equity

WDGPH will use the results from earlier well water research in combination with information collected in WISE, to inform interventions that reduce disparities in well water testing and promote safe drinking water for all residents that rely on private well water. Health equity considerations will also be included in every step of intervention planning and implementation (for example – in order to support the use of WISE by residents without access to a computer or internet at home), WISE roll out will involve the installation of kiosks at each sample drop off location where residents can register for WISE and print off the sample submission form generated in WISE. Although, these individuals may not have routine access to their email at home (for example, they may rely on library resources for email access), results will continue to be available through calling Public Health Ontario Laboratories. Moreover, all adverse test results received by WISE will automatically trigger an email to PHIs to complete a follow up phone call to the owner.

Additionally, as noted above, an instructional video is being created for public users to support all users – including those less comfortable navigating websites and online forms – to create an account and benefit from the features that WISE supports. Hard copy print forms will remain available by request.

References

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2. Wellington-Dufferin-Guelph Public Health. HBOH report - BH.01.NOV0117.R25 Well Water Research Project [Internet]. 2017 November 1. [cited 2020 Nov 5] Available from: https://www.wdgpUBLICHEALTH.ca/sites/default/files/bh.01.nov0117.r25_-_well_water_research_project_access.pdf
3. Wellington-Dufferin-Guelph Public Health. HBOH report - BH.01.OCT0318.R28 Well Water Research Project Update [Internet]. 2018 October 3. [cited 2020 Nov 5] Available from: <https://www.wdgpUBLICHEALTH.ca/oct-2018-boh-well-water-research-project-update>
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Appendices

None.