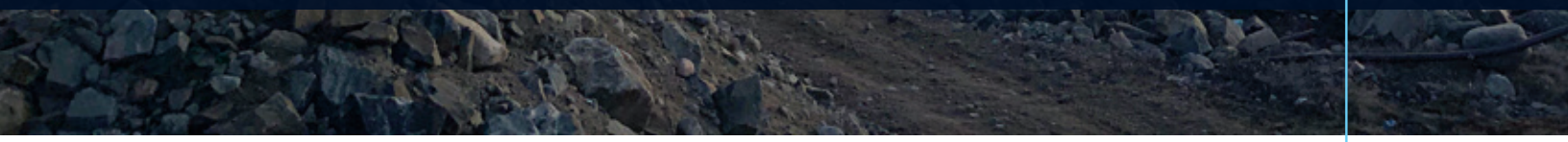
Aquatic Life® Ltd.

FROM CRISIS TO CONFIDENCE

AQUATIC LIFE'S HYDROCARBON CONTAMINATION SOLUTION IN IQALUIT, NUNAVUT



In 2021, Aquatic Life Ltd, a leading provider of water monitoring solutions, collaborated with WSP of Canada to address the pressing issue of hydrocarbon contamination in the drinking water supply of Iqaluit, Nunavut. With extensive expertise in water monitoring spanning over 37 years, Aquatic Life played a vital role in consulting with engineers and the city to implement an innovative online monitoring solution. This case study highlights the successful partnership between Aquatic Life, WSP, s::can and the City of Iqaluit, showcasing the deployment of cutting-edge technology, expedited decision-making, and the restoration of public confidence in the water supply.

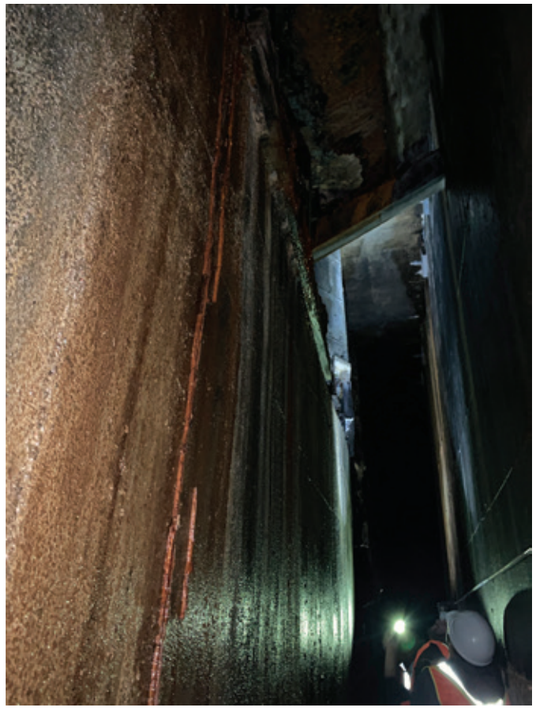
BACKGROUND

Residents of Iqaluit reported taste and odor issues with their drinking water in October 2021, leading to immediate action by WSP and Aquatic Life. An engineering team was dispatched to the site, revealing subsurface tanks were contaminated with an unidentified hydrocarbon. In response, a precautionary “Do Not Consume” order was issued by the Chief Public Health Officer. Recognizing the complexity of Iqaluit’s crisis, the engineering team worked with all levels of government, the Canadian Armed Forces and local Indigenous groups to tackle the problem head on.

AQUATIC LIFE’S CONTRIBUTIONS

Aquatic Life swiftly implemented a s::can micro::station, equipped with an online spectrometer (spectro::lyser), for real-time monitoring of hydrocarbon contamination. The Aquatic Life team collaborated with s::can and WSP engineers to develop custom hydrocarbon algorithms, enabling precise analysis and detection of contaminants. By incorporating advanced technologies and leveraging extensive water monitoring expertise, Aquatic Life enabled prompt decision-making and optimal process control.

Pictured on the left: hydrocarbons pooling on the floor of the void adjacent to the subsurface concrete water tanks.



Pictured on the right: The engineering team discovering and examining the remnants of the diesel tank in the void. The tank was for a fire protection pump when the plant was first constructed.

The City of Iqaluit viewed from the water treatment plant. Iqaluit has approximately 7500 residents and is the capital city of Nunavut. The drinking water system for this arctic city is unique in its use of an above ground utilidor to keep pipes from freezing in the winter.

KEY INNOVATIONS AND ACHIEVEMENTS

1. **Real-time Monitoring and Reporting:** Aquatic Life’s implementation of an online spectrometer enabled the City of Iqaluit to analyze water quality in real-time, ensuring rapid response to hydrocarbon contamination events. The collected data was used to establish an extensive records database, rebuild the credibility of the water treatment plant (WTP), and enhance transparency by posting reports on the city’s website.

2. **Enhanced Detection and Calibration:** Aquatic Life’s team worked with s::can to develop highly sensitive algorithms with custom standards, employing an extended pathlength for superior detection capabilities. Leveraging an EPA recommended event detection software (ana::tool) that takes into account user feedback, the team minimized false positives and enabled precise identification of contamination sources.

3. **Advanced Contamination Analysis:** Aquatic Life collaborated with the engineering team to develop customized hydrocarbon fingerprinting analysis. This analysis aided in identifying similarities between samples, pinpointing potential sources, and distinguishing different types of contamination, thus expediting the investigation process.

4. **Rapid Sampling and Analysis:** Aquatic Life and WSP trained city operators in how to grab a sample using the s::can system, reducing reliance on third-party labs and significantly accelerating the turnaround time for results. Over 500 grab samples were screened during the investigation, providing critical insights into various processes and conditions.

5. **Implementation and Expansion:** Aquatic Life’s involvement expanded beyond the initial project phase, working closely with WSP and the City of Iqaluit to install additional monitoring points within the treatment plant. Currently, the city has micro::stations deployed at the plant inlet and final treated water outlet, along with a pre-reservoir monitoring point for enhanced process control. These online monitoring stations are seamlessly integrated with SCADA and PLC systems, allowing remote access, optimal process control, alarming, and support. Beyond hydrocarbon monitoring, the systems also track parameters such as turbidity, organics, color, chlorine, UVT, UV254, pH, fluoride, temperature, and spectral alarms. This level of integration ensures robust regulatory compliance with enhanced parameter sets that provide a broader understanding of water quality coming in and leaving the facility.

Pictured above is the s::can micro::station monitoring the final treated water leaving the plant. It measures hydrocarbons, turbidity, organics, color, chlorine, UVT, UV254, pH, fluoride, temperature, and spectral alarms. The system has remote connectivity which allows for easy support between service contract visits.

CONCLUSION

Aquatic Life's collaboration with WSP and the City of Iqaluit in addressing the hydrocarbon contamination crisis demonstrates a commitment to delivering cutting-edge water monitoring solutions and expert consulting. By deploying the s::can micro::station and leveraging decades of expertise, Aquatic Life enabled real-time monitoring, expedited decision-making, and helped restore public confidence in the water supply. This case study serves as a testament to the transformative impact of innovative water monitoring technologies in addressing complex challenges and supporting regulatory compliance in remote regions such Northern Canada.

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