

Drinking Water Fluoridation in London



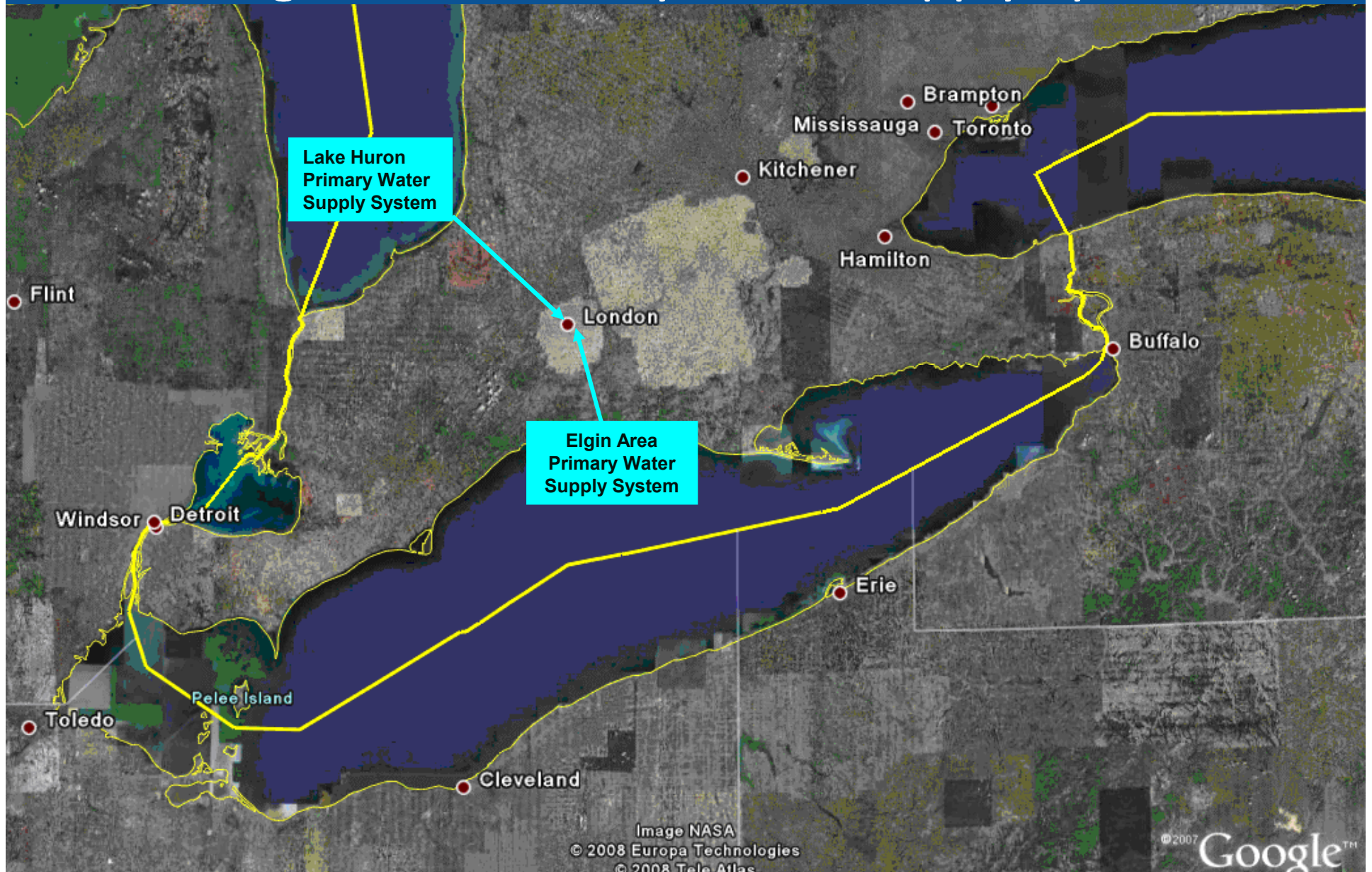
John Braam P.Eng.

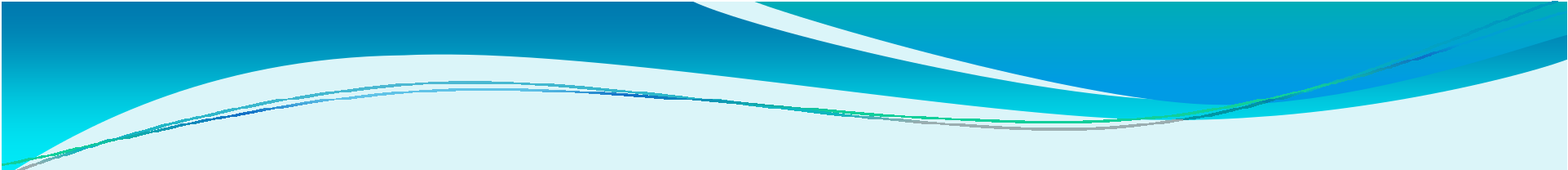
City of London

Water Director and City Engineer

January 25, 2012

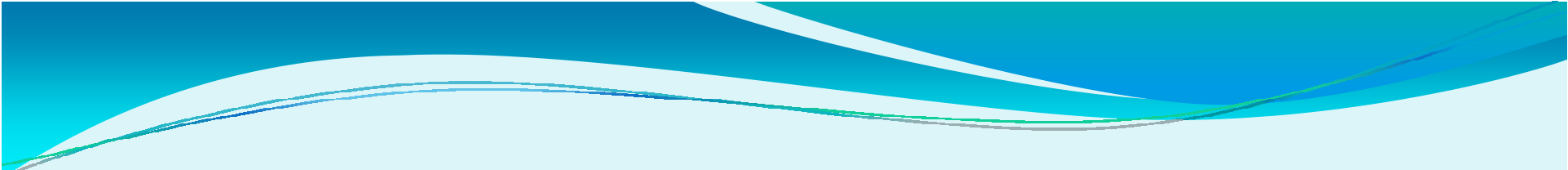
London receives water from both the Lake Huron and the Elgin Area Primary Water Supply Systems

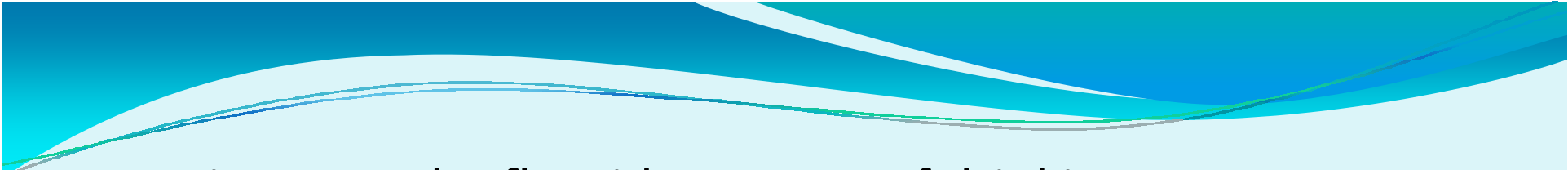


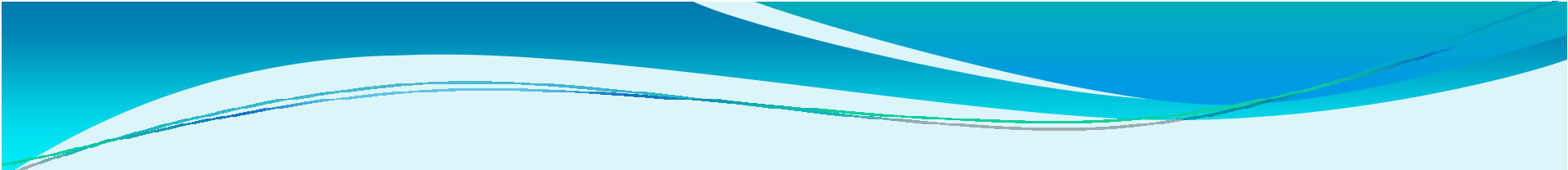
- 
- London purchases over 80% of its water from the Lake Huron system, and the remainder from the Elgin system.
 - Water received from the Lake Huron system is pumped into London through the Arva Pumping Station, where fluoride has been added by London staff since 1967.
 - The water that London receives from the Elgin system is fluoridated at the treatment plant near Port Stanley, and is then distributed to London, St. Thomas, Aylmer, Bayham, Central Elgin, Malahide and Southwold.

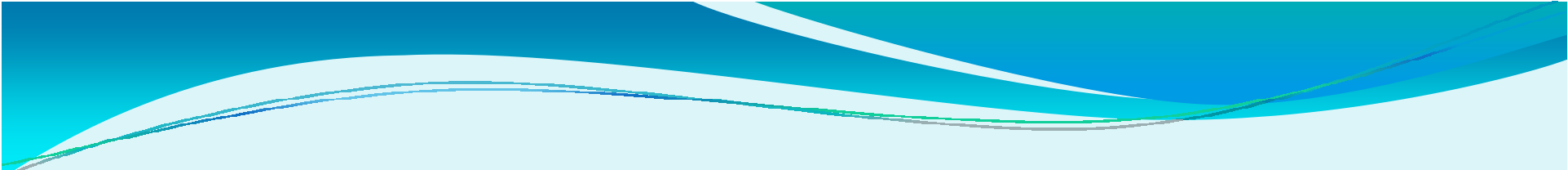
- The water we draw from the environment is in constant contact with the rocks that make up the earth's surface.
- Minerals from these rocks are constantly being dissolved into our water, including:
 - Iron
 - Calcium
 - Magnesium
 - Potassium
 - Silicates
 - Manganese
 - Chloride
 - Fluoride

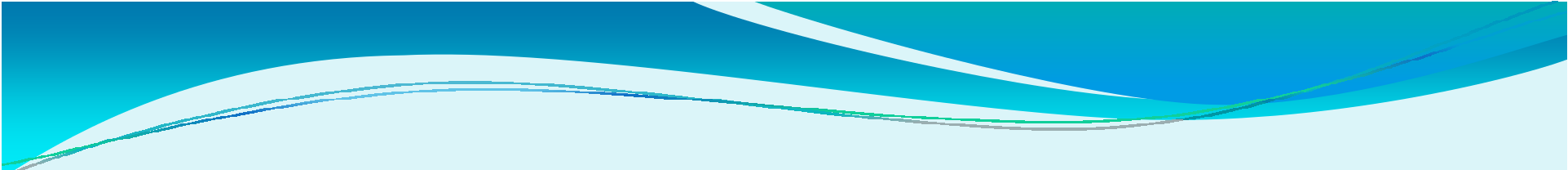


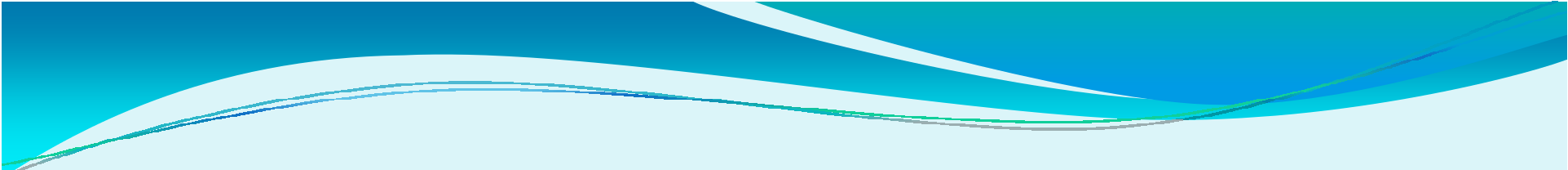
- 
- All natural water sources contain minerals. Surface water sources, such as rivers and lakes, tend to have a lower mineral content than ground water sources (well water).
 - The water drawn from Lakes Huron and Erie has relatively low fluoride levels, around 0.1 mg/L (milligrams per litre).
 - Several municipalities around London use well water that has much higher fluoride levels – some over 2 mg/L.
 - Health Canada researchers have determined that 0.7 mg/L is the optimal level for dental health, and London increases the fluoride concentration to this level.

- 
- To increase the fluoride content of drinking water, fluoride-containing rocks must be located, and the fluoride must then be extracted from those rocks.
 - The source of London's fluoride is a rock called 'fluorapatite', which is abundant in Florida. Fluorapatite is rich in both fluoride and phosphorous.
 - The phosphorous and the fluoride are separated by dissolving the rocks in acid; creating phosphoric acid, which is used in fertilizer, and hydrofluorosilicic acid (HFSA) which we use for fluoridation.

- 
- There is no such thing as “artificial fluoride”. The fluoride ions which naturally dissolve from rocks into our water are identical to the fluoride ions that we extract from rocks by dissolving them in acid.
 - We use a very concentrated form of HFSA. Each litre of HFSA is mixed into almost 450,000 litres of our water.
 - This is similar to the process that we use to disinfect our water. We purchase chlorine gas in a concentrated form, and then mix it into very large volumes of water.

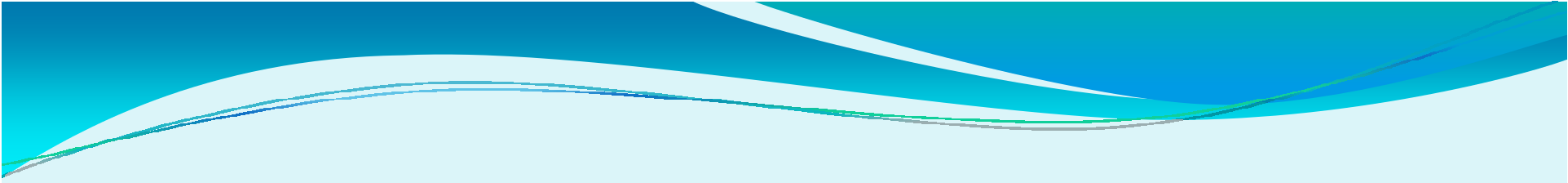
- 
- HFSA has the chemical formula H_2SiF_6 , meaning that it contains mostly fluoride, but also hydrogen and silicates – all of which are naturally present in our water.
 - Recent research has confirmed that when HFSA is added to drinking-water, it completely ‘dissociates’, or breaks apart, releasing fluoride ions, hydrogen ions and silicates.
 - The HFSA isn’t simply diluted in our water, it actually ceases to exist as HFSA when it contacts our water.
 - People are not exposed to HFSA when they drink fluoridated water.

- 
- Council has heard many claims that the HFSA used to fluoridate London's water has never been tested as safe for human consumption.
 - But, Londoners do not consume HFSA.
 - Because the HFSA breaks apart on contact with our water, only the building blocks of the acid remain – the fluoride ions, the silicates and the hydrogen ions.
 - These are substances that already exist in our water; and their safety for consumption has been well studied.

- 
- The Ontario Ministry of the Environment mandates that the purity of our fluoridation products must meet the American National Standards Institute 'Standard NSF/60'.
 - NSF/60 demands rigorous testing to ensure that any impurities in the product are below the established levels, which are based on U.S. EPA and Health Canada criteria.
 - NSF/60 is even more stringent than the USP-NF standard for fluoride products used in pharmaceutical production.

- Ontario has some of the world's highest water quality standards. As the operators of London's water system, we are responsible for meeting those standards, and for providing safe, clean drinking water to all Londoners.
- To provide safe water, we depend upon the expertise and recommendations of our public health partners, including our Middlesex-London Health Unit, the Ontario Ministry of Health and Long-Term Care, and Health Canada.



- 
- Administration recommends that Council not abandon the practice of relying upon the expertise provided by our public health officials; but rather, that Council affirm its confidence in the integrity and recommendations of World Health Organization, Health Canada, Ontario's Chief Medical Officer of Health, and the Medical Officer of Health for the Middlesex-London Health Unit, and thus support the ongoing fluoridation of the City of London's drinking water.