

Towards Sustainable Cities: Reduce Your Environmental Footprint

Aqua-Pipe is a structural trenchless technology (CIPP) designed for drinking water distribution systems. This technology offers significant environmental, social and economic advantages: a logical choice for sustainable cities.

Reduces Greenhouse Gases

Aqua-Pipe reduces GHG emissions by 84% compared to the traditional open cut replacement. That means a reduction of 378 tons of CO_2 equivalents for each mile of water main replaced. In addition, there are indirect reductions such as fewer traffic delays and detours, etc. (see reverse).

Preserves Trees and Existing Infrastructures

Because Aqua-Pipe requires minimal excavation, tree roots, other landscaping elements and adjacent infrastructures remain intact.

Improves Water Conservation

Aqua-Pipe eliminates drinking water losses due to leaks and improves the hydraulic efficiency of the distribution system.

Spares Natural Resources

There is a significant reduction in the quantity of fossil fuels used for the transportation of materials and for onsite operations. Significant reductions also occur in the quantities of materials used for site restoration (backfill, asphalt and concrete).

🗢 Minimizes Waste

Less material has to be recycled or sent to landfills (excavated soil, pipes, concrete and asphalt).

Increases Social Acceptance

Aqua-Pipe preserves the quality of life for citizens during the operations (access to residential and commercial properties maintained, less air and noise pollution, work completed significantly faster).

Reduces Costs

From 20% to 40% less expensive than conventional open cut replacement.

www.aqua-pipe.com

a technology developed by: SANEXEN

Aqua-Pipe is the First No-Dig Technology to Have its Greenhouse Gas Emissions Quantified According to International Standards

Aqua-Pipe Reduces Greenhouse Gas (GHG) Emissions by 84%¹

For each mile of water main renewed, open cut replacement produces 450 tons of GHG (as CO_2 equivalents), while the Aqua-Pipe technology emits only 72 tons of GHG. This is a reduction of 378 tons of GHG, which is the equivalent amount of carbon dioxide produced by the combustion of 24 600 gal of gasoline or 196 570 lb of coal!

Reduction Demonstrated

Calculations were completed by Sanexen Environmental Services inc, according to a rigorous quantification protocol based on the ISO140642-2² international standard. In addition to the ISO standard, the principles of life-cycle analysis³ as well as two other validated protocols⁴ were referenced.

Results Verified by an Accredited Organization

The quantification report has been verified by a standard development organization (Bureau de normalisation du Québec, BNQ)⁵, according to the requirements of the ISO14064-3⁶ international standard. The favorable verification notice was received in April 2011⁷. <u>The BNQ is accredited by the Standards Council of Canada</u> (SCC)⁸, which confers international recognition in the field of GHG quantification.

Relevance for Cities

- Taking action to reduce GHG emissions (climate change mitigation)
- Aiming to comply with initiatives, policies and regulations related to global warming solutions and sustainable development (Western Climate Initiative, California Assembly Bill 32, Sustainable Cities).



Reduction = 450 - 72 = 378 or 84% less GHG

450 tons CO₂ eq/mile piping (Open Cut)



[•] Method and Limits

Reductions were calculated for small diameter pipes (6-12 in.), for work completed in Quebec. The GHG sources considered were: material production, transportation and on-site operations. The 84% reduction did not include indirect reductions associated with traffic detours. If such effects were to be quantified, the reduction in GHG would be even greater.

References

- Sanexen, Réduction des émissions de GES lors de la réhabilitation de conduites d'aqueduc avec la technologie Aqua-Pipe pour les années d'installation 2002-2007, 2011.
- 2 International Organization for Standardization, ISO 14064-2: Greenhouse gases - Part 2: Specification with guidance at the project level for quantification, monitoring and reporting of greenhouse gas emission reductions or removal enhancements, 2006. 3 Jolliet, O., Saadé, M., Crettaz, P., Shadek, S., Analyse du cycle de vie –
- Jolliet, O., Saadé, M., Crettaz, P., Shadek, S., Analyse du cycle de vie Comprendre et réaliser un écobilan, 2ième édition, Presses Polytechniques Romandes, 2010.
- 4 Alberta Environment, Quantification protocol for gravel and lightly surfaced road and rehabilitation projects; Quantification protocol for freight modal shifting, 2008. http://environment.gov.ab.ca
- 5 Bureau de normalisation du Québec: http://www.bng.qc.ca/en/index.html. 6 International Organization for Standardization, ISO 14 064-3: Greenhouse gases - Part 3: Specification with guidance for the validation and verification of greenhouse gas assertions, 2006.
- 7 Avis de vérification d'un projet de GES, Réduction des émissions de GES lors de la réhabilitation de conduites d'aqueduc avec la technologie Aqua-Pipe[™] pour les années d'installation de 2002 à 2007, BNQ, avril 2011.
- 8 Standards Council of Canada: http://www.scc.ca/en/programs-services/ghg.





