

September 11, 2024

Via Email

Planning and Housing Committee
City of Toronto
100 Queen Street West
Toronto, ON M5H 2N2

RE: 2024.PH15.1 – OPA 528: Updating Policies for Infrastructure Projects and Parks and Open Space Areas

Dear Chair Perks, Vice Chair Bradford, and the Planning and Housing Committee,

Geosource Energy Inc. (GS) has been designing and constructing Geo-exchange systems in Toronto since 2004 and has been involved in many multi-residential, institutional, and community buildings projects within the city. We are committed to providing long-lasting efficient low-carbon systems for the heating and cooling of buildings in an effort to support building owners and developers meet Toronto Green Standard, LEED certification, and ESG goals.

We are in support of the OPA 528 initiative to include Geo-exchange utility systems in Parks.

Angled Boreholes for Geo-exchange Systems

GS has been constructing angled boreholes for Geo-exchange systems since 2008 with its first angled borehole project being the Kingsway Residential/Commercial project at 538 Plains Rd E., Burlington of affordable housing and a public library. Since that time many projects have been constructed using angled boreholes including for example two condo towers constructed near Yonge and Eglinton where the holes are drilled from a sliver of property out under an existing parking structure with the system serving the new towers then under construction, Toronto Police Services 41 building presently under construction, again with holes drilled out under a building being constructed, and University of Toronto's Landmark Project at King's College Circle, where the angled holes were drilled from inside the footprint of the future parking structure extending outside that footprint. The Landmark project is a great example of how angled holes can greatly increase the capacity of the Geo-exchange system from the building footprint (in this project's case about a 50% increase).

Angled boreholes can extend from an adjacent property to park property or across a right of way and then a park property (such as crossing under a road and then under the park). GS has been drilling boreholes with a length of up to 275m regularly for the last decade. Those holes can be drilled on angles up to approximately 25 degrees off vertical which means that the borehole will traverse a distance of about 120m. Borehole trajectory can be designed such that borehole intersection with property line with the park can be accurately placed, for example a minimum intersection depth of 30 m. Boreholes would be placed such that they do not interfere with all surface and subsurface use including existing and future planned infrastructure (subway tunnels, sewers etc).

To give an example of how angled boreholes could increase Geo-exchange capacity, a 50 m x 50 m building site with a park area of similar size adjacent to one side of the site would provide a 50% increase in total capacity. If the building tower is full lot size, the geo-exchange system can provide 100% capacity for approximately 12 floors (or 28,000 sq m), and if using the park area, about 18 floors (or 42,000 sq m). This improvement will only increase as more sophisticated drilling techniques such as drill steering are brought into the market. For higher density, taller buildings, combination of underbuilding construction and angled drilling into adjacent property can greatly increase the viability of geo-exchange solutions since a much greater percentage of the building's loads can be picked up by the geo-exchange system.

It is our opinion based on having built many angled borehole geo-exchange systems that placement of those boreholes under park areas will unlock more sites for geo-exchange with no disruption to present and future park use.

If there are questions, please do not hesitate to contact us.

Sincerely,

Geosource Energy Inc.



Stanley Reitsma, P.Eng., PhD,
CEO