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PARTNERING WITH TORONTO AND REGION CONSERVATION AUTHORITY TO SECURE CAPACITY FOR MANAGEMENT OF EXCAVATED MATERIAL FROM 10-YEAR CAPITAL WATER AND WASTEWATER PROJECTS

The Environmental Services Committee recommends the adoption of the recommendations contained in the following report dated September 25, 2012, from the Commissioner of Environmental Services.

1. RECOMMENDATIONS

It is recommended that:

1. The Commissioner of Environmental Services be authorized to enter into an agreement with the Toronto and Region Conservation Authority to secure capacity for management of excavated material from construction of water and wastewater capital projects in the 10 Year Capital Plan.
2. The Regional Chair and Regional Clerk be authorized to execute the necessary agreement with Toronto and Region Conservation Authority for securing fill capacity.

2. PURPOSE

The purpose of this report is to seek authorization for the Commissioner of Environmental Services to enter into an agreement with the Toronto and Region Conservation Authority to secure capacity at various fill sites for excavated material from water and wastewater infrastructure construction projects identified in the 10 Year Capital Plan, and an appropriate scope of work for site management.

3. BACKGROUND

Construction of the 10 year capital projects will generate significant quantities of excavated material which require appropriate management

The 10 Year Capital Plan includes construction of various water and wastewater infrastructure projects. Often multiple construction methods are used based on social, economic and environmental conditions. Common construction methods for linear infrastructure include open cut trenching, and trenchless technologies including directional drilling, microtunneling and earth pressure balance tunnel boring. The amount of surplus material generated differs for each construction method, ranging from virtually

no surplus material for high pressure directional drilling, to large quantities of excavated material for open cut trenching.

Approximately 1.5 million cubic metres of excavated material will be generated from 10 year capital linear construction projects

An analysis of the 10 Year Capital Plan for linear projects estimated that approximately 1,500,000 m³ of excavated material will be generated from construction. This does not take into account the Southeast Collector Trunk Sewer project which already has its own dedicated site and agreement to use excavated material for restoration of Toronto Region Conservation Authority owned lands. It also does not take into account construction of the various facilities within the 10 Year Capital Plan or material that will be generated from the Upper York Sewage Solution project.

Construction of shafts, tunnels and trenches for various projects will require removal of a significant amount of subsurface material. Excess clean native excavated soils (muck or spoil) will require continuous removal and management. Management of the excavated soils, including storage, transportation and disposal, must comply with applicable regulations and guidelines. Typically it is a requirement of the contractor to source disposal sites; however, during a Value Engineering session for the Southeast Collector Trunk Sewer project, it was considered that a fill site for large projects should be secured prior to construction since previous experiences demonstrated difficulties for the contractor to find adequate disposal sites.

Based on results of the Value Engineering session for the Southeast Collector project, on June 9, 2010, Council adopted Clause 5 of Report No. 6 of Environmental Services Committee recommending that the Commissioner of Environmental Services be authorized to enter into an Agreement with Toronto Region Conservation Authority to provide a site for material excavated during construction. The results of this Agreement and ongoing management of excavated material on Toronto Region Conservation Authority land have been positive. Over the next few years, the cumulative excavated material generated from York Region's water and wastewater linear infrastructure construction will exceed that produced by the Southeast Collector project and a similar solution for management is required.

Agreement would secure fill capacity to 2023

Anticipated duration for management of excavated material is from 2013 to 2023. As noted above, the total quantity of excavated material is estimated to be approximately 1,500,000 m³. This is equivalent to approximately 150,000 dump trucks, or the size of 38,000 underground parking spaces.

While geotechnical information has yet to be collected for many projects, typically linear infrastructure is located within existing transportation corridors which generally consist of sand, gravel, silt and clay and any combination of them. These materials are the same

type of materials found everywhere in southern Ontario and it is anticipated that most of this material will be clean and therefore suitable to be managed without restrictions. Depending on construction methodology, there may be requirements to use soil conditioners to soften the soil (e.g. operation of the tunnel boring activities used on some larger projects like the 19th Avenue Interceptor project). In these cases the excavated material could potentially be wet on arrival at the fill site. In general, soil conditioners are biodegradable and technical specifications for the project will mandate that any soil conditioner material used on all projects be biodegradable.

All material to be managed shall be continuously monitored for type and quality to ensure it is disposed of in accordance with all regulations. The Region's construction contracts include an item for disposal of any found contaminated materials at a provincially approved disposal site.

4. ANALYSIS AND OPTIONS

Selection criteria for determining suitable fill sites include proximity to construction, capacity, site requirements and permits

The total estimated quantity of excavated material originating from the 10-year capital construction is 1,500,000 m³. Due to the large geographic area of York Region, ideally several sites would be used to accept all the material in order to minimize mobilization, demobilization and operation costs. Excavated material will originate from various locations across York Region, with the largest volumes coming from Vaughan, East Gwillimbury and Markham. To minimize haulage costs and impact to haul roads, fill sites should be located as close to each project as possible with ease of access to regional roads and provincial highways.

Site requirements or future land use are factors for consideration in the selection of a fill site. As previously discussed, material originating from tunneling will be conditioned and the excavated material may be wet on arrival at the fill site. This wet material may be more suitable for large fill areas such as an abandoned gravel pit and less favourable for berm construction. Preliminary discussions with Toronto Region Conservation Authority indicate that they are familiar with the wet nature of material originating from Earth Pressure Balance Machine tunnelling. Management of the excess clean native soils, including storage, transportation and disposal, must comply with applicable regulations and guidelines.

Site specific permits may be required from regulatory authorities (e.g. Toronto Region Conservation Authority and Lake Simcoe Region Conservation Authority) as well from the local city, town or region. In addition, the Ontario Ministry of the Environment recently released the draft *Soil Management – A Guide for Best Management Practices* for discussion and comment. Comments were submitted by York Region staff. This document provides specific guidance for the best management of excess soils generated

from construction, which are largely already in practice on York Region Environmental Services construction contracts.

An agreement with Toronto Region Conservation Authority would support the intent of the Ministry of the Environment guide, which is the beneficial reuse of excess soils in a manner promoting sustainability, protection of the environment and a healthy economy. The agreement would be consistent with the best management practices outlined in the Ministry of the Environment's guide by incorporating various best management practices into tendering contracts, establishing a system to track and document the source of material at receiving sites and ensuring owners of source sites are aware of the ultimate destination of excavated soil to meet regulatory responsibilities.

Toronto Region Conservation Authority has available sites in close proximity to planned capital projects

Transfer of excavated material from York Region construction projects for use in restoration on Toronto Region Conservation Authority owned lands is mutually beneficial. Partnering with York Region allows Toronto Region Conservation Authority to ensure that materials used for restoration are locally sourced and native to this geographic region (which has environmental, financial and sustainability benefits). For York Region, such a partnership will allow secured capacity and associated financial and operational benefits, and an opportunity to contribute to environmental restoration and community enhancements like trail systems.

Toronto Region Conservation Authority has advised York Region that it has prior experience receiving excavated materials, including wet conditioned materials from tunneling operations. York Region has met with Toronto Region Conservation Authority and several sites in Vaughan and Markham (and other areas outside of York Region but within Toronto Region Conservation Authority's jurisdiction) require fill for various restoration activities. On this basis, staff are seeking authority to enter into an agreement with Toronto Region Conservation Authority to achieve a cost effective solution that benefits both York Region and the Toronto Region Conservation Authority. In the event an acceptable solution is not successfully negotiated with Toronto Region Conservation, provision of a fill disposal site will be included in the tender for constructing each project and bidders will be responsible for sourcing an appropriate site.

Link to Key Council-approved Plans

Proactive planning to secure fill sites for capital projects aligns with the Region's strategic priority of continuing to deliver and sustain critical infrastructure. Collaborative efforts with Toronto Region Conservation Authority benefits their immediate goals and ultimately supports the strategic priority to manage the Region's finances prudently.

5. FINANCIAL IMPLICATIONS

Funds for fill management have been included in the 10 year capital budget for the individual water and wastewater projects. The negotiated rate with Toronto Region Conservation Authority is \$6.00 per cubic metre, which is competitive to market rates and carries environmental benefits such as minimized carbon footprint due to local sites. Additional benefits of a fill agreement include avoiding contractor premiums and delays associated with sourcing fill sites, along with the certainty of having secured suitable fill capacity well in advance of construction.

6. LOCAL MUNICIPAL IMPACTS

The 10 Year Capital Plan water and wastewater projects are critical infrastructure components in ensuring adequate capacity for growth across York Region. Construction of these projects are required to support forecasted growth within the Region, as established by “Places to Grow” and reflected in the *York Region Official Plan* (June, 2009). The Plan establishes forecasts for each of the local municipalities for the plan period. Further, as envisioned in the *Province of Ontario’s Growth Plan for Greater Golden Horseshoe* (2006), there will be the requirement to service a residential population of 1.5 million people and an employment population of 800,000 people by year 2031. To achieve this, various water and sewage infrastructure is required to accommodate growth in York Region to 2036 and beyond.

7. CONCLUSION

It is recommended that the Region enters into an agreement with Toronto Region Conservation Authority to secure viable sites for fill capacity of significant quantities of excavated material to avoid costly premiums for managing this material and delays during construction due to the contractor’s potential inability to effectively manage excavated material.

For more information on this report, please contact Daniel Kostopoulos, Director, Capital Planning and Delivery, Environmental Services at 905-830-4444 Ext. 5070.

The Senior Management Group has reviewed this report.