

From: "Mochrie, Paul" <Paul.Mochrie@vancouver.ca>

To: "Direct to Mayor and Council - DL"

CC: "City Manager's Correspondence Group - DL"

"Dobrovolny, Jerry" <jerry.dobrovolny@vancouver.ca>

"Nelms, Cheryl" <Cheryl.Nelms@vancouver.ca>

Date: 9/5/2019 3:13:20 PM

Subject: Memo: Questions Pertaining to Green Rainwater Infrastructure

Attachments: Memo to Mayor and Council - Questions pertaining to GRI and Geotech - Au....pdf

Dear Mayor and Council,

Please see the attached memo from Jerry Dobrovolny. A short summary of the memo is as follows:

- Addressing questions received in relation to the process for identifying green rainwater infrastructure opportunities on public work sites, as well as clarification in relation to using recycled aggregate vs. native soils in excavations.

If you have any questions, please feel free to contact Jerry Dobrovolny at 604-873-7331 or jerry.dobrovolny@vancouver.ca.

Best,
Paul

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The City of Vancouver acknowledges that it is situated on the unceded traditional territories of the Musqueam, Squamish, and Tsleil-Waututh peoples.

MEMORANDUM

August 29, 2019

TO: Mayor and Council

CC: Sadhu Johnston, City Manager
Paul Mochrie, Deputy City Manager
Lynda Graves, Administration Services Manager, City Manager's Office
Rena Kendall-Craden, Civic Engagement and Communications Director
Katrina Leckovic, City Clerk
Neil Monckton, Chief of Staff, Mayor's Office
Alvin Singh, Communications Director, Mayor's Office
Anita Zaenker, Chief of Staff, Mayor's Office
Cheryl Nelms, Deputy General Manager, Engineering Services
Jimmy Zammar, Director, Integrated Strategy & Utilities Planning
Daniel Roberge, Director, Water & Sewers Design Construction & Operations
Karima Mulji, Director, Projects & Development Services

FROM: Jerry Dobrovoly, General Manager, Engineering Services

SUBJECT: Responses to Questions

We received the following questions and felt that all of Council would benefit from the reply.

Has an opportunity assessment been undertaken for Green Rainwater Infrastructure (GRI) implementation as part of the 12th Ave water main replacement project:

Engineering Services undertakes an assessment of the potential for GRI opportunities within most capital projects. The assessment within the E 12th Av, Fraser to Guelph, water main replacement project led to the conclusion that GRI opportunities are relatively minimal within this project.

The assessment takes into account multiple criteria for achieving the highest and best outcomes, including technical potential, space availability, schedule constraints, opportunity to integrate work within the site envelope, etc. Please refer to the attached appendix for a brief overview of the methodology and criteria in place for assessment of GRI opportunities.

In East Fraser Lands (EFL): What are the opportunities for daylighting creeks?

The primary creek within the EFL district is the seasonal Kinross Creek. North of Marine Way, the creek was piped and culverted in 1946, and is currently being commemorated by the Parks Board through a canal, wetland, and water treatment feature within the planned South Kinross Park.

To inform the planning and implementation of this effort within the South Kinross Park, Engineering Services is undertaking flow monitoring within the storm mains upstream (i.e. North of Marine Way) to better understand the seasonality and availability of stormwater intended for the water feature.

In preparation for construction, soil excavated from around the area has been temporarily placed on site to ensure that the future canal and wetland site is stable and compacted, and to achieve stability. This temporary soil will be removed and reused elsewhere prior to further work being undertaken.

In East Fraser Lands (EFL) and elsewhere: How does the City approach the use of import material vs. native material on site?

Public works undertaken by the City's crews use recycled aggregate from the City's Kent Yard facilities. This recycled resource contains building and excavated material collected from construction sites around the City, screened and crushed in our Kent Yard facilities, and prepared to be re-used in City construction projects.

During a project's design phase, the Engineer of Record assesses the suitability of native material (i.e. on-site excavated material) vs import material. This assessment is based on geotechnical investigations and lab testing of the soil properties.

If suitable, the City will always prioritize the use of on-site excavated material to reduce hauling costs and the environmental footprint of import of new material.

For more information, please do not hesitate to contact me at jerry.dobrovolny@vancouver.ca or 604-873-7331.

A handwritten signature in blue ink, appearing to read 'J. Dobrovolny'.

Jerry W. Dobrovolny, P.Eng., MBA
General Manager, Engineering Services

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APPENDIX A – Green Rainwater Infrastructure (GRI): Opportunity Assessment Methodology

The evaluation process for GRI opportunities consists of a feasibility analysis and prioritization rating. The feasibility review starts with the following screening process:

1. **Review of project scope** – Does the construction envelope of the project include an opportunity for GRI? The construction envelope for a sewer or water pipe replacement project is typically a trench at the center of the road, whereas GRI is typically at a low point along the gutter of the road. Similarly, a road repaving doesn't include the excavation or curb changes that a GRI design requires. In both cases, there are no cost savings or efficiencies generated by incorporating GRI.
2. **Review drainage areas** – A typical GRI practice aims to capture between 300-1000 m² with the typical drainage area being 500 m². If the drainage area is small, then the project is likely not worth the effort as compared to other opportunities or investments.
3. **Review of constraints** – A review of power, gas, water, sewer, and telecom utilities as well as structures like foundations, basements and poles is performed. Potential tree root conflicts in the area are also assessed. In some cases, these constraints make GRI installation difficult, overly costly, or impossible. Important constraints relate to scheduling and disruptive impacts of the implementation to mobility, businesses, and the public. Additional time needed for planning, design, consultation, and coordination are taken into account.
4. **Review of available geotechnical information:** The City of Vancouver Geotechnical Information Viewer, launched in 2018, now allows the review of historical geotechnical studies around the city. Often there are geotechnical studies in the proposed project area that provide key insights into geotechnical constraints like shallow bedrock or water table or opportunities like highly permeable soils. In some cases, this information can save on the project's geotechnical investigation costs.

Upon completion of the screening process, the opportunity is evaluated based on eleven weighted prioritization criteria. Each criteria is scored from 1-10 with a higher score being good or conducive to implementing GRI. The ratings are semi-quantitative, some requiring the use of professional judgement. The criteria are also weighted to address technical, financial, social, environmental, resilience and livability criteria. The criteria are the following:

- Timing / Urgency
- Available space for GRI (utility, structure, and existing tree constraints)
- Funding Availability
- Infiltration Potential
- Sewershed / Receiving Waterbody Improvement Potential
- Drainage Area and High Pollutant Capture Opportunity
- Underserved Neighborhood
- Visible GRI or Educational Opportunity
- Potential Loss of Parking Space
- Co-Benefit Potential
- Supports Community Engagement

A total weighted average score is calculated for each project that will range from 0-10 with a 10 score being a project with a high benefit to cost ratio. Projects that score above a 6 are typically recommended to proceed for further evaluation and implementation.