



MORRISON HERSHFIELD

December 27, 2023

Allen Jensen, P.Eng., ASct.

Allen.jensen@metrovancover.org

Senior Project Engineer, Solid Waste Planning
Solid Waste Services, Metro Vancouver

Dear Allen:

Re: Metro Vancouver Solid Waste Management Plan – Residuals Management Options Review

Morrison Hershfield (MH) submitted a Proposal on February 16, 2023, in response to REQUEST FOR PROPOSAL (RFP) No. 23-013 Consulting Services for Solid Waste Management Plan Update. The contract between MH and Metro Vancouver was finalized on April 24, 2023 and includes a revised project budget dated March 16, 2023. In support of the overall solid waste management plan (the plan) update, Metro Vancouver has requested a workplan for evaluating residual waste management options. Residual waste is defined as the leftover (residual) waste from the residential and commercial / institutional (C/I) sectors to be managed / disposed after waste reduction (e.g. the 3Rs) initiatives have been applied or after processing materials to reduce or divert waste.

Based on discussions between MH and Metro Vancouver, a scoping document was provided by Metro Vancouver to MH. In that document, the stated objective of the residuals work is as follows:

- The goal is to provide technical information in support of solid waste management plan discussions related to options for management of residual residential and commercial/institutional garbage following efforts to maximize waste reduction and recycling.
- The work is not intended to rank residual management options, but rather provide an overview of the considerations of all potential options as well as identifying potential criteria for evaluating options in the future.

Our proposed scope of work and budget (see attached) have been developed to meet these overall goals and to align with the scope elements suggested by Metro Vancouver staff.

Proposed Scope of Work

In accordance with the revised scope of work sent to MH by Metro Vancouver on November 3, 2023, we are proposing to undertake nine (9) primary tasks, as follows:

1. Scope development
2. Literature review
3. Review options for management of residual waste
4. Prepare historic case studies (10) on emerging / non-mainstream technologies
5. Prepare current case studies (10) on emerging technologies
6. Summarize considerations for residual waste management approaches

7. Identify potential criteria for evaluating residuals management options
8. Reporting
9. Project management, meetings and presentations

Details on each task are provided below followed by a summary of the required effort, along with budgetary and schedule implications.

Before beginning the technical work, we will arrange for a kick off meeting between MH and Metro Vancouver staff to confirm the expectations, scope and timeline.

Each of the tasks described below are intended to build on one another. Regular check ins with Metro Vancouver staff will be undertaken to guide the process and ensure that each task builds on and fills gaps of the previous tasks.

Task 1 – Scope Development

MH will develop a short PowerPoint presentation and present the scope of work and approach for developing the scope to four stakeholder groups. During these presentations, MH will look for feedback and scope confirmation.

We assume that Metro Vancouver will take formal notes during the committee meetings. MH will take informal meeting notes on stakeholder feedback and these notes will be reviewed to inform the refinement of the following tasks. Any necessary changes to the scope of work will be made accordingly and the final scope of work will be sent to Metro Vancouver for approval.

Task 1 also includes scoping effort spent to date including meetings and task, scope, and proposal development.

Task 2 – Literature Review

The second task will involve conducting an international literature review on the best practices related to the management of residual waste. This will provide a high-level overview of approaches being taken around the world in similar countries (e.g. similar living standards and economies), including North America, Europe, Asia, Australia and New Zealand. We will search for regions (e.g. countries) that are in some way similar to Metro Vancouver, for example in terms of the overall goals for managing all wastes. The focus will not be on regions that rely on a mixed waste processing approach, rather it will focus on regions that use the waste hierarchy as a guide and focus on source separation approaches. However, we may include at least one region that is focusing on the mixed waste approach, for comparison.

The purpose of the literature review will be to gain a general understanding of approaches taken in other regions and to establish a basis for the research to be undertaken for subsequent tasks. We envision providing broad overviews that include some of the economic and regulatory drivers that have helped define the direction for each region. We will seek to understand the

Stakeholder Presentations:

- Regional Engineers Advisory Committee, Solid Waste Subcommittee (REAC-SW)
- Solid Waste Management Public and Technical Advisory Committee (PTAC)
- Solid Waste and Recycling Industry Advisory Committee (IAC)
- Regional Engineers Advisory Committee (REAC)

primary goals for managing wastes, waste reduction and residual waste management. We will also seek to identify systems and approaches that are working well, ones that are experiencing challenges and, any approaches that may or may not work well for Metro Vancouver.

We envision that the literature review will, rather than providing detail for specific communities, provide a more general overview of trends from around the world. The focus will be on trends across North America, Europe, and advanced countries in Asia. The summary will include a minimum of five broad regions and, if the information is readily available, we may also summarize what is happening in the individual communities within those regions.

As part of the second task we will develop an overall reporting template that we will submit to Metro Vancouver before we initiate the literature review. The literature review will be summarized in the main document and submitted to Metro Vancouver for review. As tasks are completed we will continue to populate the overall report and submit to Metro Vancouver as it progresses.

We have budgeted to have one review meeting after each deliverable submission and two iterations of the reporting. Based on feedback received verbally and in writing, we will adapt the focus of any remaining tasks, for example if it becomes apparent that specific approaches, technologies and / or regions require more or less emphasis than others.

Task 3 – Options for Management of Residual Waste

The next task will involve a deeper dive into the approaches used in specific regions. The focus of this task will be identified when we review the results of Task 2. We will research the extent of specific approaches for management of residual garbage both in North America and around the world. We will drill down into approaches used in five relevant regions. We will provide general overviews of the objectives and goals for managing wastes, assess the breakdown of residual wastes being managed (e.g. residential vs. industrial / commercial / institutional) and review progress against any stated goals. We will aim to provide additional detail on the specific drivers behind the approaches being used. If available, and at a high level, we will compile information on costs, risks, greenhouse gas emissions and identify the pros and cons of the various approaches. The primary infrastructure elements of each region will be identified (e.g. landfills, waste-to-energy) and the overall reliance (e.g. amounts of waste managed) on each of the pieces of infrastructure.

We will build on the overall reporting template as we complete each task and submit another draft after completing Task 3. Before moving on to the development of the case studies, we will arrange a check in meeting with Metro Vancouver to go over the Task 3 results. This will help with refining the focus of Tasks 4 and 5.

Task 4 – Emerging/Non-Mainstream Technologies: Historic Case Studies

Tasks 4 and 5 involve preparing case studies on emerging and “alternative” (non-mainstream) technologies. Task 4 will focus on case studies for past projects involving specific technologies. We will prepare up to 10 case studies, all with a similar reporting format and content. The aim will be to identify and summarize information on a broad range of technologies to provide an overall “snapshot” of what has been tried and implemented. We will consider any technology that does not fit into the landfill or conventional waste-to-energy categories, which will include technologies that are considered “resource recovery” technologies and / or mixed waste

processing (MWP) technologies. Examples of technologies to be considered includes those employed by Plasco, Enerkem, MWP in San Jose, California and Sustane.

The focus of all case studies will be agreed to in advance with Metro Vancouver staff. We will develop a reporting template for each one that will include things like background, technology setting, regulatory environment, goals / objectives, costs, risks, pros / cons, and overall success at achieving stated objectives. We will focus on data and information that is readily available, and we will avoid summarizing any claims or promises made by individual technology vendors. While we envision completing up to 10 case studies, we are open to doing fewer if that provides sufficient information and we can redirect the remaining effort to other tasks.

Task 5 – Emerging Technologies: Current Case Studies

Task 5 is similar to Task 4 but will focus on current emerging and alternative technologies. This will include any new technologies being contemplated or employed as pilot projects around the world. We will prepare up to 10 case studies, all with a similar reporting format and content. The aim will be to identify and summarize information on a broad range of technologies to provide an overall “snapshot” of what is currently being considered in other regions. An example of a current initiative is the pilot project involving microgasification in the Peace Region in Alberta. Other similar projects will be identified – these projects and initiatives will be worth keeping an eye on over the next while.

Similar to Task 4, the focus of all case studies will be agreed to in advance with Metro Vancouver staff. We will develop a reporting template for each one that will include things like background, technology setting, regulatory environment, goals / objectives, costs, risks, pros / cons, and overall success at achieving stated objectives. This list will be developed and reviewed with Metro Vancouver at the outset of Task 4. We will focus on data and information that is readily available, and we will avoid summarizing any claims or promises made by individual technology vendors. While we envision completing up to 10 case studies, we are open to doing fewer if that provides sufficient information and we can redirect the remaining effort to other tasks.

All of the case studies from Tasks 4 and 5 will be included in the overall report template and submitted to Metro Vancouver for two sets of reviews. Potential revisions to this document will be included in the final reporting document. We envision having a meeting with Metro Vancouver staff to go over progress and results before moving into Task 6.

Task 6 – Summarize Considerations for Various Residual Management Approaches

Task 6 will involve summarizing considerations for various residual waste management approaches within the context of Metro Vancouver’s current system and approach to managing all wastes. Under this task we will define the overall context by summarizing the general goals and objectives for managing residual wastes under provincial guidelines as well as related considerations for specific technologies such as waste-to-energy. We will also provide a very high-level overview of the current residual waste management system.

We will then develop a summary of important considerations for looking at residual waste management options now and in the near future (e.g. 5-10 years). Examples of some key considerations that may be discussed include capital costs, operating costs, revenues, environmental impacts (e.g. GHG implications), transportation, alignment with regional goals /

objectives, inter-regional barriers / challenges (e.g. w/ waste export), risks and siting constraints / barriers. We will elaborate on the key considerations for Metro Vancouver and we will draw on our experience working through similar residual waste management options for other regions.

This summary will include discussion of the main alternatives that could be considered in the future for Metro Vancouver. The summary for this task will be included in the overall reporting template. We will complete this task concurrently with Task 7 and submit the reporting after completing Task 7.

Task 7 – Identify Potential Criteria for Evaluating Residual Management Options

The final technical task will involve developing a set of criteria for assessing residual waste management options in the future. The criteria will be based on the overall direction being refined through other parts of the solid waste management planning process. For example, it will be based in part on the vision, guiding principles, goals, strategies, targets, and performance metrics emerging from other parts of the planning process. The criteria will also be based on our understanding of the current residual waste management system, criteria developed in other parts of British Columbia, and the evolving overall vision for residual waste provided by Metro Vancouver staff. The intent is not to limit any future options, but to establish a set of criteria that will support the overall vision of the updated plan. In general, there are established criteria for reviewing these options that can be grouped generally by social, environmental, and economic considerations. With new and emerging technologies risks and technology readiness are important considerations. We will develop an overall list organized by specific categories and define the general emphasis or level of importance of specific criteria.

Results from this task will be included in the overall reporting template and submitted to Metro Vancouver for review. We have allowed for one meeting and two revisions of the report at this stage.

Task 8 – Reporting

Reporting will involve developing a reporting template at the start of the work and, as discussed above, populating the report as the tasks are completed. We assume that there will be two revisions to each submission of the overall report. We will prepare a concise executive summary that can be used as a discussion document for the various stakeholders and committees.

Task 9 – Project Management, Meetings & Presentations

The project management task will be undertaken throughout the completion of the technical work and will include:

- Bi-weekly project meetings for the duration of the work, which will be combined with check in meetings for the asphalt and concrete recycling assessment work
- Up to 10 presentations of scope of work along with project updates and findings
- Up to 8 presentations will be with various advisory committees including member jurisdiction staff and third party committees such as the Regional Engineers Advisory Committee (REAC), Solid Waste and Recycling Industry Advisory Committee (IAC), Regional Engineers Advisory Committee, Solid Waste Subcommittee (REAC-SW), and Solid Waste Management Plan Public and Technical Advisory Committee (PTAC)
- General budget tracking, invoicing and communication