BC Waste Disposal Calculator: 2013 Beneficial Use Guidelines

The purpose of this document is to inform the Waste Disposal Calculator for the 2013 calculation of disposal rates by regional districts. These guidelines are not intended to influence choice of diversion alternatives or justify use of material at landfills over other uses higher on the pollution prevention hierarchy. Any exclusion of material used beneficially at landfills from disposal rate calculations does not imply that this material should be counted towards diversion.

Definition of Beneficial Use

For the purposes of the Waste Disposal Calculator, MSW that is used at a solid waste landfill is considered beneficial and therefore not counted as disposal under the following criteria:

1. The material is used in the construction and operation of a solid waste landfill in accordance with the BC Landfill Criteria;
2. The material has been separated from mixed MSW, either at source or from the waste stream at any point, and displaces material that would have been purchased for use at the landfill;
3. The regional district has policies in place, either voluntary or mandatory to encourage the separation and diversion of the material from disposal;
4. The use of the material is in accordance with the Pollution Prevention Hierarchy (5Rs) in that beneficial use of the material at a landfill is undertaken only when all other cost-effective opportunities for use at a higher level have been exhausted;
5. The material has been processed in some way to meet the specific construction or operational requirement at the landfill; **AND**,
6. The quantity of material used for construction and operation, such as for cover or aggregate, is not in excess of any regulatory or best practice engineering requirements.

Criterion 1: The material is used in the construction and operation of a solid waste landfill in accordance with the BC Landfill Criteria.

In BC, with the exception of the Burnaby incinerator, MSW requiring disposal is deposited in landfills. The BC Landfill Criteria for Municipal Solid Waste (1993) guides the construction, operation and monitoring of landfills to ensure environmental protection. Under the Landfill Criteria, landfill operators must apply cover material on the working face to control vectors, wildlife, fire, litter, odour, landfill gas, and scavenging at a landfill site. They must also use various construction materials such as aggregates for road base, wet weather operations pads and access roads, as well as for leachate, storm water and landfill gas collection systems.

Criterion 2: The material has been separated from mixed MSW, either at source or from the waste stream at any point, and displaces material that would have been purchased for use at the landfill.

With respect to the use of cover material, the BC Landfill Criteria defines cover as soil or other material approved for use in sealing cells in landfills and requires that cover material be applied to the active face daily at a thickness of 0.15 metre of soil or functionally equivalent depth of cover. The Criteria also requires the use of intermediate cover at a thickness of 0.30 metres of soil or functionally equivalent depth of other cover material where the active face will not be scheduled to receive the placement of wastes for 30 days or more.

In many cases, landfill operators do not have an adequate supply of soil for cover material available on-site and must import soil for daily cover which can have negative environmental, resource and cost impacts. Consequently many landfill operators use alternative materials, such as wood chips, to replace imported soil for cover material. These materials are approved for use as long they meet the performance requirements to control vectors, wildlife, fire, litter, odour, landfill gas, and scavenging at a landfill site. If these alternative materials have been separated from mixed MSW, either at source, at a processing facility, or at the landfill, and then chipped to meet the performance requirements for cover, this contributes to consideration of the material as beneficially used and not disposed.

For example, the Regional District of North Okanagan (RDNO) uses chipped (1/2 inch) wood waste (from dimensional or dirty wood) mixed 50/50 with soil for daily and intermediate cover. They also use chipped wood waste for a bio-filter material over finished slopes. The Regional District of Fraser-Fort George uses chipped sawmill waste mixed with soil (ratio of 1/3 to 2/3 to prevent fires) for daily cover. Both these uses are authorized in the operational certificates issued by the MOE and the regional districts do not count this material towards disposal.

With respect to construction materials required for drainage swales or as fill around landfill gas collection wells, some landfill operators, such as the Sunshine Coast Regional District choose to use a locally sourced waste product, such as non-deposit glass, rather than a virgin aggregate material. The RDNO uses old concrete sidewalks, foundations, bricks and other masonry, crushed to a 3" minus for tipping pads, fill and ditch lining instead of purchasing aggregate and rip-rap. They also use asphalt pieces to make pads for storage bunkers to store materials such as drywall.

Once again, using a material that is separated from mixed MSW in a project that is required under regulation provides a benefit. This material may not have to not be counted as disposal as long as it is appropriate for the specific use and in accordance with engineering and industry guidelines.

Criterion 3: The regional district has policies in place, either voluntary or mandatory to encourage the separation and diversion of the material from disposal.

Many landfill operators, primarily regional districts, use differential tipping fees,disposal bans or other policies to encourage the source separation of various materials from the mixed MSW waste stream. In most cases there is a clear distinction between the tipping fee charged for MSW that is destined for disposal and hence placement on the active face, and a lower fee for source-separated MSW such as wood waste that is chipped and used for cover. This lower fee is usually tied to the cost of processing the material for use as cover or aggregate substitute and not related to the consumption of disposal capacity.

For example, at RDNO facilities the tipping fee for mixed construction demolition waste is $184 per tonne while the tipping fee for wood waste is $20 per tonne. This differential fee encourages source separation of wood waste and allows it be chipped and used beneficially as cover material.

Criterion 4: The use of the material is in accordance with the Pollution Prevention Hierarchy (5Rs) in that beneficial use of the material at a landfill is undertaken only when all other cost-effective opportunities for use at a higher level have been exhausted.

The provincial waste management strategy is based on the "5Rs" hierarchy of reduce, reuse, recycle, recovery and residuals management. The Guide to the Development of Regional Solid Waste Management Plans for Regional Districts (1994) and the Recycling Regulation (2004) establish this hierarchy.

Section 1 of the *Environmental Management Act* defines "recyclable material" as a product or substance that has been diverted from disposal, and that satisfies criteria outlined in the Act. The BC Landfill Criteria defines recycling as the collection, transportation and processing of products separated from MSW which are no longer useful in their present form and the use (including composting) of their material content in the manufacture and sale of new products.

There may not be markets (other than beneficial use) for all materials separated from the waste stream. The landfill may be the only cost-effective market for these low value materials. However, if higher level cost-effective markets exist, source separated materials should not be used in the construction and operation of a landfill and should instead be directed to the higher use. In this situation, any material used at the landfill would count towards disposal.

For example, in the Sunshine Coast Regional District, source separated non-deposit glass from curbside and depot collection is crushed and used as an aggregate substitute in the construction of landfill gas wells. This is because it has been cost prohibitive to transport this material to higher use out-of-province markets. This has also been the practice in the Regional District of Nanaimo (RDN), where crushed glass is use for on-site road construction. However, in both cases, if higher use local markets become available, these two regional districts would need to re-evaluate their use of these materials.

Criterion 5: The material has been processed in some way to meet the specific construction or operational requirement at the landfill.

As discussed above, when a cost effective higher use is not available, the beneficial use of source separated materials at a landfill becomes the “market” for the new use. However, for a beneficial use not to be considered disposal, the materials must be processed before being spread on the working face or used as an aggregate replacement for on-site construction projects. For example, prior to being mixed with soil for use as a cover material, source separated wood from construction, renovation and demolition wastes must be chipped to meet performance requirements for cover material. This is the case at landfills in the RDNO and the RDN.

Criterion 6: The quantity of material used for cover or aggregate is not in excess of any regulatory or best practice engineering requirements.

If the use of source separated MSW materials in the construction and operation of a landfill is surplus to regulatory or engineering requirements, then the use is no longer beneficial and should be counted as disposal. This should be considered on a case-by-case basis in accordance with operational certificates and specific site requirements.