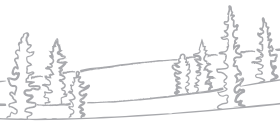




Addressing wildlife at NWT solid waste facilities

Best Management Practices



Wildlife can be attracted to Solid Waste Facilities (SWFs) due to the availability of food and other attractants (used oil, glycol, food contaminated paper, plastics etc.) that is found in municipal solid waste (MSW). Mammals are primarily attracted to the smell of food at SWFs, however almost all birds use sight to locate food. Any animal that does not face a negative consequence for accessing human food and wastes at a SWF will have a high chance of becoming food conditioned and habituated to the SWF. In particular, food conditioned bears can be a public safety concern when they are free to access unsecured food waste and other wastes in SWFs.

The objective of the document is to outline measures to reduce, and eventually eliminate, wildlife interactions at SWFs by proactively reducing wildlife attractants, and thereby reducing further wildlife intrusion at SWFs. The Departments of Environment and Climate Change (ECC) and Municipal and Community Affairs (MACA) recommend the following practices as a foundation for a sustainable wildlife control program at Northwest Territories (NWT) community SWFs.

- Reducing Attractants
- Restricting Access
- Public Education and Involvement

Reducing Attractants

Due to the nature of current waste disposal practices, completely eliminating attractants is virtually impossible. However, the amount of attractants can be reduced, by diverting or segregating organics (food waste, scraps etc.) from other waste, to be properly managed.

“Organic” is a term used to describe a wide variety of materials that decompose. Not all organic materials, like leather and solid wood, are easily compostable. Organics such as paper, cardboard, food waste, yard waste, and even wood chips decompose easily and are compostable.



Diverting Food Waste

Diverting food waste by composting it with other compostable (organic) wastes like paper, cardboard, or yard waste will greatly reduce odours from the SWF. Developing a community wide composting program should be a collaborative effort with residents as part of a longer-term plan. Community members will need to separate food waste from their general household waste to allow for separate collection. A composting area will need to be created and be properly fenced to ensure animals are not able to scavenge the food waste at any stage of the composting process. Food waste breaks down (decomposes) faster when composted in comparison to disposal in a SWF, thereby reducing the time it is an active attractant for wildlife. Composting also has additional advantages. For instance, decomposition of organic wastes in a SWF in the absence of air generates methane, a greenhouse gas (GHG) that is 28 times more potent than carbon dioxide on a 100 year scale¹. Composting not only reduces GHG emissions, but also significantly reduces the wastewater a SWF releases (called leachate).

Segregating Food Waste

In communities where composting cannot be immediately implemented, improving waste segregation is another action to reduce attractants in a SWF. Segregating the collection and disposal of food waste from other MSW can reduce the surface area that needs daily cover, and the area that requires fencing. At a minimum, domestic household garbage that contains food wastes needs a designated disposal area that is covered and compacted daily.

Covering Waste

Covering MSW regularly is essential to minimize odours, reduce wildlife attractants and restrict access to waste. In addition, covering waste also reduces windblown debris and leachate. Pushing and compacting MSW regularly to maintain a small working face will reduce the amount of cover needed. Waste is typically covered by granular material but there are alternative forms of daily cover. This is discussed in the following sub-sections.

Granular Material

Conventionally, granular materials are used to cover the waste at SWFs to minimize odours as well as environmental and public health risks. For best results, cover needs to be applied on days waste is received at the facility. Pushing and compacting waste before cover is applied will help contain the waste, reduce water intrusion, as well as extend the life of the SWF.

Alternate Daily Cover

Different types of alternative daily cover (ADC) may be more feasible in communities where granular materials are costly or difficult to find. ADC is any material or object, other than earthen material placed on the surface of the active face of a SWF at the end of each operating day to control fires, odors, blowing litter, and scavenging. Table A lists some of the ADC options for northern and remote communities.

¹IPCC (2013). Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA. (pp 1535).

Restricting Access

Restricting access to the SWF is essential to prevent irresponsible and/or illegal dumping, and unwanted access of humans and wildlife. Restricting public access to operational hours allows staff to ensure attractants and wastes are being managed properly.

Fencing

There are many different types of fencing that can be found at SWFs. Litter fences can be made with netting to catch windblown debris. Chain link fences are sturdier and better as a physical barrier to entry of wildlife but are more costly.

Electric fencing is a cost-effective method to prevent wildlife access to SWFs. Electrical fencing combined with a chain-link fence is the most effective and strongly recommended fencing technique, as it reduces the maintenance costs and prevents short-circuits caused by garbage or wind-blown debris getting stuck on electrical fencing. For best results fences must be designed to reduce wildlife (especially bear) access to SWFs. To keep wildlife out, perimeter fences around facilities must:

- be constructed of permanent posts, galvanized high tensile steel wire, and sufficient grounding to ensure maximum conductivity;
- completely surround the active disposal area of the SWF;
- have a joule rating of more than 0.7 joules and deliver at least 6000 volts; and
- include an electrified gate system that is impenetrable by bears.

Electric fences need to be powered at all times during active bear season (usually between April 1st and November 30th) and the energizer must be located within the fenced area to prevent damage by bears. The fence can be powered by a solar charged unit containing a built-in battery or a regular 120 V electrical outlet. On-site monitoring of the fence performance is typically indicated by a built-in performance meter or handheld testing device. Operators can consult with their fencing supplier for a design that is suitable to the SWF. Appendix A may be referred to for recommended specifications for electric fence design.

Bear-proof containers

Bears scavenge for food from unsecured dumpsters and household waste bins. This is a nuisance and public safety concern. As part of a wildlife-resistant solid waste disposal system, the use of bear-proof containers, especially in communities with wildlife issues will ensure that bears are not able to use them as a food source.

Hours of Operation

Specified hours of operation for when the public is allowed to enter and use the SWF will allow for more control of the facility's use. The presence of a site attendant, and appropriate signage will help ensure that wastes are disposed of in the right areas helping keep the facility in order.

Operating hours need to be communicated to the public through clear signage and other public notices. Outside of operational hours, the facility should be gated and locked. Bear-proof collection bins placed outside of the gate when the facility is closed gives residents a disposal option and helps prevent illegal dumping.

Public Education & Involvement

Community engagement is essential for minimizing human-bear conflict at SWFs.

Since solid waste facilities are frequently visited and used by the public, it is essential they are made aware of the best disposal practices to maintain public safety. Signs, posters, educational brochures, and social media campaigns can be promoted and distributed to help ensure public compliance. For instance, the signage at the SWF should guide the users of the facility where to drop off the attractant wastes safely.

It is also important to address waste collection in the community before it is taken to the SWF. At community dumpsters, informational messages should be present that alerts people to the dangers of feeding wildlife and the importance of proper waste management in reducing human-wildlife conflicts. Similar messaging should be communicated to community members where there is a curbside pickup program. Specifically, campaigns to encourage waste segregation to separate food wastes from getting mixed with other wastes, use of bear-proof containers, and disposal in a manner that restricts access to wildlife can gradually but effectively influence a change in behaviour of residents with respect to waste management. Town council meetings and/or community workshops may also be conducted to ensure community members are aware of best practices of waste handling and disposal to minimize human-bear interactions.

The ECC Bear Safety program provides additional information and guidance on bear safety measures. Communities are encouraged to collaborate with ECC and MACA to develop and communicate public education resources (see Additional Resources).

If you have more questions on how to address wildlife issues, please contact your local ECC office.

Additional Resources

Wildlife safety

NWT: www.gov.nt.ca/ecc/en/services/bear-safety

BC: <https://wildsafebc.com/resources/>
or
<https://www2.gov.bc.ca/gov/content/environment/plants-animals-ecosystems/wildlife/human-wildlife-conflict/staying-safe-around-wildlife/bears/bear-smart>

Yukon: <https://wildwise.ca/>

Get Bear Smart Society: <https://www.bearsmart.com/>

Management resources and compost standards

Alberta - Best Management Practices:
<https://open.alberta.ca/dataset/fc878d50-8751-43c9-a231-6ac27975e160/resource/c1b6255b-47c7-44f8-81de-fbadaf2df272/download/managewastefaciliitiesbearswildlife-2011.pdf>

Alberta - Standards for Composting Facilities:
<https://open.alberta.ca/dataset/b62eb735-0dfb-4e59-9aee-f5e73633734d/resource/b5e364a4-d1fb-498f-86a6-5a6a8ad0ec51/download/2007-standardscompostingfacilitiesalberta.pdf>

BC - Organic Matter Recycling Regulation:
https://www.bclaws.gov.bc.ca/civix/document/id/crbc/crbc/18_2002

Ontario - Guideline for the Production of Compost:
<https://www.ontario.ca/page/guideline-production-compost-ontario>

Solid Waste Management for Northern and Remote Communities Planning and Technical Guidance:
<https://publications.gc.ca/site/eng/9.826705/publication.html>

Table A: alternate Daily Cover (ADC) options for northern and remote communities

Alternate Daily Cover	Details	Pros	Cons
Steel plate	Series of steel plates placed over the waste at the end of the day as cover and removing them the next operating day.	<ul style="list-style-type: none"> - Durable, easy to use, minimal training required - Keeps out wildlife and birds - Fire-proof - Operation unaffected by wind 	<ul style="list-style-type: none"> - Need to be shipped into communities - Issues with snow or freezing in winter months (compost will freeze to the steel plate)
Shredded construction and demolition waste	Construction and demolition (C&D) waste is shredded at the SWF. Instead of being disposed of, the shredded material is placed on MSW at the end of the day.	<ul style="list-style-type: none"> - Alternative use for C&D waste - Material has no cost - Easy to use material 	<ul style="list-style-type: none"> - Shredder required - Regular supply of C&D waste needed
Non-reusable, geosynthetics	Less durable disposable films or fabrics intended to be left in place without retrieval. Special equipment also exists to facilitate the placement and anchoring of these materials to cover the working face of SWFs. The cover may contain pro-degradant additives to accelerate its decomposition after burial within the waste to allow fluid flow.	<ul style="list-style-type: none"> - Contains pro-degradant additives - Barrier-to-infiltration function in the top layers gives way within the SWF to allow free fluid movement - Does not need to be removed before placing more waste 	<ul style="list-style-type: none"> - Thin material could tear easily - Impact of wind could be challenging - Specific equipment required to place
Reusable geosynthetics (tarps)	Panels fabricated from these materials are placed over the working face at the end of the day, and retrieved prior to the start of the next operating day. SWFs may use standard SWF equipment or special mechanized equipment to place and retrieve panels. Tires, sandbags, or granular are placed along the edges to anchor the panels. Woven geotextiles are more commonly used than non-woven geotextiles.	<ul style="list-style-type: none"> - Preparation of working surface determines life of the panel - Litter control possible - Saves SWF airspace 	<ul style="list-style-type: none"> - Heavy panel weight makes placement and removal tedious - Thin tarps could tear easily - Impact of wind could be challenging - Typically not used when snow is predicted as retrieval could be challenging.

Fence Design Recommended Specifications

The following recommended specifications have been used in other jurisdictions, however, facility operators should consult with a fencing company to seek advice on appropriate design and construction specific to their respective SWF.

Suggestions for electric fencing include:

- Either a 12-volt portable system or 120 V AC power system can be used where AC power is available. Energizer systems specially designed for electric fences are available and should be used to ensure the safe and proper electrification of the fence.
- A minimum of seven wires spaced at approximately 15 cm, 30 cm, 45 cm, 60 cm, 80 cm, 105 cm, and 130 cm from the ground. Fence posts should be made of sturdy material (metal, fiberglass, or wood).
- The distance between posts is not critical as long as the wires remain at the indicated heights above the ground.
- A 120 cm (four-foot) ground rod should be adequate at most sites. The fence must be tested to ensure proper grounding. In areas without good grounding (i.e., loose gravel and bedrock) with no operational demands of a high-tensile fence, a portable alternating

positive/negative system can be used. Such a system relies on 6 wires spaced from the ground up at 5cm (negative), 20 cm (positive), 40 cm (negative), 60 cm (positive), 85 cm (negative) and 100 cm (positive). This installation does not require specialised equipment.

- An electrified entrance gate (using the same design as the fence) fastened with rubber fasteners, or an electrified cattle grate entrance.
- All vegetation must be cleared away from the fence area to prevent power shortage or drainage. Geotextile cloth (landscaping cloth) could be partially buried along the fence line prior to post-installation to prevent vegetative growth.
- Routine inspection and testing of the fence is required to ensure that the fence is properly working and effectively delivering shocks.

If this proves to be insufficient, additional recommendations include a 1.8 m (6 foot) chain-link fence with 2 strands of barbed-wire above the chain-link to be used in combination with the permanent electric fence. An electric fence surrounding the chain-link fence is the most effective bear and wildlife deterrent. To prevent digging, a buried mesh apron (e.g., chain link) can be buried at least 1 foot below the surface and extend approximately 1 m outward from the fence.

