

**CITY OF DAWSON**

**MUNICIPAL COMPOST**  
**PROJECT**

**REPORT**

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## **DAWSON CITY MUNICIPAL COMPOST PROJECT SUMMARY**

**A major strategy for waste reduction involves diverting waste from a landfill and transforming it into a useful product. Compost makes up approximately 50% of domestic waste (by weight) in a Yukon landfill (Yukon Environment Waste Management Report 1995). Recyclable metals, plastic and glass make up approximately 25%. Recyclable paper makes up approximately 20%. Diverting compost is one of the least expensive diversion strategies as it can be dealt with locally and the process of converting it into a useful product requires minimal intervention.**

### **OBJECTIVES:**

**Create a viable municipal compost site in Dawson.**

**Divert compostables from the landfill in order to prolong the life of the landfill, capture a nutrient rich resource, reduce greenhouse gas emissions from the landfill and reduce heavy metal leaching from the landfill.**

### **METHOD:**

**The project targeted restaurants and grocery stores during the busy summer season in order to collect a large volume of compost. A large volume of compost was required to achieve high temperatures in order to maximize what can be safely and effectively composted.**

**A preliminary survey indicated that 15/15 restaurants and grocery stores would consider participating in the project.**

**Certified compostable bags were purchased by the City and provided free of charge as an incentive for participating. The bags were pre-tested to ensure adequate strength prior to purchase.**

**The project aimed to make participation as easy as possible by providing strong compostable bags, minimizing sorting and by incorporating compost bag collection into the regular commercial garbage collection program.**

**The project began July 1, 2008 and ran until September 30, 2008. The first 2 weeks represented a staggered start and the month of September represented a staggered finish. Peak participation was for 7 weeks from July 14 till August 30, 2008.**

## RESULTS:

### Participation: *SUCCESSFUL*

- **16 businesses participated.** 13 businesses were active participants (2 grocery stores and 11 restaurants). 3 businesses were occasional participants (2 restaurants and 1 bar). 1 restaurant declined participation.
- **All year-round participants agreed they would continue collecting their compost over the winter with bags supplied.**
- **All seasonal participants agreed they would begin composting next season with bags supplied.**
- **10/16 participants stated they would be willing to continue collecting their compost when they had to purchase their own bags. These businesses represent approximately 180 large bags/boxes of compost per week during the summer season.** The other businesses were either unsure or not reachable.

### Diversion: *SUCCESSFUL*

- **Compostables make up approximately 50% of domestic garbage (by weight) in a Yukon landfill.** It is estimated that Dawson restaurants contribute approximately half of this during the summer season.
- **From July 1 – September 30 (13 weeks) a total of 2198 large bags/boxes of compost were diverted from the landfill.**
- **During the peak 7 weeks of the project (July 14 – Aug 30) an average of 217 large bags/boxes per week were diverted from the landfill.** (Range: 166 – 285 per week).

### Compost Bags: *SUCCESSFUL*

- **The compost bags were strong enough to deal with restaurant compost without breaking.**
- **The compost bags disappeared within 1-2 months.**
- **Approximately 60% of the compost bags purchased were utilized. The remaining 40% of compost bags purchased are adequate to cover all year-round participants over the winter and kick-start all seasonal participants next spring.**

### Compost Pile: *REQUIRES A STRATEGY TO DEAL WITH THE RAVENS. OTHERWISE SUCCESSFUL*

- **The compost pile did not start to accumulate until the 4<sup>th</sup> week into the project due to compost consumption by ravens during the first 3 weeks of the project. However once the pile did start to accumulate it began composting very rapidly.**
- **Trouble shooting and maintenance of the compost pile is improving rapidly (re: temperature, moisture content, oxygen and odour control).**
- **It is estimated that the current compost pile (approx. 6 ft x 10 ft) represents 1/3 of the compost that would be produced from commercial compost collection during a full summer season with the raven issue solved.**

**Collection:**

- **Compost did not represent a new volume for collection.** (If not picked up as compost, it would have been picked up as garbage).
- **However, with the current system of a single compartment collection truck, compost collection did require a duplication of stops** (one for garbage, one for compost). **This represented a significant increase in collection time. With a compartmentalized truck, the duplication of stops would be eliminated. This issue will play a factor in curbside collection of any landfill diversion initiatives** (i.e. compostables and recyclables).

**Cost: *WITHIN BUDGET* (see “Table of Commercial Compost Costs”, pg 26 for details)**

- **Total cost for the pilot project was \$11,152.67.00 (\$10,000 was budgeted).**
- **The ‘one-time only’ compost pilot project costs were \$3818.42 (\$5000 was budgeted).**
- **The anticipated additional cost for collection was \$4500. The actual cost for collection during the pilot project was \$7334.25**
- **Continuation of commercial compost collection over the winter would cost approximately \$2800. (\$2.50 per bag, approx 40 bags per mth for 7 mths). Winter collection would constitute minimal increase in work hours within the current garbage collection system (due to low winter volumes and ability to put a low volume of compost bags in the caged partition of current garbage truck). As a separate contract, commercial compost collection over the winter would constitute approximately 70 hours of work.**
- **Continuation of commercial compost collection year-round starting Spring 2009 would represent minimal additional hours of work if a compartmentalized truck were used.** It would constitute up to 155 additional hours of work for commercial garbage collection using a single compartment truck. As a separate contract, year-round commercial compost collection would constitute approximately 225 hours of work.
- **The main potential for cost recovery if municipal compost continues is cost savings by prolonging the life of the current landfill.**

**CONCLUSIONS:**

**Diverting compost from the landfill has both economic (prolonging the life of the landfill) and environmental benefits. Of all diversion initiatives, it is the simplest to achieve. The pilot project demonstrated excellent participation from restaurants and grocery stores, adequate bag strength for commercial pick-up and fast composting during the summer season. Areas for improvement include maximizing the compost return (by building a simple structure to deal with the ravens, funding for which is available through grants) and minimizing collection costs (achievable if a compartmentalized collection truck is used). Of note, the issue of a compartmentalized truck will play a factor in collection costs for any landfill diversion initiatives.**

**RECOMMENDATIONS:**

**Continue commercial compost collection for restaurants and grocery stores year-round.**

**Utilize the remaining 40% of compost bags purchased to cover the 2008/2009 winter season as well as to provide bags to ‘kick-start’ the 2009 summer season in order to continue the composting momentum.**

**Create incentives for participants to encourage their on-going participation (i.e. a window poster for participating businesses to advertise their eco-friendly composting).**

**Build an inexpensive, breathable, raven-proof structure (that is easily removed for backhoe access) to cover initial compost dumping area. Grants are available to pay for this structure.**

**Buy a compost thermometer (\$130) to monitor temperature of compost pile.**

**Incorporate winter commercial compost collection into the current commercial garbage contract.**

**Incorporate commercial compost collection into the new commercial garbage contract starting May 2009.**

**Consider ways of utilizing a compartmentalized truck for waste collection. This would decrease collection costs considerably for curbside pick-up of compost (as well as curbside pick-up of any other diversion initiatives, i.e. recyclables)**

**Incorporate the maintenance of the compost pile into the regular duties of the landfill attendant with assistance from Public Works.**

**Incorporate the overseeing of the commercial compost collection, communication with participating businesses and compost bag delivery (spring 2009) into the duties of current City staff.**

**Promote compost collection for households and community functions.**

**Consider expansion of curbside compost collection to include households in order to maximize compost diversion and minimize the carbon footprint of individual households driving to Quigley.**

# DAWSON CITY MUNICIPAL COMPOST PROJECT FULL REPORT

## OBJECTIVES:

- **create a viable municipal compost site in Dawson**
- **divert compostables from the landfill**

## WHY BOTHER:

- **Prolong the life of the landfill**
  - Compostables make up almost 50% of domestic garbage (by weight). Compostables break down much more slowly in a landfill compared to a compost facility. Diverting compostables out of the landfill could reduce domestic landfill waste by half, thus prolonging the life of the landfill.
- **Create compost, a nutrient rich resource**
  - Compost is a nutrient rich resource for landscaping, reclamation and gardening. Such a resource is wasted when compostables are buried in the landfill.
- **Reduce greenhouse gas emissions**
  - When compost goes to a landfill it composts anaerobically (without oxygen) and this produces methane which is a greenhouse gas. Methane is 21 times more potent than carbon dioxide as a greenhouse gas. Excess greenhouse gas contributes to climate change. According to Environment Canada, landfill sites account for 38% of Canada's total methane emissions. In a commercial compost facility, organics compost aerobically (with oxygen) and this does not produce methane.
- **Reduce heavy metal leaching from landfill into ground water**
  - When compostables break down anaerobically in a landfill, they increase the acidity of the landfill which significantly increases the amount of heavy metals that leach out of the landfill into the ground water.

## METHOD:

- **Large volume required therefore project focused on collection of compost from restaurants and grocery stores during the summer season.**
  - In order to **maximize a compost's capability to include all food products** (incl. meat, fish and dairy) **as well as food soiled paper products**, a municipal compost requires high temperatures (130F in the middle of the pile). **To achieve high temperatures the compost pile needs to be large** (approx 15ft base and 9 ft high). These **high temperatures also destroy bacteria that could result from composting meat and fish products. The high temperatures also destroy weed seeds, fly larvae and maggots.**
  - **In a pre-project survey, 15/15 local restaurant and grocery store owners felt they would participate.** Out of the 15 businesses verbally surveyed: 5 were enthusiastically positive, 5 agreed they would participate, 5 agreed to participate after presented with the reasoning behind the project, 0 refused to consider participating.
  
- **Strong compostable bags required for restaurants.**
  - Bags were required due to high volumes produced by restaurants and ease of incorporating into Dawson's bag oriented collection system (current outside storage bins, manual hauling, current garbage truck).
  - Only ASTM 6400 certified compost bags were considered. (Whitehorse compost facility has used biodegradable bags rather than certified compostable bags and has had great difficulty with bag remnants clogging their screening process.)
  - **"Ecosafe 6400" compost bags were chosen** due to their superior strength during preliminary testing and the proximity of the company (Vancouver) to reduce shipping costs. (Ecosafe sent some samples of their bags and several restaurants tested them before any were ordered.)
  - **Two sizes** of Ecosafe 6400 bags were chosen, **large yard size** (30x39"/33G/113L) and **tall kitchen size** (24x28"/13G/49L), based on the needs of the participants.
  - **City agreed to cover cost of the bags for the 2008 summer season as an incentive for restaurants and grocery stores to participate**
  - Horizon Distributing in Vancouver was chosen as the closest distributor. Horizon began carrying the bags the end of June, 2008 with a 20% off discount to promote the bags until July 20, 2008. Horizon provides free shipping to Whitehorse for orders over \$2000. [Large Ecosafe 6400 bags: Horizon code #46198. Tall Ecosafe 6400 bags: Horizon code #46167]
  
- **Collector agreed to collect compost bags and deposit them at compost site as part of commercial garbage collection and City agreed to compensate collector for extra work involved.**
  - Compost does not represent new volume - collector would otherwise be hauling same volume of garbage from restaurants and grocery stores whether or not segregated into compost and garbage. Recognition, however, that compost collection does require duplication of individual stops (one for garbage and one for compost) as there is no compartment system in the current garbage truck. Also recognition that there could be less than a full load of compost bags for a run to Quigley.

- Collector suggested and agreed to collect cardboard boxes of unpackaged produce from grocery stores instead of bags. Collector offered to dump contents of boxes in compost pile and then throw boxes into burn bin. (In theory, boxes could be included in compost pile but glues and resins in cardboard not good for the compost and cardboard slow to break down.)
- **Quigley Landfill site chosen for location of municipal compost** for the following reasons:
  - collector already going there (and in some cases he would collect garbage and small amount of compost in same trip)
  - already an attendant who could manage pile
  - backhoe to turn pile already present at site
  - watering tank to water pile already present at site
  - site already fenced for bears
- **City/CKS agreed to send landfill attendant to Whitehorse compost site for 2 days to learn how they manage their municipal compost pile** (also located at their landfill site).
- **Restaurants given verbal information on how to collect their compost as well as the “City of Dawson Municipal Compost Guide For Restaurants”, laminated posters for their compost bins and compost bags. Also given the “Dawson Restaurant Recycling Guide” and encouraged to increase their recycling by one category over the summer. Restaurants and grocery stores were given a thank you letter in September which included a brief summary of project as well as their average weekly compost contribution.**
- **Follow-up with participating businesses was in person**, as able. (Labour intensive, but the most effective)
- **Households encouraged to compost** (self-delivery) via City insert and the “Dawson City Municipal Compost Guide” for households.

### **PROJECT:**

**Start date July 1, 2008 till end of summer season or September 30. First 2 weeks staggered start. 7 weeks of “full” participation (July 14 to August 30). Staggered finish during month of September.**

**Project participants: 16 businesses (2 grocery stores, 13 restaurants, 1 bar)**

- **2/2 grocery stores were active participants:** General Store and Bonanza Market
- **11/13 restaurants were active participants:** Antionette’s, Drunken Goat, Downtown, Midnight Sun, Klondike Kate’s, Big Al’s (Gertie’s), Eldorado, Westmark, Yukon Queen, Sourdough Jo’s, Redheaded Bakery
- **2/13 restaurants and 1/1 bar were occasional participants:** Triple J, Aurora, plus Bombay Peggy’s
- **1 restaurant declined participation:** Riverwest (too busy to implement composting mid-season)

**RESULTS:**

- **From July 1 – September 30 a total of 2198 bags/boxes of compost were diverted from the landfill.**
- **During the peak 7 weeks of the project (July 14 – Aug 30) a total of 1516 bags/boxes of compost were diverted from the landfill. This represents an average of 217 bags/boxes per week. (Range: 166 – 285 per week).**
- **60% of the bags purchased were used during the summer pilot project (28/48 cases: 25/42 cases large bags and 3/6 cases tall bags).**
- **The compost pile did not begin to accumulate and heat up until early August. The pile was already composting after 4 weeks (by the end of August).**
  - During July, the majority of the compost collected (approximately 800 bags) was consumed by ravens. An attempt at tarping the compost pile to solve this problem failed (due to lack of oxygen to pile, difficulty removing tarp to turn pile, people dumping compost on top of tarp). The raven problem diminished after the collector changed from daily dumping to dumping 3 times per week, thus increasing the volume of bags per dump. (Perhaps dumping volume was then more than Raven's could consume). At this same time the landfill attendant started to turn the pile more frequently, therefore burying some of compost and decreasing the raven's access. During the 4 weeks of August, the pile started to accumulate and heat up (steaming from center when turned) and rapidly composting. The certified compostable bags disappeared within 1-2 months. Original estimate was 1-2 years till compost would be ready for use. Current expectation is that compost will be ready much sooner as much of the current pile composted after only 4 weeks. As of mid September, the compost pile (representing approximately 6 weeks of commercial compost) was approximately 10 ft wide and 6 ft high.

- **6/6 year-round participants** (General Store, Bonanza Market, Downtown Hotel, Eldorado Hotel, Big Al's/Gerties concession, Drunken Goat) **agreed they would continue composting throughout the winter with the bags supplied. The Arena Concession will have composting built into its contract. Aurora Inn has expressed interest in composting in their breakfast nook throughout the winter.**
- **All seasonal participants agreed they would compost next season with bags supplied.**
- **10/16 participants stated they would continue to compost even when they had to purchase their own bags. These businesses represent approx. 180 bags/boxes per week during summer season.**
- 4/16 participants were unsure if they would continue to compost when they had to purchase their own bags [Downtown (expects to be under new ownership), Eldorado (depends on cost of bags), Midnight Sun (depends on cost of bags), Sourdough Joe's]
- 2/16 participants were unable to be surveyed at the end of the project [Redheaded Bakery (left on short notice) and Triple J (not yet responded to email)]
- River West has yet to respond regarding next season.

## COMPOST BAG USAGE:

The estimate of the number of compost bags required was approximately double the number of bags actually used.

Actual bag usage during peak 7 weeks of project (July 14- Aug 30) was 31 bags per day. Estimate as of July 15<sup>th</sup> (based on staggered start info and estimates from restaurants) was 60-75 bags per day. Bag purchase was based on July 15 estimate in order to receive the 20% discount promotion which ended July 20.

- **Reason for bag usage lower than expected:**
  - 2 restaurants never managed consistent participation (Aurora and Triple J). For Aurora, too busy with mid-season start to implement the change. For Triple J, despite willingness from management, there was inconsistent willingness of staff.
  - 2 restaurants collected much less compost than they anticipated (Sourdough Jo's and Redheaded Bakery). Reason for Sourdough Joe's: too hard for servers to pull out straws and creamers when busy.
  - 1 restaurant (Klondike Kate's) maximized their compost collection but quantity turned out to be about half of what they had estimated.
  
- **Benefit of having extra bags:**
  - **ability to encourage year-round businesses to continue to collect their compost throughout the winter. Therefore continue the momentum to minimize 'drop outs' next summer. Also ability to test the bags and the compost process throughout winter months**
  - **ability to kick-start seasonal businesses with "free" bags to begin next season. Therefore businesses more likely to restart composting when they open next spring. And once started, more likely to continue even when required to purchase their own bags.**
  - **ability to give similar bag incentive to Arena Concession for 2008/2009 winter season to encourage composting**
  - **ability to give incentive to new restaurant businesses next season (consider extending to the 2 other dinner cruise boats on the Yukon River)**
  - **ability to offer compost bags for community functions**

**COSTS:** (see also “Table of Commercial Compost Costs”, pg 26)

**The cost of the pilot project was \$11,152.67 (\$10,000 was budgeted).**

**The ‘one-time only’ compost pilot project costs were \$3818.42. \$5000 had been budgeted.**

**The cost for collection was \$7334.25. (\$4500 was anticipated).**

- **Total: \$3722.36 for bags:** \$3667.08, incl. GST, plus \$55.28 Kluane freight from Whitehorse for 42 cases of large compost bags and 6 cases of tall compost bags. [\$0.67 per large bag and \$0.34 per tall bag]  
**\$2,233.42 (60% of total) for the 2008 summer pilot project.**  
**\$1,488.94 (40% of total) for the 2008/2009 winter season and a ‘kick start’ (approx. 4-6 weeks worth) for the 2009 summer season.**
- **Collection costs: \$7334.25**
  - Collector spent 102 hours collecting commercial compost from July 1- August 31, 2008 at \$55/hr is \$5610 plus GST (Total: \$5890.50)
  - Collector spent 25 hours collecting commercial compost from Sept 1-30, 2008 at \$55/hr is \$1375 plus GST (Total: \$1443.75)
  - Collector collected an average of 203 bags/boxes per week for July and August from 12 different sites.
  - Collector’s bag tally suggests that collector did separate compost collection runs for 6 days per week in July; 3-4 days per week in August and 1-2 days per week during the first two weeks of September. Collector used a separate truck to collect compost for high volume pick-up days during peak weeks of project.
  - Compost bags do not represent new volume. They would be collected as garbage, if not collected as compost. However recognition, that compost collection does require duplication of individual stops (one for garbage and one for compost) as there is not an adequate compartment system in the current garbage truck to deal with high volumes of both compost and garbage. Also recognition that there could be less than a full load of compost bags for a run to Quigley.
- **\$35.00** for “On Farm Compost Manual”
- **\$150.00** for extra hours **CKS Administrator** spent covering project coordinator’s holidays in August
- **\$200.00** contributed by City for **landfill attendant** to go to Whitehorse landfill to learn from Whitehorse compost attendant
- **\$1200.00** for **project coordinator** for formulating “Dawson City Compost Project Report” (30 hours, Sept 2- Sept 22). **Project coordinator contributed an additional 135 volunteer hours to coordinate project.** (120 volunteer hours between May 21 and July 23, 2008 and 15 volunteer hours between Sept 23 and October 7, 2008).

## ESTIMATED COST FOR CONTINUING COMMERCIAL COMPOST COLLECTION:

- **Bags: \$1,488.94** Already spent. (Have enough bags left over to cover winter and first 4-6 weeks of next summer after which businesses will be expected to buy their own compost bags).
- **\$130.00** for **compost thermometer**
- **\$0** if duties of a **Municipal Compost Coordinator** for Spring 2009 can be **incorporated into duties of current administrative staff.**
- **\$6-8k from grant funding for a simple, breathable, raven-proof structure (that is easily removed for backhoe access) to cover initial compost dumping area.** (Possibility of making use of some discarded materials i.e. pallets)
- **Collection:**

**Estimate for collection costs for winter of 2008/2009 is \$2800.00 if continues within current garbage contract (160 bags per mth at \$2.50 per bag is \$400/mth for 7 months). Estimate for collection costs for winter of 2008/2009 under a separate contract is \$3500 - \$3850/winter (based on 70 hours at \$50-\$55/hr).**

**Estimate for annual collection costs, starting May 2009, is minimal if a compartmentalized truck is used. For a single compartment collection truck, annual collection costs is estimated at \$11,250-\$12,375/yr under a separate contract (based on 225 hours at \$50-\$55/hr). Unknown if within new garbage contract.**

### **Winter Collection (Oct-April):**

- **If part of garbage contract: 0-nominal extra hours. \$0 – nominal.** No additional volume and no additional pick-up stops. One additional dumping area stop at Quigley. Compost does not represent new volume. It would be present as garbage if not present as compost. Volume will be low enough in the winter such that compost bags can be collected at same time as garbage bags. Compost bags will fit in the cage of current garbage truck.
- **If separate contract: 10 hours per month or 70 hours for winter. \$500-\$550/mth or \$3500-\$3850 for winter (based on rate of \$50-\$55/hr).**  
Represents 160 bags per month (40 bags per week) from 4-7 sites. Pick-up twice per week.

### **Summer Collection (May-Sept):**

- **If part of garbage contract: 155 hours over summer. However, offset by some decrease (unknown) in hours spent collecting garbage as volume of garbage picked up would be decreased (by volume of compost bags).**  
No additional volume. However, approximately 30-45 additional pick-up stops per week or 120-180 additional pick-up stops per month (based on duplication of 10-15 stops 3 times per week).

- **If separate contract: 155 hours over summer. \$7750-\$8525 for summer (based on rate of \$50-\$55/hr). Pick up three times per week.**

**Hourly collection estimates based on results from 2008 pilot project and extrapolation:**

- **July and August: 900 bags per month and 50 hours per month.** In 2008: Average 217 bags per week. 102 total hours of work for both months. Therefore approx. 900 bags per month and 50 hours per month for July and August.
- **September: 20 hours per month.** In 2008: 375 bags. Represents approx. 40% of bags from August. 40% of August hours is approx. 20 hours per month for September.
- **June: 20 hours per month.** Expect June to be similar to September.
- **May: 15 hours per month.** Expect May to be half way between a winter month volume and June volume.
- **October – April: 10 hours per month.** Estimate approx. 40 bags per week or 160 bags per month. This represents approximately 20% of bags from August. 20% of August hours is **10 hours per month.**

**POTENTIAL REVENUE:**

- Cost savings by **prolonging the life of the current landfill site.**
- Depending on quality (i.e. if adequate temperatures reached during composting, compost should be weed free) ability to sell compost to household gardeners, commercial gardeners, landscapers and/or mines for reclamation. **However consideration should be given to offering compost at no cost in order to promote composting.**

## PROBLEMS:

### **Compost pile problems:**

- Ravens: Problem seems to be unique to Dawson (not ever an issue in Whitehorse Possibly due to higher volumes per dump. Possibly due to more activity/heavy equipment at site). Dawson ravens were able to consume approx. 800 bags/boxes of compost delivered to the site in July.
  - Solution: Build an inexpensive, breathable, raven-proof structure (that is easily removed for backhoe access) to cover initial compost dumping area. Add sawdust or woodchips to cover the fresh compost when it is mixed into the new pile.
- difficulty coordinating compost dumping by collector with landfill attendant's ability to deal with the fresh compost (due to need for collector to dump compost on days or at times when landfill attendant not present). This problem results in ravens consuming large volumes of fresh compost.
  - Solution: raven-proof compost dumping structure, as above, would prevent the need to co-ordinate collector and attendant's schedules.
- Site not aesthetically appealing to household users or viewers
  - Solution: Incorporate a functionally pleasing deposit site for individual households. An inexpensive raven-proof dumping structure, as above, would suffice.
- non-compostables (i.e. creamers, straws, plastic bags, foil) included in the compost.
  - Solution: this problem is unavoidable. These products should easily screen out. Continue education of participants.
- non-compostables blow into compost pile
  - Solution: Raven-proof structure over initial dumping site would help diminish this. Otherwise consider fencing the entire compost site. Or ignore and allow unwanted debris to be removed during screening process.
- foul odour of compost pile
  - Solution: Have a stock pile of sawdust or wood chips (or dead leaves) to add to the fresh compost. [The composition of the compost received from the restaurants and grocery stores is high in nitrogen (food) and low in carbon (paper). This results in a foul odour. Adding a 30-50% volume of carbon (sawdust, wood, dead leaves) to the fresh compost before it is mixed into the main pile should solve this problem. If the odour persists, increase the frequency of pile turning or increase the volume of carbon added. Encourage education of trouble shooting issues with landfill attendant and Public Works. With 'trial and error', compost pile issues should sort themselves out.
- temperature of compost pile: will volume be large enough to create high enough temp's to destroy weed seeds, fly larvae, maggots, bacteria from raw meat etc.
  - Solution: purchase a compost thermometer and record temperatures. Modify compost pile to achieve target temperatures.

**Compost Bag Problems:**

- one participant (Westmark) switched mid season to degradable bags instead of compostable bags
  - Solution: keep collector educated as to which bags are acceptable and which are not and encourage collector to communicate to City if a business is using unacceptable bags. Continue reinforcing educational material for participants. Will need to remove degradable bag bits (difficult) during screening process.
- compost bags situated near coffee makers occasionally broke
  - Solution: line bottom of bag with newspaper or other paper product
- active yeast in compost bag caused bag to break:
  - Solution: only an issue for a bakery. Avoid putting active yeast in compost bag unless bag lined with paper.

**Restaurant Problems:**

- staff turnover and retraining
- inconvenience for servers as they need to pick out creamers and other non-compostables before scraping plates
- some restaurants may discontinue composting once they have to buy own bags (Sun, Eldo, Sourdough, ?Downtown depending on new ownership)
  - Solution: Supply bags throughout winter and beginning of next season to keep the momentum going. Give businesses (who compost) a sign they can post to advertise their environmental contribution. If 'drop out' becomes an issue, consider other incentives i.e. taking the commercial collection process out of the mill rate and charging for amount of garbage produced with recyclables and compost collection free of charge.

**Collection Problems:**

- duplication of stops results in increased work hours and high collection costs
  - Solution: Explore options for a compartmentalized garbage truck thus eliminating the need to duplicate individual stops.
- dependent on willingness of collector to do increased work required for compensation given
  - Solution: Incorporate compost collection into next contract for commercial pick-up. (Alternatively, create a separate contract for compost collection.)

## RECOMMENDATIONS:

### **General:**

- continue the Dawson Municipal Compost throughout the winter (to keep up momentum, test and trouble shoot winter composting issues)
- continue the Dawson Municipal Compost next summer and for years onward
- continue to promote compost collection for household use
- keep a replenished stock of the “Dawson Municipal Compost Guide” and the “Dawson Recycling Guide” at the counter of the City Office as well as the Recycling Depot and Quigley Landfill ( and any other relevant locations)
- consider a pilot project for household compost collection
- rename and re-do the signage at Quigley to reflect its purpose as a waste management site, rather than a landfill/dump.

### **Compost Pile:**

- secure a pile of sawdust and/or wood chips. Use it to add to the pile as required to balance the pile composition and help eliminate foul odour
- create an inexpensive, breathable raven-proof structure (that is easily removed for backhoe access) to cover initial compost dumping area. Such a structure would prevent the ravens’ access to freshly dumped compost. It also prevents the need to co-ordinate collector’s dumping with landfill attendant’s ability to cover and bury each dump. It also provides a more user-friendly dumping site for household users. Grants are available to cover the cost.
- create signage (i.e. “Please Dump Compost Here”) to differentiate compost dumping area from active compost pile and from windrow pile
- purchase a composting thermometer (3 foot stem and 0-200F range) to ensure adequate temperatures are being achieved to destroy bacteria, weed seeds and fly larvae
- incorporate compost maintenance into job description of landfill attendant with support from Public Works staff
- encourage landfill attendant and Public Works staff to read the “On Farm Compost Manual” to ensure understanding of maintenance issues of the compost pile as well as other trouble shooting issues (i.e. how to deal with foul odour or inadequate temperatures)
- incorporate the overseeing of commercial compost collection, communication with participants and compost bag delivery (Spring 2009) into the duties of current City staff.
- research screening options for finished compost
- research process to test quality of finished compost. Whitehorse purchases a kit out of BC to take samples and send back to BC for testing.
- discuss how to distribute/sell finished project

### Compost Bags:

- use City's extra compost bags to supply year-round participants with bags over the winter, to supply Arena Concession with bags for their 2008/2009 season, to supply seasonal businesses with bags to kick-start their 2009 season, to promote new businesses to compost and, if available, to donate to non-profit groups to encourage composting at community events ('bag-free' composting also an option for community events). The longer the momentum is continued, the more entrenched composting will become for Dawson's restaurants and grocery stores.
- continue to work with Ecosafe and GP Distributing (and/or other local distributors) to ensure a certified compostable bag supply is easily accessible next spring for local businesses to purchase

### Restaurants and Grocery Stores:

- distribute a reminder *each* spring regarding: acceptable compost bags; items which can/cannot go into compost; (and more laminated posters for their compost containers)
- design a window poster for participating businesses to advertise their eco-friendly composting as an incentive for businesses to continue composting. Distribute poster early next spring before participants run out of their 'free' compost bags
- incorporate composting (and recycling) into the contract for the Arena Concession
- educate/encourage composting at public functions (Community Christmas, potlatches, Relay for Life, Canada Day, DCMF, Moosehide Gathering, Discovery Days). Encourage bag-free composting whenever possible.

### Collection:

- Explore options for a compartmentalized garbage truck thus eliminating the need to duplicate individual stops.
- incorporate winter commercial compost collection into the current garbage contract (as minimal increased work load required). If not possible, negotiate reasonable and affordable compensation for winter compost collection as a separate contract (see Estimated Costs for Continuing Project)
- continue to have collector record a tally of how many compost bags picked up from which businesses over the winter and next summer. Have the collector deliver the tally on a monthly basis to the City. (Collector currently has tally sheets for this purpose.) This information is important to monitor success of the project as well as to monitor which participants are actually composting.
- keep collector informed as to which compost bags are acceptable and which are not and encourage collector to communicate to City if a business is using unacceptable bags.
- incorporate compost collection into next contract for commercial garbage pick-up. (Alternatively, create a separate contract for compost collection.)

**RESOURCES:**

- Yukon Environmental Programs Branch Waste Management Report (1995)
- Whitehorse Municipal Compost, started 15 years ago. Producing Grade A compost. Started with pilot project household collection of 250 bags every 2 weeks (i.e. smaller volume than Dawson pilot project)
- Peter, compost and landfill attendant at Whitehorse since the beginning of the Whitehorse municipal compost (668-1621)
- Sabine Schwieger from the Environmental Services Dept of the City of Whitehorse (668-8312)
- Joy Snider, Raven Recycling (667-7269 x25)
- Public Works, City of Whitehorse (668-8351)
- Shannon Ripley, Yellowknife Centralized Composting Pilot Project Study (867) 873-6019
- municipal compost in Durham, Ontario
- “On-Farm Composting Handbook”, Natural Resource, Engineering and Agricultural Service (NRAES), Ithaca, New York.
- “Alberta Mid-Scale Composting Manual”
- Composting Council of Canada

## EXTRA COMPOST BAGS

**Extra bags need to be stored in a cool, dry place in their original packaging.** Once a package is opened the shelf life of the bags is 9 months. However, **unopened, the shelf life is several years.** Ecosafe expects this to be the case even if the bags freeze over the winter. (Each package is stamped with the date it was manufactured.) **If the bags age prematurely, Ecosafe will replace the bags.** [Contact: Phil Ragan, Plastics Solutions Inc., Director, Market Development, 604 323 4743 (direct), pragan@ecosafeplastics.com]

**42 cases of large bags (30x39"/33G/113L) and 6 cases of tall bags (24x28"/13G/49L) were purchased by the City. Several packages of large and tall bags were donated by the company. 25 cases of large bags and 3 cases of tall bags were used between July 1 and September 30, 2008. (This represents approximately 60% of the bags purchased.)**

**By mid September there were an extra:**

- 17 ½ cases large compost bags
- 3 cases plus 9 packages of tall kitchen bags

**The extra bags were distributed in mid September 2008 as follows:**

**5 cases of large bags and 2 cases of tall bags were given to year-round business for their winter season and to kick start summer season (May and June):**

- **Aurora Inn:** 0 given. Has several (approx. 3 pkgs large and 2 pkg's tall) packages of tall kitchen bags left over from summer
- **Bonanza Market:** 1 ½ cases of tall bags given
- **General Store:** 0 given (uses boxes only)
- **Drunken Goat:** 15 pkg's of tall bags given
- **Downtown:** 2 cases of large bags given
- **Big Al's:** 1 case of large bags given
- **Eldorado:** 2 cases of large bags given

**4 ½ cases of large bags were given to the following seasonal businesses to kick-start summer season (May and June, 2009):**

- **Antionette's** (reopens May): 12 packages large bags given
- **Klondike Kate's** (reopens April): 2 cases large bags given
- **Westmark** (reopens May): 2 cases large bags given

**The remaining 8 cases large bags and 1 case of tall bags are stored at the City (Public Works) for distribution as follows:**

- **Arena Concession** (Nov – April): 2 cases large
- **Midnight Sun** (reopens last week April): 1 case large
- **Yukon Queen** (reopens May): If they compost: ½ case large [They already have 4 pkg's large.]
- **Sourdough Joe's** (reopens May): If they compost: 1 case large. [They already have 4 pkg's large.]
- **Aurora** (Rest reopens May): If they compost: 1 case large (+/- a few pkg's tall)
- **Triple J** (reopens May): If they compost: 1 case large (unsure if they have any leftover bags)
- **River West**: If they compost: ½ case large and ½ case tall
- **Bombay Peggy's**: a few pkg's of tall

**This leaves: 1+case Large and a few pkgs tall for any new business (+/-2 other dinner cruise boats on the Yukon River)**

## RECYCLING RECOMMENDATIONS FOR RESTAURANTS

During the May 2008 verbal compost survey of 15 businesses, the **13 restaurants surveyed were also asked about their recycling practices. All participating restaurants were given the “Dawson Restaurant Recycling Guide” and encouraged to increase their recycling by one category over the summer.**

### Survey Results:

- 13/13 restaurants recycled their refundables
  - 4/13 restaurants were reluctant to increase their recycling beyond refundables
  - 5/13 restaurants also recycled some non-refundables and were interested in increasing what they recycled
  - 4/13 restaurants recycled all recyclables, except for plastic film, and were interested in maximizing their recyclables

### Barriers to recycling:

- most common barrier expressed was: sorting
- storage
- rinsing
- pick-up:
  - 9/13 restaurants had a system they were happy with to deliver their recyclables to the depot. They would be interested in curbside pick-up for no increased fee.
  - 4/13 restaurants would be interested in curbside pick-up of their recyclables for a fee.

### Recommendations:

- consider a program to reduce sorting requirements for restaurants
- continue to encourage businesses to increase what they recycle by one additional category per season
- consider a Dawson City ‘Eco-Rating’ program that would allow businesses to display and advertise their rating. Could include composting, level of recycling, other environmentally friendly initiatives.

## TALLY OF TOTAL WEEKLY COMPOST COLLECTED

| <b>Week of:</b>                               | <b># bags</b> | <b># boxes</b> | <b>Total</b>   |
|---|---------------|----------------|--|
| <i>Staggered 2 week start:</i>                |               |                |  |
| July 1  | 87            | 47             | <b>134</b>   |
| July 7  | 134           | 39             | <b>173</b>   |
| <i>Full participation:</i>                    |               |                |  |
| July 14                                       | 248           | 37             | <b>285</b>   |
| July 21                                       | 181           | 37             | <b>218</b>   |
| July 28                                       | 176           | 33             | <b>209</b>   |
| August 4                                      | 138           | 28             | <b>166</b>   |
| August 11                                     | 155           | 24             | <b>179</b>   |
| August 18                                     | 196           | 55             | <b>251</b>   |
| August 25                                     | 158           | 50             | <b>208</b>   |
|   |               |                | <b>July 14-Aug 30:<br/>Total: 1516<br/>Average: 217/week</b> |
| <i>Staggered finish<br/>During September:</i> |               |                |  |
| Sept 1  | 131           | 15             | <b>146</b>   |
| Sept 8  | 88            | 16             | <b>104</b>   |
| Sept 15                                       | 30            | 7              | <b>37</b>  |
| Sept 22                                       | 52            | 18             | <b>70</b>  |
| Sept 29-Sept 30                               | 18            | 0              | <b>18</b>  |
| <b>July 1 – Sept 30<br/>Total:</b>            | <b>1792</b>   | <b>406</b>     | <b>2198</b>  |

## TALLY OF WEEKLY COMPOST COLLECTED BY RESTAURANT

|   | Estimate<br>Weekly<br>Use   | July<br>14   | July<br>21                      | July<br>28                      | Aug<br>4                    | Aug<br>11                  | Aug<br>18       | Aprx<br>Wkly<br>Use                              |    | Ag<br>25           | Sp<br>1       | Sp<br>8         | Sp<br>15  | Sp<br>22  | Sp<br>29  |
|---|-----------------------------|--|---------------------------------|---------------------------------|-----------------------------|----------------------------|-----------------|--|----|--------------------|---------------|-----------------|-----------|-----------|-----------|
| <b>Aurora</b>   | 28                          | 2  | 0                               | 0                               | 2bxs                        | 0                          | 0               | <b>0</b>   | ↓↓ | 0                  | 3             | 0               | 3         | 0         | 0         |
| <b>Antionettes</b>  | 7                           | 9  | 8                               | 8                               | 7                           | 5                          | 5               | <b>7</b>   | ↔  | 6                  | 3             | 4               | 2         | 0         | 4         |
| <b>Bonanza<br/>Market</b>                                 | 21                          | 24<br>+<br>1 bx  | 16<br>+<br>3 bxs                | 14<br>+<br>5 bxs                | 8                           | 15<br>+<br>1 bx            | 13<br>+<br>1 bx | <b>15<br/>(Tall)</b>                             | ↔  | 21<br>+<br>3<br>bx | 7<br>+<br>6bx | 10              | 3         | 10        | 9         |
| <b>Drunken<br/>Goat/Back<br/>Alley</b>                    | 7                           | 8  | 13<br>+<br>1 box                | 10                              | 7                           | 9                          | 10              | <b>10<br/>(Tall)</b>                             | ↔  | 12                 | 6             | 6               | 4         | 10        | 4         |
| <b>Downtown</b>   | 28                          | 9  | 5                               | 8                               | 6                           | 12                         | 9               | <b>8</b>   | ↓  | 8                  | 10            | 16              | 5         | 8         | 10        |
| <b>Midnight<br/>Sun</b>                                   | 14-28                       | 19   | 15                              | 21                              | 12                          | 12                         | 20              | <b>17</b>  | ↔  | 23                 | 11            | 10              | 6         | 13        | 8         |
| <b>Klondike<br/>Kates</b>                                 | 56-84                       | 47   | 35                              | 39                              | 25                          | 32                         | 48              | <b>38</b>  | ↓  | 21                 | 39            | 17              | 7         | 7         | 0         |
| <b>Big Al<br/>(Gerties)</b>                               | 7                           | 8  | 3                               | 5                               | 6                           | 5                          | 6               | <b>6</b>   | ↔  | 3                  | 2             | 3               | 0         | 4         | 2         |
| <b>Triple J</b>   | 14                          | 11   | 9                               | 4                               | 1                           | 0                          | 0               | <b>0 (-<br/>10)</b>                              | ↓↓ | 0                  | 0             | 0               | 0         | 0         | 0         |
| <b>Eldorado</b>   | 21-28                       | 5  | 22                              | 20                              | 21                          | 14                         | 25              | <b>20</b>  | ↔  | 23                 | 9             | 6               | 0         | 0         | 8         |
| <b>Westmark<br/>+<br/>Yukon<br/>Queen</b>                 | 56<br>+<br><u>7</u><br>=63  | 58   | 49                              | 45                              | 40                          | 47                         | 59              | <b>50<br/>44<br/>+<br/>6</b>                     | ↔  | 39<br>+<br>1<br>bx | 41            | 14              | 0         | 0         | 0         |
| <b>Sourdough<br/>Joe's<br/>+<br/>Redheaded<br/>Bakery</b> | 21<br>+<br><u>35</u><br>=56 | 6  | 6                               | 2                               | 4                           | 3                          | 1               | <b>4</b>   | ↓↓ | 1                  | 0             | 0               | 0         | 0         | 0         |
| <b>General<br/>Store</b>                                  | 14-49<br>boxes              | 29<br>bxs  | 33<br>bxs                       | 28<br>bxs                       | 26<br>bxs                   | 23<br>bxs                  | 54<br>bxs       | <b>32<br/>bxs</b>                                | ↔  | 46<br>bx           | 9<br>bx       | 6<br>bx         | 7<br>bx   | 18<br>bx  | 0         |
| <b>TOTAL</b>  | <b>336-420</b>              | 236<br>+46<br>bags<br>&3<br>bxs<br>July<br><u>14</u><br>=285 | <b>218</b>                      | <b>209</b>                      | <b>166</b>                  | <b>179</b>                 | <b>251</b>      | <b>(207)</b><br><br><b>True<br/>ave:<br/>218</b> |    | <b>20<br/>8</b>    | <b>146</b>    | <b>10<br/>4</b> | <b>37</b> | <b>70</b> | <b>47</b> |
| <b>Bombay<br/>Peggy's</b>                                 |                             | 2<br><i>pizza</i><br><i>bxs</i>                              | 7<br><i>pizza</i><br><i>bxs</i> | 8<br><i>pizza</i><br><i>bxs</i> | 1 T<br>+<br>1<br><i>pbx</i> | 1T<br>+<br>4<br><i>pbx</i> | 0               | <b>0-1<br/>(Tall)</b><br>+<br><b>pbx's</b>       |    | 1<br>+<br>1p<br>x  | 0             | 2               | 0         | 0         | 2         |

N.B. Pizza boxes not included in totals.

## TABLE OF COMMERCIAL COMPOST COSTS

|   | <b>July – September<br/>2008<br/>Pilot Project</b> | <b>Continuing<br/>Winter<br/>2008/2009</b>                                     | <b>Annual<br/>Starting<br/>May 2009</b>   |
|---|--|--|---|
| <b>Bags</b>   | \$2,233.42   | \$1,488.94<br>(already spent)  | \$0.00  |
| <b>Collection</b>                                   | \$7,334.25   | \$2,800.00   | \$Minimal –<br>\$12,000.00  |
| <b>Project<br/>Coordination/<br/>Administration</b> | \$1,350.00   | \$0.00   | \$0.00  |
| <b>Training<br/>Landfill Attendant</b>              | \$200.00   | \$0.00   | \$0.00  |
| <b>Incidentals</b>                                  | Compost Manual<br>\$35.00                          | Compost<br>Thermometer<br>\$130.00   | \$0.00  |
| <b>Raven-Proof<br/>Structure</b>                    | \$0.00   | \$6,000 -\$8,000<br>Grants are available for this expense.                     |   |
| <b>TOTAL</b>  | <b>\$11,152.67</b>                                 | <b>\$4,428.94</b><br>((\$1488.94 already<br>spent,<br>\$2,930.00 new<br>money) | <b>\$Minimal-\$12,000</b><br>(depending on truck)<br>plus<br>grant funds for<br>raven-proof structure |

# CITY OF DAWSON MUNICIPAL COMPOST GUIDE FOR RESTAURANTS

## THE ESSENTIALS:

Thank you for your participation.

Please read the guide to see what is and isn't acceptable in the compost. You will be surprised how much of restaurant garbage *is* compostable!

Place the laminated posters near each compost bin as reminders for staff.

Place a small garbage can next to each compost bin for those few items that are not compostable.

Please instruct servers to pull out cutlery, plastic (i.e. creamers, straws, jam containers), disposable coffee cups and foil before scraping plates into the compost container. Paper, i.e. paper napkins, is ok to go into the compost container with the plate scrapings.

Line compost bins only with the provided Ecosafe 6400 compost bags. (These bags have been tested in local restaurants and have performed well!) They do not need to be double bagged.

Maximize your use of compost bins. They work well for server stations, prep kitchens, regular kitchens, near coffee machines, behind bars (for bars with food service). The greater the volume, the more efficient the composting process.

Tie top of bag in a knot. Please do not use twist ties.

Place compost bags together on one side of your outside garbage bin. Please do not mix them up with your regular garbage bags.

Your compost will be collected regularly and frequently by Edgar Blattler who also collects your garbage.

# COMPOST GUIDE

## COMPOSTABLE IN DAWSON'S MUNICIPAL COMPOST FACILITY:

- plate scrapings
- **all** food scraps (raw or cooked) including fruit, vegetables, dairy, fish, shell fish, bones, bread, pasta, rice, tea bags, coffee grounds and filters
- cooked meat
- **small** amounts of raw meat – TRIMMINGS ONLY
- food soiled paper products including paper napkins, pizza boxes, paper plates, paper towel, flour and sugar bags, parchment paper
- wax paper and wax box board (i.e. milk and ice-cream cartons)
- certified compostable bags (must have “ASTM D6400” or “US Certified Compostable” label)

## NOT ACCEPTABLE:

- disposable coffee cups (they are lined with plastic)
- tetra-packs
- plastic (including straws, creamers, jam packs)
- foil (including butter wrappers, creamer tops, jam tops)
- oil from deep fryers
- carcasses or large amounts of raw meat
- styrofoam
- floor sweepings
- cigarettes and ashes
- toilet paper
- glass or metal
- “Degradable” and “biodegradable” garbage bags (such as Ecosafe Bio bags) that do not have the “ASTM D6400” or “US Certified Compostable” label. These bags are great for the landfill, but not the compost facility.

## WHY BOTHER?

Compostable garbage makes up almost 50% of solid waste (by weight).

When compost goes to a landfill it composts anaerobically (without oxygen) and this produces methane which is a greenhouse gas. Methane is 21 times more potent than carbon dioxide as a greenhouse gas. Excess greenhouse gas contributes to climate change. According to Environment Canada, landfill sites account for 38% of Canada's total methane emissions. In a commercial compost organics compost aerobically (with oxygen) and this does not produce methane.

When compostables break down anaerobically in a landfill, they increase the acidity of the landfill which significantly increases the amount of heavy metals that leach out of the landfill into the ground water.

Compostables break down much more slowly in a landfill compared to a compost facility. Diverting compostables out of the landfill could reduce landfill waste by half, thus prolonging the life of the landfill.

Compost is a valuable resource for landscaping, reclamation and gardening. Why waste such a resource by putting it with your garbage!

Municipal compost facilities are able to safely compost a wide range of organics, paper and wax paper. This is due to the large volumes of compost they receive, resulting in high temperatures during the composting process.

**Participation of Dawson's restaurants and grocery stores is therefore fundamental in providing high volume for efficient composting.**

## COMPOST BAGS:

The only bags acceptable in Dawson's municipal compost are those that have passed the ASTM 6400 compostable standards. These bags also carry a compostable logo from the US Composting Council.

The City of Dawson will be providing **Ecosafe 6400** compostable bags for the pilot project this summer. They are a translucent, light green colour and therefore easily distinguishable from traditional garbage bags. Extra bags can be picked up from the City Office throughout the summer at no charge.

We are also working with local distributors to be able to carry Ecosafe 6400 compostable bags in the fall, so that businesses have an easy way to purchase the bags on an on-going basis. When carried by a distributor for commercial use, the bags will be packaged with a larger volume of bags per box. Compost bags are a specialized product. Therefore they do cost more than garbage bags (approximately twice the cost).

## COMPOST BAG TIPS:

Ecosafe 6400 compost bags have a "star sealed" bottom, rather than a traditional straight bottom. This makes them stronger.

If they will be left in your garbage bucket for more than 1 or 2 days full of compost, the bags may begin to sweat, leaving condensation in the bottom of the bucket. This does not mean the bag is leaking. To minimize the condensation, line the bottom of the bucket with newspaper. If the newspaper becomes wet, the newspaper may be included with your compost. **If you change your compost bag daily, condensation should not be an issue.**

**For compost bags by coffee machines:** line the **inside** of the bottom of the bag with paper (ie newspaper). Otherwise the excessive moisture from may coffee filters and grounds can cause the bag to prematurely break.

**Ecosafe 6400 compost bags are one of the strongest compost bags available. They have been tested by several restaurants in town and have performed without difficulty.** They can manage up to 40 lbs of compost.

However, there is no compost bag as strong as a heavy duty plastic garbage bag. If you are worried that your bag may not hold the weight or if it is at

risk of puncture, i.e. from sharp bones, carry the bag with one hand supporting the bottom of the bag.

If you require extra bins for the large 30x39” compost bags, Dawson Hardware does sell a plastic garbage can that is the correct size for the large bag. (Rubmaid Roughneck, 77L, approx \$20)

If, in the unlikely event, you experience difficulty with the strength of the bags:

- consider using a traditional garbage bag as a liner in your garbage can. Transport the full compost bag within the traditional bag to your outside bin, then pull off the outside bag and re-use it as a liner. It is preferable not to double bag with compost bags as the bags do slow down the composting process. The fewer compost bags in the municipal compost, the better.
- consider transporting the compost in its bucket and then transferring the bag directly at the outside bin.

## **COLLECTION:**

The compost will be collected as part of your regular garbage collection. It will be collected on a regular and frequent basis. Please organize staff to pile the compost bags together on one side of your outside garbage bin for ease of pick-up. The collector will fill his truck with compost bags only for a run to the municipal compost facility. The collector will do a separate run for garbage bags.

**Please maximize the use of your compost.** The more compost that is diverted from the landfill, the better, from an environmental point of view. Also maximizing the number of compost bags helps provide a full truck load for collection. This minimizes collection costs. It also maximizes the frequency that your compost bags will be picked up, thus minimizing the risk of the compost bags starting to break down in the outside bin. (Full compost bags can start to break down after one week.)

**If you require additional staff training for the compost program, please contact the City of Dawson at 993-7400.**

**If you have any questions or concerns, please contact the City of Dawson at 993-7400.**

# COMPOST ONLY

## YES:

- **PLATE SCRAPINGS**
- **FOOD SCRAPS** (raw or cooked)  
fruit, vegetables, dairy, fish, shell fish,  
bones, bread, pasta, rice, tea bags, coffee  
grounds and filters, cooked meat, small  
amounts of raw meat (trimmings only)
- **FOOD SOILED PAPER PRODUCTS**  
paper napkins, pizza boxes, paper plates,  
paper towel, flour and sugar bags,  
parchment paper, etc.
- **WAX PAPER AND WAX CARTONS**  
milk and ice-cream cartons

## NO:

**COFFEE CUPS**

**TETRA-PACKS**

**PLASTIC** (straws, creamers, jam packs)

**STYROFOAM**

**FOIL** (butter wrappers, creamer tops, jam tops)

**METAL**

**GLASS**

**FLOOR SWEEPINGS**

**TOILET PAPER**

## DAWSON RESTAURANT RECYCLING GUIDE

**Please give all containers a quick cold water rinse whenever possible.**

### REFUNDABLES:

All NON-DAIRY beverage containers for water, juice, pop or alcohol

- **Plastic:** water, juice, pop bottles
- **Steel:** tomato, clamato, apple juice cans
- **Aluminum:** pop cans, beer cans, juice cans
- **Glass:** juice bottles, beer bottles, wine and liquor bottles, pop bottles
- **Tetra-packs:** juice boxes
- **Wax** juice cartons

**STEEL:** (DO NOT need to remove labels or lids)

- “tin” cans such as soup, vegetable, tuna and fruit cans
- metal lids from jars and frozen juice containers
- caps from beer bottles

### ALUMINUM:

- clean ‘tin’ foil
- clean aluminum pie plates
- foil tops from yogurt and cream cheese containers
- screw caps from some narrow necked bottles
- **NOT** other foil such as chip bags, coffee bags and candy wrappers as they are usually coated with plastic

**GLASS:** (DO NOT need to remove labels)

- glass jars and bottles
- broken dishes (In the Yukon non-refillable glass is crushed into a gravel substitute. Some is used as a sandblasting abrasive. Most is used as cover at the Whitehorse landfill. Therefore, in the Yukon, broken dishes and broken glass can also be put with the glass jars for this purpose.)

**TETRA-PACKS** (most not recycled, but stock piled and used as wind guards in Whitehorse, therefore diverted out of Quigley Landfill)

- UHT milk and soy/rice milk boxes
- “boxed” broth containers

**WAX CARTONS (ALSO COMPOSTABLE):**

- waxed milk cartons
- waxed ice cream boxes

**HARD PLASTIC** (1-3 categories):**Mixed hard plastic:**

- all hard plastic containers, regardless of the number on the bottom - even if there is no number in a triangle on the bottom, such as the clear plastic clamshell that some produce comes in
- plastic lids and rings off milk jugs and plastic bottles
- plastic cups, straws, disposable plastic cutlery
- plastic creamers (without foil top), plastic individual jam containers (without foil top)

**HELP MAXIMIZE REVENUE TO OFFSET RECYCLING COSTS BY SEPARATING OUT:**

**Cloudy milk jugs** (without lids if possible) **and 6-pack rings**  
(Otherwise they can be put with Mixed Hard Plastic)

**#1 hard plastic:** (Otherwise they can be put with Mixed Hard Plastic)

- most clear clam shell containers
- salad dressing bottles, plastic mayo jars, plastic peanut butter jars, clear vinegar bottles
- any hard plastic with '1' in triangle on bottom

**PLASTIC FILM:**

- all **clean** plastic film including: plastic bags, zip lock bags, bread bags, saran wrap, the bag that cheese or lettuce or spaghetti comes in, the plastic wrap around a magazine, even bubble wrap!
- **NOT** degradable or compostable plastic bags

Recycling can be dropped off at **Quigley Landfill** during working hours.

*Winter hours: Tues, Wed, Sat, Sun: 11 am – 6 pm*

*Summer hours: Tuesday through Saturday: Noon – 7:00 pm*

OR

at the **Dawson Recycling Depot** which is accessed from the alley between 2<sup>nd</sup> Avenue and Front St. and is located between the Fashion Nugget and Dawson Hardware. Recycling bins at the town Depot are well labeled and *accessible 24/7*. If you wish to collect money for your refundables, the Depot is open for this purpose *Saturday, Sunday, Monday: 1 pm – 5 pm and Tuesday: 3 pm – 7 pm*. **You may also donate your refundables which will help to pay for the cost of the Recycling Depot.**

# DAWSON CITY MUNICIPAL COMPOST GUIDE

Dawson City Municipal Compost Facility is located at the Quigley Landfill site.

*Winter hours: Tues, Wed, Sat, Sun: 11 am – 6 pm*

*Summer hours: Tuesday through Saturday: Noon – 7:00 pm*

Municipal compost facilities reach higher temperatures than backyard composts therefore more items can be safely composted in a municipal compost.

## **COMPOSTABLE IN THE MUNICIPAL COMPOST FACILITY:**

- plate scrapings
- food scraps (raw or cooked) including fruit, vegetables, dairy, fish, shell fish including its shell, bones, bread, pasta, rice, tea bags, coffee grounds and filters
- cooked meat
- **small** amounts of raw meat: TRIMMINGS ONLY
- **food soiled** paper products (as long as not lined with foil or plastic) including paper napkins, pizza boxes, paper plates, paper towel, flour and sugar bags, parchment paper
- wax paper and wax box board, i.e. milk and ice-cream cartons, as long as no attached plastic
- plant trimmings, leaves, grass
- sawdust and wood shavings
- **certified** compostable bags (only “ASTM D6400” or “US Certified Compostable” labels acceptable)

## **NOT ACCEPTABLE:**

- disposable coffee cups (they are lined with plastic)
- tetra-packs
- brush cuttings
- carcasses, large amounts of raw meat
- diapers and wipes, toilet paper, feminine hygiene products
- pet feces, cat litter
- floor sweepings, vacuum bag contents, dryer lint
- cigarettes and ashes
- chewing gum
- oil from deep fryers
- plastic, styrofoam, foil, glass, metal
- “Degradable” and “biodegradable” garbage bags (such as the Ecosafe Bio bags) that do not have the “ASTM D6400” or “US Certified Compostable” label. These bags are great for the landfill, but not the compost facility.

## WHY BOTHER?

Compostables make up almost 50% of domestic garbage (by weight).

Compost is a valuable resource for landscaping, reclamation and gardening. Why waste such a resource by putting it in the garbage!

Compostables break down much more slowly in a landfill compared to a compost facility. Diverting compostables out of the landfill could reduce domestic landfill waste by half, thus prolonging the life of the landfill.

When compost goes to a landfill it composts anaerobically (without oxygen) and this produces methane which is a greenhouse gas. Methane is 21 times more potent than carbon dioxide as a greenhouse gas. Excess greenhouse gas contributes to climate change. According to Environment Canada, landfill sites account for 38% of Canada's total methane emissions. In a commercial compost facility, organics compost aerobically (with oxygen) and this does not produce methane.

When compostables break down anaerobically in a landfill, they increase the acidity of the landfill which significantly increases the amount of heavy metals that leach out of the landfill into the ground water.

## HOW TO COLLECT YOUR COMPOSTABLES:

A 5-gallon bucket makes a great compost collector. Line the bottom of the bucket with some newspaper. Fill it with all the compostables listed in the guide. If you are already recycling, you will discover that the majority of your kitchen 'garbage' is actually compostable. To avoid odour, keep the lid off. Take your bucket to Quigley during operating hours and dump it into the compost pile. Rinse out your bucket and start again.

If you feel the need to use a bag in your bucket, the only bags that can go into the compost are **certified compostable bags. Only "ASTM D6400" or "US Certified Compostable" labels are acceptable.** However, compost bags do have some **limitations**. If they will not be collected within one week of use, **line the inside** of the bottom of the bag with newspaper. Otherwise, the bag may begin to break down after one week. The compost bags may "sweat" causing condensation on the inside of the bucket. (To reduce this, **line the bottom of the bucket** with newspaper also.) 'Biosak' compostable bags are certified compostable bags available at the Dawson Hardware Store. 'Ecosafe 6400' certified compost bags can be ordered through Bonanza Market.

Degradable garbage bags ('Ecosafe Bio' bags, biodegradable garbage bags available in many retail stores in Dawson) are meant for the landfill. They will disappear from the landfill in 1-3 years (as opposed to 400-1000 years for a traditional garbage bag!) They are strong and durable. **But they are not compostable, so if you choose to use biodegradable bags to collect your compost, dump the contents into the compost pile, but not the bag.**

It will take 1-2 years for Dawson's compost facility to start producing usable compost. The more it is used, the better it will be!

## MUNICIPAL COMPOST MAINTENANCE

**Maintenance of the compost pile is a balance of adequate *temperature* (steaming pile), correct *moisture* (damp but not wet) and correct *odour* (not foul).**

**THE COMPOST 'RECIPE' is a combination of:**

**Carbon (Brown/Dry):** fall leaves, wood chips (0.5-2"), sawdust, soiled boxboard, soiled paper, waxed cartons and wax paper, PLA and Bagasse containers

**Nitrogen (Green/Wet):** food waste, green grass clippings, garden clippings

**Water:** may need watering before each turning

**Oxygen:** regular turning

### TURNING AND WATERING:

**New compost needs to be mixed together within 4-7 days of arrival.**

**The compost pile should be turned with the back hoe once a week when the ambient temperature is 15C or colder. For hotter weather, the pile should be turned twice a week. If there are a lot of flies, the pile should be turned every 4 days in order to break the reproductive cycle of the flies.**

**The pile should be watered before turning, if no rain.**

### TEMPERATURE:

**The temperature in the center of the pile should ideally be 130-140F. The pile should be steaming.** The compost pile needs to be this temperature range to kill bacteria, weed seeds, fly larvae and maggots. **To achieve this temperature the pile should be 10-20 ft wide and 6-12 feet tall.** (Whitehorse aims for 15 ft wide and 9 ft tall).

**If the pile is not hot enough:** make the pile bigger (compost piles may need to be combined as they shrink) or add more grass (approx. 0.8 lbs of grass per 1.0 lb of compost) or turn the pile more frequently.

**If the pile is too hot (ash in center of pile):** turn the pile more frequently or 'fluff' the pile with 'forks' or water the pile more often or add more

sawdust/small (0.5-2.0”) woodchips/dry leaves (approx. ½ lb of sawdust/wood chips/leaves per 1.0 lb of compost).

### **MOISTURE CONTENT:**

**The compost pile should be damp, but not too wet (shouldn’t be able to squeeze out more than a drop or two of water.)**

**If the pile is too dry:** water the pile or add grass (approx. 0.8 lbs of grass per 1.0 lbs of compost).

**If the compost is too wet:** add sawdust/small woodchips/dry leaves (approx. ½ lb of sawdust/wood chips/leaves per 1.0 lb of compost).

### **ODOUR:**

**The compost pile should not have a foul odour.** If it does, turn the pile more frequently or add more sawdust/small woodchips/dry leaves (approx. ½ lb of sawdust/wood chips/leaves per 1.0 lb of compost).

### **CREATING WINDROWS:**

After the initial mixed pile seems to be correct in temperature and odour, then it is dumped onto one end of ever growing windrow. **Ideal windrow size is also 10-20 ft wide and 6-12 feet tall.** (Whitehorse aims for 15 ft wide and 9 ft tall). The windrow will shrink as it continues to compost and therefore two close areas of windrow may need to be combined to increase the size from time to time. The windrows also require regular turning, watering and temperature/moisture/odour monitoring as above.

**ADDITIONAL INFORMATION IN THE TROUBLE SHOOTING GUIDE IN THE BACK OF THE “ON-FARM COMPOSTING HANDBOOK”.**

## **ANSWERS TO SOME FREQUENTLY ASKED QUESTIONS:**

### **If you are going to use compost as landfill cover, why go to all that work, when ultimately it ends up back in the landfill?**

- decrease leaching heavy metals into ground water (see above)
- decrease green house gasses (see above)
- prolong life of landfill (organics in landfill take much longer to compost than when in compost facility)
- would have to find soil from somewhere else to use as landfill cover. Volume in landfill would be considerably higher if compost not diverted (since approx 50% of solid waste is compost). Therefore would need to find even more soil to cover the landfill if compost not diverted out.

### **Are we too small to make it work?**

**NO**

Whitehorse started about 15 years ago collecting compost every 2 weeks from 250 households. They were able to include household quantities of raw meat and fish as well as soiled paper and boxboard successfully with this volume of compost.

For our volume, it is suggested we use "static pile composting" (for volumes of 50 -1,500 tonnes per year).

### **What about winter. Won't it just freeze solid?**

**Freezing can be good.**

The compost, when set up in properly sized piles continues to produce heat in winter. In Whitehorse, albeit not as cold as Dawson, the compost pile usually is free of snow and still steaming in the winter. If colder, a blanket of snow on the pile acts as insulation. And when it does freeze, as it probably will during a Dawson winter, freezing can be actually beneficial. Freezing causes a splitting of tissue cells and this allows a big acceleration in the composting rate once spring hits. (For example, a back yard compost seems to sit as a solid frozen unchanged block from December till the end of March. However, by the end of April to find it will have all composted!) However, it is best to keep turning the pile weekly throughout as much of the winter as possible, as the more solid it freezes, the longer it will take to thaw.

### **Can you include oil from the deep friers?**

**No.**

Oil compostable, but large quantities will coat the other organics and slow the process down. Better to continue dumping the cooking oil into the landfill.

### **What about raw meat?**

Raw fish is great and speeds up the compost. Whitehorse happily accepts raw fish from fish farms.

Raw meat: Small quantities (i.e. trimmings from household or restaurant use) are ok. But large chunks take a long time to compost and may require higher temps to deal with bacteria. Therefore, no carcasses. No post-hunt moose/caribou leftovers. No grocery store quantities of raw meat. i.e. a bit is ok, but don't advertise it as a place to put raw meat. Bones from household/restaurant use ok.

### **Can you put cardboard in compost?**

**No, not for our size of compost.**

Too much glue and resins in cardboard - would contaminate compost.

(NB Apparently the price of cardboard fluctuates frequently from \$0 - \$200/tonne. With a storage facility to keep it dry, Whitehorse bails it and stockpiles it and watches the market. They back-haul it whenever the price goes up.)

### **Can you put box board and paper in compost?**

**Yes, but... only soiled/wet restaurant/household quantities. Not an option for large or dry quantities.**

Soiled/wet paper and boxboard in quantities that you would get from restaurant is fine. If add piles of dry paper/boxboard will need to add lots of water otherwise slows down composting.

Whitehorse has too much boxboard from households in their compost. Therefore, suggest only advertising it for soiled/wet paper and boxboard.

### **How much space do you need to set up a municipal compost?**

You need enough space for 2 years worth of compost. You can start harvesting during the second year.

### **Do you need a shredder?**

Whitehorse compost facility, now 15 years old, has been producing compost with a 950 CAT. They have just now bought an ALU bucket (\$40,000) to further grind/mulch it. The ALU bucket attaches on to the CAT. Apparently ALU buckets are actually used for mining.

(Does this mean we might have some used ones in Dawson?)

They are mostly getting the ALU bucket to deal with the biodegradable bags (different than compostable bags) that have not been composting as well as expected and mess up the screening process at the end. (The finished compost is screened at the end to remove the stuff that ended up there that wasn't actually compostable: apparently batteries, glass, plastic all still end up in the

compost pile) However, Whitehorse has allowed biodegradable bags in their compost since it started. Biodegradable bags have been banned from many other municipal compost facilities. They are user friendly bags but they have not met ASTM 6400 (compostable) standards.

The ALU bucket is expected to greatly speed up the composting process - by 50%.

### **Other 'how to' stuff:**

Not brush as slow to compost.

A compost pile started in May could be finished composting in Sept. Each pile should be about 3 metres high and 5 metres wide at the base.

No pad required. (Whitehorse started with an asphalt pad and the compost pile disintegrated it within 2 years)

In Whitehorse they get too much carbon from household compost (lots of cracker boxes etc, not just soiled or wet paper)

The loader/back hoe/CAT will automatically break the bags when turning the pile.

Higher grade compost needs to be screened at the end.

To determine quality of finished compost, there is a kit one gets out of BC to take samples and send back to BC for testing.

### **Cost of composting:**

Whitehorse currently deals with 1000 metric tonnes per year. For composting this amount (not incl screening), 2 people work 10 hours per week. Our volumes will of course be smaller.

The most costly part is the screening process. Screening is a 2 person job. Leasing of the equip: screen and loader to screen it is \$300/hr. Whitehorse figures it costs \$15/cu yd to screen. Not sure what equip available in Dawson and if this is a similar issue here or not. If used for landfill cover, then doesn't need to be screened.

## EXAMPLE OF THANK YOU LETTER FOR SEASONAL PARTICIPANT

September 15, 2008

**To the Josee, Wade and the staff of Klondike Kate's:**

**Thank you** for your participation in the Dawson Municipal Compost Project.

The first season of the Municipal Compost Project was successful thanks to the co-operation of Klondike Kate's and 12 other Dawson restaurants and 2 grocery stores.

Approximately 200 bags/boxes of compost were diverted from the landfill per week during July and August 2008.

Klondike Kate's produced an average of 38 bags of compost per week this summer.

As you are aware, the majority of restaurant garbage is compostable. Keeping compostables out of the landfill decreases greenhouse gas emissions and heavy metal leaching. Keeping compostables out of the landfill also captures a valuable resource for landscaping, reclamation and gardening and prolongs the life of the landfill.

After some initial trouble shooting, the municipal compost pile has started to grow and has been composting rapidly.

Please accept 2 cases of compost bags, compliments of the City of Dawson, to kick off your 2009 season.

The bags need to be stored in their original packaging in a cool, dry place over the winter. Once a package is opened the shelf life of the bags is 9 months. However, unopened, the shelf life is several years. (Each package is stamped with the date it was manufactured.) Should you discover that the bags have prematurely aged when you return next spring, Ecosafe will replace the bags. [Contact: Phil Ragan, Plastics Solutions Inc., Director, Market Development, 604 323 4743 (direct), [pragan@ecosafeplastics.com](mailto:pragan@ecosafeplastics.com)]

GP Distributing in Whitehorse is working with Ecosafe and expects to carry the Ecosafe compost bags by next season (867-667-4500). The Ecosafe compost bags can also be ordered through Horizon Distributing out of Vancouver (1-800-663-1838. Free shipping to Whitehorse for orders of \$2000 or more.)

Please remember, only certified compostable bags (stamped with "ASTM 6400" certification) are acceptable in the compost facility. Other degradable and biodegradable bags are great for the landfill, but cannot go in the compost.

We look forward to your participation in the ongoing success of Dawson's Municipal Compost in the years to come.

Should you have any comments or concerns, feel free to contact the City.

Sincerely,

Suzanne Crocker  
Dawson Municipal Compost Project Coordinator

## EXAMPLE OF THANK YOU LETTER FOR YEAR-ROUND PARTICIPANT

September 15, 2008

**To Karen, Peter, Dan and the staff of the Eldorado Hotel:**

**Thank you** for your participation in the Dawson Municipal Compost Project.

The first season of the Municipal Compost Project was successful thanks to the co-operation of the Eldorado Hotel and 12 other Dawson restaurants and 2 grocery stores.

Approximately 200 bags/boxes of compost were diverted from the landfill per week during July and August 2008.

The Eldorado Hotel produced an average of 20 bags of compost per week this summer, Dawson's third largest restaurant composter!

Please continue to collect your compost during the winter.

As you are aware, the majority of restaurant garbage is compostable. Keeping compostables out of the landfill captures a valuable resource for landscaping, reclamation and gardening and prolongs the life of the landfill. Keeping compostables out of the landfill also decreases greenhouse gas emissions and heavy metal leaching.

After some initial trouble shooting, the municipal compost pile has started to grow and has been composting rapidly.

Please accept these cases of compost bags, compliments of the City of Dawson, to cover your 2008/2009 winter season and to kick off your 2009 summer season.

The bags need to be stored in their original packaging in a cool, dry place over the winter. Once a package is opened the shelf life of the bags is 9 months. However, unopened, the shelf life is several years. (Each package is stamped with the date it was manufactured.) Should you discover that the bags have prematurely aged, Ecosafe will replace the bags. [Contact: Phil Ragan, Plastics Solutions Inc., Director, Market Development, 604 323 4743 (direct), [pragan@ecosafeplastics.com](mailto:pragan@ecosafeplastics.com)]

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Sincerely, Suzanne Crocker. Dawson Municipal Compost Project Coordinator



