

Example 2. Drinking water

The risk associated with landfill impact on a drinking water source is addressed in section C.3.2. In that section, the distance from a landfill to a known drinking water source, permanent or seasonal, is used as an indicator of the risk that the contaminants in the landfill could have an impact on the drinking water source. If a landfill is close to a drinking water source, then section C.3.2 would be assigned the maximum score (8 points). In the case of Pelly Bay, however, where the landfills are far from the drinking water source and therefore receive a relatively low score in section C.3.2, “special considerations” points may be added to address concerns that the landfills are located in the watershed for the community drinking water supply.

Example 3. Proximity to a community

In the landfill risk evaluation matrix, human exposure to a landfill is measured in the following way: people can spend time at the landfill (potential dermal exposure), they can drink water from an area near the landfill (potential ingestion), they could live very close to landfills (potential exposure through aerial transport) or they could eat animals that feed near the landfill (potential ingestion). These three considerations form section C.3 of the risk evaluation matrix. If a landfill is located near a community, there is a greater likelihood that people will spend time at the landfill than there is for landfills far from a community. It is not necessarily the case, however, that landfills near communities receive frequent visits; therefore, instead of creating a special section addressing proximity to a community, the risk of human exposure (section C.3.1) is more accurately evaluated by measuring time spent at a landfill. In these cases, however, “special considerations” points may be added to the Receptors category to address a community’s specific concerns.

ENVIRONMENTAL RISK EVALUATION MATRIX FOR LANDFILLS IN THE NUNAVUT REGION			
A.	CONTAMINANT SOURCE	Maximum Score	
A.1	LANDFILL EXTENT		
	>10,000 m ²	10	
	For areas less than 10,000 = Area of Landfill X 10 / 10 000	2-9	
	Minimum Score	1	
A.2	ESTIMATED DEPTH OF LANDFILL		
	greater than 1.5 m	5	
	less than 1.5 m	2-4	
A.3	PRESENCE OF LEACHATE		
	Evidence of Leachate	10	
	No Evidence of Leachate	0	
			10
A.4	PRESENCE OF SURFACE CONTAMINATED SOIL		
	> DCC Tier II Stains	15	
	> DCC Tier I < DCC Tier II, Stains	10	
	Contaminated suspected, no surface contamination noted	5	
			15
A.5	PRESENCE OF SURFACE DEBRIS AT LANDFILL		
	>50% of surface area	10	
	<50% of surface area, pro-rated	1-9	
	No debris observed	0	
			10
	SPECIAL CONSIDERATIONS		
		+/- 5	
			50
TOTAL SCORE - CONTAMINANT SOURCE			

ENVIRONMENTAL RISK EVALUATION MATRIX FOR LANDFILLS IN THE NUNAVUT REGION			
B.	PATHWAY/TRANSPORT MECHANISMS		Maximum Score
B.1	AERIAL TRANSPORT OF CONTAMINANTS		2
	All Landfills Scored as 2 if Surface Soil Contamination (A.4) or leachate (A.3) has been identified		
B.2	WATER MOVEMENT		
B.2.1	TOPOGRAPHY		12
	Steeply Slope (>40 % Grade)	12	
	Sloping (10% to 40% Grade)	4-11	
	Subdued to 10% Slope	2-3	
	Flat (< 3%)	1	
B.2.2	COVER MATERIALS -DEPTH		4
	No to little existing cover	4	
	Greater than 50% exposed/surface debris	3	
	Occasional exposed/surface debris	2	
	Existing cover, minimal debris,	1	
	Cover thickness > average active layer thickness	0	
B.2.3	COVER MATERIAL - TYPE		5
	No cover	5	
	Silty/Sandy Material	4	
	Sandy/Gravel Material	3	
	Gravel Material	1-2	
B.2.4	SURFACE WATER/RUN-OFF POTENTIAL		12
	Very High - evidence of erosion, continuing run-off, or wave action	12	
	High - evidence of erosion, seasonal, widespread, storm wave	10	
	Moderate - % area affected by erosion	3-9	
	Low - no evidence of erosion, slight slopes	1-2	
B.2.5	PRECIPITATION		5
	> 500 mm annual precipitation	5	
	< 500 mm annual precipitation (pro-rated)	1-4	
B.2.6	DISTANCE TO DOWNGRAIDENT PERENNIAL SURFACE/L SEASONAL DRAINAGE CHANNEL		10
	0 to 100 m	10	
	100 to 300 m	7-9	
	300 to 1 km	2-6	
	greater than 1 km	1	
	SPECIAL CONSIDERATIONS	+/- 5	
	TOTAL SCORE - PATHWAYS		50

C.	RECEPTORS	Maximum Score
C.1	POTENTIAL IMPACT ON RECEIVING FRESHWATER/MARINE HABITAT	
C.1.1	PROXIMITY TO RECEIVING FRESHWATER/MARINE HABITAT	
C.1.2	ESTIMATED HABITAT USAGE - FRESHWATER/MARINE	6
		0 to 100 m 100 to 300 m 300 to 1 km greater than 1 km
C.1.2	ESTIMATED HABITAT USAGE - FRESHWATER/MARINE	6
		High: High Biodiversity/ High Occurrence/Caving or Spawning Moderate: Moderate Biodiversity, Migratory Low: Low biodiversity; rare sightings
C.2	POTENTIAL IMPACT ON RECEIVING TERRESTRIAL HABITAT	6
C.2.1	Extent of Vegetation	Extensive vegetation growth, (80 to 100 % ground cover) Moderate vegetation growth (40 to 80% ground cover) Low vegetation growth (20 to 40% ground cover) Sparse vegetation (<20% ground cover)
C.2.2	ESTIMATED HABITAT USAGE - TERRESTRIAL/AVIFAUNA	6
		High: High Biodiversity/ High Occurrence/Caving, Denning or Moderate: Moderate Biodiversity, Migratory Low: Low biodiversity; rare sightings
C.3	POTENTIAL HUMAN EXPOSURE THROUGH LAND USE	6
C.3.1	Presence/Occupation <i>likelihood of contact</i>	Duration of contact High - Numerous visits, summer camp Moderate - occasional summer camp Low - infrequent visits or winter camp
C.3.2	Proximity to Drinking Water Source	0 to 100 m 100 to 300 m 300 to 1 km greater than 1 km
C.3.3	Food Consumption	High quantity of sedentary organisms - marine & plant life Moderate quantity of sedentary organisms - marine & plant life Low quantity of sedentary organisms - marine & plant life No consumption
	SPECIAL CONSIDERATIONS	+/-5
	TOTAL SCORE - RECEPTORS	50
	TOTAL SCORE	150

Appendix C

Disposal Requirements For Items Potentially Found At Dew Line Sites

Hazardous materials (as defined by federal or territorial legislation) will not be landfilled at the DEW sites.

The following table includes items that could be found at DEW sites and provides the treatment of these items as part of the clean-up.

Item	Disposal
Waste oil	Treat as per the DLCU Barrel Protocol/GNWT criteria
PCB-containing equipment (e.g. transformers/capacitors)	Treat as per federal regulations
Asbestos	Bag and bury according to GNWT regulations
Sewage-liquid	Treat as per wastewater discharge criteria
Sewage-solid	Treat as soil
Lead and PCB based paints	Treat as per federal regulations
Radioactive tubes	Not suitable for landfill
Scrap metal	Bury in engineered landfill on site
Radar components	Bury in engineered landfill on site
Fuel barrels	Treat as per the DLCU Barrel Protocol/GNWT criteria
Lime	Not suitable for landfill
Antifreeze	Treat as per the DLCU Barrel Protocol/GNWT criteria
Wood	Bury in engineered landfill on site
AVGAS (aviation fuel)	Treat as per the DLCU Barrel Protocol/GNWT criteria
Sulfamic acid	Not suitable for landfill.
Cathode-ray tubes and screens	Bury in engineered landfill on site
Filteron tubes	Not suitable for landfill
Oscillators	Bury in engineered landfill on site
Meters	Not suitable for landfill if PCB- or mercury-containing
Copper wire	Bury in engineered landfill on site
Transmission fluid	Treat as per the DLCU Barrel Protocol/GNWT criteria
1,1,1-trichloroethane	Not suitable for landfill
PBX telephone equipment	Bury in engineered landfill on site
Mercury vapour rectifier tubes	Not suitable for landfill
Paint thinners	Treat as per the DLCU Barrel Protocol/GNWT criteria
Batteries	Not suitable for landfill
Chlorinated hydrocarbons	Treat as per the DLCU Barrel Protocol/GNWT criteria
Corrosion inhibitors	Not suitable for landfill
Lye	Not suitable for landfill
Corrosives	Not suitable for landfill

Item	Disposal
Plastic	Bury in engineered landfill on site
Solvent	Treat as per DLCU Barrel Protocol/GNWT criteria
Dynamite	Not suitable for landfill
RF Interference filters	Bury in engineered landfill on site
Generators	Clean and bury in engineered landfill on site
Scopes	Bury in engineered landfill on site
Vehicles	Clean and bury in engineered landfill
Rubber fuel bladders	Clean and bury in engineered landfill on site
Creosote-treated poles	Bag and bury in engineered landfill on site
Compressed gas cylinders	Vent, puncture and bury in engineered landfill on site
Refrigeration equipment	Recover freon and bury in engineered landfill on site
Paper	Bury in engineered landfill on site

Appendix D

Sample Questions For Community Consultations

Habitat Considerations

- Are there fish/birds/clams in the pond/lake/bay immediately down hill of the landfill?
- Are there many different types of fish/birds/clams in the pond/lake/bay? What species have you observed in that water body?
- Does spawning or nesting occur in the pond/lake/bay?
- Do the animals in the pond/lake/bay stay all year round or are they migratory?
- Have you observed any land animals such as caribou, fox or bear at the DEW Line site? How many? Was the wildlife feeding/calving/nesting/burrowing on site or near a landfill?

Exposure Considerations

- Does the community fish in the pond/lake/bay down hill of the landfill? Where does the community fish?
- Does the community collect clams/sculpins/urchins from the lake/bay?
- Does the community hunt seal, walrus or whales from the bay?
- Does the community pick berries or use the vegetation down gradient of the landfill?
- Does the community hunt at the DEW Line site? What do they hunt?
- How often do the community residents visit the site? Do you camp there seasonally?
- Where is the camp located?
- Where is drinking water taken from on-site?

Special Considerations

- Is the community aware of this landfill? Are there any special considerations?