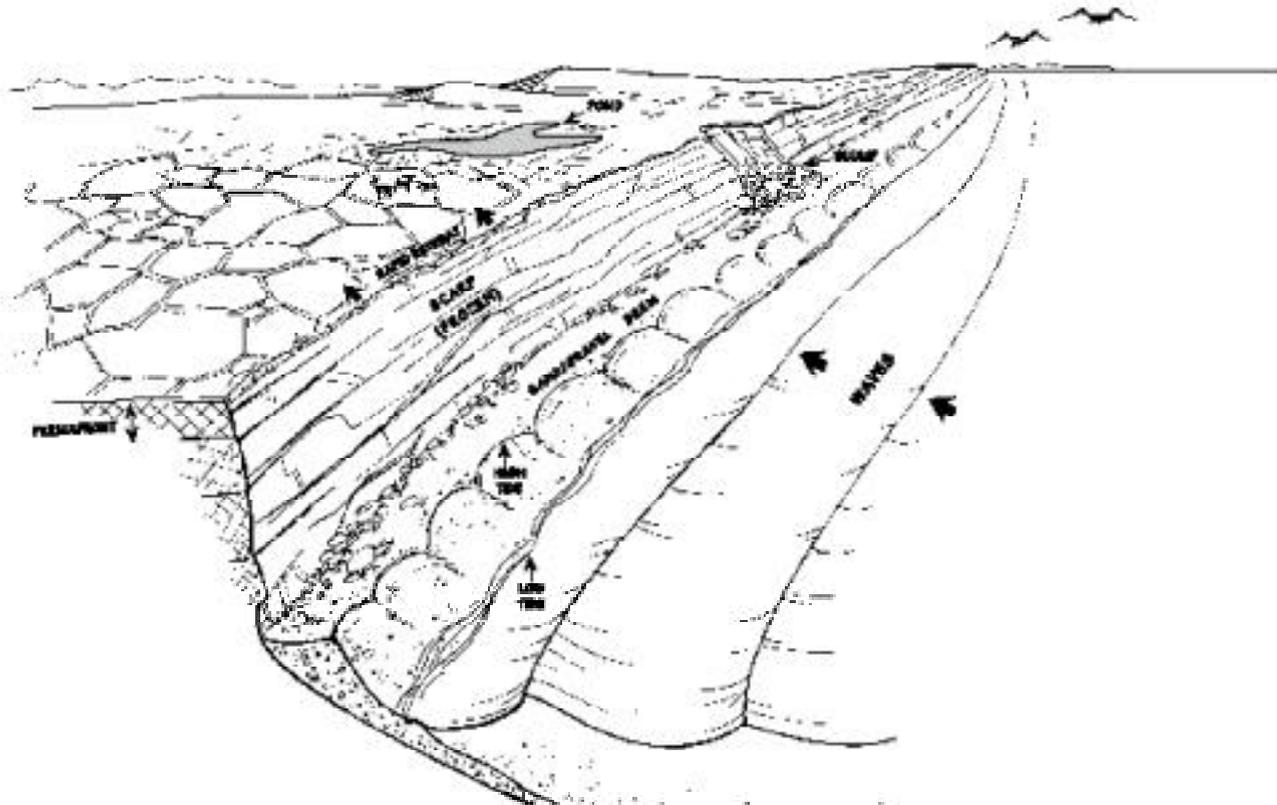


Tundra Cliffs

INTERTIDAL



INTERTIDAL

Description

- These are erosional features with tundra vegetation overlying peat and exposed ground ice or permafrost.
- Cliff heights range from less than 1 meter to as much as 5-10 meters.
- There may be a narrow beach present or just a vertical scarp.
- As the cliffs erode at rates of 0.5-4 meters/year, the vegetation and peat accumulate as fragmented and irregular blocks at the base of the cliff until they are reworked by waves.
- The vegetation on the tundra is a living plant community that is sensitive to disturbances.
- Large numbers of migratory birds can use these shorelines during the summer months.

Predicted Oil Behavior

- Oil could be stranded onshore only during the ice-free summer season.
- Oil is not likely to adhere to exposed ground ice, unless air temperatures are below freezing.
- Oil persistence on the vegetation and peat substrates would be short in most cases, due to natural cliff erosion, provided that the oil is not stranded at the onset of freeze-up.
- If the oil mixes with the peaty substrate or accumulated peat, it could create sheens until the oiled area erodes.
- Biological risks would be greatest to birds feeding along oiled cliffs in summer.

Response Considerations

- Natural peat can be used as a sorbent as long as it is taken from beach peat deposits and not the living tundra.
- Manual or mechanical removal of oil or oiled tundra/peat may be the most practical method if oil removal is required, though the peat substrate is soft and readily trampled.
- Hot-water washing or even low-pressure flushing is not appropriate because they may accelerate thermal and mechanical erosion of the ice in the cliff, triggering unexpected block falls, slumping, or mud flows.
- The cliffs are commonly undercut and naturally unstable, so worker safety is a primary concern.
- * Cleanup occurs only in the short arctic summer, a very limited window of intense ecological activity.

Response Method	Oil Category				
	I	II	III	IV	V
Natural Recovery	A	B	B	B	B
Barriers/Berms	B	B	B	B	B
Manual Oil Removal/Cleaning	D	B	B	B	B
Mechanical Oil Removal	C	C	C	C	C
Sorbents	-	B	A	A	B
Vacuum	-	-	B	A	A
Debris Removal	-	B	B	B	B
Sediment Reworking/Tilling	D	B	B	B	C
Vegetation Cutting/Removal	D	D	D	D	D
Flooding (deluge)	A	A	A	B	C
Low-pressure, Ambient Water Flushing	C	B	B	B	C
High-pressure, Ambient Water Flushing	-	-	-	-	-
Low-pressure, Hot Water Flushing	-	-	-	-	-
High-pressure, Hot Water Flushing	-	-	-	-	-
Steam Cleaning	-	-	-	-	-
Sand Blasting	-	-	-	-	-
Solidifiers	-	-	B	-	-
Shoreline Cleaning Agents	-	-	-	-	-
Nutrient Enrichment	-	B	B	C	C
Natural Microbe Seeding	-	I	I	I	I
In-situ Burning	-	-	-	-	-

Consult the *Environmental Considerations for Marine Oil Spill Response* document referenced on page 5 before using this table.

Oil Category Descriptions

- I - Gasoline products
- II - Diesel-like products and light crudes
- III - Medium grade crudes and intermediate products
- IV - Heavy crudes and residual products
- V - Non-floating oil products

The following categories are used to compare the relative environmental impact of each response method in the specific environment and habitat for each oil type. The codes in each table mean:

- A = The least adverse habitat impact.
- B = Some adverse habitat impact.
- C = Significant adverse habitat impact.
- D = The most adverse habitat impact.
- I = Insufficient information - impact or effectiveness of the method could not be evaluated.
- = Not applicable.