

D.3. Deposition of Mine Wastes in Natural Water
Bodies: A Federal Regulatory and Policy
Perspective

by
Wayne Knapp
Fisheries and Oceans Canada

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Deposition of Mine Wastes in Natural Water Bodies A Federal Regulatory and Policy Perspective

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Wayne Knapp
Water Quality Unit
Habitat and Enhancement Branch
Fisheries and Oceans Canada
Vancouver



Constitutional Jurisdiction

Fish	Federal
Habitat	Federal
Land	Provincial
Water	Provincial
Waste	Provincial



Fisheries Act Definitions

Fish (Section 2) includes:

- “the eggs, sperm, spawn, larvae, spat and juvenile stages of fish, shellfish, crustaceans and marine animals”

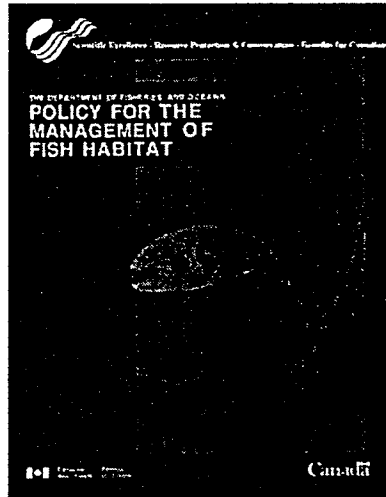
Fish Habitat (Section 34.1):

“spawning grounds and nursery, rearing, food supply and migration areas on which fish depend directly or indirectly in order to carry out their life processes”

Fisheries Act Habitat Protection (Sect 35.1)

- “no person shall carry on any work or undertaking that results in the harmful alteration, disruption or destruction of fish habitat” (HADD)
- Applies to natural and man-made habitat
- Applies only to land and water that support a fishery

Policy for the Management of Fish Habitat



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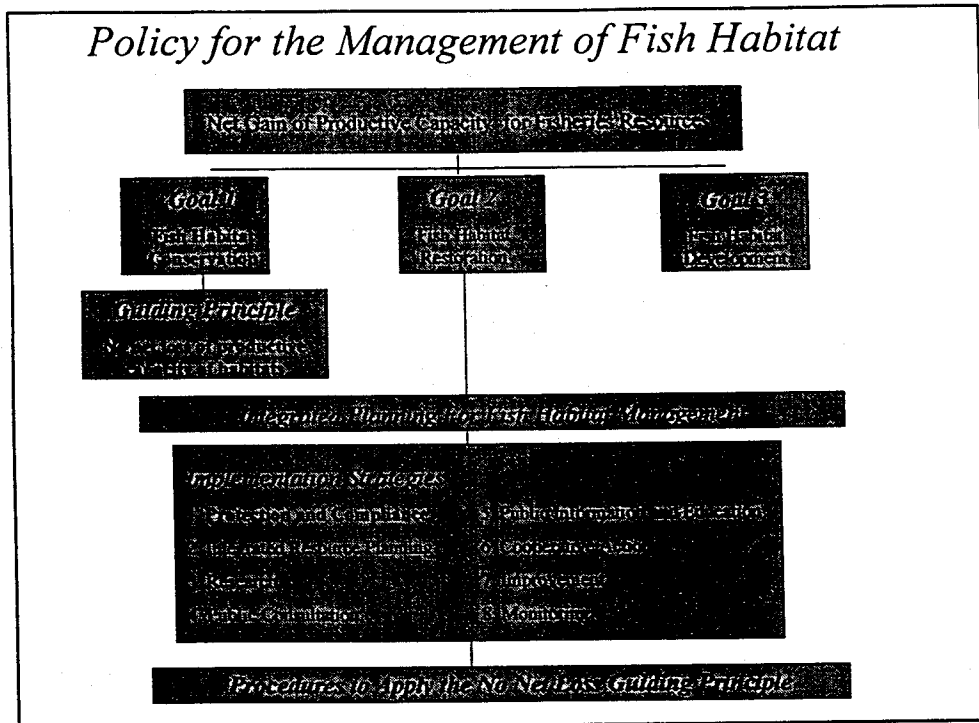
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Fish Habitat Policy and Other Policy Initiatives

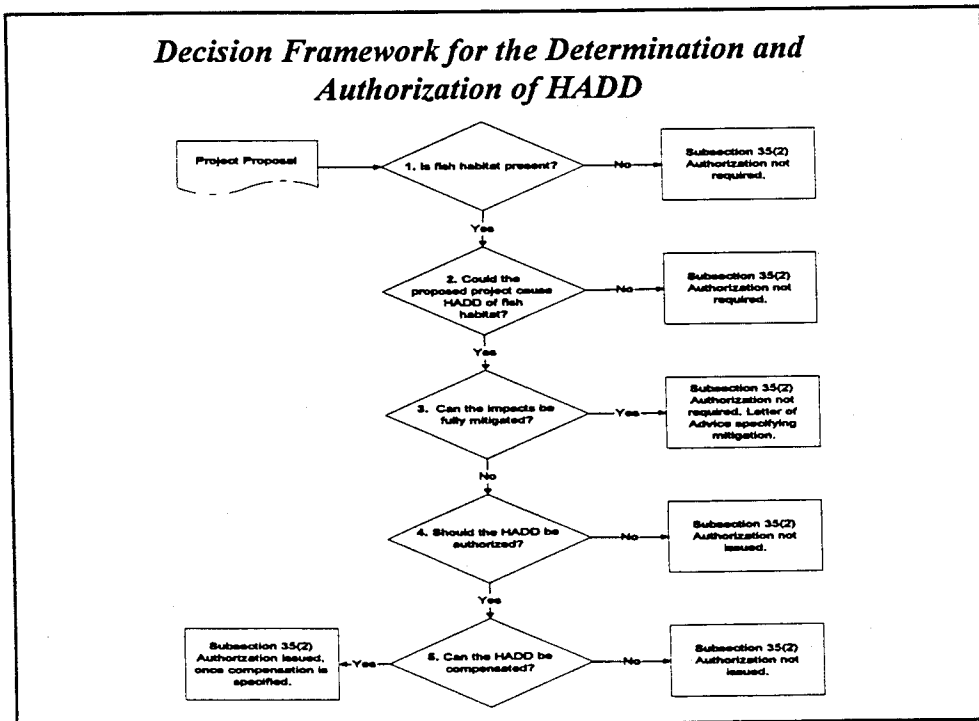
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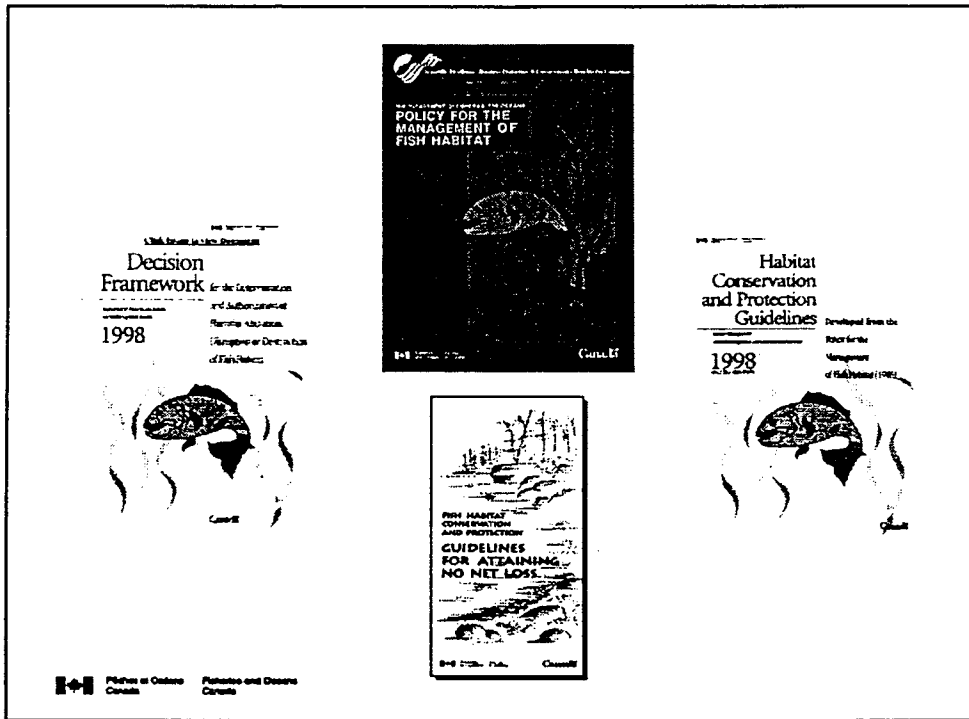
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Policy for the Management of Fish Habitat



Decision Framework for the Determination and Authorization of HADD





Fisheries Act
Pollution Prevention
(Section 36.3)

- '...no person shall deposit or permit the deposit of a deleterious substance of any type in water frequented by fish or in any place under any conditions where the deleterious substance or any other deleterious substance that results from the deposit of the deleterious substance may enter any such water.'

1986 Fish Habitat Policy Section 5.1

“Compensation options will not be possible as a means for dealing with chemical pollution and contamination problems;”

- “Reliable control techniques must be installed and operated to mitigate problems from the outset.”

Fisheries Act Regulations

- Set enforceable levels of named substances in effluents
- Based on best practical technology
- The preferred approach is to control toxic substances at source
 - 1992 Pulp and Paper Effluent Regulations
 - 1973 Petroleum refinery liquid effluent regulations
 - 1977 Metal Mining Liquid Effluent Regulations

1977 MMLER

- Limits for effluent TSS, pH, As, Cu, Ni, Pb, Zn, Ra 226
- Section 5(2): Designation of an area as a tailings impoundment

New MMER

- Apply to all metal mines
- Apply to cyanide gold mines (excluded in 1977)
- CN added as a regulated substance
- Lower TSS Limits (from 25 to 15 mg/l)
- Requires Non-Acutely Lethal Effluent
- Requires EEM

Canadian Environmental Assessment Act

- Establishes a federal environmental assessment process to achieve sustainable development by conserving and enhancing environmental quality.
- Uses environmental assessment to integrate environmental considerations into planning and decision making
- Encourages public review participation
- For mine projects, CEAA reviews are usually "harmonized" with the BC EAA.

Common CEAA Triggers

- *Fisheries Act* e.g.
 - 35(2) - harmful alteration of fish habitat
 - 5(2) MMLER - tailings area designation
- *Navigable Waters Protection Act*
 - 5(1) approval of proposed works
- *Explosives Act* (NRCan)

Potential Effects (Possible Study Topics)

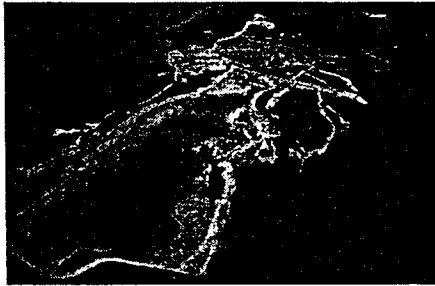
- Physical Disturbance-sediments
 - acute/chronic smothering of benthos
- Physical Disturbance-Water Column
 - increased turbidity and light attenuation
- Geochemical
 - increased dissolved metals
 - changes in sediment particle size
 - altered benthic-pelagic fluxes; metals, nutrients
- Chemical
 - increased bioavailability of metals
 - changes in chemical speciation

Potential Effects/Studies

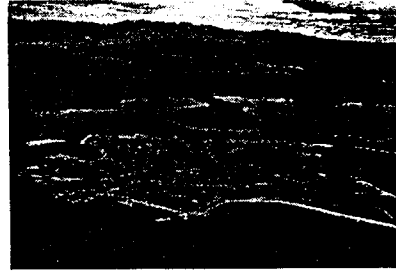
Organisms

- community changes
- behavioural responses
- clogging of fish/invertebrate gills
- impaired fitness; histopathology, immunotoxicity
- Ecological/Ecosystem
 - smothering/impairment of benthic community structures
 - effects on primary productivity
 - reductions in microhabitat diversity and ecosystem complexity

Bell Mine-Babine Lake



Granisle Mine-Babine Lk .



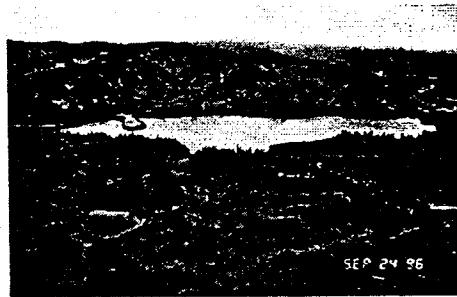
Golden Bear-Muddy Lake



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Eskay-
Albino Lake



Taseko-
Fish Lake
(Under Review)



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Unconfined Tailings Disposal

Westmin-Buttle Lake



Island Copper-Rupert Inlet



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ICM, Annual Rept.

Summary Perspectives

- Efficacy of water and saturated covers in controlling ARD is recognized
- Each proposal needs to be assessed on a site specific basis, however
 - man-made water covers & non-biologically productive, high elevation lake systems likely provide the best opportunities for waste disposal
 - unconfined tailings disposal to large productive lakes and the marine environment are prohibited

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Perspectives (cont'd)

- The habitat provisions of the *Fisheries Act* and related policies must be addressed in early project planning stages.
- Interpretations of policy application is an evolving process.
- *Fisheries Act* authorizations trigger CEEA reviews.
- Proposals involving waste disposal to fish-bearing lakes will likely require comprehensive multi-disciplinary studies and consultation.