Ice Road Stream Crossings: Fish Habitat & Passage Concerns

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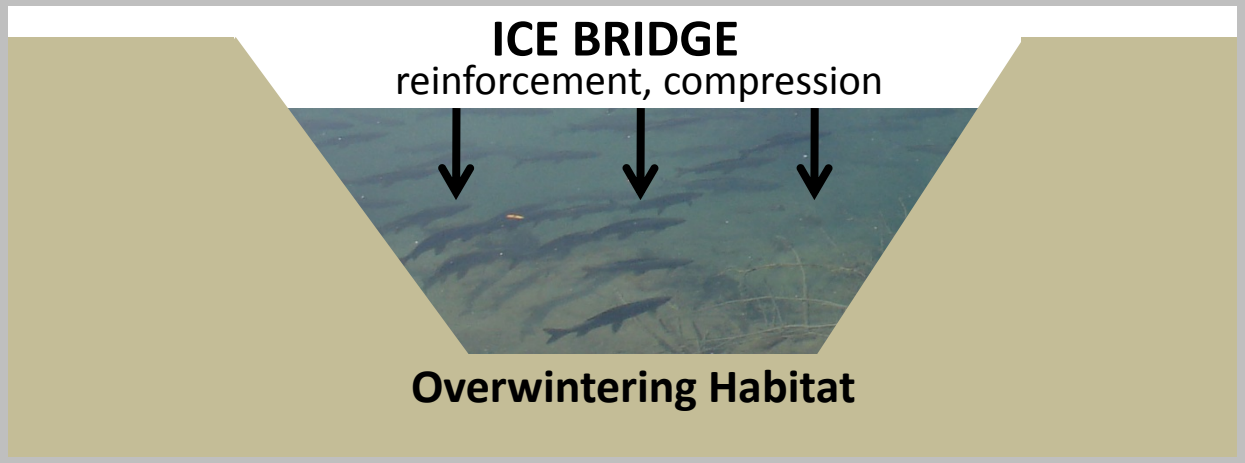
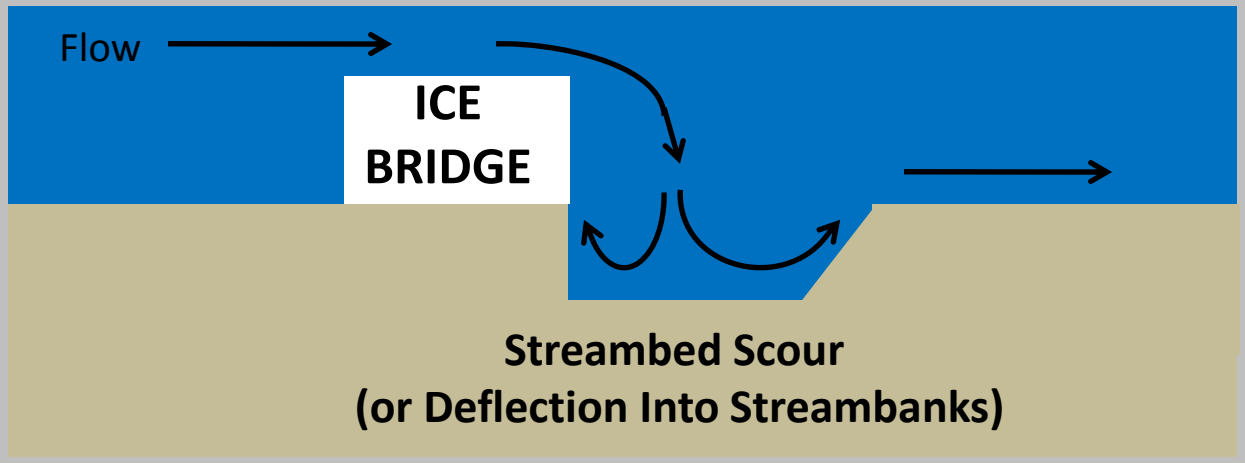
OUTLINE

- Fish Concerns
- Permits & Regulations
- Siting / Construction
- Slotting / Breaching
- General Observations

FISH CONCERNS: Physical Habitat





FISH CONCERNS: Passage

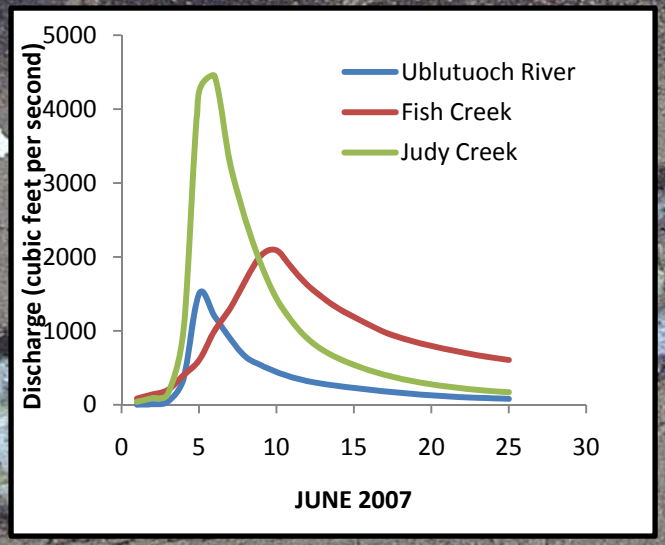
ARCTIC GRAYLING SPAWNING MIGRATION

- Spring migration strongly associated with ice breakup
  (Tripp and McCart 1974; Armstrong 1986; Blackman 2002; Morris 2003)
- Observed behaviors include swimming under the ice and congregating well before ice conditions allow free passage
  (Tack 1980; Beauchamp 1990)
- Arctic grayling continue to mature during spawning-run delays, leading to premature spawning and failure to reach upstream areas
  (Fleming and Reynolds 1991)
- If downstream areas are of lesser quality, effects could be confounded annually since Arctic grayling spawn in their natal areas
  (Hop and Gharrett 1989)
- Reduced egg viability reported for trout with postponed spawning
  (Sakai et al. 1975; Bry 1981)

FISH CONCERNS: Passage

WHITEFISH FEEDING MIGRATION

- Many broad whitefish move upstream during breakup to access productive feeding habitat
  (Bond and Erickson 1985; Chang-Kue and Jessop 1992; Morris 2003; Morris et al. 2006)
- Includes some locations only accessible during spring flooding
  (Lugas'kov and Stepanov 1988)
- Humpback whitefish and least cisco documented making similar upstream migrations early in the open-water period
  (Alt 1979; Bond and Erickson 1985)



Permits & Regulations

ADFG HABITAT DIVISION: Fish Habitat Permits

- Crossings must be slotted, breached, or weakened at end of use

BLM: Required Operating Procedures & Stipulations

- Travel up and down streambeds prohibited unless data demonstrates no additional impacts
- Crossings shall be made using a low-angle approach
- Crossings must be removed, breached, or slotted at end of use

SITING / CONSTRUCTION: What's Working

Avoiding Overwintering Habitat

2008-2009 Ice Road Stream Crossing	Ice Depth During Construction (inches)	Liquid Water Depth During Construction (inches)
Coastal Plain 1	24	0
Coastal Plain 2	0	0
Foothills 1	4	0
Foothills 2	4	0
Foothills 3	2	0
Foothills 4	2	0

SITING / CONSTRUCTION: What's Working

SITING / CONSTRUCTION: Issues

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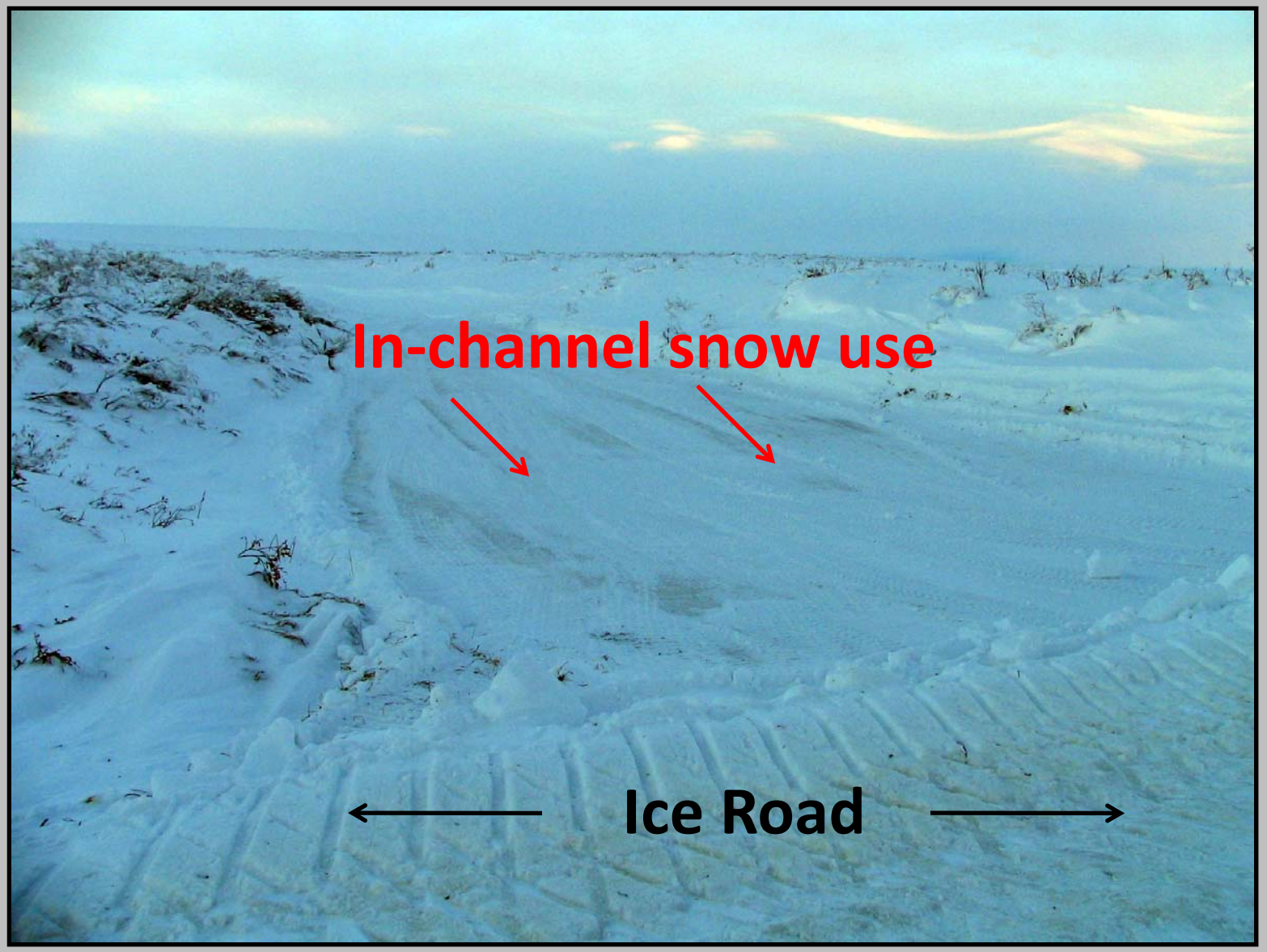

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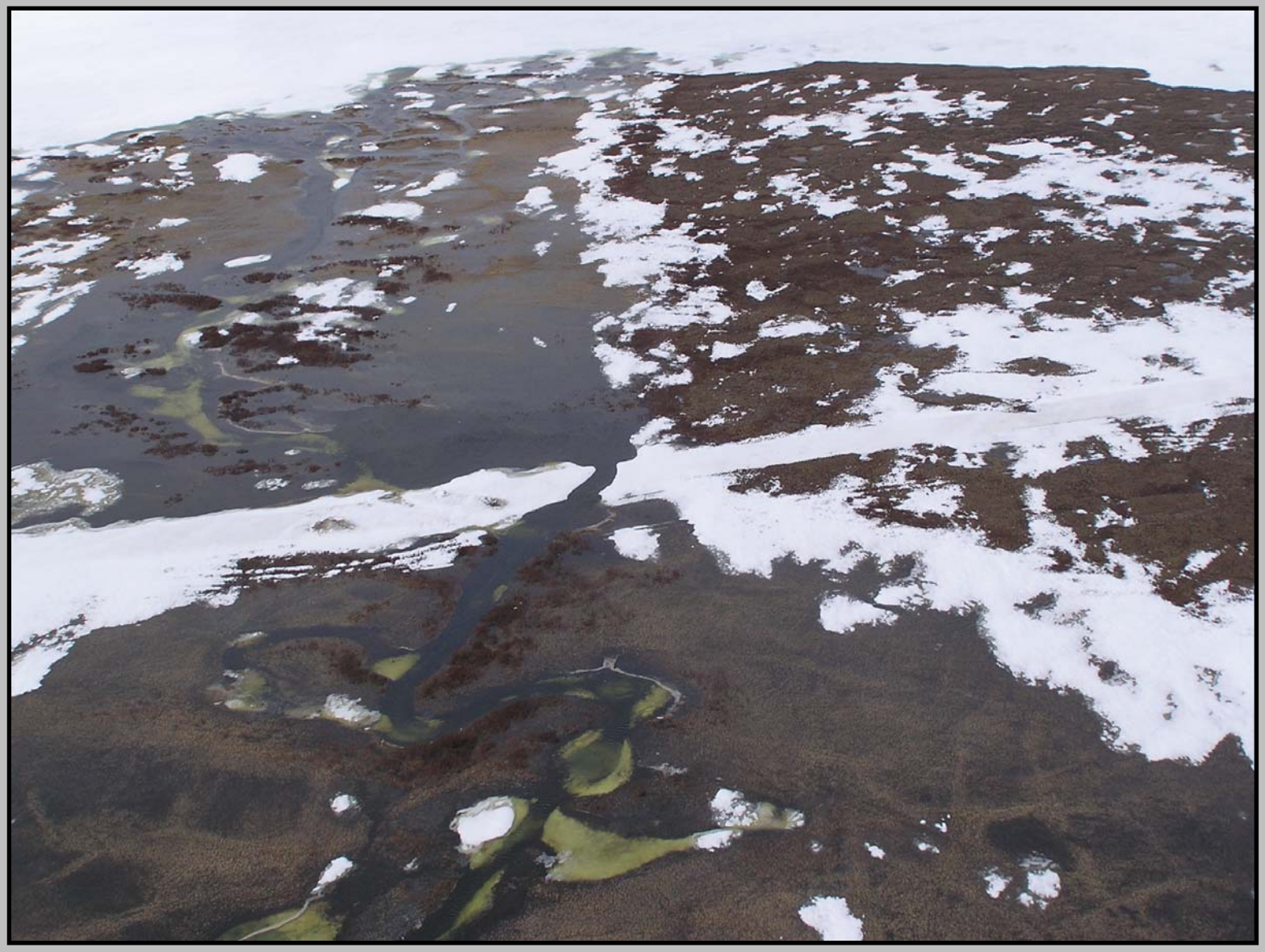

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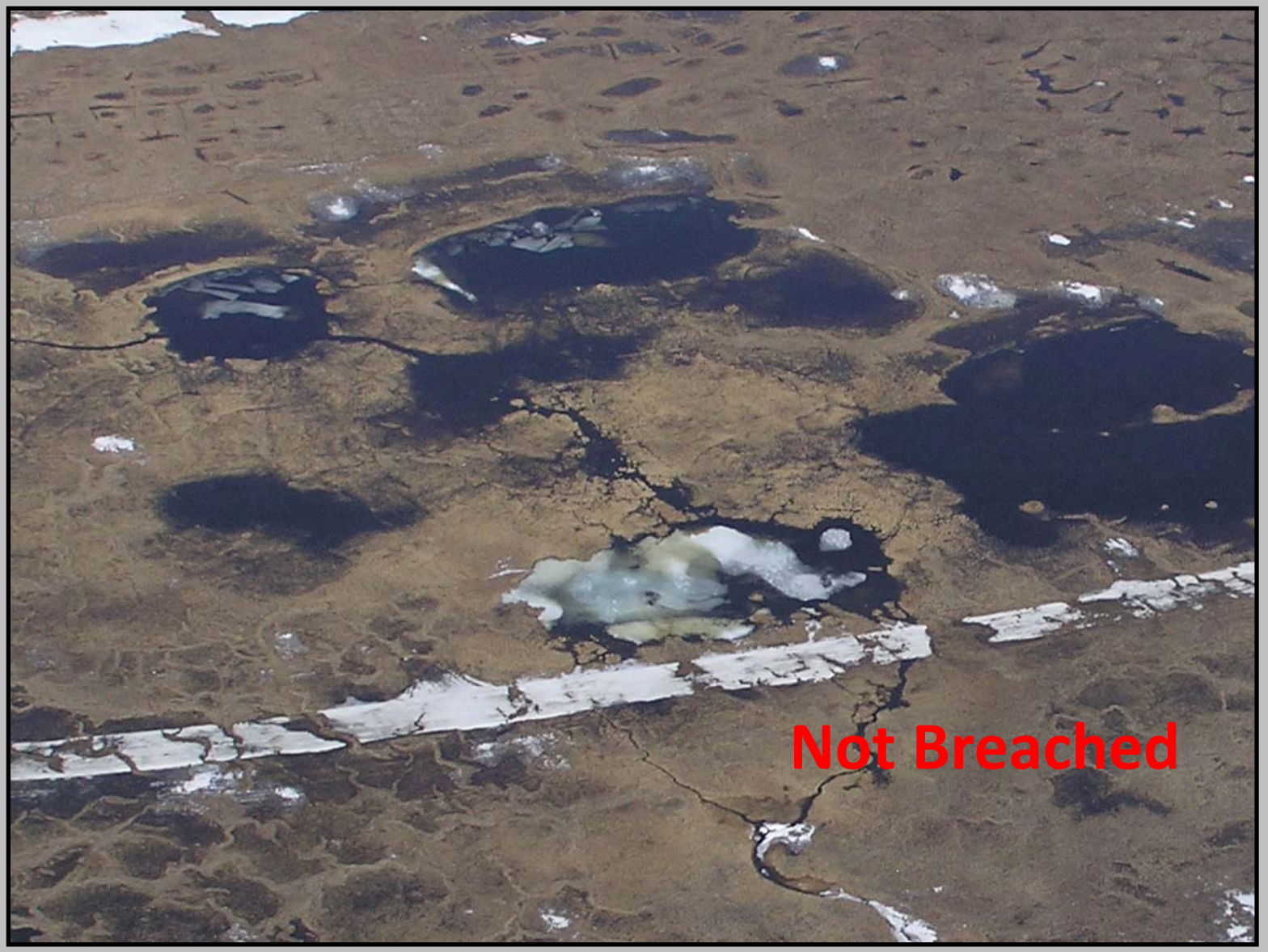

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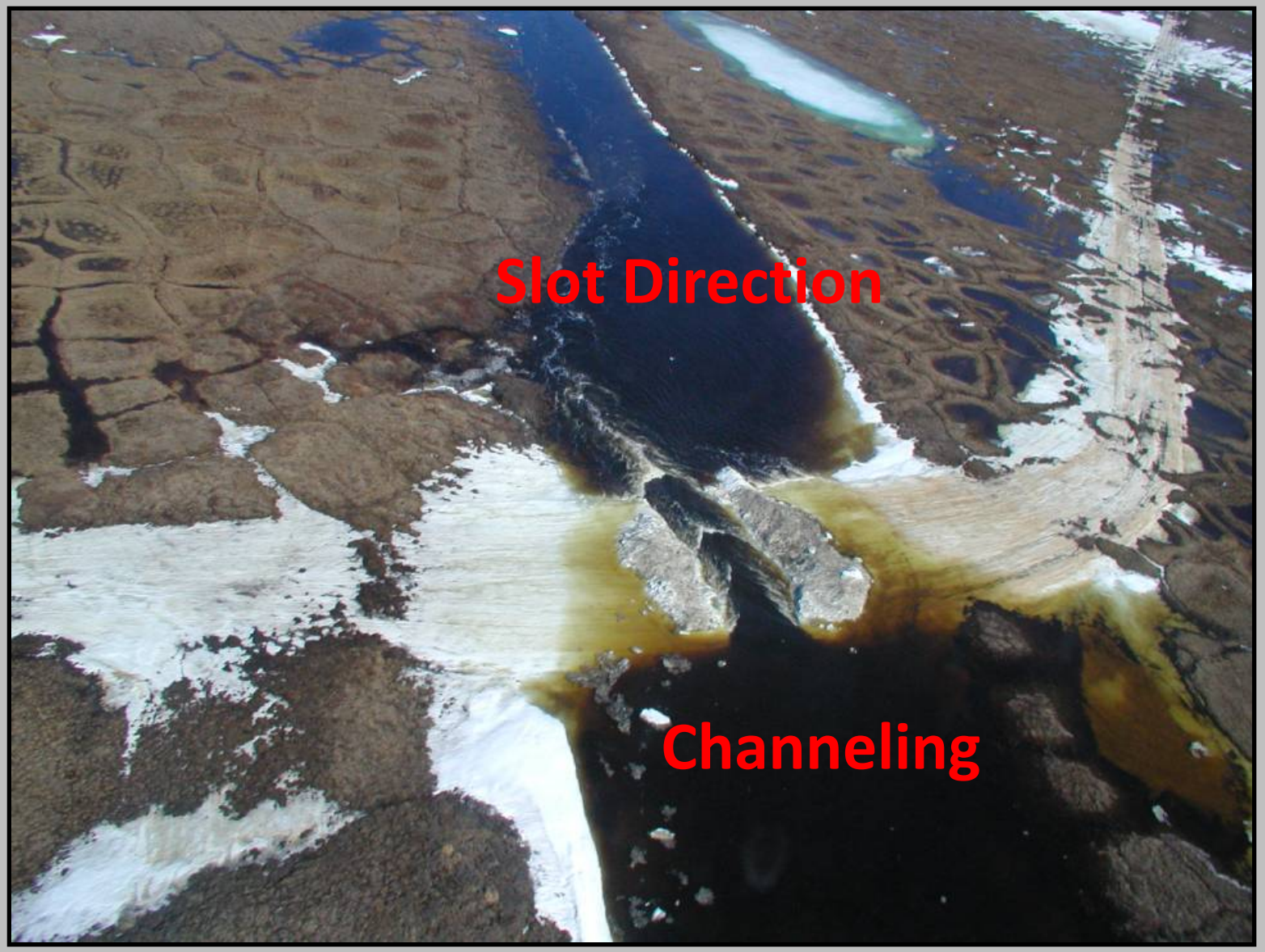

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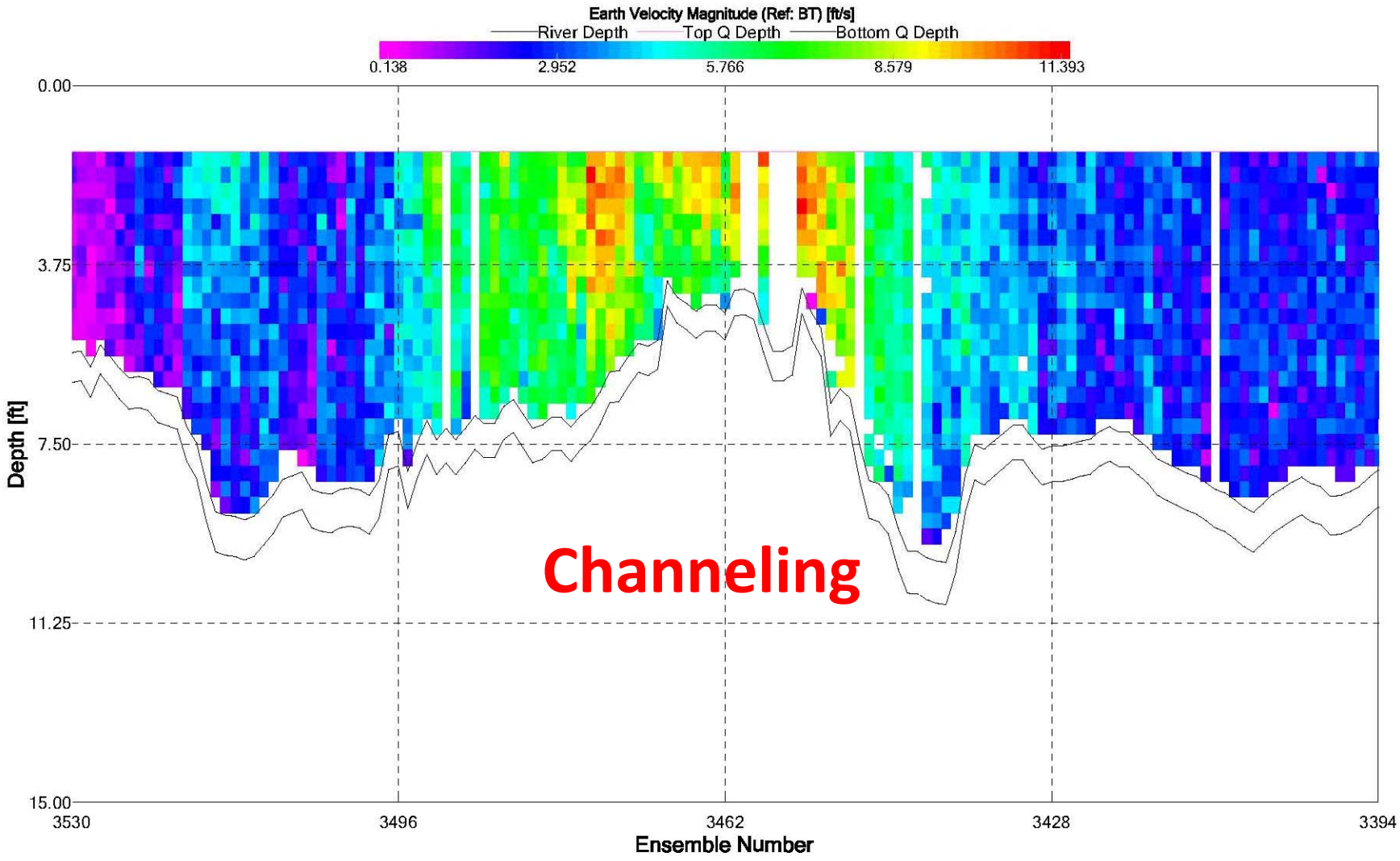

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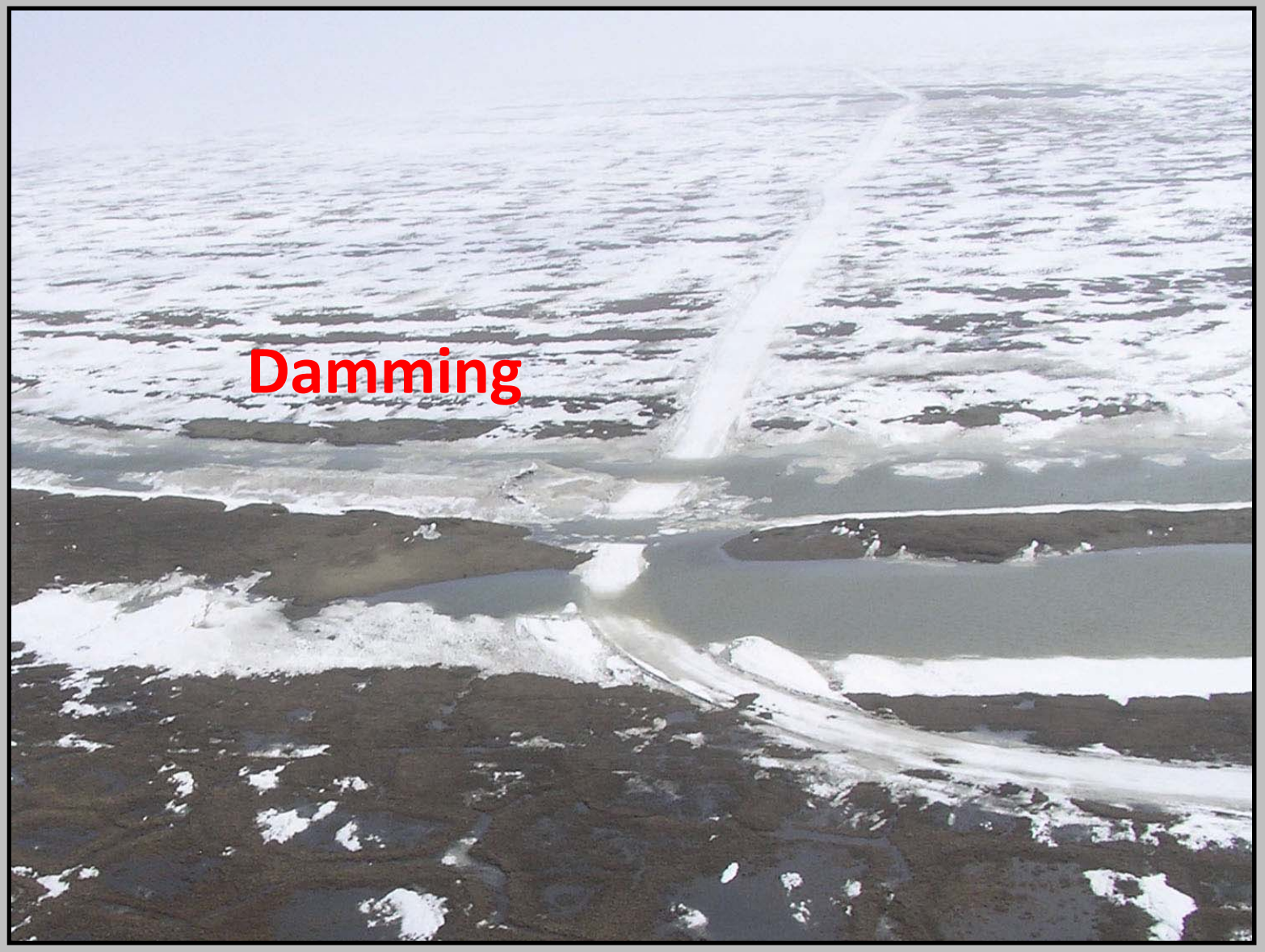

GENERAL OBSERVATIONS / COMMENTS

Most prevalent problems are due to not breaching

- Since 2004, accounts for about 85% of potential problem sites
- Most commonly overlooked are low-order/small streams

Most slotted/breached crossings appear to meet objective

- Since 2004, about 85% observed slotted sites judged as effective

- Future needs
  - Better staking during construction (especially at small streams)
  - Improved communication b/w field contractors, industry, & agencies during construction
  - Consider slotting size proportional to channel width
  - Consider surveying channel profiles at recurring sites

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QUESTIONS?