

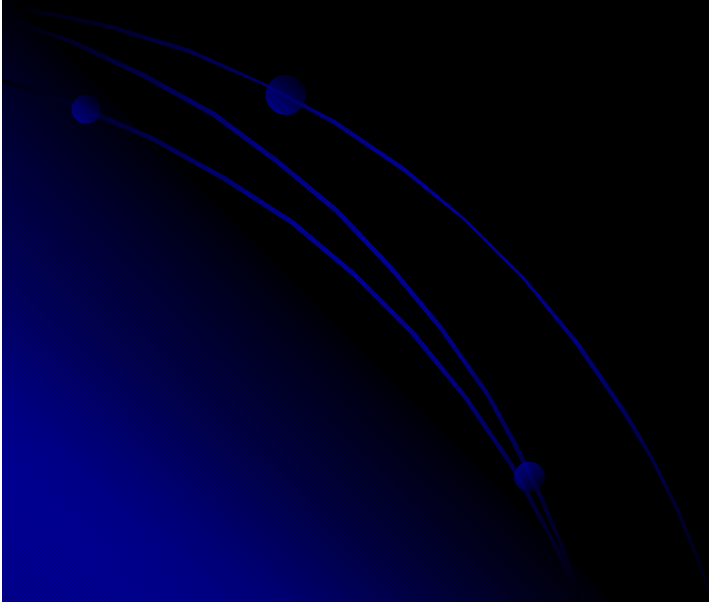
The Lake Wabamun Spill

With photographs from: Merv Fingas,
Pat Lambert, Bruce Hollebhone,
Khrishna, Deana Cymbaluk



Characteristics of the Spill

- Heavy fuel oil in freshwater
- Spill occurred in an unexpected place at an unexpected time



Lake Wabamun

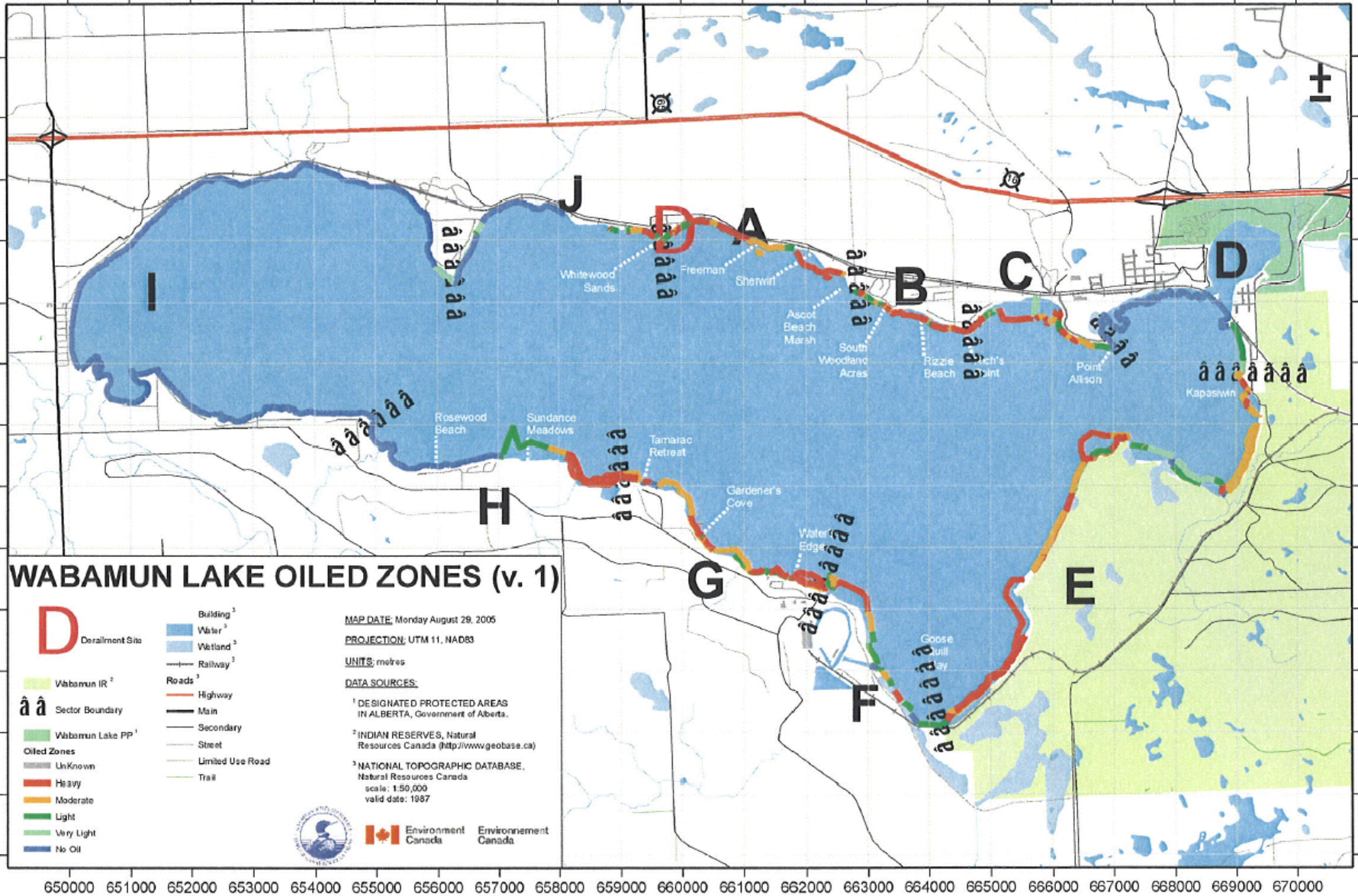
- Is close to Edmonton and several persons with cottages (houses) work in Edmonton
- **Has 4 huge power plants nearby**
- Is complicated by having a village, two power plants, an Indian reservation, a rail line and public beaches – all in close proximity
- **Is about 8 miles long and about 2 miles wide**



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The Incident

- At 10:00 August 6 Canadian National Railways had a derailment on their main east-west line through the town of Wabamun, on Lake Wabamun spilling a total of about 800,000 litres of heavy fuel oil (Bunker C) and about 90,000 litres of lube oil (then stated) (11 + 1 cars out of about 70 derailed)

The locale

- The CN main line is between the power plant, coal strip mines and cottages
- Cottages are directly on the CN right-of-way and on the lake on the other side
- The track is busy and has between 70 to 100 trains per day and each train is about 100 to 200 cars



PIERCE
LD CAP 150,000 LB 04550 RR
LT WT 72,200 LB 32750 RR
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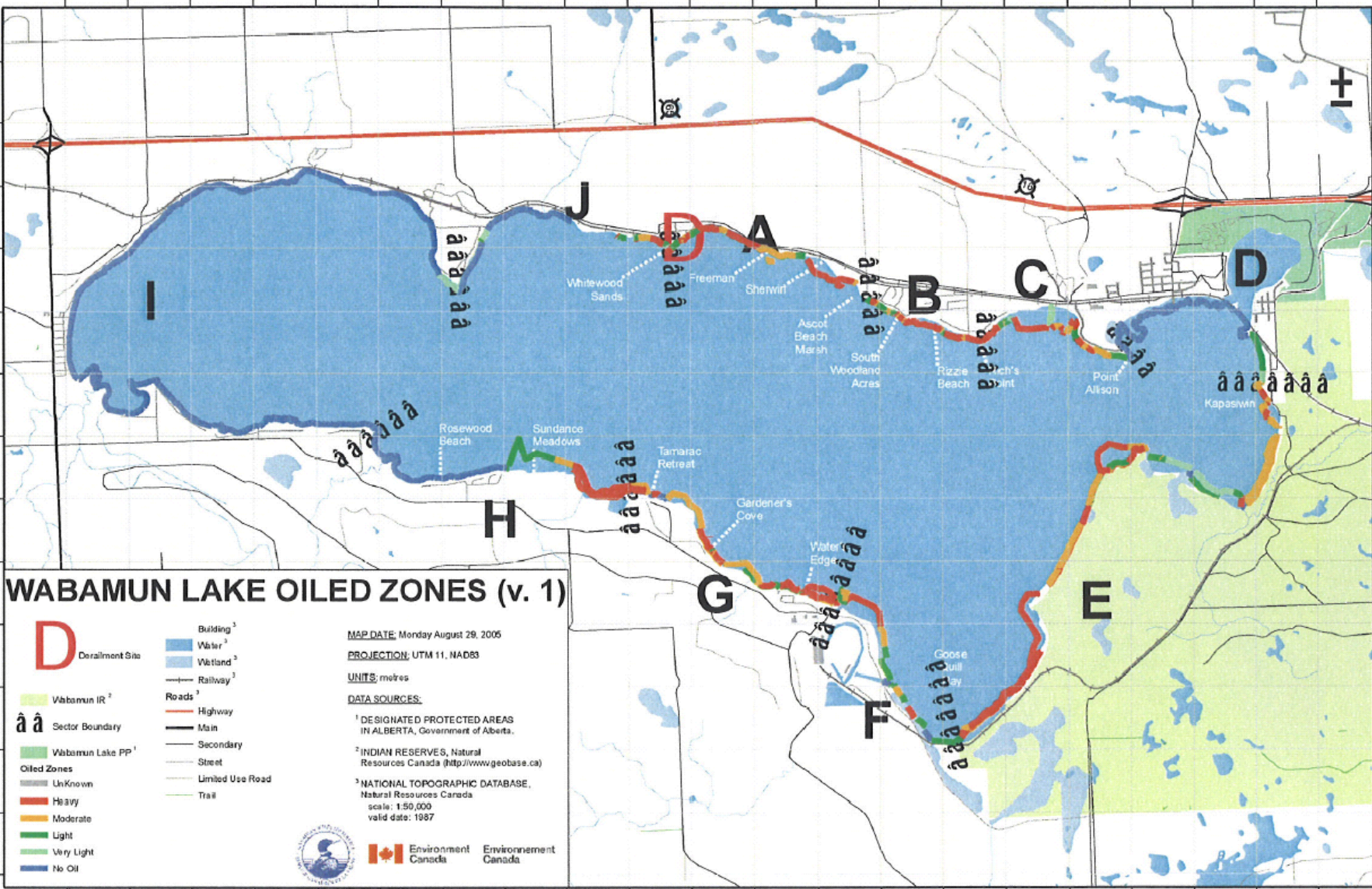


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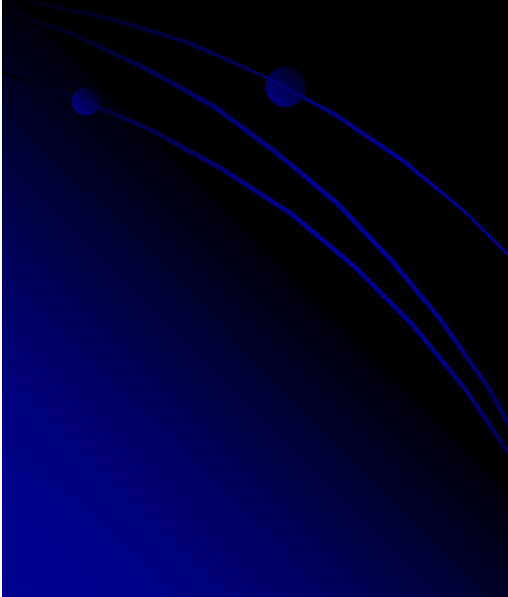


Response in Two Days

- Number of knowledgeable individuals came on-scene – Ron Goodman for Alberta, Environment, about 20 Environment Canada persons, etc.
- **ECRC – major co-op contacted and had in 800 response personnel and major equipment**
- Oil was now over much of the eastern half of the lake, but was prevented from going to western half by lake-intersecting booms
- **Within 2 days 80,000 feet of boom deployed and over 20 skimming crews**



6 8 2005







NOTICE
WE ARE CONCERNED
ABOUT YOUR SAFETY
PLEASE DO NOT PROCEED
BEYOND THIS POINT.

6 8 2005









6 8 2005

Problem....

- After arrival, EC personnel (Pat Lambert) noted that the 'lube' oil did not look like lube oil – it was non-viscous, green and fluoresced
- Further checking showed that this was 'pole oil', highly-toxic pole oil treating compound – over 80% PAHs



PROX 43307

LD LMT 197900LB 897501G
LT WT 65100LB 29550KG
07-94

PROX 43307













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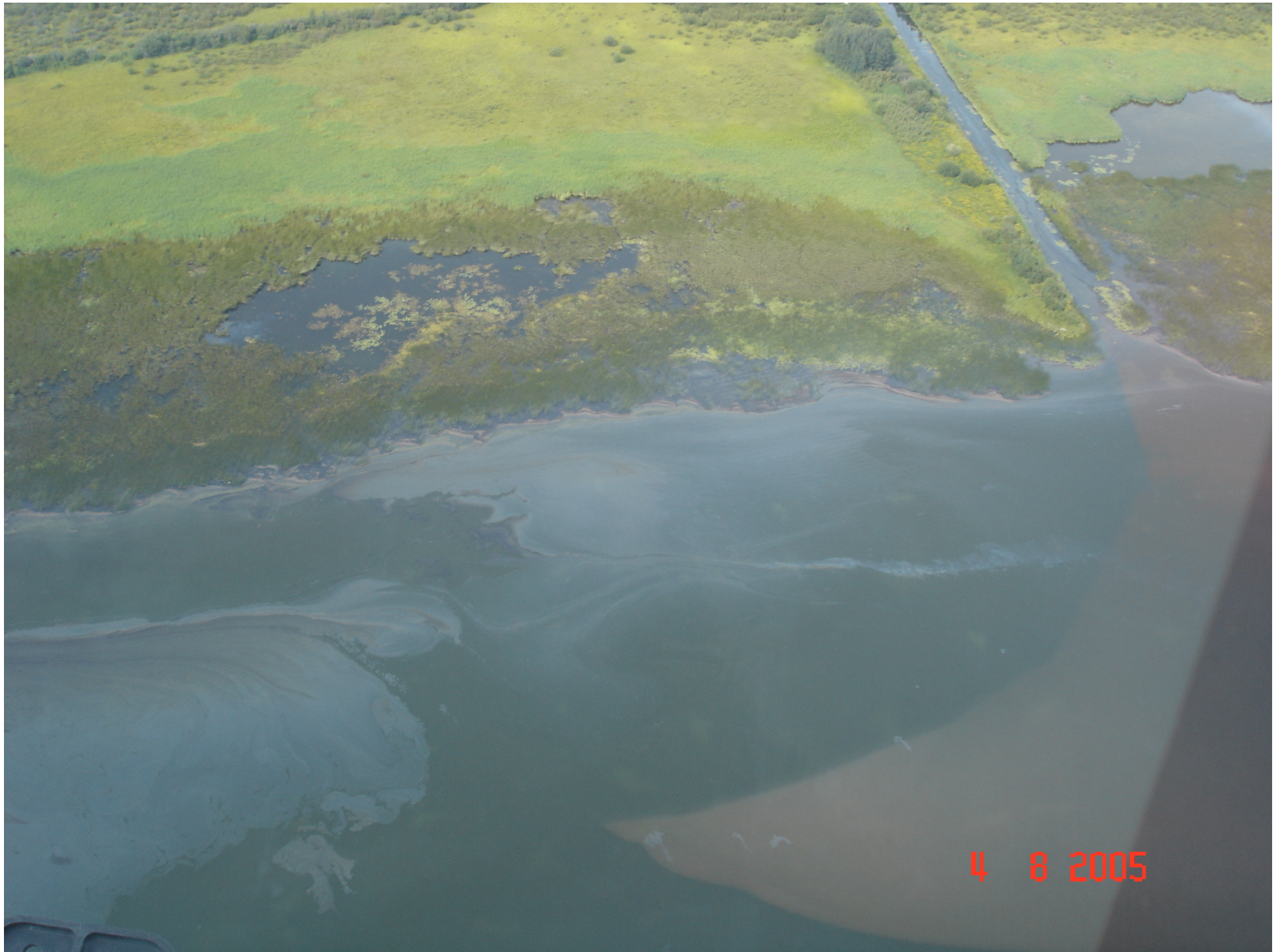


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The Wabamun Power Plant

- Is an old Transalta power plant on the way to being decommissioned – had to be shut down shortly after the spill – but only 250 kilowatts (1/4 power)
- **Great deal of effort expended to return this unit to operations**
- Other power plants not affect – Sundance (Transalta) 3 Megawatts, others slightly more remote Epcor 3 Megawatts and another Transalta at about 2 Megawatts



4 8 2005



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5 8 2005





5 8 2005

Heavy Oil Behaviour

- As oil was heavy fuel oil and flowed over land to get to the water, some of it picked up sediment
- **Several phenomena observed: oil re-surfacing, neutrally-buoyant tar balls, oil on bottom, daily re-oiling of shoreline – even after bulk oil skimmed**











Cleanup proceeds

- By September 1 – about one month later – cleanup was still in full tilt
- **Big problems at this time – new oiling – maybe from sunken oil, maybe from weed beds**
- Second problem weed beds – solution – cut the weeds

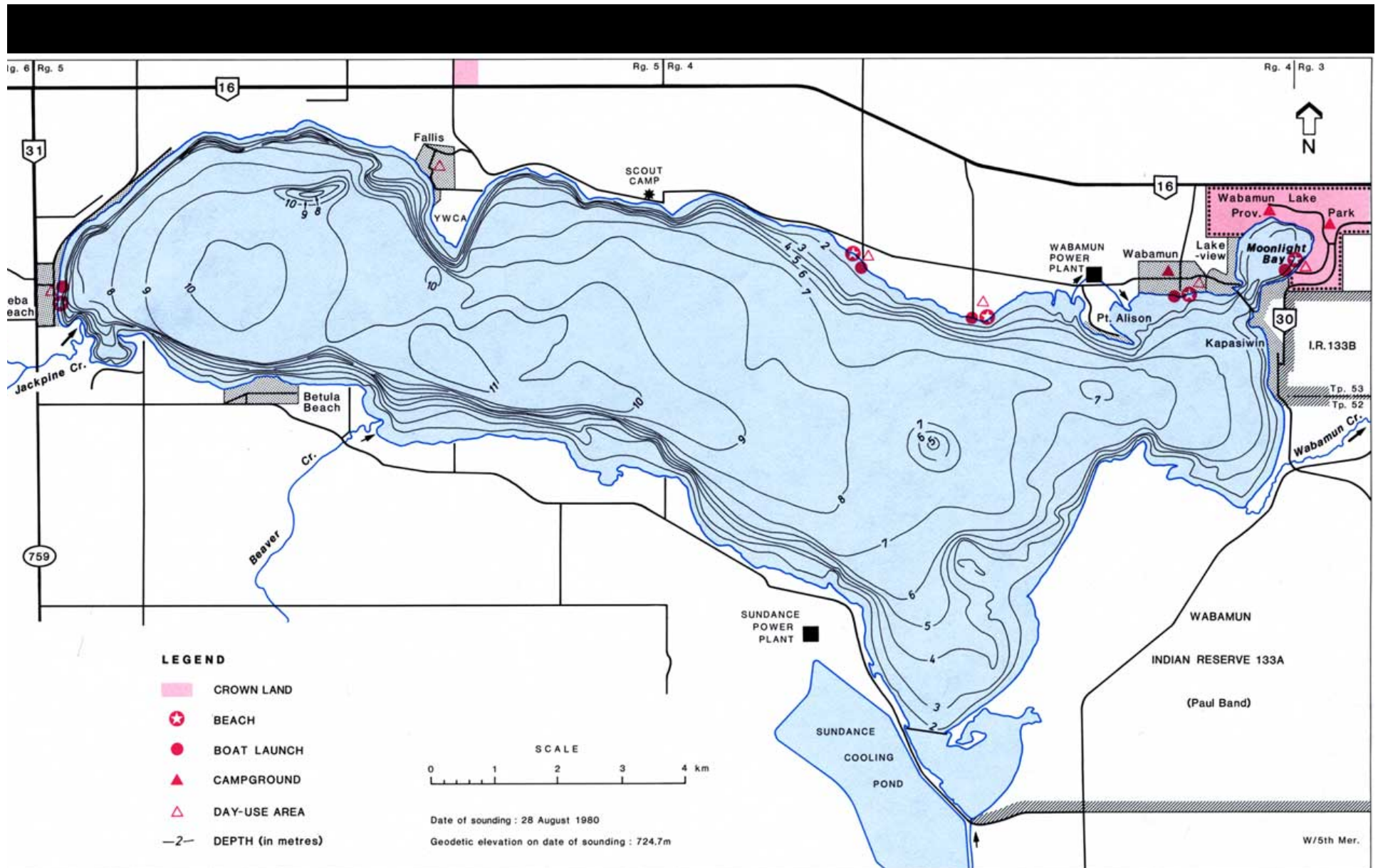


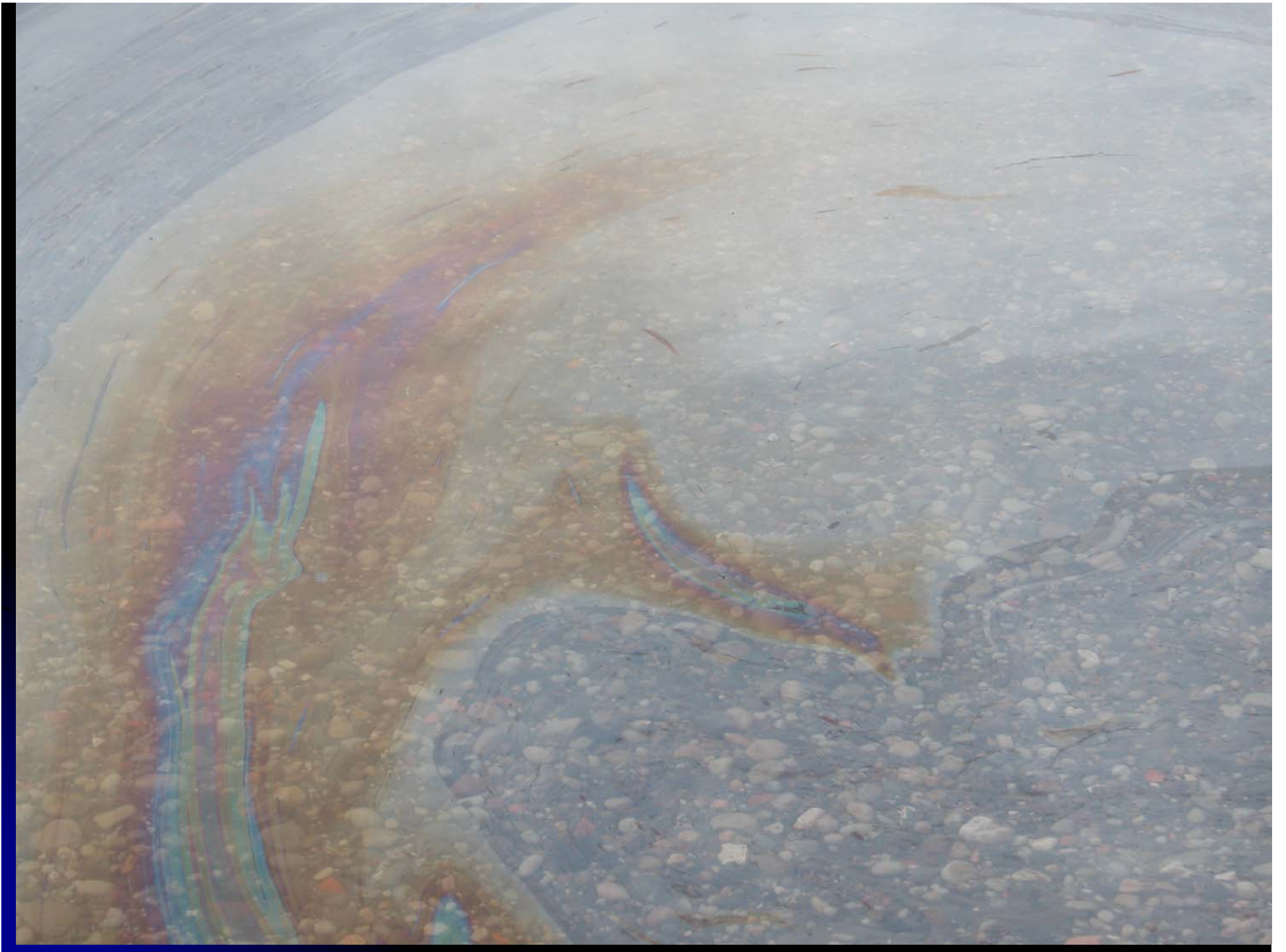
Figure 2. Bathymetry and shoreline features of Wabamun Lake. BATHYMETRY SOURCE: Alta. Envir. n.d.[c].

















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Inlet to Tranalta Sundance plant









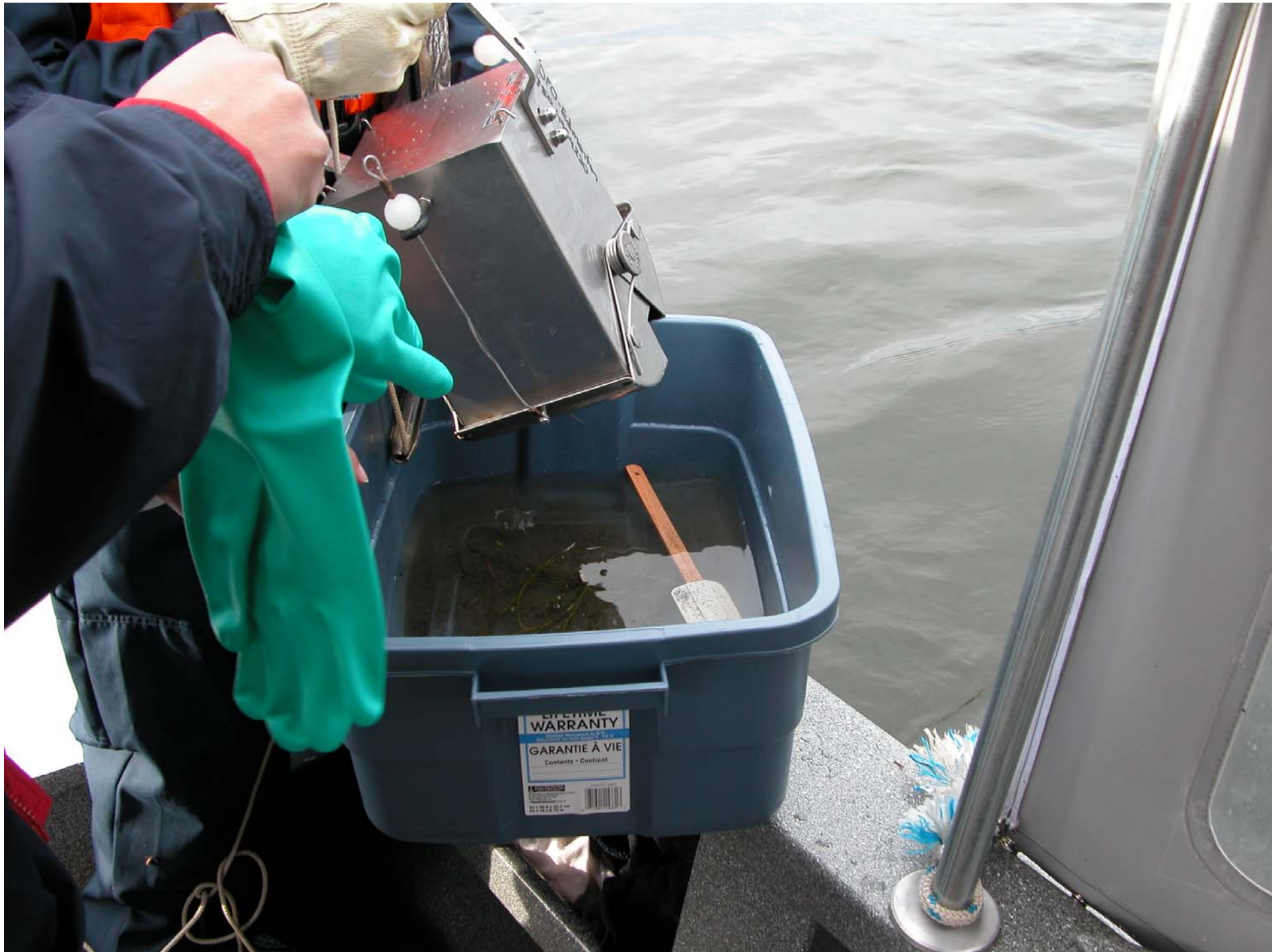




Small Dredging Program

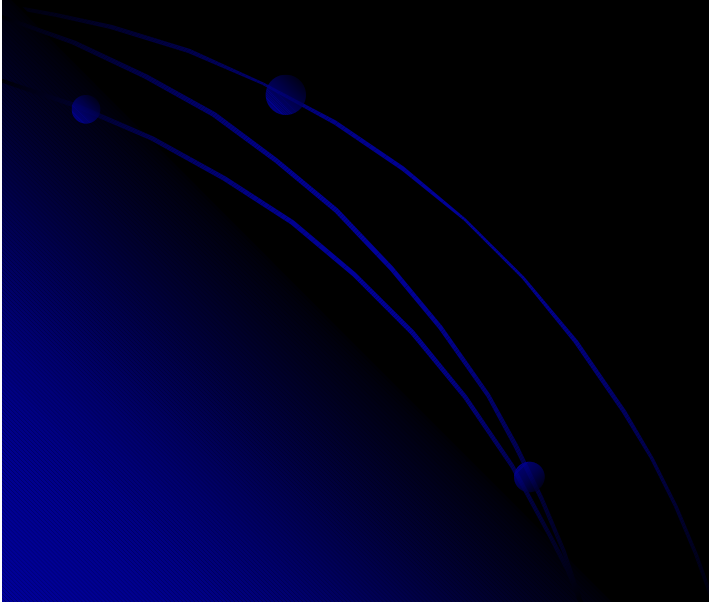
- Purpose – to see what oil was on bottom
- **Simple sampling dredge – Eckman sampler**
- Focus on areas where sheens typically seen





Oil found

- Oil was found in most drops along the shore where the oil came in
- **Typical contents were a few small tar balls**
- No big tar balls found





Lessons Learned

- Response – fast response can save a great deal of money and much more environmental damage
- **Spills will occur in places and times that are unexpected – must be better prepared for that**
- Untrained persons should seek expert assistance asap

Heavy Oil

- Especially in fresh water – can result in neutrally buoyant and sinking tar balls, logs, etc.
- **In an enclosed system like a lake this doesn't go away – it just keeps on coming back to the shoreline!!**
- There is enough heavy oil behaviour to write many papers



3 8 2005