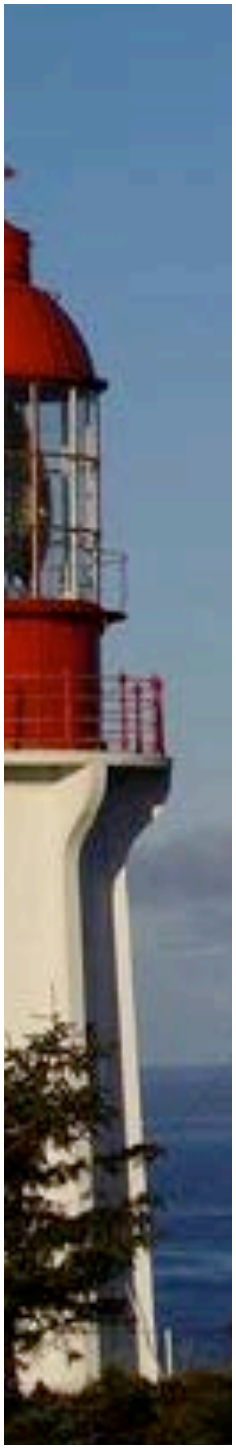


What do we do with all of these Phase II Reports? A case study of Canadian Coast Guard lightstations

Norm Healey

Gary Mann

Patrick Allard

Azimuth Consulting Group Inc.

Presented at

Real Property Institute of Canada

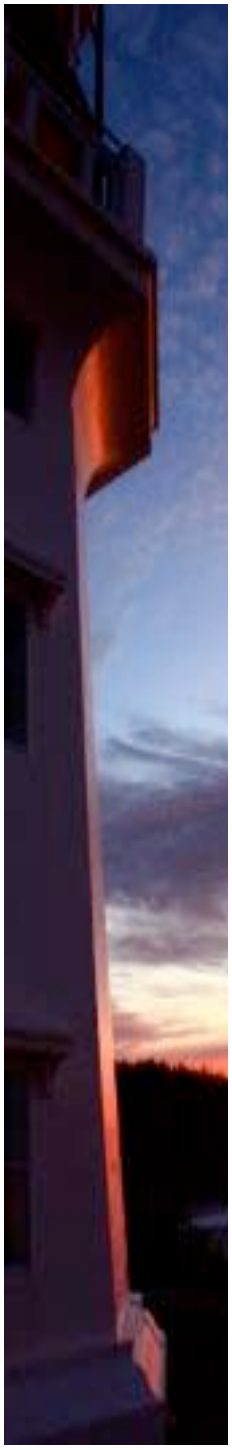
Federal Contaminated Sites National Workshop

Fairmont Queen Elizabeth Hotel

Montreal, PQ

May 11. 2010

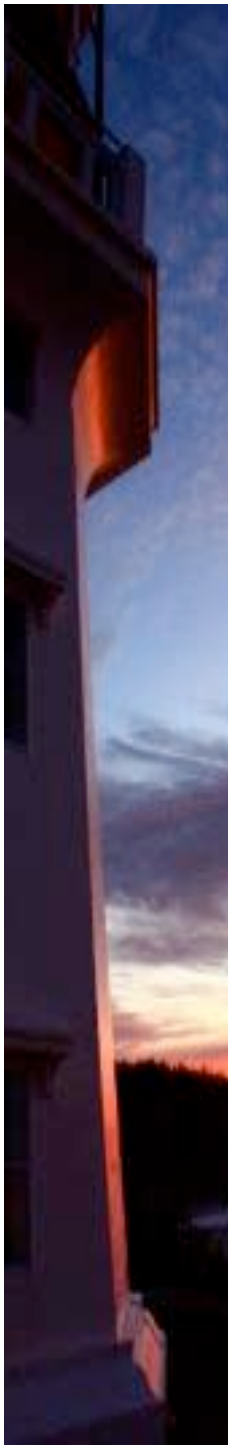
AZIMUTH



Acknowledgements

- Allard, P.J., G.S. Mann, N. Healey, L. Harding, B. McDonald, and D. Bright. 2003. *Ecological Risk Assessment of Environmental Contamination at Staffed Lightstations.* Canadian Coast Guard, Pacific Region, Fisheries and Oceans Canada, Marine Navigation Services, Lightstation Rejuvenation Project, Victoria, BC.
- Mann, G.S., N. Healey, P.J. Allard, R. Wilson, S. Petrovic, M. Cameron, D. Bright and R. Purssell. 2001. *Risk Assessment Strategy, Canadian Coast Guard Pacific Region, Staffed Lightstations*. April 2001 Draft. Fisheries and Oceans Canada, Canadian Coast Guard, Marine Navigation Services, Lightstation Rejuvenation Project, Victoria, BC.
- DFO Real Property & Technical Support, Environmental Services, Pacific Region: Scott Moseley
- Jeff Cole

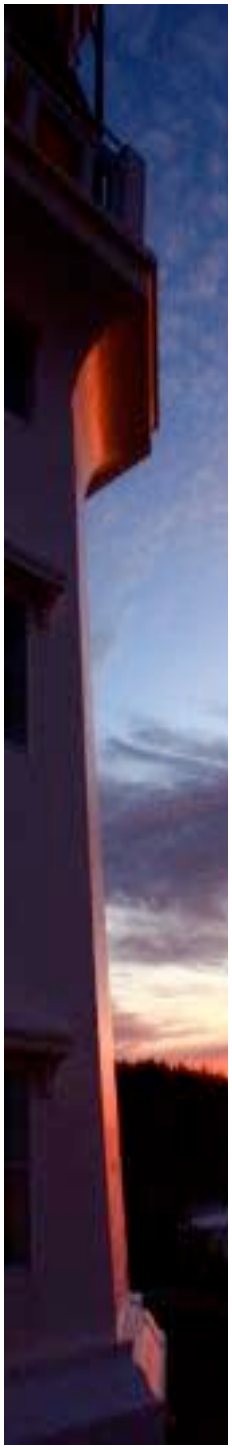
AZIMUTH



Outline

- The problem
- The solution
- Lessons learned

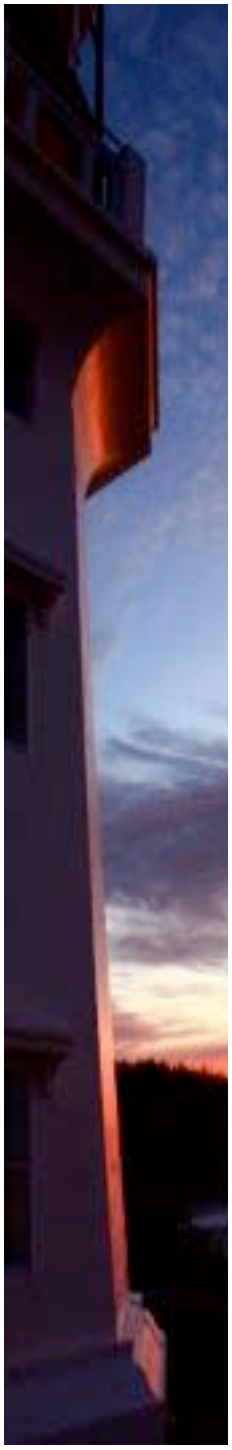
AZIMUTH



The Problem

- 27 staffed Canadian Coast Guard lightstations in Pacific Region
- Phase II Environmental Site Assessments: contaminants in soil > criteria at all sites
- Problem: What next? Phase III and detailed risk assessment at all 27 sites?

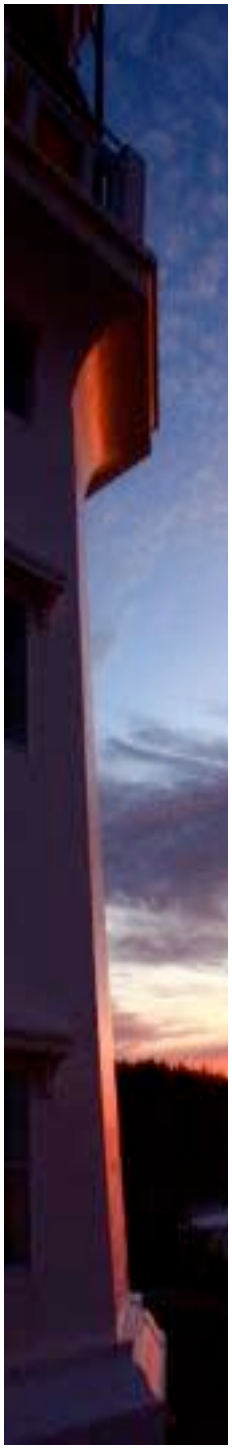
AZIMUTH



The Solution

- Guided by Expert Panel
- Risk-based strategy for assessment
- Defined decision-making context
- Goals:
  - Economically efficient
  - Scientifically defensible

AZIMUTH



US NRC Silver Book

SCIENCE AND DECISIONS

Advancing Risk Assessment

Committee on Improving Risk Analysis Approaches Used by the U.S. EPA

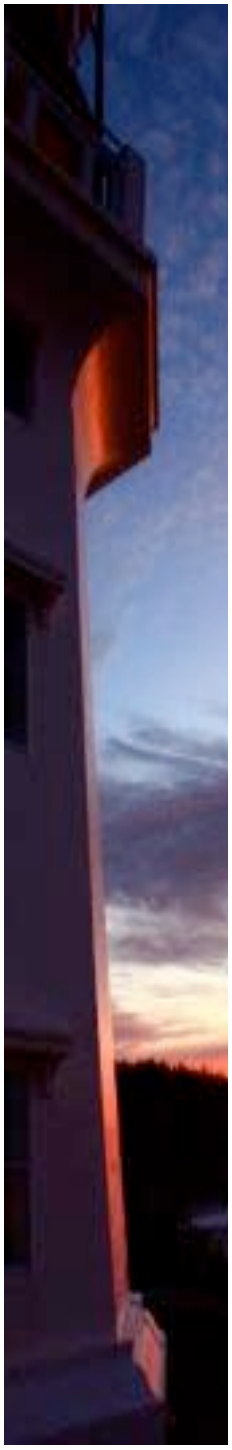
Board on Environmental Studies and Toxicology

Division on Earth and Life Studies

NATIONAL RESEARCH COUNCIL OF THE NATIONAL ACADEMIES

THE NATIONAL ACADEMIES PRESS
Washington, D.C.
www.nap.edu

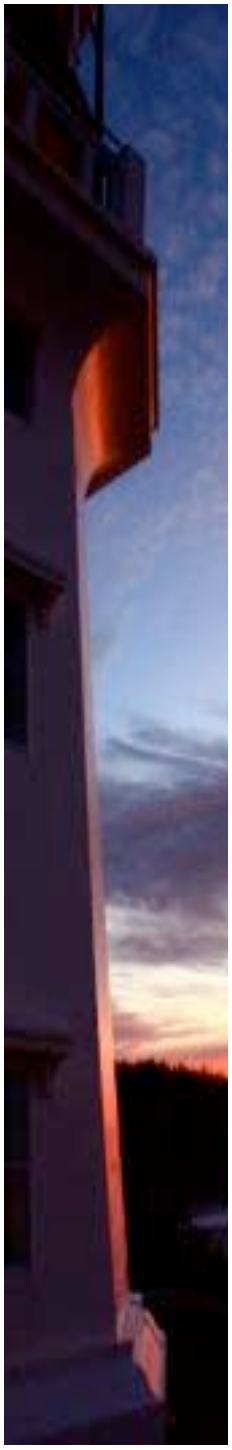
AZIMUTH



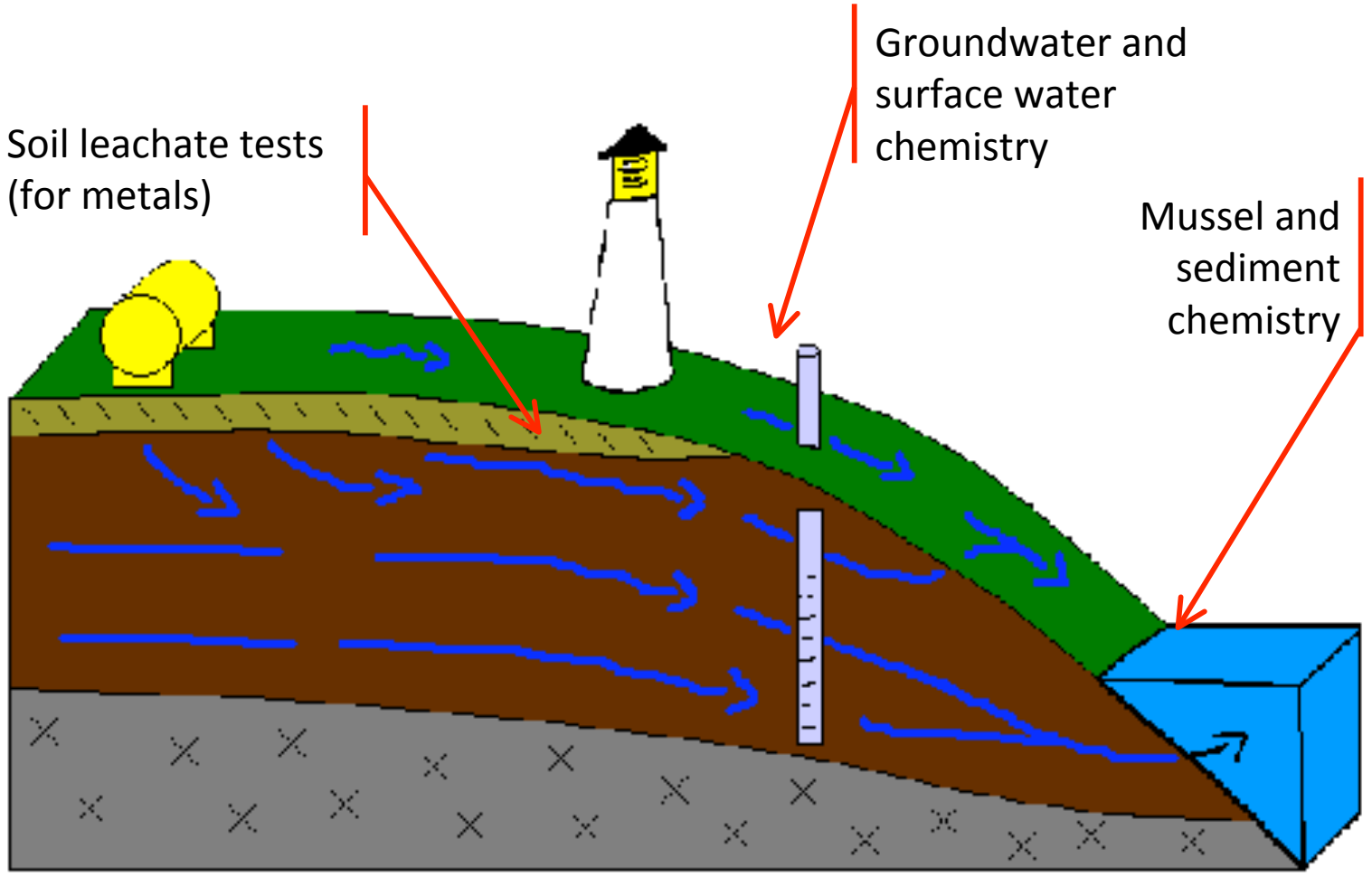
Ecological Risk Assessment Tactics

- Economize on *common characteristics among multiple sites* (geography, sources, contaminants, pathways, receptors)
- Rationalized, *targeted investigation* on the source-pathway-receptor continuum

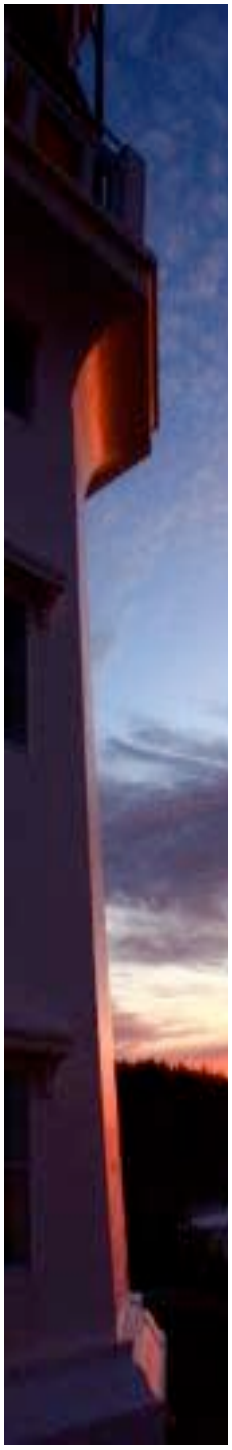
AZIMUTH



Source-Pathway-Receptor



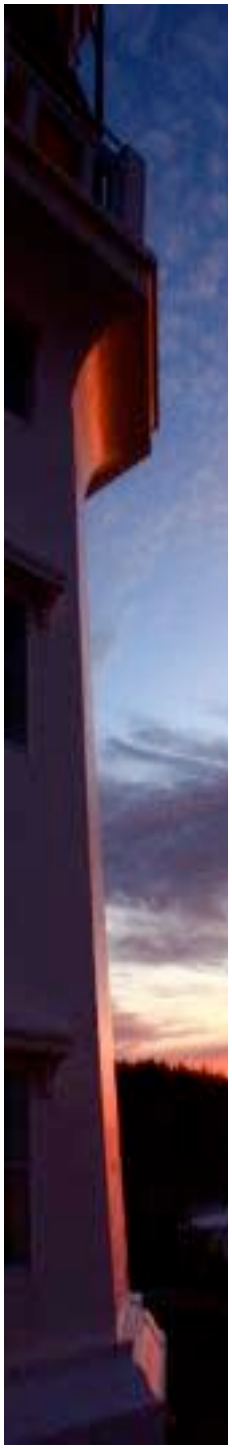
AZIMUTH



Decision-making unit

- Four common sources/issues (APECs)
  1. Dispersed metals
  2. Waste dumping
  3. Waste incineration
  4. Petroleum hydrocarbon releases
- Each APEC evaluated across sites
  - i.e. could waste incineration at lightstations result in contamination that would require clean-up?

AZIMUTH

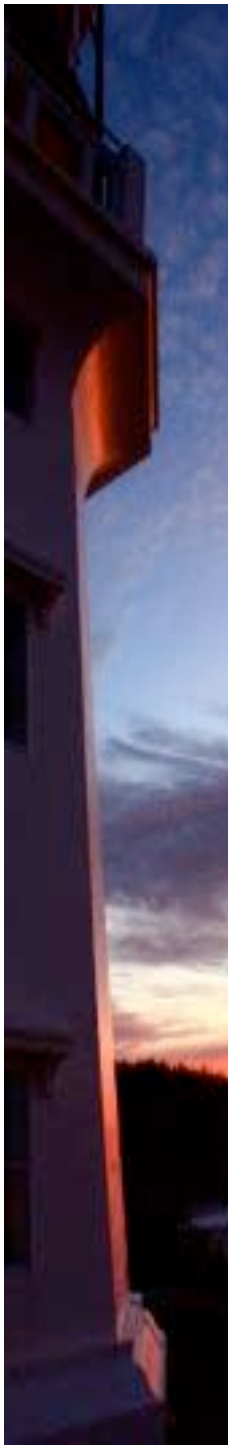


Ranking Sites & Sources

1. Quantitative: Number of COPCs, extent, and magnitude of contamination: Phase II soil chemistry screening quotient
2. Qualitative: Receptors of Concern
3. Qualitative: Uncertainty of site characterization

- Integrated by expert consensus workshop

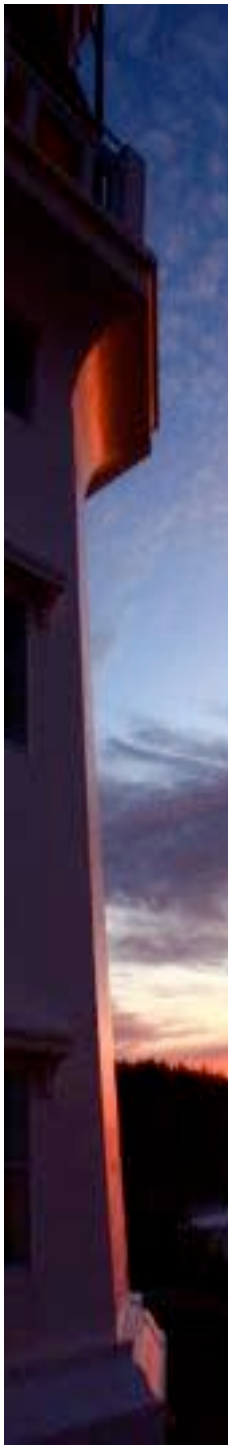
AZIMUTH



Soil Chemistry Screening Quotient

- Numerator: Site and source specific Phase II soil chemistry 90th percentile
- Screening quotient denominators:
  - Terrestrial
    - CSR/CCME soil contact (1)
    - ORNL wildlife soil screening values (6)
  - Aquatic
    - CSR/CCME soil→gw→sw (1)
- Area weighted sum used for risk ranking

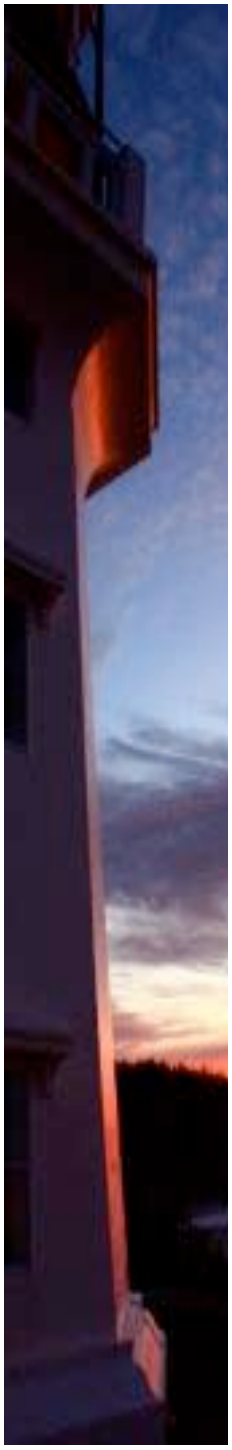
AZIMUTH



Economize Common Characteristics

Action	Number of Sites
Phase II ESA	27
Phase III ESA	2
Targeted Site Characterization & Detailed Ecological Risk Assessment	14
Dispersed metals	(8)
Waste dumping	(4)
Waste incineration	(4)
Wildlife Studies	3
Risk Management	27

AZIMUTH



Elements of Success

- Goal oriented; investment in problem formulation
- Peer collaboration
- Risk ranking
- Consultation; investment in communications
- Supportive upper management

AZIMUTH

Questions & Discussion