

# Protocol Development for Tribal and Community Assessment of Multi-media Impacts of Pollutants

September 6, 2006

US EPA

OAQPS

CLIMATE, INTERNATIONAL AND  
MULTIMEDIA GROUP

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**Pleasant Point**



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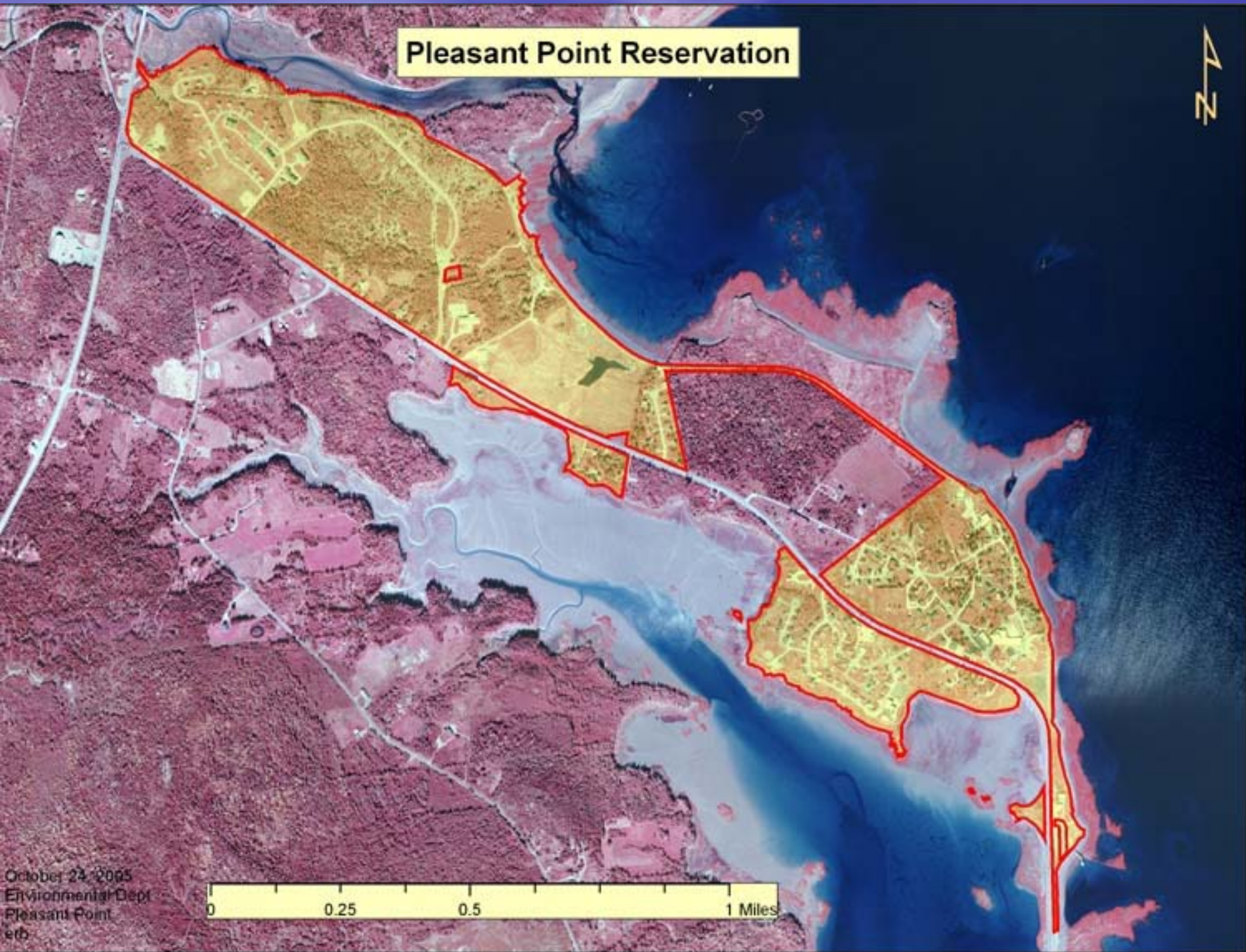
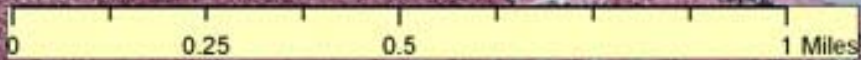
*Grand Manan Channel*

*Bay of Fundy*

# Pleasant Point Reservation



October 24, 2005  
Environmental Dept  
Pleasant Point  
erb













# Objectives

- Assist tribal nations in identifying lands with potential problems.
- Provide training to allow tribes to conduct their own multimedia analyses
- Informs Tribal participation in permitting and other environmental decision processes that may impact Tribes

# ENVIRONMENTAL CONCERNS

- Body Burden
  - CDC finds more than 700 toxins in humans.
  - Carcinogens, Teratogens, endocrine disrupters, etc
  - Synergistic effects: PCB's + dioxins = 400 times more toxic (van Birgelen et al, 1996, Environmental Health Perspectives 104:550-557)

# PASSAMAQUODDY HEALTH EFFECTS

- Cancer
- Diabetes
- Behavior/depression
- Heart disease
- Alzheimer's

# MEASURING TRIBAL HEALTH

- DALY –

Disability Adjusted Life Year

Harvard School of Health

Numerative index of health of population

# SUSPECTED SOURCES (1)

- Domtar Paper Co-NO<sub>x</sub>, SO<sub>x</sub>, Cadmium, others
- Cutler Naval Base - NO<sub>x</sub>
- Historic industries
  - World's largest tannery, Hg use
  - Sardine industry inception, Pb solder in cans
  - Mining – heavy metals - Pb, Cd, others
  - Construction – PM<sub>2.5</sub>



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# SUSPECTED SOURCES (2)

- Mid-west industry
  - Acid rain, ozone, haze, Hg
  - PCB's, PAH's, PFOA's, Fire retardants, Vinyl, pesticides

# Air Quality Data

- Map data from Tribal monitors and/or use national maps generated by OAQPS:
  - Top 15% of concentrations from two data sources mapped:
    - CMAQ results
    - OAQPS's NATA output for Cadmium, Lead, Mercury, PCBs and PAHs
      - Census tracts converted to county averages

# Model Source Trajectories

- Use both a back trajectory model (HYSPLIT) and a dispersion model (ISCST3 or AERMOD) to attempt to identify potential sources.



# Merge Results

- Maps are generated overlaying the results from the air and water quality exercise.
- Areas where the impairments coincided are highlighted.
- Tribal boundaries and urban areas are included.

# Water Quality Data

- Map Tribal data or use national data from various sources:
- Concentration-based data
  - Fish tissue
  - Sediment
- Water-quality indicators
  - Fish consumption advisories
  - 303(d) Listings (pre-2002 TMDL information)
  - 305(b) ('00, '02)

# FISH CONSUMPTION SURVEY

- Protocols:
  - Unique for each Tribe
  - Historical information, not present
  - Sample size sufficient

# FISH SURVEY SOFTWARE

- Region 10, Quinault Tribe Prototype
  - Training to be provided
  - Software will be modified/customized for Region 1 Tribes

# Final Products

- Guidance document for Tribes and Communities
- Training course for Tribes