



# NARPM 2008

National Association of Remedial Project Managers

18th Annual Training Conference

July 7 – 11, 2008

**Case Study**

**Upper Columbia River RI/FS**

**Tribal Consumption/Use Survey**



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# Human Health Risk Assessment Tribal Consumption/Use Survey Upper Columbia River





# Outline

- Timeline, Trial, & 2006 Settlement
- Human Health Risk Assessment
- Tribal Consumption Survey

# Trail, BC Smelter, 1895 –

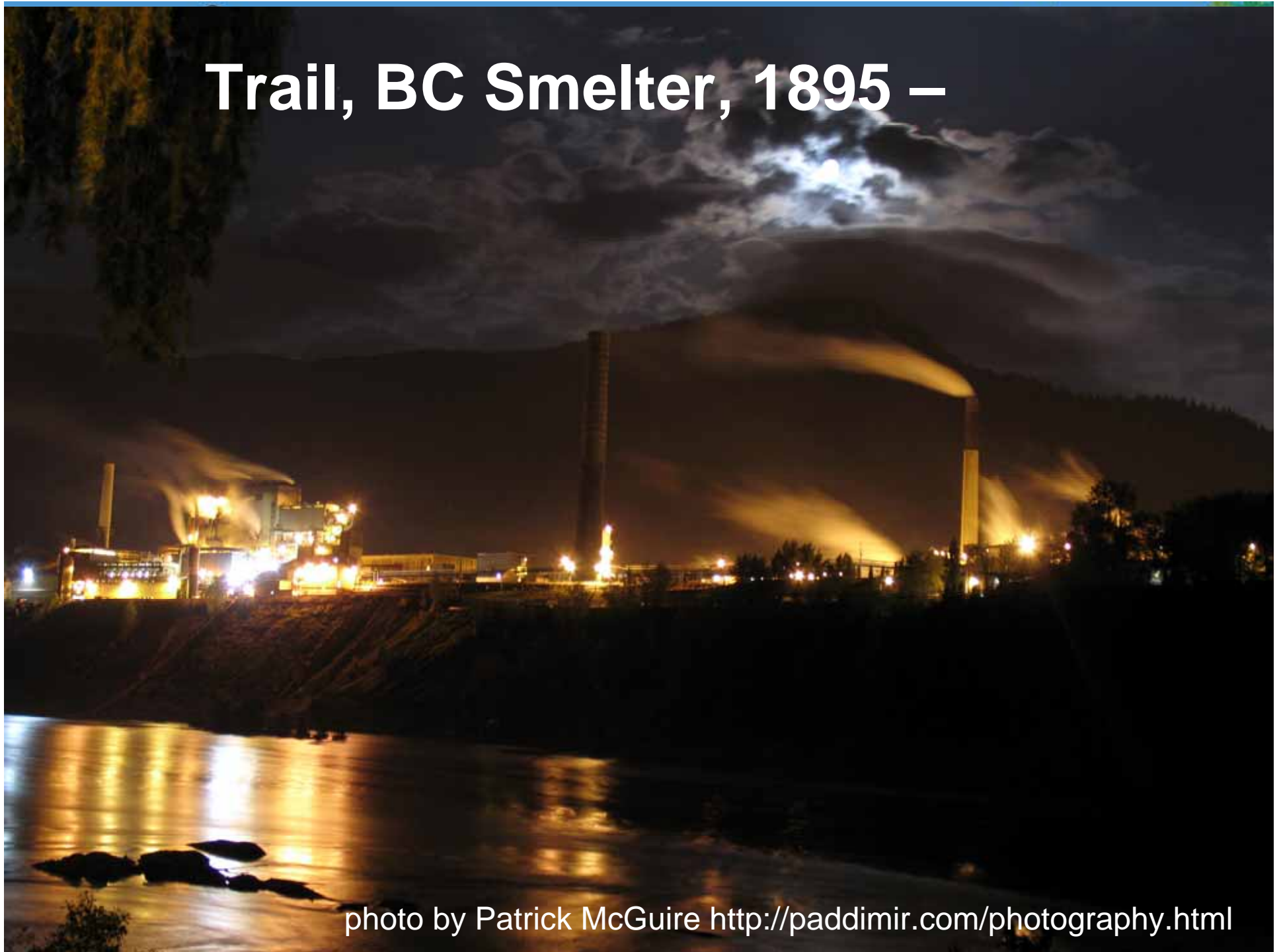


photo by Patrick McGuire <http://paddimir.com/photography.html>

# Teck Cominco, Ltd. Smelter Trail, BC

10 river miles

U.S./Canada Border

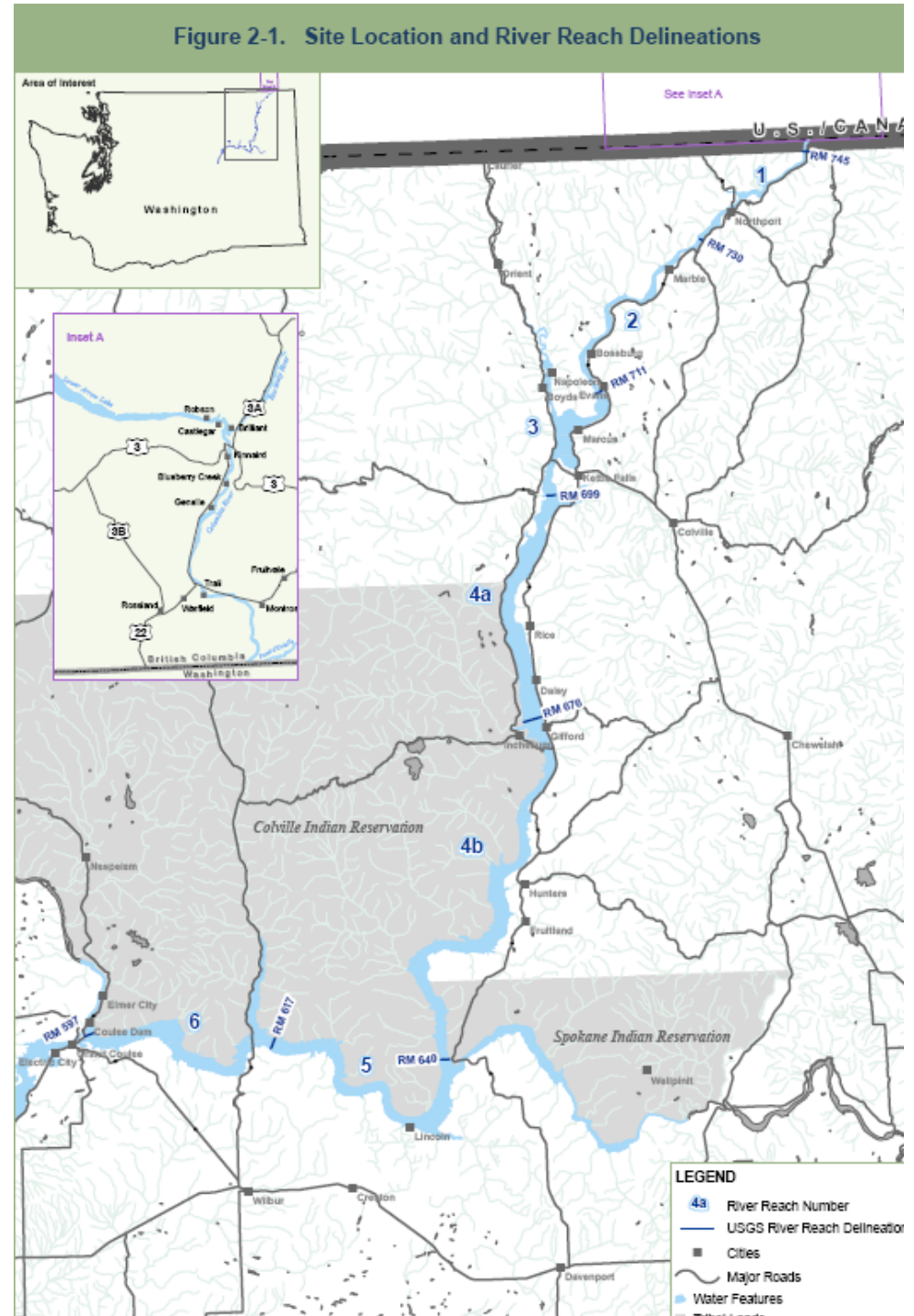
150 River Miles

Colville

Spokane

NPS NRA

Grand Coulee Dam





# History

- 1895 Trail smelter processes lead & zinc concentrates
- 1999 Confederated Tribes of the Colville Indian Reservation (CCT) petitioned Region to conduct Preliminary Assessment (PA) Upper Columbia River (UCR) Contamination (14 million tons of slag & other releases)
- 2001 Completed PA and Expanded Site Inspection; RI/FS needed
- Site “scores”; Draft NPL listing package sent to OSWER
- 2002 EPA negotiates with Teck Cominco Ltd. for voluntary RI/FS
- 2003 Informal Negotiations failed; initiated formal Administrative Order on Consent negotiations; failed

<http://yosemite.epa.gov/R10/CLEANUP.NSF/UCR/Enforcement>

[https://courses.law.washington.edu/rodgers/B584a\\_WiSp08/public/powerpoints/Upper\\_Columbia\\_River\\_Cominco.pdf](https://courses.law.washington.edu/rodgers/B584a_WiSp08/public/powerpoints/Upper_Columbia_River_Cominco.pdf)



# History

- 2003 Region issued Unilateral Administrative Order (UAO) to Teck to prepare RI/FS
- Teck Cominco doesn't comply and Justice doesn't enforce UAO
- 2004 Pakootas and Michel (CCT) and WA sue Teck to enforce UAO
- 2005 Region samples sediment and fish tissue
- U.S. Negotiates with Canadian Government and Teck
- 2006 Settlement in June
- Ongoing CCT and WA Litigation: CERCLA & UAO

<http://yosemite.epa.gov/R10/CLEANUP.NSF/UCR/Enforcement>

[https://courses.law.washington.edu/rodgers/B584a\\_WiSp08/public/powerpoints/Upper\\_Columbia\\_River\\_Cominco.pdf](https://courses.law.washington.edu/rodgers/B584a_WiSp08/public/powerpoints/Upper_Columbia_River_Cominco.pdf)

# Releases & Recycling

Mercury			Lead		
	Released (kg)	Recycled (kg)		Released (kg)	Recycled (kg)
2006	137	12,579	2006	3,424	--
2005	166	20,876	2005	4,251	--
2004	108	--	2004	7,723	223,959
2003	119	13,985	2003	4,333	86,110
2002	136	42,490	2002	4,120	88,260
2001	690		2001	6,100	
2000	170		2000	9,500	
1999	90		1999	22,000	
1998	140		1998	17,000	
1997	820		1997	63,000	
1996	2,900		1996	163,000	
1995	1,900		1995	159,000	
1994	2,600		1994	246,000	

[http://www.ec.gc.ca/pdb/querysite/facility\\_history\\_e.cfm?opt\\_npri\\_id=0000003802&opt\\_report\\_year=2004](http://www.ec.gc.ca/pdb/querysite/facility_history_e.cfm?opt_npri_id=0000003802&opt_report_year=2004)



## 9th Circuit Court:

Here, Teck Cominco has made an offer to voluntarily assume the costs of the investigation and to address any risks identified in that investigation. So it's not a question of whether this will get cleaned up or not, it's just of whether it is under CERCLA liability. If Congress wants to apply CERCLA to situations like this, it should say so.

<http://www.loe.org/shows/segments.htm?programID=06-P13-00006&segmentID=7>



## Judge William Schwarzer

“It sounds like Werner Von Braun, who said, ‘I only send the missiles up, I don't care where they land.’ That's sort of your position. We just dump it in the river; we don't care where it lands.”



## CERCLA – Domestic or Imported?

“We hold that because CERCLA liability is triggered by an actual threatened release of hazardous substances, and because a release of hazardous substances took place within the United States, this suit involves a domestic application of CERCLA”

452 F.3d 1066, 1068 (9th Cir. 2006).



# Settlement

## Parties:

- U.S. Department of Justice
- EPA General Counsel
- Region 10 RA (L Michael Bogert)
- Teck Cominco Metals Limited, Vancouver, BC
- Teck Cominco American, Inc., Spokane, WA

(continued)



# Settlement

- Teck to conduct RI/FS
- Consistent with NCP
  - but not explicitly under NCP/CERCLA
- EPA withdrew UAO
- \$20,000,000 escrow contingency



# Who Does What

- Teck Cominco American, Inc. – (PRP lead)
  - Upper Columbia River Remedial Investigation and Feasibility Study
  - Eco Risk Assessment
  - Sampling Plans for RI/FS, Eco Risk, and Human Health
- U.S. Environmental Protection Agency – (Fund lead, sort of)
  - Human Health Risk Assessment (HHRA)
  - Tribal Exposure Survey
  - Oversight of ALL of the above and below
- National Parks Service
  - Recreation Exposure Survey

With input from: Confederated Tribes of the Colville Reservation, Spokane Tribe, WA Departments of Ecology & Health, U.S. Department of Interior Agencies, and Public



# Risk Assessment Data Gaps

- Sample Exposure Media
  - Sediment
  - Fish and shellfish
  - Surface water
  - Waterfowl and game
  - Other media pending planned exposure surveys



# HHRA Exposure Scenarios

- Subsistence
  - Traditional scenario: intakes reflecting **historical, unconstrained** use (Spokane Tribe – Midnite Mine)
  - Contemporary scenario: intakes reflecting estimates of **current uses** from **CCT tribal survey**
- Recreational
  - Seasonal visitor
  - Residential – year round



# Exposure Scenarios

- Occupational
  - Maintenance/Construction
  - Archeological
- Residential
  - Indoor exposure
    - outdoor sources: wind blown dust & track in



# Exposure Assessment

- Site-specific exposure frequency, duration, and use patterns
- Consumption and Use
  - Recreational Survey – Parks Service Lead
  - CCT Tribal Consumption Survey – EPA/CCT



# National Parks Service Recreational Survey

- NPS boundaries of Lake Roosevelt National Recreation Area, and Spokane and Colville Tribes land
- northern areas up to the U.S./Canada border
- conducted for a full year
  - boating
  - fishing, eating
  - camping
  - hunting



# CCT Consumption & Use Survey

Objective – support:

- exposure assessment
- risk assessment
- risk management
- risk communication
  - to inform and promote healthy dietary and lifestyle choices for CCT

(continued)



# CCT Consumption & Use Survey

## Specific Objectives:

1. Quantify consumption and use of local resources (e.g., foods, herbs, medicines, and materials used in production of clothing, ornaments, and infrastructure) that have the potential to influence exposure to chemical contaminants from the UCR
2. Record data on foods and other consumed materials (e.g., herbs, medicines) in a database of nutritional characteristics (e.g., caloric and essential nutrient content) of these foods or materials (or similar surrogates)



# Tribal Survey

## Contracting & mistrust conflicts with collaboration

- Federal contracting and acquisition requirements prevented EPA from working with a motivated, local, collaborative and non-profit public health and scientific community
  - Able to do the work, but unable to bid –
- University of Washington
  - Global Health Department – funded by Gates Foundation
  - Medical School and Teaching Hospitals
    - Native American Center of Excellence
  - School of Public Health and Community Medicine
  - Office of Tribal Student Affairs
- Fred Hutchinson Cancer Research Center
  - Nutrition Assessment
  - Recruit graduate students from local community to support survey and earn degrees in epidemiology
    - provides comprehensive support to investigators who include dietary assessment in their research protocols. Nutritional epidemiologists at the Hutchinson Center established this resource in 1993, which to date has provided support to over 200 studies funded by the National Institutes of Health. NASR is one of the largest users in the United States of the University of Minnesota Nutrition Data Systems for Research (NDSR) software for data entry and nutrient analysis.



## Balance Risks and Benefits

- Inherent health and value of traditional lifeways
- Avoid unwarranted resource/cultural avoidance
  - **Over-estimating risk is *not* protective**
- Contaminated tribal resources (e.g., fish) provide cultural, nutritional, and economic values
- Local resources may be preferable to supermarket & restaurant food
- Not amenable to direct actions (e.g., treatment, containment, or replacement)

(continued)



## Balance Risks and Benefits

- Response actions are often limited to source control and cleanup of contaminated primary media (*e.g.*, soil and sediment)
- Source control or sediment cleanup may eventually reduce contamination of CCT resources, but an immediate need to address exposure lingers
- The primary aim of the CCT Survey is to collect information to address this immediate need



# Regional Fish Surveys

Columbia River Intertribal Fish Commission (CRITFC) (1994) A fish consumption survey of the Umatilla, Nez Perce, Yakima, and Warm Springs tribes of the Columbia Basin. Portland, Oregon: CRITFC

Toy KA, Polissar NL, Liao S, Mittelstaedt GD (1996) A fish consumption survey of the Tulalip and Squaxin Island tribes of the Puget Sound region

Suquamish Indian Tribe (2000) Fish consumption survey of the Suquamish Indian Tribe of the Port Madison Indian Reservation, Puget Sound Region

Sechena R, Liao S, Lorenzana R, Nakano C, Polissar N, Fenske R (2003) Asian American and Pacific Islander seafood consumption - A community based study in King County, Washington. J Exp Anal Env Epidemiol 13: 256-266

Kissinger L, Williams AH, Mittl B, Lasrado M, Iwenofu S, Lorenzana RL, Olivo V, Helba C, Capoeman P. (2008) A Computer Assisted Personal Interview (CAPI) Software System for Collection of Tribal Fish Consumption Data



# Methods

Scientifically rigorous survey tools ensure data quality

Optimize recall with cognitive, multiple pass, structured interview software commonly used by national surveys and medical researchers

- U.S. Department of Agriculture's Automated Multiple-Pass Method (AM/PM)
  - NHANES National Health and Nutrition Examination Survey
- Nutrition Data System for Research (NDS-R) used by medical researchers
  - nutritional epidemiologists at the Fred Hutchinson Center for Cancer Research



## It's not just what you ask It's how you ask it

- Epidemiological survey methods improve recall and minimize recall bias
- Structured interviews ask the same questions in subtly different ways
  - National Health and Nutrition Examination Survey
  - Epidemiologic research
- Evaluated by comparing responses with direct measures of energy output which equates with dietary input over weeks
  - monitor doubly labeled water H<sub>2</sub>O<sup>18</sup> disappearance in urine
- Culturally relevant – input from CCT and anthropologists



# Methods

- Train CCT community members to conduct surveys
- Use CCT steering committee to inform survey design and promote participation and acceptance
- Cultural intelligence gathering and reconnaissance by trained anthropologists
- Conduct interviews throughout the year to capture seasonal variance and availability
- Combine repeated 24-recalls with food frequency questionnaire to capture both usual and occasional foods & practices
- Use survey results to quantify exposure and to identify future sampling needs
  - location, species, preparation techniques and recipes



# Tribal Survey

## Current Status:

- Draft Statement of Work as part of Request for Proposals for competitive bid
- Peer review from:
  - EPA dietary assessment researchers from Pesticides HQ
  - National Cancer Institute
  - Fred Hutchinson Cancer Research Center



# Next Steps

- Publish Request for Proposals
- Select contractor
- Input from Tribal oversight committee
- Anthropological cultural reconnaissance
- Design survey instrument
- Train tribal members
- Pilot test
- Refine & Implement
- Analyze and report
- Utilize in Risk Assessment, Risk Communication, and Risk Management