

# A CASE STUDY IN TRIBAL-UNIVERSITY COLLABORATION: AIR SAMPLING ON THE SWINOMISH RESERVATION



**Working Together**  
**Northwest Tribal Engagement in Superfund Research**

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# Swinomish Tribal Community Priorities



March Point Oil Refineries

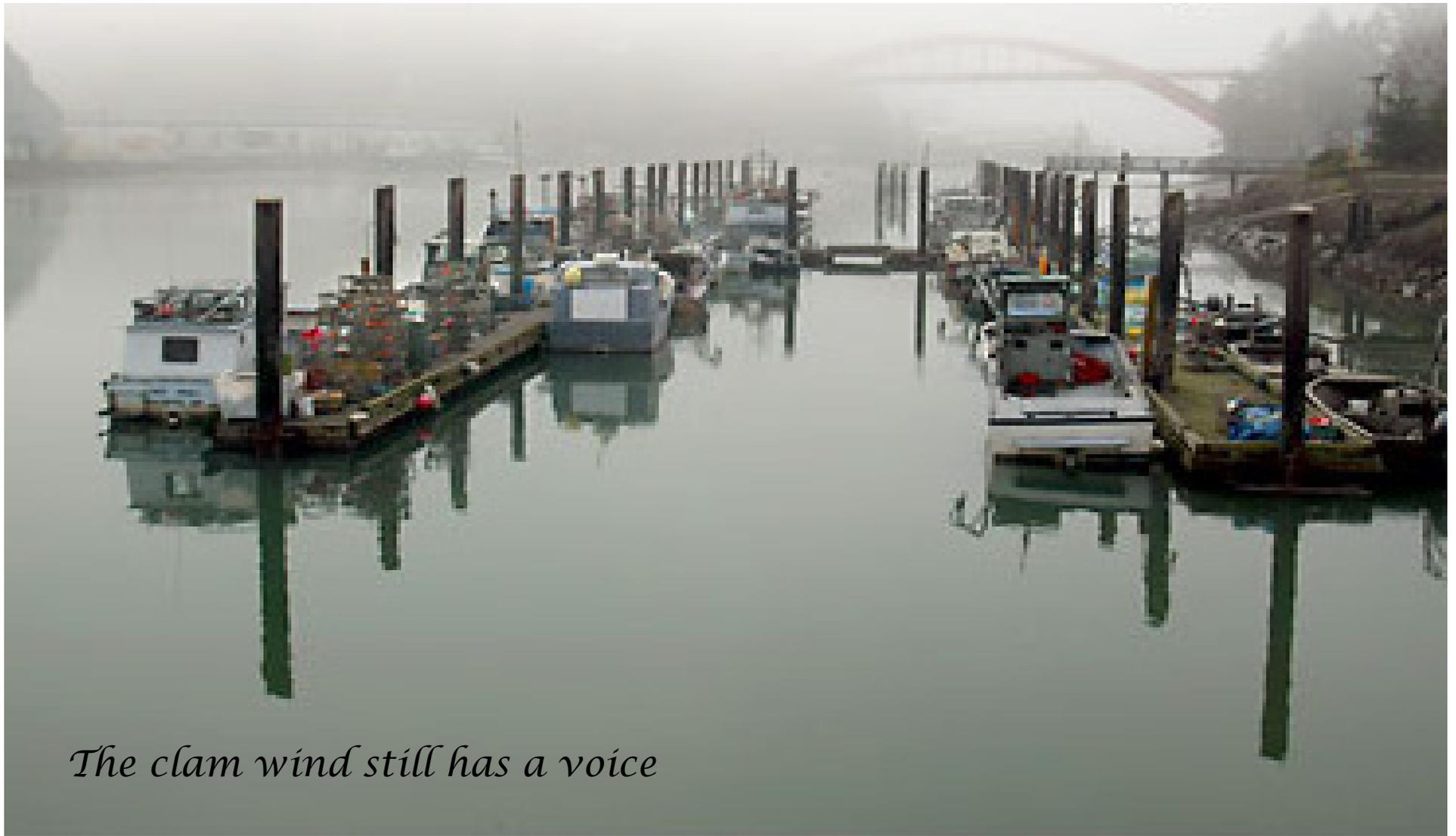
# Swinomish Tribal Community Priorities



FOOD FOR THE BODY,  
FOOD FOR THE SPIRIT.

# Swinomish Tribal Community Priorities

## Swinomish fishing docks at dawn...



*The clam wind still has a voice*

# Tribal-University collaboration

## Community-University collaboration

- **How to make it happen, LISTEN TO:**
- **Tribal Community Interest**
- **Tribal Community Chemistry Data Needs**
- **Concern about lack of tribal community specific information**
  - **Estimating exposure concentration**
- **Understanding Environmental Factors on Diseases...**
  - **MUST develop new bio-analytical tools to measure exposure**
    - L.S. Birnbaum, EHP, 2010

# TRUST: Quality Assurance Program Plan

## Defensible, Unbiased Data

### LFT Deployment Benchsheets

Deployment Date: 5/11/10

Project Number	Project Name
R0WA10	Deepwater Horizon

Collecting Agency	Collector Name (print and sign)
FSES	<i>Sarah E. Allan</i> Sarah E. Allan

Site Information

Site Name	Site Location	Water Body Type (optional)
Gulfport Public Pier	Gulfport, MS	Ocean - Gulf
Site Description (optional): Public pier in Gulfport Bay. Near construction site, marina and industrial center.		Latitude: 30.359306°N Longitude: 89.086167°W

Sample Name (ID)	Environmental Media (Air/Water)	LFT Fortification (Spiked/Blank)	Complete deployment hardware preparations and load 5 LFT into Scooper	Deployment Start Time	Initials	Notes:
Gulfport Air Spiked	Air	Spiked	✓	11:15am	Sea	Marked w/ zip tie. Samplers screwed to boards under pier, above water level. marked w/ zip tie tied to pier.
Gulfport Air Blank	Air	Blank	✓	11:08am	Sea	
Gulfport Water Spiked	Water	Spiked	✓	11:40am	Sea	
Gulfport Water Blank	Water	Blank	✓	11:40am	Sea	

Environmental Conditions

Air Temp.	80 F
Water Temp.	75 F
Water Depth	~ 4 m
Other:	Prevailing Wind S-SE

Field QC

QC type	Site	Description	Check
Field Blank	Grand Isle	N/A	✓
Trip Blank	N/A	2 LFT transported for field trip	✓

Chemist Review \_\_\_\_\_ Signature \_\_\_\_\_ Date \_\_\_\_\_

Director Review \_\_\_\_\_ Signature \_\_\_\_\_ Date \_\_\_\_\_

# BRIDGES



**Environmental**

**Toxicology**

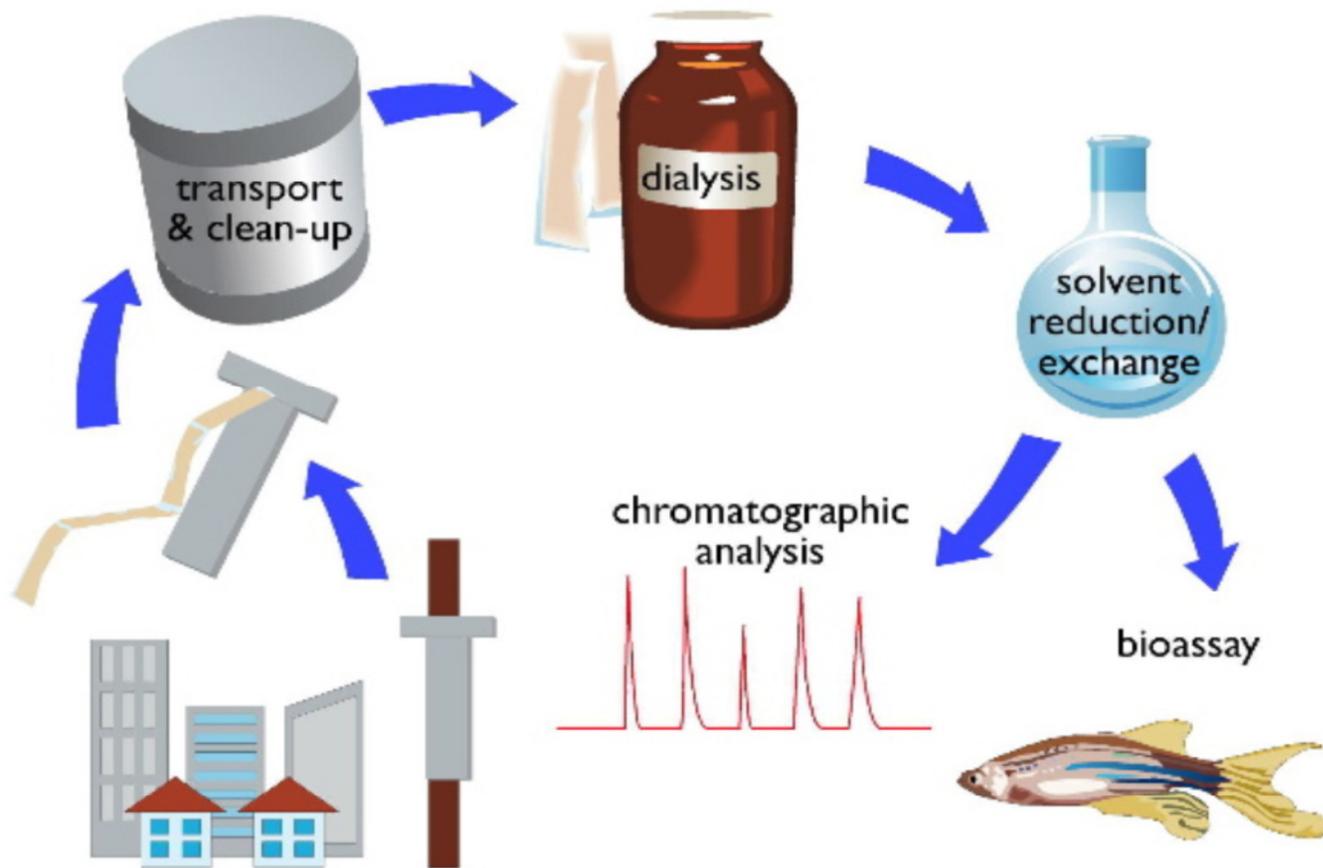
# Beyond Chemical Analysis...

## Concern about lack of tribal specific information

- Exposure dose (**exposure concentration**)
  - Chemical **mixtures**
  - Predicting environmental fate
- Integration of **space-time** into health risk framework
  - Ambient rough estimate
  - Bio-monitoring transient estimate
- Multi-media (water, air, ...)
- Tribal specific locations, unique activities
  - Spatial and temporal questions well suited to technology

# Passive Sampling Device

## Adequate biological surrogate



- **Testing:**
- **Deploy and Validate PSD at Swinomish field sites**



**Tribal Community Chemistry Data Needs**  
**Building knowledge, filling information gaps**

# How to make it happen...



**Lane Tidwell**, Environmental and Molecular Toxicology Graduate Research Associate, Oregon State University. Deploying a Beta Version of the passive sampler in the Gulf of Mexico, May, 2010

- Good communication
- Identify field sites of interest to Swinomish Tribal Community
- Set-up **test field sites**
- “Hope” sites are not bulldozed
  - ▣ Stay tuned to PART B

# How to make it happen...

## Tribal Community Interest

- **Jamie Donatuto & Anna Harding** –drive the IRB process
  - Previous expertise *critical*
- **Material and Data Sharing Agreement**
  - Ownership
  - Data access, security
  - Confidentiality
  - ....

THE SWINOMISH INDIAN TRIBAL COMMUNITY  
RESOLUTION NO. 2010-05-095  
A Resolution Approving a Material and Data Sharing Agreement with Oregon State University

WHEREAS, the Swinomish Indian Tribal Community (the "Tribe") is a federally recognized Indian Tribe, organized pursuant to Section 16 of the Indian Reorganization Act of 1934 (25 U.S.C. §476); and

WHEREAS, the Tribe is organized under a constitution and bylaws originally ratified by the Tribe on November 16, 1934, and approved by the Secretary of the Interior on January 27, 1936, and as most recently amended and ratified by the tribe on September 22, 1985 and approved by the Secretary of Interior on October 22, 1985; and

WHEREAS, the Swinomish Indian Senate (the "Senate") is the duly elected governing body of the Swinomish Indian Tribal Community and exercises governmental authority over all lands within the Swinomish Indian Reservation; and

WHEREAS, the Swinomish Indian Senate is charged with the duty and responsibility of protecting the health, security and general welfare of the Tribe and all reservation residents; and

WHEREAS, The Swinomish Indian Senate recognizes the importance of researching airborne chemicals that may be affecting the health of Reservation residents;

WHEREAS, Oregon State University (OSU) has agreed to establish passive air and water sampling devices on the Reservation to collect organic chemicals associated with petrochemical processing, agricultural burning, coal-fired utilities, rural sources, and diesel emissions, and to analyze the data that is collected on airborne chemicals;

WHEREAS, OSU has agreed that the collected data is the property of the Tribe, and has agreed to secure the data, limit the distribution of the data, and to maintain the confidentiality of the data; and

WHEREAS, OSU and the Tribe have agreed upon terms of a "Material and Data Sharing Agreement – Swinomish-OSU Collaboration", a copy of which is attached to

# Building Collaborations & Training



# Post Swinomish “leveling” project-Even the best made plans ***Building Capacity...***

**Train Swinomish  
staff to deploy  
and retrieve PSD**

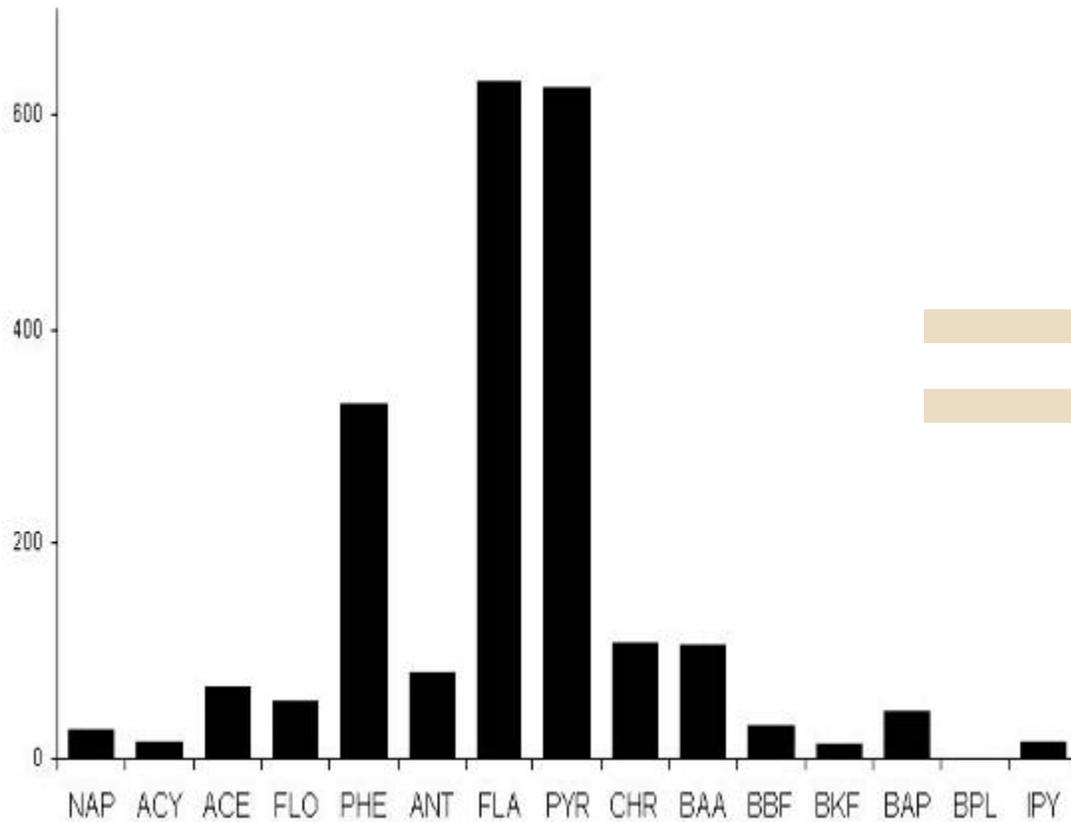
Develop sampling  
strategy and pilot  
field exercise

Chain of Custody,  
Quality Assurance

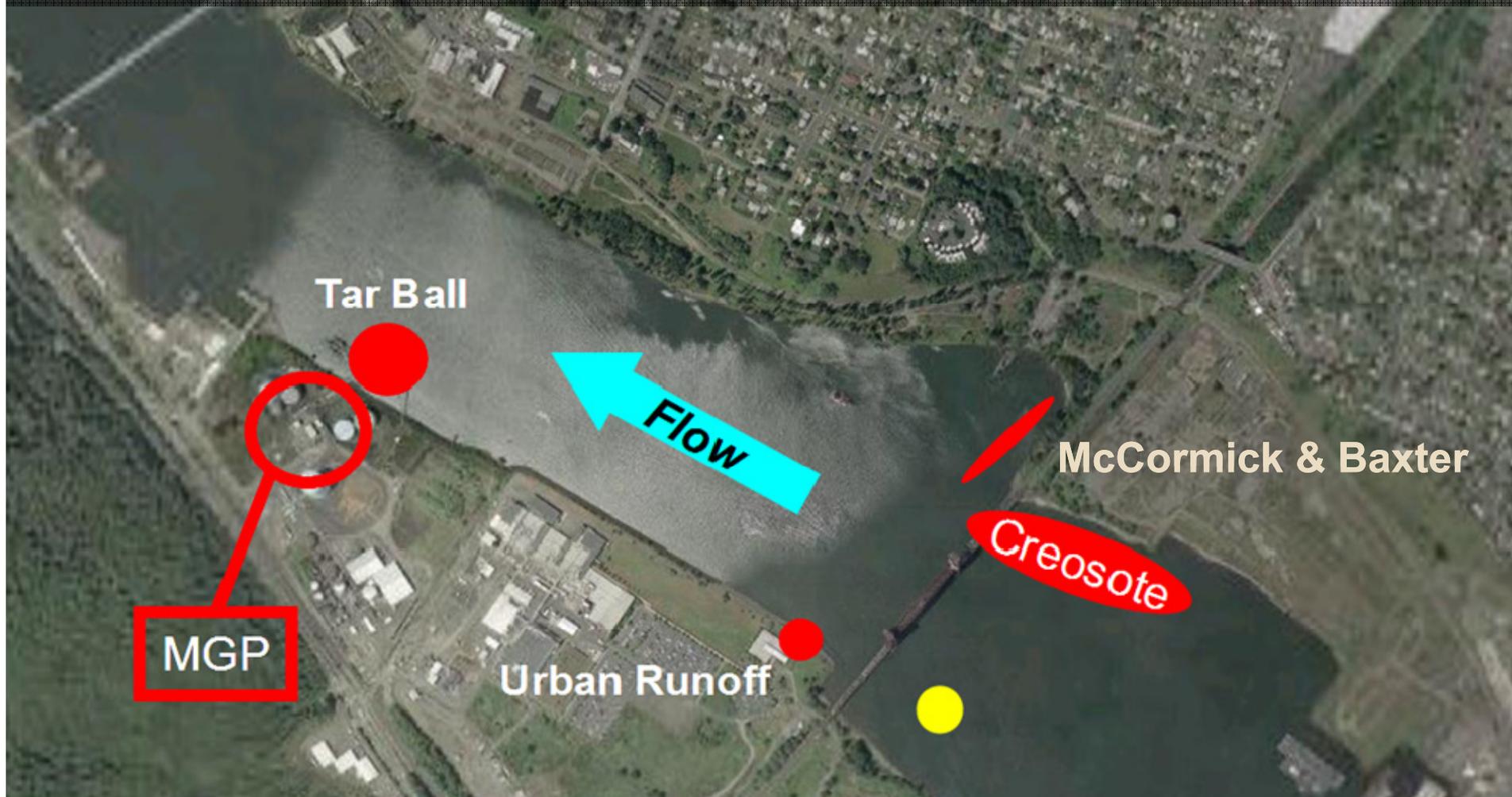
Technical skills for  
trace residue  
environmental  
sampling



# Analyzing the chemical 'fingerprint' in a congener profile



# A CASE STUDY IN COMMUNITY-UNIVERSITY COLLABORATION: MICRO-SCALE DATA FOR REMEDIATION AT A SUPERFUND SITE

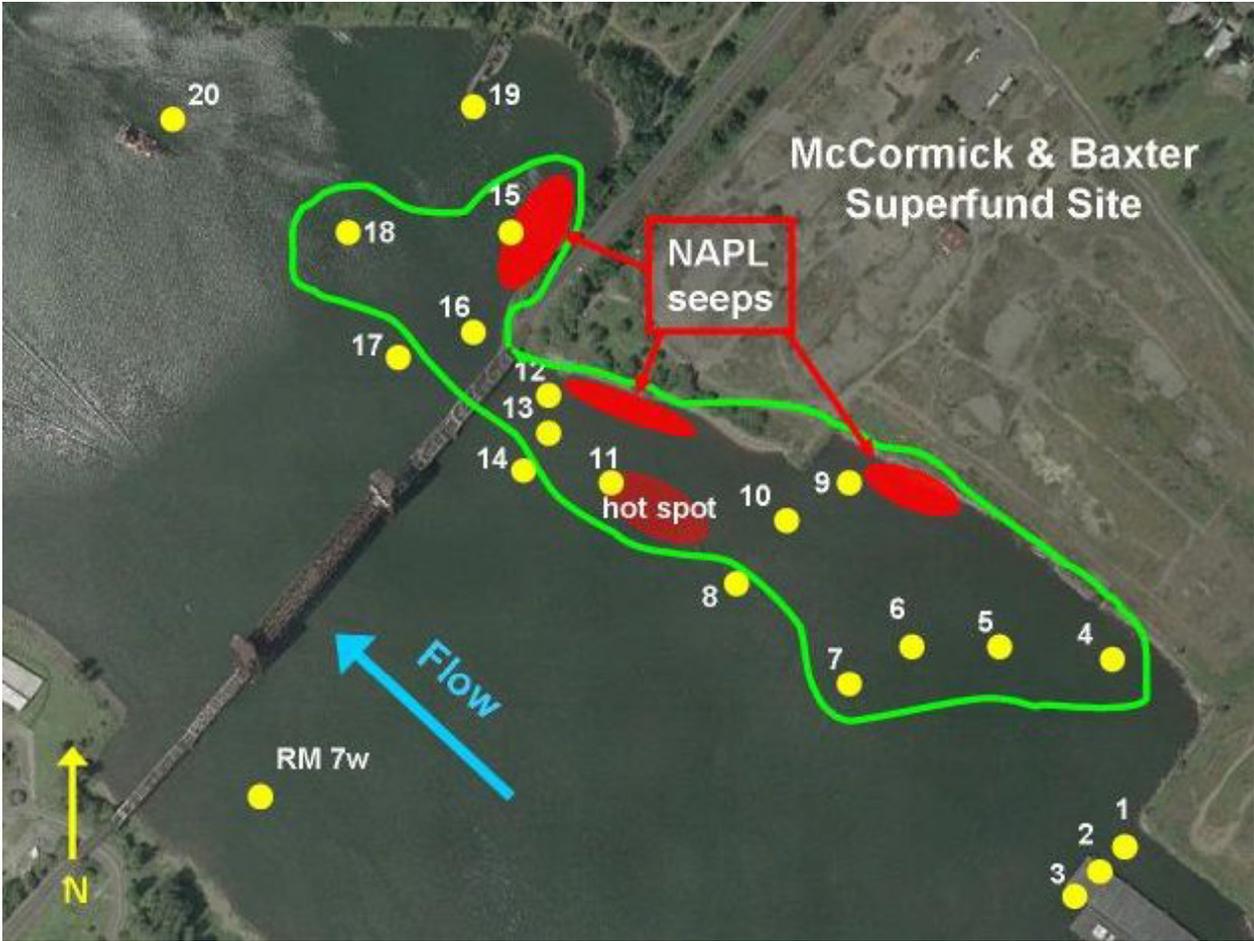


Working Together  
McCormick and Baxter Superfund Remediation

# McCormick & Baxter Superfund site

Micro scale & Temporal NEW information for Oregon DEQ

Creosote site  
Willamette  
River



# McCormick & Baxter remediation

PSD  
TECHNOLOGY

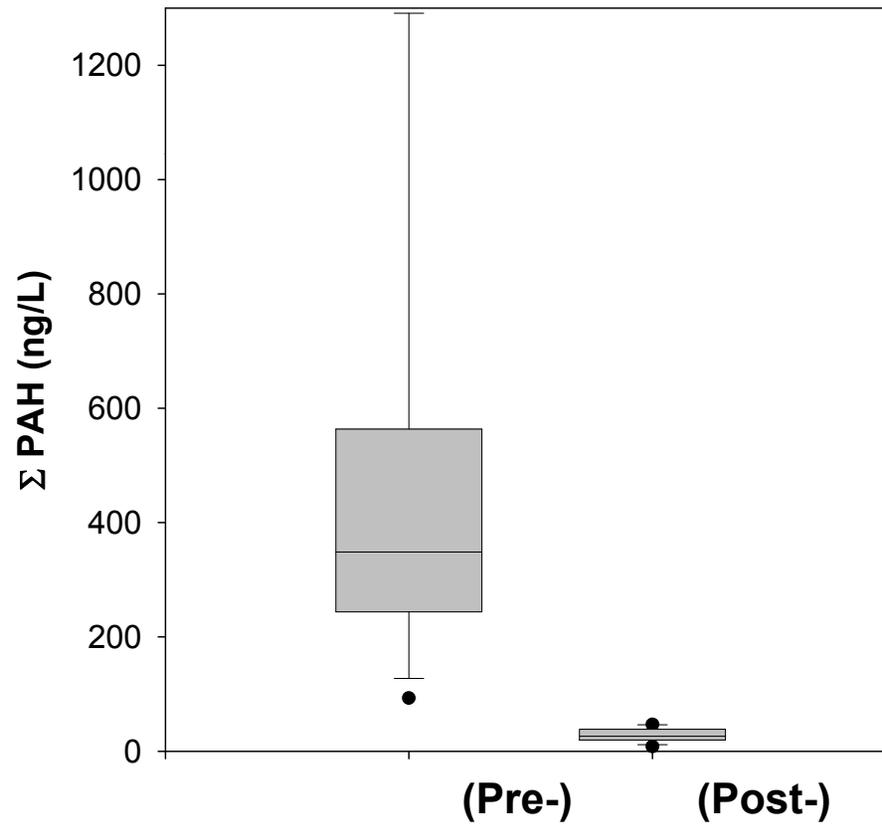
MORE information:

Bioavailable

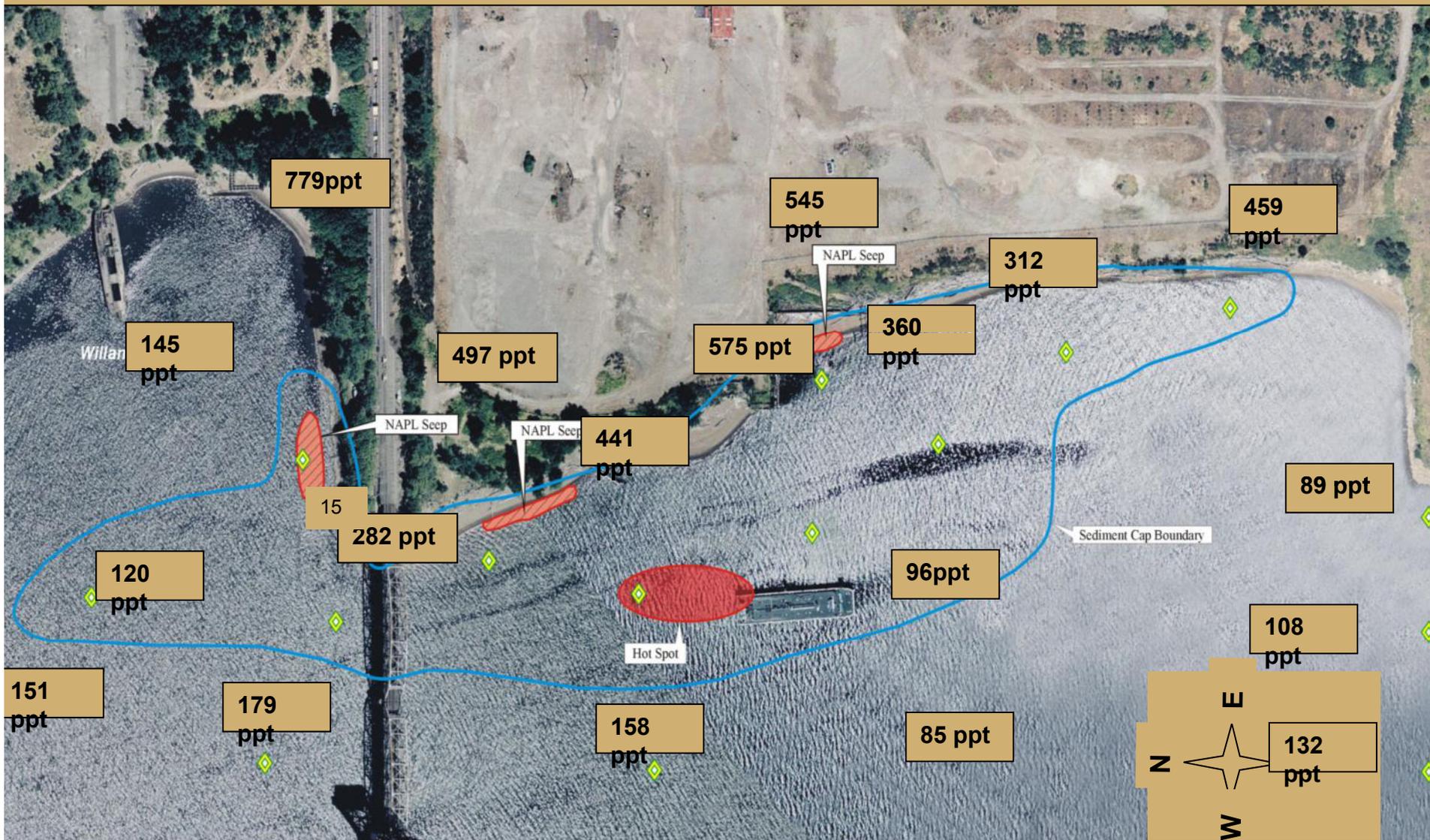
Micro-Spatial

Temporal

Chemical Profiling  
for SOURCE  
identification

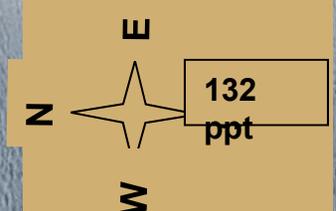
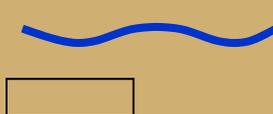


# McCormick & Baxter total bioavailable PAH concentration



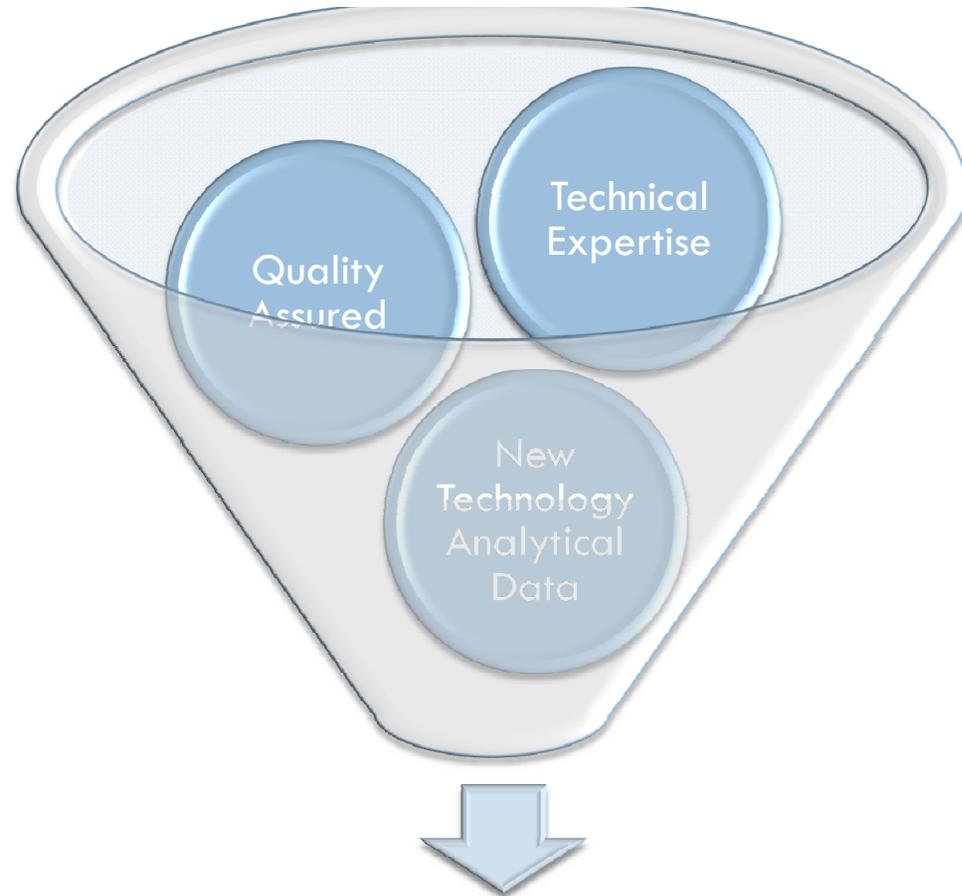
Known chemical seep  
Outside cap boundary

Proposed sediment cap boundary  
Inside cap boundary



# It worked !

*More than 'just'*  
**generating data**  
**working**  
**together for**  
**better results to**  
**solve problems**  
**and find**  
**workable**  
**solutions**



**MINDFUL INFORMATION**

# Acknowledgements



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## Collaborators:

Oregon State University  
Professor Robert Tanguay, SRP Co-I  
Professor Anna Harding, Co-I  
Professor Dashwood, Linus Pauling Institute, CCP  
Core, David Yu, PhD. (Ames)

Pacific Northwest National Laboratory  
Katrina Waters, PhD

## Collaborators:

Swinomish Indian Tribal Community  
Confederated Tribes of the Umatilla Indian  
Reservation

Oregon Dept of Environmental Quality  
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Hoggard



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<http://fses.oregonstate.edu>

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<http://oregonstate.edu/superfund/oilspill>



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