

# **Final Discussions on Ecological Risk Assessment Methodology**

Complete December workshop discussions

River Corridor Closure Contractor  
and

Neptune and Company, Inc.

January 16, 2007

# December Workshop

- Discussion of ecological risk assessment methodology was not completed
- Neptune/WCH requested that participants review October workshop handouts
- Comments received after the workshop

# Reference Site Comparisons

- Comment
  - SAP states that risk hypotheses evaluated against contamination gradient and against reference sites
- Some discussion points
  - Results from gradient analysis and reference site comparisons are given equal weight
  - Reference sites will be employed in analyses as per DQO, SAP, and workshops

# Reference Site Comparisons (cont.)

- Suggested evaluation of toxicity results
  - Preference is for comparisons against laboratory controls (e.g., plants grown in artificial soil)
  - Do not make comparisons to reference sites
- Some discussion points
  - Laboratory controls are used to evaluate test adequacy
  - once results are determined to be valid, further assessment of laboratory controls are not planned

# Reference Site Comparisons (cont.)

- Comment
  - "restored" borrow pits are not an unaffected/undisturbed site for characterizing native habitats
- Some discussion points
  - Borrow pits are not intended to serve as comparisons for native soils
  - Used to assess effects of disturbance on remediated backfilled sites

# Quality Assurance/ Quality Control

- Comment on Plant Toxicity Bioassay validity
  - Did the laboratory meet acceptance criteria?
  - Control results are too variable to be used
- Some discussion points
  - Test results have been reviewed based on method requirements or recommendations
  - Plant toxicity bioassay results are under continuing review to determine their validity

# Examination of Exposure/Response Gradients

- Comment
  - Gradient should be primary analysis factor
- Some discussion points
  - Gradients and reference site comparison are both performed and given equal weight; could consider modifying weight to “+” and “-”

# Examination of Exposure/Response Gradients (cont.)

- Comment
  - Request exploratory analyses of contaminants against the following
    - Toxicity responses
    - Field population measures
    - Other effects
- Some discussion points
  - Exploratory data analysis is included as part of planned analyses
    - See DQO, SAP, and workshop handouts

# Examination of Exposure/Response Gradients (cont.)

- Recommendation
  - Consider Principal Component Analyses
- Some discussion points
  - Principal Components Analysis has been discussed at several workshops as an additional tool; will be considered in the Exploratory data analysis

# Examination of Effects

- Comment
  - 40% difference between the lab reference and test samples was equated as no effect
- Some discussion points
  - There was additional discussion of the plant lines of evidences that clarified what was intended by the overall conclusion presented on slide 25 in the December 2006 workshop
  - We agree that there is a statistical difference relative to reference sites for some plant toxicity bioassay measures for site 100-D-22

# Examination of Effects (cont.)

- Comment
  - Gross scale habitat analysis was used to detect change and the results of this blunt test were utilized with tissue concentration and toxicity tests (which dilutes the weight of other variables)
- Some discussion points
  - Habitat analyses are one line of evidence that were given a medium weight, less than the toxicity bioassay and greater than the comparison to screening levels

# Scope of Evaluation

- Recommended approach
  - Identify relationships between contaminant exposure and responses
  - If responses observed, identify protective exposure concentrations
  - Assess whether risk is from Hanford
- Some discussion points
  - First and third items are integral to the report
  - We agree that protective levels may be derived based on the results in the report

# Waste Site Risks

- Comment
  - If waste sites analyzed separately from other areas, site-by-site evaluation is fine
  - Can also use waste site data with other data for evaluating contamination gradients
- Some discussion points
  - Waste site data evaluated in the Human Health risk assessment
  - Ecological risks are evaluated based on the investigation areas and near shore aquatic locations

# **Ecological Risk Assessment Methodology**

Other Questions or Comments