



Tribal Natural Resource Damages, Assessment and Restoration Conference

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NRDA Overview and Definitions



NRDA – Overview

- Purpose: Make the public whole for injuries to natural resources that result from the release of hazardous substances or oil
- The public is made whole through “restoration” (damages recovered must be used for restoration)



NRDA – Overview (cont.)

- Includes compensation for harms that may accrue over time: past, present, future
- NRDA restoration complements, but is distinct from, response “cleanup” actions



NRDA – Definitions

- *Damages*: Amount of money sought by a trustee as compensation for injured natural resources and service losses (must be used for restoration)
- *Injury*: Measurable adverse change in quality or viability of a natural resource resulting from exposure to a release of a hazardous substance or discharge of oil



NRDA – Definitions (cont.)

- *Services*: Physical, biological, human and cultural functions performed by the natural resource

- Examples of physical and biological services:
 - Habitat
 - Foraging
 - Food



NRDA – Definitions (cont.)

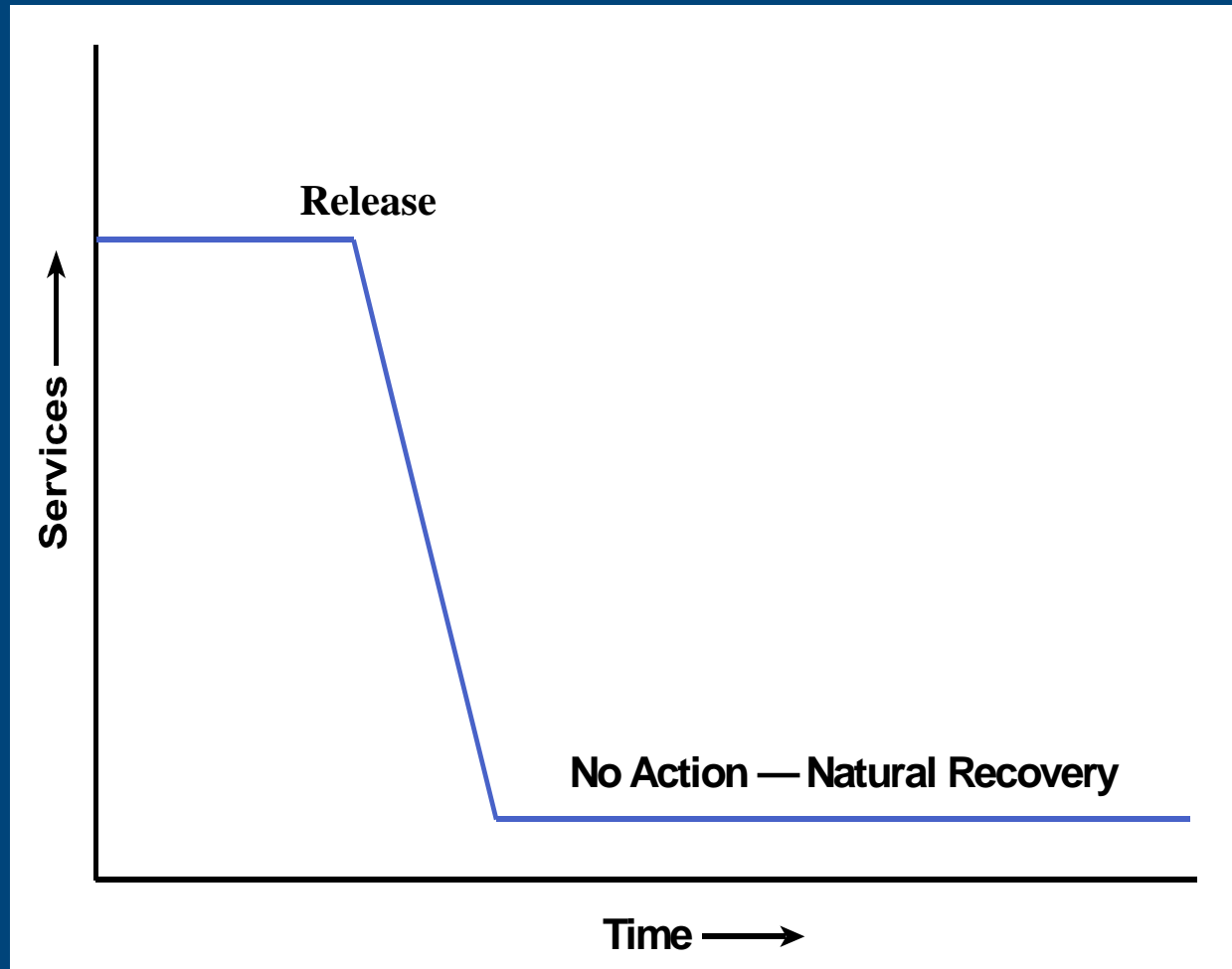
- Examples of cultural services from natural resources:
 - Direct use of the resources
 - Food, crafts, commerce
 - Transmission of language skills to youth
 - Ceremonial
 - Historic meeting sites
 - Societal interchange



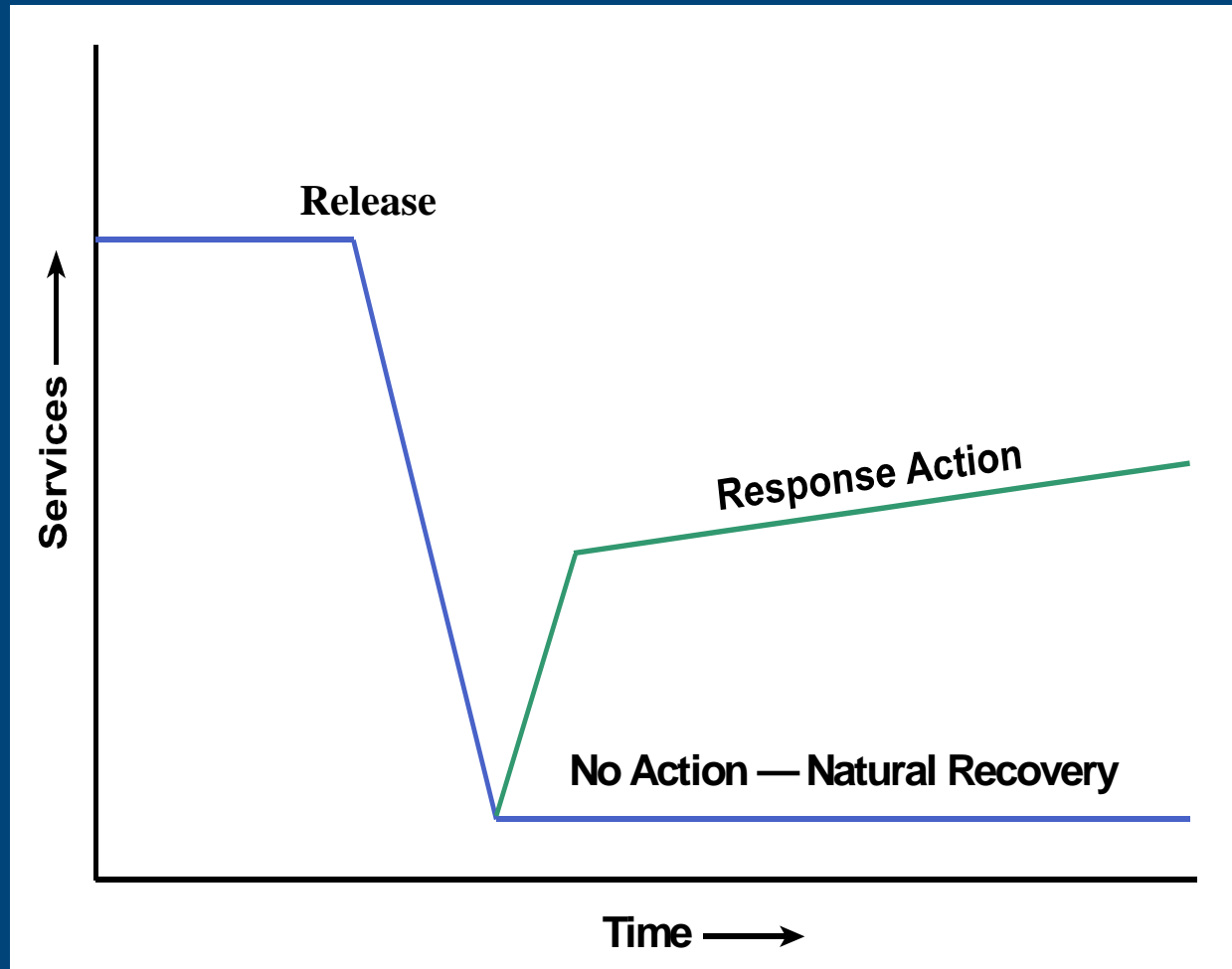
Service Loss



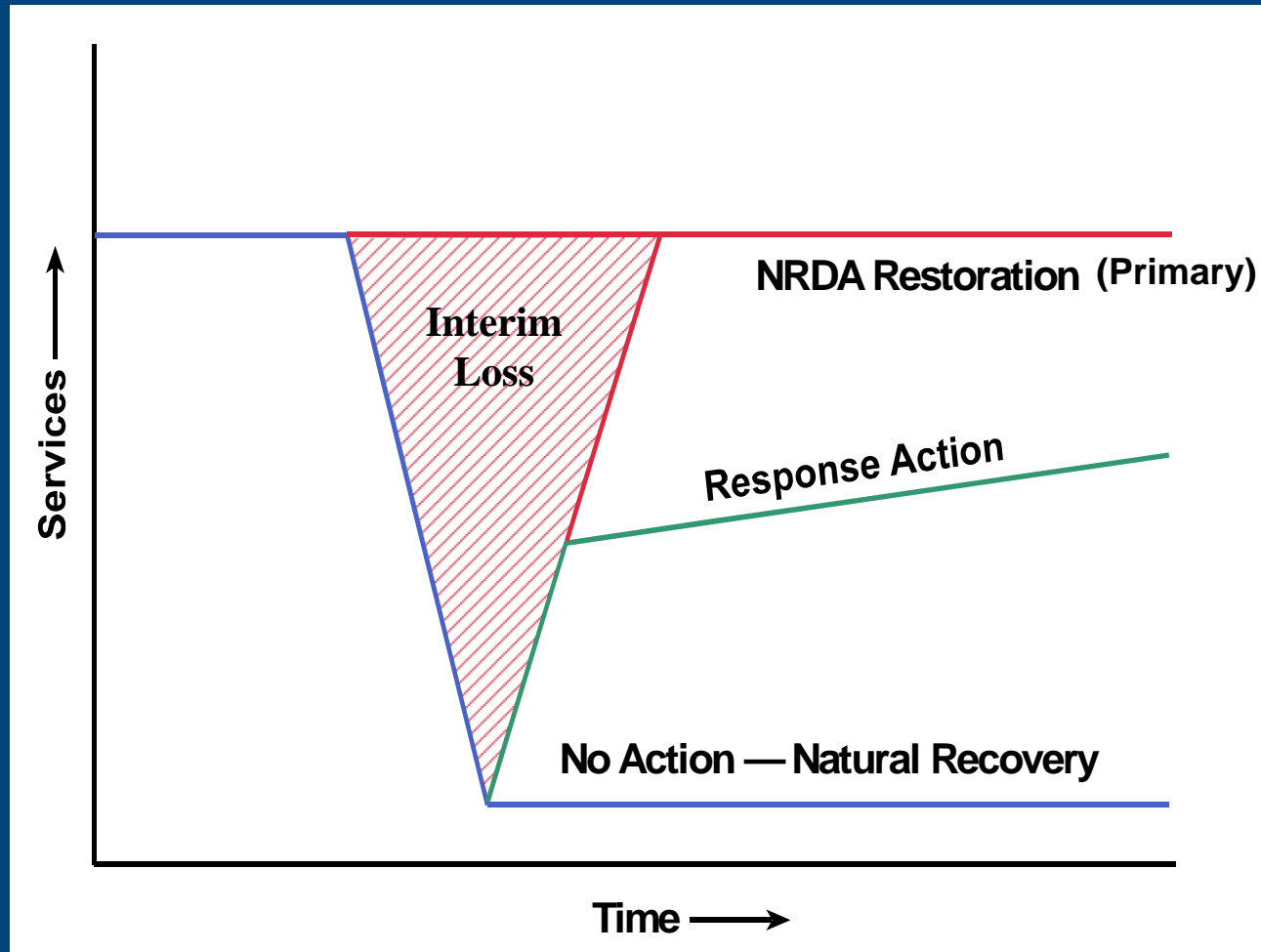
Service Loss



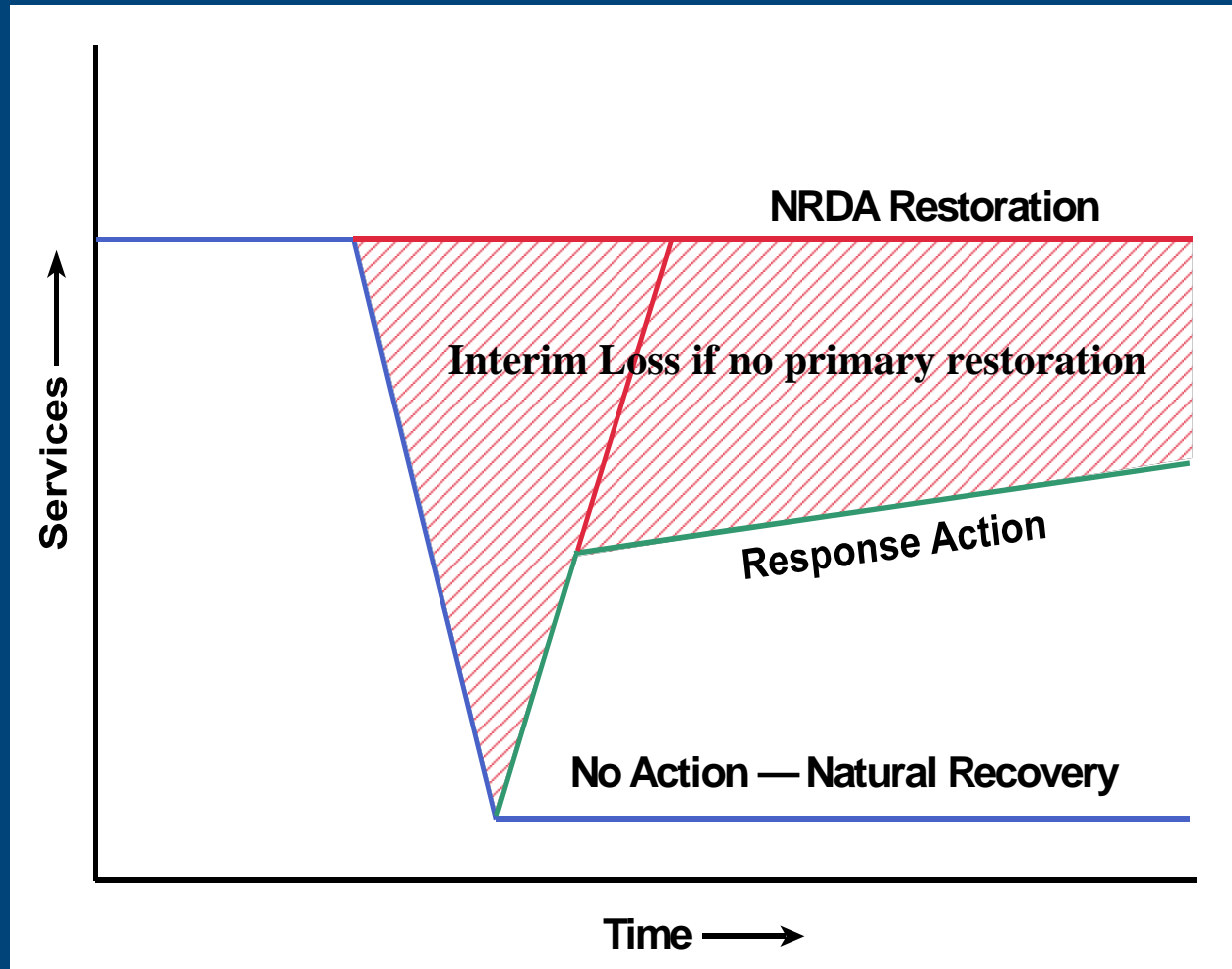
Service Loss (cont.)



Service Loss (cont.)



Service Loss (cont.)



NRDA and RI/FS

Fundamentally Different Processes with Different Objectives

- RI/FS: Inform response/remedial actions
 - Goal = manage risks to human health and the environment
- NRDA: Process of determining the effects of releases of chemicals/oil on natural resources
 - Goal = make the public whole for injuries to natural resources through restoration



NRDA vs. RI/FS

- Temporal focus
 - RI/FS: current and future residual conditions
 - NRDA: past/present/future



NRDA vs. RI/FS

- Spatial focus
 - RI/FS: where hazardous substances have come to be located. Actions focused on-site (source/risk reduction)
 - NRDA: where exposure/injury/service losses may have occurred. Restoration alternative evaluation can be broader, including off-site



Key Questions for Trustees



Key Questions for NRDA Trustees

- What can be done to restore resources and services to baseline?
 - Taking into account remedial actions
- If resources and services cannot be restored to baseline, what is appropriate compensation?
- What additional restoration is necessary to address past losses?



Key Questions Specific to Tribal Trustees

- Are there specific tribal uses and losses that can be addressed through restoration projects?
 - Cultural / ceremonial
 - Recreational
 - Subsistence
 - Commercial
- How can restoration projects be designed to specifically provide those uses and benefits?



NRDA Process



Administrative Process (DOI)

- Preassessment Screen
- Assessment Plan
- **Assessment Phase**
 - Injury determination
 - Injury quantification
 - **Damage determination**
 - Restoration planning
 - Restoration and Compensation Determination Plan (RCDP)
- Report of Assessment
- Post Assessment Phase
 - Restoration Plan
 - Implementation of restoration



Injury Determination



Injury Determination

- Determine:
 - Source(s) and release(s) of hazardous substance(s)
 - Environmental exposure (direct/indirect) via pathways
 - Injuries to trust natural resources

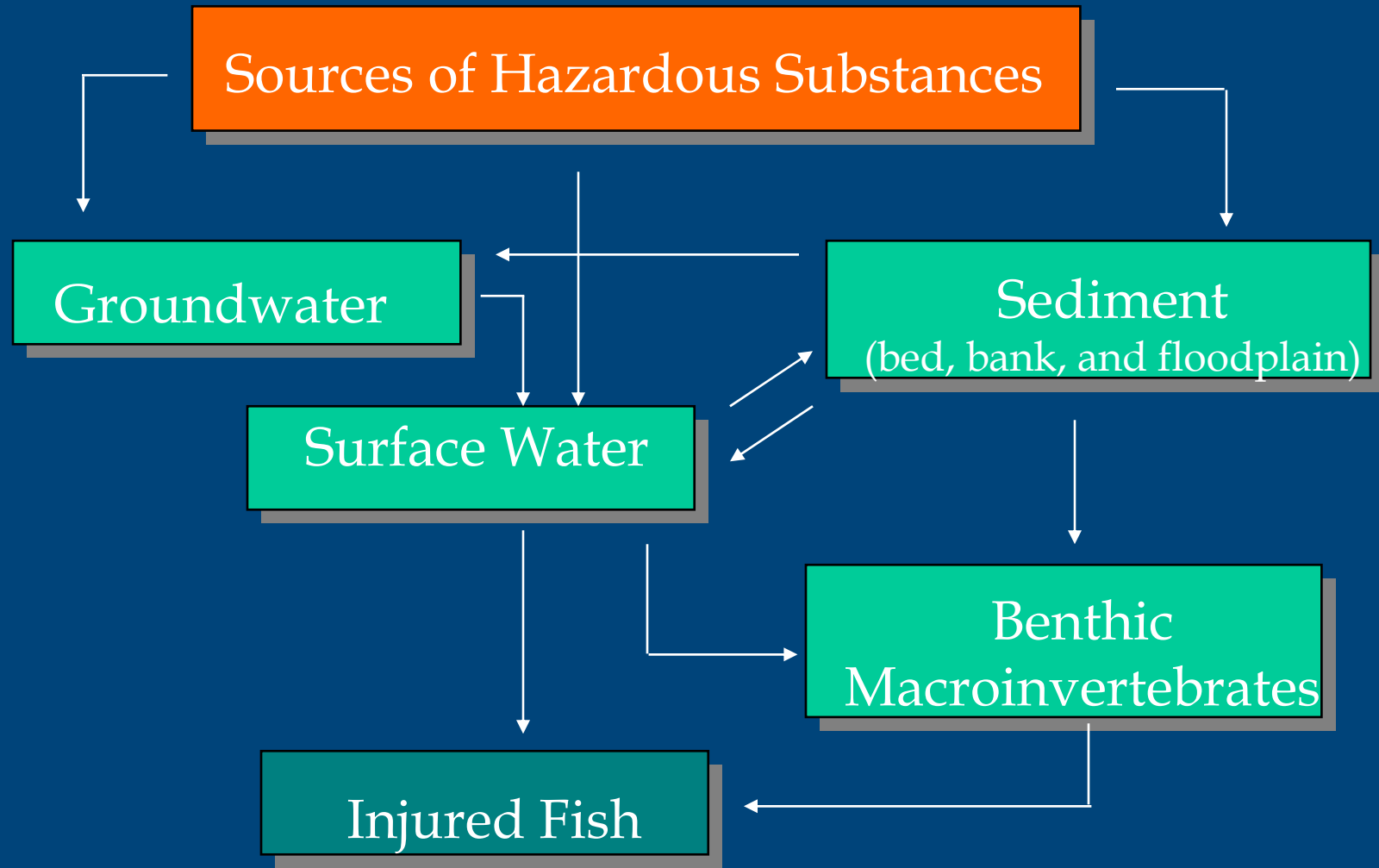


Injury Determination: Sources and Releases

- Characterize hazardous substance releases
 - Which hazardous substance(s)?
 - Timing/frequency/duration?
 - Location?
 - Quantity?
 - Responsible party?



Injury Determination: Pathway



Injury Determination: Examples

- Surface water and groundwater
 - Contaminant concentrations that exceed regulatory limits
 - Conditions sufficient to adversely affect
 - Biological resources
 - Human/cultural uses



Injury Determination: Examples (cont.)

- Soils (“geologic resources”)
 - Chemical concentrations toxic to microorganisms, invertebrates, plants, wildlife
 - Reduced water-holding capacity, nutrient cycling



Injury Determination: Examples (cont.)

- Vegetation
 - Reduced cover, diversity, health, vigor, reproductive capacity, stability



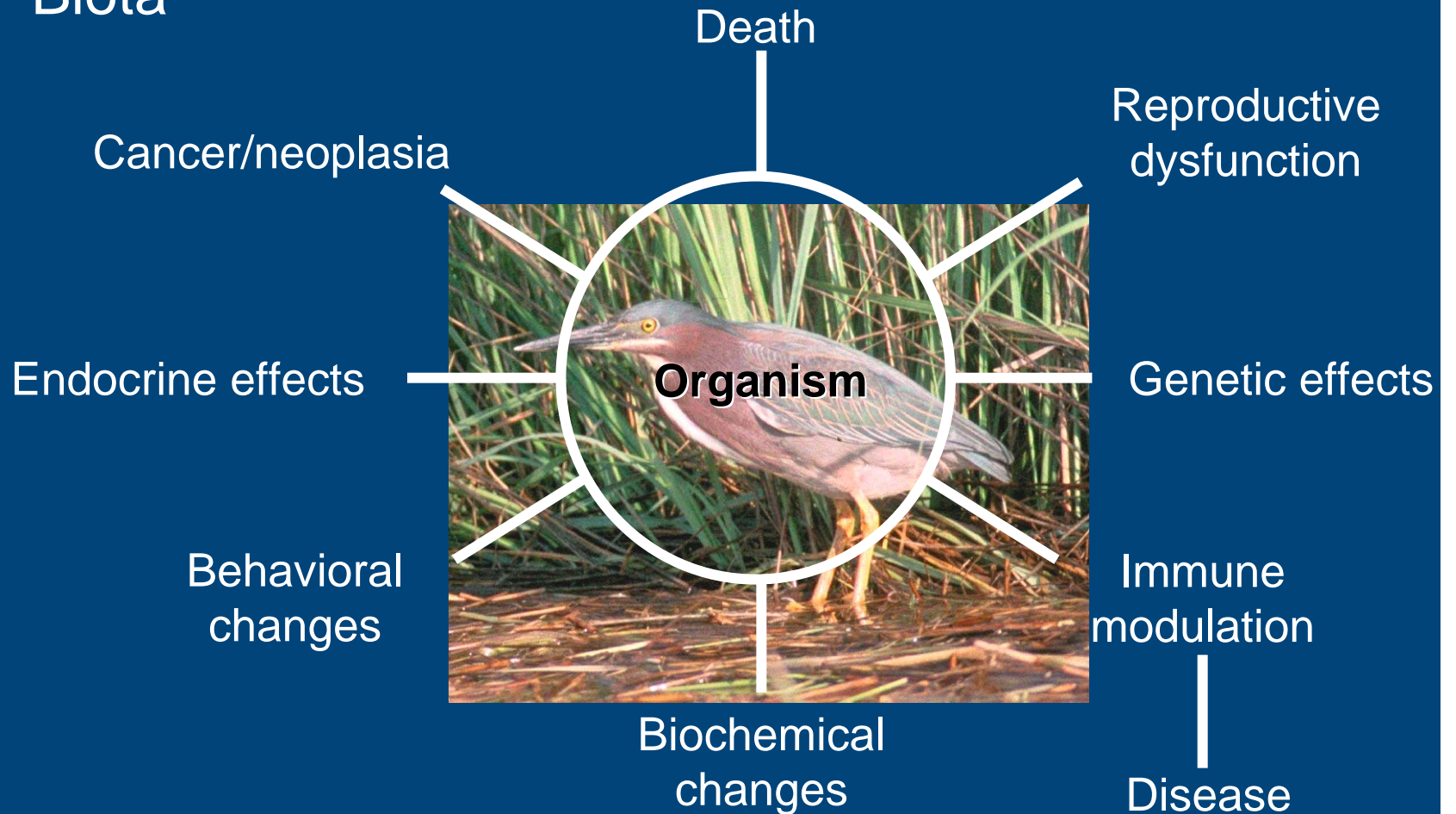
Injury Determination: Examples (cont.)

- Habitats
 - Alterations in habitat structure, resistance, resilience, stability



Injury Determination: Examples (cont.)

- Biota



Injury Quantification

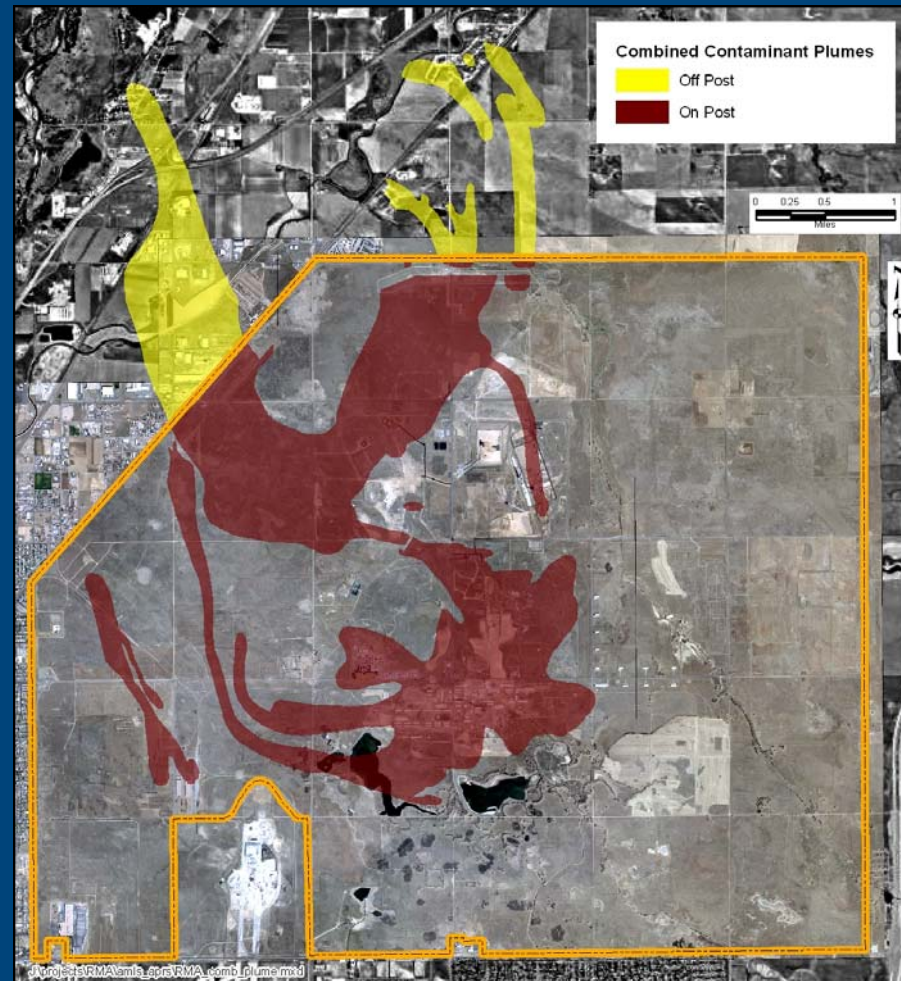


Injury Quantification

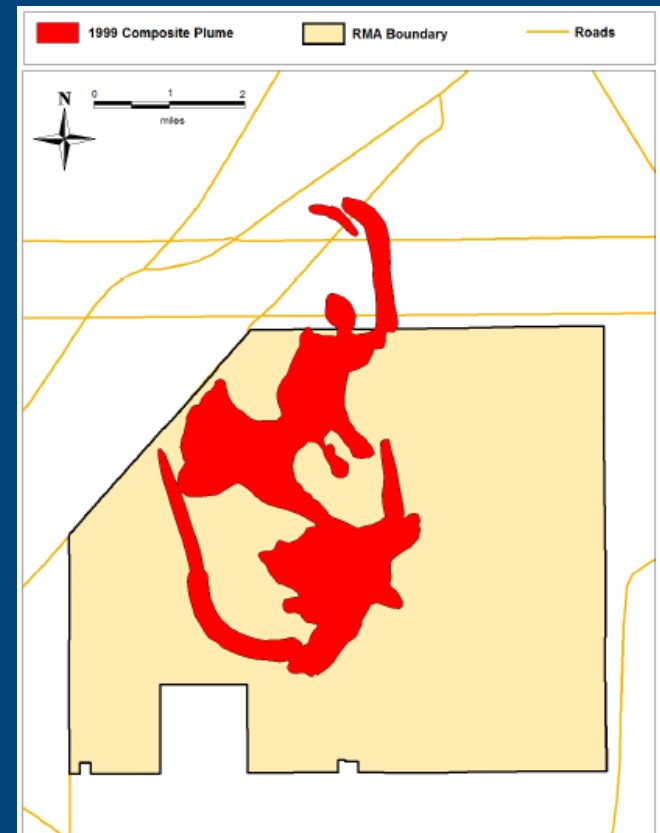
- Quantify changes relative to baseline
 - Extent or degree of injury
 - Percent occurrence in individual, population, community
 - Magnitude of effects
- Temporal extent
- Spatial extent



Injury Quantification Example: Groundwater



Injury Quantification Example: Groundwater (cont.)



Tribal NRDA Claims

- Tribal claims likely to include lost cultural use of natural resources that are above and beyond ecological impacts



Tribal NRDA Claims (cont.)

- Injury quantification can be difficult, cultural use of natural resources is not commonly measured
 - Cultural uses typically not formally tracked
 - Information may be sensitive
 - E.g., use and location of important species

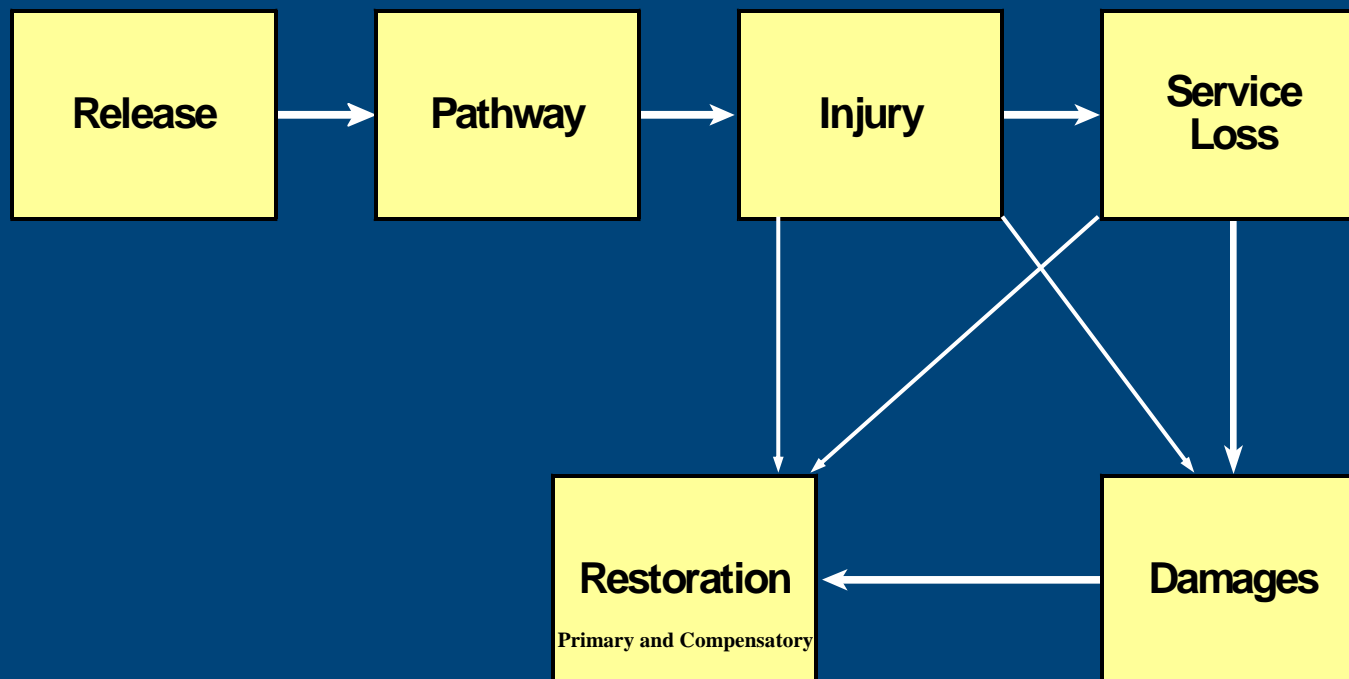


Tribal NRDA Claims (cont.)

- Focus on restoration projects with tribal use benefits that can address the losses that have occurred
 - Cultural / ceremonial
 - Recreational
 - Subsistence
 - Commercial



Summary





Extra Slides



NRDA vs. RI/FS (cont.)

- Characterization
 - RI/FS: characterize sources/pathways/risks at level of detail necessary to select appropriate remedial alternatives
 - NRDA: characterize exposure/injury/service loss at level of detail necessary to determine and quantify losses



Injury Determination: Pathway

- Sampling approach
 - Use environmental data to demonstrate presence of hazardous substances in pathway components
- Modeling approach
 - Use model to demonstrate environmental mobility/transformation

