



# Symposium 1

## Defining & Measuring Flood Risks & Floodplain Resources

September 16, 2009  
Gaithersburg, Maryland

Held in preparation for the Third Assembly of the  
Gilbert F. White National Flood Policy Forum

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This document is intended to help invitees prepare for informed and effective participation in Symposium 1. Two background papers are also provided for reading in advance of the Symposium, “Quantifying Flood Risk” by Gregory B. Baecher, and “The Need for a Resource Conservation Ethic in Flood Risk Management,” by Doug Plasencia and Jacquelyn Monday.

At the Symposium, the group’s major task will be to examine the best ways to approach the measurement of both the varied risks posed by floods and the many services provided by the natural functions and resources of floodprone areas. The “best” quantification methods are those that will enable management strategies to be effective in reaching societal goals.

### PROCEDURES and APPROACH to SYMPOSIUM 1

#### Step 1 — We need a Management Strategy for Flood Risks and Floodplain Resources (9:15–9:30 am)

A brief presentation will explain the need for a management strategy. After decades of work to reduce flood damage in the United States, losses continue to rise and floodprone ecosystems continue to be degraded. It is time to formulate methods for setting goals and evaluating progress in the reduction of flood risk and the protection/restoration of the natural functions and resources (sometimes called “services”) of floodplain areas, including the coast. At present, floodplain management programs do not work toward targets that are defined in terms of desired societal outcomes or that are quantifiable. Without quantified targets for our management approaches, we will merely be “keeping score” as flooding risks and environmental degradation persist into the future.

To develop an effective management strategy for flood risks to society and for the risks to floodplain resources, we need first to determine the best means of quantifying those attributes. The quantification methods must be adaptable to the management tools in wide use today, and also support measurement of the positive outcomes that are desired by society. We must strive for a reasonable degree of consistency in the quantification methods and also recognize that flood risk and floodplain resources management will evolve with changing needs.

#### Step 2 — Methods for Measuring Flood Risks and Floodplain Resources (9:30 am–12:00 noon)

An invited speaker will give an overview of the methods in use for measuring flood risks and for valuing of natural floodplain functions and resources (see the two papers by Baecher and by Plasencia and Monday). After the presentation, a four-person panel will respond to the presentation and engage the participants in a discussion of the range of quantification methods and their usefulness.

In general, several methods can be used to quantify the risks posed to society by floods (see paper by Baecher). These methods capture, to a greater or lesser extent, expected damage to property, economic

losses, and other factors. In contrast, methods to quantify the resources and functions of floodprone areas are not widely used in floodplain management, although analogous techniques have been employed to set values on conserved land, wetlands, habitat, recreational opportunities, and other attributes and services provided by floodplains (see paper by Plasencia and Monday).

**Step 3 — Cross-walk of Quantification Methods with Management Outcomes** (12:45–2:15 pm)

The matrix below can serve as a starting point for discussion during this phase of the Symposium. Along the vertical axis are listed some, but not all, of the main methods for measuring flood risk and for measuring resources and functions. Across the horizontal axis are listed some (again, perhaps not all ) broad goals or outcomes of a flood risk and floodplain benefits management strategy. In small groups, participants will assess how well each of these quantification techniques (and others, as applicable) provides appropriate input for setting targets and assessing progress toward each of the desired outcomes (and additional outcomes, as applicable).

Start-up Discussion Matrix: Usefulness of Quantification Methods									
How well does each method help track progress toward the desired outcomes?									
Quantification Method	Desired Management Outcomes						Other Considerations		
	Minimal Harm to Society (fewer deaths & injuries, minimal social and economic disruption, other)	Minimal Damage / Losses to Built Environment (residential, commercial, infrastructure, other)	Protection and Restoration of Natural Floodplain Functions and Resources (habitat, filtration, buffers, recreation, biomass, other)	Other?	Scale (individual, household, community, watershed, state, national)	Cost of method	Availability / accuracy of data	Other?	
Risk = (hazard, vulnerability, consequences)									
Risk index/ risk matrix									
Scenario approach									
Probabilistic approach									
Consequence estimation									
Ecological risk assessment									
Benefit/cost analysis									
Economic impact analysis									
Ecosystem valuation (market & non-market)									
Others?									

The groups should consider what additional outcomes—or refinements to listed outcomes—are needed, what other quantification methods are in use, whether one method or measurement or assessment is preferable, or whether a combination is needed. In what ways, if any, do existing quantification methods fail to support the management outcomes?

#### **Step 4 — Recommendations** (2:30–4:30 pm)

In the final stage of the Symposium, participants will return to the plenary group to report on the small-group discussions and for consolidation of comments and formulation of recommendations. The group will consider such questions as

- Do the quantification tools address one subset of outcomes better than another? If so, what can be done to equalize this treatment of outcomes?
- At what level (scale) should we monitor and quantify risks and benefits to best serve the optimal outcomes?
- Is consistency among agencies in quantifying risks and resources desirable? Should quantification methods be adapted to a given program’s purpose or agency’s mission?
- Is flood risk a single number? A dashboard-like function that reflects multiple management objectives? Can we develop a cumulative indicator that reflects the status of flood risks and floodplain-dependent uses/resources? If so, at what level?