An Evaluation of:

Compensating for Wetland Losses Under the Clean Water Act
(National Academy of Sciences, 2001)
and
The 2008 Final Rule for Compensatory Mitigation (33 CFR 332)
In Support of a Watershed Approach to Mitigation

The 2001 National Academy of Sciences (NAS) study, *Compensating for Wetland Losses Under the Clean Water Act*, emphasized the importance of adopting a watershed approach to wetland mitigation. Ultimately, this study provided a foundation for several critical tenets of the 2008 Final Rule for Compensatory Mitigation, including the watershed approach to mitigation site selection. The following excerpts from the 2001 NAS Study and the 2008 Final Rule support using a watershed approach for siting wetland mitigation projects rather than prioritizing on-site and in-kind mitigation.

NAS Study Conclusions

Executive Summary

- Conclusion 2: A watershed approach would improve permit decision-making.
- The federal guidelines for permit decision-making strongly prefer compensation as near the permitted impact site as possible and for the same wetland type and functions. The committee concluded that such a preference for on-site and in-kind mitigation should not be automatic but should follow from an analytically based assessment of the wetland needs in the watershed and the potential for the compensatory wetland to persist over time.
- On-site compensation is typically constrained by hydrological conditions that are likely to have been or are being modified by the developments requiring mitigation. Proper placement within the landscape of compensatory wetlands to establish hydrological equivalence is necessary for wetland sustainability. Opportunities for in-kind compensation should be sought within a larger landscape context.

Chapter 3: A Watershed Setting

- The committee concludes that the wetland remnants of the development process may not constitute the best configuration of wetland type for a watershed. This conclusion has implications for the kind of wetland planning that might be required in some of the nation's watersheds and the compensatory mitigation practices in those watersheds (page 46).
- Degradation of wetlands contributes to an overall decrease in watershed ecological function. Watershed scale can include river basins, subbasins, or smaller hydrological units or drainage areas, the size of which is dependent on the wetland function(s) of interest. This chapter aims to demonstrate that these units are hydrologically connected; thus, wetland functions are integrated on a watershed basis. *Consequently, wetland mitigation should be considered on a watershed basis* (page 47).
- Restored and created wetlands should be self-sustaining (Mitsch and Wilson 1996); to be self-sustaining, they must be properly sited in the watershed (page 48).
- How Does Position in the Watershed Affect Hydrology? One of wetlands' most frequently cited functions is their ability to reduce the effects of flooding by temporarily storing stormwater and gradually releasing it to streams as modulated surface flow (Dennison and Barry 1993) and/or groundwater discharge that constitutes stream base flow. Novitzki (1985) showed that watersheds in the northeastern United States with 4% or greater wetland areas had 50% lower peak flows than watersheds without wetland areas. To provide this function, the receiving wetland must occur at a relatively lower topographic elevation within the watershed than the contributing uplands. Typical inland wetlands that provide floodwater storage include riparian or floodplain wetlands.

- How Does Position in the Watershed Affect Water Quality? As described in Chapter 2, the position of a wetland in a watershed plays an important role in water-quality function. Wetlands improve the water quality of receiving waters by removing nutrients and sediment. The receiving wetland must also occur at a relatively lower topographic elevation in the watershed to provide this water-quality function than the contributing uplands. Typical inland wetlands that occupy relatively lower landscape positions and provide water-quality functions include riparian or floodplain wetlands, isolated depressional wetlands (such as playas, prairie potholes, and vernal pools), and wetlands at the base of slopes (page 49).
- Numerous sites observed by the committee were not positioned in landscape locations that would ensure sustainability. This observation was judged to be due in part to the preference for on-site, in-kind mitigation. Some sites were properly located but threatened by future developments in the watershed, demonstrating that landscape position alone is insufficient (page 55).

NAS Study Recommendations

- Site selection for wetland conservation and mitigation should be conducted on a watershed scale to maintain wetland diversity, connectivity, and appropriate proportions of upland and wetland systems needed to enhance the long-term stability of the wetland and riparian systems. Regional watershed evaluation would greatly enhance the protection of wetlands and/or the creation of wetland corridors that mimic the natural distributions of wetlands in the landscape.
- All mitigation wetlands should become self-sustaining. Proper placement in the landscape to establish hydrogeological equivalence is inherent to wetland sustainability.
- Site selection for wetland conservation and mitigation should be conducted on a watershed scale to maintain wetland diversity, connectivity, and appropriate proportions of upland and wetland systems needed to enhance the long-term stability of the wetland and riparian systems. Regional watershed evaluation should greatly enhance the protection of wetlands and/or the creation of wetland corridors that mimic the natural distributions of wetlands in the landscape.

Excerpts from the 2008 Final Rule that Support a Watershed Approach

A watershed approach aims to maintain and improve the quality and quantity of aquatic resources within watersheds through strategic selection of compensatory mitigation sites.

Considerations

1. A watershed approach to compensatory mitigation considers the importance of landscape position and resource type of compensatory mitigation projects to sustain aquatic resource functions within the watershed. Such an approach considers how the types and locations of compensatory mitigation projects will provide the desired aquatic resource functions and will continue to function over time in a changing landscape. It also considers the habitat requirements of important species, habitat loss or conversion trends, sources of watershed impairment, current development trends, and the requirements of other regulatory and non-regulatory programs that affect the watershed, such as stormwater management or habitat conservation programs. It includes protecting and maintaining terrestrial resources, such as non-wetland riparian areas and uplands, when those resources contribute to or improve the overall ecological functioning of aquatic resources in the watershed.
2. Compensatory mitigation requirements determined through the watershed approach should not focus exclusively on specific functions (e.g., water quality or habitat for certain species). However, they should provide, where practicable, the suite of functions typically provided by the affected aquatic resource.
3. Locational factors (e.g., hydrology, surrounding land use) are important to the success of compensatory mitigation for impacted habitat functions and may lead to siting of such mitigation away from the project area. However, consideration should also be given to functions and services (e.g., water quality, flood control, shoreline protection) that will likely need to be addressed at or near the areas impacted by the permitted impacts.
4. A watershed approach may include on-site compensatory mitigation, off-site compensatory mitigation (including mitigation banks or in-lieu fee programs), or a combination of on-site and off-site compensatory mitigation.

5. A watershed approach to compensatory mitigation should include, to the extent practicable, inventories of historical and existing aquatic resources, including identification of degraded aquatic resources and identification of immediate and long-term aquatic resource needs within watersheds that can be met through permittee-responsible mitigation projects, mitigation banks, or in-lieu fee programs. Planning efforts should identify and prioritize aquatic resource restoration, establishment and enhancement activities, and preservation of existing aquatic resources that are important for maintaining or improving the ecological functions of the watershed. Identifying and prioritizing resource needs should be as specific as possible to enhance the approach's usefulness in determining compensatory mitigation requirements.