

## NEW STREAM MITIGATION REQUIREMENTS IN COASTAL SOUTH CAROLINA: Providing mitigation in an atmosphere of dynamic policy and emerging science

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**Abstract.** Development projects in South Carolina have recently been required to provide direct compensatory mitigation for impacts to Coastal Plain streams, in addition to the previously-required wetland mitigation. This new policy by the U.S. Army Corps of Engineers and the South Carolina Department of Health and Environmental Control has challenged current projects proposed by the South Carolina Department of Transportation (SCDOT) with providing sufficient stream mitigation credits in an efficient and timely manner. Because the market for Coastal Plain stream mitigation is new, there are neither stream mitigation banks nor in lieu fee programs available to satisfy the need for stream credits. To allow urgent road improvement and safety-related projects to be permitted, the SCDOT has had to rely on permittee-responsible mitigation (PRM) for stream mitigation consisting of in-watershed, in-kind (similar habitat) project-specific stream mitigation actions.

This presentation describes the experiences of the SCDOT with the developing the stream compensatory mitigation in the Coastal Plain with the use of a PRM example. SCDOT is proposing improvements to a section of U.S. Highway 17-A located in Berkeley County South Carolina. The U.S. Highway 17-A project will impact approximately 1,700 linear feet of stream and/or linear features requiring compensatory mitigation of nearly 6,000 stream credits.

This project achieved the required stream mitigation entirely in the form of restoration to a portion of Hogpen Creek, located near Awendaw, South Carolina. The proposed Hogpen Creek stream mitigation site includes nearly 2,000 linear feet of restored stream using natural channel design throughout the entire length and the adjacent riparian wetland. Through channel realignment design, this plan proposes to raise and meander the channel bed and thereby restoring floodplain access to the adjacent riparian wetland. As a result of restoring the

stream and adjacent riparian floodplain, the system is expected to better attenuate flood flows, improve water quality and provide a more stable aquatic habitat.

While this presentation will provide details regarding the selected site and the proposed mitigation strategy, it will also reflect on the stream mitigation process by focusing on specific factors contributing to project success. While this project successfully served the needs of the specific SCDOT project, actually accomplishing site selection, property owner partnership, and an approved final mitigation plan may not always occur in such a smooth and timely manner. This presentation will identify how the existing process could be improved and specific measures to ensure timely permitting and effective mitigation implementation.

### OVERRIDING LEGISLATION

The driving legislation for stream mitigation is traced back to the federal register. As a result, stream and wetland mitigation has taken on various forms. Toward achievement of this goal, the CWA prohibits the discharge of dredged or fill material into wetlands, streams, and other waters of the United States unless a permit issued by the U.S. Army Corps of Engineers (Corps) or approved State under CWA Section 404 authorizes such a discharge. When there is a proposed discharge, all appropriate and practicable steps must first be taken to avoid and minimize impacts to aquatic resources. Concurrent with defining impacts, a mitigation plan accounts for offsetting activities. With the concurrence of the IRT (chaired by the Corps), the applicant is responsible for determining the appropriate form and amount of compensatory mitigation required. It is

important to note that non-mitigation stream mitigation is occasionally driven under the NPDES MS4 stormwater permit program as a means to improve water quality.

## FORMS OF MITIGATION

Mitigation may be accomplished primarily through a combination of one or more of the following various mechanisms.

### **PRM/Project Specific Mitigation**

As the name suggests, this is mitigation specifically developed to offset losses associated with a specific project. It may be accomplished through one or more of the following formats: 1) On-site/In-kind, 2) Off-site/In-kind, or 3) Other (Off-site/In-kind, On-site/Out-of-kind, Off-site/ Out-of-kind).

### **Mitigation Banking**

(Federal Register / Vol. 60, No. 228) – “A mitigation bank is a wetland or stream restoration, creation, enhancement, or preservation project undertaken to compensate for unavoidable losses to wetlands, streams, and other aquatic resources expressly for the purpose of providing compensatory mitigation in advance of authorized impacts” (Environmental Law Institute, 2005).

### **In-Lieu Fee (ILF)**

These programs consist of arrangements wherein funds are paid by a permittee after the impact to a natural resource management entity (ILF sponsor, typically a non-profit or government) for implementation of either specific or general wetland or other aquatic resource development projects instead of either completing project-specific mitigation or purchasing credits from a mitigation bank approved under the Banking Guidance.

## RESTORATION DEFINED

Prior to proposing a mitigation plan, the differences between various mitigation activities should be well understood. In general, restoration and enhancement usually includes major construction measures (earthwork, exotic/invasive removal, native revegetation, etc.). Typically, the agencies prefer restoration and enhancement to preservation. Restoration may be thought of as “returning lost function” like hydrology (i.e. ditch

plugs) or floodplain access, whereas enhancement only “improves upon existing function” (i.e. the physical processes are there, but allow room for improvement. For less than pristine systems that currently perform functions that are compromised in comparison to those of a natural system, various active management efforts may enhance these already existing functions to produce lift in value. While preservation does not typically contribute to the goal of “no net loss” it does elevate the associated level of stewardship (this becomes especially effective where agricultural/silvicultural activities are relieved or exempt from CWA special provisions) and like restoration and enhancement, limits future land use through a restrictive covenant or easement to be held in perpetuity.

While not always practical, especially in developed/developing urban areas, natural channel restoration capitalizes on the ecological lift and riparian wetland function. Where natural channel restoration is impractical (intensely urban watershed, site physical and hydrologic constraints, property owner constraints, funding terms, etc.), stabilization techniques may provide for restorative treatments resulting in improved function, given the limited opportunity. Only if the existing system is pristine, and there are not means by which we can enhance or restore natural function, then the stream shall be qualified as preservation.

An example of an urban, non-natural channel restoration treatment includes an imbricated (or stacked) riprap slope which serves as a structural approach to streambank protection. In this case the channel is confined by infrastructure where a park path and waterline (in the foreground, not visible) are being protected. Such structural practices should be applied with caution, as they oppose the deformable tendency of natural stream mechanics. While some urban systems exhibit obvious degradation and high potential for physical and ecological uplift, mitigation credits are awarded where only the geometry has been slightly naturalized and/or the channel banks armored for stability. Although such treatments may not fit restoration by the esoteric definition, by agency standards, they provide sufficient lift to qualify for restoration credits.

## REVISIONS TO CLEAN WATER ACT

Effective July, 2008, revisions to the Clean Water Act, deemed as the “New Rule“, became effective. While the overriding philosophy and principles of the CWA remain unchanged, the new rule effectively incorporated guidance from the RGL 02-02 as part of the act and not more simply as guidance.

Some major provisions under the new rule include the following:

1. Because of financial assurances and demonstrated overall success, ACOE/EPA expressed a priority to obtain mitigation through existing “Banks” or “in Lieu Fee” programs over “on-site/in-kind”.
2. Consistent with previous Regulatory Guidance 02-02, offsetting stream losses with stream credits (as opposed to wetland credits) is now the rule.
3. Elevated importance of a “watershed approach”

## CASE STUDY – SCDOT, BERKELEY COUNTY

As a point of reference, it is important to consider the context of what is being impacted, and what is being improved. For the case of US Hwy 17-Alternate (Berkeley County) proposed roadway improvements, the impacted streams typically lack access to an active floodplain, and are usually not bordered with riparian buffer, but with mowed grass. As evidenced by field observations and corresponding physical/habitat assessments, the impacted systems provide minimal value in the way of natural function. Not as poor as the impacted streams, the existing condition of the restoration reaches (Hogpen Creek) also scored low, primarily because of failure to access floodplains with natural frequency of one to two year events.

Rather than attempt to merely dress up the existing ditch with a treatment prescription based on aesthetics (minor meander grading and planting), the Hogpen Creek design philosophy focused on restoring process to maximize the potential lift in chemical, biological, and physical function and value. By reactivating access to a functioning riparian floodplain and reactivating the

associated hydroperiod, the restored physical environment will promote and sustain a complementary biological community capable of capitalizing on the site potential. This restoration strategy addresses the twelve components included in the new mitigation rule:

1. Objectives,
2. Site Selection,
3. Site Protection Instrument,
4. Baseline Information,
5. Determination of Credits,
6. Mitigation Work Plan,
7. Maintenance Plan,
8. Performance Standards,
9. Monitoring Requirements,
10. Long-term Management Plan,
11. Adaptive Management/Contingency Plan, and
12. Financial Assurances

As the mitigation plan evolved from conceptual forward, each component was dealt with in correspondingly greater detail until completion of the final mitigation plan. The final mitigation plan is equivalent in intent and content to that of a draft mitigation banking instrument.

As we move out of the lower piedmont and into the coastal region approaching tidally influenced stream systems, there exists a very intimate hydrologic connectivity between streams and adjacent riparian wetlands, almost to the point of making it difficult to discern one from the other (streams vs. wetlands). Historically, these systems have been offset with wetlands, where appropriate. However, in the atmosphere of currently revised guidance, greater scrutiny has resulted in greater need for stream specific mitigation, contributing to the following challenges:

### Technical Challenges

As a result of historical policy and associated management of jurisdictional waters, research on stable stream systems and related characteristics (hydraulic geometry, water quality, riparian hydroperiod, aquatic populations) is less available than areas traditionally managed historically as streams for streams (i.e. Piedmont).

**Implementation Challenges**

Despite the difficult charge of establishing precedent and maintaining consistency with other states/districts/regions, participating agencies have been very collaborative. However, again a function of recent changes in policy and regional interpretations, some of the technical challenges also translate into implementation challenges such as defining baseline conditions and determining success criteria and monitoring protocols.

**Market Challenges**

Because the market for Coastal Plain stream mitigation is new, there are neither stream mitigation

banks nor in lieu fee programs are available to satisfy the need for stream credits. In the atmosphere of a slow economy, speculating buyers remains extremely risky.

Additionally, the process for establishing a bank may, in some cases, require more capital and take more time than permittee responsible mitigation.

As a result, the availability of stream credits in the form of private mitigation banks is limited to none, and the need is growing and left unattended, this situation could ultimately hamper economic development in areas of great need.