

## Potential Indirect Economic Impacts and Benefits Associated with Guidance Clarifying the Scope of Clean Water Act Jurisdiction

April 27, 2011

This preliminary economic analysis is intended to provide an estimate of the possible range of indirect impacts associated with implementing the proposed Guidance on Identifying Waters Protected by the Clean Water Act.<sup>i</sup> The proposed guidance itself is not binding: existing statutory and regulatory programs and requirements, such as the 402 and 404 permitting programs, impose costs and provide benefits. In addition, neither field staff nor courts are required to follow the guidance -- it is only to the extent that the non-binding guidance is followed that these indirect costs and benefits accrue. Nevertheless, this is an attempt to estimate these possible indirect costs and benefits associated with implementing the proposed guidance when compared to implementation of existing guidance.<sup>ii</sup>

Current practice (2008-2010) may be under-representing Clean Water Act jurisdiction. Additional mitigation costs and benefits associated with CWA Section 404 are likely to be the largest category of indirect impacts of implementing the proposed guidance.<sup>iii</sup>

Best estimates of the costs, benefits, and impacts that may indirectly result from implementation of the guidance are as follows:

Annual Costs (stream and wetlands mitigation and administrative costs): \$87 to \$171 million

Annual Increased Wetlands Mitigation: 2,517 acres (5% increase over baseline)

Annual Increased Stream Mitigation: 9.3 miles (2% increase over baseline)

Annual Benefits of Wetlands Mitigation: \$162 to \$368 million

Although these estimates are uncertain, due to the difficulty of predicting what the results of implementing this non-binding guidance through case-by-case determinations will be, the analysis suggests that benefits are likely to justify costs.

The cost estimates were derived as follows. Two estimates were developed to represent a range of potential indirect impacts on an annual basis. Each share a common baseline of 53,000 acres of wetland mitigation and 530 miles of stream mitigation (2010 estimate<sup>iv</sup>) apportioned on a state-specific basis. Estimated state-specific annual incremental amounts of mitigation, derived from Corps data records (FY2009-10) of jurisdictional status of various aquatic resource types<sup>v</sup>, are multiplied by low-range, mid-range, and high-range state-specific mitigation unit costs.<sup>vi</sup> While a wide range of unit mitigation costs was used in the analysis to capture the full range of potential costs, the low to mid range costs are considered the best estimate of average mitigation costs nationally. A detailed description of the analysis and results is found in the full economic analysis.

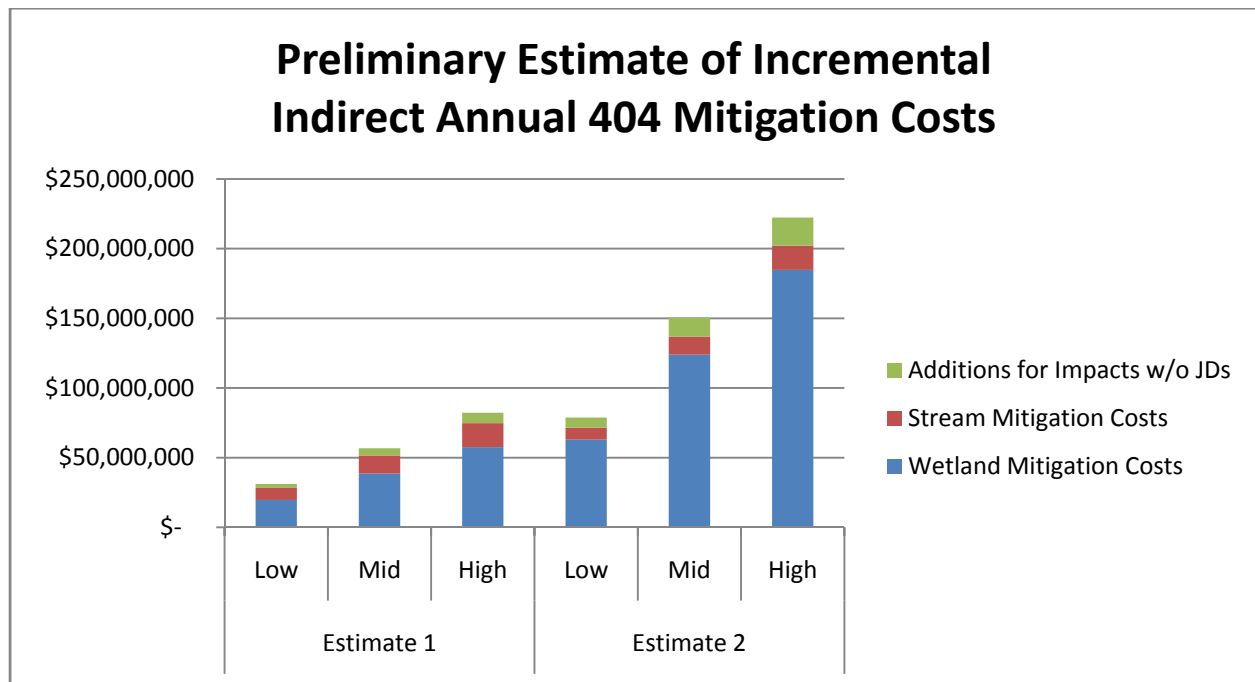
**Estimate 1** assumes that all negative jurisdictional responses for aquatic resources not in the "other waters" category would be found jurisdictional under the proposed guidance (this is inclusive of waters subject to the "significant nexus" test). The baseline mitigation is increased in proportion to the percent increase in wetlands and streams determined jurisdictional. Nationally, 1.5% of jurisdictional status determinations are negative for non-isolated wetlands in the baseline and 2% of jurisdictional status determinations are negative for streams in the baseline; these are assumed to be found jurisdictional under the guidance.<sup>vii</sup> This results in 803 incremental acres of wetlands mitigation; 9.3 incremental miles of stream mitigation; and \$31 to \$57 million annual low- to mid-range costs.

**Estimate 2** includes the incremental acres and miles from estimate 1 and also adds acres in proportion to assuming 17%<sup>viii</sup> of jurisdictional status responses for other waters<sup>ix</sup> are found to be jurisdictional wetlands following the new guidance. A team of Corps experts identified 17% as the best estimate for how many "other waters" would be determined jurisdictional using the new guidance. Nationally, the increase in wetlands that are assumed to be jurisdictional corresponds to an estimated increase of 2,517 acres of wetland mitigation (a 5 percent increase from baseline), including the 803 acres from estimate 1. The 9.3

miles of additional stream mitigation from estimate 1 (2 percent increase from baseline) are also included in estimate 2. The estimated costs are \$79 to \$151 million per year for the low- to mid-range.

For these estimates, an additional 10% increase to account for impacts that may be occurring without going through the JD process is also included (net of any avoidance/minimization that would occur through the permitting process).<sup>x</sup>

Overall, the best representation of potential incremental indirect mitigation costs is the low-mid range of estimate 2: \$79-\$151 million per year. It is highly unlikely that all costs would occur at the absolute high end of the range; most of the costs are anticipated to be in the lower half of the range. This suggests an approximate 4% increase of the current estimated baseline mitigation costs of between \$2.1 and \$3.9 billion per year. If estimated administrative costs to the Corps and applicants of between \$7.9 and \$20 million per year are added to the mitigation costs, the result is \$87-171 million per year.

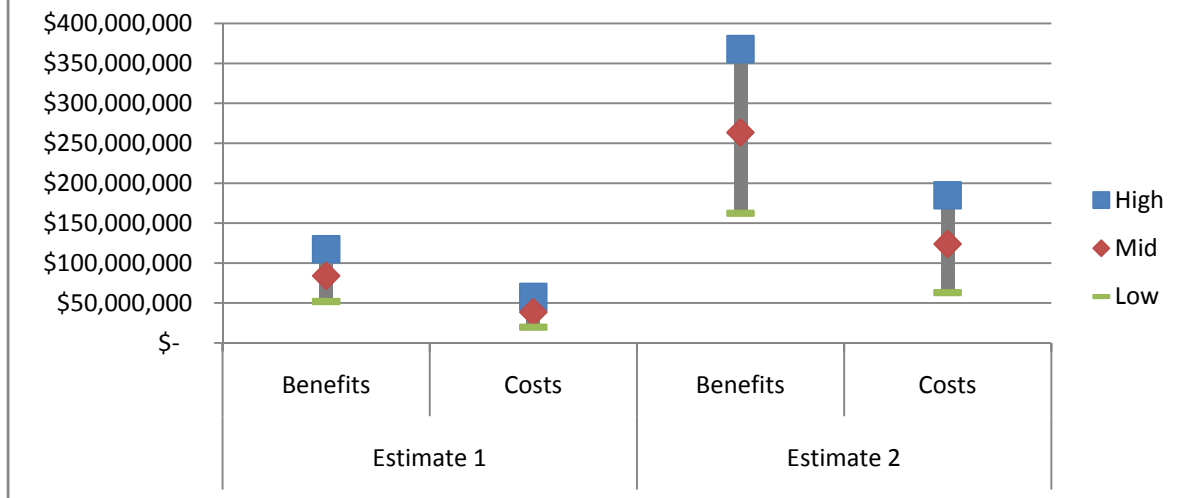


Indirect benefits of following the proposed guidance include the value of ecosystem services flowing from protected or mitigated aquatic resources, among other items. Researchers have published a great deal of studies of these ecosystem services benefits on both a national or regional scale and a site-specific scale. In particular, there are a number of studies in the published literature on wetland values that offer a basis for a rough comparison of potential marginal benefits to potential additional mitigation costs.

Estimation of benefits varies widely and suffers from incomplete knowledge of factors affecting the total value. Wetlands vary greatly in their functionality and relative value based on their relative scarcity, location within a watershed, and the degree of human impacts in their vicinity. As such, estimates of their worth can vary by several orders of magnitude.

Most published studies tend to examine a portion of the services provided by a wetland. A few have undertaken a holistic assessment, although they are still considered incomplete by their authors. Existing studies offer a basis for a first order approximation of potential benefits based on an average composite value and a range inferred from selected literature values. This “unit benefit” range is from \$129,000-292,000<sup>xi</sup>. This analysis indicates that potential incremental indirect benefits are likely to justify potential incremental indirect costs.

## Potential Wetlands Mitigation Indirect Costs Compared to Potential Value of Indirect Benefits Provided (annual basis)



<sup>i</sup> The proposed guidance clarifies and interprets requirements of the CWA and the agencies' implementing regulations in light of *SWANCC* and *Rapanos* and provides guidance on waters protected by the CWA. The CWA provisions and supporting regulations contain legally binding requirements. The guidance does not substitute for those provisions or regulations and is not itself a regulation. It does not impose legally binding requirements on EPA, the Corps, or the regulated community, and may not apply to a particular situation depending on the circumstances. Any decisions regarding a particular water will be based on the applicable statutes, regulations, and case law. The proposed guidance does represent a change in practice from existing guidance which did not make full use of the authority provided by the CWA to include waters within the scope of the Act, as interpreted by the Court. The agencies expect, based on relevant science and recent field experience, that the extent of waters over which the agencies will assert jurisdiction will increase compared to the extent of waters over which jurisdiction has been asserted under existing guidance, though not to the full extent that it was typically asserted prior to the Supreme Court's decisions. This economic analysis was developed to provide rough estimates of the range of possible indirect effects from a change in practice, but it is the statute, regulations and caselaw which determine the scope of CWA jurisdiction.

<sup>ii</sup> This particular baseline was deemed most useful for the purposes of comparing the potential outcome of proposed guidance.

<sup>iii</sup> There may also be indirect costs associated with implementing the CWA 402 and 311 programs, but they are anticipated to be small in comparison to indirect costs associated with implementing the CWA 404 program.

<sup>iv</sup> Excludes HI, AS, GU, AS, PR, VI, DC, and records without state attribution.

<sup>v</sup> e.g., relatively permanent waters (RPWs), traditional navigable waters (TNWs), non-relatively permanent waters (NRPWs), wetlands associated with these categories, and other waters (ORM2 uses the term "isolated" waters to represent these intrastate, non-navigable waters that lack a direct surface connection to other waterways).

<sup>vi</sup> Unit costs (per wetland acre or stream mile) vary substantially, both within and among states. For wetlands, they range from an average low-end of \$40,000 to an average high-end of \$85,000, with some high-end costs ranging up to \$400,000 per acre. Conversely, some low-end costs are less than \$5,000 per acre.

<sup>vii</sup> For wetlands, the percent is calculated by taking the number of "no" responses for aquatic resource (AR) jurisdictional authority for wetlands adjacent to non-RPWs, wetlands abutting and adjacent to (not abutting) RPWs, and wetlands adjacent to TNWs, and dividing by the total of all of these AR types. For streams, the percent is calculated by taking the total number of "no" responses for non-RPWs, RPWs, TNWs, and combinations of both non-RPWs and RPWs, and dividing by the total for these types.

<sup>viii</sup> 5% is applied to CA for estimate 2; although a national sample indicated approximately 17% of isolated waters would become jurisdictional, none of the 145 waters examined in CA indicated this outcome. Rather than apply a 0% increase, 5% was applied as a conservative estimate.

<sup>ix</sup> These "other waters" comprise less than 5% of all aquatic resource records in the ORM data base (FY 2009-2010).

<sup>x</sup> Some stakeholders assert there is a substantial amount of impacts to waters that project proponents believe are beyond the scope of CWA under current post-*SWANCC* and *Rapanos* policies. While not possible to quantify absent a major independent study, informed observers conclude some level of impacts to waters for which JDs are not now being requested is likely. Without an ability to specifically estimate the degree, yet to avoid a systematic source of error, the cost analysis assumes a 10% increase in the number of JDs. This provides a reasonably safe margin to capture these difficult to quantify impacts.

<sup>xi</sup> This would apply to impacted acres, not mitigated acres (which is typically larger); a 2:1 mitigation:impact ratio is assumed.