AGENCY TECHNICAL REVIEW GUIDE

for

ECOSYSTEM RESTORATION PROJECTS

VERSION 1.0
AUGUST 2008

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INTRODUCTION

1. GUIDE DEVELOPMENT

This review guide was developed by the National Ecosystem Restoration Planning Center of Expertise. In August 2003, the Corps' Director of Civil Works directed the establishment of national centers to conduct larger, complex planning studies for inland navigation, deep-draft navigation, ecosystem restoration, water supply, and flood damage reduction. The national centers are part of a Corps initiative to improve the quality and - effectiveness of the planning process for water resources projects called the Planning Excellence Program (PEP). The PEP includes training and work force capability improvement, enhanced quality assurance and control efforts, process improvement and regional and national planning centers.

References:
a. EC 1105-2-407, *Planning Models Improvement Program: Model Certification*, dated 31 May 2005*
b. *Policy Guidance on Certification of Ecosystem Output Models*, CECW-CP 13 August 2008,
c. EC 1105-2-410, *Review of Decision Documents*, dated September 2008.

*Although expired, the concepts introduce in this EC are still valid and will be incorporated into ER 1105-2-100. CECW-CP Memo further clarifies the concepts of EC 1105-2-407.

Funding was provided to the field to support a development team comprised of the following individuals from eight districts (representing five Divisions) and the Office of Water Project Review (OWPR) at Corps Headquarters:

NAME	District/Office	Division (MSC)
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These individuals provided expertise and guidance through out the development of the guide. The guide a living document and will be updated periodically to reflect changes in guidance or necessary revisions. Content questions and suggested revisions/corrections may be provided to Camie Knollenberg.

2. PURPOSE

The purpose of this guide is to provide a clearing house of requirements, regulations, guidance, and laws that pertain to Ecosystem Restoration. The goal of the guide is

a. Improve quality of reviews at all levels
b. Improve overall quality of decision documents
c. Decrease the MSC/HQ review time by reducing the number of review comments
d. Increase awareness of the need for quality reviews

It was developed for use by individuals performing Agency Technical Review (ATR) (formerly called Independent Technical Review (ITR)). Project Delivery Teams (PDTs) and Functional chiefs are encouraged to use the guide as a tool for District Quality Control (DQC).

3. INSTRUCTIONS FOR USE

The guide is structured such that individual ATR team members can focus on his/her discipline. Each major discipline has a separate section outlining the requirements that pertain to the area of expertise. The plan formulation reviewer should ensure consistency between the disciplines. It is expected that the plan formulation reviewer will use most or all of the sections depending on the project. The guide is not intended to be used as a "checklist".

4. INFORMATIONAL LINKS

To increase the guide's usability, the team focused on providing concise answers. The guide covers typical situations that reviewers may encounter. Users should be aware that many projects and programs may cover exceptional situations due to specific waivers and/or appropriation language. Users are encouraged to inquire about these situations prior to undertaking a review.

Most of the sections only summarize a requirement. In cases where reviewers may need/want additional information direct web links are provided. Reviewers are encouraged to become familiar with this guidance. Direct access to Corps guidance is provided at http://www.usace.army.mil/publications/

5. SUBJECT MATTER EXPERTS (SME) LIST

In addition to the web links, Subject Matter Experts (SME) are suggested for selected subjects. These individuals may be able to answers specific questions that reviewers may have. Consider the impact to these individuals' time when making a request for assistance. RTS list is posted to the PCX Sharepoint site.

6. OTHER REVIEW GUIDE LINKS

Similar review guides have been developed for the Corps' other Mission areas. Reviewers are encouraged to use these guides when reviewing multi-purpose projects. Links to these guides are provided below:

Planning Center of Expertise	Link
Deep Draft Navigation (DDNPCX)	http://www.sam.usace.army.mil/ddncx/reviewguide.asp
Flood Risk Management (FRM-PCX)	
Inland Navigation (PCXIN)	
Coastal Storm Damage Reduction (PCX-CSDR)	
Water Management and Reallocation Studies (PCX-WMRS)	

7. RTS LIST OR GOOD REVIEWERS

a. Economic sub-COP webpage

8. TRAINING COURSE SUGGESTIONS

a. Planning for Ecosystem Restoration
b. PROSPECT Courses
c. Ecosystem Restoration Policy Seminar
d.

9. DISCLAIMER (*"It's advice, not guidance".)*

This guide is not replacement for training and does not infer formal guidance from Corps Headquarters. It summarizes and consolidates previously issued formal guidance.

GENERAL PLANNING STUDY TOPICS

1. STUDY AUTHORITY

a. Has the study authority been correctly identified?

The study authority should generally be a provision in a public law (P.L.) or a resolution of an appropriate House or Senate Committee *(Policy Digest, para. 5-1.a.)*. Bills, including House Resolutions (H.R), and House Report (H. Rpt), do not have the effect of law and should not be cited as study authorities, even if the bill was later enacted into law. An Appropriations Act should not be cited as the sole study authority, unless there is no other applicable authority.

b. Does the study conform to the intent of the cited study authority?

The report should address the full scope of the authorization and explain why the recommendations were limited to areas evaluated in detail. Make sure the authority covers all the recommendations from the study. If the authorization comes from a Committee Resolution, refer to any previous testimony or letters to determine the reasoning behind the resolution. If the study does not fully address the entire scope of the authority, the report may be identified as an "interim" report, especially if there is a likelihood that additional reports will be prepared in the future under the same authority.

If a Committee Resolution requests a review of a previous Corps report or its findings, then the current study should provide the full title and date of that report (rather than just a document number) and indicate that it has been reviewed, along with any other relevant prior reports.

2. SCOPE OF THE EVALUATION

a. Are all conflicting resources and outputs adequately considered?
When formulating for an ecosystem restoration project, it is important to take into account conflicting uses of the same resource and the impacts to the proposed use. When conflicts are identified early and resolved during the planning process, unexpected problems and cost increases can be avoided.

b. Does planning take into account long term success/sustainability?
Because ecosystem restoration projects are intended to be self-sustaining, it is critical that planning take into account the variables that have an effect on the long-term success of any restoration project. Items such as hydrology, geomorphology, future land use, zoning issues, and related items need to be included in the scope of analysis for a restoration project. (*ER 1165-2-501 para 6 and EP 1165-2-502 para 7.f.*)

c. Are implications outside the defined study area properly addressed?

Any direct or indirect ecological effects beyond the defined study or project area should be addressed.

3. PROBLEMS, OPPORTUNITIES, OBJECTIVES AND CONSTRAINTS

a. Does the report provide concise statements of specific problems and opportunities? *(ER 1105-2-100, para. 2-3.a.)*

The IWR Planning Manual (pp. 70-75) provides examples of concise problem statements. Problem statements should not include the suggestion of a specific solution. There is no need to restate problems as opportunities.

A responsible entity (Corps, other Federal agency, non-Federal interests) should be specified for each identified problem (ER 1105-2-100, App. G, Amend. #2, Exhibit G-4, Item 5.a(3)).

b. Are planning objectives clearly stated?

The objectives of the study should be determined early in the study process and presented early in the report so that information can be evaluated in light of the study objectives. Various alternatives should be evaluated/compared in how effective they are in meeting the objectives. It is important to recognize that objectives should not be measures or alternatives.

Objectives must be clearly defined and provide information on the effect desired, the subject of the objective, the location where the expected result will occur, the timing of the effect and the duration of the effect (ER 1105-2-100, para. 2-3.a.(4))

c. Are the planning objectives consistent with the purpose of Civil Works ecosystem restoration activities?

The purpose of Civil Works ecosystem restoration is to restore significant aquatic ecosystem function, structure, and dynamic processes that have been degraded. Ecosystem restoration projects attempt to return natural areas or ecosystems to a close approximation of their conditions prior to disturbance, or to less degraded, more natural conditions. In some instances a return to pre-disturbance conditions may not be feasible, but partial restoration may be possible (EP 1165-2-502, para. 7). While ecosystem restoration is not limited to the replication of historic conditions, enhancement of artificial environments (e.g., reservoirs or landscaped parks) or non-native species (e.g., naturalized game fish) should not be an objective of the NER plan.

The objectives, alternatives, and recommendations may extend beyond the Corps' mission areas. However, this should be clearly articulated and any resulting recommendations for implementation by USACE must be consistent with Corps missions. Any components of the recommendation which extend beyond the Corps' missions must be identified for implementation by others.

d. Are the planning constraints consistent with Corps policies?

The planning constraints presented in the report should be supported by applicable Corps policies or other requirements of Federal law. Stakeholder preferences that are not supported by Corps policy should not be identified as planning constraints for the NER plan. For example, complying with State or local law is not always a Federal constraint. Generally, State and local laws are compatible with Federal law and policy. However, there may be instances where State and/or local laws are more restrictive than Corps policy or Federal law. Where this is the case, constraints based on these laws should be clearly identified and may result in a locally preferred plan.

4. RISK AND UNCERTAINTY/SENSITIVITY ANALYSIS

a. Are risk and uncertainty addressed for the specified study scope and objectives?

Risk and uncertainty should be addressed relative to the costs and outputs of alternative plans. Risk and uncertainty should be considered in identifying the NER plan. *(ER 1105-2-100, para. E-39)*. This may be done through a sensitivity analysis to determine which assumptions the recommendations are sensitive to and how changes in those assumptions would impact the performance and sustainability of the alternatives. Risk and uncertainty regarding future conditions (e.g., future development, precipitation patterns, and sea level changes, hydrology, and sustainability) may be an important consideration for some ecosystem restoration studies.

b. Are risk and uncertainty of the without-project condition addressed?

c. Are the advantages and costs of reducing risk and uncertainty adequately considered in the planning process?

The potential use of risk reduction actions should be presented in the report.

5. PROJECT COST SHARING

When a project is authorized by Congress, the recommendations contained in the feasibility report are normally incorporated by reference in the authorizing act. The proposed apportionment of costs presented in the report must be consistent with present policy and the proposed items of local

cooperation so the intent of the authorization will be apparent. In particular, any costs that are subject to differing cost-sharing requirements (e.g., betterments, associated costs, and added costs for locally preferred plans) should be clearly identified.

a. Is the apportionment of cost to the non-Federal sponsor in conformance with present policy and evaluation procedures?

A cost apportionment table is required. ER 1105-2-100 Appendix H, page H-49, Table 3 provides the required table format for the report summary. Reviewers may also refer to the applicable model Project Partnership Agreement (PPA) for a detailed explanation of the apportionment of specific types of costs. Model PPA can be found at http://www.usace.army.mil/cw/cecw-p/pca/ccpca.htm

b. Are there special circumstances associated with the project that warrant considering a change in non-Federal sponsor cost sharing?

Report should fully explain and justify any proposed exceptions, including any proposed waiver of reimbursement to the sponsor for LERR credit in excess of the sponsor's total cost-share. (Sec 204 WRDA 2000 implementation guidance here: http://www.usace.army.mil/cw/cecw-p/mp_and_dev/Wrda00/wrda00203-4.PDF Also, see ER 100, D-5.j. and G-9.g.(1)(k). Information relating to the disposal area cost share is from WRDA 96, and was incorporated in PGL 47. http://www.usace.army.mil/cw/cecw-p/pgls/pgl47.pdf

c. Does the report present the Federal and non-Federal implementation responsibilities and include a summary statement that the sponsor understands the non-Federal responsibilities, has indicated an intent to accept or fulfill those responsibilities, and has stated a financial capability to do so?

The report should clearly describe the local cooperation requirements to ensure that all parties have a complete understanding of responsibilities for implementing the recommended plan. Lists of the standard items of local cooperation are available on this web page: http://www.usace.army.mil/cw/cecw-p/ioc/ioclist.htm

The final report should either indicate that the sponsor basically agrees with the appropriate model PPA, or identify any special conditions (ER 1105-2-100, Appendix G, para. G-9.h. (1) (h) pre-publication draft). The final report should also indicate that the sponsor's letter of support and self-certification of financial capability have been provided (or during ATR, are pending).

6. COORDINATION AND COLLABORATION

Coordination and collaboration is not just required to comply with the National Environmental Policy Act; it is part of sound planning. Reviewers should look for evidence that the coordination activities meet the guidance defined in EC 1105-2-409, Planning in a Collaborative Environment. Collaboration should also be addressed in terms of the Environmental Operating Principles and Actions for Change. Executive Order Cooperative Conservation (add reference)

a. Is coordination with appropriate State, Tribal, local, Federal agencies and other non-governmental groups documented, and are their views considered in formulating the recommended plan?

b. Does this coordination conform to law, executive orders, and agreements between agencies and, if not, is the departure satisfactorily explained?

7. PUBLIC INVOLVEMENT IN PLAN FORMULATION

a. Does public involvement meet the requirements defined in *ER 1105-2-100, Appendix B* and ER 200-2-2 (NEPA Implementing Regulations)?

b. Is the public involvement process documented and discussed?

The report should document the public involvement process and included views and comments received throughout the process. For example, draft reports should summarize the results of the initial scoping meeting (held prior to the Feasibility Scoping Meeting).

c. Are public issues and concerns discussed?

Appendix B and 200-2-2 provides guidance on this topic. If not required, lessons learned dictate that the potential for public controversy be identified and addressed.

8. MODEL CERTIFICATION

a. Do the models used in the study meet the definition of planning models, as defined in EC 1105-2-407?

The EC defines planning models as any models and analytical tools that planners use to define water resources management problems and opportunities, to formulate potential alternatives to address the problems and take advantage of opportunities, to evaluate potential effects of alternatives and to support decision-making.

Models include Corps models, regional or local models, models developed by other Federal agencies, and commercial off-the-shelf software.

Engineering models are handled separately under the Science and Engineering Technology initiative (SET). Study team is responsible for obtaining and using certified models or getting existing models certified.

b. Have all models used in this study been certified by the Ecosystem Restoration Planning Center of Expertise (ECO-PCX)?

If not, request that the PDT coordinate with the ECO-PCX to initiate the certification process on models that have not been certified. The Protocols for Certification of Planning Models (July 2007) and CECW-CP Memo Policy Guidance on Certification of Ecosystem Output Models dated 13 August 2008 provide details on the model certification process. For existing models, the PDT should prepare model documentation as outlined in Table 2 of the Protocols for Certification of Planning Models. For new models, the PDT should initiate coordination with the ECO-PCX as soon as possible.

The ATR team should evaluate the technical soundness and system quality of the models used.

1. Technical Quality
- Is the model based on good science or theory?
- Does it depict the system being modeled in computer code with a high degree of accuracy and precision?
- Are the correct formulas and relationships used?
- Are the calculations done correctly?
- Are the outputs correct?
- Does the logic make sense?
- Are the assumptions fully documented?
- Are the data requirements fully documented?
- Are the outputs fully documented?
- Uncertainty?

2. System Quality
- Is the software tool appropriate for the program?
- Has the model been tested and validated?
- Has the PDT provided evidence of model tests conducted and results?
- ITR team can conduct additional test or request that additional tests be conducted.

9. CIVIL WORKS REVIEW BOARD

Does the schedule submitted with the Feasibility Scoping Meeting, Alternative Formulation Briefing or Draft document include the Civil Works Review Board briefing by the District Commander *(ER 1105-2-100, para. H-5.b.)*?

PLAN FORMULATION TOPICS

GENERAL

The over-arching basis for justifying ecosystem restoration projects is the significance of the environmental resources. Given that some resources are more significant than others and that there will never be adequate funding to address all environmental resource problems and opportunities, it is critical that reports address significance in terms of outputs. **Significance should be addressed at each step of the planning process.** Decision documents should identify all significant resources in the study area and their trends. IWR Report 97-R-4 *"Resource Significance for Environmental Project Planning"* provides guidance for incorporating significance in the planning process.

1. SCOPING

a. Are all reasonable ecosystem restoration alternatives, specifically those that are self- sustaining, adequately addressed?

Recommendations should emphasize improving both degraded ecosystem function and structure. Restoration opportunities that are associated with wetlands, riparian and other floodplain and aquatic systems are most appropriate for Corps involvement and thus should be the focus of the project scope. The roles of various plant and animal populations and related habitats shall be considered in the larger context of community and ecosystem frameworks rather than solely maximizing habitat benefits for a single species or a resource commodity. The focus of formulating measures and alternative plans should be to restoring to a self-sustaining natural system. A wide range of features are possible including, but not limited to, the use of dredged material to restore wetlands, restoring floodplain function by reconnection of oxbows to the main channel, providing for more natural channel conditions including restoration of riparian vegetation, pools and riffles and adding structure, modification of obstructions to fish passage including dam removal, modifications to dams to improve dissolved oxygen levels or temperature downstream, removal of drainage structures and/or levees to restore wetland hydrology, and restoring conditions conducive to native aquatic and riparian vegetation.

b. Is recent guidance incorporated into the study?

The basic guidance for an Ecosystem Restoration Study comes from the Planning Guidance Notebook, Engineering Regulation (ER) 1105-2-100. Recent guidance has been issued on Planning in a Collaborative Environment (EC 1105-2-409), Peer Review of Decision Documents (EC 1105-2-408), Planning Model Certification (EC 1105-2-407), and Review of Decision Documents (EC 1105-2-410. Other guidance is issued as Economic Guidance Memorandum (EGM), Engineering Circulars (EC), and letters from Headquarters or the Assistant Secretary's office. The study should address and incorporate the Environmental Operating Principals (EOPs). Obtaining and following all applicable and recent guidance requires utilizing the entire vertical team in the conduct of the study.

c. Are the ecosystem restoration components of this study part of a larger multi-purpose or watershed study?

Reports should identify upfront if the study has multiple purposes (i.e. Ecosystem Restoration with Flood Risk Management, Water Supply, Hydropower, etc.) The scope and complexity of the study can greatly increase if two or more purposes are formulated.

2. EXISTING AND FUTURE WITHOUT-PROJECT CONDITIONS

The key to project formulation and evaluation is developing a complete understanding of current ecological conditions within the study area and how those conditions will change with and without the proposed alternatives over the project life. This requires a systems review of the hydrologic and hydraulic conditions and their effect on the structure and function of the ecosystem and associated biological communities. Establishment of existing and projected future without project conditions requires complete cooperation between members of the study team and local sponsors and stakeholders.

Characterizing the without-project condition is one of the most critical steps in the evaluation process. Sometimes the without-project condition is confused with the existing condition, causing omission of critical considerations (e.g., continued degradation, planned non-Federal restoration, and any likely improvements that would occur if a Federal project were not implemented). Unless the without-project condition is properly defined, the difference between the with-project and without-project conditions, which lies at the heart of NER analysis, is meaningless. *(Policy Digest, para. 5-6.a.(2) and ER 1105-2-100, paras. E-3.a.(2) and E-33.b).*

The existing and future without project conditions need to address the significance of the resources to be restored and their trends.

a. Are the assumptions and rationale for the future without-project conditions explicitly stated and are they reasonable?

These assumptions include changes to the hydrologic regime, development pressures, land use changes, sedimentation, water quality, climate change, etc. Since the future without project condition is what each alternative is measured against, the assumptions and rationale are very important to be documented. Scenario-based evaluation of future without project conditions may be required when projected changes to the environment are difficult to predict and vary widely based on small differences in environmental parameters (e.g., climate change or sensitive species).

3. FORMULATION OF ALTERNATIVES

a. Are innovative alternatives fully considered?

Innovation may be evaluated in terms of ability to achieve success, non-structural measures, cost reduction, schedule reduction, etc. Particularly for ecosystem restoration projects, innovation should also focus on sustainability and low O&M.

b. Have the risks and uncertainty associated with projected restoration alternative outputs been evaluated and discussed?

It is essential that the risk and uncertainty associated with projected restoration alternative outputs be evaluated and discussed so informed decisions can be made. There may be

uncertainty in the ability of an alternative to achieve the desired restoration which, if significant enough, might drive decision makers to select a different alternative with less risk of failure. Timing implications may introduce elements of risk, particularly of the resource is in such a degraded state that failure to restore it in the near term may preclude future restoration success.

c. Did the formulation establish a full range of alternatives? *(Policy Digest, Chapters 3 and 5; ER 1105-2-100, page 1-2, para 5; page 2-4, para 2-3.c).*

d. Is **an adequate range of alternatives provided (small to large scale)?**

Alternatives should represent a broad range and not just a number of alternatives of very similar scale.

e. Were possible non-structural features, such as modified operations and planting of native vegetation, considered to reduce the size and cost of construction features? *(Policy Digest, para. 3-1.a and 5-6.a (3) and ER 1105-2-100 page E-4-1, para E-10.c. (1))*

f. Were there specific formulation strategies used to develop the alternatives presented? Were the compatibilities and dependencies among measures documented?

g. Do all alternatives address significant resources and provide significant effects. ER 1105-2-100, p.2-12, para (m)(1)-(2) an p.E-159 to E-162.

4. ALTERNATIVE SCREENING

a. Was qualitative and/or preliminary screening of measures and/or alternative performed by the team? Was clear rationale provided in terms of the justification and basis of the screening performed?

Potential justifications for excluding measures/alternatives include: failure to meet minimum standards for the four P&G evaluation criteria - completeness, effectiveness, efficiency, and acceptability *(ER 1105-2-100, para. E-38)*; need for fish and wildlife mitigation that cannot be provided by restoration features *(ER 1105-2-100, page E-148)*; lack of significance of resources, etc.

The IWR Planning Manual (pp. 155-159) provides advice regarding use of the four P&G criteria for screening.

b. Is a reasonable justification provided for eliminating alternatives?

Alternatives may be eliminated in the initial screening process before in-depth evaluations are performed, but the reasons for elimination should be presented in the report and should be adequate to support the planning and evaluation process.

5. EVALUATION OF ALTERNATIVES

a. Are all four P&G accounts (EQ, NED, RED and OSE) evaluated, displayed and compared? *(EC 1105-2-409, para. 7.b).*

b. Are ecosystem benefits evaluated in accordance with procedures specified in ER 1105-2-100 *(page 3-4 and 5, para. 3-2.c and page E-152 through E-153, para E-35a. and b.)?*

c. Were ecosystem outputs quantified using a model that addresses both quality and quantity *(ER 1105-2-100, para. 3-5.c.(1))***?**

The analysis should address timing, location, magnitude, and duration of outputs over the period of evaluation (typically 50 years). Was an appropriate model selected and applied properly *(ER 1105-2-100, para. E-33.b.(1))*? Were outputs annualized (timing and duration)? Were the future without-project outputs reported?

e. Are there adverse effects on any significant resources? Have the adverse effects and any cumulative effects been adequately addressed and minimized or avoided?

f. Have alternatives providing a full range of levels of restoration outputs been evaluated?

g. Has the CE/ICA analysis been performed at an appropriate level of detail for the study *(ER 1105-2-100. para. 3-5.c.(2))***?**

All significant economic costs needed to realize the benefits of the project should be included in the analysis. Both the relative magnitude of the costs and their variation among alternatives should be considered in deciding which cost categories should be included in the analysis of preliminary alternatives.

h. Do any alternatives induce flood damages? Have appropriate features been included to offset/eliminate any increase in flood damages (e.g. levee set back, etc.)?

i. Has interest during construction been included in the economic analysis?

While IDC is usually not included in the evaluation of alternatives since it is usually a fairly constant percentage of each alternative, the inclusion of IDC may be appropriate for large programs which expand many years.

j. Has risk and uncertainty been sufficiently examined?

ER 1105-2-100, paras. E-4 and E-39 provide general guidance on evaluating risk and uncertainty for ecosystem restoration projects. Assumptions and uncertainties should be documented.

6. COMPARISON OF PLANS

a. Cost Effectiveness/Incremental Cost Analyses

1. **Were cost effectiveness/incremental cost analyses (CE/ICA) used** *(ER 1105-2-100, para. E-36)*

2. **Was the IWR software used?**

3. **Were appropriate charts and tables included allowing understanding of best buy plans and incremental costs associated with the final array of plans (graphs of cost-effective and best buy plans, and incremental cost box graph)?**

4. **Were the correct inputs used (annualized costs and environmental outputs)?**

5. **Was an input table showing solutions (measures or alternatives), costs, and outputs included?**

6. **Were costs annualized appropriately (e.g., correct interest rate and period of evaluation)? Are any significant differences in O&M costs included in annual costs?**

7. **Was a "No Action" scale considered for each measure to ensure that all possible alternatives were identified?**

8. **Are the combinability and dependency relationships described and justified?**

9. **Have the management measures been properly analyzed and separated by those that are combinable and those that are exclusive?**

10. **Is the implementation of the plan functionally dependent strictly on itself?**

    Implementation of the plan must not be functionally dependent on the implementation of any other plan or measure.

b. How do the plans differ in regards to meeting stated objectives and critical thresholds? Are there differences related to restoration of nationally significant ecosystem components?

c. Do the plans differ significantly in cost over time (first cost vs. O&M)? These differences should be clearly presented for use in the plan selection. Are any significant differences in sustainability among alternatives (e.g., O&M costs relative to acreage or first costs) discussed?

d. Are there any significant differences among alternatives in terms of risk and uncertainty of an alternative providing expected benefits?

e. Is the timing of project implementation considered in the optimization process? Are the most critical elements to ecosystem health implemented first? Is the project staging planned to maximize initial habitat benefits?

This is an evaluation requirement that is seldom performed. Both staged construction and delaying project implementation can have a material impact on maximizing ecological benefits relative to cost *(policy Digest para. 3-1.c and ER 1105-2-100, page 2-13, para. 2-4.o).*

7. PLAN SELECTION

a. Does the report establish a Corps mission by addressing a regional or national aquatic ecosystem restoration problem? Is cost-shared terrestrial restoration appropriately limited and, if included, is it closely and directly linked to the functioning of aquatic restoration measures? *(ER 1105-2-100, para. 3-5, and CECW-PB memorandum dated 15 Mar 2007, Policy Guidance on Authorization and Budget Evaluation Criteria for Aquatic Ecosystem Restoration Projects).*

Projects may include buffer areas of a size (such as 50-300 feet) supported by the specific project goals and recent scientific research. Only under very limited situations, may a case perhaps be made to support some terrestrial restoration as a cost-shared effort, and this must be directly and closely linked to the functioning of an aquatic ecosystem restoration measure.

If the report is a watershed management plan, it may be appropriate to include measures which extend beyond USACE mission areas to achieve a holistic watershed plan. However, implementation of measures which extend beyond USACE mission areas must be implemented by an entity other than USACE.

b. Does the report demonstrate that the project would provide restoration benefits to the general public rather than a few landowners?

For projects where the land on which the majority of the physical ecosystem restoration will occur is in the ownership of a single firm, individual, club, or association with restrictive membership requirements, it must be demonstrated clearly that the restoration benefits are in the overall public interest and that the benefits do not accrue primarily to the property owner *(ER 1105-2-100, para. 3-5.b.(4))*.

c. Is each separable feature of the NER Plan incrementally justified?

There is no Federal interest in cost sharing project segments or features that are not incrementally justified. Even though the benefits for the overall plan may exceed the costs, it is still necessary to demonstrate that each major segment or feature contributes net benefits to the overall restoration plan *(ER 1105-2-100, para 3-5.c.(2))*.

d. Does the NER plan primarily produce aquatic ecosystem restoration benefits (as opposed to benefits from recreation, aesthetics, cultural resources, or hazardous and toxic waste clean-up)? *(ER 1105-2-100, para. 3-5.b.(2) and (6))***.**

e. Does the recommended plan inappropriately include a credit for previous non-Federal work or propose in-kind construction work by the sponsor?

There is no general authority for credit for advanced work by non-Federal interests prior to the authorization of an ecosystem restoration project. In-kind construction work is allowed for projects under the Continuing Authority Program *(ER 1105-2-100, Appendix F, para. F-15).* The Corps' model Project Cooperation Agreements for specifically-authorized projects do not allow in-kind construction work (except LERRD). Reimbursement or credit for work performed by non-Federal public bodies after authorization of a project is possible under Section 215 of the Flood Control Act of 1968 *(Policy Digest para. 8-6 and B-101 and ER 1165-2-18)*. Any proposed construction work by non-Federal interests should be carefully reviewed for compliance with applicable policies and procedures.

Comment [b1]: Implementation guidance for WRDA 2007, Section 2003 may change this.

f. Are ecosystem restoration benefits quantified in appropriate non-monetary units and is the methodology used to quantify benefits fully documented?

g. Is the identified NER plan a Best Buy plan?

If not, is the NER plan a cost-effective plan and has sufficient reason been provided for not recommending a Best Buy plan?

8. RECOMMENDED PLAN

a. Has the NER plan been evaluated and identified?
Presentation of a NER plan is a requirement for feasibility reports recommending a project for ecosystem restoration. Reports that recommend a plan that is different from the NER plan still need to identify the NER plan in order to determine the baseline for Federal cost sharing interest *(Policy Digest, paras. 5-6.a.(6) and 5-9; ER 1105-2-100, para. 2-3.f.)*

b. Is there sufficient rationale for any recommended departure from the NER plan?

c. Has any deviation from the NER plan been identified for approval by ASA (CW)?

The Corps always recommends the NER plan unless the non-Federal sponsor requests either a larger (more expensive) or smaller (less expensive) project. A less expensive project will almost always be approved if it is cost-effective. More expensive projects may be approved provided that non-Federal interests agree to pay 100% of the additional costs, and the restoration outputs are similar in kind and equal to or greater than the NER plan. *(ER 1105-2-100, para. 2-3.f (4); Appendix E, para E-3.b. and c.(4).)*

d. Have a sufficient number of increments/alternatives been analyzed to demonstrate that the NER plan has been correctly identified?

The NER plan should be developed by evaluating a range of alternatives to identify the costs of additional increments of output. A plan that reasonably maximizes ecosystem restoration benefits compared to costs should be identified as the NER plan. The alternatives should include plans that are larger and smaller in scale than the NER plan. If the NER plan is the largest scale or most expensive plan considered, the reasons that larger scale plans were not considered should be explained.

e. Is the rationale provided for the selection of major elements of the recommended plan sound and adequate?

Separable elements of the NER plan should be incrementally justified. Measures may be grouped together if they are functionally interdependent.

f. Does the recommended plan conform to existing policy? If not, are the reasons for departure adequately documented?

See ER1105-2-100, Exhibit H-2, questions 1-29 and 64-81. If a multipurpose project is recommended, include other questions from Exhibit H-2 as appropriate.

Special policy considerations should be explored through the vertical team early in the planning process.

g. Is the selected plan consistent with applicable comprehensive plans for the area?

The recommended plan should generally be consistent with comprehensive plans for the area, including local land use plans and state plans under the Coastal Zone Management Act (CZMA). However, changes to the comprehensive plan required as part of plan implementation may be recommended. A conflict with a local plan may not necessarily preclude identification of an NER plan that meets other Federal standards. Report should also address the sustainability of the recommended plan in consideration of comprehensive plans for the area.

h. Are HTRW concerns addressed?

Construction in HTRW-contaminated areas should be avoided where practicable. HTRW removal and remediation are generally a responsibility of the non-Federal sponsor. Costs for necessary special handling or remediation of wastes, pollutants and other contaminants which are not regulated under CERCLA will be treated as project costs if the requirement is the result of a validly promulgated Federal, state or local regulation. Only where the cost of the response action is a project cost will it be a part of the economic evaluation *(ER 1165-2-132)*.

i. Is a risk and uncertainty analysis included?

The risk and uncertainty of achieving the anticipated level of outputs should be addressed *(ER 1105-2-100, para. E-39).* If there are significant differences in risk and uncertainty among the alternatives, a sensitivity analysis may be performed by varying key assumptions to determine their effects on outputs and plan selection *(ER 1105-2-100, para. E-4.b.(6)).*

j. Has the recommended plan been adequately justified in terms of the significance of aquatic ecosystem outputs and the reasonableness of costs *(ER 1105-2-100. para. 3-5.c.(3))***?**

The significance of restoration outputs should be recognized in terms of institutional, public, and/or technical importance. Technical recognition includes scarcity, representativeness, status and trends, connectivity, critical/limiting habitat, and biodiversity *(ER 1105-2-100, para. E-37).* Even after the requirements of cost effectiveness and incremental cost analyses have been met, the decision-maker must ascertain that the benefits to be realized are worth the costs. That will normally be a subjective decision based upon experience, reasonableness and common sense *(ER 1105-2-100, para. E-41.b.).* The presentation of metrics such as cost/acre or cost/river mile of restored habitat may be an effective means of demonstrating the reasonableness of costs. The yearly budget EC has additional criteria that are considered in the budgeting process. IWR Report 97-R-4 "Resource Significance for Environmental Project Planning" is also a good reference.

k. Has the inclusion of any non-aquatic (e.g. infrequently flooded/upland/ terrestrial) areas been adequately justified?

Under very limited situations, perhaps a case could be made to support some limited terrestrial restoration as a cost-shared effort if it is directly and closely linked to the functioning of an aquatic ecosystem restoration measure *(CECW-PB memorandum dated 15 Mar 2007, Policy Guidance on Authorization and Budget Evaluation Criteria for Aquatic Ecosystem Restoration Projects).* Projects may include buffer areas of a size (such as 50-300 feet) supported by specific project goals and scientific research. Terrestrial restoration may be included in an LPP or in a collaborative plan for implementation by other partners.

l. Are any proposed recreation features appropriate in type/scale relative to the ecosystem restoration purpose? Will recreation activities diminish the ecosystem restoration outputs *(ER 1105-2-100, paras. 3-7.b.(5) and E-30.h.; EP 1165-2-502, Appendix B)***?**

m. Are any proposed recreation features adequately justified and consistent with guidance limiting the types of recreation features that may be cost-shared *(ER 1105-2-100, para. E-48 and Exhibit E-3)***?**

The Federal cost of recreation may not add more than 10 percent to the Federal cost for ecosystem restoration *(ER 1105-2-100, para. 3-7.b.(5))*.

n. Is the real estate to be acquired consistent with the area required to protect the anticipated ecosystem restoration benefits, including consideration of potential future land use changes?

As a target, land value should not exceed 25 percent of total project costs. Projects with land costs exceeding that target are not likely to be given high budgetary priority *(ER 1105-2-100, para. 3-5.b.(5))*. Justification should be provided for land costs exceeding 25 percent of total project costs and this issue should be raised to the vertical team for resolution as soon as it is identified.

o. If real estate interests less than fee title (e.g., easements) are proposed, will they be sufficient to protect future ecosystem restoration benefits that serve to justify the project cost?

Generally fee title is required for ecosystem restoration projects. If an estate less than fee is recommended, consideration should be given to the preservation of the physical integrity of the project and to risks associated with achieving benefits that serve to justify the project cost *(ER 1105-2-100, para. E-30.j.)*.

p. Would the recommended plan be self-sustaining (i.e., require limited O&M) *(ER 1105-1-100, para. 30.k.)***?**

Self-regulation is a key goal of ecosystem restoration. The cost of average annual O&M per acre is used in the Corps budget process as an indicator of the level of human intervention needed to maintain the restoration outcome *(EC 11-2-187)*.

q. Has a monitoring and adaptive management plan been provided, and have the estimated costs and durations for monitoring and adaptive management been identified *(ER 1105-2-100, par. E-30.i.)***?**

If cost-shared post-implementation monitoring is being considered, it must be clearly defined and justified. Adaptive management may be recommended for complex specifically authorized projects that have high levels of risk and uncertainty of obtaining the proposed outputs.

r. Are the estimated costs and durations of monitoring and adaptive management in accordance with Corps guidance?

Cost-shared monitoring shall be limited to no more than five years following the completion of construction. The cost of monitoring that is cost-shared should normally not exceed one percent of the first cost of the ecosystem restoration features *(ER 1105-2-100, para. 30.i.(2))*. Section 2039 of WRDA 2007 specifies that monitoring within 10 years of the completion of construction shall be cost-shared.

The cost of adaptive management action, if needed, will be limited to 3 percent of the total project cost excluding monitoring costs *(ER 1105-2-100, para. E.30.i.(3)).*

s. Does the recommended plan include restoration on the lands of another Federal agency that has a restoration mission? Has an appropriate rationale for use of Corps funding been provided?

t. Would the recommended plan address an existing legal requirement, such as Clean Water Act compliance, mitigation for another project, etc.?

The Corps will not propose ecosystem restoration features that would result in treating or otherwise abating pollution problems caused by other parties that are likely to have a legal responsibility for remediation or other compliance responsibility *(ER 1105-2-100, para. E-30.g.).* Ecosystem restoration projects may not be used as mitigation banks or mitigation credit *(ER 1105-2-100, para. E-30.d.).*

u. Has interest during construction been included in the economic analysis?

9. COST SHARING AND LOCAL COOPERATION REQUIREMENTS

a. Are the standard items of cooperation for the proposed project purpose(s) correctly identified in the report? Are any additions or changes to the standard items of cooperation appropriately explained and justified?

Para. 6-16 of the Policy Digest contains a basic description of the sponsor's obligations for ecosystem restoration projects. The list of items of cooperation in the report should be based on the standard lists on the HQUSACE website at www.usace.army.mil/cw/cecw-p/ioc/ioclist.htm .

b. Is cost apportionment based on the total project cost (including PED, construction, LERRD, and S&A) at the current price level (not fully funded) cost estimate? *(ER 1105-2-100, page E-16, para. E-5.a (1).*

Economic-only (non-financial) costs such as Interest During Construction should not be included in cost apportionment.

c. For multi-purpose projects only, is the separable costs-remaining benefits (SC-RB) cost allocation method used *(Policy Digest, para. 5-11 and ER 1105-2-100, para. E-63)***?**

10. LEGAL SUFFICIENCY

a. Have international implications of the project, if any, been properly addressed?

b. Has certification of legal review been provided?

11. REPORT REVIEW

a. Does the report format meet the requirements of the most recent guidance *(ER 1105-2-100, App. G, Amend. #2,para. G-9.h.(2))***?**

Format requirements include: cover, title sheet, syllabus, table of contents, EA or EIS, appendices, and displays.

b. Does the report meet the content requirements of current guidance *(ER 1105-2-100, App. G, Amend #2, Exhibit G-4 and para. G-9.h.(1))***?**
