



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
SOUTH ATLANTIC DIVISION, CORPS OF ENGINEERS
ROOM 10M15, 60 FORSYTH ST., S.W.
ATLANTA GA 30303-8801

CESAD-PDS-P

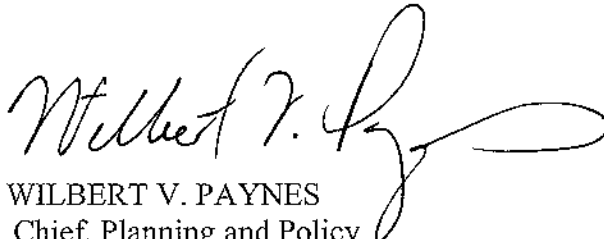
2 June 2011

MEMORANDUM FOR Commander, Mobile District (CESAM-PD/Rick Darnell)

SUBJECT: Revised Programmatic Review Plan – Anneewakee Creek, Aquatic Ecosystem Restoration Study, Section 206 of the Water Resources Development Act of 1996, as Amended, Douglas County, Georgia

1. Reference memorandum, CESAM-PD, 6 May 2011.
2. The South Atlantic Division (SAD) staff has reviewed the revised Review Plan and it is re-approved. We specifically concur with the Agency Technical Review Team lead being from within the South Atlantic Division.
3. The point of contact for this action is Ms. Kenitra Myles at (404) 562-5229.

FOR THE COMMANDER:


WILBERT V. PAYNES
Chief, Planning and Policy
Community of Practice



DEPARTMENT OF THE ARMY
MOBILE DISTRICT, CORPS OF ENGINEERS
P.O. BOX 2288
MOBILE, ALABAMA 36628-0001

REPLY TO
ATTENTION OF

CESAM-PD (1105)

6 May 2011

MEMORANDUM FOR CDR, SOUTH ATLANTIC DIVISION, ATTN: CESAD-PDS
(MR. WILBERT PAYNES)

SUBJECT: Revised Programmatic Review Plan - Anneewakee Creek, Aquatic Ecosystem
Restoration Study, Section 206 of the Water Resources Development Act of 1996, as Amended,
Douglas County, Georgia

1. A copy of the subject letter report is enclosed for review and approval.
2. The initial Review Plan (RP) was approved by SAD on 19 January 2011. SAM and SAD Council indicated that SAM must seek an exception to policy, as directed by EC 1165-2-209, for the Agency Technical Review Team Lead to be located within SAD. The enclosed RP has been modified to reflect this exception and can be found in Section 5b, page 8.
3. If you have any questions, please call Mr. Rick Darnell, Project Manager at (251) 690-3240.

FOR THE COMMANDER:

Encl

A handwritten signature in black ink, appearing to read "Curtis M. Flakes".

CURTIS M. FLAKES
Chief, Planning and Environmental
Division

**Continuing Authorities Program
Section 206, Water Resources Development Act of 1996, as Amended
Aquatic Ecosystem Restoration Projects**

DECISION DOCUMENT REVIEW PLAN

**Anneewakee Creek Aquatic Ecosystem Restoration Project
Anneewakee Creek Watershed, Douglas County, Georgia**

Mobile District

**MSC Approval Date: 19 January 2011
Last Revision Date: 6 May 2011**



**US Army Corps
of Engineers®**

DECISION DOCUMENT REVIEW PLAN

**Section 206, Water Resources Development Act of 1996, as amended
Aquatic Ecosystem Restoration Decision Documents**

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1. PURPOSE AND REQUIREMENTS

- a. **Purpose.** This Review Plan defines the scope and level of peer review for the Anneewakee Creek Aquatic Ecosystem Restoration Project located in Anneewakee Creek Watershed, Douglas County, Georgia. Aquatic Ecosystem Restoration project decision document developed under Section 206, Water Resources Development Act of 1996, as amended.

Section 206 of the Water Resources Development Act of 1996, Public Law 104-305, authorizes the Secretary of the Army to carry out a program of aquatic ecosystem restoration with the objective of restoring degraded ecosystem structure, function, and dynamic processes to a less degraded, more natural condition considering the ecosystem's natural integrity, productivity, stability and biological diversity. This authority is primarily used for manipulation of the hydrology in and along bodies of water, including wetlands and riparian areas. This authority also allows for dam removal. It is a Continuing Authorities Program (CAP) which focuses on water resource related projects of relatively smaller scope, cost and complexity. Traditional USACE civil works projects are of wider scope and complexity and are specifically authorized by Congress. The Continuing Authorities Program is a delegated authority to plan, design, and construct certain types of water resource and environmental restoration projects without specific Congressional authorization. The Federal share of costs for any one Section 206 project may not exceed \$5,000,000.

- b. **Applicability.** This review plan is for Section 206 project decision documents, which is applicable to projects that do not require Independent External Peer Review (IEPR), as defined in ER 1165-2-209 Civil Works Review Policy. A Section 206 project does not require IEPR if ALL of the following specific criteria are met:

- The project does not involve a significant threat to human life/safety assurance;
- The total project cost is less than \$45 million;
- There is no request by the Governor of an affected state for a peer review by independent experts;
- The project does not require an Environmental Impact Statement (EIS),
- The project is not likely to have significant economic, environmental, and/or social effects to the Nation;
- The project/study is not likely to have significant interagency interest;
- The project/study is not likely highly controversial;
- The decision document is not likely to contain influential scientific information or be a highly influential scientific;
- The information in the decision document or proposed project design is not likely to be based on novel methods, involve the use of innovative materials or techniques, present complex challenges for interpretation, contain precedent-setting methods or models, or present conclusions that are likely to change prevailing practices; and
- The project has not been deemed by the USACE Director of Civil Works or Chief of Engineers to be controversial nature.

If any of the above criteria are not met, the Review Plan is not applicable and a study specific review plan must be prepared by the home district, coordinated with the National Ecosystem Planning Center of Expertise (ECO-PCX) and approved by the home Major Subordinate Command (MSC) in accordance with EC 1165-2-209.

Applicability of the Review Plan for a specific project is determined by the home MSC. If the MSC determines that the Review Plan is applicable for a specific study, the MSC Commander may approve the plan (including exclusion from IEPR) without additional coordination with the ECO-PCX or Headquarters, USACE. The initial decision as to the applicability of the Review Plan should be made no later than the Federal Interest Determination milestone (as defined in Appendix F of ER 1105-2-100, F-10.e.1) during the feasibility phase of the project. In addition, the home district and MSC should assess at the Alternatives Formulation Briefing (AFB) whether the initial decision on the use of the Review Plan is still valid or if a project specific review plan should be developed based on new information. If a project specific review plan is required, it must be approved prior to execution of the Feasibility Cost Sharing Agreement (FCSA) for the study.

This review plan does not cover implementation products. A review plan for the design and implementation phase of the project will be developed prior to approval of the final decision document in accordance with EC 1165-2-209.

c. References

- (1) Engineering Circular (EC) 1165-2-209, Civil Works Review Policy, 31 Jan 2010
- (2) EC 1105-2-412, Assuring Quality of Planning Models, 14 May 2010
- (3) Engineering Regulation (ER) 1110-1-12, Quality Management, 30 Sep 2006
- (4) ER 1105-2-100, Planning Guidance Notebook, Appendix F, Continuing Authorities Program, Amendment #2, 31 Jan 2007
- (5) ER 1105-2-100, Planning Guidance Notebook, Appendix H, Policy Compliance Review and Approval of Decision Documents, Amendment #1, 20 Nov 2007

d. Requirements. This review plan was developed in accordance with EC 1165-2-209, which establishes an accountable, comprehensive, life-cycle review strategy for Civil Works products by providing a seamless process for review of all Civil Works projects from initial planning through design, construction, and operation, maintenance, repair, replacement and rehabilitation (OMRR&R). The EC outlines four general levels of review: District Quality Control/Quality Assurance (DQC), Agency Technical Review (ATR), Independent External Peer Review (IEPR), and Policy and Legal Compliance Review. In addition to these levels of review, decision documents are subject to cost engineering review and certification (per EC 1165-2-209) and planning model certification/approval (per EC 1105-2-412).

- (1) District Quality Control/Quality Assurance (DQC). All **decision documents** (including supporting data, analyses, environmental compliance documents, etc.) shall undergo DQC. DQC is an internal review process of basic science and engineering work products focused on fulfilling the project quality requirements defined in the Project Management Plan (PMP). The home district shall manage DQC. Documentation of DQC activities is required and should be in accordance with the Quality Manual of the District and the home Major Subordinate Command (MSC).
- (2) Agency Technical Review (ATR). ATR is mandatory for all **decision documents** (including supporting data, analyses, environmental compliance documents, etc.). The objective of ATR is to ensure consistency with established criteria, guidance, procedures, and policy. The ATR will assess whether the analyses presented are technically correct and comply with

published US Army Corps of Engineers (USACE) guidance, and that the document explains the analyses and results in a reasonably clear manner for the public and decision makers. ATR is managed within USACE by a designated Review Management Organization (RMO) and is conducted by a qualified team from outside the home district, but may be from within the home MSC, that is not involved in the day-to-day production of the project/product. ATR teams will be comprised of senior USACE personnel and may be supplemented by outside experts as appropriate.

- (3) Independent External Peer Review (IEPR). IEPR may be required for **decision documents** under certain circumstances. IEPR is the most independent level of review, and is applied in cases that meet certain criteria where the risk and magnitude of the proposed project are such that a critical examination by a qualified team outside of USACE is warranted. A risk-informed decision, as described in EC 1165-2-209, is made as to whether IEPR is appropriate. IEPR panels will consist of independent, recognized experts from outside of the USACE in the appropriate disciplines, representing a balance of areas of expertise suitable for the review being conducted. There are two types of IEPR: Type I is generally for decision documents and Type II is generally for implementation products.
- (a) Type I IEPR. Type I IEPR reviews are managed outside the USACE and are conducted on project studies. Type I IEPR panels assess the adequacy and acceptability of the economic and environmental assumptions and projections, project evaluation data, economic analysis, environmental analyses, engineering analyses, formulation of alternative plans, methods for integrating risk and uncertainty, models used in the evaluation of environmental impacts of proposed projects, and biological opinions of the project study. Type I IEPR will cover the entire decision document or action and will address all underlying engineering, economics, and environmental work, not just one aspect of the study. For decision documents where a Type II IEPR (Safety Assurance Review) is anticipated during project implementation, safety assurance shall also be addressed during the Type I IEPR per EC 1165-2-209.

Based on the information and analysis provided in this review plan, the project covered under this plan is excluded from Type I IEPR because it does not meet the mandatory IEPR triggers and does not warrant IEPR based on a risk-informed analysis. If any of the criteria outlined for IEPR exclusion are not met, the Review Plan is not applicable and a study specific review plan must be prepared by the home district, coordinated with the National Ecosystem Planning Center of Expertise and approved by the home Major Subordinate Command (MSC) in accordance with EC 1165-2-209.

- (b) Type II IEPR. Type II IEPR, or Safety Assurance Review (SAR), are managed outside the USACE and are conducted on design and construction activities for hurricane, storm, and flood risk management projects or other projects where existing and potential hazards pose a significant threat to human life. Type II IEPR panels will conduct reviews of the design and construction activities prior to initiation of physical construction and, until construction activities are completed, periodically thereafter on a regular schedule. The reviews shall consider the adequacy, appropriateness, and acceptability of the design and construction activities in assuring public health safety and welfare.

Based on the information and analysis provided in this review plan, the project covered under this plan is excluded from Type I IEPR because it does not meet the mandatory IEPR triggers and does not warrant IEPR based on a risk-informed analysis. If any of the criteria outlined for IEPR exclusion are not met, the Review Plan is not applicable and a study specific review plan must be prepared by the home district, coordinated with the National Ecosystem Planning Center of Expertise and approved by the home Major Subordinate Command (MSC) in accordance with EC 1165-2-209.

- (4) Policy and Legal Compliance Review. All **decision documents** will be reviewed throughout the study process for their compliance with law and policy. Guidance for policy and legal compliance reviews is addressed in Appendix H, ER 1105-2-100. These reviews culminate in determinations that the recommendations in the reports and the supporting analyses and coordination comply with law and policy, and warrant approval or further recommendation to higher authority by the home MSC Commander. DQC and ATR augment and complement the policy review processes by addressing compliance with pertinent published Army policies, particularly policies on analytical methods and the presentation of findings in decision documents.
- (5) Cost Engineering DX Review and Certification. All **decision documents** shall be coordinated with the Cost Engineering Directory of Expertise (DX), located in the Walla Walla District.

Regional cost personnel that are pre-certified by the DX will conduct the cost estimate ATR. The DX will provide the Cost Engineering DX certification.

- (6) Model Certification/Approval. EC 1105-2-412 mandates the use of certified or approved models for all planning activities to ensure the models are technically and theoretically sound, compliant with USACE policy, computationally accurate, and based on reasonable assumptions. Planning models, for the purposes of the EC, are defined 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 the opportunities, to evaluate potential effects of alternatives and to support decision making. The use of a certified/approved planning model does not constitute technical review of the planning product. The selection and application of the model and the input and output data is still the responsibility of the users and is subject to DQC, ATR, and IEPR (if required). EC 1105-2-412 does not cover engineering models used in planning. The responsible use of well-known and proven USACE developed and commercial engineering software will continue and the professional practice of documenting the application of the software and modeling results will be followed. The use of engineering models is also subject to DQC, ATR, and IEPR (if required).

For decision documents prepared under this Review Plan, use of existing certified or approved planning models is encouraged. Where uncertified or unapproved models are used, approval of the model for use will be accomplished through the ATR process. The ATR team will apply the principles of EC 1105-2-412 during the ATR to ensure the model is theoretically and computationally sound, consistent with USACE policies, and adequately documented. If specific uncertified models are identified for repetitive use within a specific district or region, the appropriate PCX, MSC(s), and home District(s) will identify a unified approach to seek certification of these models.

2. REVIEW MANAGEMENT ORGANIZATION (RMO) COORDINATION

The RMO is responsible for managing the overall peer review effort described in this review plan. The RMO for Section 206 decision documents is the home MSC. The MSC will coordinate and approve the review plan and manage the ATR. The home District will post the approved review plan on its public website. A copy of the approved review plan (and any updates) will be provided to the National Ecosystem Planning Center of Expertise (ECO-PCX) to keep the PCX apprised of requirements and review schedules.

3. STUDY INFORMATION

- a. **Decision Document.** The Anneewakee Creek Aquatic Ecosystem Restoration Project located in Anneewakee Creek Watershed, Douglas County, Georgia decision document will be prepared in accordance with ER 1105-2-100, Appendix F. The approval level of decision documents (if policy compliant) is the home MSC. An Environmental Assessment (EA) will be prepared along with the decision document.
- b. **Study/Project Description.** The Douglasville-Douglas County Water and Sewer Authority provided a Non-Binding Letter of Intent to Participate in the Anneewakee Creek Ecosystem Restoration Project Section 206 Program in October of 2002 as part of its comprehensive stormwater management planning for the City of Douglasville. Since then a Preliminary Restoration Plan (PRP) was approved in April 2003 and an Ecosystem Restoration Report (ERR) phase was initiated, however funding was discontinued early in FY04. In August 2009 federal funding to restart the Anneewakee Creek Feasibility Report was provided.

The Anneewakee Creek Watershed is located within the northeastern portion of Douglas County, Georgia (Figure 1); it is in Georgia Congressional District 7. The Anneewakee Creek Watershed covers approximately 29.72 square miles, including the southern part of the City of Douglasville and a major portion of the county (USACE, 2002). The watershed is within the Metropolitan North Georgia Water Planning District, which includes 15 counties in the metro Atlanta region. The highest elevation in the watershed is approximately 1,250 feet above mean sea level (msl) in the northwestern section of the watershed and the lowest elevation is approximately 740 feet above msl at the point of discharge to the Chattahoochee River.

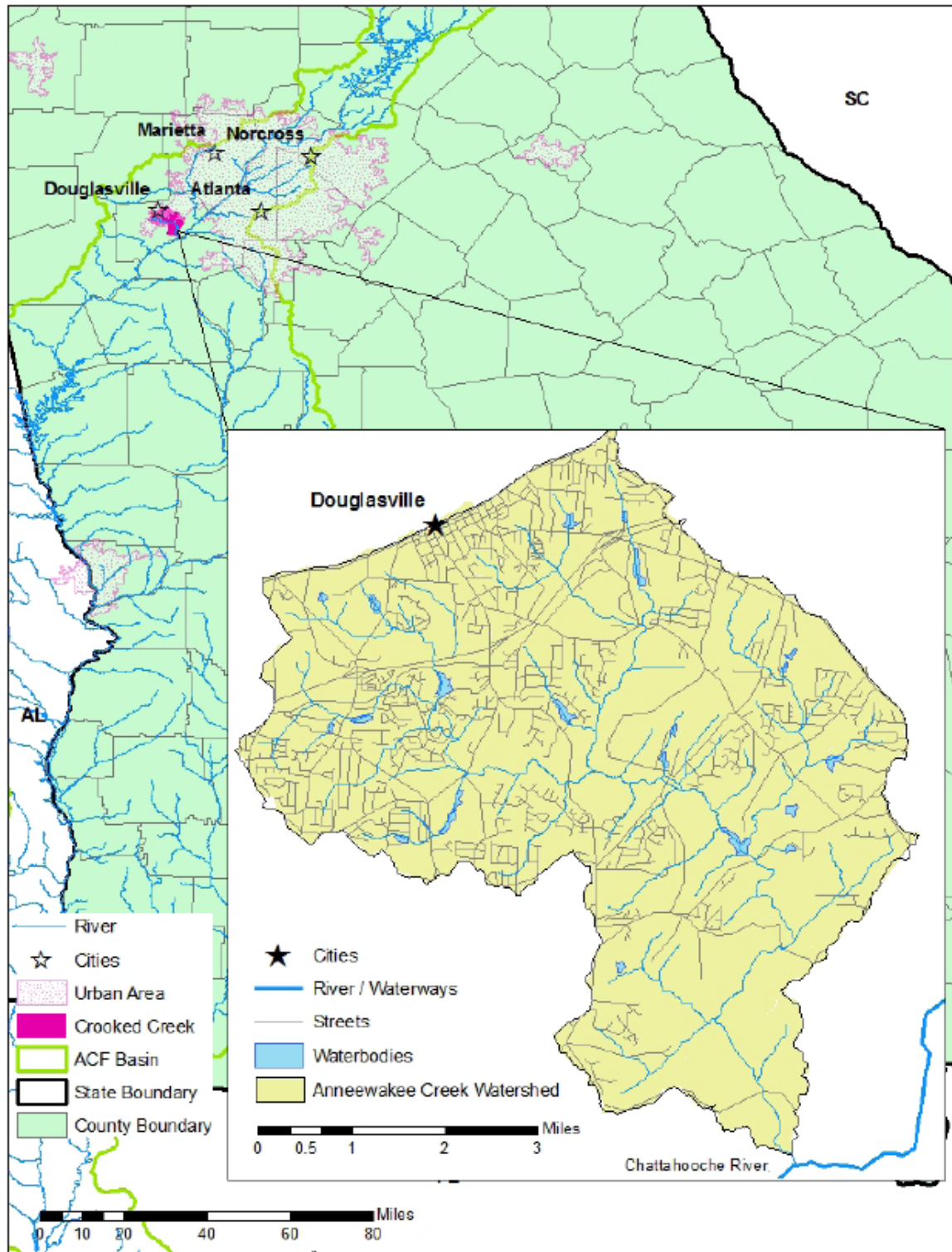


Figure 1. Anneewakee Creek Watershed

The management measures considered for this study include stormwater Best Management Practices (BMPs) that reduce flow, velocity or sediment concentrations; and restoration measures that directly change physical habitat parameters within the stream channel or riparian zone. Several

specific management measures were proposed in the Preliminary Restoration Plan (PRP) for Anneewakee Creek (USACE, 2002). These measures were considered, along with measures identified through the current selection process.

The estimated cost (or range of cost) will be determined after alternatives are identified. At present time there are no existing or anticipated policy waiver requests (pursued per paragraph F-10.f.(4) of ER 1105-2-100, Appendix F).

- c. Factors Affecting the Scope and Level of Review.** The Anneewakee Creek basin is the most heavily developed basin in the County with more than 70% of the land area currently developed. Considerable growth in this area is projected in the future due to its water and sewer amenities (Douglas County, 2004). The parts of the study that will be challenging are environmental and real estate. Some of the alternatives being proposed are located in wetland areas. The concern is the amount and quality of wetlands lost during the construction of those ecosystem restoration sites. All wetlands affected during construction will be returned to their natural state or better than their natural state at the completion of construction. Anneewakee Creek proposed restoration features will produce an overall net gain in habitat value or ecosystem outputs, avoiding any requirement to implement individual compensatory mitigation actions. Real estate may also be challenging due to steep creek banks and land acquisition of private and commercial property for access and staging equipment.

The project is not likely to have significant economic, environmental, or social effects to the Nation or involve a significant threat to human life/safety. The project is a ecosystem restoration project consisting of wet detention, dry detention, underground storage, retrofitting existing lakes and wet detention, and stream restoration. The project will reduce flashy high peak flows, reduce channel embeddedness, stabilize banks, and reconnect floodplains. The project will also provide educational and outreach opportunities. The project is not likely to have significant interagency interest, be highly controversial, contain influential scientific information or be a highly influential scientific assessment due to the relatively small footprint of the watershed (29.72 square miles). The information in the decision document or proposed project design will not likely be based on novel methods, involve the use of innovative materials or techniques, present complex challenges for interpretation, contain precedent-setting methods or models, or present conclusions that are likely to change prevailing practices.

- d. In-Kind Contributions.** Products and analyses provided by non-Federal sponsors as in-kind services are subject to DQC and ATR, similar to any products developed by USACE.

There are no in-kind products anticipated at this time. The non-federal sponsor shall participate with cash reimbursement for 35% of the Feasibility Study cost during the Design and Implementation Phase after execution of the Project Partnership Agreement (PPA).

4. DISTRICT QUALITY CONTROL (DQC)

All documents to be produced will undergo DQC. The DQC review team will be responsible for performing a technical review of the Draft Feasibility Report including the EA, engineering, economics, real estate, cost and environmental appendices. The DQC review will be completed prior to submitting documents for ATR. Duties of the DQC team include the following:

- 1) Reviewing report contents for compliance with established principles and procedures, using clearly justified and valid assumptions.
- 2) Reviewing methods and procedures used to determine appropriateness, correctness and reasonableness of results.
- 3) Providing the review team leader with documentation of comments, issues, and decisions arising out of the DQC review. Comments, and resolutions, will be documented in a Microsoft Word document or by using DrChecks.
- 4) Capturing public input at scoping and public meetings. Public comments are solicited and accepted by various means: United States Postal Service, email, website, fax, or at the public and scoping meetings.

5. AGENCY TECHNICAL REVIEW (ATR)

- a. **Products to Undergo ATR.** ATR will be performed throughout the study in accordance with the District and MSC Quality Management Plans. The ATR shall be documented and discussed at the AFB milestone. Certification of the ATR will be provided prior to the District Commander signing the final report. Products to undergo ATR include the Draft Feasibility Report, Draft EA, Final Feasibility Report and Final EA.
- b. **Required ATR Team Expertise.** The ATR team will consist of the individuals that represent the significant disciplines involved in the accomplishment of the work. The RMO, in cooperation with the Project Delivery Team (PDT) and vertical team, will determine the final make-up of the ATR team. The RMO will coordinate with the Cost Engineering Directory PCX in Walla Walla District to provide the cost engineering review and resulting certification.

ATR will be managed within the Corps and conducted by a qualified team. HQUSACE guidance requires that the ATR Team Lead reside outside of the SAD that is producing the document, unless an exception is acquired. For this study, the ATR Team Lead will reside within the SAD, but outside of Mobile District, for the following reasons:

- ATR Team Lead is independent from the District that is preparing the decision document;
- SAD has the resident expertise within its jurisdiction to lead and perform the review;
- Efficiencies are gained by an ATR Team Lead being located with the SAD, such as timeliness of the review and subsequent ATR certification; and
- Study is low risk, does not involve a significant threat to human life, or possess safety concerns.

ATR Team Members/Disciplines	Expertise Required
ATR Lead	The ATR lead should be a senior professional with experience in preparing Section 206 decision documents and conducting ATR. The lead should also have the necessary skills and experience to lead a virtual team through the ATR process. Typically, the ATR lead will also serve as a reviewer for a specific discipline (such as planning, economics, environmental resources, etc).
Planning	The Planning reviewer should be a senior water resources planner with experience in general planning policy and guidance. The team member should also be familiar with the Ecosystem Response Model software used as Plan Formulation tool to

	evaluate alternatives.
Economics	Team member should have extensive knowledge of the economic software Institute of Water Resources (IWR) Planning Suite Decision Support Software and knowledge of Cost Effective/Incremental Cost Analysis (CE/ICA).
Environmental Resources	Team member should have extensive knowledge of the integration of environmental evaluation and compliance requirements, pursuant to National Environmental Policy Act (NEPA) statutes, applicable executive orders and other Federal planning requirements, into the planning of Civil Works comprehensive plans and implementation projects. The team member(s) should also have a thorough understanding of the approved environmental software used for this project (Ecosystem Response Model).
Hydrology & Hydraulic Engineering	Team member will have a thorough understanding of open channel dynamics, application of detention/retention basins and computer modeling techniques that will be used such as Hydrologic Engineering Center – River Analysis System (HEC-RAS), and Sedimentation Impact Analysis Method(SIAM)
Cost Engineering	Team member should be familiar with the most recent version of Micro - Computer Aided Cost Estimating System II (MCACES II) software and total project cost summary. The Cost Reviewer is required to coordinate with the Walla Walla Cost DX for further cost engineering review and resulting certification.
Real Estate	Team member(s) should have planning/appraisal/acquisition experience regarding ecosystem restoration type projects. Including, but not limited to, knowledge of estates to be acquired, induced flooding, zoning/buffer ordinances, and NFS acquisition responsibilities.

c. **Documentation of ATR.** DrChecks review software will be used to document all ATR comments, responses and associated resolutions accomplished throughout the review process. Comments should be limited to those that are required to ensure adequacy of the product. The four key parts of a quality review comment will normally include:

- (1) The review concern – identify the product’s information deficiency or incorrect application of policy, guidance, or procedures;
- (2) The basis for the concern – cite the appropriate law, policy, guidance, or procedure that has not be properly followed;
- (3) The significance of the concern – indicate the importance of the concern with regard to its potential impact on the plan selection, recommended plan components, efficiency (cost), effectiveness (function/outputs), implementation responsibilities, safety, Federal interest, or public acceptability; and
- (4) The probable specific action needed to resolve the concern – identify the action(s) that the reporting officers must take to resolve the concern.

In some situations, especially addressing incomplete or unclear information, comments may seek clarification in order to then assess whether further specific concerns may exist.

The ATR documentation in DrChecks will include the text of each ATR concern, the PDT response, a brief summary of the pertinent points in any discussion, including any vertical team coordination (the vertical team includes the district, RMO, MSC, and HQUSACE), and the agreed upon resolution. If an ATR concern cannot be satisfactorily resolved between the ATR team and the PDT, it will be elevated to the vertical team for further resolution in accordance with the policy issue resolution process described in either ER 1110-2-12 or ER 1105-2-100, Appendix H, as appropriate. Unresolved concerns can be closed in DrChecks with a notation that the concern has been elevated to the vertical team for resolution.

At the conclusion of each ATR effort, the ATR team will prepare a Review Report summarizing the review. Review Reports will be considered an integral part of the ATR documentation and shall:

- Identify the document(s) reviewed and the purpose of the review;
- Disclose the names of the reviewers, their organizational affiliations, and include a short paragraph on both the credentials and relevant experiences of each reviewer;
- Include the charge to the reviewers;
- Describe the nature of their review and their findings and conclusions;
- Identify and summarize each unresolved issue (if any); and
- Include a verbatim copy of each reviewer's comments (either with or without specific attributions), or represent the views of the group as a whole, including any disparate and dissenting views.

ATR may be certified when all ATR concerns are either resolved or referred to the vertical team for resolution and the ATR documentation is complete. The ATR Lead will prepare a Statement of Technical Review certifying that the issues raised by the ATR team have been resolved (or elevated to the vertical team). A Statement of Technical Review should be completed prior to the District Commander signing the final report. A sample Statement of Technical Review is included in Attachment 2.

6. INDEPENDENT EXTERNAL PEER REVIEW (IEPR)

- a. Decision on IEPR.** Based on the information and analysis provided in paragraph 3(c) of this review plan, the project covered under this plan is excluded from IEPR because it does not meet the mandatory IEPR triggers and does not warrant IEPR based on a risk-informed analysis. At this time all of the criteria outlined in paragraph 1(b) would be met.
- b. Products to Undergo Type I IEPR.** Not applicable.
- c. Required Type I IEPR Panel Expertise.** Not Applicable.
- d. Documentation of Type I IEPR.** Not Applicable.

7. MODEL CERTIFICATION AND APPROVAL

- a. **Planning Models.** The following planning models are anticipated to be used in the development of the decision document: Environmental, Economic and Engineering software will be used. All products will undergo ATR. The environmental software to be utilized is the Ecosystem Response Model (ERM). The ERM was created by the NGWRA interagency team led by USACE, with members from the U.S. Fish and Wildlife Service (USFWS), USEPA, Water Resources Division (WRD) of the Georgia Department of Natural Resources (GADNR), Environmental Protection Division (EPD) of GADNR, and local sponsors and stakeholders. It was developed as a decision making tool to assist in the selection of watershed improvement projects by comparing ecosystem benefits of various management measure alternatives, using existing and predicted future biological scores. The ERM uses physical habitat and biological monitoring data, collected using GADNR guidance (GADNR, 2005; 2007), as an indicator of the overall stream ecosystem integrity. The ERM outputs a combined stream health score and Habitat Units, based on biological monitoring data, and a projected future combined stream health score and Habitat Units based on predicted future biological monitoring scores. This allows comparison of outputs under various conditions and provides an indicator of the extent of stream improvement that would result from implementation of restoration alternatives. The Ecosystem Restoration Model was approved for use by the ECO-PCX and endorsed by South Atlantic Division (SAD) for North Georgia.

The economic software that will be used is IWR Planning Suite Decision Support Software developed by the Institute of Water Resources. IWR Planning Suite combines solutions to planning problems and calculates the additive effects of each combination or “plan.” IWR Planning Suite assists with plan comparison by conducting cost effectiveness and incremental cost analyses (CE/ICA). For this study IWR Planning Suite will be used to evaluate the cost effectiveness and incremental cost of each potential restoration alternative, based on an estimated cost and projected benefits according to ERM results.

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study	Certification / Approval Status
Ecosystem Response Model	The ecosystem response model was developed based on interagency team and Independent Technical Review (ITR) recommendations, to quantify existing, “future without project”, and “future with project” conditions in North Georgia watersheds in and around the metro-Atlanta area.	Approved
IWR Planning Suite Decision Support Software	The IWR Planning Suite combines solutions to planning problems and calculates the additive effects of each combination or “plan.”	Certified

Engineering Models. The following engineering models are anticipated to be used in the development of the decision document: Hydrologic Engineering Center Hydrologic Modeling System (HEC-HMS 3.4) and a calibrated Hydrologic Engineering Center River Analysis System (HEC-RAS 4.1) model for the watershed.

The Hydrologic Engineering Center’s Hydrologic Modeling System (HEC-HMS) is designed to simulate the precipitation-runoff processes of dendritic watershed systems. It is designed to be applicable in a wide range of geographic areas for solving the widest possible range of problems. This includes large river

basin water supply and flood hydrology, and small urban or natural watershed runoff. Hydrographs produced by the program are used directly or in conjunction with other software for studies of water availability, urban drainage, flow forecasting, future urbanization impact, reservoir spillway design, flood damage reduction, floodplain regulation, and systems operation. The HEC-HMS model that was developed for the Anneewakee Creek watershed was physically represented by applying a range of elements that included subbasin, reach, reservoir, diversion, sources, and sinks. Infiltration losses for each model were performed using the Soil Conservation Service (SCS) Curve Number (CN) method. This method is designed for a single storm event, and is based on the area's hydrologic soil group, landuse, treatment and hydrologic condition. The watershed model included a baseline condition SCS CN for each subbasin as well as a future condition SCS CN for each subbasin. Meteorological data included in the Anneewakee Creek model represented the 2, 10, 50, 100, and 500 year theoretical storm events. This model was used for the baseline and future without conditions, and will be used for the future with project conditions. Baseline conditions for the Anneewakee Creek watershed were based on landuse trends interpreted from 2004 values presented in Douglas County's October 2004 Comprehensive Landuse Plan. Future without conditions for the Anneewakee Creek watershed were based on Douglas County's October 2004 Comprehensive Landuse Plan where "It is expected that Douglas County will be completely built out by 2025."

The Hydrologic Engineering Center's River Analysis System (HEC-RAS) program provides the capability to perform one-dimensional steady and unsteady flow river hydraulics calculations. The HEC-RAS model that was developed for the Anneewakee Creek Watershed was physically represented by a series of reaches, cross-sections, bridges and culverts. The Anneewakee Creek watershed was developed with representative reaches for the main branch and tributary branches Amber, Arbor, Austin, Bomar, Chapel Farms, Crooked, Farm, Knollwood, Little-Anneewakee, Simon, and Tiger. Unfortunately, the existing model did not include representative reaches for the upper branches of the Simon tributary. The program will be used for steady flow analysis to evaluate existing, future without and future with project conditions for the main branch of Anneewakee Creek and its tributaries.

For Anneewakee Creek, it was decided that the channel forming discharge would be the most appropriate flow to indicate overall channel stability and stream health. The channel forming discharge is the flow magnitude that, over time, applies the greatest amount of work towards shaping the channel. This is the flow that, over the long term, is the most effective at moving sediment, forming or eroding bars, changing bends and meanders, and generally doing work that results in the average morphologic characteristics of channels (Dunne and Leopold, 1978).

Due to the highly urbanized nature of the Anneewakee Creek watershed, it was determined that bank-full flows would be difficult to determine through empirical field measurements. In many places the stream channels are unstable and the size and shape of the channel do not represent natural conditions due to development in the watershed. Because of the difficulties associated with determining the bank-full discharge and the lack of a readily available sediment rating curve, it was decided that the 2 year recurrence interval discharge would be a reasonable approximation of the channel-forming discharge. It was assumed that the two year recurrence interval event would adequately represent the channel forming discharge for the watershed.

For sediment, the Anneewakee Creek Watershed Assessment Study (2000, CH2MHill) estimates existing and future annual TSS loading rates (lbs/acre/year) for six subwatersheds within the Anneewakee Creek Watershed. Figure ES-2, Table ES-3 and Table ES-7 within that report show the locations of the six subwatersheds and the existing and future TSS loading rates for each subwatershed respectively.

For this study, baseline annual TSS loads were determined for each assessment site using the above referenced annual loading rates from each respective subwatershed. For each assessment site, the upstream drainage area was determined and multiplied by the corresponding area loading rate to get the annual TSS load (lbs/year).

The future conditions analysis included TSS loading rate estimates that were based on the assumption that the county will encourage cluster developments and buffers along the creeks and major tributaries. For each assessment site, the upstream drainage area was determined and multiplied by an estimated loading rate calculated for years 2015, 2020, 2025, 2035, and 2065. The predicted future annual TSS loads (lbs/year) are based on an assumed total build-out of the watershed occurring in 2025.

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study
HEC-RAS 4.1 (River Analysis System)	The Hydrologic Engineering Center’s River Analysis System (HEC-RAS) program provides the capability to perform one-dimensional steady and unsteady flow river hydraulics calculations. The program will be used for steady flow analysis to evaluate the future without- and with-project conditions along the Wild River and its tributaries.
HEC-HMS 3.4	The Hydrologic Engineering Center’s Hydrologic Modeling System (HEC-HMS) is designed to simulate the precipitation-runoff processes of dendritic watershed systems.
SIAM	Sediment Impact Analysis Methods (SIAM) provides a framework for combining morphological, hydrologic, and hydraulic information. The results develop a quantitative picture of sediment movement through a watershed more detailed than a qualitative geomorphic evaluation and less intensive than a numeric mobile boundary model

8. REVIEW SCHEDULES AND COSTS

a. ATR Schedule and Cost. The cost for ATR is estimated to be approximately \$20,000. The documents to be reviewed and scheduled dates for review are as follows:

Milestone	Review	Schedule Dates
AFB Materials	ATR	July 2011
AFB	AFB by SAD	August 2011
Draft Report and Draft EA	ATR	November 2011
Final Report and Final EA	ATR	April 2012

b. Type I IEPR Schedule and Cost. Not applicable.

c. Model Certification/Approval Schedule and Cost. Model Certification/Approval. EC 1105-2-407 requires certification (for Corps models) or approval (for non-Corps models) of planning models used for all planning activities. The EC defines planning models as any models and analytical tools that planners use to define water resources management problems and opportunities, to formulate 11 potential alternatives to address the problems and take advantage of the opportunities, to evaluate potential effects of alternatives and to support decision-making. The EC does not cover engineering models used in planning. Engineering software is being address under the Engineering

and Construction (E&C) Science and Engineering Technology (SET) initiative. Until an appropriate process that documents the quality of commonly used engineering software is developed through the SET initiative, engineering activities in support of planning studies shall proceed as in the past. The responsible use of well-known and proven USACE developed and commercial engineering software will continue and the professional practice of documenting the application of the software and modeling results will be followed.

9. PUBLIC PARTICIPATION

State and Federal resource agencies may be invited to participate in the study covered by this review plan as partner agencies or as technical members of the PDT, as appropriate. Agencies with regulatory review responsibilities will be contacted for coordination as required by applicable laws and procedures. The ATR team will be provided copies of public and agency comments.

The RP will be made accessible to the public through the Mobile District website link <http://www.sam.usace.army.mil/>. Public review of the review plan can begin as soon as it is reviewed and approved by the MSC Commander and posted by the Mobile District. Comments made by the public will be available to the review team. Public and interagency review for the EA will be conducted in accordance with NEPA, as outlined in ER 1105-2-100.

The RP will be available throughout all public and agency scoping and other processes for this project. Public input from the NEPA workshops and the public meetings will be available to the ATR members to ensure that public comments have been considered in the development of reviews and final reports. Public comments will be solicited and accepted by multiple means: United States Postal Service, email, website, fax or at the public and scoping meetings.

10. REVIEW PLAN APPROVAL AND UPDATES

The home MSC Commander is responsible for approving this review plan and ensuring that use of the Review Plan is appropriate for the specific project covered by the plan. The review plan is a living document and may change as the study progresses. The home district is responsible for keeping the review plan up to date. Minor changes to the review plan since the last MSC Commander approval are documented in Attachment 3. Significant changes to the review plan (such as changes to the scope and/or level of review) should be re-approved by the MSC Commander following the process used for initially approving the plan. Significant changes may result in the MSC Commander determining that use of the Review Plan is no longer appropriate. In these cases, a project specific review plan will be prepared and approved in accordance with EC 1165-2-209. The latest version of the review plan, along with the Commanders' approval memorandum, will be posted on the home district's webpage.

11. REVIEW PLAN POINTS OF CONTACT

Public questions and/or comments on this review plan can be directed to the following points of contact:

- Project Manager, 251-690-3240
- South Atlantic Division Point of Contact, 404-562-5229

ATTACHMENT 3: REVIEW PLAN REVISIONS

Revision Date	Description of Change	Page / Paragraph Number
2010 09 01	Updated HEC-RAS version from 4.0 to 4.1	13 / 7
2010 09 01	Inserted model HEC-HMS 3.4 and description	11, 12 / 7
2010 09 01	Further explained engineering models used	11, 12, 13 / 7
2011 04 26	Updated schedule	13 / 8

ATTACHMENT 4: ACRONYMS AND ABBREVIATIONS

<u>Term</u>	<u>Definition</u>	<u>Term</u>	<u>Definition</u>
AFB	Alternatives Formulation Briefing	IWR	Institute of Water Resources
ATR	Agency Technical Review	ITR	Independent Technical Review
CAP	Continuing Authorities Program	MCACES	Micro - Computer Aided Cost Estimating System
CE/ICA	Cost Effective/Incremental Cost Analysis	MSC	Major Subordinate Command
DQC	District Quality Control/Quality Assurance	NEPA	National Environmental Policy Act
DX	Directory of Expertise	OMRR&R	Operation, Maintenance, Repair, Replacement and Rehabilitation
EA	Environmental Assessment	PCX	Planning Center of Expertise
EC	Engineer Circular	PDT	Project Delivery Team
ECO-PCX	Ecosystem Planning Center of Expertise	PED	Pre Construction Engineering & Design
EIS	Environmental Impact Statement	PMP	Project Management Plan
ER	Engineering Regulation	RMO	Review Management Organization
ERR	Ecosystem Restoration Report	SAR	Safety Assurance Review
HEC - RAS	Hydrologic Engineering Center – River Analysis System	SIAM	Sedimentation Impact Analysis
HEC - HMS	Hydrologic Engineering Center Hydrologic Modeling System	USACE	U.S. Army Corps of Engineers
HQUSACE	Headquarters, U.S. Army Corps of Engineers		
IEPR	Independent External Peer Review		