

Design Phase Review Plan U.S. Army Corps of Engineers Baltimore District

Anacostia Watershed Restoration Project Design Phase Review Plan

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1. PURPOSE AND REQUIREMENTS

a. Purpose. This review plan defines the scope and level of review for implementation documents. Implementation documents include design documentation reports (DDRs) and Construction Plans & Specifications. This review plan defines the scope and level of review for the DDR and Plans and Specifications associated with the design phase of the Anacostia Watershed Restoration Project.

b. References.

- (1) EC 1165-2-217 Civil Works Review, February 2018.
- (2) ER 1110-2-1150, Engineering and Design for Civil Works Projects, 31 August 1999.
- (3) ER 1110-1-12, Engineering and Design Quality Management, 31 July 2006, as revised through 31 March 2011.
- (4) ER 415-1-11 – Biddability, Constructability, Operability, Environmental and Sustainability (BCOES) Reviews, 1 January 2013.
- (5) Resolution by the Senate Committee on Environment and Public Works, 5 June 1997.
- (6) Water Resources Reform and Development Act of 2014 (WRRDA 2014), Public Law 113-121, 10 June 2014.
- (7) Climate Change – ECB 2018-14, Guidance for Incorporating Climate Change Impacts to Inland Hydrology in Civil Works Studies, Designs, and Projects.

c. Requirements. This review plan was developed in accordance with EC 1165-2-217 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) and BCOES (Biddability, Constructability, Operability, Environmental and Sustainability) review, Agency Technical Review (ATR), Independent External Peer Review (IEPR), and Policy and Legal Compliance Review. In addition to these levels of review, the cost estimate may be subject to cost engineering review and certification (per EC 1165-2-217).

2. REVIEW MANAGEMENT ORGANIZATION (RMO) COORDINATION

The RMO is responsible for managing the overall review effort described in this Review Plan. The RMO for implementation documents is the Major Subordinate Command (MSC), (per EC 1165-2-217). Therefore, the RMO for the review effort described in this review plan is the North Atlantic Division (NAD) Engineering & Construction (E&C) Division.

3. PROJECT INFORMATION

a. Implementation Documents

This review plan has been prepared for the Design Document Reports and the Construction Documents (Plans and Specifications) for the Anacostia Watershed Restoration Project. The DDR will serve as the record of the design of the project. The Plans and Specifications will serve as the bid documents for the construction of the Anacostia Watershed Restoration Project which includes aquatic restoration of approximately 86 square miles of the Anacostia River watershed. Approval of these implementation documents is at the district level.

This review plan focuses on the DDR developed in association with the initial construction contracts (restoration of aquatic habitat, fish passages through the removal of blockages, flood risk management, etc.) for the six reaches of the Northwest and Northeast Branches of the Anacostia River and components of the project.

b. Background

The Anacostia River watershed, a sub-watershed of the Chesapeake Bay, spans approximately 176 square miles, and is located entirely within the Washington D.C. metropolitan area. The portion within Prince George's County and the focus of the project is approximately 86 square miles, accounting for almost one half of the total Anacostia River watershed. The Anacostia River flows through Maryland and then the District of Columbia into the Potomac River, which is an American Heritage River that ultimately drains to the Chesapeake Bay. Aquatic ecosystems in the Anacostia River watershed have been substantially degraded as a result of anthropogenic alterations to the natural landscape. USACE has a long history of work in this watershed, beginning in the 1800s with navigation and flood risk management projects. More recently, attention has shifted toward ecosystem restoration opportunities. By incorporating new science and technology, habitat can be restored in areas where these USACE projects were constructed without impacting their authorized purpose. The significance of this ecosystem, as a sub-watershed of the Chesapeake Bay, is widely recognized, including nationally by the Chesapeake Bay Protection and Restoration Executive Order (EO 13508) and 2014 Chesapeake Bay Watershed Agreement, and regionally by the Anacostia Restoration Plan. The stream reaches included in this study historically provided critical spawning and nursery habitat for anadromous fish, including alewife herring (*Alosa pseudoharengus*), blueback herring (*Alosa aestivalis*), American shad (*Alosa sapidissima*), and hickory shad (*Alosa mediocris*). River herring (alewife and blueback herring), shad, and the American eel are fish species of interest in the U.S. Fish and Wildlife Service's Northeast Region and are specifically identified as target species for the fish passage outcome of the 2014 Chesapeake Bay Watershed Agreement. Findings of the 2012 Benchmark Stock Assessment for River Herring concluded that the overall coast-wide population of river herring stocks on the Atlantic coast is depleted to near historic lows. In May 2015, partially to prevent an endangered species listing, NOAA Fisheries released the River Herring Conservation Plan with the goal of increasing river herring populations.

c. Project Description

The recommended plan for aquatic ecosystem restoration will restore approximately 7 miles (32 acres) of aquatic habitat, restore approximately 4 miles of fish passage through the removal of blockages, and connect approximately 14 miles (64 acres) of restored habitat in the Northwest and Northeast Branches. The fish blockages removed will provide anadromous fish species of concern with substantially greater access to their historical range; thereby contributing to increases in the populations of these species. Access within the Northwest Branch for anadromous fish will be restored from 21 % to 83% of historic range, with access in the Northeast Branch restored from 10% to 90% of historic range. Furthermore, the recommended plan restores aquatic habitat in four streams in close proximity to flood damage reduction channels that were constructed by the Corps in the 1970s. The recommended plan is the National Ecosystem Restoration (NER) Plan. Implementation of the recommended plan will have substantial beneficial impact on the biological integrity, habitat diversity, and resiliency of the Anacostia River watershed.

4. DISTRICT QUALITY CONTROL (DQC) AND BCOES REVIEW

All implementation documents will undergo DQC. DQC is an internal review process of basic science and engineering work products focused on fulfilling the project requirements defined in the design phase project management plan (PMP). The Baltimore District will manage the DQC. The DQC process will be performed in two phases. The initial phase will be the day-to-day production reviews performed by the designers' supervisor, team leader, or senior engineer as the product is being developed. For the second phase, qualified engineers/scientists not affiliated with the development of the product will be selected commensurate with the complexity of the product to be reviewed. Branch and Section Chiefs will sign-off to complete the review for the plans and specifications. The Engineering Chief will sign-off when the plans and specifications are ready to advertise thus completing the DQC review process. These reviews will be documented in Dr. Checks (PROJNET).

For Civil Works projects, the BCOES review will include evaluation of Plans and Specifications, Engineering Considerations and Instruction for Field Personnel (ECIFP) reports, the operations, maintenance, repair, replacement, and rehabilitation (OMRR&R) plan for the project and other required documents as mentioned in ER 415-1-11. The Baltimore District will manage the BCOES review.

a. Documentation of DQC and BCOES. DQC and BCOES will be documented through the use of DrChecks and DQC/BCOES certifications.

b. Products to Undergo DQC and BCOES. The P&S packages will undergo DQC and BCOES reviews at 35%, 65%, 95% and Final.

c. Required DQC and BCOES Expertise. DQC and BCOES will be performed by staff in the home district that are not involved in preparing the implementation documents. The

required disciplines for review are similar to the PDT disciplines listed in Attachment 1. The DQC supplements the reviews provided by the Project Delivery Team during the course of completing the design.

5. AGENCY TECHNICAL REVIEW (ATR)

ATR is mandatory for all implementation documents. 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 USACE guidance, and that the document explains the analyses and results in a reasonably clear manner. ATR is managed within USACE by the designated RMO and is conducted by a qualified team from outside the home district 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. The ATR team lead will be from outside the home MSC.

- a. Products to Undergo ATR. The Design Document Report and Plans & Specifications documents will undergo an ATR at 95% design review.
- b. Required ATR Team Expertise.

ATR Team Members/Disciplines	Expertise Required
ATR Lead	The ATR lead should be a senior professional with extensive experience in preparing Civil Works implementation documents and conducting ATR. The lead should also have the necessary skills and experience to lead a virtual team through the ATR process. The ATR lead may also serve as a reviewer for a specific discipline (such as civil engineering and hydraulic engineering).
Civil Engineering	Team member shall have expertise in civil engineering design and review of site/civil layout, grading, drainage and utilities for stream restoration projects, and shall be a registered professional engineer.
Hydraulic Engineering	Team member shall have expertise in hydraulics and hydrologic engineering and shall be a registered professional engineer.
Geotechnical Engineer	Team member shall have expertise in geotechnical engineering design with respect to stream restoration and shall be an actively licensed professional engineer.

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 been properly followed;
- (3) The significance of the concern – indicate the importance of the concern with regard to its potential impact on the 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 ER 1110-1-12. Unresolved concerns can be closed in DrChecks with a notation that the concern has been elevated to the vertical team for resolution.

d. Review Report. At the conclusion of the 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:

- (1) Identify the document(s) reviewed and the purpose of the review;
- (2) Disclose the names of the reviewers, their organizational affiliations, and include a short paragraph on both the credentials and relevant experiences of each reviewer;
- (3) Include the charge to the reviewers;
- (4) Describe the nature of their review and their findings and conclusions;
- (5) Identify and summarize each unresolved issue (if any); and
- (6) Include a copy of each ATR comment, the PDT response, a brief summary of the pertinent points in the follow on discussion, including any vertical coordination, and the agreed upon resolution.

e. ATR Certification. ATR will 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 for all the implementation documents.

6. INDEPENDENT EXTERNAL PEER REVIEW (IEPR)

An IEPR may be required for implementation 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 1165-2-217, is made as to whether an 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:

a. Type I IEPR. Type I IEPRs 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 1165-2-217.

b. Type II IEPR. Type II IEPRs, or Safety Assurance Reviews (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.

c. Decision on IEPR.

- (1) Type I IEPR's are conducted on project studies and reports. Since this review plan deals with implementation documents, a Type I IEPR is not applicable.
- (2) Type II Independent External Peer Review, Safety Assurance Review, is required by EC 1165-2-217 for hurricane and storm risk management and flood risk management projects, as well as other projects where potential hazards pose a significant threat to human life.
- (3) Based on the risk informed assessment there has been a determination that the Type II IEPR is not required for this project. The Baltimore District Chief, Engineering

Division has determined that the Anacostia Watershed Restoration Project is not a threat to human life. All conclusions and decisions have been updated and provided as Attachment 5 – Risk Informed Assessment.

- d. Products to Undergo IEPR. Not applicable at this time.
- e. Required IEPR Panel Expertise. Not applicable at this time.
- f. Documentation of IEPR. Not applicable at this time.

7. POLICY AND LEGAL COMPLIANCE REVIEW

All implementation documents will be reviewed for their compliance with law and policy. The DQC will facilitate the policy and legal compliance review processes by addressing compliance with pertinent published Army policies, particularly policies on analytical methods and the presentation of results in implementation documents.

8. COST ENGINEERING DIRECTORATE OF EXPERTISE (DX) REVIEW AND CERTIFICATION

This is not applicable since this review plan is for implementation documents associated with the design phase of the Anacostia Watershed Restoration Project.

9. MODEL CERTIFICATION AND APPROVAL

This is not applicable since this project is in the Preconstruction Engineering and Design (PED) phase and this relates to the use of certified or approved models for planning activities.

10. REVIEW SCHEDULES AND COSTS

ATR Schedule and Cost. The schedule and cost budgeted for ATR is \$50,000 and is scheduled for [MONTH YEAR] for Anacostia Watershed Restoration Project. The District will advise Engineering & Construction (E&C) of any changes to the ATR schedule and advise E&C when an ATR team should be assembled.

11. PUBLIC PARTICIPATION

Public participation is not required for this review plan.

12. REVIEW PLAN APPROVAL AND UPDATES

The North Atlantic Division Commander is responsible for approving this review plan. The Commander's approval reflects vertical team input (involving district, MSC (RMO), and HQUSACE members) as to the appropriate scope and level of review for the implementation

documents. Like the PMP, the review plan is a living document and may change as the engineering and design progresses. The home district is responsible for keeping the review plan up to date. 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. The latest version of the review plan, along with the Commander's approval memorandum, will be posted on the District and Division web sites.

13. REVIEW PLAN POINTS OF CONTACT

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

Kameel Hall, CENAB, EN Design Manager, 410-962-5667.

Trevor Cyran, P.E., Project Manager, 410-962-4999

ATTACHMENT 1 - TEAM ROSTER

Project Delivery Team

NAME	ROLE	ORGANIZATION	EMAIL PHONE
Trevor Cyran	Project Manager	NAB	Trevor.P.Cyran@usace.army.mil
Kameel Hall	Design Manager	NAB	Kameel.R.Hall@usace.army.mil
Chris Spaur	Biologist	NAB	Christopher.C.Spaur@usace.army.mil
Ethan Bean	Archeologist	NAB	Ethan.A.Bean@usace.army.mil
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Ben Soleimani	Stream Restoration Engineer	NAB	Behnam.Soleimani@usace.army.mil
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	Geographer	NAB	
	Structural Engineer	NAB	
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Eric Lamb	Real Estate Specialist	NAB	Eric.Lamb@usace.army.mil
Sarah Lazo	Public Affairs Specialist	NAB	Sarah.D.Lazo@usace.army.mil
Frank Galosi	Project Manager	PGCO	

DISTRICT QUALITY CONTROL (DQC) TEAM

NAME	ROLE	PHONE	EMAIL
Andy Orlovsky, PE	Civil Engineering		Andrew.J.Orlovsky@usace.army.mil
Dan Risley, PE	Hydraulic Engineering		Daniel.W.Risley@usace.army.mil
TBD	Structural Engineering		
John C. Smith, PE	Geotechnical Engineering		John.C.Smith@usace.army.mil
Parris McGhee-Bey	Cost Engineering		Parris.J.McGhee-Bey@usace.army.mil
Charles Leasure	Environmental		Charles.W.Leasure@usace.army.mil
Jeff Lorenz	Office of Counsel		Carl.J.Lorenz@usace.army.mil

BCOES Team

NAME	ROLE	PHONE	EMAIL

Agency Technical Review (ATR) Team

NAME	ROLE	REVIEW DISTRICT
TBD	ATR Lead	
TBD	Civil Engineer	
TBD	Environmental	
TBD	Geotechnical Engineer	
TBD	Structural Engineer	

Vertical Team

NAME	ROLE	PHONE	EMAIL
Ben Fedor, PE	Chief, Civil Works Branch	410-962-4280	Benjamin.A.Fedor@usace.army.mil
Charles Frey, PE	Chief Geotechnical Branch	410-962-5663	Charles.E.Frey@usace.army.mil
TBD	Chief, Military Design Branch		

ATTACHMENT 2: ACRONYMS AND ABBREVIATIONS

TERM	DEFINITION	TERM	DEFINITION
AFB	Alternative Formulation Briefing	NED	National Economic Development
ASA (CW)	Assistant Secretary of the Army for Civil Works	NER	National Ecosystem Restoration
ATR	Agency Technical Review	NEPA	National Environmental Policy Act
CSDR	Coastal Storm Damage Reduction	O&M	Operation and Maintenance
DPR	Detailed Project Report	OMB	Office of Management and Budget
DQC	District Quality Control/Quality Assurance	OMRR&R	Operation, Maintenance, Repair, Replacement and Rehabilitation
DX	Directory of Expertise	OEO	Outside Eligible Organization
EA	Environmental Assessment	OSE	Other Social Effects
EC	Engineer Circular	PCX	Planning Center of Expertise
EIS	Environmental Impact Statement	PDT	Project Delivery Team
EO	Executive Order	PAC	Post Authorization Change
ER	Engineering Regulation	PMP	Project Management Plan
FDR	Flood Damage Reduction	PL	Public Law
FEMA	Federal Emergency Management Agency	QMP	Quality Management Plan
FRM	Flood Risk Management	QA	Quality Assurance
FSM	Feasibility Scoping Meeting	QC	Quality Control
GRR	General Reevaluation Report	RED	Regional Economic Development
HSLRR	Hurricane Sandy Limited Reevaluation Report	RMC	Risk Management Center
Home District/MS	The District or MSC responsible for the preparation of the decision document	RMO	Review Management Organization
HQUSACE	Headquarters, U.S. Army Corps of Engineers	RTS	Regional Technical Specialist
IEPR	Independent External Peer Review	SAR	Safety Assurance Review
ITR	Independent Technical Review	USACE	U.S. Army Corps of Engineers
LRR	Limited Reevaluation Report	WRDA	Water Resources Development Act
MSC	Major Subordinate Command		

ATTACHMENT 3: COMPLETION OF AGENCY TECHNICAL REVIEW [SAMPLE]

COMPLETION OF AGENCY TECHNICAL REVIEW

This Statement of Technical Review has been completed by the ATR Team for the Anacostia Watershed Restoration Project in Prince Georges County, MD, see attached summary of unresolved issues and future commitments, the Charge questions, a brief resume of ATR reviewers, and a printout of all DrCheckssm comments with resolution. The ATR was conducted as defined in the project's Review Plan to comply with the requirements of EC 1165-2-217. During the ATR, compliance with established policy principles and procedures, utilizing justified and valid assumptions, was verified. This included review of: assumptions, methods, procedures, and material used in analyses, alternatives evaluated, the appropriateness of data used and level obtained, and reasonableness of the results, including whether the product meets the customer's needs consistent with law and existing USACE policy. The ATR also assessed the District Quality Control (DQC) documentation and made the determination that the DQC activities employed appear to be appropriate and effective. All comments resulting from the ATR have either been resolved or have been elevated and are attached. All comments in DrCheckssm are closed.

Alan Huntley
Chief, Business Technical Branch
CENAD-RB-T

Date

Kameel Hall
Design Manager
CENAB-EN-WC

Date

Trevor Cyran
Project Manager
CENAB-PP-C

Date

ATTACHMENT 4: CERTIFICATION OF AGENCY TECHNICAL REVIEW [SAMPLE]

CERTIFICATION OF AGENCY TECHNICAL REVIEW

Significant concerns and the explanation of the resolution are as follows:

[Describe the major technical concerns and their resolution and specifically list any agreed-upon deferrals to be completed in the next phase of work or state "There are no significant concerns or any unresolved comments".]

As noted above, all concerns resulting from the ATR of the project have been fully resolved or have been elevated and documented with this certification.

Mary P. Foutz, PE
Chief, Engineering Division
CENAB-EN

Date

ATTACHMENT 5: RISK INFORMED DECISION MEMO

CENAN-EN-EN

22 July 2020

MEMORANDUM FOR RECORD

SUBJECT: Anacostia Watershed Restoration Project, Prince Georges County, Maryland – Risk Informed Assessment of Significant Threat to Human Life

1. Project Authorization:

USACE received the authority to conduct the Anacostia Watershed Restoration Study in Prince George's County, Maryland as an interim response to a resolution by the Committee on Public Works and Transportation of the House of Representatives, adopted 8 September 1988. Preconstruction engineering and design activities for the project will continue under the authority provided by the resolution. The resolution requests a review of:

"the report of the Chief of Engineers on the Anacostia River and Tributaries, District of Columbia and Maryland, published as House Document No. 202, 81 st Congress, 1st Session, with a view to determining if further improvements for flood control, navigation, erosion, sedimentation, water quality and other related water resources needs are advisable at this time."

2. Project Description:

The Anacostia River Watershed, a sub-watershed of the Chesapeake Bay, spans approximately 176 square miles, and is located entirely within the Washington D.C. metropolitan area. The portion within Prince George's County and the focus of the project is approximately 86 square miles, accounting for almost one half of the total Anacostia River watershed. The Anacostia River flows through Maryland and then the District of Columbia into the Potomac River, which is an American Heritage River that ultimately drains to the Chesapeake Bay. Aquatic ecosystems in the Anacostia River watershed have been substantially degraded as a result of anthropogenic alterations to the natural landscape. USACE has a long history of work in this watershed, beginning in the 1800s with navigation and flood risk management projects. More recently, attention has shifted toward ecosystem restoration opportunities. By incorporating new science and technology, habitat can be restored in areas where these USACE projects were constructed without impacting their authorized purpose.

The recommended plan for aquatic ecosystem restoration described in the Anacostia Watershed Restoration, Prince George's County Chiefs Report dated 19 December 2018 and Feasibility Report and Integrated Environmental Assessment dated October 2018 will restore approximately 7 miles (32 acres) of aquatic habitat, restore approximately 4 miles of fish passage through the removal of blockages, and connect approximately 14 miles (64 acres) of restored habitat in the Northwest and Northeast

Branches. The recommended plan restores aquatic habitat in four streams where a flood risk management project was constructed by the Corps in the 1970s. The recommended plan is the National Ecosystem Restoration (NER) Plan. Implementation of the recommended plan will have substantial beneficial impact on the biological integrity, habitat diversity, and resiliency of the Anacostia River watershed. The plan specifically calls for the restoration of six (6) sites within the Anacostia watershed including Sligo Creek, Paint Branch, Indian Creek, the Northeast and Northwest main stems of the Anacostia, and the upper Northwest Branch of the Anacostia.

3. Levels of Review

Reviews shall include:

- District Quality Control (DQC) – All work products shall undergo DQC.
- Agency Technical Review (ATR) – All work products shall undergo ATR reviews.

Independent External Peer Review (IEPR) – A Type I IEPR is not appropriate since the Anacostia Watershed Restoration Project DDR is an implementation document. A Type II IEPR is not required due to the following justification:

Within EC 1165-2-217, there are four factors listed to determine whether a Type II review is appropriate. Table 1 summarizes these factors and a discussion of each is below.

Table 1. Risk Informed Decision Factors Requiring a Type II IEPR SAR

Factor for Consideration	Yes	No
Significant Threat to Human Life (Public Safety)		X
Use of Innovative Material or Techniques		X
Project Design Requires Redundancy, Resiliency, and Robustness		X
Unique Construction Sequencing or Reduced or Overlapping Design Construction Schedule		X

(1) Significant threat to human life (public safety):

Hazards resulting from a failure at Anacostia Watershed Restoration would not affect any populated areas and therefore does not pose a threat to human life or public safety. Personnel operating in the stream will have sufficient advance warning of any storm of sufficient magnitude to cause a failure, and would be evacuated and therefore not at risk.

(2) Use of innovative materials or techniques where the engineering is based on novel methods, presents complex challenges for interpretations, contains precedent-setting methods or models, or presents conclusions that are likely to change prevailing practices:

The Anacostia Watershed Restoration Project proposes conventional stream restoration techniques not considered to be innovative or resulting in the alteration of prevailing industry standards.

(3) Project design requires redundancy, resiliency, and robustness:

(a) Redundancy: The Anacostia Watershed Restoration project is located within the confines of a river/stream bank and is required to be designed so as to not increase water surface elevations. No redundant measures will be designed.

(b) Resiliency: The project will be designed to be resilient so as to reduce maintenance costs but does not require resiliency for life safety purposes.

(c) Robustness: The project will be designed to be as robust as necessary to manage the anticipated water surface elevations and riverine behavior to reduce future maintenance costs.

(4) Unique construction sequencing or a reduced or overlapping design construction schedule:

The Anacostia Watershed Restoration project will follow proven construction methods and will execute using standard design-bid-build processes. The construction will not be executed using the Design-Build or Early Contractor Involvement delivery systems.

Consequences resulting in failure from conditions exceeding the design are less significant than traditional Civil Works projects (e.g. dams and levees) as this is an environmental restoration project. The consequences of failure have nominal effects on life safety or economic output.

4. Determination. Neither a Type I nor Type II IEPR is warranted for Construction Contracts for the Anacostia Watershed Restoration Project.

Mary P. Foutz, P.E.
Chief, Engineering Division