



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
NORTH ATLANTIC DIVISION, US ARMY CORPS OF ENGINEERS
FORT HAMILTON MILITARY COMMUNITY
BROOKLYN, NEW YORK 11252-6700

DEC 11 2012

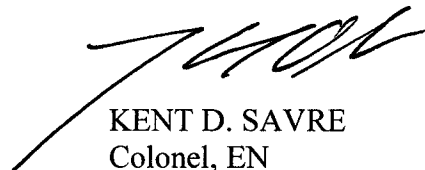
CENAD-PD-PP

MEMORANDUM FOR Commander, New York District, ATTN: CENAN-PL

SUBJECT: Review Plan Approval for Poplar Brook, NJ, Section 205 Continuing Authorities Program, Flood Risk Management Feasibility Study

1. The attached Review Plan for the subject study has been prepared in accordance with EC 1165-2-209, Civil Works Review Policy.
2. The Review Plan has been coordinated with the Flood Risk Management Planning Center of Expertise of the South Pacific Division, which is the lead office to execute this plan. For further information, contact Mr. Eric Thaut at 415-503-6852. The Review Plan includes independent external peer review.
3. I hereby approve this Review Plan, which is subject to change as study circumstances require, consistent with study development under the Project Management Business Process. Subsequent revisions to this Review Plan or its execution will require new written approval from this office.

Encl


KENT D. SAVRE
Colonel, EN
Commanding

REVIEW PLAN

**Poplar Brook, NJ
Flood Risk Management
Feasibility Study**

New York District

**MSC Approval Date: Pending
Last Revision Date: November 2012**



**US Army Corps
of Engineers ®**

REVIEW PLAN

**Poplar Brook, NJ
Flood Risk Management
Feasibility Study**

TABLE OF CONTENTS

1. PURPOSE AND REQUIREMENTS 1

2. REVIEW MANAGEMENT ORGANIZATION (RMO) COORDINATION 1

3. STUDY INFORMATION 1

4. DISTRICT QUALITY CONTROL (DQC) 5

5. AGENCY TECHNICAL REVIEW (ATR)..... 5

6. INDEPENDENT EXTERNAL PEER REVIEW (IEPR)..... 8

7. POLICY AND LEGAL COMPLIANCE REVIEW..... 12

8. COST ENGINEERING DIRECTORY OF EXPERTISE (DX) REVIEW AND CERTIFICATION..... 12

9. MODEL CERTIFICATION AND APPROVAL..... 12

10. REVIEW SCHEDULES AND COSTS..... 14

11. PUBLIC PARTICIPATION 15

12. REVIEW PLAN APPROVAL AND UPDATES..... 15

13. REVIEW PLAN POINTS OF CONTACT..... 15

ATTACHMENT 1: TEAM ROSTERS 16

ATTACHMENT 2: SAMPLE STATEMENT OF TECHNICAL REVIEW FOR DECISION DOCUMENTS 17

ATTACHMENT 3: REVIEW PLAN REVISIONS 18

ATTACHMENT 4: ACRONYMS AND ABBREVIATIONS..... 19

1. PURPOSE AND REQUIREMENTS

a. **Purpose.** This Review Plan defines the scope and level of peer review for the Poplar Brook, NJ, Flood Risk Management Feasibility Study.

b. 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, 31 Mar 2010
- (3) Engineering Regulation (ER) 1110-1-12, Quality Management, 30 Sep 2006
- (4) ER 1105-2-100, Planning Guidance Notebook, Appendix H, Policy Compliance Review and Approval of Decision Documents, Amendment #1, 20 Nov 2007
- (5) PMP for study
- (6) MSC and/or District Quality Management Plan(s)
- (7) Any other relevant quality control/quality assurance guidance

c. **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).

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 decision documents is typically either a Planning Center of Expertise (PCX) or the Risk Management Center (RMC), depending on the primary purpose of the decision document. The RMO for the peer review effort described in this Review Plan is the Flood Risk Management Center of Expertise, South Pacific Division.

The RMO will coordinate with the Cost Engineering Directory of Expertise (DX) to ensure the appropriate expertise is included on the review teams to assess the adequacy of cost estimates, construction schedules and contingencies. Because there is potential risk for life safety, the Risk Management Center of Expertise (RMC) will be consulted during the development of the scope of the Type I IEPR to include those Safety Assurance Review factors that should be reviewed for this study.

3. STUDY INFORMATION

a. **Decision Document.** The study is the Poplar Brook, New Jersey, Flood Risk Management Study. The purpose of the Poplar Brook feasibility study is to formulate and evaluate potential alternatives for reducing flood damages within the study area; assess the Federal interest in participating in flood risk management plans; identify the plan which maximizes net economic benefits; and if consistent with Administration policy, recommend a project for Federal implementation. The Poplar Brook feasibility study is being conducted under the USACE's Continuing Authorities Program (CAP). The

legislative authority for the Poplar Brook study is Section 205 of the Flood Control Act of 1948 (Public Law 80-858), as amended. The New Jersey Department of Environmental Protection (NJDEP) is the non-Federal partner for this study.

The decision document, including EA, will present planning, engineering and implementation details of the recommended plan to allow final design and construction to proceed subsequent to approval of the plan. The study effort is funded by the Continuing Authorities Program – Section 205, undertaken to evaluate structural and non-structural flood risk management measures, including but not limited to a dry detention basin, demolition and relocation of municipal structures, and mitigation.

The level of approval for the document is delegated by the Chief of Engineers to the Division Commander. However, appropriation of construction funding will require Congressional authorization. The National Environmental Policy Act (NEPA) documentation will be an Environmental Assessment (EIS) which will be prepared along with the document.

On the basis of the foregoing findings and conclusions, the plan of protection for Poplar Brook (Recommended Plan) is recommended for authorization for implementation as a Federal project, with such modifications as in the discretion of the Commander, U.S. Army Corps of Engineers, may be advisable.

- b. Study/Project Description.** An initial evaluation of flooding problems and potential solutions in the Poplar Brook Basin was documented in the *Poplar Brook, Borough of Deal and Ocean Township, New Jersey, Reconnaissance Report*, dated September 1994. The Reconnaissance Report demonstrated that there was a Federal interest in, and non-Federal support for, pursuing solutions to the flooding problems of the Poplar Brook Basin. After completion of the 1994 Reconnaissance Report, a feasibility study was initiated in 1997. However, progress on the study was suspended in 2000 due to concerns regarding acceptable flood risk management solutions to the two communities, specifically, the level of protection, aesthetic impacts of potential structural solutions, and induced flooding. Between 2000 and 2004, when this study was re-initiated, discussion took place between all interested parties in order to resolve the concerns stated above. Eventually, agreement was reached on the best approach to solving the flooding problems in the basin and the study resumed. This 2004 study was suspended again pending resolution of the concerns regarding the siting of the detention basin dam. The study is still pending resolution.

The study area is located in the Borough of Deal and the Township of Ocean in east-central Monmouth County, New Jersey, approximately 4 miles south of Long Branch, New Jersey, as shown in Figure 1. The primary water resources problem within the Poplar Brook Basin is persistent, recurring flooding. Flooding along Poplar Brook is caused by the restrictive flow characteristics of the stream through the highly developed portions of the floodplains of Ocean and Deal. Poplar Brook was subject to relatively infrequent flooding prior to 1990. The flood of record prior to 1990 occurred in August 1955. However, since 1990, major flood events have occurred in January 1991, August 1992 (new flood of record), August 1993, January 1994, and September 1999 (Tropical Storm Floyd), October 2005, April 2007, and March 2010 due to intensive development in the study area.

The Poplar Brook watershed encompasses 3.9 square miles and drains through Poplar Brook into the Atlantic Ocean. Poplar Brook has three primary unnamed tributaries. The main channel of Poplar Brook flows from the west to the east, discharging directly into the Atlantic Ocean in the Borough of Deal. Measured from its mouth, Poplar Brook runs to the west for approximately 30,600 linear feet

(5.8 miles). Watershed topography is generally flat. Elevations within the watershed range from 160 feet National Geodetic Vertical Datum (NGVD) 1929 in the western portion of the watershed near Wayside, New Jersey to sea level along the New Jersey coast. Poplar Brook is a low gradient, single channel stream with an average channel gradient of approximately 0.0018 feet per foot. Channel capacity (assuming free flow) is approximately 170 cfs at a velocity of 2.5 feet per second.

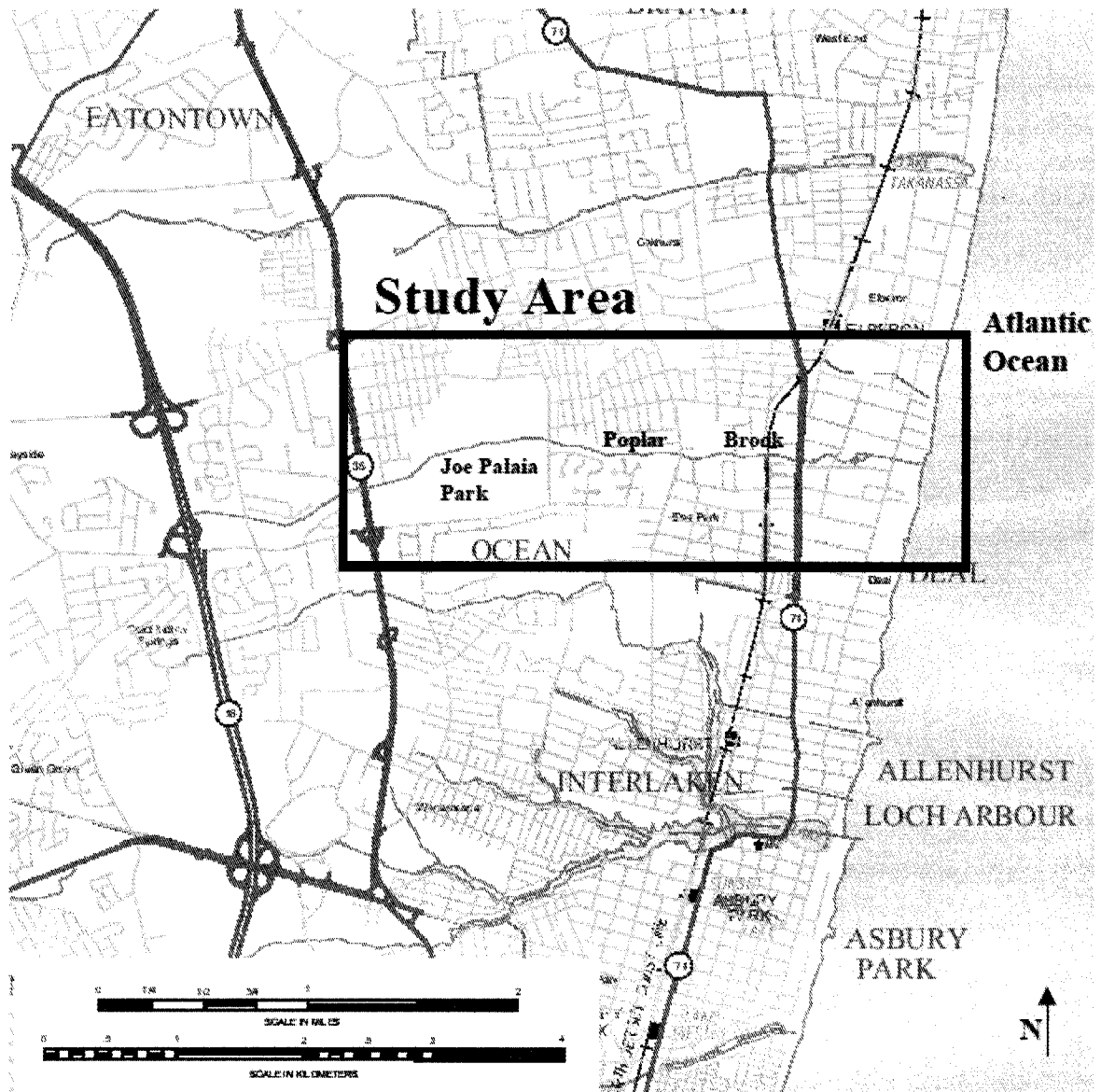


Figure 1: Poplar Brook Study Area

The recommended flood risk management project for the Poplar Brook Basin is comprised of two major construction components and two mitigation components:

- (1) A dry detention basin formed by an earthen dam and outlet in Joe Palaia Park in

Ocean Township,

(2) Demolition and relocation of the municipal structures in Joe Palaia Park that are used to store park maintenance vehicles and materials,

(3) Fish & Wildlife Facilities (wetlands mitigation), and

(4) Green Acres compensation/replacement property.

The Recommended Plan best serves the overall public interest without significant adverse effects. The Recommended Plan meets Federal budgetary criteria, is the NED Plan, is the Environmentally Preferred Alternative, and is strongly supported by the non-Federal partner, the NJDEP. The Recommended Plan would result in a significant reduction in flood damages throughout the Poplar Brook Basin.

The project shall be subject to cost sharing, financing, and other requirements of the Water Resources Development Act (WRDA) of 1996 (Public Law 104-303). The estimated total project first cost of the Recommended Plan is \$10,026,500. Applying the cost sharing provisions of WRDA 1996, the estimated Federal first cost is \$6,517,200, and the estimated non-Federal first cost is \$3,509,300. The estimated annual operations and maintenance cost of the project is \$12,000, and is a non-Federal responsibility.

c. Factors Affecting the Scope and Level of Review.

- It is anticipated that this study may have some social challenges, as the recommended plan from 1977 was not constructed due to local concerns over the aesthetic aspects of the flood risk management structures. The challenge will be managing expectations to minimize the risk of local rejection of a Recommended Plan. Technical or institutional challenges are not expected on the study.
- Based on a preliminary assessment, the most likely risk is local rejection of the NED plan based on aesthetic concerns. In the event of such a rejection, the consequence is that portions of the study area will remain without flood risk management measures, subject to property and potentially personal damages.
- As the proposed project is relatively modest in scale and involves conventional flood risk management measures, significant economic, environmental, and/or social effects to the Nation are not anticipated.
- The determination of significant threat to human life/safety assurance is included in Attachment 5. (see risk-informed assessment by District's Chief of Engineering Division in Attachment 5).
- The project is likely to have significant interagency coordination with the New Jersey Department of Environmental Protection (NJDEP), The study is not expected to be highly controversial as long as public expectations are managed effectively, per the Communications Plan Appendix to the Project Management Plan.
- The report is unlikely to contain influential scientific information because the proposed flood risk management measures are conventional and straightforward.
- It is unlikely that the information in the decision document or proposed project design will 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 because the proposed measures are conventional.

- The proposed project design is unlikely to require redundancy, resiliency, and/or robustness because of its relatively modest scale and use of conventional techniques, however, this assumption may be revisited as more data are collected.
 - The proposed project is not expected to involve unique construction sequencing or a reduced or overlapping design construction schedule because of its relatively modest scale and use of conventional techniques.
- d. **In-Kind Contributions.** Products and analyses provided by non-Federal sponsors as in-kind services are subject to DQC, ATR, and IEPR. No in-kind products and analyses to be provided by the non-Federal sponsor have been identified. This Review Plan will be updated if in-kind services are identified.

4. DISTRICT QUALITY CONTROL (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 MSC.

- a. **Documentation of DQC.** District Quality Control will be conducted on all decision documents and interim reports as noted below in Section 4(b) of this Review Plan. Documentation for all DQC reviews will be provided in DrChecks and included in a Quality Control Appendix of all decision documents and interim reports.
- b. **Products to Undergo DQC.** Products under this study to undergo DQC include IPR technical documents as required and Draft/Final Reports.
- c. **Required DQC Expertise.** The expertise required for this study will be extensive. Expertise will be required for structural engineering, civil engineering, geotechnical engineering, cost engineering, hydraulic engineering, hydrologic engineering, environmental resources, cultural Resources, HTRW, Plan Formulation, Real Estate and Economics. Additional expertise may be required by Public Affairs and the Office of Counsel.

5. 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 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 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.** Products under this study to undergo ATR include IPR technical documents as required and Draft/Final DPR. Additionally, where practicable, technical products that support subsequent analyses may be reviewed prior to being used in the study and may include: surveys & mapping, hydrology & hydraulics, geotechnical investigations, economic, environmental, cultural, and social inventories, annual damage and benefit estimates, cost estimates, etc.
- b. Required ATR Team Expertise.** The appropriate RMO, in cooperation with the PDT, vertical team, and other appropriate centers of expertise, will determine the final make-up of the ATR team. The following table provides the types of disciplines that should be included on the ATR team and the expertise required. The names, organizations, contact information, credentials, and years of experience of the ATR members will be included in Attachment 1 once the ATR team is established.

ATR Team Members/Disciplines	Expertise Required
ATR Lead	The ATR lead should be a senior professional with extensive experience in preparing Civil Works decision 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 planning, economics, environmental resources, etc).
Planning	The Planning reviewer should be a senior water resources planner with experience in formulation of flood risk management studies especially in urban, highly developed areas.
Economics	The economics reviewer should have extensive experience in urban flood risk management studies and a thorough understanding of HEC-FDA.
Environmental Resources	Team member will have independently completed EA/EIS's and be well versed in the NEPA process, partnerships with other environmental resource agencies and environmental concerns and constraints within urban settings.
Cultural Resources	Team member will have experience with 106 actions and documentation including mitigation for historical structures and archeological artifacts.
Hydrology	Team member should be an expert in the field of urban hydrology and hydraulics, have a thorough understanding of flash flooding and the use of HEC computer modeling systems.
Hydraulic Engineering	Team member should be an expert in the field of urban hydrology and hydraulics, have a thorough understanding of open channel systems and the use of HEC computer modeling systems. A certified professional engineer is required
Geotechnical Engineering	Team member should have expertise with earthen dams, including slope stability evaluation and seepage analysis. A certified professional engineer is required
Civil Engineering	Team member will have a thorough understanding of design of earthen dams and culverts in a suburban setting. A certified professional engineer is required.
Structural Engineering	Team member will have a thorough understanding of both

	structural and non-structural measures to include, but not be limited to, retaining walls, channel improvements and tunnels. A certified professional engineer is required.
Cost Engineering	Team member will be familiar with cost estimating for similar projects in MII. Review includes construction schedules and contingencies for any document requiring Congressional authorization. The team member will be a registered Professional Engineer, Certified Cost Technician, a Certified Cost Consultant, or a Certified Cost Engineer. As the Cost Engineering Center of Expertise, Walla Walla District will assign this team member as part of a separate effort coordinated by the ATR or IEPR team lead in conjunction with the geographic district's project manager.
Construction/Operations	
Real Estate	Team member will be have at least 5 years experience with flood risk management studies and be familiar with urban planning and acquisition strategies.
Hazardous, Toxic and Radioactive Waste (HTRW)	Team member should have knowledge of HTRW issues common to urban environments and developed areas.

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 1110-1-12 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, based on work reviewed to date, draft report, and final report. A sample Statement of Technical Review is included in Attachment 2.

6. 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 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.
- 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.

- a. **Decision on IEPR.** This section should document the risk informed decision on whether IEPR (Type I, Type II, both or neither) will or will not be conducted for the decision document and, if appropriate, follow-on project implementation. The decision should be based on the criteria in EC 1165-2-209 and the discussion in Section 3 – Factors Affecting the Scope and Level of Review. If an exclusion to Type I IEPR is being requested, the basis for and status of the exclusion should be discussed. Furthermore, the recommendation must make the case that the study is so limited in scope or impact that it would not significantly benefit from Type I IEPR. If Type II IEPR is not considered appropriate, the basis for this decision should also be discussed. The risk informed decision should explicitly consider:

- If the decision document meets the mandatory triggers for Type I IEPR described in Paragraph 11.d.(1) and Appendix D of EC 1165-2-209; and if it does not, then also:
 - the consequences of non-performance on project economics, the environmental and social well-being (public safety and social justice);
 - whether the product is likely to contain influential scientific information or be highly influential scientific assessment; and
 - if and how the decision document meets any of the possible exclusions described in Paragraph 11.d.(3) and Appendix D of EC 1165-2-209.
- The status of any request to conduct IEPR from a head of a Federal or state agency charged with reviewing the project, if applicable; and
- If the proposed project meets the criteria for conducting Type II IEPR described in Paragraph 2 of Appendix D of EC 1165-2-209, including:
 - if the Federal action is justified by life safety or failure of the project would pose a significant threat to human life;
 - if the project involves the 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;
 - if the project design requires redundancy, resiliency, and/or robustness; and/or
 - if the project has unique construction sequencing or a reduced or overlapping design construction schedule.

Note: If Type II IEPR is anticipated to be required, the Review Plan should state that Safety Assurance will also be addressed during the Type I IEPR per Paragraph 2.c.(3) of Appendix D of EC 1165-2-209.

IEPR (Type I and Type II,) will be conducted for the decision document and, if appropriate, follow-on project implementation. This decision is based on the criteria in EC 1165-2-209 and the discussion in Section 3 – Factors Affecting the Scope and Level of Review. The risk informed decision explicitly considers:

- The decision document meets the mandatory triggers for Type I IEPR described in Paragraph 11.d.(1) and Appendix D of EC 1165-2-209; and also:

- That the project has consequences of non-performance on project economics, the environmental and social well-being (public safety and social justice);
- That the product is likely to contain influential scientific information or be highly influential scientific assessment; and
- That the Federal action is justified by life safety or failure of the project would pose a significant threat to human life.
- The status of any request to conduct IEPR from a head of a Federal or state agency charged with reviewing the project, if applicable; and
- The proposed project meets the criteria for conducting Type II IEPR described in Paragraph 2 of Appendix D of EC 1165-2-209, therefore, Safety Assurance will also be addressed during the Type I IEPR per Paragraph 2.c.(3) of Appendix D of EC 1165-2-209.

Type 1 IEPR will be required for the Poplar Brook, NJ, Flood Risk Management Study, based on the potential for life and safety impacts. Close coordination with the sponsor and public meetings are expected to negate significant public dispute with regard to a recommended plan as are coordination with USFWS and EPA and cultural/archeological interests. Flood risk management methods and models used in this study are typical of all Corps flood risk management studies with little room for interpretation and are not expected to change prevailing practices on this or future studies.

As this is a flood risk management (FRM) study, a Safety Assurance Review as part of a Type I IEPR is presumed to be warranted due to the potential for risk to life safety involved in any FRM study. However, it is too early in the study process to accurately predict the level of risk involved to human life. Therefore, the risk informed assessment of significant threat to human life will be revisited once the tentatively selected plan is identified and optimized.

The District Chief of Engineering's risk informed assessment of whether there is a significant threat to human life as a result of the Poplar Brook FRM Project is presented in Attachment 5 of this Review Plan.

- b. Products to Undergo Type I IEPR. Products to Undergo Type I IEPR.** At minimum, Type I IEPR will be performed for the entire decision document (including supporting documentation), which is typically available at the draft report stage; however, it is anticipated to initiate IEPR early in the study process to reduce the chances of significant changes to the decision document occurring at the end of the study due to IEPR panel findings and recommendations.
- c. Required Type I IEPR Panel Expertise.** If Type I IEPR will not be conducted for this study, 'Not-Applicable' should be indicated; otherwise this section should provide an estimate of the number of Type I IEPR panel members and briefly describe the types of expertise that should be represented on the panel (not just a list of disciplines). The expertise represented on the Type I IEPR panel may be similar to those on the ATR team, but may be more specifically focused and generally won't involve as many disciplines/individuals except for very large and/or complex studies. At minimum, the panel should include the necessary expertise to assess the engineering, environmental, and economic adequacy of the decision document as required by EC 1165-2-209, Appendix D. The PDT should make the initial assessment of what expertise is needed based on the PMP and the factors affecting the scope and level of review outlined in Section 3 of the review plan and may suggest candidates. The Outside Eligible Organization (OEO) will determine the final participants on the panel. The following table provides examples of the types of disciplines that might be included on

the ATR team and a sample description of the expertise required. Pick from the listed disciplines and/or add additional disciplines as needed and provide a short description of the expertise required for each discipline.

Required Type I IEPR Panel Expertise. The expertise represented on the Type I IEPR panel will be similar to those on the ATR team. The IEPR panel is anticipated to involve as many disciplines/individuals as the ATR team. At minimum, the panel should include the necessary expertise to assess the engineering, environmental, and economic adequacy of the decision document as required by EC 1165-2-209, Appendix D. The PDT has made the initial assessment of what expertise is needed based on the PMP and the factors affecting the scope and level of review outlined in Section 3 of the review plan. The Outside Eligible Organization (OEO) will determine the final participants on the panel. The following table provides the types of disciplines that might be included on the IEPR team and a description of the expertise required.

IEPR Panel Members	Expertise Required
Plan Formulation	The Planning reviewer should be a senior water resources planner with experience in formulation of flood risk management studies especially in urban, highly developed areas.
Economics	The economics reviewer should have extensive experience in urban flood risk management studies and a thorough understanding of HEC-FDA.
Environmental Resources	Team member will have independently completed EA/EIS's and be well versed in the NEPA process, partnerships with other environmental resource agencies and environmental concerns and constraints within urban settings.
Hydrology	Team member should be an expert in the field of urban hydrology and hydraulics, have a thorough understanding of flash flooding and the use of HEC computer modeling systems.
Hydraulic Engineering	Team member should be an expert in the field of urban hydrology and hydraulics, have a thorough understanding of open channel systems and the use of HEC computer modeling systems. A certified professional engineer is required
Geotechnical Engineering	Team member should have expertise with earthen dams. A certified professional engineer is required
Civil Engineering	Team member will have a thorough understanding of design of earthen dams and culverts in a suburban setting. A certified professional engineer is required.
Structural Engineering	Team member will have a thorough understanding of both structural and non-structural measures to include, but not be limited to, , channel improvements and A certified professional engineer is required.

- d. **Documentation of Type I IEPR.** The IEPR panel will be selected and managed by an Outside Eligible Organization (OEO) per EC 1165-2-209, Appendix D. Panel comments will be compiled by the OEO and should address the adequacy and acceptability of the economic, engineering and environmental methods, models, and analyses used. IEPR comments should generally include the same four key

parts as described for ATR comments in Section 4.d above. The OEO will prepare a final Review Report that will accompany the publication of the final decision document and shall:

- 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; 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.

The final Review Report will be submitted by the OEO no later than 60 days following the close of the public comment period for the draft decision document. USACE shall consider all recommendations contained in the Review Report and prepare a written response for all recommendations adopted or not adopted. The final decision document will summarize the Review Report and USACE response. The Review Report and USACE response will be made available to the public, including through electronic means on the internet.

7. 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.

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

All decision documents shall be coordinated with the Cost Engineering DX, located in the Walla Walla District. The DX will assist in determining the expertise needed on the ATR team and in the development of the review charge(s). The DX will also provide the Cost Engineering DX certification. The RMO is responsible for coordination with the Cost Engineering DX.

9. MODEL CERTIFICATION AND 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.

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. As part of the USACE Scientific and Engineering Technology (SET) Initiative, many engineering models have been identified as preferred or acceptable for use on Corps studies and these models should be used whenever appropriate. 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 .

a. **Planning Models.** The following planning models are anticipated to be used in the development of the decision document:

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study	Certification / Approval Status
HEC-FDA 1.2.5a (Flood Damage Analysis)	The Hydrologic Engineering Center’s Flood Damage Reduction Analysis (HEC-FDA) program provides the capability for integrated hydrologic engineering and economic analysis for formulating and evaluating flood risk management plans using risk-based analysis methods. The program will be used to evaluate and compare the future without- and with-project plans along the Passaic River and major tributaries to aid in the selection of a recommended plan to manage flood risk.	Certified
Habitat Evaluation Procedures (HEP)	HEP is an established approach to assessment of natural resources. The HEP approach has been well documented and is approved for use in Corps projects as an assessment framework that combines resource quality and quantity over time, and is appropriate throughout the United States. The Habitat Suitability Index (HSI) models are the format for quantity determinations that are applied within the HEP framework.	New HSI models developed by the Corps are subject to certification. Published HIS models, while peer reviewed and possibly tested by the developers are subject to review and approval by the PCX. Modifications to published HSI models where relationships or formulas are changed may be subject to certification.
Stream Impact Assessment - spreadsheet model	<p>Given the variety of alternatives formulated for this project and the urbanized nature of the Project Area, a two phased approach will be utilized to evaluate and quantify the impacts to natural resources and the associated mitigation requirements of each impact.</p> <p>For the screening of preliminary alternatives, the following method will be used:</p> <ul style="list-style-type: none"> • Consideration of the extent of development within 	Not certified; will initiate approval process during FSM documentation.

	<p>and surrounding the Project Area and its effect on the identification of suitable mitigation sites;</p> <ul style="list-style-type: none"> • New Jersey Flood Hazard Area Control Act Rules, which regulates activities in the riparian zone and outlines mitigation requirements; • New Jersey Freshwater Wetlands Regulations; • New Jersey Green Acres Regulations, which regulates open space preservation and outlines mitigation requirements when the use on subject properties is modified for purposes other than recreation/open space; • Corps ETL 1110-2-571 Guidelines for Landscape Planting and Vegetation Management at Levees, Floodwalls, Embankment Dams and Appurtenant Structures. <p>Currently, there is no state specific or regional method that focuses on quantifying stream function and impacts resulting from channel modification activities that could be applied to this project.</p>	
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b. Engineering Models. The following engineering models are anticipated to be used in the development of the decision document:

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study	Approval Status
HEC-RAS 4.0 (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/unsteady flow analysis to evaluate the future without- and with-project conditions along the Passaic and its tributaries	HH&C CoP Preferred Model
HEC-HMS	This model will be used to define the watersheds’ physical features; describe the metrological conditions; interior drainage analysis; estimate parameters; analyze simulations; and obtain GIS connectivity	HH&C CoP Preferred Model

10. REVIEW SCHEDULES AND COSTS

- a. ATR Schedule and Cost.** The estimated schedule for ATR has ATR next taking place for the submission of the draft report in FY14. The ATR budget of \$30,000 includes participation of the ATR Lead in milestone conferences and the Civil Works Review Board (CWRB) meeting to address the ATR process and any significant and/or unresolved ATR concerns.
- b. Type I IEPR Schedule and Cost.** The estimated schedule for IEPR has IEPR scheduled before submission of the draft report in FY15. The IEPR budget, not to exceed \$250,000, includes

participation of the IEPR Lead in the Civil Works Review Board (CWRB) meeting to address the IEPR process and any significant and/or unresolved IEPR concerns.

c. Model Certification/Approval Schedule and Cost. Streambank Assessment Model

11. PUBLIC PARTICIPATION

Members of the public have opportunities to comment on the development of the study throughout the study process. Also, as significant changes or developments in the study occur, the District will present this information to the Task Force. Any significant comments or concerns raised at public meetings will be brought to the attention of the ATR and IEPR panels. In addition, at the end of the study process, there will be a public meeting to outline the analysis, results and any residual risk to the public as a result of the decision. The final report will be available to the local municipalities, the flood Task Force and will be available on the New York District Website. It is not anticipated that the public or state partner would recommend IEPR panel members, although that option is not precluded. Further, to ensure appropriate public communication regarding the study, a Public Affairs officer will be assigned to the PDT.

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 decision document. Like the PMP, 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. The latest version of the Review Plan, along with the Commanders' approval memorandum, should be posted on the Home District's webpage. The latest Review Plan should also be provided to the RMO and home MSC.

13. REVIEW PLAN POINTS OF CONTACT

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

- Alek Petersen, Plan Formulation, Flood Risk Management and Ecosystem Restoration Section, (917) 790-8624
- Cliff Jones, Deputy, NAD Planning and Policy CoP (347) 370-4514.
- Eric Thaut, Program Manager, Flood Risk Management Planning Center of Expertise, (415) 503-6852.

ATTACHMENT 1: TEAM ROSTERS (To be updated accordingly)

Project Manager	David Gentile	David.t.gentile@usace.army.mil	917-790-8483
Project Planner	Alek Petersen	Aleksander.J.Petersen@usace.army.mil	917-790-8624
Technical Manager	Sheila Rice-McDonnell	Sheila.Rice-McDonnell@usace.army.mil	917-790-8297
Economist	Johnny Chan	Johnny.C.Chan@usace.army.mil	917-790-8706
Biologist	Kim Rightler	Kimberly.A.Rightler@usace.army.mil	917-790-8722
Cultural Specialist	Carissa Scarpa	Carissa.C.Scarpa	917-790-8612
Real Estate Specialist	David Andersen	David.C.Andersen@usace.army.mil	917-790-8456

ATR Team Members to be designated by the PCX

ATTACHMENT 2: SAMPLE STATEMENT OF TECHNICAL REVIEW FOR DECISION DOCUMENTS

COMPLETION OF AGENCY TECHNICAL REVIEW

The Agency Technical Review (ATR) has been completed for the Flood Risk Management Study for Poplar Brook, NJ. The ATR was conducted as defined in the project’s Review Plan to comply with the requirements of EC 1165-2-209. 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 US Army Corps of Engineers 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 been resolved and the comments have been closed in DrCheckssm.

SIGNATURE

Name

ATR Team Leader

Date

David Gentile

Project Manager

Date

SIGNATURE

Name

Architect Engineer Project Manager¹

Company, location

Date

SIGNATURE

Name

Review Management Office Representative

Office Symbol

Date

CERTIFICATION OF AGENCY TECHNICAL REVIEW

Significant concerns and the explanation of the resolution are as follows: Describe the major technical concerns and their resolution.

As noted above, all concerns resulting from the ATR of the project have been fully resolved.

Arthur J. Connolly, P.E.

Chief, Engineering Division

Date

Frank Santomauro, P.E.

Chief, Planning Division

Date

¹ Only needed if some portion of the ATR was contracted

ATTACHMENT 3: REVIEW PLAN REVISIONS

Revision Date	Description of Change	Page / Paragraph Number
November 2012	First Submittal	All

ATTACHMENT 4: 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 and 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	Ecosystem Restoration	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
Home District/MSD	The District or MSD responsible for the preparation of the decision document	RMC	Risk Management Center
HQUSACE	Headquarters, U.S. Army Corps of Engineers	RMO	Review Management Organization
IEPR	Independent External Peer Review	RTS	Regional Technical Specialist
ITR	Independent Technical Review	SAR	Safety Assurance Review
LRR	Limited Reevaluation Report	USACE	U.S. Army Corps of Engineers
MSC	Major Subordinate Command	WRDA	Water Resources Development Act

MEMORANDUM FOR RECORD

SUBJECT: Poplar Brook Flood Risk Management Detailed Project Report, New Jersey (Section 205 CAP) Risk Informed Assessment of Significant Threat to Human Life

1. Study/Project Information. The study area of this Section 205 CAP project is located in the Borough of Deal and the Township of Ocean in east-central Monmouth County, New Jersey, approximately 4 miles south of Long Branch, New Jersey. Land use is light residential in the western portions of the watershed, located above NJ State Highway 35 (Route 35/Neptune Boulevard). Land use in the eastern watershed (below Route 35) is dominated by moderate density, single-family residential and light commercial development, particularly between Whale Pond Road and Ocean Avenue.

The primary water resources problem within the Poplar Brook Basin is persistent, recurring flooding. Flooding along Poplar Brook is caused by the restrictive flow characteristics of the stream through the highly developed portions of the floodplains of Ocean and Deal. Poplar Brook was subject to relatively infrequent flooding prior to 1990. The flood of record prior to 1990 occurred in August 1955. However, since 1990, major flood events have occurred in January 1991, August 1992 (new flood of record), August 1993, January 1994, and September 1999 (Tropical Storm Floyd), October 2005, April 2007, and March 2010 due to intensive development in the study area.

An initial evaluation of flooding problems and potential solutions in the Poplar Brook Basin was documented in the *Poplar Brook, Borough of Deal and Ocean Township, New Jersey, Reconnaissance Report*, dated September 1994. The Reconnaissance Report demonstrated that there was a Federal interest in, and non-Federal support for, pursuing solutions to the flooding problems of the Poplar Brook Basin. Based on these findings, the Reconnaissance Report recommended proceeding to a feasibility phase investigation. Accordingly, a Detailed Project Report was initiated in 1997. However, progress was suspended in 2000 pending study scope concurrence and funding.

Between 2000 and 2004, when the study was re-initiated, discussion took place between all interested parties in order to resolve the concerns stated above. Eventually, agreement was reached on the best approach to solving the flooding problems in the basin and the study resumed. The study was suspended again pending resolution of the concerns regarding the location of the detention basin dam. An agreement was subsequently reached upon the location of the detention dam.

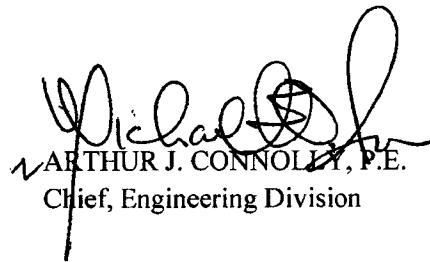
2. Study/Project Description. The feasibility level investigations for Poplar Brook include examining structural and non-structural solutions to the flooding problem. Structural measures that have been examined include dams, floodwalls, levees, diversion, channel modification, and detention. Non-structural measures include floodproofing, acquisition, flood warning, and mitigation. The tentatively selected and optimized plan consists of construction of an earthen dam (15.5 feet high and 1300 feet long) and dry detention basin with a 60-inch diameter culvert, and removal of municipal storage structures in Joe Palaia Park.

SUBJECT: Poplar Brook Flood Risk Management Detailed Project Report, New Jersey (Section 205 CAP)– Risk Informed Assessment of Significant Threat to Human Life

3.Risk Informed Assessment. In accordance with EC 1165-2-209 (31 January 2010), Civil Works Review Policy, a risk informed assessment was made as to whether there is a significant threat to human life from the authorized flood risk management project. The key factors considered are shown in Table 1.

4.Determination. Based on a risk informed assessment which considered life safety factors, it has been determined that there is a significant threat to human life associated with the Poplar Brook, NJ Flood Risk Management Project. Accordingly, a Safety Assurance Review as part of a Type I Independent External Peer Review (IEPR) is warranted.

Encl



ARTHUR J. CONNOLLY, P.E.
Chief, Engineering Division

SUBJECT: Poplar Brook Flood Risk Management Detailed Project Report, New Jersey (Section 205 CAP)- Risk Informed Assessment of Significant Threat to Human Life

Table 1: Poplar Brook, NJ Flood Risk Management Detailed Project Report- Risk Informed Assessment of Significant Threat to Human Life

No.	Risk Factor (Significant Threat to Life Safety)	Risk Magnitude	Basis of Concern	Risk Assessment
I	Land Use Adjacent to Project	Medium	The Poplar Brook study area encompasses two municipalities located in Monmouth County, NJ. These include Ocean Township and the Borough of Deal.	The flood damage prone areas are largely suburban communities. Land use is mostly residential and commercial. Risk assessment details are provided in 1a-e below.
1a	Population Density	Medium	The study area municipalities encompass approximately 3.9 square miles with an estimated population of 26,959, or 2,443 persons/sq.mi in Ocean Township and population of 1,070, or 881 persons/sq.mi in the Borough of Deal.	Due to population density, many people could be affected by flooding or by project failure.
1b	Critical Facilities Affected (Schools hospitals, emergency vehicle and evacuation routes)	Medium	Critical facilities in the project area include one senior housing complex and a sewage facility. Major transportation routes include Route 35 and the Garden State Parkway. Locally, Whale Pond Road is located about 200 feet downstream of the proposed dam.	Failure of the project could present a significant threat to the senior housing complex and as well as result in loss of infrastructure. Multiple alternative evacuation routes exist that will be unaffected by failure of the project.
1c	Number and types of structures in the flood plain	Medium	There are 189 residential structures and 23 non-residential structures in the project area.	Floodplain structures include single family residential structures, senior citizen housing, industrial and commercial structures. Although many structures could be affected by flooding or project failure, sufficient evacuation routes exist to remove the population and reduce the risk to life and safety.
1d	Existing Hazardous Materials	Low	There are known sites within a half mile buffer of the study area that contain hazardous and toxic materials. However, none lie directly within the flood control corridor.	Construction plans & specs will identify the areas which could contain known and suspected contaminated materials. During construction, appropriate personnel protection equipment will be used and work will be done in conformance with regulations and laws governing construction site monitoring, excavation and disposal of contaminated material, if necessary.

SUBJECT: Poplar Brook Flood Risk Management Detailed Project Report, New Jersey (Section 205 CAP)– Risk Informed Assessment of Significant Threat to Human Life

1e	Existing Utilities	Low	Human safety risk exists due to uncertainty of utility locations (esp. electrical and sewage lines).	Utility survey will be conducted as part of the PED work in order to help mitigate this risk.
2	Structural failure of project components	Low	Uncertainty in design parameters, failure to comply with proven construction techniques.	Structural failure of a project component is unlikely due to the use of proven design and construction techniques. However, a failure of a structural component could result in the loss of human life and significant loss to the public infrastructure with effects on the local economy and quality of life.
2a	Soil Erosion	Low	Erosion of soils may result which could undermine the dam.	The downstream slope of the dam will be underlain with articulated concrete blocks to prevent erosion of the dam fill (from top to bottom of slope) in case of overtopping or high flow..
2b	Overtopping of Hydraulic Structure	Medium	Flood event that would exceed the design elevation.	The dam is designed to hold up to the 500 year event without overtopping. At some event above the 500 year, but below the PMF, the dam will be overtopped as designed, To minimize the risk to multiple homes downstream of Whale Pond Rd, the dam has been located about 200 ft upstream and a non-overtopping section is included.
3	Use of Unique or Non-traditional Methods			
3a	Design methods	Low	Unique or non-traditional design methods may be poorly understood or inadequately designed and may be more subject to failure than proven design methods.	Traditional design methods that are in accordance with Corps of Engineers guidance will be used. No innovative or precedent setting methods or models were used.
3b	Design Features	Low	Unique or non-traditional design features may be poorly understood or inadequately designed and may be more subject to failure than proven design features.	Design of the project features fall within prevailing practice and include only traditional design features.
3c	Construction materials or methodologies	Low	Unique or non-traditional construction materials or methods may be poorly understood or inadequately executed, resulting a project feature that may be more subject to failure than those built with proven materials and methods.	Materials and methodologies are not unique.
3d	Does this project have unique construction sequencing or a reduced or overlapping design/ construction schedule?	Low	Unique or accelerated construction sequencing may lead to poor quality work, leading to greater possibility of future project failure.	The project does not have any accelerated design or construction scheduling.

SUBJECT: Poplar Brook Flood Risk Management Detailed Project Report, New Jersey (Section 205 CAP)– Risk Informed Assessment of Significant Threat to Human Life

4	<i>Does the project design require:</i>			
4a	Redundancy	Medium	Failure of one critical project element would result in sudden, catastrophic damage. Duplication of critical components of the protective system is required to increase the reliability of the system.	Non-performance of the culvert would result in impoundment of the flood water for a longer duration, leading to more seepage which could possibly weaken the dam structure. Blockage of the spillway, such as by a fallen tree, could result in insufficient spillway capacity and lead to overtopping of the dam and structural failure. Failure of the dam would increase the risk to human life and property relative to the without project condition.
4b	Resiliency	Low	Integrity of the dam is reduced over time.	Project is designed based on future condition flows. Adherence to OMRR&R requirements will ensure that the project remains at full operating efficiency.
4c	Robustness	Low	Natural events can occur that are greater than the optimized design and may lead to project failure.	Structural failure of a project component, specifically the dam, is unlikely due to the use of proven design and construction techniques. However, a failure of a structural component could result in the loss of human life and/or significant loss to property.