



DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DIVISION, GREAT LAKES AND OHIO RIVER
CORPS OF ENGINEERS
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CELRD-PD-G

30 April 2014

MEMORANDUM FOR Commander, U.S. Army Engineer District, Chicago (Susanne Davis/CELRC-PM-PL), 231 South LaSalle Street, Suite 1500, Chicago, IL, 60604

SUBJECT: Decision Document Review Plan for Bubbly Creek, South Branch of the Chicago River, Illinois

1. The attached Review Plan (RP) for Bubbly Creek was presented to the Great Lakes and Ohio River Division for approval in accordance with EC 1165-2-214 "Civil Works Review" dated 15 December 2012.
2. The study area includes the entire 1.25 mile channel and areas draining to the South Fork of the South Branch of the Chicago River, located entirely within the City of Chicago, Cook County, Illinois. Implementation of an ecosystem restoration plan is expected to greatly improve the ecosystem conditions of Bubbly Creek. The project entails placement of a sand and gravel substrate layer, creation of large woody debris structures, and plant community reestablishment. The addition of several native habitat types and more than 50 native plant species is expected to increase species richness and abundance of the surrounding environment.
3. The RP defines the scope and level of peer review for the activities to be performed for the subject project. The USACE LRD Review Management Organization (RMO) has reviewed the attached RP and concurs that it describes the scope of review for work phases and addresses all appropriate levels of review consistent with the requirements described in EC 1165-2-214.
4. I concur with the recommendations of the RMO and approve the enclosed RP for the Bubbly Creek project.
5. The District is requested to post the RP to its website. Prior to posting, the names of all individuals identified in the RP and the dollar values of all project costs should be removed.
6. If you have any questions please contact Dr. Hank Jarboe, CELRD-PDP, at (513) 684-6050, or Ms. Pauline Thorndike, CELRD-PDG, at (513) 684-6212.

Encl
Review Plan

MARGARET W. BURCHAM
Brigadier General, USA
Commanding

DECISION DOCUMENT REVIEW PLAN

**BUBBLY CREEK, SOUTH BRANCH OF THE CHICAGO RIVER,
ILLINOIS**

FEASIBILITY STUDY

Chicago District

MSC Approval Date: [11 February 2008](#)

Last Revision Date: 2 April 2014



**US Army Corps
of Engineers®**

DECISION DOCUMENT REVIEW PLAN

Bubbly Creek, South Branch of the Chicago River, Illinois Feasibility Study

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DECISION DOCUMENT REVIEW PLAN

Bubbly Creek, South Branch of the Chicago River, Illinois Feasibility Study

PURPOSE AND REQUIREMENTS

A. Purpose.

This Review Plan updates the 30 March 2007 Review Plan that was approved by the Major Subordinate Command on 11 February 2008. This plan defines the scope and level of peer review for the Bubbly Creek, South Branch of the Chicago River, Illinois, Feasibility Study.

B. References

- (1) Engineering Circular (EC) 1165-2-214, Civil Works Review , 15 Dec 2012
- (2) EC 1105-2-412, Assuring Quality of Planning Models, 31 Mar 2011
- (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) Project Management Plan, Bubbly Creek, South Branch of the Chicago River, Illinois, Feasibility Study

C. Requirements.

This review plan was developed in accordance with EC 1165-2-214, 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 1165-2-214) and planning model certification/approval (per EC 1105-2-412). This document outlines the peer review plan for the Bubbly Creek, South Branch of the Chicago River Feasibility Study. A Feasibility Report that will potentially lead to Congressional Authorization will be developed and is therefore covered by the Circular.

- (1) District Quality Control (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). Basic quality control tools include a Quality Control Plan (QCP) and Quality Assurance Plan (QAP) providing for seamless review, quality checks and reviews, supervisory reviews, Project Delivery Team (PDT) reviews, etc. It is managed in the home district. Quality checks are performed by staff responsible for the work, such as

supervisors, work leaders, team leaders, designated individuals from the senior staff, or other qualified personnel. However, they should not be performed by the same people who performed the original work, including managing/reviewing the work in the case of contracted efforts. Additionally, the PDT is responsible for a complete reading of any reports and accompanying appendices prepared by or for the PDT to assure the overall coherence and integrity of the report, technical appendices, and the recommendations before approval by the District Commander. The Major Subordinate Command (MSC) Regional Business Process/District Quality Control addresses the conduct and documentation of this fundamental level of review.

- (2) Agency Technical Review (ATR). EC 1165-2-214 requires that USACE Risk Management Center (RMC) shall serve as the Review Management Organization (RMO) for Dam Safety Modifications projects and Levee Safety Modification projects. For Decision Documents such as this one, the RMO will be the appropriate Planning Center of Expertise (PCX), in this case, the Ecosystem Restoration PCX. ATR is an in-depth review, managed within USACE, and conducted by a qualified team outside of the home district that is not involved in the day-to-day production of the project/product. The purpose of this review is to ensure the proper application of clearly established criteria, regulations, laws, codes, principles and professional practices. The ATR team reviews the various work products and assure that all the parts fit together in a coherent whole. ATR teams will be comprised of senior USACE personnel, preferably recognized subject matter experts with the appropriate technical expertise such as regional technical specialists (RTS), and may be supplemented by outside experts as appropriate. To assure independence, the leader of the ATR team shall be from outside the home MSC.
- (3) Independent External Peer Review (IEPR). 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. For clarity, IEPR is divided into two types, Type I is generally for decision documents and Type II is generally for implementation documents.

D. Review Progress.

The review plan will be reviewed and updated on an annual basis, or as needed, to reflect the progress in project completion.

1. 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 Ecosystem Planning Center of Expertise (ECO-PCX).

The RMO will coordinate with the Cost Engineering Mandatory Center of Expertise (Cost-MCX) for the decision documents to ensure the appropriate expertise is included on the review teams to assess the adequacy of cost estimates, construction schedules and contingencies

2. GENERAL INFORMATION

A. Decision Document.

The Bubbly Creek Feasibility Study, officially known as South Fork of the South Branch (SFSB) of the Chicago River, was authorized by the Senate Committee on Energy and Public Works adopted 20 July 2005. The Feasibility Study will produce a Feasibility Report (FR), with integrated Environmental Assessment (EA) document that complies with National Environmental Policy Act (NEPA). This report will provide the basis for a decision by the U.S. Congress to authorize construction of a Federal project. The feasibility phase of this project is cost shared 50/50 with the project sponsor, the City of Chicago. The report will provide planning, engineering, and implementation details of a recommended restoration plan to allow final design and construction to proceed subsequent to the approval of the plan. NEPA documentation is included in the report as an integrated Environmental Assessment.

B. Project Description.

The study is being conducted in accordance with the study resolution adopted by the Committee on Environment and Public Works, United States Senate, July 20, 2005. The study resolution authority reads as follows:

“Resolved by the Committee on Environment and Public Works of the United States Senate, that, the Secretary of the Army, is requested to review the report of the Chief of Engineers on the Illinois River, Illinois submitted in Senate Document Numbered 126, Seventy-first Congress, second session, and other pertinent reports, to determine whether any modifications to the South Fork of the South Branch of the Chicago River (commonly known as Bubbly Creek) for ecosystem restoration is advisable at this time.”

It is being cost shared with the non-federal sponsor, the City of Chicago. The study area includes the entire 1.25 mile channel and areas draining to the South Fork of the South Branch of the Chicago River, colloquially referred to as “Bubbly Creek” located entirely within the City of Chicago, Cook County, Illinois. A once sluggishly flowing channel that drained an area of 5 square miles of wetlands, Bubbly Creek has since been severely altered by human development. Bubbly Creek was once a pristine prairie slough that provided natural aquatic and terrestrial habitats for fish, bird, and mammal species. Bubbly Creek has endured major physical alterations including deepening and widening of the channel, creation of sheet pile banks, complete filling of wetlands within the original drainage area, severe hydrologic alterations including a major increase in drainage area, and introduction of polluted sediments and runoff. Today, the Bubbly Creek channel drains a 30 square mile area of metropolitan Chicago, begins near Racine Avenue and 38th Street at the Racine Avenue Pumping Station (RAPS), and flows north into the South Branch of the Chicago River near Ashland Avenue.

Implementation of an ecosystem restoration plan would greatly improve the ecosystem conditions of Bubbly Creek. The addition of several native habitat types and close to 50⁺ native plant species would increase species richness and abundance of the surrounding environment. Generally, measures include 1) sand and gravel substrate layer, 2) large woody debris structures, and 3) plant community reestablishment. Large woody debris can be broken down into ___ structural components: a) fish & turtle habitat (trunk & limbs), b) heron & bird habitat (trunk & limbs), c) wetland structural habitat (rootwads). Plant communities are specified by a) aquatic bed, b) emergent, c) transitional bank, and d) riparian. The estimated cost for the tentatively recommended plan is approximately \$xx,xxx,xxx.

C. Factors Affecting the Scope and Level of Review.

The scope and level of review for this study will be impacted by institutional factors rather than technical ones. Recommendations from this study require NER/ecosystem restoration benefits, which could be achieved through: placement of sand and gravel for substrate restoration, invasive plant removal, native plantings within the channel and along the banks and placement of woody debris. While these measures do not pose technical challenges, institutional challenges do exist with the placing new substrate atop soft sediment. USACE Chicago District (LRC) has experience in placing substrate on these types of channel bottoms; such as Red Mill Pond Section 506 and design contributions to the West Branch Grand Calumet River Restoration Project; however, LRC has involved Engineering Research and Development Center (ERDC) as an integral member of the Project Delivery Team (PDT). ERDC has been instrumental in the engineering aspects of the substrate layer design. USACE LRC has much experience in invasive species removal, native plantings, and designing to the site's hydrology, hydraulics and geomorphic conditions. The public and the local sponsor support this project.

- (1) Challenges: The measures involved in restoring the ecosystem of Bubbly Creek are not expected to generate significant technical, institutional, or social challenges. LRC has in-house expertise in ecosystem restoration and experience in invasive species removal, native plantings, and designing to the site's hydrology, hydraulics and geomorphic conditions. LRC has coordinated with ERDC's experts in the field of placement of new substrate on soft sediment. They have assisted in the formulation and design of this substrate restoration feature and have provided guidance on construction methods.
- (2) Project Risks: There are risks associated with the success of the project. Data gaps to inform decisions and reduce the risk will be addressed during the next phase of study where additional site specific site investigation and data collection will occur. Remaining risk will be mitigated with the development and implementation of an adaptive management plan.
- (3) Life Safety: The project will neither be justified by life safety or will involve significant threat to human life/safety assurance. There is no reason to believe that any measures involved in the project are associated with a significant threat to human life. The Chicago District Chief of Technical Services Division has determined that the project does not involve a significant threat to human life/safety, as the products may include the design and implementation of: 1) Selective Dredging; 2) Capping; 3) Creating channel base flow 4) Bypassing the RAPS overflow, and 5) No

Federal Action. Governor Request for Peer Review: The Governor **has not** requested peer review by independent experts.

- (4) Public Dispute: The project/study is not anticipated to be controversial nor result in significant public dispute as to the size, nature, or effects of the project or to the economic or environmental costs or benefits of the project. To date, the public and the governmental agencies that are members of the PDT support the project.
- (5) Project Design/Construction: The anticipated project design will take advantage of prevailing practices and methodologies. It is not expected to be based on novel methods or involve the use of innovative techniques, or present complex challenges for interpretation.
- (6) The project is not anticipated to require redundancy, resiliency, and/or robustness, unique construction sequencing, or a reduced or overlapping design construction schedule.

D. In-Kind Contributions.

Products and analyses provided by non-Federal sponsors as in-kind services are subject to DQC, ATR, and IEPR. The in-kind products and analyses to be provided by the non-Federal sponsor include: project oversight, project Web site development, Phase I site investigations, Phase II sediment sampling and sediment geotechnical investigations, review and comment on technical reports, surveying and mapping, compiling data.

3. 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.

All products shall undergo appropriate Chief's review. Chief's of all sections with participating PDT members will review the completed document and submit comments and/or edits. All analyses, documentation, and design calculations are checked and signed-off by an independent peer reviewer. Edits will be incorporated into the document and rerouted for final approval requiring sign-off from the reviewers and the appropriate Branch Chiefs. This review, in conjunction with the PDT review is completed to ensure consistency of the document prior to ATR. Review comments are coordinated by the team with the manager.

All analyses, documentation, and designs will be checked and initialed by the reviewer. Comments and responses from reviewers and Chiefs for the study and design products shall be documented and maintained in shared electronic folders. Pertinent quality control checklists will be completed and signed by the Chiefs.

District Quality Control (DQC) Overview:

- Purpose: Quality Control of science and engineering work products
- Managed by: Study Manager

- Performed by: Chicago District Technical Team Members, independent peer reviewer, section and branch chiefs
- Required for: All study narratives, analyses, design products, reports, evaluations and assessments
- Documentation: DrChecks or Word Document

Products to Undergo DQC. All feasibility report products have or will undergo DQC including the Feasibility Scoping Meeting Document, the Alternative Formulation Briefing Document, Draft Feasibility Report, and Final Feasibility Report.

4. 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.

Agency Technical Review Overview:

- Purpose: Ensure the quality and credibility of the government's scientific information and verify compliance with National Environmental Policy Act (NEPA) and other environmental compliance documents
- Managed by: ATR Leader (Outside Lakes and Rivers Division MSC)
- Performed by: Senior Technical Team Members, preferably recognized subject matter experts (Outside Chicago District)
- Required for: Feasibility Report
- Documentation: DrChecks and Review Report
- Review Management Organization: Lakes and Rivers Division MSC

Subject matter experts from within USACE will conduct the ATR. ATR reviewers shall be approved by the Ecosystem PCX. Selections will be based on expertise, experience, and skills, including specialists from multiple disciplines as necessary to ensure comprehensive review. ATR teams will be comprised of senior USACE personnel, preferably recognized subject matter experts with the appropriate technical expertise, and may be supplemented by outside experts as appropriate. To assure independence, the leader of the ATR team shall be from outside the home MSC and the ATR team shall be from outside the Chicago District.

The group of qualified reviewers shall be formed into panels that are sufficiently broad and diverse to fairly represent the relevant scientific and engineering perspectives and fields of knowledge. RMO shall ensure that reviewers who are Federal employees (including special government employees) comply with applicable Federal ethics requirements. In selecting

reviewers who are not Federal government employees, the National Academy of Sciences' policy for committee selection with respect to evaluating the potential for conflicts (e.g., those arising from investments; agency, employer, and business affiliations; grants, contracts and consulting income) shall be adopted or adapted.

A. Products to Undergo ATR.

ATR will be performed throughout the study in accordance with the District and MSC Quality Management Plans. The Feasibility Scoping Meeting document and the Alternative Formulation Briefing document have undergone ATR review in July 2010 and August 2013 respectively. The draft Feasibility report and the final Feasibility Report are estimated to undergo ATR in December 2013 and April 2014 respectively. Certification of product ATRs will be provided prior to vertical team reviews and prior to District Commander approval of the final report.

B. Required ATR Team Expertise.

A reviewer may be able to address more than one discipline.

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).
Plan Formulation	The Planning reviewers should be senior water resources planners with experience in ecosystem restoration.
Economics	The Economics Panel Member reviewer will be responsible for reviewing the required economic analyses, project benefits, anticipated future costs. They will be responsible for reviewing the CE/ICA and IWR Plan.
Biologist/Ecosystem Restoration/NEPA	The biologist should be familiar with ecosystem restoration within urban settings. The biologist should also be familiar with lacustrine ecology. The biologist will be responsible for reviewing the NEPA compliance for the study.
Hydraulic Engineering	The hydraulic engineering reviewer will be an expert in the field of hydraulics and have a thorough understanding of urban storm water and combined sewage management and/or computer modeling techniques that will be used such as HEC-RAS, FLO-2D, and UNET.
Geotechnical Engineering	The geotechnical engineer should be familiar with CPT testing and methods to determine shear stresses in soft material. This person should be able to review data and apply it to a project.
Civil Engineering	The civil engineer should be familiar with completing

	quantity take offs and generating feasibility level design plates.
Cost Engineering	The cost engineers should be familiar with methods and costs to place substrate in a channel, remove invasive plants and plant native plants.
Real Estate	The real estate specialist should have experience the real estate issues associated with riparian ecosystem
Environmental Engineer	The environmental engineer should have experience in Phase I and Phase II site assessments in an urban setting, identifying adverse environmental conditions and formulating methods for addressing those conditions.

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, for the AFB, draft report, and final report. A sample Statement of Technical Review is included in Attachment 2.

5. 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 1165-2-214, 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 1165-2-214.
- **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.

A Type I IEPR will be executed on the draft Feasibility Study document. A Type I IEPR will be conducted because this project may be controversial due to its location, given the proximity to potentially contaminated lands. Bubbly Creek has been severely altered by human development and a century ago served as a dumping ground for the local meat packing industry.

The Bubbly Creek Ecosystem Restoration project does not include features that pose a significant threat to human life, therefore a Type II IEPR, or Safety Assurance Review (SAR) will not be conducted during the design phase of this project.

B. Products to Undergo Type I IEPR.

The Type I IEPR will be performed on the draft Feasibility Study document at the time of public review.

C. Documentation of Type I IEPR.

Documentation of Type I IEPR: The IEPR panel will be selected and managed by an Outside Eligible Organization (OEO) per EC 1165-2-214, 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.c 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.

6. 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.

7. COST ENGINEERING MANDATORY CENTER OF EXPERTISE (Cost-MCX) REVIEW AND CERTIFICATION

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

8. 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 (if required).

EC 1105-2-412 does not cover engineering models used in planning. The responsible use of well-known and proven USACE developed and commercial engineering software will continue and the professional practice of documenting the application of the software and modeling results will be followed. 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 (if required).

A. Planning Models.

The following planning models have been used in the development of the decision document and the link to documentation attesting to their certified status:

[1\) Institute of Water Resource Plan -
http://www.pmcl.com/iwrplan/SoftwareInfo_1_0_11_0.asp;](http://www.pmcl.com/iwrplan/SoftwareInfo_1_0_11_0.asp)

[2\) Floristic Quality Assessment Coefficients for Conservation for the Chicago Region -
http://cw-environment.usace.army.mil/model-library.cfm?CoP=Restore&Option=View&Id=318;](http://cw-environment.usace.army.mil/model-library.cfm?CoP=Restore&Option=View&Id=318;)
and

3) the Chicago Area Waterway System Habitat Index - <http://cw-environment.usace.army.mil/model-library.cfm?CoP=Restore&Option=View&Id=58>.

The Chicago Area Waterway System Habitat Index and the Floristic Quality Assessment Coefficients for Conservation for the Chicago Region will be used to quantify the benefits of the Bubbly Creek ecosystem restoration project.

9. REVIEW SCHEDULES AND COSTS

A. DQC Schedule and Cost.

The District Quality Control reviews will cost approximately \$20,000 each, with a total estimate of \$60,000. DQC will occur seamlessly throughout the feasibility report creation process. Quality checks and reviews occur during the development process and are carried out as a routine management practice. A formal DQC review will occur prior to AFB submittal to LRD and Headquarters for the Draft Feasibility submittal in October 2013.

B. ATR Schedule and Cost.

The estimated cost for ATR is approximately \$30,000 to \$50,000 each, with a total estimate of \$90,000 to \$150,000. Some ATR has already occurred. Remaining ATR will occur during the AFB Feasibility Report, Draft Final Feasibility Report, and Final Feasibility Report. The ATR team is invited to take part in weekly team meetings and monthly vertical team meetings. Comment resolution meetings will be scheduled with the ATR team, if necessary. ATR review is scheduled prior to October submission of the AFB and prior to the September submission of the DE’s Notice.

Product	Date	Cost
Feasibility Scoping Meeting Document	Aug 2010	\$30,000
Alternative Formulation Briefing Document	Jul 2013	\$55,000
Draft Feasibility Report*	Apr 2014	\$35,000
Final Feasibility*	June 2014	\$10,000

*Estimated date and cost provided for reviews not yet completed

C. Type I IEPR Schedule and Cost.

The contract for the Type I IEPR has been estimated to cost \$100,000 and district participation would cost approximately \$30,000. The IEPR will commence on or about March 7, 2014 and Final IEPR is expected to be received May 30, 2014.

D. Total Cost.

The total cost for reviews required by EC 1165-2-214 for the Bubbly Creek Project is estimated at approximately \$300,000. The costs of the reviews are not escalated over time; the costs are based on today’s rates.

10. PUBLIC PARTICIPATION

In addition to the public access provided to the Peer Review Plan on the District and respective PCX web sites, the District will solicit public input regarding elements of a potential

Recommended Plan through the upper Des Plaines River project newsletters and other avenues of outreach. Additionally, the District will solicit input from the Executive Steering Committee, which includes concerned municipalities, local, state and federal agencies, and local interest groups, on the contents and approach of the review plan. In order to satisfy requirements of the National Environmental Policy Act (NEPA), an environmental compliance document will be developed as part of the feasibility study process and released for public review. Comments received through these activities will be reviewed, incorporated into the feasibility report where appropriate and formal responses prepared by District staff. Significant and relevant comments on the study process will be provided to the ATR teams as part of the review package.

11. REVIEW PLAN APPROVAL AND UPDATES

The Great Lakes and Ohio River Division is responsible for approving the review plan. Approval is provided by the MSC Commander. The commander’s approval should reflect vertical team input (involving district, MSC, RMC, and HQUSACE members) as to the appropriate scope and level of review for the project. Like the PMP, the review plan is a living document and may change as the study progresses. Changes to the review plan should be approved by following the process used for initially approving the plan. In all cases the MSCs will review the decision on the level of review and any changes made in updates to the project. The latest version of the Review Plan, along with the Commanders’ approval memorandum, will be posted on the Home District’s webpage. The latest Review Plan should also be provided to the RMO and home MSC.

12. CHICAGO DISTRICT CONTACTS

- Michael Padilla, Project Manager, 313-846-5427

ATTACHMENT 1: TEAM ROSTERS

Project Delivery Team

Role	Name	Telephone
Project Manager		
Lead Planner		
Restoration Ecology		
Ecology		
Botany		
Cultural Resources		
Civil Engineer		
Cost Engineer		
Geotechnical Engineer		
Environmental Engineer		

Hydraulic Engineer		
Real Estate		
Planning - Sponsor		
Environmental - Sponsor		

Agency Technical Review Team

Role	Name	Telephone
ATR Leader/Planning		
Civil Engineer		
Plan Form		
Hydraulic Engineer		
Cost Engineering		
Biologist/ NEPA		
Environmental Engineering		
Real Estate		
Geotechnical		
Economics		

ATTACHMENT 2: SAMPLE STATEMENT OF TECHNICAL REVIEW

COMPLETION OF AGENCY TECHNICAL REVIEW

The Agency Technical Review (ATR) has been completed for the <type of product> for <project name and location>. The ATR was conducted as defined in the project’s Review Plan to comply with the requirements of EC 1165-2-214. 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
Office Symbol/Company

Date

SIGNATURE

Name
Project Manager (home district)
Office Symbol

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.

SIGNATURE

Name
Chief, Design Branch (home district)
Office Symbol

Date

SIGNATURE

Name
Chief, Planning Branch (home district)
Office Symbol

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
2 April 2014	Updated to Comply with Current Guidance. Original Review Plan was prepared using Peer Review Process from 2005. There are no changes in scope from the original plan.	Throughout

ATTACHMENT 4: ACRONYMS AND ABBREVIATIONS

<u>Term</u>	<u>Definition</u>	<u>Term</u>	<u>Definition</u>
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
CAP	Continuing Authorities Program	O&M	Operation and maintenance
CSDR	Coastal Storm Damage Reduction	OMB	Office and Management and Budget
DPR	Detailed Project Report	OMRR&R	Operation, Maintenance, Repair, Replacement and Rehabilitation
DQC	District Quality Control/Quality Assurance	OEO	Outside Eligible Organization
DX	Directory of Expertise	OSE	Other Social Effects
EA	Environmental Assessment	PCX	Planning Center of Expertise
EC	Engineer Circular	PDT	Project Delivery Team
EIS	Environmental Impact Statement	PAC	Post Authorization Change
EO	Executive Order	PMP	Project Management Plan
ER	Ecosystem Restoration	PL	Public Law
FDR	Flood Damage Reduction	QMP	Quality Management Plan
FEMA	Federal Emergency Management Agency	QA	Quality Assurance
FRM	Flood Risk Management	QC	Quality Control
FSM	Feasibility Scoping Meeting	RED	Regional Economic Development
GRR	General Reevaluation Report	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