

I. PURPOSE, AUTHORITY, STUDY DESCRIPTION, AND PRODUCTS

A. Purpose

This review plan defines levels and scopes of review required for the engineering design and construction products for the Dutch Gap, Section 206 Aquatic Ecosystem Restoration project (P2# 455136).

1. References:

- (1) Engineering Regulation (ER) 415-1-11, Biddability, Constructability, Operability, Environmental and Sustainability (BCOES) Reviews, 1 January 2013
- (2) Engineering Regulation (ER) 1165-2-217, Civil Works Review Policy, 01 May 2021
- (3) Qualtrax 08504 LRD, Supplemental Quality Procedures for Civil Works (CW) Engineering and Design (E&D) Products
- (4) ER 1110-1-8159, Engineering and Design, DrChecks, 10 May 2011
- (5) ER 1110-2-1150, Engineering and Design for Civil Works Projects, 31 August 1999
- (6) Project Management Plan (PMP)

B. Authority

Section 206 of the Water Resources Development Act of 1996, Public Law 104-305, authorizes the Secretary of the Army to carry out a program of aquatic ecosystem restoration with the objective of restoring degraded ecosystem structure, function, and dynamic processes to a less degraded, more natural condition considering the ecosystem's natural integrity, productivity, stability, and biological diversity. This authority is primarily used for manipulation of the hydrology in and along bodies of water, including wetlands and riparian areas. This authority also allows for dam removal. It is a Continuing Authorities Program (CAP) which focuses on water resource related projects of relatively smaller scope, cost, and complexity. Traditional USACE civil works projects are of wider scope and complexity and are specifically authorized by Congress. The Continuing Authorities Program is a delegated authority to plan, design, and construct certain types of water resource and environmental restoration projects without specific Congressional authorization. The Federal Interest Determination for the Dutch Gap Section 206 Aquatic Ecosystem Restoration project was completed and approved on June 22, 2019, and the Integrated Feasibility Report and Environmental Assessment for was completed and approved on July 29, 2021. The Project Partnership Agreement with the non-Federal sponsor was signed on December 15, 2022.

C. Review Management Organization (RMO)

The RMO is responsible for managing the overall peer review effort described in this review plan. The RMO for CAP Section 206 is the Great Lakes and Ohio River Division (LRD), and the LRD Commander or their Director of Programs/ Business is responsible for approving the Review Plan. LRD will serve as the RMO for Dutch Gap, Section 206 and has delegated to the Chicago District all other RMO responsibilities identified in EC1165-2-217 except final review and approval of the Review Plan.

D. Project Location, Scope, and Products

The 785-acre study area is in Antioch, Lake County, Illinois. The study area resides south of the Wisconsin state border line, north of W. Pedersen Dr., east of US-45 N, and west of N Crawford Road. Study area parcels are owned by the Lake County Forest Preserve District (LCFPD).

Specific water resource problems and considerations within the study area were previously evaluated by USACE during the feasibility stage, including hydrology, hydraulics, restoration plans, NEPA, real estate,

and cost estimates. USACE is now moving forward with engineering design and construction of the project following the feasibility stage's guidance.

Based on site qualitative and quantitative investigations, and aside from the past hydrogeomorphic changes to the system, the main aquatic resource problems which the 206 Authority will address are:

- Altered hydrology stemming from drain tile and ditch system
- Altered riverine hydraulics stemming from invasive plant species
- Altered riverine hydraulics stemming from historic channelization
- Habitat fragmentation
- Cessation of natural processes

The project will reestablish hydroperiods and rehydrate former hydric soils through drain tile disablement, restore stream connectivity and habitat diversity, remove invasive plant species, and establish native plant communities. USACE anticipates that total project costs including the Integrated Detail Project Report, Plans & Specifications, Construction, Monitoring, and Lands, Easements, Right of Ways, Relocations, and Disposals would be approximately \$14,961,000. USACE's share of such costs are projected to be \$9,724,650, and the Non-Federal Sponsor's (NFS) share of such costs are projected to be \$5,236,350, which includes creditable real property interests and relocations projected to be \$4,014,000. The amount of additional funds required to meet the NFS' 35 percent cost share are \$1,222,350. The plans and specifications will be developed by a PDT and include 30%, 60%, and 90% design. Standard review practices (i.e., District Quality Control, Agency Technical Reviews, and Biddability, Constructability, Operability, Environmental and Sustainability Reviews) will occur at the 60% and 90% design stages.

Table 1. Project Summary	
Project Type, P2 Number:	Civil Works, 455136
Locations:	Antioch Township, Lake County, IL
Purpose/Function:	AER
Key Physical Components:	Drain tile disablement, restoration of aquatic habitats
Estimated Design and Construction Cost:	\$14,961,000
E&D Product Method Delivery:	Internal USACE Design
Construction Delivery Method:	Tentative - Invitation for Bid (IFB)

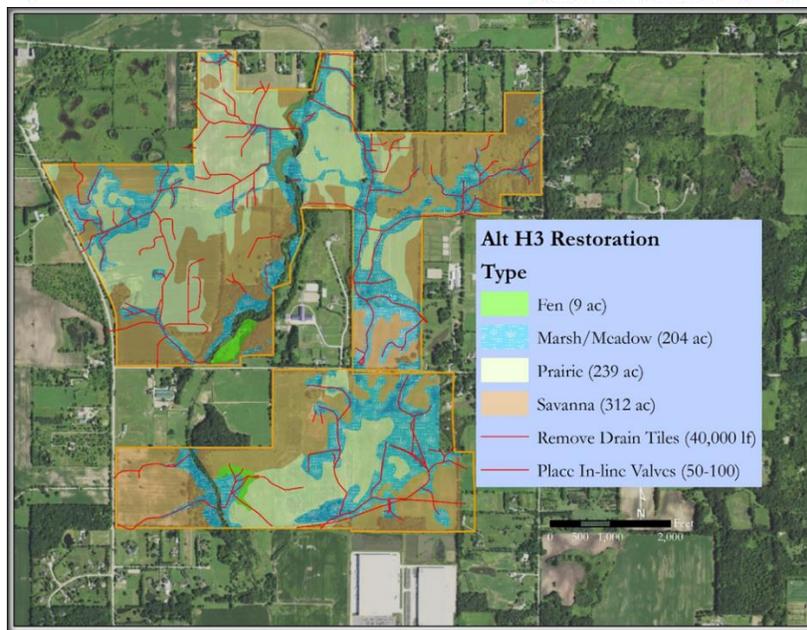


Figure 1. Project Overview Maps

1. Products: The E&D products to be reviewed include the following:
 - (1) Design Documentation Report (DDR)
 - (2) Plans and Specifications (P&S)
 - (3) Engineering Considerations and Instructions for Field Personnel (ECIFP)
 - (4) E&D Products for Construction Contract Modifications

E. Documentation of Risks and Issues

- (1) Life Safety Assessment: The District Chief of Engineering has reviewed the project requirements and determined there is not a significant threat to human life if the project were to fail.
- (2) Technical Complexities and Risks. The project delivery team (PDT) has completed a risk assessment for the project, including technical, construction and operations activities and identified the following key technical complexities and risks. Quality reviews will be focused to manage these risks:
 - (a) Native Plant Establishment: Native plants will be re-established on the project site. There is a risk that native plantings may not initially establish due to unpredictable events, such as extreme weather and predation from herbivorous animals and insects. The execution of the native plant establishment design and installation would mitigate potential adverse conditions. In addition, warranties required by the contract and adaptive management options placed in the contract will provide the means of replanting over the 5-year construction period, should the need arise.
 - (b) Hydraulic modeling will be required to ensure any changes to the waterways in the project area will not cause water to back up and impact neighboring properties.

F. Review Execution

1. **Project Delivery Team (PDT):** PDT members are listed in Attachment 1. PDT members will work collaboratively with review team members to ensure effective execution of quality reviews.
2. **District Quality Control (DQC):** DQC is required for all products. DQC will be performed by the DQC team listed in Section K of this review plan to ensure proper QC procedures were followed by the PDT. Follow DQC procedures in Chapter 4 of ER 1165-2-217 and District local work instructions.
3. **Biddability, Constructability, Operability, Environmental, Sustainability (BCOES):** BCOES reviews are required for all products. Follow BCOES review procedures in ER 415-1-11 and District local work instructions. The Engineering Technical Lead and DQC Lead will collaborate to oversee and ensure effective BCOES execution.
4. **Agency Technical Review (ATR):** ATR is required for all products and will follow ATR procedures in Chapter 5 of ER 1165-2-217. ATR will address the technical risks described in subsection 4.b. Required senior technical disciplines and expertise needed for ATR are shown in Table 2. Assigned ATR team members are listed in Attachment 1. ATR members in engineering disciplines are verified as certified in the Corps of Engineers Review and Certification Access Program (CERCAP) [Command Training Plan & CERCAP Tool (CTP) - PROD v2.5.2 - Home (army.mil)]. PDT and review team leaders will collaborate to oversee and ensure effective execution.

5. **Safety Assurance Review (SAR):** By signature on this document the District Chief of Engineering confirms she has determined that a Safety Assurance Review (SAR) is not required.

6. **Review Charge:** Reviewers will refer to and perform ATR per Section 5.7 of ER 1165-2-217, Objectives, Scope, and Review Criteria. Reviews shall check to confirm the design addresses the technical complexities and risks described in paragraph 4.b.

Technical Discipline	Expertise Required
ATR Leader	The ATR team member shall be a senior level engineer or biologist, with experience in review management and processes and project coordination. CERCAP Certified.
Hydraulic Engineer	H&H ATR team member shall be a senior level, registered professional engineer, with experience in aquatic ecological restoration design and analysis. CERCAP Certified.
Biologist	Biologist ATR team member shall be a senior level with experience in aquatic ecological restoration design and analysis.

G. Review Schedules and Budgets

The schedule and budgets for reviews are shown below in Table 3. BCOES reviews will be performed concurrently with ATR review periods.

Review	Start Date	Finish Date	Tentative Budget per reviewer (\$)*
Risk Assessment	November 13, 2023	December 7, 2023	\$2,000
60% DQC Review	July 19, 2024	August 20, 2024	\$1,500
60% BCOES/ATR Review	August 21, 2024	September 19, 2024	\$1,500
90% DQC Review	December 17, 2024	January 21, 2025	\$1,500
90% BCOES/ATR Review	January 22, 2025	February 20, 2025	\$1,500
100% Backcheck	February 11, 2025	February 20, 2025	\$1,000

*Budgets contained in PMP. ATR team members will submit budget to PM. It's assumed that each reviewer will spend 4-12 hours on each review. This includes reviewing the documents, attending review meetings, asking clarifying questions, drafting comments, etc. The backcheck is expected to be less of an effort, if there are not any outstanding issues.

H. Review Documentation

The ATR leader will prepare an ATR report per Section 5.10 of ER 1165- 2-217. The ATR report with certification form will be provided to the approval signatories, including the RMO representative. Review documents will be stored with the official project records.

I. Review Plan Points of Contact

Questions and comments relating to this review plan can be directed to the following points of contact:

- 1. Project Manager:
- 2. Technical Lead:
- 3. Management Organization (RMO) Representative:

J. Approval Signature

RECOMMEND FOR APPROVAL:	 Chief, Design Branch
DISTRICT APPROVAL:	 Chief, Engineering and Construction Division

K. Team Members

PROJECT DELIVERY TEAM		
Function/Discipline	Name (Last, First)	Office
Project Manager		
Lead Planner/Botanist		
Technical Lead/Civil Engineer		
Cost Engineer		
Environmental Engineer		
Hydraulic Engineer		
CADD/BIM Manager		
Zachary Ostrum		
Dist. Value Officer		
Realty Specialist		
Manager of Restoration Ecology		
DQC REVIEWERS		
Function/Discipline	Name (Last, First)	Office
Geospatial		
Geotech		
Cost		
Environmental		
Hydraulics		
Civil *DQC Lead		
Biologist		
Real Estate		
BCOES REVIEWERS		
Function/Discipline	Name (Last, First)	Office
Biddability		
Constructability		
Environmental		
Safety		
Legal		
Real Estate		
ATR REVIEWERS		
Function	Name	Office
ATR Leader		
Biologist		
Hydraulic Engineer		
Biologist		