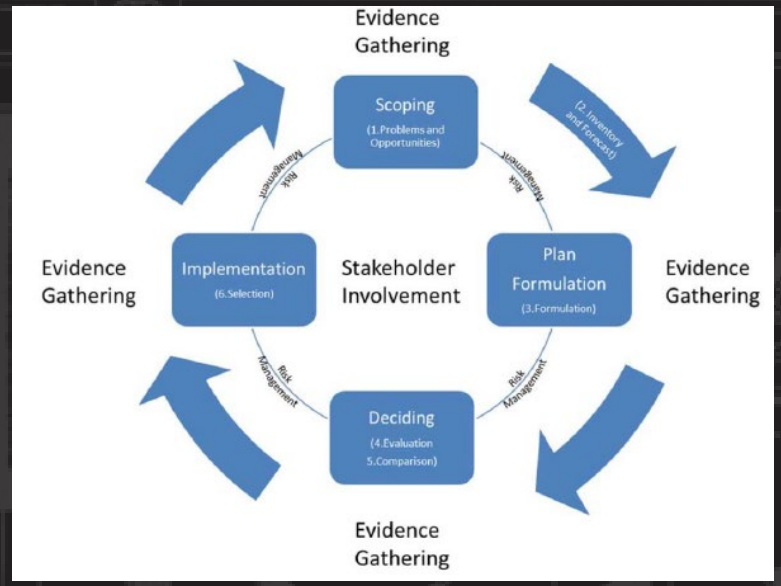
CHAUTAUQUA LAKE AQUATIC ECOSYSTEM RESTORATION

Planning and Environmental Branch, USACE Pittsburgh District

Chautauqua Symposium

22 March 2025



U.S. ARMY

US Army Corps of Engineers®

TALK OUTLINE

1. Project overview
   - What is an “Aquatic Ecosystem Restoration?”
   - The Chautauqua Aquatic Ecosystem Restoration project
   - What is the USACE Planning Process?
2. Progress
   - The Chautauqua Charrette
   - Charette outcomes and later refinements
   - Future without project: What happens if nobody does anything?
3. Next steps and schedule
   - What happens during the evaluation and analysis phase
   - How to get involved: public participation and outreach

WHAT IS AN "AQUATIC ECOSYSTEM RESTORATION?"

- Ecosystem Restoration is one of the primary missions of the USACE.

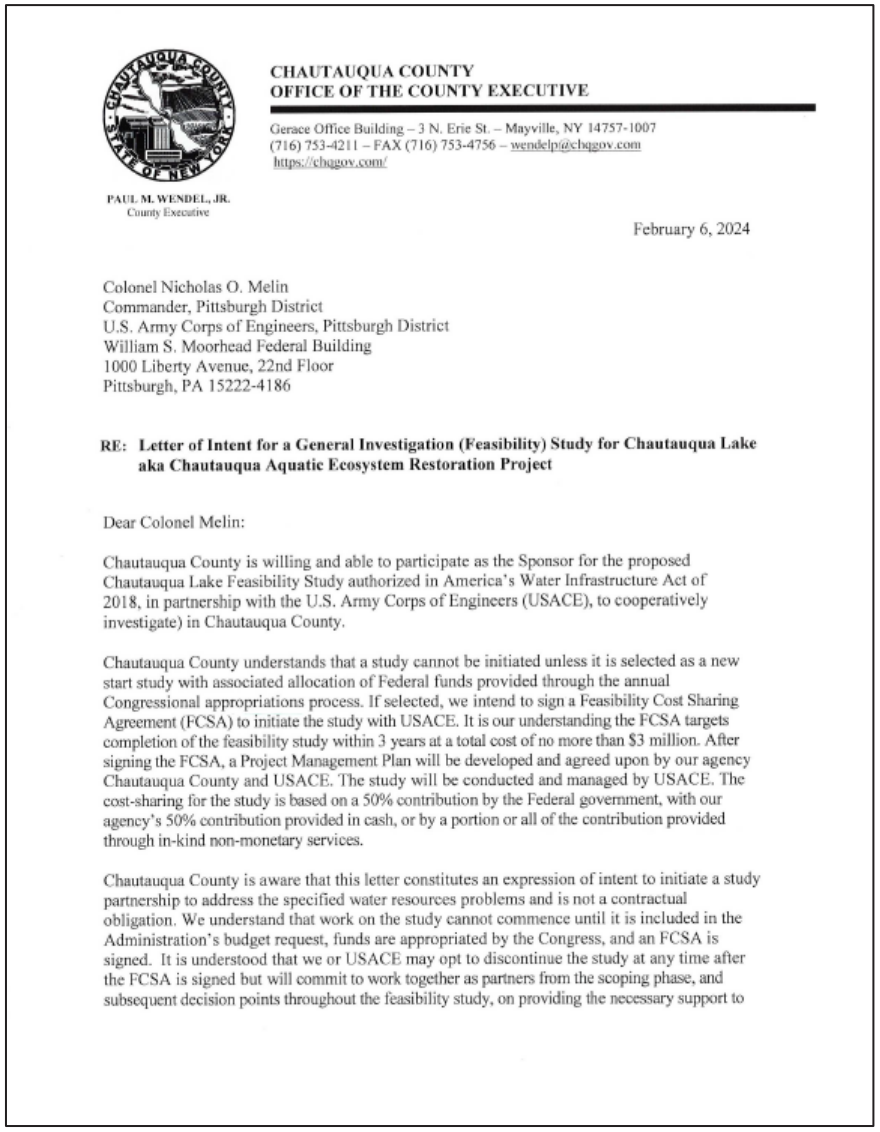
- The purpose of the AER mission is to restore ecosystem structure, function, and dynamic processes that have been degraded.

- USACE works to identify and enact activities to fully, or partially re-establish the attributes of a natural, functioning, and self-regulating ecological system.

- Examples:
  - Re-establish fish or wildlife species of concern
  - Specific habitat types: deep water or shoreline habitats
  - Enhance native, or address invasive, plant cover
  - Establish connectivity between habitat types

CHAUTAUQUA LAKE AQUATIC ECOSYSTEM RESTORATION PROJECT

- ✓ USACE Pittsburgh District received congressional authorization to conduct a feasibility study through Section 1201 (6) of America's Water Infrastructure Act of 2018 (PL 115-270).
- ✓ Funding was received in early 2024 to begin the study.
- ✓ USACE and Chautauqua County signed a feasibility cost share agreement on September 26, 2024. Chautauqua County agreed to participate as the non-federal sponsor on the Chautauqua Lake Aquatic Ecosystem Restoration Study.
- ✓ A scoping and planning charrette held **January 8 and 9, 2025**, with the non-federal sponsor and parties actively engaged in research or restoration work around the lake.
- ✓ Focused and interagency meetings were held after the charrette to continue gathering data and solicit input from resource agencies.



CHAUTAUQUA COUNTY
OFFICE OF THE COUNTY EXECUTIVE

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(716) 753-4211 – FAX (716) 753-4756 – wendelp@chqgov.com
https://chqgov.com/

PAUL M. WENDEL, JR.
County Executive

February 6, 2024

Colonel Nicholas O. Melin
Commander, Pittsburgh District
U.S. Army Corps of Engineers, Pittsburgh District
William S. Moorhead Federal Building
1000 Liberty Avenue, 22nd Floor
Pittsburgh, PA 15222-4186

RE: Letter of Intent for a General Investigation (Feasibility) Study for Chautauqua Lake aka Chautauqua Aquatic Ecosystem Restoration Project

Dear Colonel Melin:

Chautauqua County is willing and able to participate as the Sponsor for the proposed Chautauqua Lake Feasibility Study authorized in America's Water Infrastructure Act of 2018, in partnership with the U.S. Army Corps of Engineers (USACE), to cooperatively investigate) in Chautauqua County.

Chautauqua County understands that a study cannot be initiated unless it is selected as a new start study with associated allocation of Federal funds provided through the annual Congressional appropriations process. If selected, we intend to sign a Feasibility Cost Sharing Agreement (FCSA) to initiate the study with USACE. It is our understanding the FCSA targets completion of the feasibility study within 3 years at a total cost of no more than $3 million. After signing the FCSA, a Project Management Plan will be developed and agreed upon by our agency Chautauqua County and USACE. The study will be conducted and managed by USACE. The cost-sharing for the study is based on a 50% contribution by the Federal government, with our agency's 50% contribution provided in cash, or by a portion or all of the contribution provided through in-kind non-monetary services.

Chautauqua County is aware that this letter constitutes an expression of intent to initiate a study partnership to address the specified water resources problems and is not a contractual obligation. We understand that work on the study cannot commence until it is included in the Administration's budget request, funds are appropriated by the Congress, and an FCSA is signed. It is understood that we or USACE may opt to discontinue the study at any time after the FCSA is signed but will commit to work together as partners from the scoping phase, and subsequent decision points throughout the feasibility study, on providing the necessary support to

CHAUTAUQUA LAKE AQUATIC ECOSYSTEM RESTORATION PROJECT

- This project will develop and then compare alternative plans, evaluate costs and benefits, and recommend *a specific course of action to Congress*, **the Chief's Report.**

- Congress may then authorize and fund the identified course of action for construction
  - The identified course of action is eligible for a cost share
  - Cost share varies, but generally 65% federal funding, 35% local cost share.

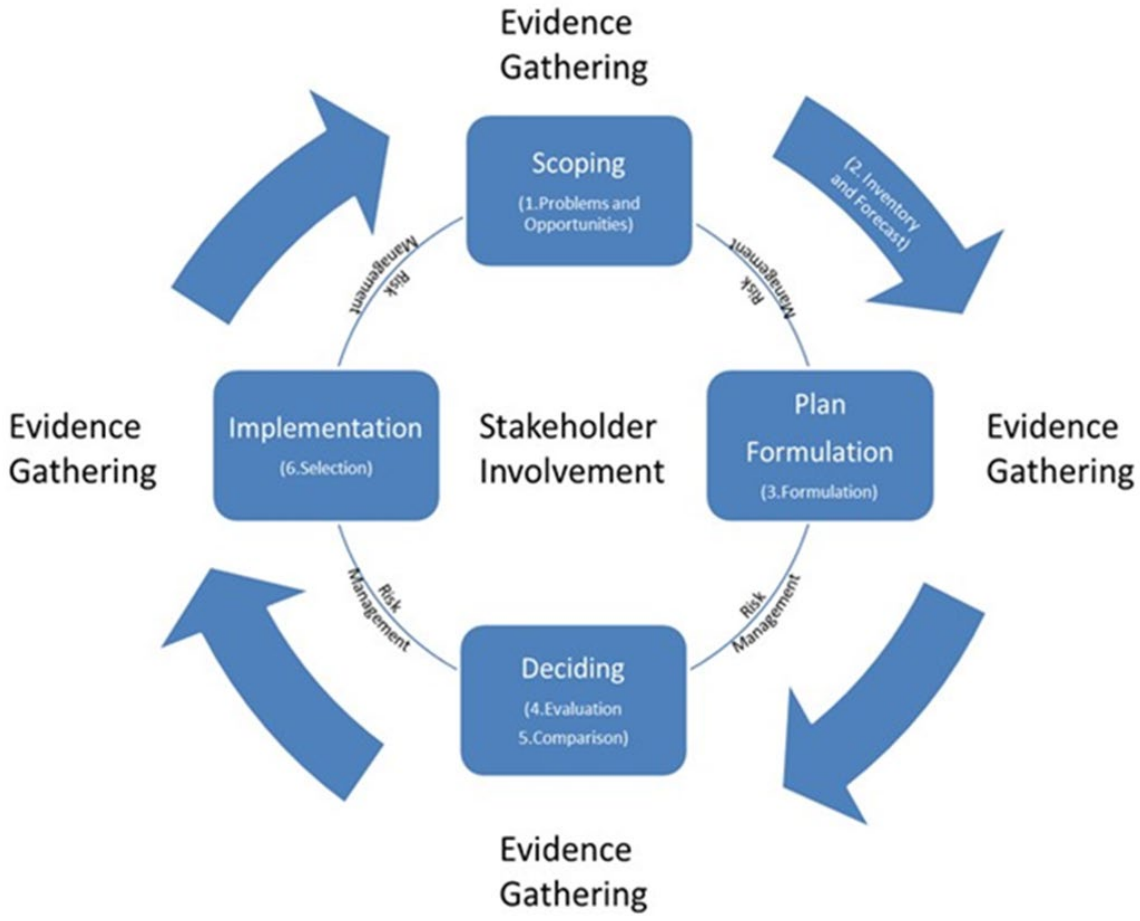
WHAT IS THE USACE PLANNING PROCESS?

Six-step process*
1.Identify problems & opportunities
2.Inventory and forecast
3.Formulate alternative plans
4.Evaluate alternative plans
5.Compare alternative plans
6.Plan selection

*Stakeholder Involvement – at the center!

*Iterative – keep revising!

*Risk-informed
•What information/analysis is necessary to make the next decision?
•What is the uncertainty, likelihood, and consequence of project risks?



THE USACE PLANNING PROCESS: WHAT IS A CHARRETTE?

A charrette:

- Is a meeting in which identified stakeholders in a project attempt to resolve conflicts and map solutions.
- Originates from the French word *charrette,* in the 19th century Paris, where a little cart was used to collect architecture students' submissions when they were due.
- All submissions were consolidated and reviewed as a team to reach consensus on specific topics.

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THE CHAUTAUQUA CHARETTE

Charrette Goal: *Complete one iteration of the planning process*

1. Develop problems, objectives, opportunities, and constraints (Day 1)
2. Outline existing conditions and likely future conditions (Day 1)
3. Understand existing data, data gaps, and study analyses (Day 1 & 2)
4. Identify and screen management measures (Day 2)
5. Develop initial array of alternative plans (Day 2)

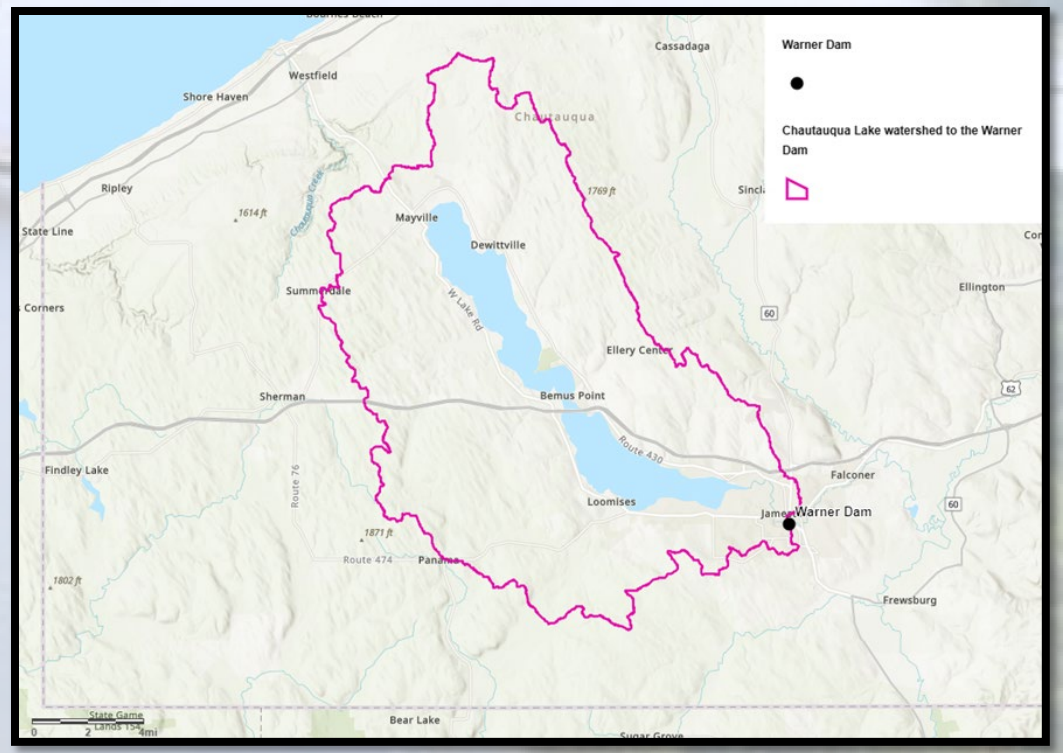
Agenda:

Day 1:

- Outline Existing Conditions & Future-without-project Conditions
- Refine the Conceptual Ecological Model
- Develop Problems, Opportunities, Objectives, & Constraints

Day 2:

- Refine Outputs from Day 1
- Identify Risks and Describe Uncertainty
- Brainstorm Plan Formulation Strategies
- Develop Management Measures & Formulate Alternative Plans
- Conduct Initial Screening Exercise
- Discuss Next Steps



CHARRETTE OUTCOMES AND LATER REFINEMENTS

Problem Statements:

Sedimentation caused by shoreline and streambank erosion resulting from land development and agricultural practices along the shoreline and through the Chautauqua Lake watershed have impacted the quality and availability of aquatic and deep-water habitats within Chautauqua Lake.

High nutrient levels caused by internal and external loading resulting from wind and wave action within the lake and runoff throughout the watershed have degraded optimal habitat parameters for native species and impacted biodiversity within Chautauqua Lake.

Sedimentation, nutrients, and changing precipitation and temperature regimes have resulted in favorable conditions for the growth of invasive and nuisance macrophytes within Chautauqua Lake that threaten native species, and impact local economics and recreation opportunities.

General Objectives:

1. Increase the quality of aquatic habitat located within Chautauqua Lake.
2. Increase the quantity of available aquatic habitat located within Chautauqua.
3. Improve the connectivity of aquatic habitats within Chautauqua Lake.

CHARRETTE OUTCOMES AND LATER REFINEMENTS

<u>Opportunities</u>: Benefits that may be realized through the implementation of a recommended plan.

- Improve the water management plan for the lake, including understanding lake level and hydrologic considerations.
- Improve the ability of the community to withstand and respond to impacts from a changing climate and increased development over time, with least harm done.
- Enhance recreation opportunities when compatible with overall ecosystem restoration.
- Increase public education and understanding of the lake ecosystem.
- Reduce maintenance costs for water supply infrastructure.
- Reduce costs for existing management efforts.
- Strengthen the economy of the region, and provide benefits to all communities located around the lake.
- Improvement water quality within the lake including: Harmful Algal Blooms (HABs), temperature, and trophic level index.
- Address flooding issues on upstream tributaries, along the lake, and to downstream communities.

CHARRETTE OUTCOMES AND LATER REFINEMENTS

Constraints – MUST AVOID

1. Avoid affecting water levels which are required for recreation and maintained by Warner Dam.
2. Avoid impacting public use of the lake permanently.
3. Avoid impacting public and private water supplies within the lake.
4. Avoid increasing flooding in surrounding communities.

Additions to consider:

1. Negative impact to fisheries
2. Downstream flow requirement for utilites

Considerations – INFORM THE PROCESS

1) Existing Conditions Considerations
   - Current efforts planned by others (Jefferson Project, County, Towns, NYSDEC, USGS, others?)

2) Alternative Formulation and Design Considerations:
   - The type of habitat for which the PDT should be designing.
   - The impact of changing precipitation and temperature regimes on our design choices.
   - Real estate considerations? Areas we need avoid?
   - How would dredging affect lake levels required for recreation?
   - Insect herbivory?

3) Alternative Comparison and Evaluation Considerations:
   - HTRW findings may affect project feasibility and cost.
   - Substantial O&M requirements may be unsustainable.
   - Uncertainty in long-term macrophyte response

4) Operations and Maintenance Roles & Responsibilities: Work that needs to happen outside the Corps's ability to ensure the project is sustained in future.

FUTURE WITHOUT PROJECT - WHAT HAPPENS IF NO ONE DOES ANYTHING?

We consider this outcome, so we have a baseline to compare our plan to.

- Streambank/shoreline erosion continues due to agriculture & increased residential development.
- Increased runoff & sedimentation. Continued nutrient issues.
- Decreased species diversity & abundance.
- Further loss of habitat & ecosystem function degradation due to HABs & nutrients.
- Increased sediment could cause the lake capacity to change.
- Hydrology will be influenced by climate trends, such as higher water temps, changing precipitation patterns, and less ice cover.
- Increased cover of invasive species.
- HABs could create issues with drinking water and recreational use of the lake.
- Economic impacts from lost recreation dollars from rentals, gas, food, and impacts to local businesses.

CHARRETTE OUTCOMES AND LATER REFINEMENTS - MANAGEMENT MEASURES BRAINSTORM

Measure	Measure	Measure
Dredge a portion of the lake	Beneficial use of dredged materials	Construct Shoreline Wetlands
Macrophyte management: Herbicides	Water mixing (break down thermocline, reduce anoxia) – north basin	Streambank stabilization of tributaries
Macrophyte management: Mechanical Removal	Proactive measures to detect new invasive (ex: boat wash)	Nutrient inactivation (e.g., in-lake aluminum sulfate or sodium aluminate), etc.
Macrophyte management: Biological control (weevils, triploid grass carp)	Additional treatment to public water systems; upgrade wastewater treatment plants	Construct bioswales, vegetative filter strips, retention or infiltration ponds, SW infrastructure
Shoreline cleanup	Private septic system upgrades	Sediment Traps
Invasive fish or mussel species management	Natural methods for sequestering the internal load (ex. Moss)	Education and awareness initiatives (e.g., informational signage)
Install nanobubblers	Conservation of critical areas in the watershed (e.g. protecting wetlands)	Improvement or creation of stormwater (SW) management plans
Enhance or expand vegetated buffers	Adjustment to the water management plan (what levels and when changes are made)	Warner Dam fish passage improvements
Replace hard armoring along shoreline with natural features	No wake zones & speed limits	Fish passage improvements throughout the watershed
Construct floating wetlands	Stricter development regulations for stormwater	

CHARRETTE OUTCOMES AND LATER REFINEMENTS – INITIAL MEASURES SCREENING

Example screening questions:

- Is a group already completing this management measure effectively?
- Is a group better suited to complete this management measure?
- What is the extent of future O&M that would be required?

Developed a refined list of management measures for initial optimization:

- Dredging
- Nanobubblers or other means of increasing DO / water column mixing
- Invasive species management – herbicides, mechanical, biological, diver-assisted suction removal
- Native species planting
- Wetland creation or preservation - shoreline, floating, riparian
- Shoreline improvements – remove/replace hard armoring
- Stream improvements – install/improve vegetated buffers, stabilize banks
- Nutrient inactivation – chemical, natural means
- Aquatic passage improvements – Warner Dam, upstream tributaries (connectivity to agriculture ponds)
- Adjustment to the water management plan for Warner Dam (higher summer water elevations)
- Installation of native mussels

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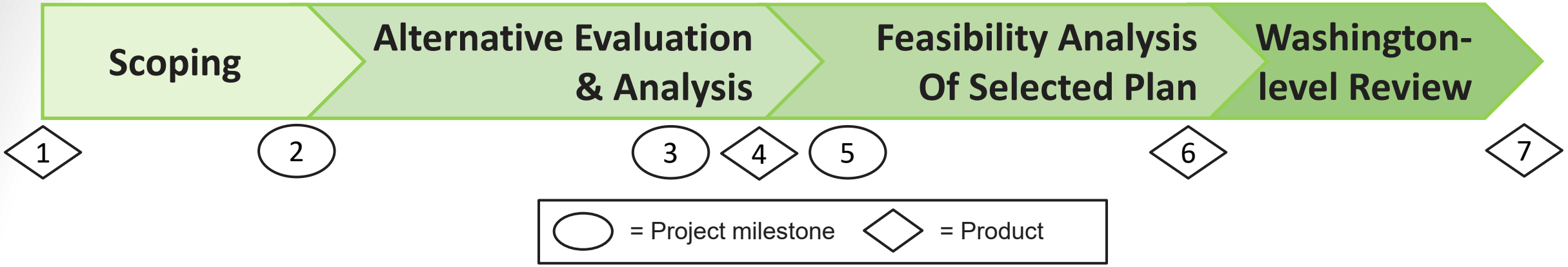
3. Next steps and schedule
   - What do we need from you? (Public participation and outreach)
   - How can you provide input?
   - Schedule?

WHAT'S NEXT? ALTERNATIVE EVALUATION AND ANALYSIS



Plan formulation and impact analysis may take a year to complete.
The array of alternative plans (including the "no action" plan) are compared against each other, with emphasis on the outputs and effects of each plan.

- Compare the beneficial and adverse effects of each plan including monetary and non- monetary benefits
- PDT will be required to select a model, collect the data, and conduct a Cost Effectiveness/Incremental Cost Analysis (CE/ICA) to identify the "National Ecosystem Restoration" plan.
- Conduct a high level analysis of impact on fish, wildlife and habitat of alternative plans.
- Identify ways to scale measures / alternatives to avoid or minimize negative impacts.

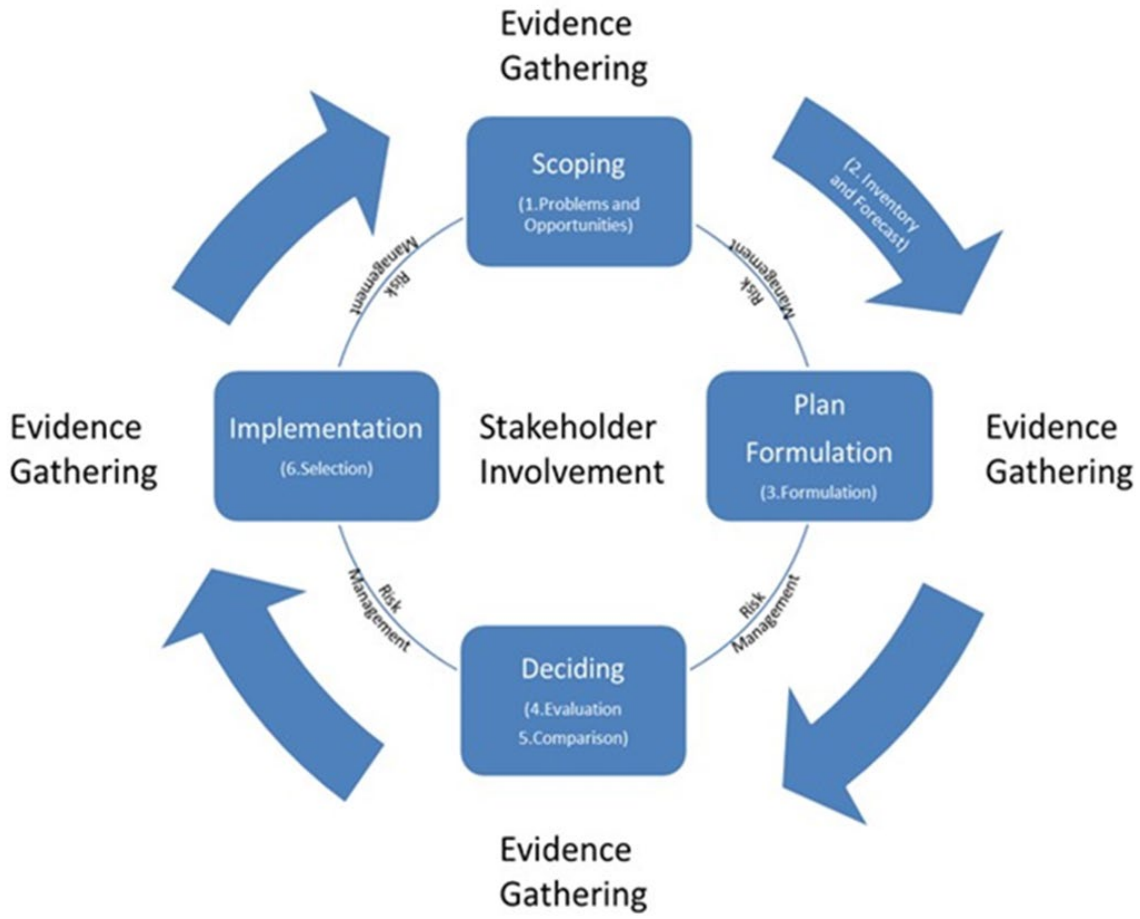
In this phase, the PDT will evaluate all alternatives and identify one as the "Tentatively Selected Plan," and release a draft Integrated Feasibility/NEPA Report for public and agency review.

WHAT DO WE NEED FROM YOU?

Public and stakeholder engagement is an important part of our planning process!

It is located at the center of our planning process for a reason.

We value and consider **all** public comments throughout the process.



HOW CAN YOU PROVIDE INPUT?

- Website: https://www.lrd.usace.army.mil/chautauqua-lake-aquatic-ecosystem-restoration-project/

- Public input on the map using link on website.
  - Where have you noticed problems?
  - Recommendations for places to focus?

- Project-specific email address: CELRP-Chautauqua-AER@usace.army.mil
  - Email your comments directly

MAP ON PROJECT WEBSITE: MAP YOUR OBSERVATIONS AND INPUT

Chautauqua Lake Aquatic Ecosystem Restoration Project

PITTSBURGH DISTRICT

Published March 11, 2025

PRINT | E-MAIL

The U.S. Army Corps of Engineers Pittsburgh District and Chautauqua County are undertaking a multi-year effort to restore the aquatic ecosystem of Chautauqua Lake.

Chautauqua Lake is a 13,000 acre, glacially-formed lake in Chautauqua County, New York. The lake and its associated wetlands historically supported myriad aquatic communities and a thriving, local and regional socioeconomic system. However, degradation of the aquatic ecosystem threatens the sustainability of Chautauqua Lake via three interrelated pathways: sedimentation, growth of nuisance aquatic vegetation, and harmful algal blooms (HABs).

1 of 2

- Sedimentation: excess sedimentation within the lake degrades the quality and availability of critical habitats (e.g., variability in depth, availability of spawning gravel), impacts navigation and recreation, and increases flood risk.
- Nuisance vegetation: accumulated sediments promote the growth of nuisance and invasive aquatic plant species, such as Eurasian watermilfoil, that have dramatically impacted this ecosystem and degraded recreational opportunities.
- HABs: sediment and nutrient inputs can contribute to increased HAB frequency and nutrients within the lake. There have been over 500 documented HABs since 2012, with 61 HAB notices being issued in 2022 alone. HABs affect human health risk due to recreation exposure and impacted drinking water quality and result in lost economic revenue. Increasingly, intense and frequent large rain events and associated erosion and sedimentation rates further degrade habit quality and availability within the lake.

MAP ON PROJECT WEBSITE: MAP YOUR OBSERVATIONS AND INPUT

2. **Alternatives Milestone Meeting (AMM).** Identify the federal interest in the project and the initial array of alternatives that will be analyzed.
3. **Tentatively Selected Plan (TSP) Milestone.** Present the tentatively selected plan to the vertical chain, and receive approval to release the report for public review.
4. **Draft Report Release for Public Review.** Release the draft report for public review.
5. **Agency Decision Milestone.** USACE endorses tentatively selected plan.
6. **District Engineer Recommendation.** The final report submitted for final review.
7. **Chief's Report.** Chief of Engineers presents the recommended action to congress for authorization.

Authorization

America's Water Infrastructure Act of 2018:

Authorizing the Secretary of the Army to "...conduct a feasibility study for...ecosystem restoration and flood risk management, Chautauqua [Lake], New York".

We want to hear from you!

As this project moves forward, suggestions, comments, or questions are welcome.

Please send us your comments via email at CELRP-Chautauqua-AER@usace.army.mil

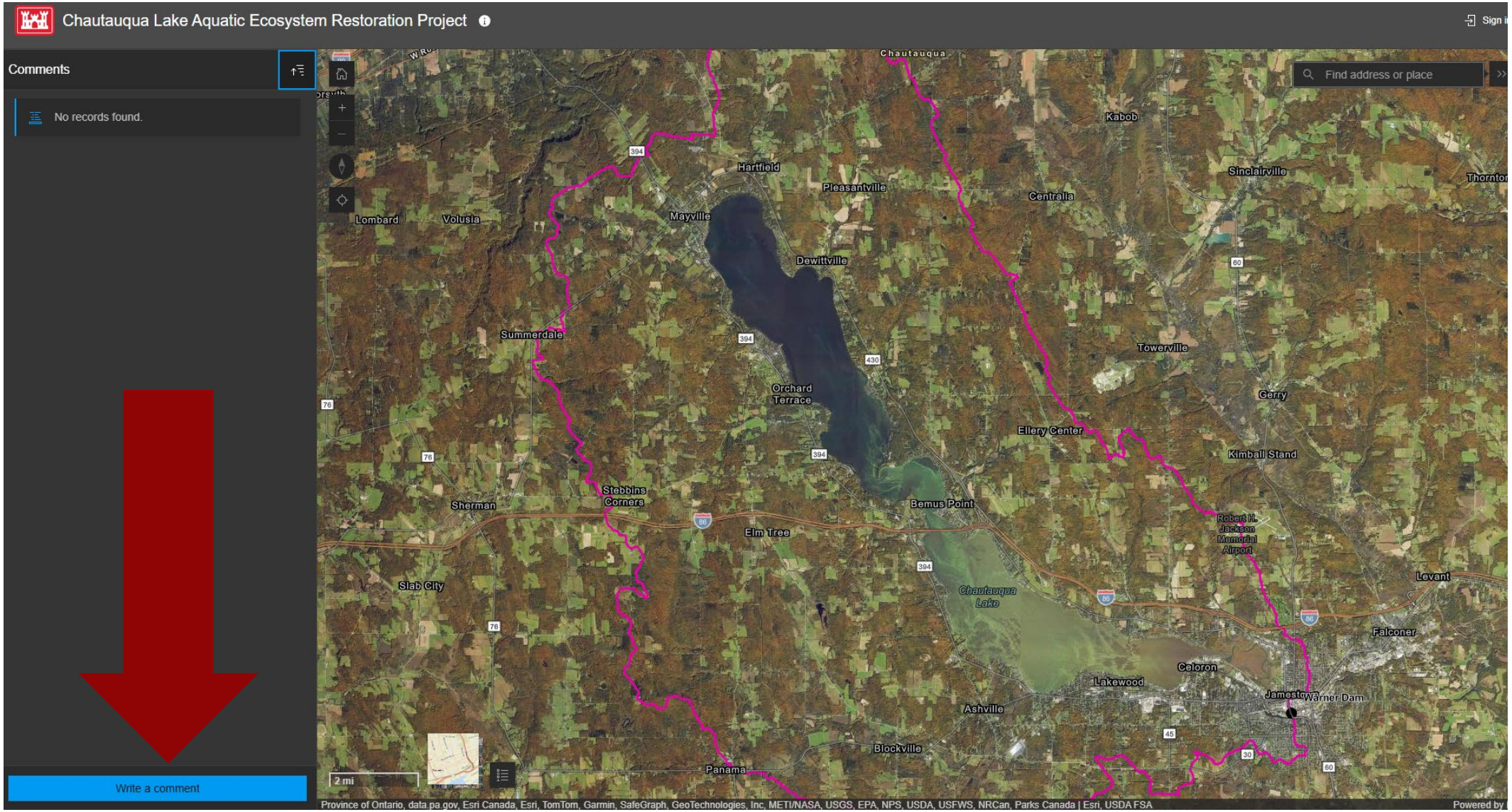
You can also provide comments or observations about specific locations at the interactive map below.

What we want to hear:

- What have you observed about the lake, and where?
- What aquatic ecosystem resources do you associate with Lake Chautauqua?
- What are the aquatic ecosystem resources that you think we should focus on with this project?
- What are the potential threats to the aquatic ecosystem that you observed?
- What other information about the aquatic ecosystem should we be aware of?

Interactive Map of the Chautauqua Lake Aquatic Ecosystem Restoration Project

MAP ON PROJECT WEBSITE: MAP YOUR OBSERVATIONS AND INPUT



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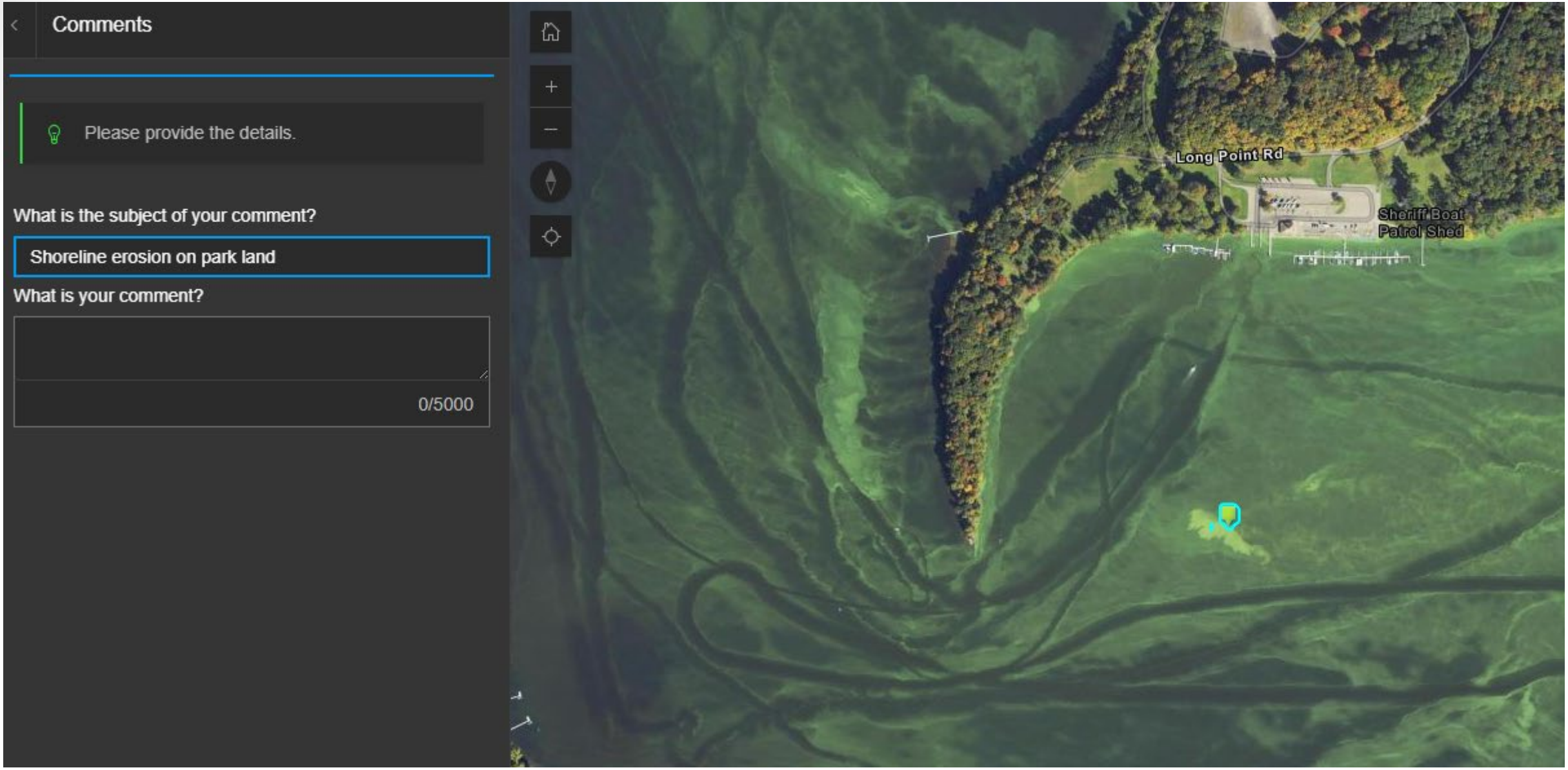


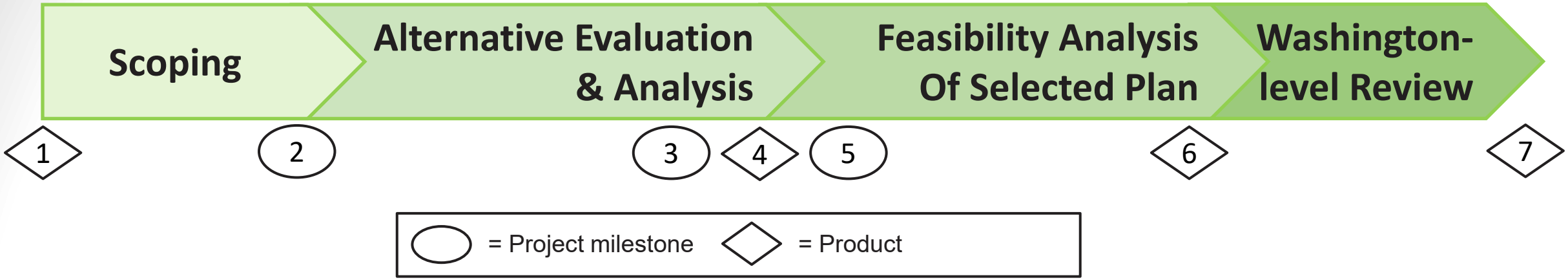
WHAT DO WE NEED FROM YOU?

<u>The 1st of multiple future public engagement meetings</u>:

April 9th – 2-hour virtual meeting from 6-8 PM

- Information about this meeting will be posted to the County's website and on USACE Pittsburgh District social media accounts.
- An agenda and webex link will be provided the week prior to the meeting.
- Comments will be accepted in the chat or verbally at the meeting.

SCHEDULE



1. **Feasibility Cost Share Agreement (***Completed Sept 2024)*
2. **Alternatives Milestone Meeting (AMM).** Identify the federal interest in the project and the initial array of alternatives that will be analyzed. ~May 2025~
3. **Tentatively Selected Plan (TSP) Milestone.** Present the tentatively selected plan to the vertical chain, and receive approval to release the report for public review. ~May 2026~
4. **Draft Report Release for Public Review.** Release the draft report for public review.
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6. **District Engineer Recommendation.** The final report submitted for final review.
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QUESTIONS? COMMENTS?