

## CPA PROJECT APPLICATION

Community Preservation Committee  
66 Westford Street  
Carlisle, MA 01741  
TEL: 978-369-6155 (Town Clerk) FAX: 978-371-0594

Please type your responses to the following questions:

### 1. Project Overview, Contact Information, Signatures

Project Name: Cranberry Bog Watershed Analysis Management Plan

Project Applicant: Sylvia Willard, Conservation Administrator

Amount Requested: \$56,000

Sponsoring Board or  
other organization(s)  
(as applicable): Carlisle Conservation Commission

Primary Contact Person:

Name: Alex Parra

Address: 31 Bellows Hill Road, Carlisle, MA 01741

Phone Number: (978) 407-8618

Email Address: alexparra902@gmail.com

Purpose: (please select all that apply)

- Community Housing
- Historic Preservation
- Open Space
- Recreation

Project location or address: 750 Curve Street, Carlisle, MA 01741

Signature of Applicant: Carlisle Conservation Commission

Print name: Dan Wells, Chair

Date: 3/1/2024

Signature of Chairman of  
Sponsoring Board  
or other organization  
(as applicable):



Print name: Dan Wells

Date: 3/1/2024

2. **Project Summary**

Provide a summary of the project.

*This project intends to conduct a scientific hydrologic study of the watershed impacting the Carlisle Cranberry Bog, its infrastructure formerly used for agriculture, evaluation of dam design options and for water outlet operation to manage pond levels. This is to be done to provide the best future management of the bog and to ensure best management practices for the infrastructure.*

3. **Project Description**

Provide a complete description of the project.

*Please see Attachment A. Email description of procedures from Andrew Walker of Weston and Sampson, dtd. 2/28/2024. The Conservation Commission is recommending \$40,580 for their services, an additional \$10,000 for any updated plans for Cranberry Bog Dam #1 and \$5,000 for permitting of any updated plans if needed by the Massachusetts Office of Dam Safety.*

4. **Responsible Parties**

Who will implement the project? Is there a project manager? Please list the name and contact information of these persons and any additional responsible parties – i.e. property owner, consultant (if applicable).

*Sylvia Willard, Conservation Administrator.*

5. **Timeline**

When will the project begin? When will it be completed? Are there multiple stages for the project?

*This project can commence once funds are available. Completion expected by the end of December, 2024.*

6. **Project Purpose**

State the purpose of the project and indicate how the project meets the general and specific criteria for funding CPA projects (see “Criteria for Project Consideration & Recommendation by CPC”). How will the project benefit the Town of Carlisle? Address current and/or future community needs? Impact Carlisle’s citizens? Preserve Carlisle’s character? Why should this project be funded this year?

*This project needs to be funded this year to be able to conduct a needed repair of this Cranberry Bog Dam #1 prior to a scheduled Dam inspection in 2025. The dam was rated in Poor Condition at its previous inspection in 2015. The infrastructure at the bog is widely used by the residents for trails in all seasons of the year and for ponds important for wildlife observation, fishing, ice skating. Having a science-based plan for management will assist with the future management of this valuable property and will be significantly appreciated by future residents and users.*

7. **Community Support**

What is the nature and level of community support for this project?

*Community feedback indicates that this project has wide support.*

**8. Jurisdiction or Ownership of Project Site**

Indicate if the applicant has jurisdiction or ownership of the project site. If applicable, attach a copy of the deed or purchase agreement for the property.

*This information was submitted for the CPC application for Restoration of the Fiske Street Dike submitted in mid-January. Please reference.*

**9. Permitting Requirements and Endorsements**

List permits or endorsements needed for completion of project, including any special permit, variance or other approval required by any Town of Carlisle Board or Committee.

*\$10,000 of the requested funding has been earmarked for a Cranberry Bog Dam #1 updated plan and a Wetland Protection Act application. An additional \$5,000 earmarked for potential Office of Dam Safety Review. The remainder of the activities for which funds are requested are activities exempt from permitting under the Wetlands Protection Act. See Attachment A.*

**10. Project Budget**

Attach a project budget. Expenditures and estimate of costs must be clearly identified and back-up documentation provided. If the project is expected to last more than one year, delineate the budget for each year. Distinguish between hard and soft costs. List any additional or alternate funding sources for the project. **CPA funds cannot be used for maintenance.** If ongoing maintenance is required, who will be responsible and how will it be funded? Indicate anticipated annual income (if any).

*See attachment A*

**11. Attachments**

List all attachments, including, but not limited to, photos, plans, maps, quotes, costs, estimates, and letters of endorsement.

*Attachment A*

*Resource Area Plan.*

**From:** Walker, Andrew <walkera@wseinc.com>  
**Sent:** Wednesday, February 28, 2024 1:33 PM  
**To:** Sylvia Willard  
**Cc:** Blair, TJ  
**Subject:** Cranberry Bog Dam #1 H&H Study

Sylvia,

Pleasure talking with you and Alex this morning. Here is an outline of what an H&H study might entail as well as a rough cost estimate. Everything I describe in the bulleted tasks below is included in the "Estimate" price unless otherwise noted. Please be aware that these cost estimates are preliminary in nature and for rough planning purposes only. A formal proposal from Weston & Sampson may deviate from these values although I have done my best to provide an accurate estimate.

#### Existing Data Review

- Review of existing reports, design drawings, inspection reports, and downstream flow data (assumed to be flow data, not water level data)

#### Survey

- One day of field work
- Use of hand-held GPS units to survey the hydraulic restrictions that control the split flow to both impoundments as well as a few key locations further upstream, at the project dam site, and potentially downstream
- No in-pond bathymetry included

#### Additional Data Gathering (Optional, not necessarily needed)

- Having never seen the existing flow data, it may be useful to install automated pressure transducers in the project impoundment as well as the other western impoundment in order to more accurately estimate how the response to upstream releases
- It may also be useful to monitor water levels in the upstream impoundment to better understand what is discharged from there

#### H&H Model

- Develop a rainfall-runoff model that includes the upstream flow split to more accurately estimate the 50-year design flood at the project dam
- Developed in HydroCAD using methods typically required/encouraged by the Office of Dam Safety
- Will include the upstream flow split
- Potentially calibrated based on historical flow data collected downstream to increase accuracy

#### Dam Rehab Alternatives Analysis

- Evaluate non-auxiliary spillway alternatives such as increasing capacity of the two existing outlets, raising the dam crest, or armoring the dam crest to safely allow overtopping flow
- The results of this analysis could inform a redesign of the dam rehab plans, but note that that work is not included anywhere in this outline as it would likely be completed by your existing engineer

#### ODS Coordination (optional)

- Coordination with ODS and your existing engineer regarding the results of the H&H study and how it might impact the currently proposed rehab design and associated permit
- Limited to 16 hours of coordination

**O&M Plan**

- Coordination re goals of outlet operations related to pond levels and downstream water levels
- Develop an O&M plan regarding the management of the two drop inlet outlets and long-term water level monitoring
- Will require additional extended duration H&H model simulations, potentially building off of the H&H Model developed above in Task 3, but that’s unclear at the moment

**Reporting & Meetings**

- Develop a technical memo or report summarizing development of the model(s) and its findings
- Up to 12 hours of meetings with client, regulators, and stakeholders

And here is the cost breakdown (below). I expect a solid H&H study could be completed for around \$32k. The two optional tasks are listed separately and may increase the total price closer to \$40k. A smaller firm might be able to do it for cheaper, something closer to the Low estimate. You may also find that when firms sink their teeth into it a bit more, that the unknowns and political aspect causes proposals to come in a bit higher. The High estimate is just 50% more than my best Estimate.

I hope this helps.

Andy

#	Task	Labor	Expenses
1	Existing Data Review	\$ 2,100	
2	Survey	\$ 3,600	\$ 400
2.5	Additional Data Gathering	\$ 3,700	\$ 1,400
3	H&H Model	\$ 5,000	
4	Dam Rehab Alternatives Analysis	\$ 2,400	
4.5	ODS Coordination	\$ 4,300	
5	O&M Plan	\$ 7,800	
6	Reporting & Meetings	\$ 9,700	
		Low	Estimate High
	Labor	\$ 20,196	\$ 30,600 \$45,900
	Expenses	\$ 1,980	\$ 1,980 \$ 2,970
	Total	\$ 22,176	\$ 32,580 \$48,870
	Optional	\$ 5,280	\$ 8,000 \$12,000
	Max Total	\$ 27,456	\$ 40,580 \$60,870

**Andrew Walker, PH, CFM**  
 TECHNICAL LEADER (HYDROLOGY)  
 direct: 603-570-6322



Weston & Sampson  
 100 International Drive, Suite 152, Portsmouth, NH 03801  
 tel: 603-431-3937  
[westonandsampson.com](http://westonandsampson.com)



## Resource Area Map

Cranberry Bog  
Carlisle, MA

Date: 3/28/2023



1 inch = 300 feet

0 75 150 300 Feet