

Minutes 4-10-18 meeting for the Harvey's Lake Dam:

Conference call attendees: Dylan Ford, George Coppenrath, David Price, Ron Rhodes, Candice Constantine, Danielle Owczarski, Keith Kantack.

Agenda:

A. Goals and Objectives

George Coppenrath suggested that we move item a. (Remove the dam and Town's liability) to lower on the list suggesting this is more of an objective than a goal. Danielle states that matches the grant requirements.

The top goals should be:

- b. To stop or reduce to the greatest extent possible back flow from South Peacham Brook into Harvey's Lake.
- c. Maintain existing lake levels and
- d. Provide aquatic organism passage through the site. This is the top state priority. And
- e. Protect infrastructure around the dam and the Harvey Mountain Road bridge from adverse impacts of dam removal.

B. Primary Map

a. Sand and silt findings: The sediment behind the dam is 1/2'-2' of fine sand in both channels. It is around 4500 cubic yards. Ron Rhodes stated that this is not that much considering. They removed 10,000 cubic yards in East Burke.

Ron asked about the potential removal of the sediment in the lake.

George Coppenrath stated that the sediment in the lake has created a delta with at least 4500 cubic yards. It has affected the fish habitat.

Candice suggested that this could be a possible add-on.

Danielle Owczarski stated that doing the initial check with regulations on this would be worth spending money on looking into as a regulatory possibility.

- b. The profile of South Peacham Brook suggests that the dam effects including sedimentation extend approximately 300 feet upstream of Harvey Mountain Road.
- c. Gravel and cobbles below the fine material would likely provide grade control at the bridge site following dam removal. The post dam removal profile is likely to have a gradient of less than 0.5%, suggesting that a gravel-bed channel characterized by riffles and pools will form naturally once the fine sediment is evacuated.

George: *If we take sediment out, will the lake level be at the orange line (around 885-887)?*

Ron: *It will be a much straighter line with less "blips".*

Candice: *Granite slabs will be removed from the lake outlet channel and high point near dam will self-correct.*

Nick: *Channel from lake will probably eventually be 4-5' deep.*

Ron: *If lake is at 885', the stream would arch up to 887' then down from there. Bottom of the "V" would be gone.*

Candice: *Possible realignment of river to historical alignment ... might do it by itself, but we could help. Below dam primary flow is on the west side with less flow on east. There is room to realign the channel away from houses. Some release of impounded material may be beneficial to flow.*

d. Lidar imaging from the wetlands report shows a possible former alignment of the South Peacham Brook on the west side of the valley where the brook enters the reservoir upstream of the dam (figure #4).

Candice: *If you look at the Lidar image (figure #4) you can see the possible historic alignment which the stream may align to. The channel may reoccupy this historical alignment on its own following dam removal, or realignment could form part of the design scope.*

Ron: *Realigning is expensive and we would need Army Corps permission which is hard to do.*

Danielle: *We have to look into whether or not the State would support permits for realignment. Do the benefits outweigh the cost and the work?*

George: *We will have to support the bank either way.*

Ron: *We will put the stream alignment potential into the sediment report.*

Danielle: *At what stage could Inter-Fluve investigate the structural integrity of the rock wall on it's own? We want to remove as much of the dam and fishway infrastructure as possible without risking the landowner's property.*

Candice: *We can look at the dam plans as a first step and then decide if any further investigations would be necessary to bottom out this issue.*

George: *Would it be possible to fill in the fish ladder with large stones?*

Ron: *We should prioritize the structural integrity of the walls and check with Historic Preservation.*

e: Downstream of the dam , the primary flow channel is located to the west of the valley and separated from a high-flow channel by a vegetated bar. Little sediment appears to make it past the dam, and thus, the downstream channel would benefit from some release of impounded material.

C. List of suggested alternatives by location. This list includes some alternatives that will likely be eliminated because of the associated risks but should be included initially to demonstrate consideration of the full range of options.

a. Dam

i. Remove full vertical extent of the dam and all appurtenances. This would have risks for properties.

ii. Remove the full vertical extent of the dam and most associated structures but leave the concrete wall forming the left bank. Could this remain alone structurally?

iii. Remove the full vertical extent of dam and most associated structures but leave the concrete wall forming the left bank. Shift the channel alignment to the right and build out the left bank.

b. Lake outlet

i. Construct a passive riffle structure that allows fish and loon passage immediately downstream of the existing lake outlet. Preferred option.

ii. Constructing the riffle structure closer to the confluence with the South Peacham Brook would be much more laterally extensive and invasive.

iii. A concrete weir structure would require maintenance by an owner. It is not preferable.

David: *We need to be mindful of the loon nesting in the outlet. Include Fish and Wildlife and LHA Loon Monitor, Jan Parsons.*

c. Harvey Mountain Road bridge

i. Do nothing: viable as this is not a high risk situation

ii. Do nothing and monitor

iii. Supplement bed material downstream of the bridge with larger rock to provide additional assurance of grade control. This is more expensive.

Ron: *Can we add material without compromising width of the stream? Should anything happen to the bridge in the future, we will most likely not be able to find grants to fix it. Wouldn't it be preferable to stabilize the grade with rock during the project when we will have grant money?*

Dylan stated that she would feel better about stabilizing during the project to avoid town costs later.

d. South Peacham Brook and floodplain restoration

i. Allow the brook to self adjust both vertically and laterally

ii. Realign the channel to occupy the apparent relic flow path. Remove localized high points (granite slabs) along the bed of the outlet channel.

iii. Remove accumulated sediment in overbank areas, resetting the floodplain to a lower level to maintain a similar channel/floodplain functional relationship. Could be combined with the realignment of the channel.

Candice: *This would be to maximize floodplain conveyance of floodwater in order to minimize potential back flow into the lake.*

iv. Incorporate large wood.

George: *What do you mean by large wood?*

Candice: *Large diameter trees and large root wads would be installed along the right bank of South Peacham Brook and/or on the floodplain between the brook and the outlet channel to provide habitat and discourage flooding from South Peacham into the outlet channel.*

Ron: *It is like a bumper. We use large root wads or large trees and sink them into the channels. The water hits the root wads and channels it back into the streams so it is not back flowing into the lake. I think Fish and Wildlife would support this idea. I really like this idea.*

Danielle: *What are the costs and benefits of each option? Like a high/middle/low range of cost? I would like to see that.*

Ron: *There are not usually dollar figures at 30% which is what this grant covers.*

Ron: *We need to send the various ideas to Army Corps and see which they can permit.*

Dylan: *What can we do regarding restoration to make this project to make this project more grantable and permit-able?*

Ron: *Write application to match grant needs.*

George: *During construction can we consider creating fishing holes/pools to promote recreational fishing?*

Ron: *We often direct placement of stones and obstacles during construction to create beneficial areas.*

D. Assessment Criteria

- a. Meets project goals and objectives
 - i. potential for black flow
 - ii. Lake levels
 - iii. Aquatic passage
 - iv. infrastructure risk
- b. Impacts/permitting
 - i. Wetlands
 - ii. Flood risk
 - iii. Sediment management
- c. Technical feasibility/construction constraints and opportunities
- d. Ecological benefits
- e. Land ownership
- f. Cost (Qualitative)

Ron: *We do not need a wetlands permit per se but more of a wetlands study. Dylan, are there any local permits (floodplain, zoning)?*

Dylan: *I will look into it, but don't remember any from the sediment removal project in 2015.*

Candice: *Could I get the information from the sediment removal project?*

Candice: *Will add grant opportunities, maintenance, historic resources to assessment.*

Danielle: *I would like to see quantitative cost as well. Group discussed cost banding or order of magnitude costs at this stage.*

Dylan: *Are there any foreseen downstream effects of removing the dam? I have already fielded some questions regarding this matter.*

Keith: *A brief look revealed no major problems.*

Ron: *A statement indicating no adverse effects downstream can be done in the 100% design. Will explain the downstream reach and impacts.*

George: *The dam doesn't actually keep the water back, but more slows it down.*

Ron: *Dam is only a speed bump ... not flood control element.*

Ron: No sediment testing was needed in Vermont on any project Ron has done.

Candice: *We will begin working on a draft of the feasibility report based on today's discussion and related action items. June 1 is the deadline for the final feasibility report under 30% grant. This report will be an outwardly facing document that the partners can share with the community.*

Call concluded.