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First name: Ian

Last name: Kluft

Organization:

Title:

Comments: I read the Spirit Lake Outflow Safety Improvement Project description. An idea occurred to me which I think may be helpful. The option of a pumping station outlet at the Spirit Lake debris dam has reliability issues for maintenance, accessibility and power for the pumps.

A related alternative is a siphon spillway because they can act like a pump once primed at a water level set by design. They start automatically without external power. And they draw water from below the lake surface, which suits Spirit Lake due to logs floating on the surface.

Since redundancy is part of the need of the system, 2, 3 or more parallel pipes should be considered to allow one to be shut down for maintenance at a time. Redundant pipes should also resist blockage by ice in the worst winter conditions.