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NATIONAL PARK SERVICE
WATER RESOURCES LABORATORY
COLORADO STATE UNIVERSITY
FORT COLLINS, CO. 80523
October 28, 1987

Patrick Lynch
Resource Management Specialist
Saratoga National Historic Park
R.D. 2 Box 33
Stillwater, N.Y. 12170

Dear Pat;

Please forgive the late follow-up to my August visit, but I have been preoccupied with a large number of unplanned administrative tasks. What I would like to do in this letter is to outline several different classes of variables and levels of effort for a resource inventory of the streams you showed me in August. The inventory is not meant to be an exhaustive list of every organism found in the stream systems in the Park, but a baseline of relevant physical, chemical, and biological variables that will allow the Park some management information and be able to act in an anticipatory fashion and monitor for future expected impacts. The letter cannot cover all aspects, so please feel free to call for elaboration and discussion on your program.

The following variables should be monitored with some regularity during the warm, ice-free, or growing season of the year. The frequency and intensity of measurement will have to be determined by your available time and resources. You should characterize different reaches of your streams, i.e., first and second order stretches, pool and riffle etc.

1) PHYSICAL: Hydrological discharge (see enclosure), temperature, & conductivity. Turbidity can be measured if you have the equipment.

2) CHEMICAL: Total or Kjeldahl Nitrogen, total phosphorous, dissolved oxygen concentration, pH, and (if you have the funds) dissolved and particulate organic carbon, and (if you are expecting sewage) ammonia and five-day biochemical oxygen demand.

3) BIOLOGICAL: Benthic macroinvertebrates from in situ substrates (see enclosed literature). You will have to decide which of the designs is most appropriate for your needs. Initially I recommend at least three collection dates: 1) Late spring, 2) Midsummer, and 3) Autumn, more frequently if you have the resources. The substrates should be allowed to colonize for several months prior to collection. As we discussed you can enumerate the taxa at your leisure, but some provision should be made for permanently archiving the invertebrate collection for comparison with future samples. In addition you should note the taxonomic composition of the fish community in various reaches of the stream.

The frequency and intensity of measurement is highly dependent on your resources, but let me make some general comments. The physical and chemical variables should be collected every time you sample. Two week intervals would be an ideal sample interval, however if your time and resources will not allow that frequent a sampling, you should make some provisions for characterizing critical times of the year. If you find your sampling effort will be used in a legal or some other contentious manner then some effort should be made to sample in replicate, particularly the macroinvertebrates. Again, the statistical question is too complex to be completely covered by this letter.

I have not yet been able to find the proper people to contact for the PCB monitoring in the Hudson at this time, however I hope to provide that information by the end of November.

Good luck. Call if I can be of more help.

Sincerely,

Terence P. Boyle Ph.D.
Research Ecologist

cc: Soukup