

## EXETER RIVER STUDY COMMITTEE MINUTES

March 24, 2011

### 1. Convene Meeting:

Chairman Lionel Ingram, Don Clement-Selectmen Rep., Rod Bourdon, Paul Vlasich-Town Engineer, Mimi Becker, Ginny Raub and Kristen Murphy – Natural Resource Planner were all in attendance. Guest speakers: Brian Getz from Weston & Sampson. Lionel convened the meeting at 9:04 a.m.

### 2. Approve minutes of 2/17/11:

There was a motion made to accept the minutes of the February 17, 2011 by Mimi Becker and seconded by Rod Bourdon. Ginny Raub abstained since she had not attended the February meeting.

Lionel stated we added an item to the already posted agenda which is a briefing on the hydroelectric study that was performed by Weston & Sampson with Brian Getz giving a power point presentation. One aspect of keeping the dam would be if the dam was useful for hydroelectric power. Lionel wanted to reiterate this is not part of the project that Paul Vlasich and the Selection Committee (SC) have been working on for the feasibility study. This is just another separate option to look at.

### 3. Status of the Consultant Search – Paul Vlasich:

Paul Vlasich updated the committee on the search for the consultant. Paul walked through what has happen since the last River Study Committee (RSC) meeting and the update on the selection of a consultant for the Dam Removal Feasibility Study. Paul started off by stating it has been very difficult narrowing down and selecting a consultant due to the amount of funding the Town has. There just isn't enough money to do what we have requested to be done. Paul reviewed the funding the Town has to work with, as follows:

- ❖ EPA Grant - \$60,000.00
  - ❖ 2010 Town Warrant - \$40,000.00
  - ❖ Gulf of Maine Grant Counsel Habitat Restoration - \$40,000.00
- Making the total budgeted amount **\$140,000.00**

Paul stated the finalist exceeded this number so he met with Lionel Ingram and Deb Loiselle (NH DES Dam Bureau). They reviewed if the dam were to be modified what type of tasks and permits would the Town need to go through. The reason this was brought up was the same as a year ago where the committee was asking where they could get extra money. They went back and reviewed common tasks. They also met with Russ Dean, Town Manger to discuss appropriate use of the money. There was still a shortfall of \$8,000.00 and Paul went back to the consultant and got a draft copy of another proposal. It was still too high so there needed to be more reviewing of the tasks and pull items out in order to get the project rolling.

Paul also stated that Deb Loiselle mentioned another potential grant opportunity available is from the NH Charitable Foundation (NHCF). This would be in the amount of \$20,000.00 with an April 1, 2011 deadline for application. Paul stated the town of Milford, NH, who is doing the same type of project the Town of Exeter is doing was able to max out the grant they received from the NHCF. Paul stated that Phyllis Duffy will be writing the grant and stated he may be asking for support letters from the RSC.

In the meantime, Paul will pursue a contract with the consultant leaving out one of the add alternatives i.e., sediment alternatives. Paul stated there is a 75 to 80% chance we may not need this add alternative. After that is worked through with the consultant Paul stated there should be a draft contract by Tuesday, March 29, 2011. Certain tasks need to be assigned for the Gulf of Maine grant money. The consultant made an assumption on where to cut due to past experience and revised the schedule and put a cost to the cuts. Paul stated he will have more information from the consultant in order for him to make a decision soon.

Once this is all done Paul will go through the draft contract and submit it to the SC for a review and final decision and recommendation. Once the committee is satisfied with the dollar figures one thing that needs to happen is, early on in the EPA grant of \$60,000 and later with the Gulf of Maine grant of \$40,000, Paul stated we had to estimate certain tasks and assign which program will be paying for what tasks. Now that we have harder numbers from the consultant we need to go back and make sure those assumption are still accurate and maybe modify them as necessary. Paul stated he is not actually sure what that entails but Sally Soule, NH DES and Deb Loiselle will help with that.

Lionel looked to Paul for confirmation, “So we are close to choosing a consultant?” Paul replied yes.

Don Clement asked Paul to embellish on leaving out the full sediment alternatives and would it be upstream or downstream. Paul stated it would be upstream and deals with the toxicity, bioassay and the community assessment. The 20/80% is based on the consultants past experience with the projects they have done.

Paul stated the consultant whom he has been working with now knows he will most likely be the chosen one so Paul has asked him to crunch the numbers more. He will be receiving more information from the consultant next Tuesday. Paul stated in the past the committee has talked about wanting photo renditions of the river as a visual to use later to show the public what it would be like after dam removal. None of the consultants had put in the rendition part of it. Paul felt if the Town was asking for some additional grant money we could add on to what the Town is short by adding on the renditions. Paul mentioned he will be meeting with the consultant to get an estimate of what it would cost for the photo renditions of the river if the dam should be removed. He will put that cost in the NHCF grant.

#### **4. Discussion of Future Tasks for the River Study Committee (RSC)-Lionel Ingram:**

Lionel Ingram stated the committee needs to look closer at water and sewer issues.

Mimi Becker first wanted to make some comments on future tasks. There are future task that the Working Committee has to pick up that have been put off from the public meeting last spring Mimi stated. Mimi also stated she is concerned with the designation of the delegation of the Squamscott/Exeter River if it is successful and given current discourse in the legislature that is still in question, Mimi feels the committee needs to think about communicating with the water shed advisory committee and what the implication are for how the Town considers the river from the perspective to the fall line. Lionel stated this does fall into Phase II, Mimi agreed.

Also, what has hit her and other people between the discourse at the deliberative session and the vote over the water supply issue and the Jady Hill issue was the lack of clear creditable information and data that the public could use. Mimi’s thoughts were if the Town is still considering the river as a system and there is continued demand on surface water for drinking water supply and for waste water treatment, we need to start thinking of those things. There are going to be things that are going to cross over from issues of water and sewer and things the committee has to be concerned about. Mimi stated the committee should try and figure out what some of the issues are and deal with them. Lionel stated the committee has to be careful on not crossing into other committee’s territories and tasks. But ask how the RSC can contribute to these other committees and tasks.

Don Clement informed the committee that EPA has issued their draft permit for Exeter’s Waste Water Treatment Plant (WWTP) on nitrogen levels. The permit is telling us we have to get down to 3mg per liter of nitrogen level. There are other issues from EPA Executive Decision. One executive order is to better our Combined Sewer Overflow (CSO). Don also stated a lot of issues are related to the health of Great Bay. Don mentioned that Exeter River Local Advisory Committee (ERLAC) will be updating the watershed management plan.

Mimi Becker stated the committee needs to be cognizant of those things that are going on; related to specifically our terms of reference and mandate. What’s going to hit the press on the WWTP? How to educate the public on

run off and its impact? The public needs to understand the impact of what they do to their land and how it impacts the runoff also what the Town needs to do. The Town needs to identify what are the best management practices. The Town needs to look at updating their zoning ordinances and the capacity to enforce them. How is the Town going to deal with the septic system policy?

Lionel Ingram stated there are a couple of things the RSC could do. One being, the committee might be the ideal place to bring all the various aspects together from other committees and periodically discuss them. If these other committees have updates have them come and talk at a RSC meeting so the public can hear. Second being, listen from the RSC perspective and decide should we become involved. Lionel stated he will keep future tasks on the RSC's agenda as a discussion topic. Lionel thought the RSC should go out to various organizations in Town and let them know what we're thinking and that we would like to have them participate in this forum and go from there.

In essence, the RSC could be the clearing house for issues that concern the river and a consensus builder against the various groups that at time may have competing interest.

Ginny Raub asked if anyone receives agenda's from other committees. No, not yet replied Lionel. Lionel asked all the RSC members to let him know of upcoming meetings with the various committees. Mimi stated she could ask Piscataqua Region Estuaries partnership (PREP) to send their community outreach coordinator to brief the RSC on their outreach strategy. Don Clement stated that PREP puts out a monthly newsletter.

## **5. Presentation on "Exeter Hydroelectric Study Review" – Brian Getz**

Paul Vlasich gave a brief introduction and referenced the idea of hydroelectric power being around since the early 1980's. Paul asked Weston & Sampson to give a proposal for very short money by taking a look at two reports that were out there when hydro power was discussed in the early 1980's. Basically to take those reports and look at it in today's eyes with updated knowledge of river flows and also what we know of the regulations that might be. This was funded with left over monies in Dam Repair and Utility accounts. Paul explained Weston & Sampson should tell us what we need to know today, it wasn't to go out and fully find how we can do something, it was to tell us what we already have with today's ideas. Weston & Sampson was chosen because they just did the ground water studies; they had update river flows, they had looked at all of the issues with flow requirements and fish etc. Paul passed it to Brian Getz from Weston & Sampson to tell the committee what he has found in the guidelines Paul had set.

Brian passed out copies of the PowerPoint slides<sup>1</sup> on the Exeter Hydroelectric Study Review of the updates of the 1981 studies and a draft executive summary. Brian noted the executive summary summarizes in text what he talked about.

A discussion and Q & A followed Brian's presentation.

**Q.** Rod mentioned the gauge at Haigh Road is way off balance to Kimball Road and Court Street. You could walk across the water at Haigh Road where the gauge is but it could be flooded at Kimball Road and Court Street Rod stated. Is it because of the dam? Don Clement mentioned the dam is the one on the west side of Route 125 in Brentwood which is a private dam.

**A.** Brian replied most yes.

**Q.** Paul Vlasich had a question on the economics of it mentioning the bond payback of \$186,000 per year for 20 years and compare that cost to what you can generate for

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<sup>1</sup> Attached to the bottom as part of these minutes.

electricity, an estimate of \$26,000 and looking at the economics of the study and relate it to today, it's a no go. Paul questioned, you would lose money, correct?

A. Brian stated yes, correct.

Q. Paul stated the reports shows hydroelectric power isn't necessarily "green" because of the impact up stream and to the fish. How do you work around having a hydro power scenario where you don't impact the fish and safeguard fish from entering the intake?

A. Brian stated he talked with Wayne Ives about the micro hydro and since Wayne was not at the meeting to speak Brian spoke unofficially that the way its looked at is with the in stream flows, of what the river was, and what do we do to take it back to what it once was, if the Town puts in a proposal even in using micro hydro it's a case by case and not a one size fits all and couldn't answer that.

Q. Paul Vlasich mentioned the study shows a 100 kw generator but also mentioned that Amesbury, Ma. has a smaller 24 kw generator. Could you tell us what the smaller generator would mean, the number of houses?

A. Brian stated the DOE data base shows the average NH household usage is 623 kw hours per month. Brian stated they crunched the number for the 100 kw it would be 35 homes divide by 4 quarters and it would be about 8 homes. Lionel stated, "Or the library".

Mimi Becker stated since we're supposed to be thinking about habitat and restoration as well as energy efficiency we may be looking at an issue that we have to identify and assess the potential conflicts and what the consequences of one over the other are before a decision is made even if the Town decided to provide power for the library.

## **6. Public Comment:**

A member of the audience asked about maintaining the levels of the river for use of drinking water. Lionel asked if that answer could be postponed due to the fact they will be covering that area in future meetings. The member was agreeable.

## **7. Adjourn the Meeting:**

The meeting was adjourned at 10:47 a.m. The next meeting was set for Thursday, April 21, 2011 at 9:00 a.m. in the Nowak Room of the Town Office.

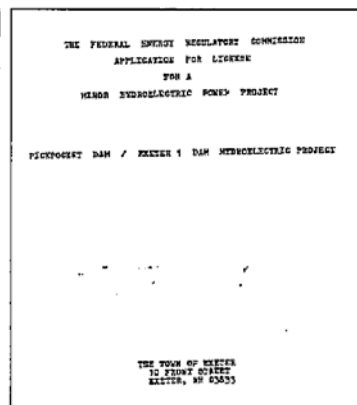
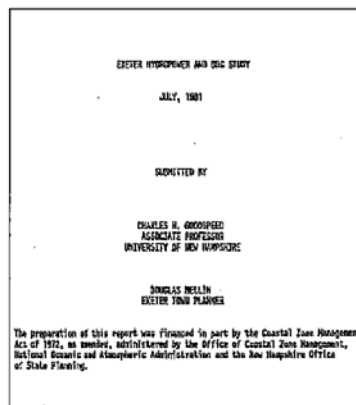
Respectfully Submitted,

Grace Rogers  
Public Works Office Manager

Exeter Hydroelectric Study Review  
prepared for the  
Exeter River Study Committee  
March 24, 2011

**Weston&Sampson®**

Reviewed Two Documents  
Both Authored by Dr. Charles Goodspeed



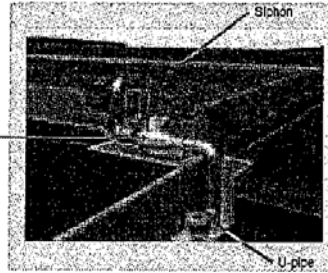
## 1981 Study

- Focused on the feasibility of hydroelectric power generation at the Great Dam
- Calculates that a combination of a 50kW primary turbine along with a 150kW secondary turbine would produce the most electricity.
- Ultimately recommended a single 100kW siphon turbine at the Great Dam as construction costs would outweigh the increased production achieved by multiple turbines.
- Relied on discharge through the Mill buildings to get the most vertical drop and hydraulic head

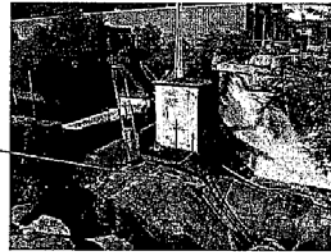
## 1981 Application

- Proposed two hydroelectric projects
  - A 269-kW unit on the Great Dam and
  - A 133-kW unit on the Pickpocket Dam
- More traditional turbine and discharge
  - Similar to the existing Brentwood Hydro Dam
- Application was prepared but never formally submitted

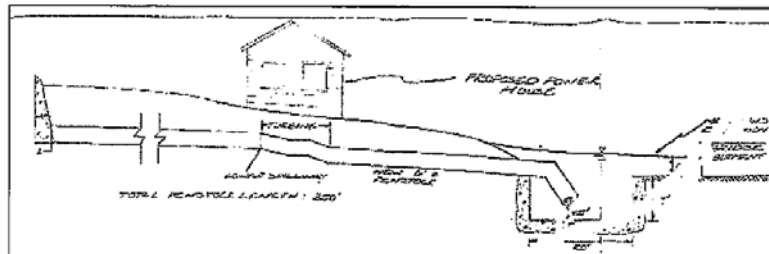
- Siphon and Turbine



- Brentwood Hydro Dam



## 1981 Application Components





## 1981 Capital Cost Estimate

- The 1981 license Application contained preliminary design layouts for the modifications to the Great Dam and Pickpocket Dam, as well as basic cost estimates for each design as follows:
- Pickpocket Dam - \$324,790
- Great Dam - \$447,490



## 2012 Capital Cost Estimate

- Updated utilizing the Boston-area Construction Cost Index (CCI) which has shown an increase of approximately 375%:

Table 1. Opinion of Probable Hydropower Construction Costs

|                            | Pickpocket Dam      | Great Dam           |
|----------------------------|---------------------|---------------------|
| Capital Cost               | \$ 1,580,000        | \$ 1,964,000        |
| Contingency (approx 20%)   | \$ 316,000          | \$ 393,000          |
| Engineering and Permitting | \$ 150,000          | \$ 200,000          |
| <b>Total</b>               | <b>\$ 2,046,000</b> | <b>\$ 2,557,000</b> |

1. Exact quotes for construction estimates are difficult to surmise without a more detailed design and sizing of system components.
2. The Engineering and Permitting allowance is an estimate based on an assumed level of effort and a significant amount of contingency due to the unknowns with respect to FERC licensing requirements.

## 2012 Financing Estimate Annual Payment on 20-year Bond @ 4% Interest

- Pickpocket - \$148,344
- Great Dam - \$185,939
  - only capital costs, not including operating, depreciation and other potential costs

## Revenue for Great Dam Through "Net Metering"

- 1981 Study used the assumed fixed rate of \$0.077/kWh for 470,000 kWhs of hydroelectric generation from the Great Dam, giving an annual Gross Operating Income (GOI) of \$36,190.
- Updating this estimate with the approximate electrical rate in 2011 of \$0.10/kWh for 470,000 kWhs of annual generation would give a GOI of \$47,000.
- If the operating parameters were updated to allow generation from November through March, which would generate an estimated 263,278 kWh then the annual GOI is estimated to be \$26,328.

## Revenue Estimate Based on Anticipated 2011 Operating Parameters

| Updated Power Yield Analysis Using 2011 Electric Utility Rates   |          |          |          |          |          |          |          |          |          |          |          |          |
|--|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Great Dam  | Jan      | Feb      | Mar      | Apr      | May      | Jun      | Jul      | Aug      | Sep      | Oct      | Nov      | Dec      |
| Rated Flow   | 760      | 760      | 760      | 760      | 760      | 760      | 760      | 760      | 760      | 760      | 760      | 760      |
| Flow   | 760      | 760      | 760      | 760      | 760      | 760      | 760      | 760      | 760      | 760      | 760      | 760      |
| Energy   | 8760     | 8760     | 8760     | 8760     | 8760     | 8760     | 8760     | 8760     | 8760     | 8760     | 8760     | 8760     |
| GOI  | 66,920   | 66,920   | 66,920   | 66,920   | 66,920   | 66,920   | 66,920   | 66,920   | 66,920   | 66,920   | 66,920   | 66,920   |
| Energy production w/losses due to wind power output and pipeline | 458,439  | 458,439  | 458,439  | 458,439  | 458,439  | 458,439  | 458,439  | 458,439  | 458,439  | 458,439  | 458,439  | 458,439  |
| GOI  | 45,844   | 45,844   | 45,844   | 45,844   | 45,844   | 45,844   | 45,844   | 45,844   | 45,844   | 45,844   | 45,844   | 45,844   |
| GOI  | 45,844   | 45,844   | 45,844   | 45,844   | 45,844   | 45,844   | 45,844   | 45,844   | 45,844   | 45,844   | 45,844   | 45,844   |
| Potential revenue (if running entire year)                       | \$45,844 | \$45,844 | \$45,844 | \$45,844 | \$45,844 | \$45,844 | \$45,844 | \$45,844 | \$45,844 | \$45,844 | \$45,844 | \$45,844 |
| Potential revenue (1981 Study Operating Parameters)              | \$36,190 | \$36,190 | \$36,190 | \$36,190 | \$36,190 | \$36,190 | \$36,190 | \$36,190 | \$36,190 | \$36,190 | \$36,190 | \$36,190 |
| Potential revenue (2011 Anticipated Operating Parameters)        | \$26,328 | \$26,328 | \$26,328 | \$26,328 | \$26,328 | \$26,328 | \$26,328 | \$26,328 | \$26,328 | \$26,328 | \$26,328 | \$26,328 |

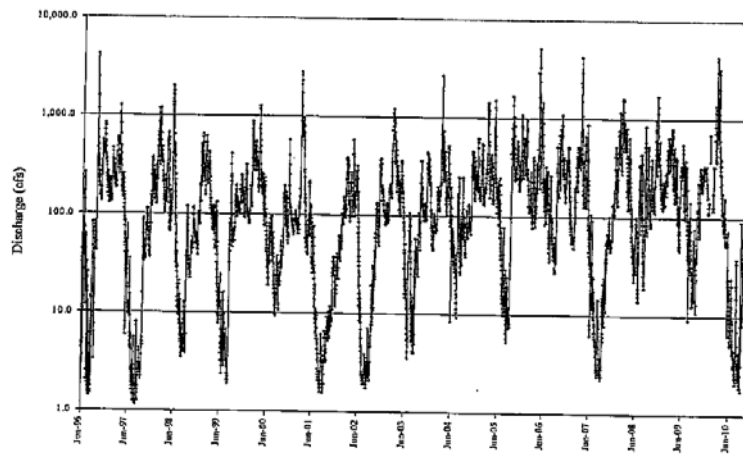
1981 Study – Assuming Operation for the Entire Year

1981 Study – January through June Operation

Anticipated 2012 Operating Parameters – November through March

Turbine would be idle during these periods due to low flow or anticipated operating restrictions

## Exeter River Flow Regime



## Discussion with Dr. Goodspeed

- The license application was drafted but was never submitted
- The project at the Great Dam was more feasible if two- or three-foot flashboards were installed on the dam to increase the ability to capture flow and increase the head going to the turbine, which did not prove favorable in discussions following the study due to impoundment and flooding concerns.
- The project originally was designed to have inexpensive turbines installed; however, they were no longer available once the license application was drafted
- The potential for hydropower was put forward as another reason the Town might want to acquire the dams.

## Discussions with Regulators

- FERC Licensing is intensive process
  - May take 3 to 7 years. This is why many smaller hydro projects are not carried forward
- Fish passage is major issue and would have to be addressed
- Other communities have been inquiring about this potential but they have not come forward with applications
- Instream flow regulations would most likely be triggered
- Multiple agency reviews, comments and requirements

## A smaller “micro-hydro” project may be more feasible

- May not have to rely on existing dam and headworks
- Would be able to run a greater % of time
- Counting House Project (funded by the Massachusetts Technology Collaborative) in Amesbury proposed a 24 kW turbine @ an estimated construction cost of \$300,000 but hasn't gone forward due to regulatory concerns. This project had a payback estimate of approx 10.5 years.