

March 6, 2008

Mr. Courtney McCracken  
Project Manager  
Brown Facilities Management  
295 Lloyd Avenue  
Providence, RI 02912

**Re: CHP Operating Costs**

Dear Courtney:

At your request, we are pleased to submit our proposal to estimate the operating cost penalties for the Central Heating Plant (CHP) during the 2006/07 heating season as a direct result of the sand contamination of the high temperature hot water (HTHW) system.

A. Project Understanding

The existing CHP uses a combination of #6 fuel oil and natural gas in the production of HTHW for heating the Brown campuses. Due to the sand contamination of the HTHW system in 2006, the high pressure boilers in CHP were shut down in the 2006/07 heating season, and temporary boilers firing #2 fuel oil were used instead to provide heating to the campuses. In addition, large quantity of makeup water was consumed due to frequent blow down at the boilers to control the silica level in the HTHW system. As a result, Brown incurred considerably higher energy and water cost than the previous years.

The objective of this project is to estimate the operating cost penalties in CHP caused by the change of operation during the 2006/07 heating season.

B. Scope of Work

Brown will make available CHP operating logs, and fuel (oil and gas) and water bills for 2006/07 as well as five prior years.

We will review the data of the prior years and establish a norm for the fuel and water usage by the CHP in normal operation which will be used as the basis for comparison with the 2006/07 fuel and water usage. The comparison will take into the account the weather data and historical operating hours and output of the individual boilers (HP and LP) in the CHP which would have an impact on the fuel consumption. The differences in fuel and water consumption will then be translated into cost based on the 2006/07 fuel and water rates.

We will summarize the results in a letter report. We will attend a total of three meetings.

C. Fee

We will provide the services for a lump sum fee of \$32,000. Expenses for reproduction, out-of-town travel and living will be reimbursed at cost. We estimate the reimbursable expenses not to exceed 1500.

We appreciate the opportunity to provide our services to you. If you have any questions with regard to the above, please do not hesitate to contact us.

Very truly yours,

**WM Group Engineers, P.C.**



Douglas Wen, P.E.  
Vice President