LINCOLN PUBLIC SCHOOLS

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ADMINISTRATOR FOR BUSINESS AND FINANCE

March 17, 2010

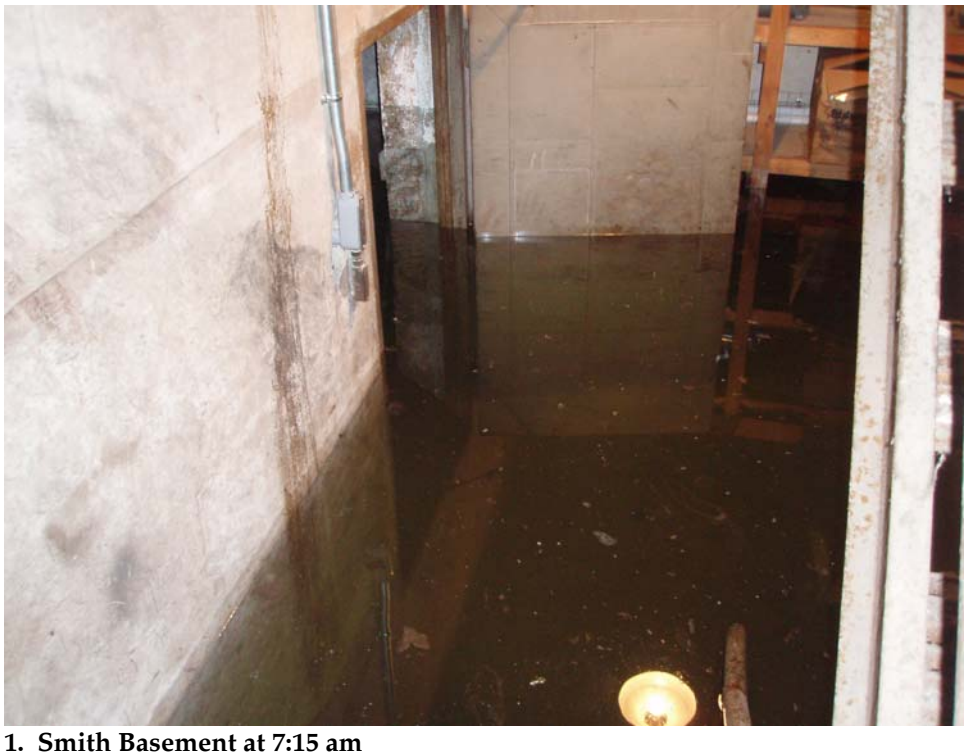
To: School Committee
Michael Brandmeyer
From: Buckner Creel

Subject: Update on Flood Damage – March 2010

Background. The Ballfield Road Campus is built on a former swamp, and has a high water table which rises seasonally and during periods of heavy precipitation. The two boilers and their associated circulation pumps providing heating to the Smith Building are located in a basement under the entry and school office; the floor of the basement is almost 12 feet below the first floor level.

The Smith basement is continually wet for most of the year, and floods under certain conditions. There are two sump pumps (normal and back-up) fed from the emergency generator which have sufficient capacity under most conditions. The basement has flooded to a level damaging major items of equipment at least 6 times in the past 22 years.

Initial sequence of events at Smith. Unusually heavy rains of almost ten inches during the March10-14 period, following a ground thaw period, resulted in a rapid rise in the ground water table on the Ballfield Road Campus. Sometime during the night of Sunday, March 14, the rate of inflow exceeded the capacity of the sump pumps to eject the water, and the basement began to fill with water. We could find no evidence of a power outage, but the external phone lines went down sometime after 8:00 pm on the 14th, complicating the subsequent recovery effort.



1. Smith Basement at 7:15 am

The flooding was discovered by the Smith day custodian, Mark Mazerolle, upon his arrival at 6:30 am Monday morning. He instituted a series of emergency calls, and recovery efforts began almost immediately. I measured 4'5" of water in the basement on my arrival, after 7:00; the boiler firing equipment is about 3 feet off the floor, and we anticipated significant boiler damage as a consequence of the flood. The Lincoln Fire Department responded quickly, helped evaluate that the conditions were safe for staff and students, installed a 1" pump and reversed the inflow by 7:20. After calculating that the rate of pumping would empty the basement in 16 hours, we looked for additional pumping capacity. While Chief Cotoni explored installing one of his trash pumps, the Superintendent was able to procure another I" pump from Lincoln-Sudbury RHS, which doubled the capacity sometime between 10 and 11:00am.

During this time, Steve McKenna arrived and began exploring alternative plans for education. Complicating his planning was the lack of heat; the temperatures in the Smith classrooms ranged from 50° to 60°F. With the cooperation of his faculty, he received the students, relocated those most affected and arranged for warming rooms in Brooks. The water heater in the Brooks basement was also under water, so the Board of Health gave us a one-time authorization to prepare and serve lunch from the Smith kitchen using alternative sanitation methods. Education happened Monday, although it was clear that systems would not be restored in sufficient time to support school on Tuesday. With classroom temperatures expected to drop overnight, the Superintendent had no option but to close the Lincoln School on Tuesday, March 16th.

Hanscom. Several emergency conditions at Hanscom required the initial attention of Michael Haines, Maintenance Coordinator. The rain caused faults in the HPS alarm system, and roof leaks rendered classroom E-3 in the HMS unusable. After arranging for emergency response from the custodians and the alarm system company, Michael was able to switch his attention to the Lincoln recovery efforts.

Brooks. While groundwater had poured into the Brooks crawlspace, roof leaks and the septic system posed a greater problem. The Brooks pump station was in alarm, which was caused by an inflow of water from the leaching field into the pump chamber. The septic system company, Hall Pump, verified the correct operation of the pumps and controls, and then pumped 1,000 gallons from the tank to give us sufficient capacity for the days operations. This took the system out of alarm. The three Lincoln custodians working together were able to contain and clean up after the worst of the roof leaks in Hartwell, Brooks and Smith, although the leaks continued until the rain stopped in the evening.

Recovery at Smith. During the afternoon, we determined that the energy management system (EMS) was non-responsive, so the EMS vendor ENE Invensys was placed on standby for 6:00 am on Tuesday, along with the boiler service company, Dillon Boiler. Knowing they are familiar with our boiler plant, Michael directed Dillon to begin assembling the parts they thought would be needed to bring the boilers on line. I walked the basement when the water level was down to a foot above the floor, and was amazed to find that the sump pumps were still functioning, and the indicator lights on the boiler controls still lighted.

While the basement was essentially pumped down by 6:00 pm, the water inflow still exceeded the sump pump capacity so we left one 1" pump online until about 2:30 am

Tuesday morning. At that point, the inflow subsided to the point where the sump pumps contained the water level.

Recovery started in earnest when Dillon arrived at 6:00 am Tuesday morning. They quickly determined that one of the two circulation pumps was inoperable and needed to be replaced, and the computers and most of the micro switches in the boilers were damaged beyond . They focused on getting a boiler and the remaining circulation pump in operation under manual control, which occurred by mid-afternoon on Tuesday. On Wednesday, the second boiler was brought back on line, as well as the hot water heater. As of Wednesday evening, March 17th, heat and hot water has been restored, although the boilers are functioning under limit controls, as the EMS has not yet been brought back online.

Estimate of Damages. We were lucky that no structural damage to the boiler chambers occurred during the flood. The following estimated costs should be considered preliminary. Overall, the cost of recovering from the flood event on the Lincoln Campus may total $17,800; on the Hanscom Campus, ~$4,000.

- In the Smith boiler room, Dillon Boiler replaced both burner computer control boards, gas valves on one boiler and the hot water heater, three electrical switches, four relay switches and both fire eyes. Parts and labor are estimated to cost $8,400.
- ENE Invensys EMS programming will cost approximately $2,000.
- Hall Pump service to the Brooks septic pump station will cost approximately $2,500.
- Restoring the second circulation pump will cost up to $2,200 in parts, depending upon the extent of damage. The first circulator pump is running but making loud noises, so we may have to replace it as well, at the same cost of $2200.
- Miscellaneous materials will total about $500.
- Emergency response and troubleshooting the HPS fire alarm system will cost approximately $4,000.

We contacted our insurance carrier who informed us that the Town does not have flood insurance coverage. We anticipate covering these expenses with funds remaining in the facilities budget.

On the Hanscom Campus, significant leaks were identified at four locations in the HMS and one location in the HPS. These areas have been identified as roofs which have received significant repairs, but which are now failing and in need of replacement.

At the Lincoln School, significant leaks were identified at 13 locations. Perhaps most troubling were the leaks in Kindergarten classroom K107, the Link Library, along the flat roof near the clock tower, in the Bjork Computer Lab and in Brooks classroom B135. All of these roofs were installed in the 1994 project. Significant leaks in two locations in the Hartwell Building reappeared. All of these roof leaks are an indication of the growing deterioration of our roofs.

On the positive side, the Field House remained completely dry inside during this event.