

July 23, 2009
Secretary Ian A. Bowles
Executive Office of Environmental Affairs – MEPA Office
100 Cambridge St.
Boston, MA 02114

Attn. Anne Canaday, MEPA Analyst

Via Email

cc. Marybeth Taylor (SEA Consultants)
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COMMENTS IN RESPONSE TO DRAFT ENVIRONMENTAL IMPACT
REPORT, BIRCH ROAD WELL SITE REACTIVATION, FRAMINGHAM
EOEA NUMBER 14197

Dear Secretary Bowles and Ms. Canaday:

These comments are directed primarily to the impact of the proposed new withdrawal on the Sudbury River adjacent to and downstream of the location of the Birch Road wells, and on possible impacts to the Wayland wells. In general, I believe that the proposed withdrawals will have a devastating effect on the river which CANNOT be mitigated with management strategies under the Water Management Act, as claimed by the proponent.

To understand the scope and significance of this proposal, it should be noted that the proposed withdrawals will exceed the current average withdrawals from all of the towns downstream along the Sudbury River to its confluence with the Assabet. Furthermore, unlike in those towns, all of the water will be exported through the MWRA sewer system out of the basin and lost to the river ecosystem.

The impact of the withdrawals will begin at the confluence of Cochituate Brook with the river in Saxonville, which normally carries most of the outflow from Lake Cochituate to the river and will much more frequently be dewatered as a

result of these proposed withdrawals. Only about 300 yards downstream is the beginning of the Wild and Scenic segment of the river, federally recognized for its "outstandingly remarkable" beauty, recreational value, and wildlife habitat. Removal of flow from the river in the proposed location will have a radical effect on river flow in dry periods at least to the point where the next tributaries (Pine Brook and Hop Brook) enter the river near Wayland Center several miles downstream. This area also encompasses the beginning of the Great Meadows National Wildlife Refuge, nationally significant wildlife habitat.

Table 7-11, showing AVERAGE flows in the river and a withdrawal rate of up to 12% from the proposed pumping, is interesting context but does not address the primary issue. It is the effect during dry years that is of concern, not average years.

The pumping test and vertical gradient table, 7-13, show conditions during the spring when groundwater is highest; it is not surprising that groundwater is discharging to the river in these conditions and this data is again not relevant to the primary concerns. The potential issues occur in the late summer when the groundwater level has dropped.

The fundamental background is that groundwater is flowing toward the river and all water removed by additional withdrawals is water that would have flowed in the river. The critical element not discussed in the FEIR is time: specifically the transit time of groundwater movement over the significant distance from the wells to the river. In 7.7.1, second paragraph, this is given as 2,500 feet, while in other sections of the document it is specified as 1200 feet. The proponent should accurately specify this distance, but in either case the time from any change in pumping rate at the wells to an effect at the river will be significant. The delineation of Zone 2, which is defined as the effects of 180 days of pumping, as barely reaching the river oxbow, suggests that the lag time between actions at the wells and effects at the river are on the order of six months. The fact that the 21 day pumping test appeared to have no influence on the levels at the oxbow as shown in Figure 7-19 is further evidence of the long time lags involved.

Furthermore, Cochituate Brook draining Lake Cochituate enters the river in Saxonville slightly upstream of the segment of the river surrounding the proposed new wells. The proponent states that one third of the well withdrawals will be generated by induced recharge from the lake, and shows a water budget for the lake with the vast majority of the outflow occurring in the

brook. Therefore one third of the well pumping rate will be removed from the brook flow, and therefore from the river flow. Yet, again, any reduced pumping at the wells will likely take months to result in a reduction of lake infiltration into the aquifer and a corresponding increase in brook flow, because the wells are approximately equally far from the lake as the river.

In recent years the flow at the Saxonville gauge has dipped under 5 cfs in the late summer (4.6 cfs in September 2007). At 6.65 cfs (Table 7-11), the effect of the proposed withdrawal exceeds 100% of those low flows. The proponent suggests that under the Water Management Act pumping could be reduced in such a situation. But to make such an action effective it would have to have been initiated in the previous winter, when conditions in late summer would have been pure speculation.

In 2007 the river flow dipped below 6 cfs for three months, August, September, and October. The photo below shows the river looking downstream from the Stonebridge Road bridge toward the old ruined bridge in late August, when the Saxonville flow measured approximately 7 cfs. Half the riverbed is dry and only a few inches of water remain in the other half. This appears to be the site referred to in the DEIR as the ungaged "Sudbury River at Oxbow" site. Yet flows in late spring and into July were normal. It would have been impossible to predict the dry late summer conditions in time to take effective action under the WMA.

River flows in 2001 showed a similar pattern, but dipped even lower in August, September, and October to 5.3, 4.0, and 4.8 cfs respectively. Yet in early July flows were well over 200 cfs. By late July, however, flows were down to 7.0 cfs. Again, sub-month time scales are much too short to allow effective mitigating action by adjusting well withdrawals.

All river flow data are from the USGS website waterdata.usgs.gov.

It is worth noting that the two lowest flow years in the online record (since 1979) occurred in this past decade, perhaps as a result of global climate change and watershed development. The river may now be significantly more sensitive than when the Birch Road wells were last active, suggesting the need for reduced pumping relative to historical practices. This is the opposite of the proponent's desire to withdraw at a rate nearly 40% higher than historical rates.

To aggravate the situation, flows in the river can be altered on time scales on the order of hours as a result of decisions made to alter dam releases, including releases from Cochituate Brook to maintain the level of Lake Cochituate, which will also be impacted by the proposed withdrawals. So the scenario of low flow turning into even lower or zero flow essentially instantaneously, while remedial actions from adjusting pumping rates take months to be effective, leads to the almost certain nearly complete dewatering of the river during dry years. Needless to say, this is unacceptable.

If the proponent believes that effective action could have been taken under a scenario of full use of the Birch Road wells in 2001 and 2007 to prevent dewatering of the river, it should delineate how such action could have occurred in detail. This is necessary to meet the requirement on page 5 of the Certificate that "The proposed wells should not be allowed to have a significant impact on flows in the Sudbury River, which is already depleted by other upstream withdrawals."

With regard to interactions with Wayland wells, the proponent contends there is a hydrological barrier between the recharge areas of the Wayland and Framingham wells which precludes any effect on Wayland's wells from the proposed new pumping. (see Figure 3-2). The impermeable barrier in all probability exists along West Plain Street in Wayland to separate Lake Cochituate from Dudley Pond, which lies about 10 feet higher. But the extension of that barrier along the town line and extending to the river is speculation. The supposed barrier would transect the pond in Pod Meadow to the east of the proposed new wells, which would act as a hydrological short circuit between the two sides of any such barrier; Wayland's Happy Hollow wells are to the northeast. In fact, the data shown for SG-3 during the pumping test is relevant to this claim. Located in the pond supposedly outside the Zone 2 area, it documents a pond drawdown of nearly a half foot to dry conditions during the test, proving that the pond is bridging any groundwater barriers. To the north of the new wells the river oxbow would again act as a hydrological short circuit to any groundwater barrier; Wayland's Meadowview well is to the north. Unless both of these surface features are perched and isolated from the groundwater beneath them (no evidence for this is presented in the document) the supposition that the Framingham withdrawal will have no effect on the Wayland wells is questionable.

It is also worth noting that while it may or may not be true that the aquifer surrounding the Birch Road wells is hydraulically isolated from the Wayland Meadowview and Happy Hollow wells there will be a definite connection

through the regulatory process. Since the Wayland wells are adjacent to the river (in the flood plain) a reduction in Wayland pumping would result in immediate benefit to the river. State officials would be forced to restrict Wayland pumping during low streamflow emergencies to make up for the ineffectiveness of restrictions on the Framingham wells. Even so, while reducing Wayland pumping might benefit the river in Wayland and further downstream, the river from the oxbow to the vicinity of Wayland High School (site of the Happy Hollow wells) may go dry. Wayland High School is the approximate point at which the impounding effects of the Billerica dam and Fordway bar are lost. Beyond that point the river may not go dry even with a loss of upstream flow, but it may go stagnant.

Finally, with regard to the Interbasin Transfer Act, the plain language of the regulations, which provides that the well capacity must be useable "without additional installation of facilities", seems clear. The new treatment plant which is required to make the Birch Road water "useable" is certainly a new "facility", eliminating any grandfathering of withdrawals from these wells. Since the heart of the issues I raise above is in fact the removal of water from the Sudbury River basin (if all of Framingham were on septic systems, as are Wayland and Sudbury, return of the well withdrawals to the aquifer providing the river base flow would be automatic), permitting under the IBTA should provide a process to resolve the questions.

As a result of the major unanswered questions outlined above, it should be clear that this document should be treated as a DEIR and not an FEIR, and the proponent should respond to the issues raised.

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Sudbury River at Stonebridge Road (Oxbow site) Late August 2007

