By Fax and Mail

April 22, 2005

Richard Tomczyk
Department of Environmental Protection
Northeast Regional Office
One Winter Street
Boston, MA 02108

Re: Draft WMA Permit, Town of Lincoln

Dear Mr. Tomczyk:

Charles River Watershed Association (CRWA) has reviewed the Town of Lincoln's Water Management Act (WMA) permit application and submits the following comments. We note that the permit application grows out of the Administrative Consent Order (ACO) issued to the Town in 2003. The ACO was based on the Town exceeding its authorized withdrawal volume in violation of the WMA and its regulations each year since 1995.

Lincoln is seeking to withdraw an additional .25 million gallons a day (mgd) from two sources in the Charles Basin in addition to the .35 mgd previously registered in the basin. In October, 2004, the Town requested a Water Needs Forecast (forecast) from the Department of Conservation and Recreation. We believe that the forecast should be evaluated by the Department prior to permit issuance and that measures to reduce the Town's high seasonal water use should also be factored into (and reduce) the actual volume permitted.

In 2000, the Town applied to abandon the Farrar Pond well in the Concord basin and now maintains an emergency connection only. The Town's permit to withdraw an increased volume of water from the Charles basin should be conditioned upon retirement of the Town's registered volume in the Concord basin.

According to the application, the Town expected to use Sandy (Flints) Pond and the Tower Road well equally, or 50-50. In the past, the Town has drawn more water from Sandy Pond (2/3rds) than from the Tower Road well (1/3rd) on a year-round basis, and particularly in the summer months. An increase in the use of the Tower Road well on the subbasin should be analyzed for environmental impacts before this change is allowed and CRWA recommends that an analysis of subbasin stress be conducted using the methodology in the Water Resources Commission's *Stressed Basins Report* (2001).

The permit is subject to the Department's *Water Management Act Permitting Policy* (Policy) and Guidance Document (Guidance), issued on April 2, 2004, as the Department informed the Town in its Request For Additional Information on the Permit Application. The Charles is classified as medium stress pursuant to the Stressed Basins Report, though the lack of a USGS gage in the area is probably the only reason that the headwaters of the Charles River are not classified as "highly stressed."

Lincoln should be required to meet the residential performance standard of 65 gpcd (gallons per capita per day) as set forth in the Policy.[1] We note that Lincoln is showing a disturbing upward trend in residential water use as the attached graph shows, despite a modest growth rate of about 125 persons per year. Water use in a number of other towns in the Charles has flattened out in the 1990s; however, Lincoln's continues to climb.

Its reported residential per capita day use has also varied with the Town reporting 93.1 gpcd in its 2003 Annual Statistical Report (ASR) and 78.43 gpcd in its 2004 ASR. The Town should explain the discrepancy between the total number of persons served reported in the 2003 (4310 persons) and 2004 (5300 persons) ASRs.[2] Similarly, the Town's unaccounted for water (UAW) has been extremely high and also variable with the Town reporting 22.4% UAW in 2003 with 80% of this comprised of leaks and an average of 19% UAW on average between 2001-2003.

As mentioned in other WMA comment letters, CRWA believes that all semi-residential categories in Part D of the Annual Statistical report except "Industrial/ Agricultural" should be included for the purposes of calculating residential water use. These additional semi-residential categories represent missing components of use by the Town's residents. Without them, the residential per capita number will be biased downward and it will not accurately reflect actual use. Additionally, because water conservation by consumers is enhanced when customers know how much they are actually saving, Lincoln should be required to include per capita water use information in its residential water use bills as part of its public education program.

Lincoln, with a five-month summer-to-winter ratio of 2.21 has the highest summer-to-winter ratio of all of the towns in the Charles. With two-acre zoning, Lincoln uses a large amount of water for nonessential outdoor irrigation as indicated by its high ratio. The seasonal cap provision of the Policy promotes irrigation water management in all types of water years. However, even with a 50% reduction in the summer-to-winter difference based on the year with the highest ratio, Lincoln's ratio will still be quite high, while other Charles communities currently undergoing five-year reviews of their WMA

[1] This should, however, be the starting point rather than the end goal for residential water conservation. Over time, we believe that Lincoln and other communities can do better than 65 gpcd. A conserving household uses about 45 gpcd (Vickers, 2001). Adding in system losses, a goal for household winter usage could be as low as 50 gpcd. A reasonable goal for maximum outdoor use might be 20 gpcd yielding an average annual value of about 60 gpcd.

[2] In a table in its request for the Water Needs Forecast, the Town's population is listed as 5470.

permits with better water conservation track records and lower seasonal ratios will be required to reduce use more. CRWA believes that the seasonal ratio is too high for Lincoln. While the Town should be given a reasonable amount of time to reduce water use below the 50% reduction in the seasonal ratio required in the Policy, the ultimate goal (for all Charles WMA communities) should be to achieve a ratio closer to 1.2. The Town's permit should include a step decrease provision beginning with a seasonal cap ratio of 1.6 for the period May 1st through September 30th (or whatever lower ratio is computed to pursuant to the Policy), reduced to a 1.3 ratio commencing in the summer 2008. The Department's use of five-month winter and summer "blocks" to determine the ratio flattens out the ratio. Instead, summer water use should be defined as water use in the highest three-month average, and winter use as the lowest three-month average. This would present a truer picture of the seasonal difference in use and the percentage reduction applied to the ratio.

An enhanced water conservation plan should be required if the Town exceeds any of the performance standards.

Additionally, mandatory outdoor water use restrictions tied to streamflow triggers should be imposed in the permit. Streamflow limits protect the river especially in dry years when other water management mechanisms are not adequate. Streamflow-triggered restrictions work in tandem with the seasonal cap to reduce nonessential outdoor water use. Since the savings from the seasonal cap are relatively small and usually in the range of 10% or less depending on the year, streamflow restrictions are not intended to achieve the cap (although this may be a side benefit), but rather to work synergistically with the cap to reduce nonessential outdoor use further when flows are low. CRWA recommends using a 0.5 cfsm streamflow trigger, or the summer Aquatic Base Flow default value, for requiring hand-held hose watering only at least on an interim basis, which should be revised in the future to a more accurate representation of the natural August median of monthly average flows. A lower streamflow limit of 0.21 cfsm for elimination of all outdoor lawn watering should also be incorporated into the permit. We do not believe that a higher streamflow trigger for voluntary conservation is effective and could also be confusing to residents. Instead, Lincoln should be required to implement voluntary conservation measures May 1st through September 30th of each year as a matter of course and also to prohibit outside irrigation between the hours of 9:00 a.m. and 6:00 p.m. when evapotranspiration is highest.[3]

Pursuant to the Policy, Lincoln should be required to prepare an offset feasibility study for the increased permitted withdrawal.[4] The offset feasibility study is intended to

[3] Lincoln characterized odd-even day watering as "extremely successful" in its February 2004 Water Conservation Plan; however, experience has shown in the Ipswich that odd-even day watering in some cases resulted in increased water use.

[4] The Policy distinguishes between offsets for increases in authorized withdrawal volumes and offsets for existing authorizations during the five-year review process. If the Department was to require an offset only for the amount of water withdrawn (and lost) above the Town's actual withdrawal, this would in effect (footnote continued on next page)

evaluate the feasibility of reducing basin water losses and identifying the most feasible means of maintaining the local water balance. We note that about 80% of seasonal irrigation water use is consumptively lost and while Lincoln has septic systems, 40% of those systems are located in the Concord and Shawsheen River basins and hence this water is also lost to the basin. The permit should require Lincoln to submit the offset feasibility study and an implementation schedule within one year of permit issuance.[5] The pricing system, which should be an increasing block rate, or seasonal structure in order to to promote water conservation, should include the cost of required offsets.

Additionally, Lincoln should be required to establish a water bank program now for keeping or conserving at least two gallons of water in the Charles basin for every additional gallon of water demand added to the system for new development and expansion projects to restore water lost to the watershed.

The permit should also require the Town to retrofit all public buildings with water saving devices within one year of permit issuance. A water audit and plan to reduce use by the Town's ten largest water users should also be required. Lastly, the ACO requires Lincoln to make conservation measures applicable to customers that purchase water from it. The sale of water (which totaled 5.0 mgd in 2002-03) should be limited to existing customers. CRWA is opposed to using the Charles basin as a source of water for Hanscom.

We appreciate the opportunity to comment on this withdrawal permit application and have offered to assist the Town in reducing its water use and achieving a water balance. The appointment of the Lincoln Natural Resources Preservation Committee, tasked with collecting information and assessing water consumption is an important first step on which we commend the Board of Selectmen. Please feel free to call me if you have any questions regarding these comments.

Very truly yours,

Margaret Van Deusen
Deputy Director and General Counsel

cc: (Via mail)
Arleen O'Donnell
Glenn Haas
Duane LeVangie
Madelyn Morris
Town of Lincoln Water Commissioners
Lincoln Natural Resources Preservation Committee

(footnote continued from pervious page) reward the Town for violating the Water Management Act for the past decade, an untenable result. Here, where the Town is seeking a new permit after years of violation, the offset feasibility study should be based on the withdrawal volume it is requesting.

[5] Pursuant to the Policy, the Town can receive a credit for regulating private wells.