



Belmont Citizens Forum

P. O. Box 609, Belmont MA 02478 (617) 484-1844 www.belmontcitizensforum.org

October 5, 2006

*s/l
September*

Mr. Jay Szklut
Planning and Economic Development Manager
Town of Belmont
19 Moore Street
Belmont, MA 02478

Dear Mr. Szklut:

The Belmont Citizens Forum is supported by about 650 families in Belmont and neighboring communities who are concerned with protecting the environment, preserving historic and archeological resources, and controlling the growth of traffic. We appreciate the opportunity to submit the following comments on sanitary sewer capacity issues relating to the proposed 40B development at the Belmont Uplands. The Belmont Citizens Forum engaged an independent engineering firm, the Norfolk Ram Group, to review current documentation pertaining to the proposed connection to the Belmont sanitary sewer system. Their memorandum is attached. Could you please distribute this to the members of the Zoning Board of Appeals and to other town officials whose responsibilities relate to this matter? I realize this is short notice, but we would appreciate it if this could be forwarded by email to ZBA members prior to the ZBA meeting tonight.

Very Truly Yours

John Dieckmann
Vice President



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MEMORANDUM

DATE: September 1, 2006
TO: Belmont Citizens Forum c/o Sue Bass, et.al
FROM: Mark S. Bartlett, P.E.
PROJECT: Belmont Citizens Forum (BCF) - Acorn Park (Norfolk #1087.002)
SUBJECT: Sewer capacity to accept new sewage flow from the Belmont Uplands - Acorn Park Comprehensive Permit 40B Project

I have reviewed certain documents¹ available through the web site posted by the Belmont Office of Community Development, specifically documents viewable at: www.town.belmont.ma.us/Public_Documents/BelmontMA_BComm/Uplands40B/index.

I have also had some limited discussions with the Town Planner Jay Szklut, and the town's engineering consultant Justin Gould, P.E. of Fay, Spofford & Thorndike; and a brief discussion with one of the engineers for the applicant, David Albrecht, of Rizzo Associates. Based on these initial efforts, and given our understanding of well documented sewer capacity limitations² within the area of Belmont to which this project would connect, it is my view that the proposed residential housing project does not propose a plan for sewage disposal that will adequately address issues of public health and environmental protection within the Town of Belmont. Although a plan for pumping sewage to the Belmont sewer system is provided, there is no analysis or proof that capacity exists in the sewer system at all times (e.g. during problematic wet weather conditions) from the point of the connection (at Garrison Road) down through the Belmont sewer system heading generally south down to the MWRA connection at the Cambridge line. Moreover, there is no specific plan of mitigation to prove that the new sewage flows can be accepted without causing additional hardship to residents of the Town of Belmont in lower lying sewer areas. This is a fundamental deficiency in the project application that the Zoning Board of Appeals should not ignore during its deliberations on approving or denying the proposed project. More detailed comments and recommendations are provided below.

1 See the list of documents reviewed, noted in Attachment 1 to this memo.

2 Numerous reports, letters, etc. are available at the Belmont Office of Community Planning that document sewer system capacity problems that are based on infiltration / inflow impacts on the aging sewer system in the Town of Belmont, both from a perspective of sewer surcharges into public areas and private homes, and from a perspective of sewage contamination of the town's storm drains and local surface waters.

Initial comments and observations on sewer disposal plans for the Acorn Park 40B Project

1. The applicant has not submitted any information or engineering calculations to document the capacity of the Belmont sewers or to model the ability of the system from the point of connection to the downstream MWRA connection to accept the development's average and peak sewage flows. It is interesting to note, as a point of comparison that the 40B application (ref. #1 on attached list of documents reviewed) contains over 110 pages of project narrative and detailed engineering calculations documenting existing stormwater conditions and proposed mitigation for the project's stormwater impacts³, however the same application contains only one map of the proposed sewer force main, ¼ of one page of text, and no flow measurements or calculations under the heading "Wastewater Management". The one paragraph in the wastewater section contains reference to the method of connection to the Belmont sewers and the following statement: "The proponent will work with the Town to upgrade these sewers to provide additional capacity to accept flow from the project". This paragraph acknowledges that capacity does not presently exist, but offers no proposed upgrades and provides no supporting documentation to ensure that additional sewage flow can be accommodated without exacerbating the existing problem.
2. A sewer connection / extension permit has not yet been filed with Massachusetts DEP and the Town of Belmont, so there has not been any opportunity for formal independent calculations or review by the DEP, the MWRA, or Town of Belmont to document that sewer capacity exists in the sewer sections that will be used to transfer sewage flow from Belmont Uplands / Acorn Park, through Town of Belmont sewers (approximately 3,500 feet of sewers) to the MWRA connection.
3. There is no documentation at the Town of Belmont (web site) for this project that demonstrates that the project applicant, the Town of Belmont, and/or DEP ever consulted with, or traded engineering calculations with the MWRA to confirm that the MWRA system, including MWRA sewer interceptors and the treatment facility, have capacity to handle the new flow without adverse impacts.
4. The only capacity estimate found to date for the gravity sewer (that would receive force main discharge from the project) has been provided by Fay, Spofford & Thorndike (FST) and is reported in their letter to Jay Szklut, Planning and Economic Development Manager for Belmont, dated June 23, 2006 (a copy of this letter and figures is included herein as Attachment 2). A sewer system computer model, recently developed by FST for the Town, was utilized in conjunction with flow metering in the 15-inch sewer at the intersection of Brighton Street and Hill Road from April 12 to May 9, 2006. The metering period reflected a period of dry weather flow. For the dry weather conditions the model predicted that total flow (i.e. existing flow plus Acorn Park flow) would fall

³ Re: Stormwater Management - Although only scanned briefly, the engineering submittals for stormwater management appear to be generally thorough; but we defer formal comment on these until reviewed in detail. However, two important deficiencies were immediately evident: (1) There is no mitigation of the total volume of stormwater runoff from the project - and post development volume of stormwater released from the site will be greater than is presently released; and (2) the rainfall intensities used for analysis of potential stormwater related flooding are antiquated values based on the National Weather Bureau's Technical Paper - 40 developed many decades ago - the hydrologic calculations should be re-done using the more current and appropriate values published by the Cornell University Northeast Regional Climate Center "Atlas of Precipitation Extremes for the Northeastern United States and Southeastern Canada", (1993).

within the hydraulic capacity of the town's sewers from the point of force main connection (Garrison Rd. at Gilmore Rd.) to the intersection of Brighton St. and Hill Rd. However, under simulation of wet weather conditions (the model used data from a recent May 2006 large storm / surcharge event as recorded at the MWRA meter at Flanders Rd.) the predicted hydraulic profile indicated severe surcharge of the system and illustrates that the existing gravity sewer does not have capacity to accept the proposed project flow. The addition of any new flow under such circumstances would worsen adverse public health impacts to others in the community and negatively impact the environment.

5. The problems of surcharging sewers within the lower portion of the Belmont sewer system are well documented, and further illustrated by the example noted above. Without investigation and study to determine the appropriate mitigation, and implementation of such mitigation, there is no sound basis to conclude that adequate wastewater disposal will be possible for this project via the proposed connection to the Belmont sewer system. The applicant has not proposed any specific and certain mitigation that would enable new sewage flows from the project to flow into the Belmont sewer system without aggravating and worsening the sewer capacity problems and creating adverse public health impacts to others in the community, and negatively impacting the environment.

Recommendations

The following recommendations for investigation and implementation would help to ensure that the Belmont sewer system can accommodate the additional sewage flow from the Acorn Park 40B Project so as not to make the current sewer surcharge situation worse.

1. In general, the Town of Belmont and the Belmont ZBA acting on this case should defer decisions that allow connections from new major sewer users such as the proposed project unless and until the existing system has been fully evaluated for capacity during wet weather, and unless and until such engineering analyses (factoring in actual I/I removal implemented to date or other proposed developer funded mitigation measures such as suggested below) show that such new projects do not make conditions worse for existing residents and the environment. Moreover, such engineering analysis of the sewer system should include impacts from other recently approved major projects, such as the McLean Hospital Redevelopment.
2. The applicant should be required by ZBA to propose specific mitigation (such as I/I removal and temporary storage of project sewage during wet weather sewer system surcharge) that will improve the Belmont sewers' ability to transport the Acorn Park flow without adverse impact on existing customers and natural resources. The computer model recently completed by FST could be a useful tool (if funded by the developer) in developing a specific mitigation plan.
3. Any agreement between the Town and applicant on I/I removal funds should require:
 - a. the highest removal ratio possible.
 - b. that I/I removal funded by Acorn Park will help mitigate surcharge problems within the specific sections of the system affected by the proposed connection (based on engineering analysis, for example using the FST model) and therefore help free up capacity for the Acorn Park sewage flow while preventing impacts to existing residents.

4. In addition to providing maximum possible I/I removal funds, the applicant should be required to design and construct an on-site sewage storage facility adjacent to the pump station wet well, to hold back and temporarily store project wastewater during critical periods of sewer system surcharge. Negotiating the quantity / time period of storage provided by the developer would depend on several factors including:
 - a. The frequency, severity (area of impact) and duration of surcharge events.
 - b. The protection level desired by the town, ranging from preventing discharge to the gravity system “during all sewer surcharge events” to “during 80% of sewer surcharge events” or “during 50% of sewer surcharge events”, etc.
 - c. The cost of storage and availability of area and location balanced against the level of protection that can be provided.

As noted in recommendations 1 and 2 above further study is required, preferably by the Town of Belmont utilizing the newly developed computer model, to evaluate the likely effectiveness of various sewage storage scenarios under a range of wet weather conditions.

5. Obtain agreement that I/I removal, sewage storage, or other mitigation by the applicant, or by the Town with applicant’s funds, will occur before the Acorn Park sewage flow can commence.
6. Consider requiring the applicant to fund or implement other types of sewer system remediation that may be possible in addition to I/I removal, for example:
 - a. Design and construct a sewage surcharge storage facility in those critical areas near the MWRA connection (instead of, or in addition to storage on-site at Acorn Park) to relieve system surcharges to Belmont homes and the environment.
 - b. Work in conjunction with MWRA if they are in the process of upgrading the interceptor that serves Belmont to eliminate / reduce surcharging.

Attachment 1 - Memo on Acorn Park to Belmont Citizens Forum, September 1, 2006

**List of documents reviewed for Belmont Citizens Forum
Review of BELMONT UPLANDS COMPREHENSIVE PERMIT - Acorn Park 40B Project**

Documents from Belmont Office of Community Development organized by web site, see:
www.town.belmont.ma.us/Public_Documents/BelmontMA_BComm/Uplands40B/index

1. **Comprehensive Permit Application – Parts 1 and 2**, including selected plans such as, Existing Conditions Plan (C-1), Site Layout and Materials Plan (C-2), Grading and Drainage Plan (C-3), and Water and Sewer Extension Plan (C-11).
2. **Letters from Town Boards/Commissions – Comments from –**
 - a. Department of Public Works
 - b. Board of Selectmen
 - c. Office of Community Development
 - d. Conservation Commission
 - e. Planning Board
 - f. Uplands Advisory Committee – (multiple letters on: General Comments, Sustainable Design, Open Space, and two letters dated 3/22/2006)
 - g. Vision 21 Implementation Committee- Sustainable Belmont
3. **Peer Reviews** - including the following letters:
 - a. Fay, Spofford & Thorndike-Stormwater & Wastewater Review
 - b. Fay, Spofford & Thorndike, Stormwater & Wastewater Review of Revised Plan
 - c. Fay, Spofford & Thorndike-Wastewater Review , I/I Recommendation
4. **Responses to Peer Reviews –**
 - a. Response to Civil Engineering Review 5/4/2006
 - b. Response to Wastewater Pump Station
 - c. Response to Civil & Stormwater Review-06/26/06
5. **Other Comments** - Mystic River Watershed Association

Information from Mystic River Watershed Association web site, data collected by MRWA's Hot Spot monitoring program, as available at: www.mysticriver.org/research/online_data_sources.html