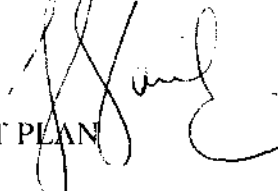


City of Alexandria, Virginia

MEMORANDUM

DATE: MAY 2, 2011

TO: THE HONORABLE MAYOR AND MEMBERS OF CITY COUNCIL
THE CHAIR AND MEMBERS OF THE PLANNING COMMISSION

FROM: RICHARD J. BAIER, P.E., LEED AP, DIRECTOR, T&ES 

SUBJECT: COMBINED SEWER IMPACTS OF THE WATERFRONT PLAN

This memo is in response to the April 25, 2011, email (attached) from Mr. Bert Ely pertaining to sanitary sewer issues associated with the Waterfront Plan. Mr. Ely's email raised a number of issues, specifically:

- Development and redevelopment in the Waterfront Plan will substantially increase sewage flow in the combined sewer that could trigger costly sewer investments in the waterfront area.
- There are no sanitary sewers in the waterfront area that flow directly into the Alexandria Sanitation Authority (ASA) treatment plant.
- All of the additional sanitary sewer flow in the Waterfront Plan will overflow into the Potomac River after a heavy rain.

The properties identified in the Waterfront Plan for future development or redevelopment are Robinson Terminal (North and South) and the Cummings/Turner Properties. Figure 1 (attached) shows the location of the above properties and the location of the combined sewer service area. As the figure shows, the area served by the Waterfront Plan is almost entirely served by separate sanitary and storm sewers. Sanitary sewer flow from the properties in the Waterfront Plan flows into the City's local sanitary sewers, which discharge into the Potomac Interceptor, a trunk sewer owned by the Alexandria Sanitation Authority (ASA). This interceptor sewer begins at the intersection of Pendleton and N. Union Streets and flows downstream directly to the ASA Advanced Wastewater Treatment Facility (ASA).

Sewer flows enter the upstream end of the Potomac Interceptor via a combined sewer located along Pendleton Street. During periods of dry weather, all of the flows from the Pendleton Street

combined sewer flow directly into the Potomac Interceptor and are conveyed to the ASA treatment facility. During certain types of rain events, excess combined sewer flows, which are a mixture of storm water and sanitary wastewater, that do not enter the Potomac Interceptor overflow through a permitted combined sewer outfall at the end of Pendleton Street into Oronoco Bay. Additional combined sewer flows also enter the Potomac Interceptor from a combined sewer at the end of Royal Street, upstream of the Royal Street combined sewer outfall. Once flows enter the Potomac Interceptor at Pendleton Street or from any connection downstream, they cannot overflow from this pipe and are conveyed to the ASA facility.

Mr. Ely's email includes an exhibit from the City's GIS sewer mapping, known as the Sewer Viewer. The pipes shown on the Sewer Viewer are based on limited field data and are intended to show general sewer location information. As pointed out by Mr. Ely, the Potomac Interceptor is incompletely depicted on the Sewer Viewer and is not shown as continuing uninterrupted to the ASA treatment facility. Since this has been identified by Mr. Ely, staff is working to more accurately depict the connectivity on the City's GIS mapping. Mr. Ely also points out that the Potomac Interceptor is identified by color as a combined sewer on the Sewer Viewer. This is because it carries combined sewer flows from the upstream collection system, but all of the flows in this Potomac Interceptor are conveyed to the treatment plant and do not have any opportunity to overflow. Because the flows cannot overflow before reaching ASA, staff considers the Potomac Interceptor to function as a separate sanitary sewer, even though it contains combined flows.

Table 1 (attached) shows a likely development scenario that could occur under the zoning proposed in the Waterfront Plan and the corresponding sanitary sewer flows in gallons per day (gpd). These flows are compared to the existing flows as well as the flows resulting from a likely development scenario that could occur under the current zoning on the same properties. The difference in flows between the current and proposed zoning is not great; nevertheless, the difference would be even less if more of the redevelopment under current zoning were residential. The flows generated by the Waterfront Plan are compared to the Potomac Interceptor's existing flows and total capacity in Figure 2 (attached). As can be seen in Figure 2, the Potomac Interceptor has considerable capacity to accommodate the additional sanitary sewer flows anticipated in the Waterfront Plan. The total sanitary sewer flow anticipated to be generated by the Waterfront Plan is less than one percent of the available capacity in the Potomac Interceptor.

The City's combined sewer system and overflows are managed and permitted under a permit issued by the Virginia Department of Environmental Quality. The City is in compliance with this permit and proposed redevelopment projects will not affect its compliance status. There are however, independent of the waterfront planning process, several new regulatory initiatives underway at the state and federal level which may, in the future, require the City to take additional measures to stay in compliance with its permit. In effect, the bar is being raised for the City to remain in compliance. The extent or type of improvements to the Combined Sewer

System that the City may undertake in the future as part of our permit obligations will be based on the existing combined sewer system, not necessarily triggered by new development that occurs in the combined area or adjacent areas. The City has actively and successfully managed the combined sewer system by proactive planning and investments in separation and improvements to minimize combined sewer overflows. The approved FY2012 CIP contains \$6 million for sewer separation projects over the next 10 years. New development in CSO areas will increase that investment through City-required developer paid efforts.

In summary, all sanitary flows generated in the Waterfront Plan area will be conveyed directly to the ASA treatment facility and cannot overflow into the Potomac River. The Potomac Interceptor has significant available capacity to convey the anticipated flows to the plant. The total sanitary sewer flows anticipated in the proposed Waterfront Plan are slightly less than one percent of the total capacity of the Potomac Interceptor. If one looks at only the flow impact of current zoning with proposed zoning, that impact shrinks to between three- and four-tenths of one percent. Development and redevelopment projects in the Waterfront Plan area will not increase any of the City's financial requirements associated with the permitted combined sewer system.

If you have any questions, please contact me at 703-746-4025 or Emily Baker, City Engineer at 703-746-4045.

Attachments

cc: Mark Jinks, Deputy City Manager
Michele Evans, Deputy City Manager
Emily Baker, P.E. City Engineer
William Skrabak, Director, Office of Environmental Quality
Farroll Hamer, Director, Planning & Zoning

Table 1: Waterfront Plan Area Existing, Current Zoning and Proposed Zoning Summary of Uses

	Existing square feet	Existing units	Current Zoning square feet	Current Zoning units	Proposed Zoning square feet	Proposed Zoning units/rooms
Residential	0	0	-	442	-	319
Hotel	0	0	-	0	-	625
Restaurant	6,486	-	50,000	-	50,000	-
Retail	10,246	-	10,550	-	20,197	-
Office	16,635	-	100,000	-	13,122	-
Warehouse	275,740	-	0	-	0	-
Total Sanitary Flow	6,182 gallons per day		84,539 gallons per day		141,612 gallons per day	
Net Increase Over Existing Flow	-		78,357 gallons per day		135,430 gallons per day	
Net Increase Over Current Zoning	-		-		57,073 gallons per day	

Notes:

1) Sanitary sewer flows calculated using the following flow factors:

- 184 gallons per day applied to each residential unit
- 130 gallons per day applied to each hotel room
- 20 gallons per 1000 square feet applied to restaurant, retail, office and warehouse uses

2) Current and proposed zoning for the Waterfront redevelopment parcels allow a mix of uses. The land use mix shown for current and proposed zoning are likely redevelopment scenarios, but are not required by the zone.

3) Total existing sanitary sewer flow in the Potomac Interceptor, based on flow monitoring just outside the ASA treatment facility, is equal to 1,870,000 gallons per day.

4) Total capacity of the Potomac Interceptor at the ASA treatment facility is equal to 16,000,000 gallons per day.

Figure 2: Potomac Interceptor Flow Summary

