BOSWELL ENGINEERING
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MEMORANDUM – 02

TO: Jessica Pearson
Planning Board
Township of Verona
Verona Town Hall
600 Bloomfield Avenue
Verona, New Jersey 07044

FROM: Alvaro Gonzalez, Ph.D., P.E.

DATE: March 21, 2023

SUBJECT: Verona Sunset Urban Renewal, LLC
Stormwater Management Report and Utilities
1 Sunset Avenue
Block 303, Lot 4 (Verona)
Block 301, Lots 5 and Block 401, Lot 1 (Montclair)
Township of Verona,
Essex County, New Jersey
Our File No. VAES-104

In the context of the statements made by the Applicant and the comments from both the Planning Board and Boswell Engineering (Boswell) during the hearing of March 16, 2023, we (Boswell) revisited: (a) the Applicant's submitted documentation and (b) the stormwater management comments of the Technical Memorandum made by Boswell on February 16, 2023.

In addition to the comments of the Technical Memorandum (Feb. 6, 2023), this is what we have to offer:

Note: Underlined phrases/sentences contain hyperlinks to facilitate the access to the cited literature.

1. During the hearing of March 16, 2023, the Applicant stated (that) Boswell had agreed that a capacity analysis of the existing stormwater sewer was not necessary. This statement does not represent Boswell's technical opinion on the matter, but Bright View Engineering's.

   In their technical memo (dated August 16, 2022), Bright View Engineering stated: "*It is*

noted that the proposed development will result in a reduction in the runoff rate directed towards the existing drainage inlet located within Sunset Avenue. Therefore, the reduction in runoff rate will not have a negative impact on the downstream drainage system and ***no downstream capacity analysis is required***." This statement was included in Boswell's Technical Memorandum (dated February 16, 2023) only as a reference. Therefore, it should not be construed as Boswell's opinion and/or endorsement.

On the contrary, we (Boswell) recommend that a capacity analysis of the existing stormwater sewer on Afterglow and Sunset Aves shall be performed given that some of the existing flow path patterns and the total contributory area of the catchments discharging into the inlets on Afterglow and Sunset Aves will be modified.

2. The Applicant used the NRCS Delmarva unit hydrograph (peaking factor of 284) in the submitted hydrologic analysis (latest revision dated Jan. 11, 2023). This needs to be corrected per NJDEP BMP Manual, Chapter 5 (pages 24-26). A new hydrologic and hydraulic analysis shall be performed using the NRCS standard unit hydrograph (peaking factor of 484).

3. Project's water demand: According to documentation provided by the Applicant, the average water demand is 32,308 GPD (or 22.4 gpm). Using a peaking factor of three [per NJAC 5:21-5.2(d)], the peak flow will be 96,924 GPD (or 67.3 gpm). The Township's water system capacity to supply the demand shall be assessed/determined.

4. Project's fire flow demand: Per both NJAC 5:21-5.3(i)3 and NJAC 7:10-12.37(b), "*the design capacity of every distribution main and every service line shall be such as to provide a minimum pressure of 20 psi at ground level under all flow conditions*." The Applicant should calculate their fire flow demand, which must be compared to the flow available (resulting from the hydrant test) in order to assess whether the Township's water system has enough capacity to handle the fire flow. This should be also evaluated by the Township Fire Official.

5. Project's domestic wastewater flow: According to documentation provided by the Applicant, the average domestic wastewater flow is 40,355 GPD (or 28 gpm, or 0.062 cfs). Using a peaking factor of 2.0, the peak wastewater flow will be 80,710 GPD (or 56 gpm, or 0.12 cfs). The capacity of the receiving existing sanitary pipe shall be assessed.

   The Applicant shall perform a capacity analysis. For that, we (Boswell) recommend that a 4-week flow monitoring shall be performed at a manhole located immediately downstream of the location where the Applicant plan to tie into the Township's sanitary system. Per NJAC 7:14A-23.6(b),"*Gravity sanitary sewers, including outfalls, shall be designed to carry at least twice the estimated average projected flow when flowing half full […]*." Thus, the Applicant shall demonstrate that two times their average flow (80,710 GPD, or 56 gpm, or 0.12 cfs) will not affect the existing sanitary pipe capacity when running half full.

Thank you for your kind attention to this matter. Should you have any questions or comments, please feel free to contact me.

Very truly yours,

BOSWELL ENGINEERING

Alvaro Gonzalez, Ph.D., P.E.

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