

**MEMORANDUM-06**

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: August 18, 2023

SUBJECT: **Stormwater Management/Site Plans Review**  
***Resubmission dated August 11, 2023***  
Verona Sunset Urban Renewal, LLC  
One 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

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Based on the review of the files referenced below, this is what I have to offer:

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

**Documents Reviewed (Table 1)**

<b>File Name</b>	<b>Dated</b>	<b>Comments</b>
"2023-07-31 Runoff Volume Memo (Generic Example)"	July 31, 2023	Prepared by Sean Savage (MATRIXNEWORLD). Subject: Runoff Volume Memo.
"2023-07-31 Stormwater Report Memo"	Aug. 7, 2023	Prepared by Sean Savage (MATRIXNEWORLD). Subject: Stormwater Report Memo.
"2023-08-07 Pre- and Post-Hydrograph Memo"	Aug. 7, 2023	Prepared by Sean Savage (MATRIXNEWORLD). Subject: Pre- and Post- Dev. Hydrographs.
"2023-08-08 SWM Report _Rev 5"	Dec. 10, 2021 (Last revised Aug. 8, 2023)	Prepared by MATRIXNEWORLD. Signed by Sean M. Savage, P.E. (NJ PE License 24GE04451000). Note: the stormwater report has been revised five times so far: 05/10/2022, 01/11/2023, 03/21/2023, 05/05/2023, and 08/08/2023.

File Name	Dated	Comments
"2023-08-09 19-720 Preliminary and Final Site Plans REV. 5"	May 05, 2022 (Last revised Aug. 8, 2023)	Prepared by MATRIXNEWORLD. Signed by Sean M. Savage, P.E. (NJ PE License 24GE04451000).
"2023-08-09 Site Plan Revisions Memo for Township"	Aug. 9, 2023	Prepared by Sean Savage (MATRIXNEWORLD). Subject: Site Plan Revisions Memo.
"2023-08-11 Maccarelli_Review Response Letter"	Aug. 11, 2023	Prepared by MATRIXNEWORLD. Signed by Sean M. Savage, P.E. (NJ PE License 24GE04451000).
"Delmarva HydroCAD"	Aug. 11, 2023	HydroCAD model pre- and post-development runs using Delmarva Unit Hydrograph (file extension *.hcp) sent via email by Tori Massara (c.c. Sean Savage and Charles Thomas. Email Subject: Verona -01 Sunset Ave)
"SCS HydroCAD"	Aug. 11, 2023	HydroCAD model pre- and post-development runs using Standard Unit Hydrograph (file extension *.hcp) sent via email by Tori Massara (c.c. Sean Savage and Charles Thomas. Email Subject: Verona -01 Sunset Ave)

### **Background**

On July 25, 2023, we (Boswell) issued a Stormwater Review Technical Memorandum (Memorandum 05) with several comments on:

- (a) The seasonal high-water table (SHWT) at the location of the three proposed basins (A, B, and C);
- (b) The stormwater volume calculations resulting from the change of unit hydrographs (from Delmarva to Standard, which use peaking factors of 284 and 484, respectively);
- (c) The runoff quantity reduction in drainage areas 1, 3, and 4 (DA-1, DA-3, and DA-4);
- (d) The bioretention (Basin C) 2-ft separation between the bottom (gravel layer) and the SHWT;
- (e) The assessment of the existing stormwater sewer capacity in the context of the 2-, 10-, and 100-year flow coming out of the site;
- (f) The adequacy of the existing sanitary sewer capacity to handle the additional wastewater flow generated by the proposed development; and
- (g) The project's water and fire flow demand.

During the last hearing of July 2023, the Applicant provided testimony on pending issues and changes made to the project. The Applicant agreed on Boswell's comments regarding sanitary, drinking water, and fire flow demand. As to the stormwater, the Applicant agreed on providing further documentation on the pending issues and comments discussed during the hearing.

As a result, the Applicant submitted eleven files on August 11, 2023, which are listed in Table 1 of this memorandum.

### **Stormwater System Review**

- (a) Seasonal High-water Table (SHWT): The Applicant has agreed to perform two soil borings at Basin A and one (1) at Basin B (both are StormTrap® detention ponds). Soil borings will be performed at any date during the months of January through April.

Action: No further action required until the soil borings are performed. Upon completion of the soil borings, the Applicant shall add the results to the Stormwater Report and resubmit a new version of said document to be reviewed.

- (b) Stormwater runoff volume calculations: After reviewing the technical memorandums and the HydroCAD model runs, it could be confirmed that the stormwater volume remained the same.

Action: No further action required.

- (c) Runoff reduction in Drainage Areas 1, 3, and 4 (DA-1, DA-3, and DA-4): In the latest version of the Stormwater Management Report, the Applicant cited the parts of the N.J.A.C. 7-8 met to comply with the runoff quantity reduction standards. The Applicant added the following wording below Tables 5, 7, and 8 of the Stormwater Report: *“The drainage area [...] from pre-development to post-development conditions is demonstrating compliance with both NJAC 7:8-5.4-i and ii.”*

The cited standards (*NJAC 7:8-5.4-i and ii*) are incorrect. Per the March 2, 2020 version of the N.J.A.C. 7-8 (the one applicable to this application), the runoff quantity standards are in N.J.A.C. 7:8-5.6(b) not in N.J.A.C. 7:8-5.4. Also, the Applicant only meets N.J.A.C. 7:8-5.6(b)(1), which is enough to comply. [Note: the latest version of the N.J.A.C. 7-8 (effective July 17, 2023) maintains the same nomenclature for the stormwater runoff quantity standards. The only change is the design rainfall to be used in the hydrologic and hydraulic analysis].

Action: Address and resubmit.

- (d) Bioretention’s 2-ft separation between the bottom (gravel layer) and the SHWT: In the response letter (dated August 11, 2023), the Applicant stated that *“the Stormwater Management Report and Site Plans have been revised so that the bottom elevation of the Bioretention Basin (Basin C) complies with the BMP requirement of 2-ft separation. The revised Stormwater report and site plans are included with this submission.”*

After reviewing both Boswell’s Technical Memorandum (“Memorandum-03,” dated June 5, 2023) and the Site Plans (dated August 8, 2023), it was observed that the 2-ft separation

is met. No further action is required regarding this issue.

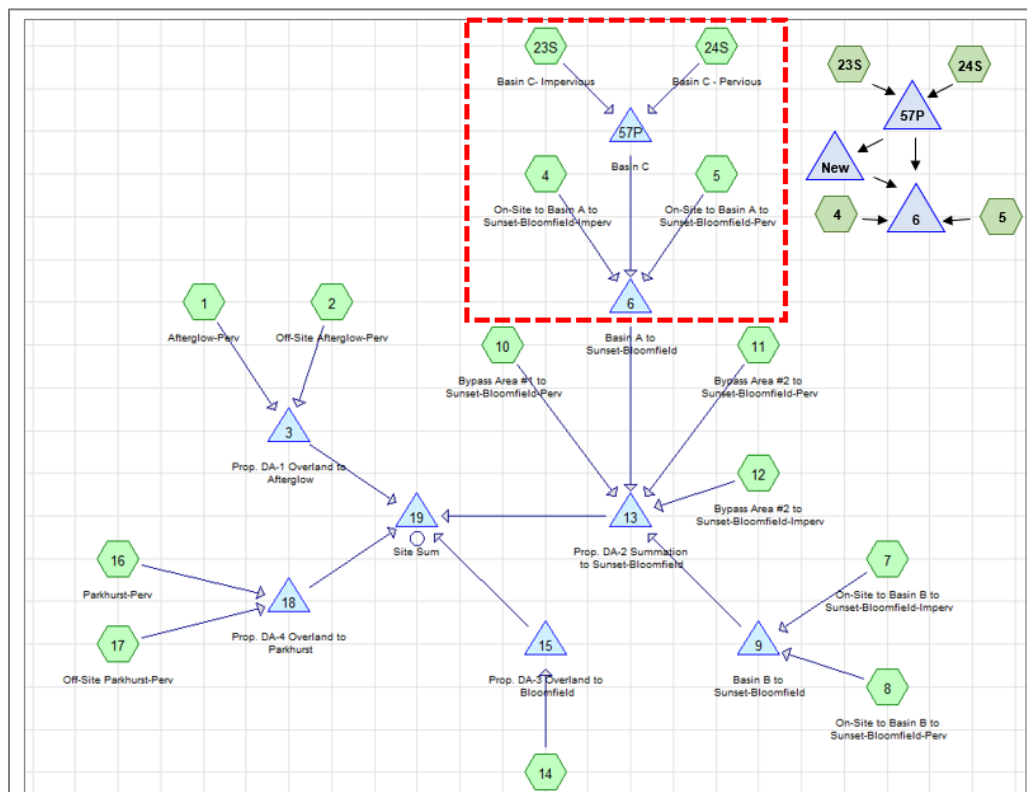
With respect to the estimated drain time provided in the Applicant's Technical Memorandum (dated June 14, 2023), the provided calculations shall be added to both the Stormwater Report and the Maintenance Plan (per NJDEP BMP Manual, Chapter 9.7). Also, the Maintenance Plan must be reflected in a deed notice recorded in the County's clerk office.

### Bioretention HydroCAD Modeling

After reviewing the HydroCAD post-development run, it could be noticed that the portion of the model corresponding to the bioretention needs to be fixed.

The component identified as "57P" (Basin C) receives the runoff from subcatchments "23S" (Basin C - Impervious) and "24S" (Basin C - Pervious). The component ("57P") displays one outlet, which does not properly represent how the flow should be routed.

The Applicant shall set up "57P" with two outlets: primary and secondary. The primary will route the flow through the subsurface bioretention basin. The secondary will route any excess flow through the 5-inch orifice. Both outlets will discharge into the 15-inch HDPE pipe and, then, to the component identified as "6" (Basin A to Sunset-Bloomfield). See Figure 1.



**Figure 1.** Proposed model set up adjustment

Action: Address and resubmit.

Bioretention Basin Detail (Site Plans)

The Bioretention Basin Detail (Sheet 15 of the Site Plans) shall be adjusted as follows:

- If the bioretention is to be also used for water quality purposes, then the proposed 5-inch orifice shall be raised above the water quality design storm (WQDS).
- The 5-inch orifice is currently labeled as ‘2.5” *minimum.*’ Please, display the exact diameter (5 inches).
- The 15-inch HDPE pipe bioretention outlet is 6.22 feet below the gravel layer. Please, adjust the detail to better represent the elevation difference.
- The gravel layers are currently labeled as ‘Gravel Layer 3” *minimum.*’ Please, display the exact thickness.
- The underdrain perforated pipe is currently labeled as ‘4” *PVC perforated.*’ However, the HydroCAD model displays a 3-inch perforated pipe. Please, adjust the discrepancy.
- A cleanout shall be added to the bioretention (for reference, please, see page 15 of the NJDEP BMP Manual, Chapter 9.7).
- All relevant elevations shall be displayed in the bioretention detail (e.g., bioretention basin top and bottom, and outlet pipe).

Action: Address and resubmit.

- (e) Assessment of the existing stormwater sewer capacity: The Applicant provided an analysis of the existing 15-inch stormwater pipe under the 25-year storm scenario. The analysis demonstrated that the proposed stormwater BMP measures will improve the current overflow occurred in the existing pipe (during the 25-year storm).

Action: No further action required.

**Water and Wastewater System Review**

- (f) The adequacy of the existing sanitary sewer capacity to handle the additional wastewater flow generated by the proposed development: The Applicant has agreed to perform the recommended capacity analysis, which will consist of a 4-week flow monitoring at a manhole located immediately downstream of the location where the Applicant plans to tie into the Township’s sanitary system.

Also, per the N.J.A.C. 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 wastewater average flow will not affect the existing sanitary pipe capacity when running half full.

Action: No further action required until the assessments are performed. The Applicant shall submit the analysis to be reviewed.

- (g) Project's water and fire flow demand: The Applicant has agreed to perform the recommended assessments.

Action: No further action required until the assessments are performed. The Applicant shall submit the analysis to be reviewed.

Should you have any questions or comments, please feel free to contact me.

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