



**Consulting & Municipal
ENGINEERS**

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MEMORANDUM

**To: Chairman and Members of the
West Orange Planning Board**

**From: John J. Hess, PE, PP, CME
Planning Board Engineer**

FOR

Date: August 15, 2025

**Re: Application No. PB 24-01
West Essex Highlands, LLC
Response To Objector's Stormwater Management System Review
Warner Road
Block 179, Lot 32
Our File: 115.WRP0179.V01**

**CC: Geniece Gary-Adams – Director of Planning & Development/Zoning Official
Zayibeth Carballo, PE, PLS, PP, CME, CFM, CFS – Township Engineer
Diana McGovern, Esq. – Planning Board Attorney
George Wheatle Williams, PP – Planning Board Planner
West Essex Highlands, LLC – Applicant
Bryan D. Plocker, Esq. – Applicant's Attorney
Paul W. Anderson, PE – Applicant's Engineer**

In accordance with your authorization, our office has reviewed the following documents to provide a response to the objector's stormwater management system review for the above referenced application:

- A Stormwater Management Review for Municipal Planning Board Approval prepared by Sean Walsh, PE with Princeton Hydro, LLC, of Trenton, New Jersey dated March 10, 2025.
- A set of Preliminary and Final Site Plan drawings (60 sheets) prepared by Paul W. Anderson, PE with Anderson Consulting Services of Boonton, New Jersey and bearing a latest revision date of October 1, 2024.
- A set of Regulated Water + Riparian Zone Impacts drawings (2 sheets) prepared by Paul W. Anderson, PE with Anderson Consulting Services of Boonton, New Jersey and bearing a latest revision date of November 5, 2024. These plans are stamped as approved under NJDEP File Number 0722-04-0001.1.

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NJ CERTIFICATE OF AUTHORIZATION NO. 24GA28359000

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- A set of Freshwater Wetland + Wetland Transition Area Impacts drawings (2 sheets) prepared by Paul W. Anderson, PE with Anderson Consulting Services of Boonton, New Jersey and bearing a latest revision date of November 5, 2024. These plans are stamped as approved under NJDEP File Number 0722-04-0001.1.
- A Geotechnical Investigation Report prepared by Atilla Sencar, PE with Sor Consulting Engineers, Inc, of Cedar Grove, New Jersey dated April 19, 2021.
- A Subsurface Investigation Report prepared by Atilla Sencar, PE with Sor Consulting Engineers, Inc, of Cedar Grove, New Jersey dated May 23, 2023.
- A Subsurface Investigation Report prepared by Atilla Sencar, PE with Sor Consulting Engineers, Inc, of Cedar Grove, New Jersey dated February 12, 2024.
- A Supplementary Subsurface Investigation Report prepared by Atilla Sencar, PE with Sor Consulting Engineers, Inc, of Cedar Grove, New Jersey dated April 4, 2024.
- A Stormwater Management Report prepared by Paul W. Anderson, PE with Anderson Consulting Services of Boonton, New Jersey and bearing a latest revision date of October 28, 2024.
- A copy of a Response Letter to the September 13, 2024 Princeton Hydro Letter prepared by Paul W. Anderson, PE with Anderson Consulting Services of Boonton, New Jersey dated October 10, 2024.
- A copy of an Environmental Report prepared by Scarlett Simpson and Ariana Tsiattalos with the New Jersey Department of Environmental Protection, dated November 15, 2024.
- A copy of an Engineering Report, prepared by Danielle Jones and Dennis Contois with the New Jersey Department of Environmental Protection, dated November 12, 2024.
- A copy of a NJDEP Permit Number 0722-04-00.1 LUP230001 which granted a Flood Hazard Area Individual Permit, Freshwater Wetlands General Permit 10B, Freshwater Wetlands General Permit 11, Freshwater Wetlands General Permit 17, and a Water Quality Certificate for the project, dated November 15, 2024.

We have reviewed the submitted information and offer the following:

A. PROPOSED STORMWATER MANAGEMENT DESIGN DESCRIPTION

The property in question is an irregularly shaped tract which fronts on the northerly ends of Warner Road, Kuzik Drive and Bayowski Road. It also abuts the municipal boundary with the Borough of Essex Fells to the north and west, the municipal boundary with the Township of Verona to the north and the West Essex Highlands Condominium development to the south. The property in question is located in the IH-1 Inclusionary Housing District and has an area of 5,245,870 sf or



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approximately 120.429 acres. The property is currently vacant and wooded and is traversed by several stream corridors. Development of the property is subject to the terms and conditions in a Settlement of Litigation Agreement between West Essex Highlands, LLC, the Township of West Orange and the West Essex Condominium Association, Inc.

The Applicant is seeking Preliminary and Final Site Plan approval to construct a residential development containing 496 residential apartments, 100 of which will be set aside for low and moderate income families. The Applicant proposes to construct six (6) apartment buildings, a clubhouse, a maintenance building, a dog kennel and a dog park.

The proposed stormwater management design for the development includes one (1) large scale surface infiltration basin with a manufactured treatment device, three (3) small scale surface infiltration basins, seven (7) porous pavement infiltration systems and one (1) small scale subsurface infiltration basin.

The proposed development will result in the disturbance of more than one acre. As a result, it is classified as a Major Development and is subject to the applicable stormwater management requirements set forth in the New Jersey Stormwater Management Rules (N.J.A.C. 7:8) as well as Section 25-29.4 of the Township Ordinance. Our office notes that the proposed development has been reviewed by NJDEP and has received an NJDEP Permit which granted a Flood Hazard Area Individual Permit, Freshwater Wetlands General Permit 10B, Freshwater Wetlands General Permit 11, Freshwater Wetlands General Permit 17, and a Water Quality Certificate, dated November 15, 2024.

B. OBJECTOR'S STORMWATER MANAGEMENT SYSTEM REVIEW SUMMARY

At the request of the project objectors, We Care NJ Corp., Sean Walsh, PE with Princeton Hydro, LLC completed a technical review of the proposed stormwater management design and prepared a Stormwater Management Review for Municipal Board Approval dated March 10, 2025 to outline the objector's concerns regarding stormwater management.

Based on our review, we have the following to offer for Board consideration. For clarity purposes, review comments taken from the Stormwater Management Review for Municipal Board Approval prepared by Sean Walsh, PE with Princeton Hydro, LLC, dated March 10, 2025, are shown in *italics* with comments from our office shown in **bold**.

Stormwater Management Review for Municipal Board Approval prepared by Sean Walsh, PE with Princeton Hydro, LLC, dated March 10, 2025:

1.0 Introduction: Informational/Opinion. No comment needed.

2.0 Stormwater Management: Informational/Opinion. No comment needed.



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2.1 Soil Testing Requirements:

"...It appears that the SHWT was only established using the elevation of the water found in the test pit or boring and no effort was made to document mottling. As noted in the NJDEP BMP Manual, there are instances where mottling can be absent from a soil profile, but it is highly unusual that mottling was not found in any of the soil test pits or borings provided by the applicant. Mottling is a natural and common process, thus it is fair to assume mottling should have been observed in some of the soil profiles. The concern is that the groundwater level found in a test pit can fluctuate on a daily basis based on the recent weather. Using the mottling to determine the SHWT is recommended because it estimates the highest (most conservative) elevation that does not vary with time. If one only uses the observed groundwater elevation, it is safe to assume that the SHWT elevation is probably underestimated."

As indicated above, the New Jersey Stormwater Best Management Practices Manual (NJ BMP Manual) notes that there are instances where mottling can be absent from a soil profile, therefore, observing mottling in a soil profile is not a requirement. Further, Chapter 12 of the NJ BMP Manual specifically outlines the methods for determining the seasonal high-water table (SHWT) when mottling is not observed in a soil profile. Therefore, based on our review, the Applicant's Engineer's method of determining the SHWT is consistent with the NJ BMP Manual.

2.2 BMP Design Standards and SHWT:

"Princeton Hydro reviewed the SHWT elevations documented in the subsurface investigations against the proposed BMP designs to confirm that each of the proposed BMPs met the minimum two vertical feet of separate from the bottom of the basin to the SHWT. Princeton Hydro found that the following BMPs did not meet that minimum standard:

- *BMP 6 (Porous Pavement)*
- *BMP 4 (Porous Pavement)*
- *BMP 9 (Aboveground basin)"*

The submitted soil testing includes Test Pit Logs that indicate approximate ground surface elevations which were determined by the Applicant's geotechnical engineer interpolating between existing ground contours depicted on the site plan that was provided to the Applicant's geotechnical engineer prior to completing the soil testing. Therefore, the Test Pit Logs should be reviewed in conjunction with the site plan drawings and associated existing ground contours shown at the location of each soil profile/test pit to verify the existing ground surface elevations and corresponding seasonal high-water table (SHWT) elevation. Based on our review of the depth to SHWT shown on the Test Pit Logs and the existing ground surface elevations shown on the site plan drawings, the proposed BMPs



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have been designed to provide the required separation between the bottom of the BMP and the SHWT.

Further, the Applicant will be required to complete additional soil testing during construction and post construction for all infiltration BMPs in accordance with the NJ BMP Manual to verify consistency with the proposed stormwater management design as well as compliance with the applicable stormwater management regulations.

2.3 Soil Testing Requirements for BMPs:

"...Princeton Hydro compared the number of test pits for each BMP to the number required by the NJDEP Manual to confirm the applicant performed the minimum number of soil tests. Princeton Hydro compared the infiltration area of each BMP on the plan to what was entered into the model. Table 1 is a comparison of the infiltration area found in the model calculations and the infiltration area shown on the plan. The infiltration area is the bottom of the basin, not the side slopes.

Table 1: Comparison of Infiltration Areas Shown in the Plan and Model

<i>BMP ID – BMP Type</i>	<i>Infiltration Area, Model (SF)</i>	<i>Infiltration Area, Plan (SF)</i>	<i>Difference, Model – Plan (SF)</i>
<i>1 – Large Scale Infiltration Basin</i>	<i>42,000</i>	<i>45,490</i>	<i>-3,490</i>
<i>2 – Small Scale Infiltration Basin</i>	<i>26,023</i>	<i>25,830</i>	<i>193</i>
<i>3 – Porous Pavement</i>	<i>5,227</i>	<i>5,558</i>	<i>-331</i>
<i>4 – Porous Pavement</i>	<i>12,197</i>	<i>12,369</i>	<i>-172</i>
<i>5 – Porous Pavement</i>	<i>14,810</i>	<i>14,611</i>	<i>199</i>
<i>6 – Porous Pavement</i>	<i>35,719</i>	<i>37,473</i>	<i>-1,754</i>
<i>7 – Small Scale Infiltration Basin</i>	<i>14,375</i>	<i>13,405</i>	<i>970</i>
<i>8 – Porous Pavement</i>	<i>10,019</i>	<i>15,900</i>	<i>-5,881</i>
<i>9 – Porous Pavement</i>	<i>6,534</i>	<i>17,981</i>	<i>-11,447</i>
<i>10 – Small Scale Infiltration Basin</i>	<i>9,583</i>	<i>9,467</i>	<i>116</i>
<i>11 – Porous Pavement</i>	<i>13,504</i>	<i>22,826</i>	<i>-9,322</i>
<i>12 – Small Scale Infiltration Basin</i>	<i>900</i>	<i>1,004</i>	<i>-104</i>

As demonstrated, there are differences between what was modeled and what was shown on the plan. A majority of these differences are not consequential, but the differences at BMP 1, 8, 9 and 11 are much more significant as the infiltration areas as modeled are much larger than the final BMP footprints as proposed on the plans. The modeling must be revised accurately analyze the proposed conditions."



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As shown within Table 1, the infiltration areas as modeled are less than (not greater than) the infiltration areas shown on the plans for BMPs 1, 8, 9 and 11. Therefore, the model does not need to be revised since it is a more conservative design. With that said, the Applicant will be required to revise the BMP infiltration areas shown on the plans to match the model for consistency purposes prior to any construction.

"Table 2 provides a comparison of the number of test pits required by the NJDEP BMP Manual against those performed by the applicant. The BMP footprint as shown on the plan was used as the reference to determine the required number of test pits.

Table 2: Number of Soil Test Performed for each BMP against the Minimum Number Required

<i>BMP ID</i>	<i>Infiltration Area, Plan (SF)</i>	<i>Number of Tests Provided</i>	<i>Number of Tests Required</i>	<i>Compliant (Y/N)</i>
1	45,490	12	6	Y
2	25,830	4	3	Y
3	5,558	2	2	Y
4	12,369	3	3	Y
5	14,611	3	3	Y
6	37,473	4	5	N
7	13,405	1	3	N
8	15,900	2	3	N
9	17,981	3	3	Y
10	9,467	1	2	N
11	22,826	4	4	Y
12	1,004	2	2	Y

BMPs 6, 8, and 10 are short one soil test and BMPs 7 is short two test pits. 76,425 sf of the 221,914 sf of infiltration areas are not compliant with local ordinance. Though this may seem minor, but the SHWT can vary greatly as exemplified by BMP 6 and therefore it's important to enough testing to confirm the design conforms with standards. This is a vulnerability in the design that shows how the project is potentially not conforming to N.J.A.C. 7:8 5.4 (§25-29.4P) 7:8 5.6 (§25-29.4R) for groundwater recharge and stormwater quantity control standards."

The New Jersey Stormwater Best Management Practices (BMP) Manual provides guidance to address the standards in the Stormwater Management Rules, N.J.A.C. 7:8.

N.J.A.C. 7:8 defines the New Jersey Stormwater Best Management Practices (BMP) Manual as the "manual maintained by the Department (NJDEP) providing, in part, design specifications, removal rates, calculation methods, and soil testing procedures approved by the Department as being capable of contributing to the achievement of the stormwater management standards specified in this chapter. The manual is periodically amended by



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the Department as necessary to provide designs specifications on additional best management practices and new information on already included practices reflecting the best available current information regarding the particular practice and the Department's determination as to the ability of that best management practice to contribute to compliance with the standards contained in this chapter (N.J.A.C. 7:8). Alternative stormwater management measures, removal rates, or calculation methods may be utilized, subject to any limitations specified in this chapter, provided the design engineer demonstrates to the review agency, in accordance with N.J.A.C. 7:8-5.2(g), that the proposed measure and its design will contribute to achievement of the design and performance standards established by this chapter.

Chapter 12 of the NJ BMP Manual outlines the location and number of required soil explorations.

Our office defers to NJDEP review regarding the number of required soil explorations for the proposed development. With that said, it is our understanding that the Applicant's Engineer worked with the NJDEP to determine the number of required soil explorations for the development prior to completion. Finally, as indicated above, the Applicant received a NJDEP Permit which granted a Flood Hazard Area Individual Permit, Freshwater Wetlands General Permit 10B, Freshwater Wetlands General Permit 11, Freshwater Wetlands General Permit 17, and a Water Quality Certificate, dated November 15, 2024.

2.4 Groundwater Mounding Calculations:

"...the groundwater mounding analysis for the 100-year storm has errors in it and upon further investigation, the groundwater mounding will reach into the storage volume for the following BMPs:

- *BMP 3*
- *BMP 4*
- *BMP 10"*

Chapter 13 of the NJ BMP Manual outlines the method(s) to complete groundwater mounding calculations for an infiltration BMP. Our office agrees that there appears to be some discrepancies with the groundwater mounding calculation methodology completed by the Applicant's Engineer as compared to the methodology outlined in the BMP Manual. With that said, as indicated above, the BMP Manual provides guidance to address the standards in the Stormwater Management Rules, N.J.A.C. 7:8 and alternative stormwater management calculation methods may be utilized provided the design engineer demonstrates to the review agency that the proposed measure and its design will



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contribute to achievement of the design and performance standards established by N.J.A.C. 7:8.

Further, Special Condition #2 of the NJDEP Permit referenced above indicates that the Department has determined that this project meets the requirements of the Stormwater Management Rules at N.J.A.C. 7:8.

2.5 Impacts to Wetlands:

The proposed stormwater system intends to route the stormwater runoff through a pipe network to down-gradient basins where all of the surface runoff will discharge much further downstream. The wetlands uphill of the discharge locations will therefore collect less stormwater runoff due to their reduced contributory drainage areas.

Impacts to Freshwater Wetlands are under the jurisdiction of the New Jersey Department of Environmental Protection (NJDEP). As indicated above, the Applicant has received the necessary Freshwater Wetland permitting from NJDEP.

2.6 Peak Flow Calculations:

"Based on our review of the existing conditions mapping and modeling, we believe the time of concentration computations were done incorrectly for this project."

"...It appears that the designer used an old method to determine the TC for drainage areas POA 1 and 2."

"...Princeton Hydro would note that the NJDEP ruling on this project means that the latest (2023) Stormwater Rule update does not apply. However, the TC calculation methodology referenced above was updated with the previous rule change in 2021."

Chapter 5 of the NJ BMP Manual outlines the method to complete time of concentration calculations. Our office agrees that there appears to be some discrepancies with the time of concentration calculation methodology completed by the Applicant's Engineer as compared to the methodology outlined in the BMP Manual. With that said, as indicated above, the BMP Manual provides guidance to address the standards in the Stormwater Management Rules, N.J.A.C. 7:8 and alternative stormwater management calculation methods may be utilized provided the design engineer demonstrates to the review agency that the proposed measure and its design will contribute to achievement of the design and performance standards established by N.J.A.C. 7:8.



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Further, Special Condition #2 of the NJDEP Permit referenced above indicates that the Department has determined that this project meets the requirements of the Stormwater Management Rules at N.J.A.C. 7:8.

2.7 Separation of Sanitary Infrastructure and BMP

"The design has a sanitary pipe traveling through porous pavement system (Figure 11). While Princeton Hydro could not find a specific rule against a sanitary line traveling through a subsurface basin, there are rules dictating adequate separation between stormwater piping and sanitary piping."

Sanitary sewer piping will not be installed within any stormwater management system. The Applicant's Engineer will be required to revise the plans to indicate the same prior to any construction.

3.0 Summary: Informational/Opinion. No comment needed.