

## MEMORANDUM

To: Bryan Healy, Village of Croton-on-Hudson Village Manager  
CC: Dan O'Connor, Village Engineer; Linda Whitehead, Village Attorney, Stuart Mesinger, AICP  
From: Nick Vamvas  
Date: October 29, 2021  
Re: Hudson National Golf Club/Matrix Development, LLC – Solar Project - Engineering Review  
Project #: 82050.00

The following are our comments on the applicant's latest submission. The following items were reviewed for conformance with the Village code, NYSDEC stormwater design requirements, and general engineering and natural resource protection best practices:

- Proposed Subdivision/Solar Array System prepared for Hudson National Golf Club dated April 22, 2019 revised October 14, 2021 sheet 1 of 6 sheets, (Preliminary Plat),
- Overall Map, Proposed Subdivision/Solar Array System prepared for Hudson National Golf Club dated January 22, 2020 revised October 14, 2021 sheet 2 of 6 sheets,
- Tree Plan and Tree Replanting Plan, Solar Array System prepared for Hudson National Golf Club dated March 25, 2020 revised October 14, 2021 sheet 3 of 6 sheets,
- Tree Schedule, Solar Array System prepared for Hudson National Golf Club dated February 25, 2020 sheet 4 of 6 sheets,
- Erosion Control Plan, Solar Array System prepared for Hudson National Golf Club dated July 2, 2020 revised October 14, 2021 sheet 5 of 6 sheets,
- Detail/Notes, Solar Array System prepared for Hudson National Golf Club dated July 2, 2020 revised October 11, 2021 sheet 6 of 6 sheets,
- Biodiversity and Habitat Assessment
- prepared for Matrix Development LLC dated December 1, 2020, and
- Stormwater Assessment at Prickly Pear Hill Road memorandum dated February 9, 2021.

### COMMENTS ON REVISED PLANS

1. The zoning schedule and building envelope for Lot 2 should be shown on Sheet 1 of 6.
2. Two tables in Array 1 are outside of the building envelope. The tables should be relocated or removed.
3. The Proposed Disturbance Line appears to indicate the presence of grading to accommodate installation of the proposed solar arrays. Please provide the proposed grading for review. Furthermore, the disturbance line should be modified to include the proposed underground cable in the materials storage area and the proposed equipment on the east side of Prickly Pear Hill Road.
4. It is possible that proposed steep slopes are present directly adjacent to the proposed subdivision line. This is impossible to verify until the proposed grading is provided, but the applicant is reminded to comply with §195-4.A(14) regarding the setback of cut and fill slopes from existing and proposed property lines.
5. Please provide locations where slope stabilization measures are required, if applicable.
6. Array 1 contains a dead-end access drive over 850 feet in length without a hammerhead or other turnaround area. The local Fire Department should be consulted to verify that this is acceptable. Additionally, the Fire Department should be asked to comment on the width, slope, and proposed surface of the access paths.

7. It appears that a hydrant and a culvert are present in Array 1. Please note these should be protected during construction.
8. Stabilized construction entrances (anti-track pads) should be provided on the two access paths in Array 1. Also, sediment control barriers should be added around the existing basin in Array 1 to limit the intrusion of sediment-laden runoff during construction.
9. It appears from Sheet 6 of 6 that the proposed solar panels will be mounted on driven piles. Please verify the foundation type.
10. Please provide a manufacturer specification on the proposed jute mat that will provide anti-scour treatment at the solar panel drip edge.
11. Under “General Erosion Control Notes,” note 2 should be modified to include compliance with the New York State Standards and Specifications for Erosion and Sediment Control, November 2016. Note 4 should be updated to define what constitutes “extended periods” before seeding and mulching must occur. Typically, any disturbance to remain open for 14 days or more should be stabilized. Please provide a specification on the “tobacco netting” mentioned in Note 5.
12. The Stormwater Device Maintenance Schedule should be modified to include daily inspections by the trained contractor. Also, “special” maintenance should be provided for silt fences. Sediment must be removed when bulges in the fence develop. Lastly, please specify what constitutes “significant” rainfall.
13. Please indicate the location of the proposed fence around the electrical equipment.
14. Installation of the transformer and inverter pads constitutes construction of new impervious surfaces. Thus, the applicant must provide a SWPPP including post-construction stormwater management practices to capture and treat runoff from all impervious surfaces. The SWPPP must comply with the requirements of both the Village Code and The New York State Stormwater Management Design Manual.
15. See below for updated SWPPP requirement checklists based on review of the revised plans.

#### COMMENTS ON HABITAT ASSESSMENT REPORT

1. The introduction states that the survey was limited to two field days, and in the next paragraph the first sentence states “A number of site walks were conducted during October and November of 2020 to evaluate site conditions...” It is unclear if two site visits or numerous site visits were conducted.
2. The Breeding Bird Atlas might be consulted regarding potential birds found in this Survey Block and whether any of those potential species are special concern. Attachments to the report should include consultation letters from the New York Natural Heritage Program (NYNHP) or the US Fish and Wildlife Service (USFWS) IPaC that have been obtained/refreshed within the past 6 months.
3. Survey Methods
  - a. More complete survey results would be produced if survey visits were conducted during the plant growing season and nesting bird season (i.e., late spring) to listen for bird calls and to review herbaceous plants. Reptiles and salamanders are also more likely to be observed in the late spring than in October and November. Given that this is a forested site, nesting bird survey in the spring would provide a more complete analysis as to the use of the existing forested habitat and whether it was being used by forest interior species.
  - b. The Survey Methods state that “a qualitative analysis of the forested habitat was performed throughout the study area. Specific random search areas were used to determine representative plant community characteristics. Changes in the soil conditions, topography, and vegetative disturbances were also recorded. Each habitat was evaluated according to the following community characteristics, including uniqueness and relative abundance, vegetative species diversity, plant type and food value, vertical and structural diversity and plant utilization

of existing vegetation (unclear what this last phrase means). However, there is no tabulation or defined discussions of these various factors in the Existing Conditions or Ecological Settings and Assessment sections of the report.

4. Existing Conditions

- a. The Biodiversity report should state the minimum size of trees that were surveyed (i.e., were all trees surveyed, trees >3" dbh). The report states that 177 trees are less than 8" dbh. For Indiana bats, trees of 5" dbh or greater is relevant and should be noted here.
- b. The Ecological Assessment and Setting states that "standing dead trees with snags and cavities exist that may provide habitat for mammals and larger bird species," and "existing stone walls and occasional cracks in exposed bedrock may provide habitat for small mammals and reptiles. Occasional standing dead trees and fallen logs can provide cavities and habitat for a number of bird, small mammal and potentially some of the more terrestrial salamander species (redback salamander and slimy salamander). However Table 2, Animal Species Observed or Likely does not include possible reptiles mentioned in the "Ecological Assessment and Setting," that may use standing dead trees and fallen logs. It is noted that bats, including Indiana bat use dead trees and associated cavities as roost trees.

5. Ecological Assessment and Setting section states that 7.4 acres of forest shall be removed, whereas the site plan of April 22, 2019 shows 6.39 acres of disturbance, and the Current Proposal as Reviewed states that "approximately seven acres of the parcel" will be converted to grasslands. The final tree removal, disturbance area and habitat conversion numbers should be clarified.

6. Threatened and Endangered Species

- a. Regarding critical habitat, "currently the only designated critical habitat in New York State is for the Great Lakes breeding population of the piping plover and occurs along 17 miles of Lake Ontario shoreline in Oswego County and Jefferson County."<sup>1</sup> Therefore it is inappropriate for critical habitat to be tied to Indiana bat in the same sentence, as the critical habitat issue is referring to a separate species. This should be corrected in this report. There is no designated "critical habitat" for Indiana bat in New York State. However, suitable summer roosting habitat for this species is characterized by wooded areas with trees that have sun exposure for at least half of the day, are ≥ 5 in. diameter at breast height (dbh), and exhibit specific physical traits (e.g., exfoliating bark, crevices, dead limbs, snags). Suitable foraging habitat includes riparian/floodplain forests, upland forests, as well as open fields and pastures with scattered trees. Given the size of trees on the site, suitable summer roost trees are likely to be present.
- b. Regarding Indiana bat, there are also hibernacula in Orange County, which would be closer to this site.

7. Current Proposal as Reviewed

- a. It is unclear whether grubbing of stumps and roots may be needed given the forested nature of the site. A separate paragraph on soil disturbance and water quality would be beneficial and could also address the area of grubbing and associated soil erosion control practices.
- b. The paragraph about solar being a low impact use does not accurately assess sensitive species, as this site appears to have suitable habitat for Indiana bat. It is not clear what is attempting to be conveyed relative or in comparison to habitat on the golf course. At 13 acres, of which 7 will be cleared, this wooded site does not appear to represent edge habitat (whereas a golf course would represent edge habitat).

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<sup>1</sup> USFWS. 2021. IPaC Project Review Step 5, Critical Habitat. [www.fws.gov/northeast/nyfo/es/step5.htm](http://www.fws.gov/northeast/nyfo/es/step5.htm). Accessed October 28, 2021.

- c. This section does not discuss current contiguous forest habitat patch size and fragmentation of that patch through installation of a solar array in two section of the 13.5 acre site. The analysis should include identification of the current contiguous forest patch sizes and future contiguous forest patch size, and whether this represents a significant fragmentation that will reduce use by interior bird species, for example.

REQUIRED SWPPP COMPONENTS CHECKLIST (per NYSDEC GP 0-20-001, requirements are paraphrased for brevity)

1. ESC Component
  - a. Background info **included**
  - b. Site map **included**
  - c. Soils description **included in Stormwater Assessment memo, February 9, 2021**
  - d. Construction phasing and sequencing **included**
  - e. Minimum ESC practices **included**
  - f. Temp and perm stabilization plan **included**
  - g. ESC plan **included**
  - h. ESC details including sizing of temp sed basins and structural practices **included in plan view but a typical detail of basins should be provided**
  - i. Maintenance inspection schedule **included**
  - j. Description of pollution control measures (litter, chemicals, debris) **not included**
  - k. Description of industrial stormwater discharges – NA
  - l. ID of any elements not in conformance - NA
2. Post-Construction SWM Practice Component
  - a. ID of all SWM practices
    - i. Dimensions **not included**
    - ii. Material specs **not included**
    - iii. Installation details **not included**
  - b. Site map showing location and size **included but additional measures should be provided**
  - c. Modeling analysis report **included but needs more detail**
  - d. Soil test results (test pits) **not included**
  - e. Infiltration test results **not applicable unless SWM practices with infiltration are proposed**
  - f. O&M plan including inspection and maintenance schedule and ID of responsible entity **not included**
3. Enhanced Phosphorus Removal Standards (where required) - NA

VILLAGE CODE §196-6. STORMWATER POLLUTION PREVENTION PLANS

- A. No application for approval of a land development activity shall be reviewed until the appropriate approving authority has received a stormwater pollution prevention plan (SWPPP) prepared in accordance with the requirements of this article. **SWPPP has been submitted for review**
- B. All SWPPPs shall provide the following background information, erosion and sediment control, and stormwater management measures relating to stormwater quantity (some requirements are paraphrased for brevity):

- (1) Background information **included**
- (2) Site map/construction drawings including the site map shall show the total site area; all improvements; areas of disturbance; areas that will not be disturbed; existing vegetation; on-site and adjacent offsite surface water(s); wetlands and drainage patterns that could be affected by the construction activity; existing and final slopes; locations of off-site material, waste, borrow or equipment storage areas; and location(s) of the stormwater discharge(s). The site map shall be at a scale no smaller than one inch equals 50 feet. **included**
- (3) Soils description. **included in Stormwater Assessment memo, February 9, 2021**
- (4) Phasing plan. Not more than two acres shall be disturbed at any one time unless otherwise approved. **included but needs revision to restrict disturbance to 2 acres at a time or to request a project-specific maximum**
- (5) Description of pollution control measures (litter, chemicals, debris). **not included**
- (6) Description of construction waste materials stored on site and description of controls/storage. **not included**
- (7) Temporary and permanent structural and vegetative measures for each phase. **A list of the proposed measures is provided but not broken down per phase**
- (8) A site map/construction drawing(s) specifying the location(s), size(s) and length(s) of each erosion and sediment control practice. **included but needs more detail**
- (9) Dimensions, material specifications and installation details for all erosion and sediment control practices, including the siting and sizing of any temporary sediment basins. **included**
- (10) Temporary practices that will be converted to permanent control measures. **included**
- (11) Implementation schedule for staging temporary erosion and sediment control practices, including the timing of initial placement and duration that each practice will remain in place until the site is stabilized. **included but needs more detail to identify which ESC practices are in place in each phase**
- (12) Maintenance schedule to ensure continuous and effective operation of the erosion and sediment control practice. **included**
- (13) Name(s) of the receiving water(s) and NYSDEC classification(s), if applicable. **included**
- (14) Delineation of SWPPP implementation responsibilities for each part of the site. **not included**
- (15) Description of structural practices designed to divert flows from exposed soils, store flows, or otherwise limit runoff and the discharge of pollutants from exposed areas of the site to the degree attainable. **included**
- (16) Any existing data that describes the stormwater runoff at the site. **included**
- (17) An acknowledgement by the landowner granting to the Village and other agencies having jurisdiction the right to enter the property at reasonable times and in a reasonable manner for the purpose of inspection. **not included**
- (18) Description of each postconstruction stormwater management practice, including but not limited to dimensions, material specifications, and installation details for each postconstruction stormwater management practice. **not included**
- (19) Site map/construction drawing(s) showing the specific location(s) and size(s) of each postconstruction stormwater management practice. **included but additional measures should be provided**
- (20) Hydrologic and hydraulic analysis for all structural components of the stormwater management system for the applicable design storms, as per the manual specified in § 196-8A(1) herein. **not included**

- (21) Comparison of post-development stormwater runoff conditions with pre-development conditions. **included but needs more detail**
- (22) Maintenance schedule to ensure continuous and effective operation of each postconstruction stormwater management practice. **not included**
- C. In addition to the information requirements of § 196-6B, SWPPPs for land development activities disturbing one or more acres, whether or not these land development activities involve discharging a pollutant of concern to either an impaired water identified on the Department's 303(d) list of impaired waters or a total maximum daily load (TMDL) designated watershed for which pollutants in stormwater have been identified as a source of the impairment, must provide the following water quality controls (post- construction stormwater controls):
  - (1) Description of each postconstruction stormwater management quality practice. **not included**
  - (2) Site map/construction drawing(s) showing the specific location(s) and size(s) of each postconstruction stormwater management quality practice. **not included**
  - (3) Hydrologic and hydraulic analysis for all structural components of the stormwater management quality system for the applicable design storms, as per the manual specified in § 196-8A(1) herein. **not included**
  - (4) Dimensions, material specifications and installation details for each postconstruction stormwater management quality practice. **not included**
  - (5) Maintenance schedule to ensure continuous and effective operation of each postconstruction stormwater management quality practice. **not included**
  - (6) Maintenance easement(s), where required, to ensure access to all stormwater management practices at the site for the purpose of inspection and repair. Easements shall be recorded and shall remain in effect with transfer of title to the property. **Not included but may not be applicable if the stormwater management practices are within the lease controlled by the applicant.**
  - (7) Inspection and maintenance agreement recorded and binding on all subsequent landowners served by the on-site stormwater management measures in accordance with § 196-9 of this article. **not included**

#### ADDITIONAL OUTSTANDING COMMENTS

##### SWPPP COMMENTS

1. "Regulatory"
  - a. Page 2: The applicant asserts this project does not require post-construction stormwater management practices based on NYSDEC solar panel construction SWPPP guidance. The referenced memorandum includes two project scenarios, and the applicant appears to assert the project falls under Scenario 1 which allows for the project SWPPP to be developed to address erosion and sediment controls only. However, criteria #5 under Scenario 1 states "the project does not include the construction of any traditional impervious areas (i.e. buildings, substation pads, gravel access roads or parking areas, etc.)." This project, therefore, falls under Scenario 2 because of the installation of "traditional impervious areas" including the equipment pad and gravel access roads. Thus, the SWPPP must address post-construction stormwater management controls.
2. "Specific Erosion Control Measures"

- a. Page 3: Temporary Sedimentation basins are noted as flow control measures. The applicant should provide sizing calculations and typical details of the basins for review.
  - b. Page 3: Permanent detention basin is noted as a practice to reduce peak flows. The applicant should provide sizing calculations and typical details of the basin for review.
3. "Hydrology"
- a. Pages 9 and 10: The hydrologic analysis doesn't take in to account the impervious areas to be constructed as part of this project. Nor does it account for the changes in grades and their affect on the flow paths. In accordance with NYSDEC GP 0-20-001, Part III.B.2.c., a stormwater modeling and analysis report should be provided for review. The report must include:
    - i. Updated drainage area maps including pre- and post- construction subcatchment boundaries, flow paths, and design points;
    - ii. Hydrologic and hydraulic analysis for the 1-, 10-, and 100-year, 24-hour storm events including supporting calculations and summary table comparing pre- and post- runoff rates;
    - iii. Supporting calculations demonstrating the post-construction stormwater management practice(s) has/have been designed in conformance with NYSDEC sizing criteria;
    - iv. Identification of any sizing criteria that is not required based on NYSDEC GP 0-20-001; and
    - v. Identification of any elements of design that are not in conformance with the performance criteria contained in the NYSDEC design manual.
4. Notice of Intent
- a. The NOI is incomplete and must be modified to include responses to questions 23 and 27-39.
  - b. Question #4 must be updated to indicate the area of equipment pads.
  - c. Question #5 must be answered.
  - d. Question #6 should include the percentage of D soils in the disturbed area.
  - e. Question #22 should be answered "yes."
5. Other comments
- a. SWPPP must be updated to include WQv and RRv calculations, must address which runoff reduction techniques will be applied, and must address how any remaining WQv will be treated.
  - b. A more complete description of on-site soils is necessary to determine suitability of the proposed stormwater management practices. Test pits or borings should be provided in all practice areas, and infiltration testing should be provided for practices with a filtering component.
  - c. SWPPP must be updated to include a description of the pollution prevention measures that will be used to control litter, debris, and construction chemicals.