JC ENGINEERING, INC.

Civil & Environmental Engineering

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February 9, 2024

Town of Wareham
Conservation Commission
Attn: Sandra Slavin, Chair
54 Marion Road
Wareham, MA 02571

RE: Responses to Initial and Technical Peer Reviews as prepared by Allen & Major, Inc.
Hidden Trails Definitive Subdivision Plan

Dear Chair Slavin and Members of the Commission:

JC Engineering, Inc. (JCE) has received the following documents from Allen & Major, Inc. (A&M) pertaining to the previously submitted Hidden Trails Definitive Subdivision Plan and Special Permit for a Residential Cluster Development & Site Plan Review, dated September 7, 2023, as prepared by JCE:

- Initial Peer Review letter addressed to the Town of Wareham Planning Board, Attn: Michael King, Chair, dated October 23, 2023
- Initial Peer Review of Resource Areas letter addressed to the Town of Wareham Conservation Commission, Attn: Sandra Slavin, Chair, dated December 7, 2023
- Technical Peer Review letter addressed to the Wareham Conservation Commission, Attn: Sandra Slavin, Chair, dated January 3, 2024 (with 10/23/23 letter)

Comments from A&M are shown in italics followed by responses from JCE. Also attached is the revised Definitive Subdivision Plan of Hidden Trail, dated 2/9/24 (Plan) and a revised Stormwater Report, dated 2/9/24 for review.

COMMENTS FROM RESOURCE AREAS LETTER (DECEMBER 7, 2023)

A-series IVW (Sheet 12)

- *Flags present: A1 to A7 (LEC agrees with flag locations).*
- *Note: this IVW is a NHESP mapped Potential Vernal Pool (PVP) according to MassGIS. Wareham's Wetland Bylaw protects vernal pools and the 100-foot Buffer Zone regardless of whether the site has been certified by the Massachusetts Division of Fisheries and Wildlife. If this PVP is determined to be certifiable, it may affect permitting as the proposed*

stormwater infiltration basin is within the 100-foot Buffer Zone. The applicant should provide documentation as to the intent of work adjacent to this resource area.

JCE concurs that this IVW is mapped as a potential vernal pool (PVP). Although JCE has not determined whether this IVW is a vernal pool or not, JCE has calculated the boundary of this PVP in accordance with the State Wetlands Protection Regulations, 310 CMR 10.57(2)(b)6 and has depicted the boundary on the Plan. A drainage area sketch and HydroCAD analysis is attached to this letter. Further, the Wareham Wetland Protection Bylaw defines a vernal pool to include the area within 100 feet of the mean annual boundaries of such depressions which is also depicted on the Plan. The boundary of the local PVP is approximately the same as the 100-foot buffer zone to the IVW. The location of Infiltration Basin #1 has been relocated to provide a minimum 30-foot buffer to the local PVP, but is now outside of jurisdiction from the IVW. Also, proposed Lots #1 and #2 have also been relocated to the northerly side of the right of way to ensure that future lot development will not take place within the 100-foot buffer zone to the local PVP boundary. We note that site conditions have not changed since the issuance of the Order of Conditions for the prior development, which classified this resource area as only an IVW.

<u>B-series IVW (Sheet 12)</u>

- *Flags present: B2, B9, B10, B11 (LEC agrees with flag locations).*
- *Flags added: B8 added in the field to close out IVW boundary in proximity to the project footprint and should be reflected on future plans.*

The newly delineated Flag B-8 by LEC is now depicted on the revised Plan as Flag B-8R.

<u>AA-series IVW (Sheet 12)</u> (Added by LEC):

- *LEC identified and delineated a small IVW during the site evaluation with wetland flags numbered AA- 1 to AA-6. This IVW is located directly northwest of the B-series IVW and appears to be located within the proposed roadway footprint. We observed obligate wetland plant species, hydric soils, and evidence of hydrology. It appears that this IVW is within a low-lying area that may have been previously excavated to function as a cranberry bog and was subsequently abandoned. This area should be reviewed by the Applicant. An additional onsite review with wetland consultants can be provided.*

The revised Plan depicts the locations of the AA-series as delineated by LEC. This IVW is a state non-jurisdictional isolated wetland and is located within the proposed roadway footprint. A total of 1,432 square feet of IVW alteration is proposed.

IS-series Inland Bank (Sheet 12)

- *Flags present: IS-22 to IS-30 (west side of ditch) IS-11 to IS-2 (east side of ditch).*
- *Note: Although flagging within this ditch was confirmed to be present and consistent with the steep toe-of-slope, this ditch presents underwhelming evidence that it is presently a jurisdictional/protectable resource area. We observed mostly upland soils, minimal wetland vegetation/evidence of hydrology and no indications that water regularly flows through the area. It appears this ditch may have been intended to convey flow to the south as part of a cranberry operation. Culverts depicted on the plan (not placed in the field) at wetland flags IS-17/IS-16 and IS-32 do not appear function as active hydrologic connections to upgradient or downgradient resource areas. This ditch appears non-jurisdictional under the Wetlands Protection Act and Bylaw and further discussion with the Commission is warranted.*

  JCE concurs with LEC and has removed from the Plan any reference to the ditch as being a jurisdictional resource area.

I-series BVW (Sheets 13, 14 & 15)

- *Flags present: I-100 – I-105, I-108 – I-109 I-120 to I-141 (LEC agrees with flag locations).*
- *Note: Flags I-108 and I-109 are placed in the field, but the numbering on Sheet 15 is skewed and it looks like the flags should really be I-107 and I-108. No issues with the flagging locations but the plans should be revised for clarity.*

  The skew of the wetland numbering has been revised on the Plan. The mis-labeled flags have been relabeled in the field.

D-series IVW (Sheet 14)

- *Flags present: D-8 to D-15, D-17 to D-19, D-22 to D-28 (LEC agrees with flag locations).*
- *Note: D-16 not on the plan or placed in the field. We agree with the connection between D-15 and D-17.*

  No response necessary.

L-series BVW (Sheet 15)

- *Flags present: L-26 to L41, L-48 to L-105, L-108. LEC agrees with all but two flag locations, however a good amount of the L-series flags appeared correct.*
- *Suggested flag revisions: L-40: 3' upgradient & labeled as L-40R. L-49: 4' upgradient & labeled as L- 49R. These should be reflected on future plans.*

  Wetland flags L-40R and L-49R are now depicted on the Plan.

- *Note: The 100-foot Buffer Zone extends onto the western and northern portions of the property from off-site cranberry bogs. Information should be provided from the Applicants representative regarding the source of the cranberry bog boundary depicted on the plans. The cranberry bogs located southwest of the site (depicted in green below) held standing*

water and exhibited vernal pool characteristics at the time of the visit. This is not a NHESP mapped CVP or PVP on MassGIS, but as mentioned above, Wareham's Wetland Bylaw protects vernal pools and the 100-foot Buffer Zone regardless of whether the site has been certified by the Massachusetts Division of Fisheries and Wildlife. Similar to the A-series IVW/PVP, if there is evidence to support certification, it may affect permitting as there is a proposed stormwater infiltration basin within the 100-foot Buffer Zone.

The resource areas depicted on the JCE plan, dated 9/7/23, were based upon the permit plans associated with the Order of Conditions issued on August 13, 2007 for "The Pond at Fearing Hill" (SE76-1941). The boundaries of the off-site cranberry bogs were confirmed by instrument survey in January 2024 by JCE and adjusted on the Plan where necessary. The updated resource area offsets are also depicted. Regarding the most southerly cranberry bog that is located westerly of Lot 36, JCE concurs that said bog is not depicted as a certified nor potential vernal pool on MassGIS. This cranberry bog is the most southerly and downgradient cranberry bog within a series of (5) hydraulically connected cranberry bogs. An existing outlet pipe, which is now depicted in the Plan, discharges surface water runoff southerly into a wetland system located southwesterly of the project. As is the case with most currently active bogs, this inactive bog has an adjustable flume at the outlet pipe which would have been used to contain water when this bog system was actively harvested. The current owner of these bogs no longer appears to harvest these bogs, therefore the need to hold water is not necessary. We feel any water ponding that does occur within this bog is from the slow discharge of collected surface water runoff from the hydraulically connected upgradient bogs.

COMMENTS FROM PEER REVIEW LETTER (JANUARY 3, 2023)

<u>Wareham Wetland Protective By-Law</u>

1. *The project depicts approximately 25 lots that will have portions of the lot area located within resource area buffers. Each lot will require individual Notices of Intent for construction of each single family home.* JCE concurs that some of the lots will require individual Notice of Intents prior to lot development.

2. *The Project is considered Commercial/Industrial Development for construction of greater than four residential units. This requires a 50-foot No activity Buffer Zone which is shown on the Site Development drawings. The plans also depict a 30-foot No activity Buffer Zone that is applicable for Residential Construction (Section XVII. Buffer Zone A.). The application does not identify the constraint of the 50 foot no activity buffer zone and it is unclear whether the applicant intends to seek a waiver from the requirements. The applicant should clarify the intent.* The current Notice of Intent application is for approval for the construction of a roadway, utilities, and stormwater management systems that will provide access to 56 individual residential lots. This application does not propose any commercial uses or individual lots with multiple residential units. In accordance with the Wareham Zoning Bylaws, neither of these uses are allowed within the R-60 zoning district. All future Notice of

Intent applications will only involve the construction of a single-family dwelling on each lot, which requires a minimum 30-foot no activity zone. In accordance with the Wareham Wetland Protection Bylaw, individual house construction on a separate lot will be subject to a 30-foot no activity zone, as will be the case for the lots within this development. Those lots within this development that contain areas under the jurisdiction of the Conservation Commission will require a separate application. Regarding the proposed limit of work for the current application, a 50-foot buffer zone has been maintained to the maximum extent practicable. There are areas where work is proposed within the 50-foot buffer zone, but is no closer than 30 feet from the resource area. These areas are as follows:

- wetland alteration of the AA series near STA 7+0 to 7+50 and adjacent buffer zone for the construction of the roadway, which is an allowable exception under Section XVII(C)(1)b.
- construction of a stormwater management system to the northeast of an IVW/PVP (A series). The proposed work is outside of jurisdiction of the IVW, but maintains a 30-foot no touch buffer from the boundary of the PVP. The PVP has not been confirmed as a vernal pool, but site activities have been designed as if this IVW is a vernal pool.
- Grading associated with the roadway construction in the vicinity of STA 23+50 that extends no closer than about 45 feet from the cranberry bog. We note that the disturbance occurs within the footprint of the existing gravel roadway and that no roadway pavement is proposed within the 50-foot buffer zone.
- Grading as part of the construction of Infiltration Basins #4 and #5 and proposed stockpile areas between these infiltration basins on Lots 48, 49, 52 and 53. This portion of the development is within previously altered and graded areas associated with past gravel removal activities. Further, the proposed site work will take place where the land surface is mostly void of topsoil or vegetation up to the approximate boundary of the resource areas.

3. *Section VII. Permits and Conditions, 5. of the Bylaw requires new septic systems to be located no closer than 150 feet to any wetland, or 100 feet if granted a variance by the Board of Health. The depths of some of the lots in total are approximately 160 feet (Lots 27 through 36). The applicant should clarify the feasibility of installation of standard septic systems or whether the intent is to seek a waiver.* It is not the intent of JCE to request any waivers from the Board of Health for the installation of a septic system. The layout of the proposed lots includes sufficient areas on each lot to install a septic system that maintains a minimum setback of 150 feet from the nearest resource area.

Buffer zone

The work required for this project is largely buffer zone work. Buffer zone work is regulated by the Wetland Protective By-law and described by the Wetlands Protection Act.

At 310 CMR 10.02(2)(b), the WPA regulations state:

> *Any activity other than minor activities identified in 310 CMR 10.02(2)(b)2, proposed or undertaken within 100 feet of an area specified in 310 CMR 10.02(1)(a) (hereinafter called the Buffer Zone) which, in the judgment of the issuing authority, will alter an Area Subject to Protection under M.G.L. c. 131, § 40 is subject to regulation under M.G.L. c. 131, § 40…*

The MACC Wetlands Buffer Zone Guidebook was issued to provide guidance to conservation commissions on reviewing projects with buffer zone impacts as a key resource for ensuring that permits support the protection of the interests of the Act. Removal of buffer zone may create an indirection alteration of resource areas that is specifically prohibited by both the Act and the Protective By-Law. The application does not describe how the removal of buffer zone can be accomplished while ensuring no adverse impacts to the adjacent resource area. A&M recommends that the applicant expand upon the application narrative to confirm the Burden of Proof as outlined in Section X of the bylaw is met. It is noted that the development site has been previously altered. The narrative should discuss both the new developed areas as well as those previously altered to the extent impacts were observed on the adjacent resource areas.

Neither the Wetlands Protection Act nor Wareham Wetland Protection Bylaw prevent any activities or development from being permitted within the 100-foot buffer zone of a resource area. Wareham does have a bylaw that requires a 30-foot No-Activity zone that would apply to residential lots, as is the case for this project. The attached Stormwater Report shows that the peak rate of discharge and volume under post-development conditions does not exceed pre-development conditions at both the property line and interior wetlands. This takes into account future development of each lot, where roof drywells will be required in certain situations described on the Plan. To protect the resource areas during construction, an erosion control barrier has been depicted on Plan.

Plan Comments

4. *The applicant notes the intent to utilize nitrogen reducing septic systems as part of the final development of each lot. Future applications should describe the technology being used, the influent and effluent parameters, and the specific maintenance requirements of the homeowner that are necessary for such a system and how compliance will be maintained.* The design of septic systems is under the jurisdiction of the Health Department. A sewage disposal system permit for each septic system will be obtained from the Health Department prior to installation, which will specify the innovative/alternative septic system being utilized as part of the design. JCE does agree that some lots will require a Notice of Intent prior to development, but it is not anticipated that any part of the septic system on any lots

will be installed within an area under jurisdiction of the Conservation Commission.

5. *No calculations are provided in support of the HDPE culvert crossing for the drainage ditch. The applicant should clarify the anticipated flows through here both form a precipitation standpoint as well as a bog management standpoint to affirm the pipe is sized correctly.* The Plan depicts a revised stormwater management system in the location of the existing ditch. Due to the ditch no longer being classified as a jurisdictional resource area, the pipe is no longer needed.

6. *The plan depicts a temporary stockpile area on Lots 50 and 52 with a portion of it extending into the buffer zone area. Erosion control barrier is proposed at the base of the stockpile. The applicant should consider the opportunity to relocate the stockpile entirely out of the buffer zone thereby minimizing work to the maximum extent feasible during construction.* The temporary stockpile area is proposed in a location that is mostly void of any native topsoil. When the stockpile area is no longer needed, areas depicted on the Plan adjacent to the resource areas will be stabilized with on-site topsoil and a conservation seed mix. A note has been added to the Plan regarding proposed restoration with on-site topsoil and a conservation seed mix.

7. *The limit of work line is shown inconsistently across the plans relative to the potential work on each lot. For example, the work shown on Lots 27 through 36 ends at the shoulder of the roadway with no tree line limit shown or the intent for further clearing. Lots 48 through 53 are shown cleared and/or graded to the limit of each lot. While lots 48 through 53 have differing degrees of topography that may be necessitating the additional work, is the extent of work necessary in support of the subdivision roadway (this application) or the individual lots? If the latter, that level of consideration should be provided throughout the subdivision to allow the Commission to review the potential full impacts of work within the buffer zone.* It is the intention to obtain a conservation permit that will allow for the depicted areas to be altered for the construction of the roadways and their associated utilities, the stormwater management systems, and to provide a storage area for the equipment, materials, and stockpiles (lots 48 through 53). Any work associated with the development of each lot that will occur within 100 feet of the resource areas will be required to file a separate Notice of Intent. A proposed treeline is depicted on the Plan for any site clearing necessary for the roadway construction.

8. *It is A&M's understanding that an environmental study is currently being conducted on the onsite reservoir. The results of that study should be provided to the Commission for review. Any reportable condition of contaminants under the Massachusetts Contingency Plan should be noted. Further, any required work for environmental remediation should be described to the Commission or otherwise indicated for a future Notice of Intent for work under a water body.* Although not required under the State Wetland Protection Act and Local Wetlands Bylaw, the applicant contracted with Lightship Engineering of Plymouth, MA to complete a Phase 1 Environmental Site Assessment with sampling to both rebut

statements made by property abutters at previous public hearings as well as ensure the applicant that there are no environmental concerns from past site activities. After completion of soil, groundwater, and surface water sampling and testing, Lightship Engineering has determined that there are no reportable conditions of contaminants.

Thank you for your assistance with this project. Feel free to contact this office should you have any additional questions or comments.

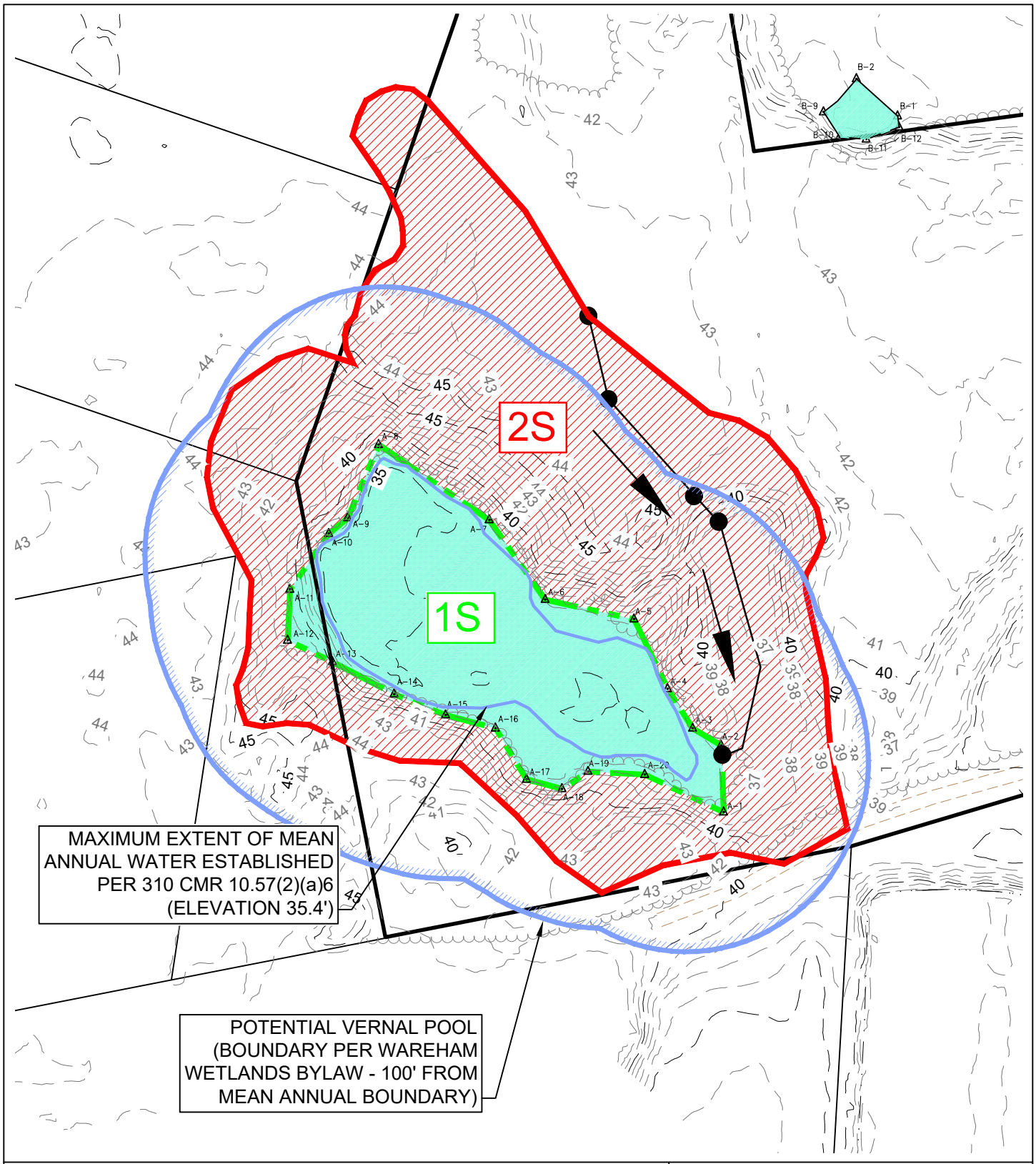
Sincerely,

Bradley Bertolo

Bradley M. Bertolo, EIT, CSE
Project Engineer

Cc: Sarajon Realty LLC

Attachment: Potential Vernal Pool Calculations



Contributing Drainage Areas to Potential Vernal Pool

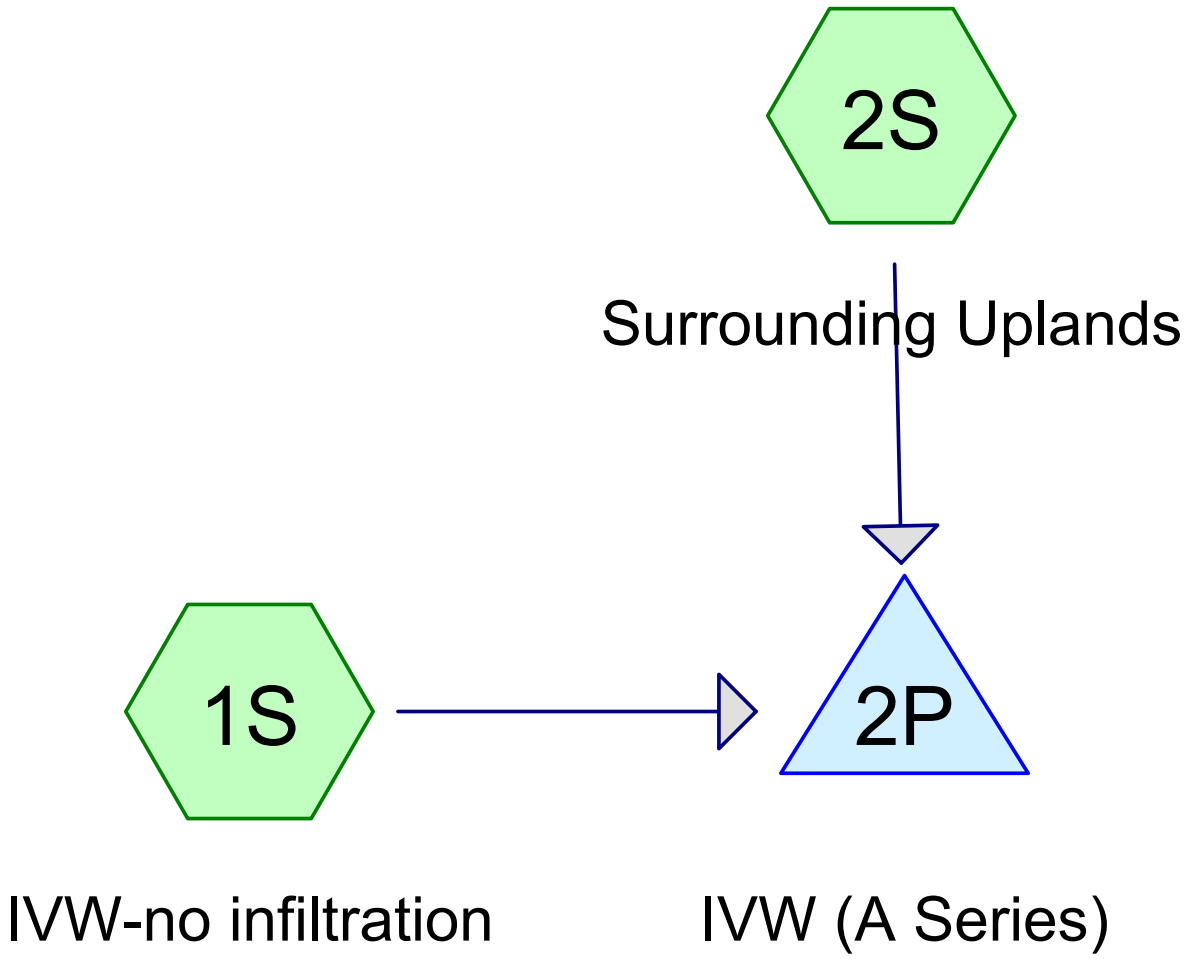
Hidden Trails, W. Warham, MA

DATE: FEBRUARY 9, 2024

SCALE: 1" = 80'

PREPARED BY:

JC ENGINEERING, INC.
2854 CRANBERRY HIGHWAY
EAST WAREHAM, MA 02538
(508) 273-0377



Subcat Reach Pond Link

Routing Diagram for Hidden Trails-IVW A-Series Volume Calcs
Prepared by JC Engineering, Inc., Printed 2/9/2024

Summary for Subcatchment 1S: IVW-no infiltration

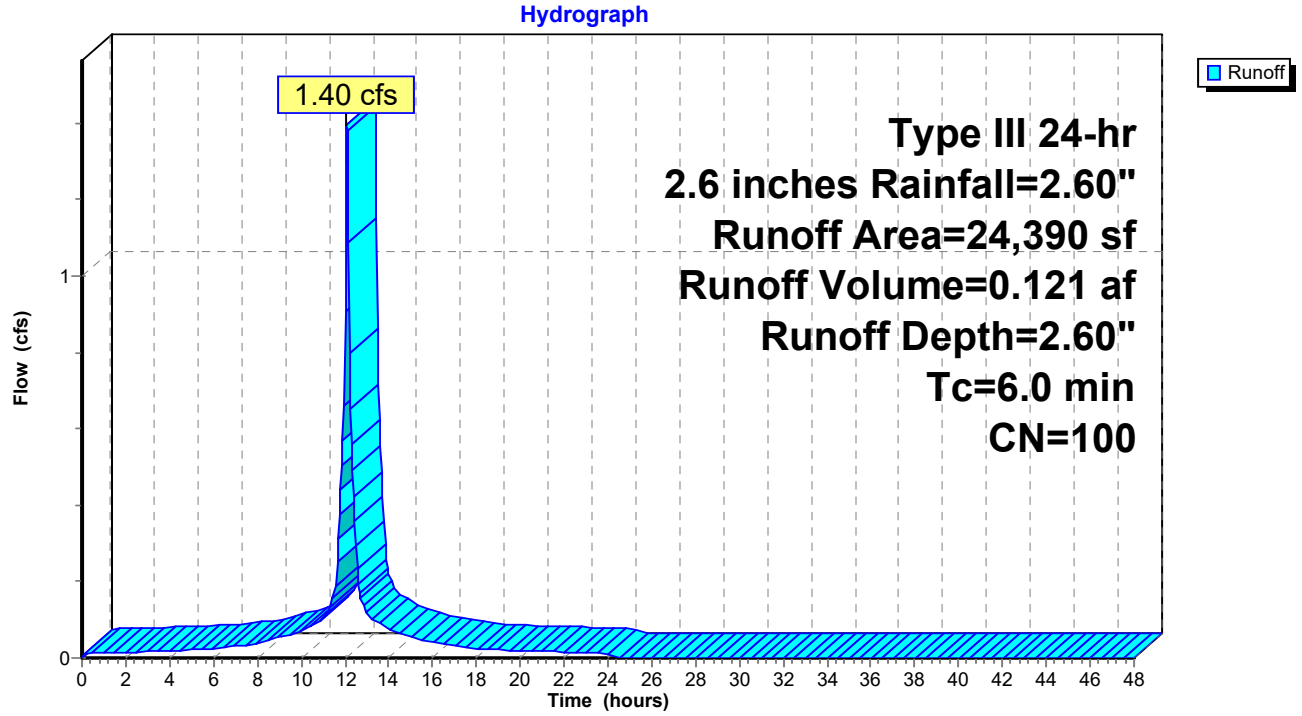
Runoff = 1.40 cfs @ 12.09 hrs, Volume= 0.121 af, Depth= 2.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2.6 inches Rainfall=2.60"

	Area (sf)	CN	Description
*	24,390	100	IVW
	24,390		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Subcatchment 1S: IVW-no infiltration



Summary for Subcatchment 2S: Surrounding Uplands

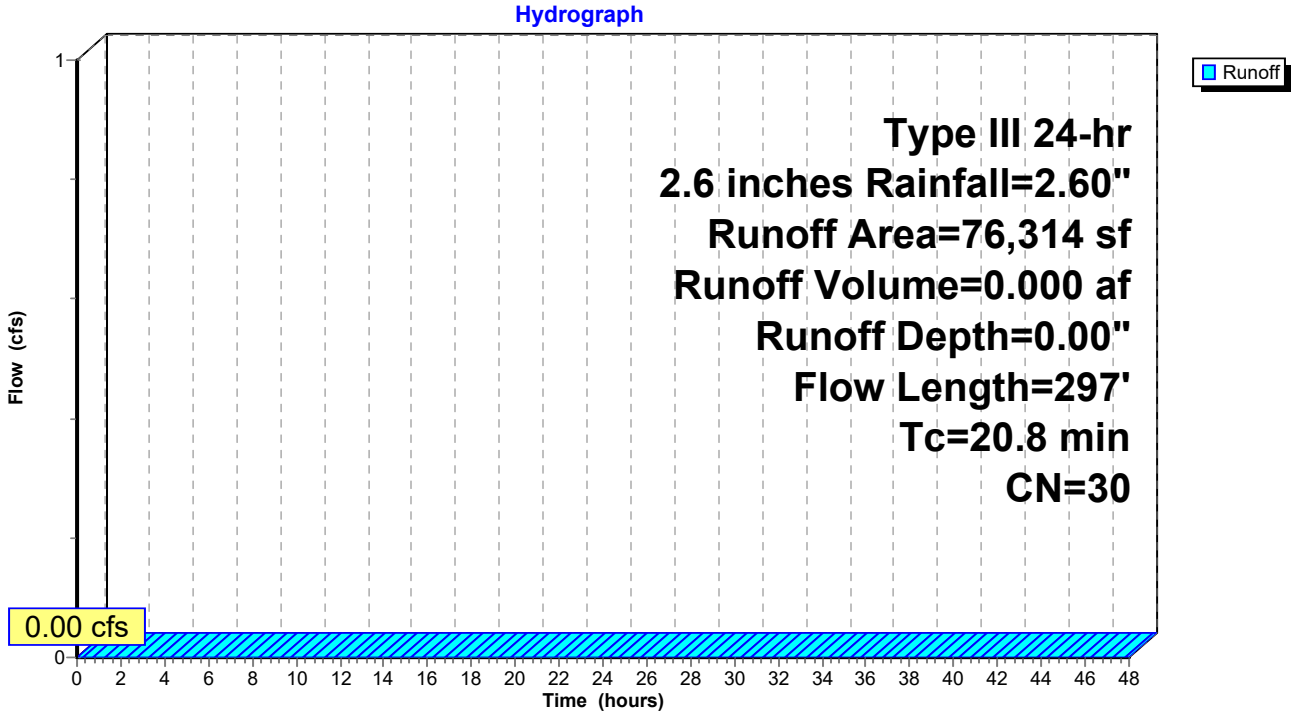
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2.6 inches Rainfall=2.60"

Area (sf)	CN	Description
76,314	30	Woods, Good, HSG A
76,314		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.7	50	0.0100	0.05		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.43"
1.8	75	0.0200	0.71		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	22	0.1400	1.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.1	150	0.0130	0.80		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
20.8	297	Total			

Subcatchment 2S: Surrounding Uplands



Summary for Pond 2P: IVW (A Series)

Inflow Area = 2.312 ac, 24.22% Impervious, Inflow Depth = 0.63" for 2.6 inches event
Inflow = 1.40 cfs @ 12.09 hrs, Volume= 0.121 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 35.36' @ 24.40 hrs Surf.Area= 14,575 sf Storage= 5,284 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	34.50'	29,577 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
34.50	985	0	0
35.00	5,700	1,671	1,671
35.10	8,010	686	2,357
35.50	18,140	5,230	7,587
36.00	22,610	10,188	17,774
36.50	24,600	11,803	29,577

Pond 2P: IVW (A Series)