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LAND PLANNERS

October 5, 2026

Ms. Cathy Shyer, Chair
Planning & Zoning Commission
Town of Salisbury
27 Main Street, P.O. Box 0548
Salisbury, Connecticut 06068

**Re: 62 Rocky Lane, Application PZC #2026-0323
Review of Stormwater Submission on behalf of Karl Anoushian**

Dear Chair Shyer and Members of the Commission:

Arthur H. Howland & Associates has been retained by Mr. Karl Anoushian, whose property lies across Rocky Lane and downhill from the subject parcel, to review the stormwater design for this application and its potential impact on his property as well as 73 Rocky Lane, 59 Rocky Lane, the Park Reserve and Rocky Lane right of way itself. Mr. Anoushian's interest is a simple one: that the project, once built, does not send more water, or dirtier water, onto his land than reaches it today. The applicant's own report acknowledges that runoff from this site already crosses under Rocky Lane onto his property through pipes in the road, and that the rain gardens were added in response to his concern. We appreciate that, and our review is offered in the same spirit: to help the Commission make sure the design actually delivers what the applicant intends.

We have reviewed the documents listed at the end of this letter against the Salisbury Zoning Regulations, the 2024 Connecticut Stormwater Quality Manual (SWQM), and the 2024 Connecticut Guidelines for Soil Erosion and Sediment Control. Our conclusion is that the submission does not yet demonstrate that Mr. Anoushian's property and others will be protected, for three reasons that are each correctable:

1. The computer analysis was built around a short, intense rain burst rather than the 24-hour storms the State Manual requires, so it does not yet tell us how the rain gardens behave in the storms that cause problems.
2. The soils under the rain gardens have not been tested, so no one yet knows whether water will soak in there.
3. And the lower two-thirds of the property, including the existing driveway that drains toward Rocky Lane and Mr. Anoushian's land, 73 Rocky Lane, 59 Rocky Lane and the Park Reserve today, has no stormwater measure of any kind. The applicant's engineer has written that he has "no problem complying with all" of the town engineer's comments (Response 10/1, p. 1). We respectfully ask that the Commission hold the application until those corrections are in hand rather than approve now and rely on them being made later.

Our detailed comments follow. Wherever we cite a number, we identify the document and sheet or page it comes from.

1. The Storm In The Analysis Needs To Match The Storm In The Standard

A drainage study answers two questions: how fast water leaves the property at its worst moment, and how much water leaves in total. A rain garden is a shallow basin, and a basin's performance depends on total volume. If it is sized for one amount and the storm delivers much more, it fills and the excess continues downhill as if the basin were not there. For Mr. Anoushian, et al, downhill means his yard.

The State Manual requires the design to be tested against 24-hour storms of 2-, 10-, and 100-year size using current federal rainfall data (SWQM Ch. 4, Standard 2). The submitted analysis uses the "Rational Method" throughout (Hydraflow, every hydrograph typed "Rational," $T_c = 10$ min). That is a sound tool for sizing a culvert or a pipe, but it describes a storm lasting about 20 minutes and was never meant for sizing storage. The applicant's own table shows the consequence: the 100-year storm is shown producing 8,276 cubic feet of runoff from the 4.05-acre lot (Hydraflow Summary, 100-Year, Hyd. No. 1), which is about half an inch of rain running off. The federal 100-year 24-hour rainfall at this location is 8.32 inches (NOAA Atlas 14, 42.034 N, 73.395 W). Applying the standard NRCS curve-number method to the cover shown on the plans yields roughly 51,000 to 62,000 cubic feet, six to seven times the modeled figure. The three rain gardens hold about 4,800 cubic feet combined to their rims (Response 10/1, Sheet C-1, Raingarden Sizing: 2,744 + 1,073 + 951 cu ft).

This is why the report's statement that runoff is reduced 32% in every storm (Stormwater Report, p. 2) cannot yet be relied on. Rain Garden #1 illustrates the point. It receives 0.53 acres (Hydraflow Hyd. No. 5). Using the engineer's own soil rate of half an inch per hour (Response 10/1, Drainage Comment 1), it can handle the 2-year storm, reaches capacity at about the 10-year storm, and in the 100-year storm receives roughly 8,000 to 10,000 cubic feet against about 3,700 cubic feet of capacity. The roughly 5,000 cubic feet that overflow have no designed outlet; the Hydraflow Pond Report for Pond 1 shows every culvert, orifice, and weir field at zero.

The State standard also asks that the 2-year storm peak be brought down to half of today's peak (SWQM Ch. 4, Standard 2). The submitted figures show 68% (Hydraflow Summary, 2-Year: Existing 6.05 cfs, Proposed with Ponds 4.11 cfs), and that is with the smaller storm. For the Commission's awareness, Zoning Regulation 602 does not adopt the 2024 Manual by reference; the 50% figure is the State standard the town engineer is applying under 602.2's general language.

None of this means the rain gardens cannot work. It means the analysis must be rerun with the right storm so the Commission and Mr. Anoushian, et al can see what they actually do.

2. Testing The Soil Under The Rain Gardens

A rain garden works only when the soil beneath it drains and the groundwater is far enough below the bottom. The State Manual requires a test pit at each rain garden, at least 3 feet below the proposed bottom and within 20 feet of the footprint, with a measured infiltration rate, before the design is finalized (SWQM Ch. 10, Soil Evaluation). Testing is mandatory whenever the system is sized by routing with an infiltration rate, which is what this model does. The engineer proposes to dig the pits

before construction (Response 10/1, Drainage Comment 2). We ask that they be dug before approval, because the results determine whether a garden can go where it is drawn and how large it must be.

Three reasons the results matter here. First, the engineer's own report notes that the septic test pits found mottling, the staining that marks seasonal high groundwater, at 19, 21, and 30 inches below grade (Stormwater Report, p. 1). The rain gardens are dug 24 inches deep. The State requires at least 24 inches between the bottom of a residential rain garden and seasonal high groundwater (SWQM Ch. 10, Vertical Separation). On this evidence the gardens may hold water rather than absorb it for part of the year.

Second, the model assumes the ground absorbs 2 inches per hour ("Exfiltration = 2.000 in/hr (Contour)," Pond Reports 1 to 3), while the engineer's letter states "B soils have 0.5 inch per hour infiltration rate" (Response 10/1, Drainage Comment 1). The letter is the realistic number. The State also applies a 50% safety factor to a measured rate and credits only the flat bottom, not the sloped sides, where the model's "(Contour)" setting credits the full wetted area (SWQM Ch. 10, Sizing Methods).

Third, the submitted soil survey shows a third soil unit, Farmington-Nellis complex, with bedrock 10 to 20 inches down and Hydrologic Soil Group D, covering about 44% of the mapped window (Soil Report, Map Unit Legend, p. 11), while the Stormwater Report describes only the two well-drained units (p. 1). How much of that unit falls on the parcel, if any, should be confirmed, since it affects the runoff coefficients used in the existing-conditions comparison.

3. Bringing The Rain Gardens Up To The State's Design Chapter

The State Manual's bioretention chapter (SWQM Ch. 13) sets out how a rain garden is built, and the current drawings fall short of it in several respects.

Ponding and freeboard. The Manual caps ponding for the water quality storm at 12 inches, allows up to 36 inches only for larger storms passing to a designed outlet, and requires 3 to 6 inches of freeboard above the highest ponding level (Ch. 13, Sizing and Dimensions). The applicant's gardens are a single 24-inch basin to the rim, with no outlet set at a water-quality level, no freeboard called out, and in Rain Garden #1 no outlet at all. Ponds 2 and 3 are modeled with a weir 3 inches below the rim (Pond Reports), with no spillway drawn and no discharge path shown. The "volume provided" on Sheet C-1 appears to count the full 24 inches as water quality storage.

Pretreatment. The Manual asks that runoff be pretreated where it enters, typically with a filter strip or a small forebay holding 25% of the water quality volume, so grit and leaves stop before the garden rather than in it (Ch. 13, Design Recommendations: Pretreatment). None is shown.

Media, outlets, plantings. The Manual calls for 2 to 4 feet of a specified sandy planting mix that does the filtering; the gardens as proposed are seeded native soil (Sheet C-1). It requires a primary outlet for the 10-year storm and an emergency spillway for the 100-year (Ch. 13, Outlet & Overflow); neither is drawn. There is no cross-section, planting plan, or maintenance plan.

Construction protection. The Manual requires that the contributing area be stabilized before flow is directed to a garden, that the garden be fenced off during construction, and that it not be used as a sediment trap (Ch. 13, Construction). The construction sequence on ES-1 does not appear to mention the gardens.

Setbacks. The Manual recommends 100 feet between an infiltration practice and a private well unless the practice receives only clean roof water (SWQM Ch. 10, Table 10-3 and footnote 4). Rain Garden #1 sits inside the 75-foot well radius on Sheet C-1 and receives lawn and driveway runoff with the roof (Stormwater Report, p. 2; Hydraflow Hyd. Nos. 3 and 5). The town engineer raised this (Grimaldi, Comment 6); the response cited the Health District's septic approval, which is a different review.

4. Measuring Water Quality Over The Right Area

The State asks that the first 1.3 inches of rain from developed areas be soaked into the ground on site (SWQM Ch. 4, Standard 1). The applicant used the correct formula but applied it to the whole lot (Sheet C-1: $WQV = 2,239$ cu ft) and compared the result to combined rain garden storage (4,768 cu ft) to show "more than twice what's required."

The requirement must be met for the land that actually drains to each garden. The lower 2.61 acres, 64% of the lot, drain toward Rocky Lane without passing through any garden. That figure is the applicant's own: Hydraflow Hyd. No. 11 "PR-DA-4, Drainage area = 2.610 ac"; the Summary shows Hyd. No. 12 built from inflows "6, 8, 10, 11," where 11 is PR-DA-4 added directly and unrouted; and Sheet C-5 (Response 10/1, p. 8) places PR-DA-4 over the existing driveway, both septic fields, and the frontage, with no rain garden inside it. The town engineer stated it plainly: "Run-off from the driveway within PR-DA-4 bypasses all of the proposed rain gardens" (Grimaldi, Drainage Comment 5). This is the part of the site that drains toward Mr. Anoushian, et al. Extra capacity uphill does not treat it. Measured as the State intends, roughly a third of the required volume is addressed.

5. Reconciling The Numbers

The plan, report, and model do not appear to agree with one another. Rain Garden #2's bottom is 191 sq ft on the plan but appears to be 931 sq ft in the model, so the model credits 1,813 cubic feet where the plan provides 1,073 (Sheet C-1; Pond Report 2); the model also shows that garden shrinking as it rises, which a bowl cannot do. Roof areas appear to be 2,731 and 2,185 sq ft on the plan but about 3,136 and 3,223 in the model (Hyd. Nos. 4 and 3), and those roof hydrographs do not appear to be routed anywhere. The lot area appears as 160,343 sq ft, 4.05 acres, and 176,626 sq ft in three places. The report says each roof goes to its own garden (p. 2); Sheet C-5 shows the main house draining to Garden #3 with driveway runoff and Garden #2 with no building in it. The town engineer asked for coverage calculations and time-of-concentration computations (Grimaldi, Drainage Comment 3); the revised maps add path lines but no table. Individually small issues, together these mean the Commission cannot yet rely on any single figure in the package.

6. The Point Of Comparison

The applicant's report identifies "a couple of small pipes that carry the runoff under the road onto the property across the street" and ties the rain gardens to "the concern raised by the downhill neighbor" (Stormwater Report, pp. 1-2). Sheet C-1 shows two pipe inverts along the frontage (INV. 233.1 and 232.0). Yet the analysis compares the whole lot at one lumped point (Hyd. No. 1 vs. Hyd. No. 12). The comparison that matters to Mr. Anoushian, et al is at the point where this site's runoff reaches those pipes, before and after construction, in the 24-hour design storms. We ask that it be provided.

7. The Driveway

Regulation 700.3(c) requires a driveway drainage plan to "shed water along the length of the driveway side slopes" and "avoid concentration of water runoff onto existing or proposed streets, street right-of-way and adjoining property." The existing drive from Rocky Lane to the fork is kept as-is (Stormwater Report, p. 1), runs down toward the road, and the new lower segments add to it. There is no swale, cross-slope, spreader, or other measure on that half of the drive. The town engineer recommended cross-sloping the drive (Grimaldi, Comment 12) and a rain garden below the septic area to intercept PR-DA-4 (Drainage Comment 5). The replies were that the cross-slope "will be done during maintenance after construction" and that a test pit would be dug "to see if a Rain Garden can be fit in here" (Response 10/1). Both are constructive, and both items should be done now, prior to approval.

8. Erosion Control During Construction

The disturbed area appears to be 1.48 acres (Response 10/1, ES-1 Narrative 1.2), which requires registration under DEEP's Construction Stormwater General Permit; the submission does not mention it. The narrative cites the 2024 Guidelines, which replaced the 2002 edition effective March 30, 2024 and which Regulation 600 incorporates "as amended," but the detail text on ES-1 and ES-2 still carries the 2002 section numbers.

Three temporary sediment traps were added to Sheet C-1 in response to Grimaldi Comment 2 (13 x 26 ft west of the guest house, 13 x 26 ft near the proposed well, 11 x 22 ft east of the main house). They appear only on C-1, drawn as rectangles across sloping ground, with no drainage area, depth, storage, embankment, or outlet shown, so sizing cannot be checked. A 13 x 26 footprint at a plausible depth holds roughly a quarter acre's worth of trap capacity under the Guidelines, against 1.48 acres disturbed, and none of the three serves the lower 2.6 acres where the septic systems and lower driveway are built and which drain toward Mr. Anoushian, et al. The traps are not in the sequence or the bond. The construction entrance was placed mid-driveway rather than at Rocky Lane, so trucks still track about 150 feet of gravel onto the public road. The sequence seeds once at the end of a one-year build where the 2024 Guidelines require stabilizing finished grades within 7 days and idle areas within 14. The bond estimate (\$29,844) omits the traps, all seeding and mulching, and stockpile protection. During a year of construction, sediment control on the downhill side of this site is Mr. Anoushian's most immediate concern.

9. The Commission's Findings

Regulation 602.2(a) requires the plan to "prevent flooding on or off the property"; 602.2(b) requires on-site storage "to the maximum extent feasible"; 602.2(d) allows the Commission to require a

maintenance program, which the State Manual also requires (Ch. 4, Standard 4) and which has not been provided; and 803.4(b) requires the Commission to be satisfied as to "proposed measures to control stormwater run-off." On this record those findings cannot yet be made.

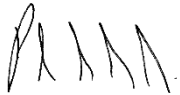
Requested Revisions Before Action

On behalf of Mr. Anoushian, et al, we respectfully ask the Commission to require the following before acting on the application:

- test pits and infiltration tests at each rain garden location, with results;
- a drainage analysis using the 24-hour design storms the State requires, with a land-cover table and a before-and-after comparison at the point where the site's runoff reaches the Rocky Lane pipes;
- rain gardens redesigned to the State's bioretention chapter, with 12-inch water-quality ponding, freeboard, pretreatment, planting media, a 10-year outlet and 100-year spillway, relocated where the well setback requires;
- a stormwater measure for the existing and lower driveway shown on the plan;
- one consistent set of numbers across plan, report, and model;
- a long-term maintenance plan;
- and an erosion-control plan on the 2024 Guidelines with sized and detailed sediment traps, the construction entrance at the road, and a bond that covers them.

The applicant has said the right things about protecting his neighbor. These revisions are how the Commission can make sure the plans say them too. We would be glad to meet with the applicant's engineer and the town engineer to work through any of these items, and to answer any questions the Commission may have.

Respectfully submitted,
Paul Szymanski, P.E.



President
Arthur H. Howland & Associates, P.C.

cc: Karl Anoushian
Thomas D. Grimaldi, P.E., R.R. Hiltbrand Engineers & Surveyors, L.L.C.

Documents reviewed: Site Plans Sheets C-1 to C-5, ES-1, ES-2 revised 8/14/26 ("2026-0323-Site-Plans-Revised-08142026.pdf"); Allied Engineering response package of Oct. 1, 2026 with revised Sheets C-1 to C-5, C-1A, ES-1, ES-2, Rev. 4 ("2026-10-1 alliend engineering resposne to grimaldi.pdf"); Stormwater Management Report, Allied Engineering, undated ("2026-0323-Stormwater-Report.pdf"); Hydraflow Hydrographs run of Aug. 26-27, 2026 and Drainage Summary Sheets ("allied engineering hydrographs.pdf," "2026-0323-drainage-summary-sheets.pdf"); NRCS

Custom Soil Resource Report ("2026-0323-Soil-Report.pdf"); Allied Engineering special permit narrative ("2026-0323-Letter-from-Allied-Engineering-Assoc-Inc.pdf"); R.R. Hiltbrand Engineers review letter of Sept. 24, 2026 ("2026-8-24 grimaldi review.pdf"); Salisbury Zoning Regulations effective 02/02/2026; 2024 Connecticut Stormwater Quality Manual; 2024 Connecticut Guidelines for Soil Erosion and Sediment Control; NOAA Atlas 14 precipitation frequency estimates for the site.