DiPrete Engineering

September 29, 2026

Beth E. Ashman, MCP, AICP
City Planning Director
869 Park Avenue
Cranston, Rhode Island 02910

RE: Stormwater Memorandum
Cranston, Rhode Island
AP 28, Lots 31 & 86
DE Project #: 2953-001-D01

Dear Reviewer,

On behalf of the applicant, we respectfully submit this letter and attached materials for the proposed subdivision located on Pippin Orchard Road in Cranston, Rhode Island. The site is located on Assessor's Plat 28, Lots 31 and 86. The total existing lot area is approximately 6.29 acres. Currently the site exists as a single-family dwelling with a private well and Onsite Wastewater Treatment System (OWTS). The site is accessed from Pippin Orchard Road via an existing shared driveway.

The intent of the applicant is to subdivide the existing lots 31 and 86 into two lots of single-family dwellings. The applicant proposes to construct one new single-family dwelling on the proposed Lot 1, along with associated infrastructure improvements such as a private well, OWTS, driveway and other utilities. Lot 2 will remain as is, however, part of the existing shared driveway will be altered to stay within Lot 2. No new road is proposed, instead both proposed lots will utilize their own driveways that connect to the existing shared driveway. Per Section 300.6 of the RI Coastal Resources Management Program (RICRMP) and Rule 7.12 of the DEM Rules and Regulations Governing the Administration of the RI Freshwater Wetlands Act, stormwater management and treatment is required for all new impervious areas greater than 600 SF. The new proposed dwelling will have a footprint of 3,120 SF. The new proposed driveway will have an area of 2,817 SF. Roof runoff from the proposed home will be directed to a rain garden through a roof leader, and driveway runoff will be directed to the same rain garden via overland flow.

Soil evaluations were completed on August 20, 2026 by Tim Twohig (D-4073), a Rhode Island registered Soil Evaluator. The soils are characterized as loamy sand, sandy loam, and silt. Seasonal high groundwater table was observed at depths ranging from 20" to 25".

There are two large wetlands (B-Series and C-Series) located within both lots 31 and 86. The B-Series wetland requires a 75' No-Disturb Buffer, and the C-Series wetland requires a 50' No-Disturb Buffer. The project does not disturb area within these wetlands.

Section C of the *Rhode Island Stormwater Management Guidance for Individual Single-Family Residential Lot Development* document was used for sizing the rain gardens and has been attached with this letter for reference, along with soil evaluations. Using the soil evaluation data, soils were determined to be loamy sand, sandy loam, and silt. Table 8 (Rain Garden Surface Area in Silty Soils (Loams and Silt Loams)) was used, with an 8" depth for the rain garden sizing. The roof area for the proposed home (3,120 SF),

along with the driveway area for lot 1 (2,817 SF) was used for the contributing area. Using Table 8 yielded a 952 SF minimum rain garden for lot 1. See also the Site Grading & Utilities Plan (Sheet 6 of 7) for detailed extrapolated calculations.

A summary of the design requirements for the rain garden is shown in the following table.

	Roof (SF)	Driveway (SF)	Total Impervious Area (SF)	Required Bottom Area 8" Depth (SF)	Provided Bottom Area 8" Depth (SF)
Lot 1	3,120	2,817	5,942	952	969

As designed, the site meets the requirements set forth in Section 300.6 of the RI Coastal Resources Management Program and Rule 7.12 of the RIDEM Rules and Regulations Governing the Administration of the RI Freshwater Wetlands Act. Negative impacts of stormwater have been mitigated to the maximum extent practicable. The stormwater management design meets the Rhode Island Stormwater Management Guidance for Individual Single-Family Residential Lot Development document; therefore, it is designed to capture and provide water quality treatment to the runoff from all new contributing impervious surfaces.

If you have any further questions on this matter, please feel free to contact me at your earliest convenience.

Sincerely,
DiPrete Engineering Associates, Inc.



Brenna Guay, PE
Project Engineer
bguay@diprete-eng.com

Appendix A: *Rhode Island Stormwater Management Guidance for Individual Single-Family Residential Lot Development*
Section C: Rain Gardens

Appendix B: Soil Evaluations

C. Rain Gardens

Rain Gardens are shallow depressions that are excavated, backfilled with amended soil, and planted to capture runoff and allow it to infiltrate into the ground below. Rain gardens can be planted with a variety of plants, and are similar to regular planting beds or landscaped areas, except that they are designed and sited to intercept and detain stormwater runoff. They are ideal for receiving larger volumes of runoff from downspouts or impervious areas such as driveways.

Table 6. Required Elements for Rain Gardens on Single-Family Residential Lots	
Location	☐ Rain gardens should be located in areas with less than a 12% slope (i.e. a 12 foot drop over a horizontal distance of 100 feet or a 6 foot drop over a distance of 50 feet). ☐ Rain gardens should be located at least 10 ft from foundations to avoid basement seepage. ☐ Rain gardens should be located at least 15 ft from onsite wastewater treatment systems and at least 25 ft from private drinking water wells (see Table 5 for additional setbacks).
Treatment	☐ The bottom of a rain garden should be level to encourage the even distribution of stormwater and increase infiltration capacity. ☐ Rain gardens should be 4 to 8 inches deep with a 2 – 4 inch amended soil layer and a 2 – 3 inch layer of non-dyed aged shredded hardwood mulch. ☐ The amended soil layer of a rain garden should be a 50/50 mixture of the excavated native soils and mature organic compost.
Vegetation	☐ Select plants for rain gardens using the Coastal Plant Guide at www.uri.edu/cels/ceoc/coastalPlants/CoastalPlantGuide.htm or Appendix B of the RI Stormwater Design and Installation Standards Manual. See example planting plans below.
Construction	☐ A crushed stone entrance should be installed at the inflow to prevent channeling. ☐ A berm to detain stormwater should be constructed along the downhill side of the rain garden, perpendicular to the slope of the lawn ☐ Be sure that the soil within the rain garden area does not become compacted by construction activities (i.e. heavy machinery). If soil becomes severely compacted it may need to be tilled and amended to maintain proper drainage.
Maintenance	☐ Rain gardens shall be inspected following at least the first two precipitation events of at least 1.0 inch to ensure that the system is functioning properly. Thereafter, the rain garden shall be monitored and maintained to assure proper functioning, plant growth and survival. Plants shall be replaced on an as-needed basis during the growing season. ☐ Silt/sediment shall be removed from the rain garden when the accumulation exceeds one inch, or when water ponds on the surface of the rain garden for more than 48 hours). The top few inches of material shall be removed and shall be replaced with fresh soil mixture and mulch. ☐ Pruning or replacement of woody vegetation shall occur when dead or dying vegetation is observed. ☐ Soil erosion gullies shall be repaired when they occur. ☐ Fertilizer or pesticides shall not be applied to plants within rain gardens. ☐ Perennial plants and ground covers shall be replaced as necessary to maintain an adequate vegetated ground cover. Annual plants may also be used to maintain ground cover.

Sizing a Rain Garden

Determine the area of impervious surface that will drain to your rain garden. This is the drainage area. Use Tables 7 and 8 below to choose a pre-calculated size based on the drainage area, soil texture and depth. To do this, you may need to round up your drainage area size (don't round down to avoid under-sizing your rain garden). The sizing recommendations below are based on sizing guidance in the University of Wisconsin Extension publication "Rain Gardens: a how-to manual for homeowners," which can be accessed at clean-water.uwex.edu/pubs/pdf/rgmanual.pdf . Alternatively, use sizing information and equations in Chapter 5 of the RI Stormwater Design and Installation Standards Manual at www.dem.ri.gov/pubs/regs/regs/water/swmanual.pdf. Be sure to demonstrate which sizing method was used on your submitted application.

Tables 7. and 8. Rain Garden Sizing Guidance

Rain Garden Surface Area in Sandy Soils (Sands, Loamy Sands and Sandy Loams) (square feet)			
Drainage Area (Square feet)	**for 4 inch deep garden**	**for 6 inch deep garden**	**for 8 inch deep garden**
100	19	15	8
200	38	30	16
300	57	45	24
400	76	60	32
500	95	75	40
600	114	90	48
700	133	105	56
800	152	120	64
900	171	135	72
1000	190	150	80

Rain Garden Surface Area in Silty Soils (Loams and Silt Loams) (square feet)			
Drainage Area (Square feet)	**for 4 inch deep garden**	**for 6 inch deep garden**	**for 8 inch deep garden**
100	34	25	16
200	68	50	32
300	102	75	48
400	136	100	64
500	170	125	80
600	204	150	96
700	238	175	112
800	272	200	128
900	306	225	144
1000	340	250	160

*In lieu of a soil texture determination, use the calculated surface areas for silty soils

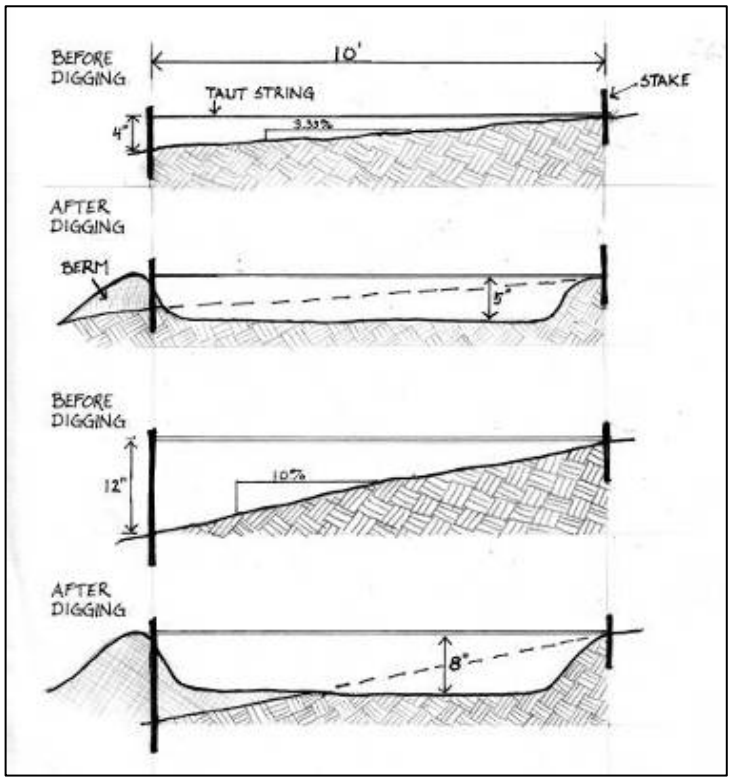
Rain Garden Dimensions and Shape

The length of the rain garden should be perpendicular to the slope of the lawn, and overall it should be twice as long as it is wide. This allows the garden to catch as much runoff as possible. Rounded or curvy shapes are the most effective, just be sure to approximate the required area from the table. Depending upon your site, it may be easier to break up stormwater flows to create multiple, smaller rain gardens than one larger one.

Rain Garden Installation

The best time to install a rain garden is in the spring, when digging will be easier and plants will be more likely to thrive. Be sure that the bottom of the rain garden is level and at the appropriate depth, and that you create a berm on the downhill side to retain stormwater (see Figure 3. below).

Figure 3. Digging the Rain Garden and Creating a Berm





Rain Garden Plant Selection

Plants that tend to do well in rain gardens are those that tolerate wet conditions, but also very dry conditions. Use the Rhode Island Coastal Plant Guide at www.uri.edu/cels/ceoc/coastalPlants/CoastalPlantGuide.htm to select appropriate species (filter your selection for "Rain Garden") then create a planting plan to lay out where each plant will go. Below are two example planting plans for residential rain gardens, but feel free to create your own. To ensure proper functioning of the rain garden, your planting plan should include a minimum of three different plant species, including shrubs as well as herbaceous species. Additional guidance for plant selection can be found in Appendix B of the RI Stormwater Design and Installation Standards Manual or in the CRMC Coastal Buffer Zone Planting Guide at www.crmc.ri.gov/coastallandscapes/Coastal_Buffer_Planting_Guide.pdf. Submit your planting plan and a list of the species to be planted with your application.

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
Department of Environmental Management
Office of Water Resources
Onsite Wastewater Treatment Systems Program

Site Evaluation Form
Part A – Soil Profile Description **Application Number** _____

Property Owner: NKC Investments LLC
Property Location: 1489 Pippin Orchard Road, Cranston
Date of Test Hole: 08/20/2026
Soil Evaluator: Tim Twohig License Number: D-4073
Weather: Sunny, 80's Shaded: Yes ☐ No ☑ Time: 10:00

TH dth 26-5 Horizon	Depth	Horizon Boundaries		Soil Colors		Re-Dox	Texture	Structure	Consistence	Soil Category
		Dist	Topo	Matrix	Re-Dox Features	Ab. S. Contr.				
Ap	0-11"	A	S	10YR 3/2	-	-	fsl	1 SBK	FR	4
Bw	11-28"	C	S	10YR 6/6	5YR 5/8	C M D	fsl	1 SBK	FR	4
Cd1	28-84"	C	S	5Y 5/3	7.5YR 5/8	C C P	lfs	1 PL	FI	9
Cd2	84-100"	-	-	5Y 5/3	-	-	cb gr lfs	0 M	FI	8

TH dth 26-6 Horizon	Depth	Horizon Boundaries		Soil Colors		Re-Dox	Texture	Structure	Consistence	Soil Category
		Dist	Topo	Matrix	Re-Dox Features	Ab. S. Contr.				
Ap	0-12"	A	S	10YR 3/2	-	-	fsl	1 SBK	FR	4
Bw	12-25"	C	S	10YR 6/6	5YR 5/8	C M P	fsl	1 SBK	FR	4
C	25-52"	C	S	2.5Y 5/2	7.5YR 5/8	C C P	sil	0 M	FR	7
Cd	52-96"	-	-	5Y 5/3	-	-	cb gr lfs	1 PL	FI	9

TH dth 26-5 Soil Class Dense till Total Depth 100" Impervious/Limiting Layer Depth - (og) GW Seepage Depth - SHWT 25" (og)
TH dth 26-6 Soil Class Dense till Total Depth 96" Impervious/Limiting Layer Depth - (og) GW Seepage Depth - SHWT 25" (og)

Comments: _____

Revised 11/25/18

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
Department of Environmental Management
Office of Water Resources
Onsite Wastewater Treatment Systems Program

Site Evaluation Form
Part A – Soil Profile Description **Application Number** _____

Property Owner: NKC Investments LLC
Property Location: 1489 Pippin Orchard Road, Cranston
Date of Test Hole: 08/20/2026
Soil Evaluator: Tim Twohig License Number: D-4073
Weather: Sunny, 80's Shaded: Yes ☐ No ☑ Time: 10:00

TH dth 26-1 Horizon	Depth	Horizon Boundaries		Soil Colors		Re-Dox	Texture	Structure	Consistence	Soil Category
		Dist	Topo	Matrix	Re-Dox Features	Ab. S. Contr.				
Ap	0-11"	A	S	10YR 2/2	-	-	fsl	1 GR	FR	4
Bw	11-26"	C	S	2.5Y 5/6	5YR 6/2	C F D	fsl	1 SBK	FR	4
Cd1	26-60"	C	S	5Y 6/2	5YR 5/8	C M P	lfs	1 PL	FI	9
Cd2	60-108"	-	-	5Y 5/3	-	-	cb lfs	1 PL	FI	9

TH dth 26-2 Horizon	Depth	Horizon Boundaries		Soil Colors		Re-Dox	Texture	Structure	Consistence	Soil Category
		Dist	Topo	Matrix	Re-Dox Features	Ab. S. Contr.				
Ap	0-12"	A	S	10YR 3/3	-	-	fsl	1 SBK	FR	4
Bw	12-25"	C	S	10YR 6/6	5YR 5/8	C F D	fsl	1 SBK	FR	4
Cd1	25-65"	C	S	5Y 6/2	5YR 5/8	M M P	lfs	1 PL	FI	9
Cd2	65-96"	-	-	5Y 6/2	-	-	cb ls	0 M	FI	9

TH dth 26-1 Soil Class Dense till Total Depth 108" Impervious/Limiting Layer Depth - (og) GW Seepage Depth - SHWT 22" (og)
TH dth 26-2 Soil Class Dense till Total Depth 96" Impervious/Limiting Layer Depth - (og) GW Seepage Depth - SHWT 21" (og)

Comments: _____

Revised 11/25/18

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
Department of Environmental Management
Office of Water Resources
Onsite Wastewater Treatment Systems Program

Site Evaluation Form
Part A – Soil Profile Description **Application Number** _____

Property Owner: NKC Investments LLC
Property Location: 1489 Pippin Orchard Road, Cranston
Date of Test Hole: 08/20/2026
Soil Evaluator: Tim Twohig License Number: D-4073
Weather: Sunny, 80's Shaded: Yes ☐ No ☑ Time: 10:00

TH dth 26-3 Horizon	Depth	Horizon Boundaries		Soil Colors		Re-Dox	Texture	Structure	Consistence	Soil Category
		Dist	Topo	Matrix	Re-Dox Features	Ab. S. Contr.				
Ap	0-9"	A	S	10YR 3/3	-	-	fsl	1 SBK	FR	4
Bw1	9-20"	C	S	10YR 5/8	-	-	fsl	1 SBK	FR	4
Bw2	20-37"	C	S	10YR 6/6	5YR 6/2	C F D	fsl	1 SBK	FR	4
CB	37-68"	C	S	2.5Y 6/4	7.5YR 5/8	C M P	sil	0 M	FR	7
2C1	68-89"	C	S	2.5Y 5/3	-	-	gr ls	0 M	VFR	6
2C2	89-108"	-	-	2.5Y 5/3	-	-	cb gr ls	0 M	VFR	6
TH dth 26-4 Horizon	**Depth**	**Horizon Boundaries**		**Soil Colors**		**Re-Dox**	**Texture**	**Structure**	**Consistence**	**Soil Category**
		Dist	**Topo**	**Matrix**	**Re-Dox Features**	**Ab. S. Contr.**				
Ap	0-9"	A	S	10YR 3/3	-	-	fsl	1 SBK	FR	4
Bw	9-23"	C	S	10YR 6/6	7.5YR 5/8	C M P	fsl	1 SBK	FR	4
C	23-33"	C	S	2.5Y 5/2	5YR 5/8	M C P	sil	0 M	FR	7
2Cd1	33-71"	C	S	5Y 6/2	-	-	gr lfs	0 M	FI	8
2Cd2	71-96"	-	-	5Y 6/2	-	-	cb gr lfs	0 M	FI	8

TH dth 26-3 Soil Class Dense till Total Depth 108" Impervious/Limiting Layer Depth - (og) GW Seepage Depth - SHWT 22" (og)
TH dth 26-4 Soil Class Dense till Total Depth 96" Impervious/Limiting Layer Depth - (og) GW Seepage Depth - SHWT 20" (og)

Comments: _____

Revised 11/25/18

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
Department of Environmental Management
Office of Water Resources
Onsite Wastewater Treatment Systems Program

Site Evaluation Form
Part A – Soil Profile Description **Application Number** _____

Property Owner: NKC Investments LLC
Property Location: 1489 Pippin Orchard Road, Cranston
Date of Test Hole: 11/22/2023
Soil Evaluator: Tim Twohig License Number: D-4073
Weather: Rain, 50s Shaded: Yes ☑ No ☐ Time: 9:00

TH dth 23-1 Horizon	Depth	Horizon Boundaries		Soil Colors		Re-Dox	Texture	Structure	Consistence	Soil Category
		Dist	Topo	Matrix	Re-Dox Features	Ab. S. Contr.				
Ap	0-8"	A	S	10YR 3/3	-	-	sil	1 Gr	Fr	5
Bw	8-35"	C	S	10YR 4/6	7.5YR 5/6	C M D	sil	1 SBK	Fr	5
C	35-55"	C	S	2.5Y 5/3	7.5YR 5/8	C C P	sil	0 M	Fr	5
2Cd	55-96"	-	-	2.5Y 5/4	10YR 5/8	C M D	Gr ls	0 M	Fr	8m

TH dth 23-2 Horizon	Depth	Horizon Boundaries		Soil Colors		Re-Dox	Texture	Structure	Consistence	Soil Category
		Dist	Topo	Matrix	Re-Dox Features	Ab. S. Contr.				
Ap	0-10"	A	S	10YR 2/2	-	-	fsl	1 Gr	Fr	5
Bw	10-24"	C	S	10YR 4/6	7.5YR 5/6	C M D	fsl	1 SBK	Fr	5
C	24-56"	C	S	2.5Y 5/3	7.5YR 5/8	M C P	sil	0 M	Fr	5
2Cd	56-96"	-	-	2.5Y 5/4	10YR 5/8	C M D	Gr ls	0 M	Fr	8m

TH dth 23-1 Soil Class Eolian/dense till Total Depth 96" Impervious/Limiting Layer Depth - (og) GW Seepage Depth - SHWT 28" (og)
TH dth 23-2 Soil Class Eolian/dense till Total Depth 96" Impervious/Limiting Layer Depth - (og) GW Seepage Depth - SHWT 20" (og)

Comments: _____