

**PETITION FOR TEXT AMENDMENT, MAP TEXT  
AMENDMENT, SUBDIVISION APPROVAL, AND SITE  
PLAN APPROVAL OF SADDLE RIDGE DEVELOPERS  
FOR PROPERTY LOCATED AT SPORT HILL ROAD,  
SILVER HILL ROAD, CEDAR HILL ROAD, AND  
WESTPORT ROAD (ROUTE 136)**

**Applicant's Supplemental Materials  
January 3, 2017**

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**December 12, 2016**

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3. Response to December 10, 2016 letter from Peter G. Neary, Easton Fire Marshal, prepared by Milone & MacBroom, Inc.
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10. Revise Proposed Zoning Regulation for Planned Housing Opportunity District

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January 3, 2016

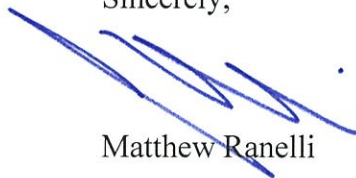
Mr. Robert Maquat, Chair,  
and Commission Members  
Planning and Zoning Commission  
Town of Easton  
225 Center Road  
P. O. Box 61  
Easton, CT 06612

Re: Supplemental Materials; Petition for Text Amendment, Map Text Amendment, Subdivision Approval, and Site Plan Approval of Saddle Ridge Developers for Property Located at Sport Hill Road, Silver Hill Road, Cedar Hill Road, and Westport Road (Route 136)

Dear Chairman Maquat and Commission Members:

On behalf of Saddle Ridge Developers, LLC ("Saddle Ridge"), I am pleased to provide this letter and the attached documents in response to comments on the above-referenced application as requested by the Commission at the public hearing on December 22, 2016.

Sincerely,



Matthew Ranelli

GMR:ekf  
Attachments

c: Saddle Ridge Developers, LLC (w/ att.)  
Milone & MacBroom, Inc. (w/ att.)  
Soil Science and Environmental Services, Inc. (w / att.)







January 3, 2017

Matthew Ranelli, Esq.  
Shipman & Goodwin, LLP  
265 Church Street  
Suite 1207  
New Haven, CT 06510

RE: Easton Crossing  
Easton, Connecticut  
MMI #2683-01-29

Dear Attorney Ranelli:

Milone & MacBroom, Inc. (MMI) is in receipt of a letter addressed to Mr. Robert Maquat, Chairman, Planning and Zoning Commission, dated December 12, 2016, from Steven D. Trinkaus, P.E., Trinkaus Engineering, LLC. To the comments provided in this letter, we offer the following responses:

- C1. According to the applicant updated drainage narrative, the plan from October 30, 2014 contained 7.98 acres of impervious area (roof, driveways and roads). The plan from October 30, 2014 increased the impervious area to 9.52 acres (19.3% increase). The current plan submitted by the applicant states that there will be only 7.43 acres of impervious area as the applicant is proposing to utilize interlocking concrete pavers on the driveways for units 1-7, 10, and 39-48. Based upon this assertion, the applicant claims that they do not need to improve any of the previously approved stormwater basins as the 7.43 acres is less than the 7.98 from the August 4, 2014. This is not valid for the following reasons:
- a. The pavers themselves are a hardscape landscape feature and meet a well-respected position that the surface is impervious.
- R1a. The commenter is incorrect and ignores the *2004 Connecticut Stormwater Quality Manual* that he relies upon elsewhere. The proposed permeable interlocking pavement system is a well-recognized stormwater management practice recommended in both the *2004 Connecticut Stormwater Quality Manual* and its Low Impact Development Appendix. The proposed permeable interlocking pavement system designed for the driveways to the 18 duplex houses is underlain with 14 inches of crushed stone that is capable of storing the stormwater from a 5.5-inch rainfall event. In addition, the commenter inaccurately indicates that the impervious cover of the 2014 plan was 9.52 acres. The August 2014 plans had an impervious coverage of 7.98, and at the request of the commission's consultant, the applicant had projected potential future coverage as if each home expanded or added 1,500 square feet of impervious coverage and other potential future changes to demonstrate that the coverage would still be below ten percent.

- b. The applicant has not shown by an appropriate modeling analysis that the underlying native soils will infiltrate the runoff which either falls on the concrete pavers or drains onto them will actually infiltrate into soil.
- R1b. Over 350 soil test pits were performed on site in addition to the soil percolation tests. The Town Sanitarian and/or the independent sanitarian hired by the town observed each of these test pits. In the Town Sanitarian's review memo dated November 10, 2008, she commented that, "The soils throughout the parcel are generally well-draining and suitable for on-site septic systems." The results of the percolation tests were also remarkably consistent with over 95% of the percolation test results falling in the 5 to 10 minutes per inch to 10 to 20 minutes per inch range. Based on the soil testing results, the runoff stored in the crushed stone reservoir below the permeable pavers will infiltrate into the soils below in 2 to 5 hours. The commenter has not provided any analysis of the data from the over 350 test pits to support his comments, nor has the commenter provided any data, modeling, or other explanation as to why infiltration demonstrated in the test pits and the consistency of the soils as noted by the sanitarian is not accurate.

The proposed pavers are designed for the garage apron and parking adjacent to the house. Since they are located close to the house and as the grades around the house are designed according to standard engineering practice to shed water away from the house, there will be no stormwater from adjacent areas running onto the pavers.

- c. It is not clear that the applicant is even considering the total area of the concrete pavers in the calculation of the Runoff Curve Number (CN) for each sub watershed area.
- R1c. The area (0.5 acres) of all the pavers was included in our Runoff Curve Number Worksheets for each subwatershed and included in the application materials that were provided to the commenter.
- d. There are no deep test holes or infiltration tests performed in the area of the concrete pavers to assess the ability of the soil to infiltrate runoff.
- R1d. Of the 350 test pits performed on site, there are 12 located in or within 20 feet of the concrete driveway pavers. The results of the percolation tests were also remarkably consistent sitewide with over 95% of the percolation test results falling in the 5 to 10 minutes per inch to 10 to 20 minutes per inch range. Based on the soil testing results, the runoff stored in the crushed stone reservoir below the permeable pavers will infiltrate into the soils below in 2 to 5 hours. In the Town Sanitarian's review memo dated November 10, 2008, she commented that, "The soils throughout the parcel are generally well-draining and suitable for on-site septic systems."

- e. There is an increase of 1.54 acres of impervious area on the site which has not been accounted in the stormwater calculation and detention basin modeling results.
- R1e. This is an incorrect statement. The August 4, 2014 plan (7.98 acres of impervious area) is the same as the current 2016 plans. In October 2014, an analysis was prepared that represented a proposal for much larger homes with affordable accessory apartments that are no longer proposed. The October 30, 2014 plan had 7.98 acres of impervious coverage plus the potential additional impervious coverage of 1,500 square feet per lot for a total impervious coverage of 9.52 acres. All of the impervious coverage (9.52 acres – 7.98 acres = 1.54 acres) is accounted for. The impervious area on the current September 8, 2016 plan has been reduced by changing approximately 0.55 acre of the driveways to permeable pavers resulting in less impervious coverage (7.43 acres) for the current plan.
- C2. The applicant uses a RCN value of 90 for the building roofs as the roof areas are being directed to an underground Cultec system. This is not correct. The roofs must be modeled with an RCN of 98 (impervious area) and then each Cultec system must be shown to infiltrate the runoff directed to them with this analysis being based upon field soil tests and infiltration tests for each Cultec System.
- R2. The RCN value of 90 is correct. The clean runoff from each roof will be reduced by capturing the first 2 inches of runoff and holding it in the underground Cultec retention/infiltration units.
- C3. In many locations, the Cultec systems are located either partially or significantly in fill situations which will have a significant impact on their short term and long term functionality. Soils which have been cut and filled and then replaced do not retain their original ability from an infiltration point of view. It is highly probable that the Cultec systems located in fill material will not infiltrate runoff as intended and thus the site will not meet the Groundwater Recharge Volume (GRV) required for this project.
- R3. We have double checked each of the Cultec systems, and they all extend down below the proposed fill into the natural soil. The Cultec roof runoff infiltration systems will collect, store, and infiltrate clean roof runoff from a 2" rainfall event. The Cultec chamber is 32" high with 18" to 24" of soil over the chamber and a 12" thick layer of crushed stone under the Cultec chamber; this puts the bottom of the infiltration system 5' to 6' below grade.
- C4. The proposed stormwater basins are not consistent with the parameters stated in the 2004 CT DEP Storm Water Quality Manual. While the applicant states that each of the forebays for the stormwater basins contain 10% of the required Water Quality Volume (WQV) directed to the basin, this is only one aspect of a forebay which must be provided to be effective at the trapping of coarse and fine grained sediments. The SWQM clearly states that a forebay must be 4-6' and provide a minimum length to width ratio of 2:1 and a preferred ration of 3:1. As the applicant's forebays are only 2' in depth and not all of them meet the 2:1 length to width ratio, this will result in the failure to adequately trap sediment within the forebay and allow for the

resuspension of sediment with subsequent rainfall events. The forebays will not function properly and will result in the discharge of sediment and those other pollutants, such as metals and hydrocarbons which attach to the sediment particles from the basin and into the environment.

- R4. We disagree with Mr. Trinkaus's opinions and note that during his long-standing engagement to oppose this project he has declined to engage and reach consensus on any of his criticisms. The basins are consistent with the Connecticut Department of Energy & Environmental Protection (DEEP) *2004 Connecticut Stormwater Quality Manual*. The basins were reviewed by the commission's consultant, GHD, in 2014 and its current consultant, LandTech, and found to be consistent with the *2004 Connecticut Stormwater Quality Manual*. The sediment forebays are adequately sized to trap coarse, medium, and fine sediment; furthermore, the water leaving the forebay will continue to be treated in the much larger area of the basin before discharging from it. We would also point out that the goal of water quality management is to treat the first flush; this is the runoff from the first inch of rainfall. The *2004 Connecticut Stormwater Quality Manual* defines this as the Water Quality Volume (WQV): "The water quality volume (WQV) is the amount of stormwater runoff from any given storm that should be captured and treated in order to remove a majority of stormwater pollutants on an average annual basis. The recommended WQV, which results in the capture and treatment of the entire runoff volume for 90 percent of the average annual storm events, is equivalent to the runoff associated with the first one-inch of rainfall."

The stormwater basins are designed to treat the WQV. The flow through each of the basins is very small so that they will provide excellent treatment of the WQV. Each of the basins will discharge between 0 and 0.5 CFS for the 2-year storm, 3.3-inch rainfall event, the smallest storm we modeled. The 1" rainfall event associated with the WQV will flow very slowly through the basins and will have almost no discharge out of the basins. The water leaving the stormwater basins will be further treated as it flows over riprap and through well over 100 feet of wooded and vegetated terrain.

- C5. The applicant states that all of the proposed stormwater basins will adequately address the reduction on non-point source pollutant loads and meet the CT DEP goal of reducing post-development Total Suspended Solids (TSS) by 80%. In order to achieve this goal, the stormwater basins must contain certain design components depending upon the type of system chosen. These features range from areas of high and low marsh within the bottom of the basin, micro-pools, deep water pools, and long non-linear flow paths which maximize the contact time of the runoff with the native soils and vegetation in the bottom of the basins. If the path from the inlet of the basin to the outlet of the basin is too short and also linear, then the natural processes of settlement, uptake, and absorption will simply not occur and will result in the discharge of pollutants into the environment. The multiple basins proposed by the applicant do not contain these features and without them, reductions of pollutant loads will simply not occur and result in the discharge of pollutants to the environment. Each of the proposed basins were reviewed and those portions of these basins which are not consistent with the SWQM are listed below.

- a. In Basin 220, the western and eastern forebays do not meet the parameters found in the SWQM for minimum depth and length to width ratio for the flow of water.
- b. In Basin 140, the forebay does not meet the parameters found in the SWQM for minimum depth.
- c. In Basin 150, the forebay does not meet the parameters found in the SWQM for minimum depth.
- d. In Basin 210, the forebay does not meet the parameters found in the SWQM for minimum depth.
- e. In Basin 230, the forebay does not meet the parameters found in the SWQM for minimum depth.
- f. The central portion of Basin 140 contains a shallow, dead level bottom. This portion of the basin does not contain high and shallow marsh areas, micropools for deep pools all of which are necessary components in a stormwater quality basin to reduce pollutant loads.
- g. The central portion of Basin 150 contains a shallow, dead level bottom. This portion of the basin does not contain high and shallow marsh areas, micropools for deep pools all of which are necessary components in a stormwater quality basin to reduce pollutant loads.
- h. The central portion of Basin 210 contains a shallow, dead level bottom. This portion of the basin does not contain high and shallow marsh areas, micropools for deep pools all of which are necessary components in a stormwater quality basin to reduce pollutant loads.
- i. The central portion of Basin 220 contains a shallow, dead level bottom. This portion of the basin does not contain high and shallow marsh areas, micropools for deep pools all of which are necessary components in a stormwater quality basin to reduce pollutant loads.
- j. The central portion of Basin 230 contains a shallow, dead level bottom. This portion of the basin does not contain high and shallow marsh areas, micropools for deep pools all of which are necessary components in a stormwater quality basin to reduce pollutant loads.

R5. The proposed stormwater management system complies with the "Pocket Pond" and "Micropool Extended Detention Pond" criteria of the 2004 DEEP *Stormwater Quality Manual*. LandTech compared the current application documents to the application documents from 2014, and in its December 12, 2016 letter to the Easton Planning and Zoning Commission, it concluded, "The two sets of drawings are nearly identical. The basic lot layout, stormwater management system, erosion control plan and road network are substantially the same." GHD, Inc. reviewed the previous application documents, which LandTech has found to be substantially the same as the current plans, and GHD, Inc. concluded the following: "Based on GHD's review of the original and supplemental application materials received to date (as noted in GHD's reports) for the Easton Crossing Development proposed by Saddle Ridge Developers, it is GHD's professional opinion that construction of the development in compliance with the current proposal, including the final recommendations provided by GHD in this report, will not result in foreseeable adverse impacts to public health, safety, wetlands, watercourses and the environment. Furthermore, the current design of the wet stormwater quality basins, which now generally comply with the 'Pocket Pond' and 'Micropool Extended Detention Pond' criteria of the 2004 DEEP Stormwater Quality Manual, should provide increased stormwater treatment capacity and performance as compared to the dry detention



basins previously approved by the Town for the Applicant's 21-lot subdivision on the property."

- C6. The applicant has not provided a pollutant loading evaluation which properly calculates the anticipated pollutants loads from the development and which demonstrates that the proposed stormwater management systems will reduce pollutants loads.
- R6. A pollutant loading analysis is not required by the Town of Easton Zoning Regulations or the Connecticut DEEP. However, a Simple Method Model has been prepared, and the results show the proposed stormwater management system with the addition of the hydrodynamic separators prior to each stormwater basin will remove the required 80% Total Suspended Solids. The sediment removal devices were removed from the original 2008 plans for the simple reason that the Town Engineer did not want to maintain them.
- C7. The applicant proposes to use many of the proposed post-development stormwater basins as temporary sediment traps. How will the applicant restore these areas after being used as temporary sediment traps to receive post-development runoff without compromising the ability of the basin to function properly?
- R7. The sediment traps located where the stormwater basins are to be constructed are much smaller than the proposed stormwater basins. The sediment traps will be removed, and the area will be excavated and expanded to accommodate the proposed shape of the stormwater basins. The impervious liner will be installed as soon as the new shape is established, and then a growing media will be installed followed by plantings.
- C8. There are no maintenance provisions for the interlocking concrete pavers or underground Cultec systems. Who will maintain these systems? Who will verify that these systems are being maintained properly? If the systems are not maintained properly, who will bear the responsibility to restore them or replace them?
- R8. The operation and maintenance of the pavers and the underground roof runoff collection system (Cultec units) will be set forth in the homeowners' association's maintenance policy. The individual owners will be responsible for maintenance.

Please feel free to contact me should you need any further information.

Very truly yours,

MILONE & MACBROOM, INC.



Ted Hart, P.E., Vice President  
Director of Civil Engineering

2683-01-29-d1416-2-ltr



# PERMEABLE INTERLOCKING CONCRETE PAVEMENT (PICP) DESIGN PROFESSIONALS FACT SHEET

## **PICP Stormwater Benefits**

- Infiltrates, filters and decreases stormwater runoff rate and reduces Total Maximum Daily Load (TMDL)
- LEED® point eligible for Sustainable Sites, Water Efficiency, Materials & Resources and /or Innovative Design; Contributes to Green Globe points
- Meets U.S. Environmental Protection Agency (EPA) stormwater performance criteria as a structural best management practice (BMP) while providing parking, road and pedestrian surfaces
- Helps meet local, state and provincial stormwater drainage design criteria and provides compliance with the U.S. National Pollutant Discharge Elimination System (NPDES) regulations
- Provides 100% pervious surface by runoff passing through small, aggregate-filled openings between solid high-strength durable concrete pavers
- Reduces or eliminates stormwater detention and retention ponds, storm sewers, drainage appurtenances and related costs
- May be used on sloped sites with proper design
- The modular concrete units allow for project phasing; open-graded base and subbase materials are typically available locally.
- Rain water harvesting: capable of storing water for on-site irrigation or building grey water use
- May be designed with underground stormwater storage systems, over many slower-draining clay soils and in cold climates
- Processes and reduces pollutants from vehicular oil drippings

## **Pollutant removal efficiencies**

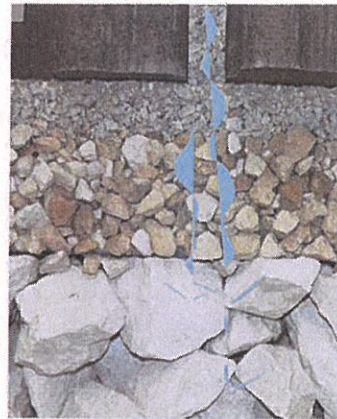
(Compared to impervious pavement runoff)

Zinc: 62-88%

Copper: 50-89%

Total Suspended Solids: 60-90%

Total Phosphorous: 65%



← 3 1/8 in. (80 mm) thick pavers with permeable joints

← Open-graded bedding course

← Open-graded base course (OGB)

← Open-graded subbase on non-compacted soil subgrade

***Permeable interlocking concrete pavement (PICP) with open-graded base and subbase for infiltration and storage.***

**PICP is a cost effective LID stormwater management tool**



***PICP and bioswales work together as LID tools to increase infiltration at Morton Arboretum in Lisle, IL.***

## **APPLICATION OPPORTUNITIES**

- **Urban:** Office plazas, sidewalk replacement, street tree planting areas, parking lots, parks and outdoor seating areas
- **Suburban:** Parking lots, parks, driveways, parking bays on roadways, subdivision roads and sidewalks
- **Redevelopment Sites:** Parking areas, plazas and public spaces, sidewalks and brownfields



# LID DESIGN APPLICATION



**350,000 sf (3.2 ha) of PICP at a Burnaby, BC shopping center infiltrates runoff from roofs.**

## **Permeable Interlocking Concrete Pavement Meets Low Impact Development Goals**

- Conserves on-site space: roads, parking, stormwater infiltration and retention all combined into the same space creating more green space or building opportunities
- Preserves wooded areas that would otherwise be cleared for stormwater detention or retention ponds
- Increases site infiltration that helps maintain pre-development runoff volumes, peak flows and time of concentration
- Promotes tree survival and growth
- Contributes to urban heat island reduction through evaporation and reflective, light colored pavers
- Highly visible, cost effective exemplary demonstration of cornerstone LID technique for public and private development

## **Design Software Available**

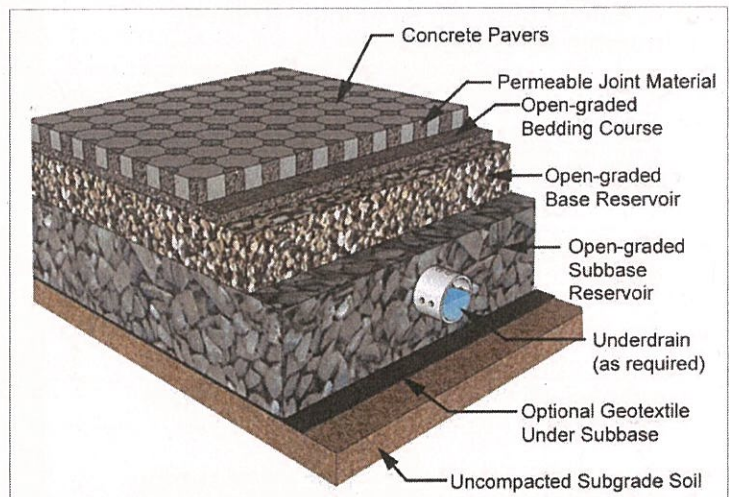
New software from ICPI for permeable pavement incorporates research from a range of university research studies.

## **Permeable Interlocking Concrete Pavement:**

### **A Low Impact Development Tool**

#### **PICP supports LID Principles**

1. Conserve vital ecological and natural resources: trees, streams, wetlands and drainage courses
2. Minimize hydrologic impacts by reducing imperviousness, conserving natural drainage courses, reducing clearing, grading and pipes
3. Maintain pre-development time of concentration for runoff by routing flows to maintain travel times and discharge control
4. Provide runoff storage and infiltration uniformly throughout the landscape with small, on-site decentralized infiltration, detention and retention practices such as permeable pavement, bioretention, rain gardens, open swales and roof gardens
5. Educate the public and property owners on runoff and pollution prevention measures and benefits



**Typical PICP cross section**



**By eliminating detention pond, the subdivision layout conserves trees while 15,000 sf (1500 m<sup>2</sup>) PICP in the cul-de-sac returns rainfall to the water table in Glen Brook Green subdivision in Waterford, CT.**



## Technical Guidelines

- Pavers conform to ASTM C936 in the U.S. or CSA A231.2 in Canada
- Open-graded crushed stone recommended for all aggregates
- Joint filling stone gradation: ASTM No. 8, 87, 89 or 9
- Base gradation: ASTM No. 57
- Subbase gradation: ASTM No. 2, 3 or 4 (railroad ballast)
- Optional geotextile: consult manufacturers for selection
- Soil subgrade: classified per ASTM D2487; tested for permeability per ASTM D3385
- Structural design: ICPI design chart determines minimum base thickness to support pedestrian and vehicular traffic (see references)

## Construction Guidelines



**Pavers are delivered ready to place, joints filled, compacted and then are ready for traffic.**



## Construction Checklist

- No compaction of native soil subgrade – excavate and trim native soil
- Geotextile, drainage pipes and overflow vary with design
- Ensure no sediment from equipment-borne mud on aggregates
- Install and compact aggregate subbase and base with standard paving equipment
- Specialty equipment used for screeding bedding layer and for mechanical paver installation
- Mechanical installation equipment accelerates construction; minimum 5,000 sf (500 m<sup>2</sup>)/ machine/day
- Pavers, non-frozen bedding material & base/ subbase installable in freezing temperatures over non-frozen soil subgrade
- Paver joints filled with aggregate and compacted
- No curing time – ready to use upon installation; modular construction allows for project phasing
- Specify experienced ICPI contractors with PICP construction, inspection and detailing skills



**Base construction uses locally available materials.**



**Aggregate base and subbase are spread and compacted; pavers are delivered ready to install. After placement, joints and/or openings are filled with small aggregate. Then pavers are compacted.**



**Mechanical sweeping of fine aggregate into paver joints**

## Curve Number and Rational Method Runoff Coefficients

NRCS Curve Numbers (CN) and Rational Method runoff coefficients ('C' value) used depend on the soil infiltration rate, base storage and design storm. In every case, PICP yields significantly lower CN and C values than impervious pavement per the table below: ↙

Land Cover	Infiltration Rates in./hr (mm/hr)	Curve Number CN	Runoff Co-efficient, C
<b>Permeable Interlocking Concrete Pavement</b>	Up to 50 in./ hr (1270 mm/hr) with maintenance 3-4 in./hr (75-100 mm/hr) with no maintenance	45 – 80	0.00 – 0.30
<b>Impervious Asphalt or Concrete Pavement</b>	0 in./hr (0 mm/hr)	95 – 98	0.90 – 0.95



## PERFORMANCE

### Volume Reduction

Research has demonstrated that PICP can reduce runoff as much as 100% from a 3 in. (75 mm) rain event with sandy soil and a minimum 12 in. (300 mm) thick open-graded aggregate base.

Given regional variations in annual rainstorms and PICP base storage capacities, PICP can reduce annual runoff between 30% and 80%. Well-maintained PICP can reduce flows by 70% to 90% from intense rain events and up to 100% for many storms. *This yields a corresponding reduction in runoff pollution.*

### Peak Flow Reduction and Delay

PICP can reduce peak flow by as much as 89%, producing a hydrograph nearer to pre-development conditions. Peak flow is generally proportional to rainfall intensity. Permeable pavers delay the timing of peak flow runoff from several hours to several days.

### Additional Benefits

- ADA compliant for slip resistance
- Concrete pavers available in various shapes and colors from local ICPI members; colored pavers mark lanes and parking spaces
- Simplifies surface and subsurface repairs by reinstating the same paving units; no unsightly patches or weakened pavement cuts

### Water Quality Improvement

PICP treats stormwater by slowing runoff velocities to allow for sedimentation and filtering by aggregates in the surface openings and base. Oils adhere to small soil particles and aggregates and then are digested by bacteria.

### FAQS

**Can PICP be used on clay soils?** *Yes. Even in clay soils, PICP reduces runoff and helps to capture "first flush" runoff and reduce pollution.*

**Can PICP be used to replace conventional stormwater management tools such as detention basins?** *Yes. In both colder and warmer climates, PICP has been used to reduce or eliminate the need for conventional stormwater pipe infrastructure, detention basins and drop inlets.*

**Is Maintaining PICP difficult?** *No. PICP can be maintained through street sweeping and vacuuming based on a periodic inspection.*

**Can PICP be used in cold climates?** *Yes, PICP has been very successful in many Canadian and northern United States applications. It remains stable through freezing and thawing cycles.*

### REFERENCES

Ferguson, B. K. *Porous Pavements*. Boca Raton, FL: CRC Press, 2005.

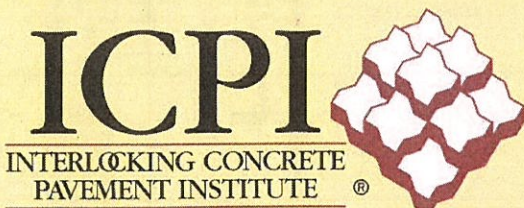
Smith, David R. *Permeable Interlocking Concrete Pavements: Selection • Design • Construction • Maintenance*, Washington, DC: ICPI 3rd ed., 2006. [www.icpi.org](http://www.icpi.org).

For more information pertaining to permeable interlocking concrete pavement, please visit the Interlocking Concrete Pavement Institute ([icpi.org](http://icpi.org)) or the Low Impact Development Center ([lowimpactdevelopment.org](http://lowimpactdevelopment.org)).

**Other Fact Sheets available for Developers, Municipal Officials and Schools/Universities**



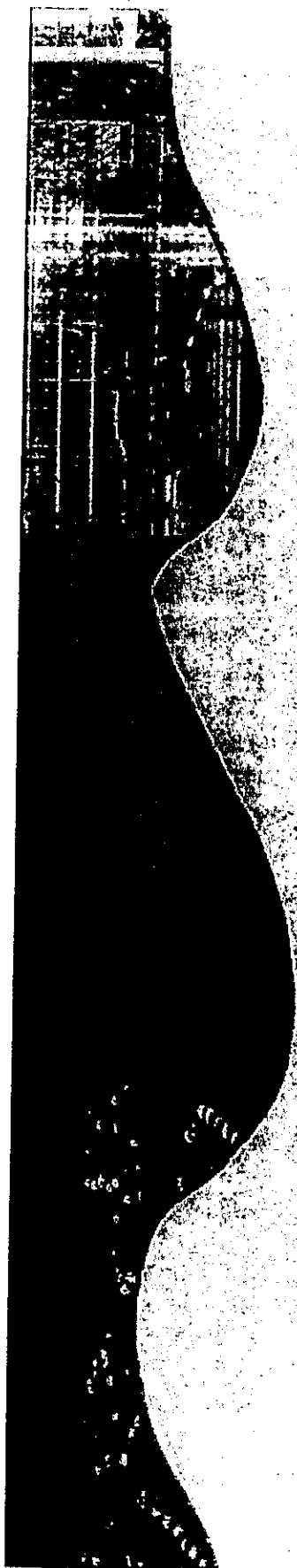
*Disclaimer: The content of this brochure is intended for use only as a guideline. It is not intended for use or reliance upon as an industry standard, certification or specification. ICPI & LIDC make no promises, representations or warranties of any kind, express or implied, as to the content of this brochure. Professional assistance should be sought with respect to the design, specifications and construction of each permeable interlocking concrete pavement project.*



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New England Interstate Water Pollution Control Commission  
21st Annual NPS Conference

May 17-19, 2010

Concurrent Session 2

## The Runoff Reduction Method

Joseph Battista, P.E.  
Center for Watershed Protection

[jgb@cwpr.org](mailto:jgb@cwpr.org)

CENTER FOR  
**WATERSHED  
PROTECTION**

# **Volume Reduction: Hydrograph Modification**

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- **Objective:** Account for hydrologic effect of distributed retention storage;
- **Simplifying Assumptions:**
  - Assume retention is uniformly distributed if considering multiple features or sub-areas;
  - Assume negligible discharge from under-drains (if any)

# Volume Reduction: Hydrograph Modification

Runoff Depth Equations (TR-55):

$$Q = \frac{(P - I_a)^2}{(P - I_a) + S}$$

Where:

$Q$  = runoff depth (in)

$P$  = precipitation depth (in)

$S$  = potential maximum retention after runoff begins (in)

$I_a$  = initial abstraction, volume that must be filled before runoff begins.

$$S = 1'' \rightarrow CN = 90$$

$$S = 2'' \rightarrow CN = 83$$

Additionally:

$$I_a = 0.2S$$

$$S = \frac{1000}{CN} - 10$$

$$CN = \frac{1000}{S + 10}$$

# **Volume Reduction: Hydrograph Modification**

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## **Methods Considered:**

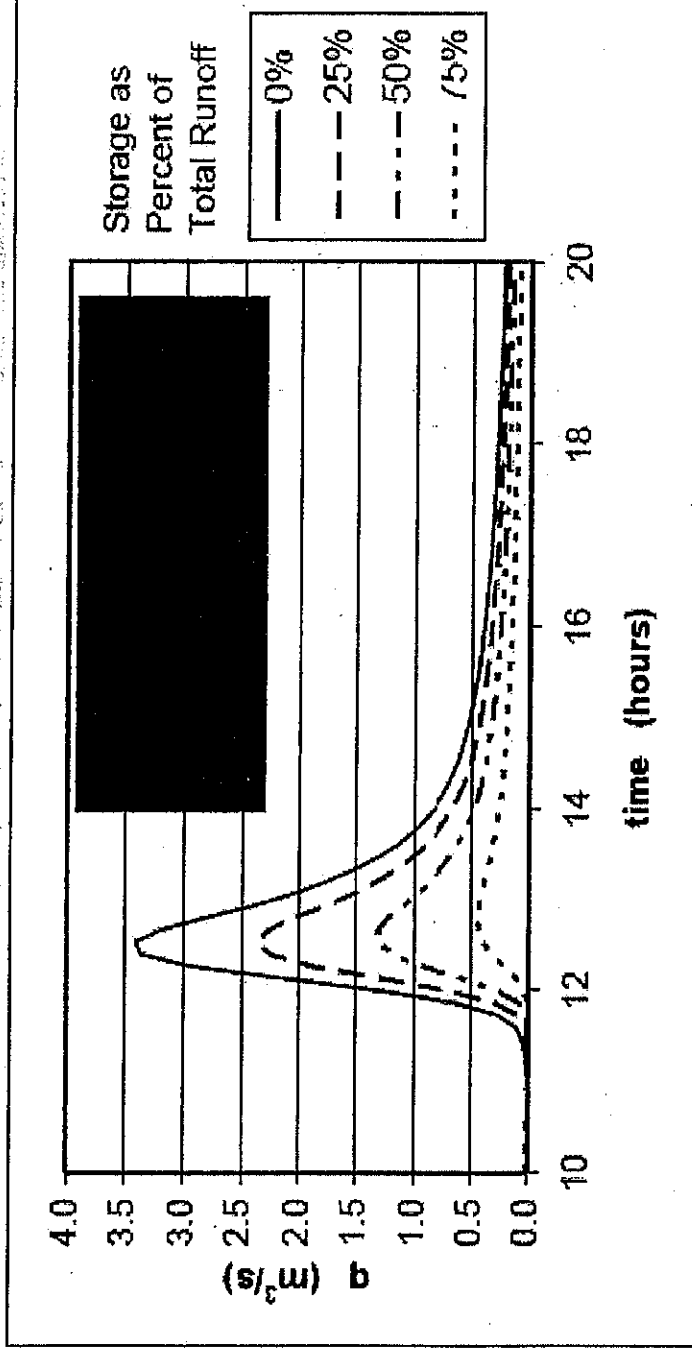
- 1. Hydrograph Truncation**
- 2. Hydrograph Scalar Multiplication**
- 3. Precipitation Adjustment**
- 4. Runoff Adjustment**
- 5. Curve Number Adjustment**

Excerpted from work by Paul R. Koch, Ph.D., P.E.



# Volume Reduction: Hydrograph Modification

## 5. Curve Number Adjustment



NRCS Runoff depth formula solved for a new value of  $S$ , and then a revised  $CN$  value can be calculated from the revised  $S$ . No delay in the  $T_c$  is reflected, and the reduction is distributed across the entire storm, resulting in a conservative estimate of the peak discharge.

To: Planning and Zoning Commission  
From: Polly Edwards, R.S., Easton Health Department  
Re: Saddle Ridge Subdivision, Cedar Hill, Sport Hill,  
Silver Hill, and Westport Roads.  
Date: November 10, 2008

The Easton Health Department has reviewed the above-mentioned proposed 22 lot subdivision for on-site wastewater disposal and on-site water supply. We have witnessed over 80 soil test pits and have walked the property with Matt Pawlik, Senior Sanitary Engineer with the Department of Public Health. We offer the following comments:

- ◆ The soils throughout the parcel are generally consistent in being well-draining and suitable for on-site septic systems. Oversized primary and reserve septic areas have been provided for each lot.
- ◆ On-site well locations are provided for each lot. We do have a concern with backwash discharge for water treatment that might be required for wells that are high in iron, manganese, low pH etc. Separate water treatment discharge systems will be required if the well water on individual sites require treatment.
- ◆ Soil testing is scheduled for next week for an existing barn on Lot 22 that has an existing bathroom. A septic system will need to be sized and located to service this bathroom.

Conceptually, the proposed subdivision meets the State of Connecticut Public Health Code for on-site wastewater disposal and on-site water supply. As usual our concerns will be at construction time. Design engineer supervision will be required for all lots from preconstruction to issuance of the final Certificate of Occupancy.







**MILONE & MACBROOM®**

January 3, 2017

Matthew Ranelli, Esq.  
Shipman & Goodwin, LLP  
265 Church Street  
Suite 1207  
New Haven, CT 06510

**RE: Easton Crossing  
Easton, Connecticut  
MMI #2683-01-29**

Dear Attorney Ranelli:

Milone & MacBroom, Inc. (MMI) is in receipt of a letter addressed to Robert Maquat, Chairman, Town of Easton Planning & Zoning Commission, dated December 12, 2016, from Michael J. Bartos Jr. of LandTech Consultants, Inc. To the comments provided in this letter, we offer the following responses:

**Watershed Protection**

- C1. The entire property is within a water-supply watershed. As such, the project must be designed, constructed and operated in a way that protects the watershed from increases in the amounts of sediment, nutrients and other contaminants from the project.

Erosion and sedimentation, stormwater runoff, and nonpoint sources of pollution caused by residential development may contribute to the degradation of water quality. Stormwater runoff may carry suspended solids, nutrients, hydrocarbons, heavy metals, bacteria, and road salts. Lawn care fertilizers are a source of phosphorus, one of the major causes of eutrophication. Because most phosphorus is adsorbed to soil, erosion appears to be the main mechanism of phosphorus transport to lakes and reservoirs from residential development.

During the processing of one or more previous applications for this property, there was discussion of using "one residence per two acres of buildable land" as a rule of thumb for watershed protection. This guideline originated in a literature review conducted in the late 1980s by LandTech and published as Bulletin #11 in 1990 by the Connecticut Department of Energy and Environmental Protection. The guideline was based primarily on considerations related to stormwater management, erosion control, septic system requirements and water supply wells.

More recently, a second measure, "not more than ten percent impervious coverage on the property," has been applied, because accelerated erosion and increased flooding are known to be reasonable expectations as the impervious coverage within a watershed approaches ten percent. This is an improvement over the "one residence per two acres of buildable land" guideline, but these guidelines

do not by themselves ensure adequate watershed protection. They do not provide control of all factors contributing to the discharge of nutrients and sediment to the watershed.

To supplement the "ten percent impervious" restriction, we recommend that the applicant prepare a comparison of pollutant loading. The analysis should compare the amounts of nutrients and sediment discharged from the proposed 48-lot plan vs. the amount of nutrients and sediment discharged from the previously approved 21-lot plan based on the three-acre zone currently in effect.

The comparison should include the discharge location of each detention basin and each area that does not drain to a detention basin individually.

The comparison could be made using the appropriately named "Simple Method" developed by Thomas Schueler (See attachment from New York State Stormwater Quality Manual) or by more sophisticated methods (SWMM-5, etc.). The purpose of the loading analysis would be to determine whether the proposed subdivision can reasonably be expected to discharge more suspended solids and nutrients than would be discharged from a conventional subdivision based on current zoning. If the loading analysis shows an increase in sediment or nutrients discharged from the 48-lot project, then the plan should be revised to eliminate the increase. This may take the form of reduced disturbance area, improved stormwater treatment, reduced impervious coverage, etc. This is analogous to long-standing requirements to avoid increases in flood flows resulting from development.

The proposed stormwater management system is designed with the assumption that the overall impervious coverage of the area to be subdivided (including roads and other areas that are not part of a lot) does not exceed ten percent. We recommend that the proposed text amendment be revised to incorporate this as a requirement. If the impervious coverage is allowed to exceed ten percent, the storm drainage system, especially the treatment aspect of the detention basins may be improperly sized and not function correctly. We also recommend that Parcel A be restricted to ten percent impervious coverage and that should Parcel A be resubdivided in the future, the coverage restriction would also apply.

We understand that GHD initially recommended deed-restricting each lot to a maximum impervious coverage of ten percent, that the applicant objected because the restriction may reduce lot development options, and that GHD subsequently suggested instead that Easton develop "regulatory mechanisms" to monitor and enforce the ten percent restriction on coverage.

We recommend that an appropriate "regulatory mechanism" would be to include the restriction as part of the governing regulation (the proposed text amendment). There could also be a provision allowing additional impervious coverage so long as an appropriately sized on-site infiltration area is provided to negate the effect of the additional impervious area.

The approval issued by the Easton Conservation Commission requires that all lots that have regulated areas obtain site plan approval before issuance of a building permit. We recommend that this requirement also be implemented by the Planning & Zoning Commission and that such site plan

approval be required for all lots. This is in part to ensure that restrictions related to impervious coverage, maintained lawn, erosion control, etc. are met and that the roof runoff infiltration systems are properly designed.

- R1. We agree that the amount of impervious cover guideline is an improvement over the general recommendation of one unit per 2 acres. The applicant agrees to the suggested recommendations in the following section to further enhance erosion control during construction. When the construction is complete and the site stabilized with permanent cover of vegetation, the possible threat of soil erosion will be eliminated. We have prepared and provided a detailed Soil Erosion and Sediment Control Plan for the proposed plan (and accepted LandTech's additional comments on the plan in the section, Erosion Control during Construction, below). Furthermore, the proposed stormwater management measures will treat the stormwater before leaving the site. Once the stormwater leaves the site, the water flowing to the west will flow into Ballwall Brook and travel over 2 miles to the Aspetuck Reservoir, and the stormwater that flows to the east will enter Tetetuck Brook and travel over 2 miles to Easton Reservoir. In addition to the Soil Erosion and Sediment Control Plan and the Stormwater Management Plan, we have also prepared an Integrated Turf Management Plan for the community and proposed a minimum septic inspection and pump out plan, neither of which is required by regulation. The commission's consultant, GHD, reviewed the 2014 plans and concluded that these measures were protective of the watershed and exceeded the protection provided by the one unit per 2 acres general recommendation. The commission accepted GHD's conclusions and found that the measures proposed had addressed the commission's public health and safety concerns.

Although the 10 percent coverage guideline in the state Plan of Conservation and Development (POCD) is not required of private developments, the Department of Public Health (DPH) has requested it as a condition of approval for both the 2014 and 2016 plans, and Saddle Ridge has agreed to that request. The previously approved 2009 plans for this site had no restriction on the amount of impervious surface that could be constructed on each lot, no restriction on clear cutting, no turf management plan, and no septic inspection and pump out requirement. Under the 2009 plan, the individual lots that were 3 acres or more in size could be clear cut for lawns or other activities, and owners could add outbuildings, basketball or tennis courts, longer paved driveways, and parking areas for these outbuildings that could add up to significantly more impervious coverage than the 10 percent limit to which the applicant has agreed in the current application.

In response to the DPH-suggested condition of approval (and LandTech's similar request), we have proposed an addition to the proposed zoning regulations that would limit the impervious surface area of the project area (110 acres) to 10 percent.

In accordance with LandTech's suggestion for a pollutant loading comparison for the approved 2009 plan and the 2014/16 plans, an analysis has been prepared to compare the amounts of nutrients and sediment discharged from the proposed 48-lot plan (2014/16) versus the amount of nutrients and sediment discharged from the previously approved 21-lot plan (2009). There are several variables that are difficult to account for in such a model because of the lack of limitations on the 2009 plan that could raise the results for that plan. Therefore, we have taken the most

conservative approach to model the 2009 plan. In order to offset the slight increases in some of the categories, we have modeled the 2016 plans with hydrodynamic separators/sediment chambers prior to each of the stormwater basins, and we have replaced several areas of impervious pavement with porous pavement. We would accept these changes as conditions of approval.

The results of the Simple Method Comparison Models show a significant reduction of total suspended solids to the east (46.2%) draining to Easton Reservoir and to the west (35.6%) draining toward the Aspetuck Reservoir. There were reductions in all the other pollutants modeled in the Simple Method. It is important to note that the Simple Method modeling does not account for the benefits of a septic inspection and pump out requirement or the significant reduction in bacteria from the horse farm activity on the project area that was highlighted in the 2014 application. With the elimination of the horse farm activities on the project areas, there will be a significant reduction in bacteria in the stormwater runoff.

#### Erosion Control during Construction

The major threat to the watershed during construction is the discharge of sediment-laden stormwater runoff. A robust erosion control plan is required to protect the watershed.

This project is regulated under the DEEP General Permit for the Discharge of Stormwater and Dewatering Wastewater from Construction Activities. The applicant should be required to furnish all plan revisions made for compliance with the general permit to the Planning & Zoning Commission and should furnish copies of all third party certifications, Stormwater Pollution Control Plan, inspection reports and other documents required by the general permit.

We recommend that the erosion control plans for road and drainage construction be made separate and independent from the erosion controls related to individual lot construction. It is better to keep the erosion controls related to the roads and detention basins close to the actual construction to facilitate routine inspection and maintenance. The roads, detention basins and storm drainage may be constructed by different contractors than lot construction, and at different times. There should be no confusion concerning which contractor is responsible for each element of erosion control.

We recommend that the following requirements be added to the erosion control narrative on sheet SE-1.

- C1. Silt fence not installed parallel to the slope shall have five foot long wings installed every 100 feet to intercept and diffuse flows along the silt fence.
- C2. Additional control measures will be installed during the construction period if required. A minimum of 300 feet of silt fence shall be stored at the site for emergency use.
- C3. Erosion controls related to road construction are in large part to be installed on private building lots and are to remain and be maintained until the areas disturbed by road and house construction are stabilized.

- C4. Each contractor for road or house construction shall inspect all erosion and sediment controls weekly, before and following a storm greater than 0.1 inches.
- C5. Water or calcium chloride shall be applied to unpaved driveways and haul routes to control dust.
- C6. Debris and other wastes resulting from equipment maintenance and construction activities are not to be discarded on-site.
- C7. Silt fences shall have sediment removed when the depth of the sediment is equal to 1/3 the height of the fence. Fences shall be properly installed and ripped fence or broken posts repaired as soon as practical.
- C8. Catch basin inserts (silt sack or equivalent) shall be cleaned when the reservoir is full.
- C9. Construction entrances and check dams shall be replaced when void spaces are full or structures are breached, as applicable.
- C10. All temporary erosion and sedimentation control measures shall be properly maintained until stabilization has been achieved. Temporary erosion control measures shall be removed and the soil surface stabilized when construction is complete and the soil surfaces are permanently stabilized. Structural components shall be cleaned of all sediment upon completion of construction. Stabilization means that: 1) temporary or permanent vegetation has been established, 2) disturbed soil surfaces within 100 feet of the wetland have a dense stand of grass or are covered an erosion control blanket (ECB), 3) turf or landscape areas are planted or mulched. If seasonal restrictions exist for planting, the town of Easton staff shall determine whether the site is stabilized in accordance with the above criteria, prudent construction practices, and the Connecticut *Guidelines For Erosion And Sediment Control*.
- C11. In the event of conflict between this plan and other regulations, the more stringent shall apply.
- C12. \_\_\_\_\_ (Applicant to provide name and 24-hour telephone number) is assigned the responsibility for implementing this erosion and sediment control plan. This responsibility includes installation and maintenance of control measures, informing all parties engaged on the construction site of the requirements and objectives of the plan, notifying the town of Easton of any transfer of this responsibility and for conveying a copy of the erosion and sediment plan, if and when the title of land is transferred.

We recommend the use of temporary sediment basins instead of traps. The areas draining to these traps may reasonably be expected to take longer than two years to be fully developed and stabilized.

- R. Comments C1 through C12 above are agreed to as conditions of approval and will be added to the final Soil Erosion and Sediment Control Plan subject to any changes that might be requested by the Connecticut Department of Energy & Environmental Protection during its review of the Stormwater

General Permit for the project. We will provide the revisions to the town along with the final approval documents. If the roads, detention basins, and storm drainage system are to be constructed by a different contractor than the contractor for the proposed lots, a separate soil erosion and sediment control plan will be prepared for the roads, detention basins, and storm drainage.

#### Operation & Maintenance of Stormwater Facilities

The detention basins are to be maintained permanently by a Homeowners Association. Failure to maintain the detention basins, rip rap aprons and other stormwater collection, storage and treatment facilities may reasonably be expected to result in the failure of the system to protect the watershed from accelerated erosion and pollutant discharge.

On the Title Sheet of the drawings, the section entitled "Operation And Maintenance Plan (Post Construction)" should be clarified to note that the Roadways and Storm Drainage Structures sections apply permanently to Bradford Place, which is a private road, and to Stonegate Lane and Boxwood Court only until they are accepted by the town of Easton.

The following recommendations should be incorporated into the operation and maintenance requirements for the project. Reports certifying completion of all inspections and documentation of maintenance and repairs should be submitted annually to the Commission.

#### (new section) Grassed Lined Swales

- C1. Cut grass as needed to a height of 2.5-3 inches. Leave clippings in place to provide fertilizer for new growth.
- C2. Reseed swale with appropriate grass seed mixture and application rates as needed to ensure that no bare spots develop.
- C3. Inspect swale regularly for evidence of erosion. Pack eroded areas with sandy till, compact and apply 4-6" of settled top soil, reseed and water as needed until grass is established.
- R. Comments C1, C2, and C3 above are agreed to as conditions of approval and will be added to the final operation and maintenance plan.

#### (new section) Preformed Scour Holes (Riprap Aprons)

- C1. Inspect the surface of each scour hole twice per year to ensure surface is free of debris and the discharge is flowing via sheet flow and not concentrated. Remove accumulated sediment when sediment depth within the scour hole reaches 50% of the total depth.

- C2. Inspect the discharge lip area for low points and down gradient flow areas for active scour or soil erosion. Repair scoured or eroded areas with compacted sandy till, and riprap as needed to prevent further scouring.
- R. Comments C1 and C2 above are agreed to as conditions of approval and will be added to the final operation and maintenance plan.

Detention Basins/Infiltration Galleries

- C1. Replace any diseased or dead vegetation within the basin with native species, per the approved plan.
- C2. Remove invasive plants, as identified by the current listing of Invasive Species compiled by the CT Invasive Plant Working Group. These shall include, but not be limited to, purple loosestrife (*Lythrum salicaria*), common reed (*Phragmites australis*), multiflora rose (*Rosa multiflora*). Removal shall be by hand, shovel or pulling, treatment of cut stump within 20 minutes of cutting or spraying of foliage with a 1-2% solution of Rodeo™.
- C3. Repair any soil erosion of the sidewalls of the basin.
- R. Comments C1, C2, and C3 above are agreed to as conditions of approval and will be added to the final operation and maintenance plan.

Affordable Housing

- C1. On page 3 of Tab 2 of the "Petition for text amendment, . . .," in the last paragraph there is a statement that implies that the applicant is seeking site plan approval for the proposed homes. This should be clarified to mean that the applicant is seeking only subdivision approval and that no individual lot site plan approvals are included.

The Drainage Narrative states that duplex affordable lots are 1-7, 10, 39-48. This is not in agreement with the Schedule A of the Affordability Plan, which allows some flexibility in lot designation.

- R1. The duplex units on Lots 1 through 7, 10, and 39 through 48 are not all affordable. Thirty percent of the duplexes will be affordable, and 30 percent of the single-family houses will be affordable. The applicant is seeking site plan approval of the conceptual master plan consistent with the proposed regulations; individual lots will still require plot plan approval prior to obtaining a building permit.



### Open Space

**C1. Who will own the open space parcels?**

We recommend that the drainage easements and stormwater facilities currently located within open space parcels 1 and 2 be included as part of the adjoining lots, so that the open space parcels include only natural and undisturbed land.

We recommend that open space #4 be eliminated and included as part of lots 30-33. We also recommend easements extending from Stonegate Lane to allow the town of Easton access to maintain the culvert ends.

We recommend that open space #5 be included as part of the Stonegate Lane right of way, rather than open space. The parcel has no value as open space and includes stormwater facilities requiring maintenance by the town of Easton. There will be no need for a drainage easement over the parcel once it is made part of the street right of way.

We recommend that access over easements leading from town roads to and including the detention basins be also granted to the Town of Easton for purposes of inspection repairs and maintenance, should the need arise.

**R1. The open spaces parcels will be owned by the homeowners' association, and the stormwater facilities will be maintained by the homeowners' association (both as allowed in the subdivision regulations). It is our opinion that the stormwater facilities should remain in the open space parcels where feasible. We see no reason and would prefer not to expand the homeowners' private lots.**

As a condition of approval, easements can be added for maintenance access to each end of the culvert under Stonegate Lane at Station 24+32.

We agree with the comment about including Open Space #5 in the road right-of-way and would accept it as a condition of approval. That was the original design for that area; however, the Town Engineer requested the town road right-of-way be specifically limited to a 50' width in this area.

The drainage easements will also be granted to the town for the purposes of inspection, repairs, and maintenance should the need arise.

### Water Supply

**C1. Both the 2014 GHD memo to the Planning & Zoning Commission and the Easton Health Department memo of 2016 raise the issue of water supply. GHD notes that the proposed well locations are closely spaced in some instances. Easton Health Department notes that homeowners in the vicinity have required a second well.**

There are not enough data to determine whether groundwater conditions and water usage within the proposed subdivision will be such that well water shortages may develop at full build-out. Note that the septic systems will serve to recharge a large portion of well water, as would lawn irrigation.

We agree with the GHD finding that the Milone & MacBroom water supply analysis is reasonable. There appears to be no evidence that the lots cannot support on-site water supply. This should be regulated on a lot-by-lot basis by the Easton Health Department.

- R1. It is our opinion that there will be adequate water supply for the 48 proposed lots. We have provided support for this opinion in our response to the Easton Health Department in 2014 and 2016.

#### Miscellaneous

- C1. We recommend that the drawings be revised to provide for a paved temporary turnaround suitable to the Easton Fire Department to be constructed at the end of phase 3 road construction in the vicinity of lots 39 and 6. The turnaround should be removed upon completion of the road through to Cedar Hill.

Sheet DB-4 shows a typical section for stormwater basins. The detail shows a low-permeability soil liner. The engineering report addendum states that a portion of basin 150 (behind lots 23-29) is not to be lined. The plans should be revised to show where basin 150 is to be lined. The section should be revised to show a topsoil layer over the low-permeability soil.

The outlet pipes for the detention basins discharge to areas where no defined watercourse exists. We have inspected the locations in the field and have no objections. These areas should be observed annually as part of routine basin inspection until it becomes clear that no erosion problems will occur.

There should be typical sections with dimensions for the open channel along Bradford Place and for the berm and channel between the two lobes of detention basin 150.

- R1. The miscellaneous comments above are agreed to as conditions of approval, and the recommended details and sections will be added to the final plans.

#### Bonding

- C1. We recommend that the applicant prepare and submit bond estimates for road construction (complete, including drainage, street trees, etc.) detention basin construction, and other construction not related to individual lots.

We also recommend a permanent bond or other funding mechanism for the replacement cost of the stormwater detention basins (including berms, spillways, outlet protection, plantings, etc.) to protect

Matthew Ranelli, Esq.  
January 3, 2017  
Page 10

against the failure of the homeowners association to provide routine inspection, maintenance and repair and to ensure replacement in the event of catastrophic failure.

- R1. **Bonding will be in accordance with state statutes. Permanent bonds are not necessary and are no longer allowed under state statute. The temporary bond noted by the commenter is adequate to ensure that the basins are properly constructed and operate as planned. After that, the homeowners' association is the proper and well-established mechanism for required maintenance and repairs. The bond estimate will be provided prior to obtaining a building permit.**

Please feel free to contact me should you need any further information.

Very truly yours,

MILONE & MACBROOM, INC.



Ted Hart, P.E., Vice President  
Director of Civil Engineering

Enclosures

2683-01-29-d1516-ltr

**Simple Method Results**  
**Comparison of the 2009 vs. 2016 Proposed Plans**

	Pollutant Load After All BMP's (lbs)		
	Total East		
	Jan 2009	Dec 2016	% Reduction from 2009
Sediment	710.9	382.8	46.2%
Total N	97.6	97.4	0.2%
Total P	10.3	9.9	4.0%
COD	2,105.4	2,031.9	3.5%
Zinc	2.9	2.2	23.0%
Copper	0.8	0.7	13.0%
Lead	3.0	2.7	11.2%
Hydrocarb	43.2	23.5	45.6%
Bacteria	103.1	91.7	11.0%

	Pollutant Load After All BMP's (lbs)		
	Total West		
	Jan 2009	Dec 2016	% Reduction from 2009
Sediment	1,033.5	665.3	35.6%
Total N	125.0	118.8	5.0%
Total P	13.5	12.6	7.0%
COD	2,749.7	2,525.4	8.2%
Zinc	3.9	3.1	19.5%
Copper	1.0	0.9	0.0%
Lead	4.0	3.6	9.6%
Hydrocarb	60.9	43.3	28.9%
Bacteria	140.5	134.8	4.1%

# Simple Method (Schueler Method) for Estimating Pollutant Export from Urban Development Sites

## 2016 Proposed Plans

### I. Pollutant Load Calculation:

#### Pollutant Loading:

$$L = 0.226 * R * C * A$$

#### Bacteria Loading:

$$L = (1.03 * 10^{-3}) * R * C * A$$

Where:

L = annual load (lbs or billion colonies)

R = annual runoff (in.)

C = pollutant or bacteria concentration (mg/l or #/100ml)

A = contributing watershed area (acres, see table)

#### Annual Runoff:

$$R = P * P_j * R_v$$

Where:

P = average annual rainfall = 50.0 inches

P<sub>j</sub> = fraction of annual rainfall events producing runoff = 0.9

R<sub>v</sub> = runoff coefficient (fraction of rainfall converted to runoff)

R<sub>v</sub> = 0.05 + 0.009(I) where I = % site imperviousness (see table)

#### Pollutant Concentration

<u>Pollutant</u>	<u>C</u>	<u>Units</u>
Sediment <sup>1</sup>	69.0	mg/l
Total N <sup>1</sup>	3.31	mg/l
Total P <sup>1</sup>	0.46	mg/l
COD <sup>1</sup>	90.8	mg/l
Zinc <sup>1</sup>	0.176	mg/l
Copper <sup>1</sup>	0.047	mg/l
Lead <sup>1</sup>	0.180	mg/l
Petroleum Hydrocarbons <sup>2</sup>	3.5	mg/l
E. Coli Bacteria <sup>2</sup>	1450.0	#/100ml

#### Sources:

<sup>1</sup> - National NURP Study Average, Controlling Urban Runoff : A Practical Manual for Planning and Designing Urban BMPs (Schueler, 1987)

<sup>2</sup> - New Jersey Stormwater Best Management Practices Manual (Feb. 2004)



# Simple Method (Schueler Method) for Estimating Pollutant Export from Urban Development Sites

## 2016 Proposed Plans

### II. Input Parameters:

#### II.1 East toward Easton Reservoir

Proposed Bypassed	
Parameter	PR WS 10
P	50.0
Pj	0.90
I	4.5
Rv	0.09
A	3.02

Proposed Bypassed	
Parameter	PR WS 11
P	50.0
Pj	0.90
I	3.3
Rv	0.08
A	2.42

Proposed Collected	
Parameter	PR WS 14
P	50.0
Pj	0.90
I	22.9
Rv	0.26
A	5.16

Proposed Collected	
Parameter	PR WS 15
P	50.0
Pj	0.90
I	16.0
Rv	0.19
A	11.00

#### II.2 West toward Hemlock Reservoir

Proposed Bypassed	
Parameter	PR WS 20
P	50.0
Pj	0.90
I	2.3
Rv	0.07
A	2.48

Proposed Collected	
Parameter	PR WS 21
P	50.0
Pj	0.90
I	7.9
Rv	0.12
A	11.20

Proposed Collected	
Parameter	PR WS 22
P	50.0
Pj	0.90
I	9.2
Rv	0.13
A	11.38

Proposed Collected	
Parameter	PR WS 23
P	50.0
Pj	0.90
I	14.4
Rv	0.18
A	4.72

Proposed Bypassed	
Parameter	PR WS 24
P	50.0
Pj	0.90
I	8.8
Rv	0.13
A	0.69

Proposed Bypassed	
Parameter	PR WS 30
P	50.0
Pj	0.90
I	6.2
Rv	0.11
A	4.86

Proposed Collected	
Parameter	PR WS 31
P	50.0
Pj	0.90
I	19.4
Rv	0.22
A	1.08

Proposed Bypassed	
Parameter	PR WS 40
P	50.0
Pj	0.90
I	0.0
Rv	0.05
A	0.35

**Simple Method (Schueler Method) for Estimating Pollutant  
Export from Urban Development Sites**

**2016 Proposed Plans**

**III. Initial Pollutant Load Estimation:**

**III.1 East toward Easton Reservoir**

Pollutant	PR WS 10	PR WS 11	PR WS 14	PR WS 15	Total East	Units
Sediment	192.4	135.7	930.1	1,501.9	2,760.1	lbs
Total N	9.2	6.5	44.6	72.0	132.4	lbs
Total P	1.3	0.9	6.2	10.0	18.4	lbs
COD	253.1	178.6	1,223.9	1,976.4	3,632.1	lbs
Zinc	0.5	0.3	2.4	3.8	7.0	lbs
Copper	0.1	0.1	0.6	1.0	1.9	lbs
Lead	0.5	0.4	2.4	3.9	7.2	lbs
Hydrocarbons	9.8	6.9	47.2	76.2	140.0	lbs
Bacteria	18.4	13.0	88.8	143.4	263.6	bill. colnies.

**III.2 West toward Hemlock Reservoir**

Pollutant	PR WS 20	PR WS 21	PR WS 22	PR WS 23	PR WS 24	Units
Sediment	123.4	954.6	1,063.6	596.6	62.7	lbs
Total N	5.9	45.8	51.0	28.6	3.0	lbs
Total P	0.8	6.4	7.1	4.0	0.4	lbs
COD	162.4	1,256.2	1,399.7	785.1	82.6	lbs
Zinc	0.3	2.4	2.7	1.5	0.2	lbs
Copper	0.1	0.7	0.7	0.4	0.0	lbs
Lead	0.3	2.5	2.8	1.6	0.2	lbs
Hydrocarbons	6.3	48.4	54.0	30.3	3.2	lbs
Bacteria	11.8	91.2	101.6	57.0	6.0	bill. colnies.

Pollutant	PR WS 30	PR WS 31	PR WS 40	Total East	Units
Sediment	361.9	171.0	12.3	3,346.2	lbs
Total N	17.4	8.2	0.6	160.5	lbs
Total P	2.4	1.1	0.1	22.3	lbs
COD	476.2	225.0	16.2	4,403.4	lbs
Zinc	0.9	0.4	0.0	8.5	lbs
Copper	0.2	0.1	0.0	2.3	lbs
Lead	0.9	0.4	0.0	8.7	lbs
Hydrocarbons	18.4	8.7	0.6	169.7	lbs
Bacteria	34.6	16.3	1.2	319.5	bill. colnies.

## Simple Method (Schueler Method) for Estimating Pollutant Export from Urban Development Sites

### 2016 Proposed Plans

#### IV. Pollutant Removal Efficiency by BMP:

Proposed Best Management Practices:

Deep Sump Catch Basins  
Off-line Hydrodynamic Separator  
Extended Detention Basin  
Recharger Chambers

Pollutant	% Pollutant Removal By BMP			
	Deep Sump Catch Basins	Offline Hydrodynamic Separator	Extended Detention	Recharger Chambers
Sediment <sup>1</sup>	10	75 <sup>2</sup>	80-100	60-80
Total N <sup>1</sup>	-	-	20-40	40-60
Total P <sup>1</sup>	5	-	40-60	40-60
COD <sup>1</sup>	-	-	40-60	60-80
Zinc <sup>1</sup>	5	21 <sup>2</sup>	60-80	40-60
Copper <sup>1</sup>	5	-	60-80	40-60
Lead <sup>1</sup>	5	-	60-80	40-60
Hydrocarbons <sup>2</sup>	14	64	82	-
Bacteria <sup>3</sup>	-	-	74	-

Sources:

- <sup>1</sup> - Controlling Urban Runoff : A Practical Manual for Planning and Designing Urban BMPs (Schueler, 1987)  
<sup>2</sup> - University of New Hampshire Stormwater Center, 2012 Biennial Report  
<sup>3</sup> - EPA Preliminary Data Summary of Urban Storm Water Best Management Practices, 1999

#### V. Pollutant Load Removal:

##### V1. East toward Easton Reservoir

##### WS 10 - Proposed Bypassed

Pollutant	Initial Pollutant Load (lbs or billion colonies)	Pollutant Load After BMP (lbs)				Percent Removal Efficiency
					End Pollutant Load	
Sediment	192.4				192.4	0.0%
Total N	9.2				9.2	0.0%
Total P	1.3				1.3	0.0%
COD	253.1				253.1	0.0%
Zinc	0.5				0.5	0.0%
Copper	0.1				0.1	0.0%
Lead	0.5				0.5	0.0%
Hydroc	9.8				9.8	0.0%
Bacteria	18.4				18.4	0.0%



# Simple Method (Schueler Method) for Estimating Pollutant Export from Urban Development Sites

## 2016 Proposed Plans

### WS 11 - Proposed Bypassed

Pollutant	Initial Pollutant Load (lbs or billion colonies)	Pollutant Load After BMP (lbs)				Percent Removal Efficiency
					End Pollutant Load	
Sediment	135.7				135.7	0.0%
Total N	6.5				6.5	0.0%
Total P	0.9				0.9	0.0%
COD	178.6				178.6	0.0%
Zinc	0.3				0.3	0.0%
Copper	0.1				0.1	0.0%
Lead	0.4				0.4	0.0%
Hydroc	6.9				6.9	0.0%
Bacteria	13.0				13.0	0.0%

### WS 14 - Proposed Collected

BMPs: Deep sump catch basin, Off-line Hydrodynamic Separator, Extended Detention

Pollutant	Initial Pollutant Load (lbs or billion colonies)	Proposed Pollutant Load After BMP (lbs)				Percent Removal Efficiency
		Deep Sump Catch Basins	Offline Hydrodynamic Separator	Extended Detention	End Pollutant Load	
Sediment	930.1	837.0	209.3	20.9	20.9	97.8%
Total N	44.6	44.6	44.6	31.2	31.2	30.0%
Total P	6.2	5.9	5.9	2.9	2.9	52.5%
COD	1223.9	1223.9	1223.9	611.9	611.9	50.0%
Zinc	2.4	2.3	1.8	0.5	0.5	77.5%
Copper	0.6	0.6	0.6	0.2	0.2	71.5%
Lead	2.4	2.3	2.3	0.7	0.7	71.5%
Hydroc	47.2	40.6	14.6	2.6	2.6	94.4%
Bacteria	88.8	88.8	88.8	23.1	23.1	74.0%

### WS 15 - Proposed Collected

BMPs: Deep sump catch basin, Off-line Hydrodynamic Separator, Extended Detention

Pollutant	Initial Pollutant Load (lbs or billion colonies)	Proposed Pollutant Load After BMP (lbs)				Percent Removal Efficiency
		Deep Sump Catch Basins	Offline Hydrodynamic Separator	Extended Detention	End Pollutant Load	
Sediment	1501.9	1351.7	337.9	33.8	33.8	97.8%
Total N	72.0	72.0	72.0	50.4	50.4	30.0%
Total P	10.0	9.5	9.5	4.8	4.8	52.5%
COD	1976.4	1976.4	1976.4	988.2	988.2	50.0%
Zinc	3.8	3.6	2.9	0.9	0.9	77.5%
Copper	1.0	1.0	1.0	0.3	0.3	71.5%
Lead	3.9	3.7	3.7	1.1	1.1	71.5%
Hydroc	76.2	65.5	23.6	4.2	4.2	94.4%
Bacteria	143.4	143.4	143.4	37.3	37.3	74.0%

**Simple Method (Schueler Method) for Estimating Pollutant  
Export from Urban Development Sites**

**2016 Proposed Plans**

**Total Pollutant Reduction with BMP's - East toward Easton Reservoir**

<b>Pollutant</b>	<b>Total Proposed Pollutant Load prior to BMP's</b>	<b>Total Proposed Pollutant Load after BMP's</b>	<b>Total Percent Reduction</b>
<b>Sediment</b>	2760.1	382.8	86.1%
<b>Total N</b>	132.4	97.4	26.4%
<b>Total P</b>	18.4	9.9	46.3%
<b>COD</b>	3632.1	2031.9	44.1%
<b>Zinc</b>	7.0	2.2	68.3%
<b>Copper</b>	1.9	0.7	63.0%
<b>Lead</b>	7.2	2.7	63.0%
<b>Hydroc</b>	140.0	23.5	83.2%
<b>Bacteria</b>	263.6	91.7	65.2%

# Simple Method (Schueler Method) for Estimating Pollutant Export from Urban Development Sites

## 2016 Proposed Plans

### V2. West toward Hemlock Reservoir

#### WS 20 - Proposed Bypassed

Pollutant	Initial Pollutant Load (lbs or billion colonies)	Pollutant Load After BMP (lbs)				Percent Removal Efficiency
					End Pollutant Load	
Sediment	123.4				123.4	0.0%
Total N	5.9				5.9	0.0%
Total P	0.8				0.8	0.0%
COD	162.4				162.4	0.0%
Zinc	0.3				0.3	0.0%
Copper	0.1				0.1	0.0%
Lead	0.3				0.3	0.0%
Hydroc	6.3				6.3	0.0%
Bacteria	11.8				11.8	0.0%

#### WS 21 - Proposed Collected

BMPs: Deep sump catch basin, Off-line Hydrodynamic Separator, Extended Detention

Pollutant	Initial Pollutant Load (lbs or billion colonies)	Proposed Pollutant Load After BMP (lbs)				Percent Removal Efficiency
		Deep Sump Catch Basins	Offline Hydrodynamic Separator	Extended Detention	End Pollutant Load	
Sediment	954.6	859.1	214.8	21.5	21.5	97.8%
Total N	45.8	45.8	45.8	32.1	32.1	30.0%
Total P	6.4	6.0	6.0	3.0	3.0	52.5%
COD	1256.2	1256.2	1256.2	628.1	628.1	50.0%
Zinc	2.4	2.3	1.8	0.5	0.5	77.5%
Copper	0.7	0.6	0.6	0.2	0.2	71.5%
Lead	2.5	2.4	2.4	0.7	0.7	71.5%
Hydroc	48.4	41.6	15.0	2.7	2.7	94.4%
Bacteria	91.2	91.2	91.2	23.7	23.7	74.0%

#### WS 22 - Proposed Collected

BMPs: Deep sump catch basin, Off-line Hydrodynamic Separator, Extended Detention

Pollutant	Initial Pollutant Load (lbs or billion colonies)	Proposed Pollutant Load After BMP (lbs)				Percent Removal Efficiency
		Deep Sump Catch Basins	Offline Hydrodynamic Separator	Extended Detention	End Pollutant Load	
Sediment	1063.6	957.3	239.3	23.9	23.9	97.8%
Total N	51.0	51.0	51.0	35.7	35.7	30.0%
Total P	7.1	6.7	6.7	3.4	3.4	52.5%
COD	1399.7	1399.7	1399.7	699.8	699.8	50.0%
Zinc	2.7	2.6	2.0	0.6	0.6	77.5%
Copper	0.7	0.7	0.7	0.2	0.2	71.5%
Lead	2.8	2.6	2.6	0.8	0.8	71.5%
Hydroc	54.0	46.4	16.7	3.0	3.0	94.4%
Bacteria	101.6	101.6	101.6	26.4	26.4	74.0%

# Simple Method (Schueler Method) for Estimating Pollutant Export from Urban Development Sites

## 2016 Proposed Plans

### WS 23 - Proposed Collected

BMPs: Deep sump catch basin, Off-line Hydrodynamic Separator, Extended Detention

Pollutant	Initial Pollutant Load (lbs or billion colonies)	Proposed Pollutant Load After BMP (lbs)				Percent Removal Efficiency
		Deep Sump Catch Basins	Offline Hydrodynamic Separator	Extended Detention	End Pollutant Load	
Sediment	596.6	537.0	134.2	13.4	13.4	97.8%
Total N	28.6	28.6	28.6	20.0	20.0	30.0%
Total P	4.0	3.8	3.8	1.9	1.9	52.5%
COD	785.1	785.1	785.1	392.6	392.6	50.0%
Zinc	1.5	1.4	1.1	0.3	0.3	77.5%
Copper	0.4	0.4	0.4	0.1	0.1	71.5%
Lead	1.6	1.5	1.5	0.4	0.4	71.5%
Hydroc	30.3	26.0	9.4	1.7	1.7	94.4%
Bacteria	57.0	57.0	57.0	14.8	14.8	74.0%

### WS 24 - Proposed Bypassed

Pollutant	Initial Pollutant Load (lbs or billion colonies)	Pollutant Load After BMP (lbs)				Percent Removal Efficiency
					End Pollutant Load	
Sediment	62.7				62.7	0.0%
Total N	3.0				3.0	0.0%
Total P	0.4				0.4	0.0%
COD	82.6				82.6	0.0%
Zinc	0.2				0.2	0.0%
Copper	0.0				0.0	0.0%
Lead	0.2				0.2	0.0%
Hydroc	3.2				3.2	0.0%
Bacteria	6.0				6.0	0.0%

### WS 30 - Proposed Bypassed

Pollutant	Initial Pollutant Load (lbs or billion colonies)	Pollutant Load After BMP (lbs)				Percent Removal Efficiency
					End Pollutant Load	
Sediment	361.9				361.9	0.0%
Total N	17.4				17.4	0.0%
Total P	2.4				2.4	0.0%
COD	476.2				476.2	0.0%
Zinc	0.9				0.9	0.0%
Copper	0.2				0.2	0.0%
Lead	0.9				0.9	0.0%
Hydroc	18.4				18.4	0.0%
Bacteria	34.6				34.6	0.0%

# Simple Method (Schueler Method) for Estimating Pollutant Export from Urban Development Sites

## 2016 Proposed Plans

### WS 31 - Proposed Collected

BMPs: Deep sump catch basin, Recharger Chambers

Pollutant	Initial Pollutant Load (lbs or billion colonies)	Proposed Pollutant Load After BMP (lbs)				Percent Removal Efficiency
		Deep Sump Catch Basins	Recharger Chambers		End Pollutant Load	
Sediment	171.0	153.9	46.2		46.2	73.0%
Total N	8.2	8.2	4.1		4.1	50.0%
Total P	1.1	1.1	0.5		0.5	52.5%
COD	225.0	225.0	67.5		67.5	70.0%
Zinc	0.4	0.4	0.2		0.2	52.5%
Copper	0.1	0.1	0.1		0.1	52.5%
Lead	0.4	0.4	0.2		0.2	52.5%
Hydroc.	8.7	7.5	7.5		7.5	14.0%
Bacteria	16.3	16.3	16.3		16.3	0.0%

### WS 40 - Proposed Bypassed

Pollutant	Initial Pollutant Load (lbs or billion colonies)	Pollutant Load After BMP (lbs)				Percent Removal Efficiency
					End Pollutant Load	
Sediment	12.3				12.3	0.0%
Total N	0.6				0.6	0.0%
Total P	0.1				0.1	0.0%
COD	16.2				16.2	0.0%
Zinc	0.0				0.0	0.0%
Copper	0.0				0.0	0.0%
Lead	0.0				0.0	0.0%
Hydroc	0.6				0.6	0.0%
Bacteria	1.2				1.2	0.0%

### Total Pollutant Reduction with BMP's - West toward Hemlock Reservoir

Pollutant	Total Proposed Pollutant Load prior to BMP's	Total Proposed Pollutant Load after BMP's	Total Percent Reduction
Sediment	3346.2	665.3	80.1%
Total N	160.5	118.8	26.0%
Total P	22.3	12.6	43.7%
COD	4403.4	2525.4	42.6%
Zinc	8.5	3.1	63.2%
Copper	2.3	0.9	58.6%
Lead	8.7	3.6	58.6%
Hydroc	169.7	43.3	74.5%
Bacteria	319.5	134.8	57.8%







# Integrated Turf Management Plan

## EASTON CROSSING

January 3, 2017  
MMI #2683-01-29

This Integrated Turf Management Plan is prepared to avoid any potential impacts to surface and groundwater quality from the inappropriate use of fertilizer and/or pesticides.

### 1.1 Turf Maintenance

A mowing schedule will be developed by the homeowners' association to provide the homeowners guidance on the proper mowing protocol.

### 1.2 Fertilization

Best Management Practices (BMPs) for nitrogen fertilization include applying nitrogen fertilizer only when the grass is actively growing, returning grass clippings to the turf to recycle plant nutrients, and applying the nitrogen required each year from a slow-release nitrogen source such as a coated urea or a natural organic form.

The schedule of nitrogen fertilizer application will be developed by the homeowners' association in conjunction with a turf management specialist.

The personnel applying the fertilizer will be trained in fertilizer application rules for the site, and all fertilizer use will be recorded and kept on file with the homeowners' association. The judicious use of nitrogen by trained personnel reduces the risk of nitrogen runoff and leaching into groundwater.

### 1.3 Pesticides and Herbicides

The use of pesticides will only occur if mechanical or natural controls of pest infestation fail. Use of pesticides will be avoided until application is absolutely necessary.

The following housekeeping and BMPs will minimize the potential for pollution:

- Chemicals will not be stored on site.
- Chemicals will not be mixed on site.
- Application will be prohibited when winds exceed 10 miles per hour (mph).
- Containers will be removed from the site immediately following the application and will be disposed of properly.
- Signs will be posted on the site property away from the location of the application and at the location of the application identifying the type of chemical and date of application.

- A field inspection will be completed by the company retained to conduct the application, and a report will be completed including the name, date, chemical, weather conditions, type of application, and description of the location of the application.

If it were to become necessary to use them, pesticide selection would be based on a risk estimate by a risk assessment model. The risk assessment will be used to select chemicals that have a low potential to run off. The following is a list of possible chemicals that could be used at the site.

**Table 1-1  
Selected Pesticides**

Herbicides (trade name)	Insecticides (trade name)
2,4-D* amine	Acephate (Orthene)
Bensulide (Betasan)	Bendicaocarb (Turcam)
Benefin (Balan)	Bifenthrin* (Talstar)
Dicamba* (Banvel)	Carbaryl (Sevin)
2,4-DP	Cyfluthrin (Tempo)
Dithiopyr (Dimension)	Fluvalinate (Mavrik)
Fenoxaprop-ethyl (Acclaim)	Lambda-cyhalothrin (Scimitar)
Glyphosate (Roundup)	
MCP* (mecoprop)	
Oxadiazon (Ronstar)	
Pendimethalin* (Pendulum)	
Siduron (Tupersan)	
Triclopyr (Turflon)	
Trifluralin (Treflan)	

\* These chemicals are found in residential pesticide products

2683-01-29-d1916-rpt







Engineering, Planning,  
Landscape Architecture  
and Environmental Science

**MILONE & MACBROOM**

December 21, 2016

Matthew Ranelli, Esq.  
Shipman & Goodwin, LLP  
265 Church Street  
Suite 1207  
New Haven, CT 06510

**RE: Easton Crossing  
Easton, Connecticut  
MMI #2683-01-29**

Dear Attorney Ranelli:

Milone & MacBroom, Inc. (MMI) is in receipt of a letter addressed to Robert Maquat, Chairman of the Town of Easton Planning and Zoning Commission, dated December 10, 2016, from Peter G. Neary, Town of Easton Fire Marshal. To the comments provided in this letter, we offer the following responses:

- C1. There was no information that details specifications for the two water sources, four water tanks depicted on the applicant's maps. For planning purposes, the applicant on a prior application has indicated that the public water system would be brought into a prior application to supply water for fire protection. Especially with application for multifamily housing units, a public water supply is desirable.
- R1. Two storage cisterns with a capacity of 30,000 gallons of water for firefighting are provided on the plans, one shown on Sheet SD-1 of the plans at the intersection of Stonegate Lane and Boxwood Court and the other shown on Sheet SD-2 of the plans located on Stonegate Lane between Lots 4 and 5. The detail for the fiberglass fire cisterns is provided on Sheet D-2. This is the same information that was provided on the 2014 plans. The firefighting cisterns are in the same location as proposed for the previously approved 21-lot subdivision. Cisterns are typically filled by the local fire department as was the plan for the 2014 application. In addition, there is an existing dry hydrant on the property connected to the pond located near the intersection of Sport Hill Road and Westport Road.
- C2. Minimum number of off street parking spaces for the affordable housing dwellings is inadequate
- R2. According to the Institute of Traffic Engineers *Parking Manual*, the parking demand for a single-family home is 2.0 parking spaces. The parking demand for a smaller, two-bedroom unit is less than 2.0 parking spaces. Each home has a minimum of two parking spaces; therefore, the proposed number of parking spaces is adequate. The parking spaces provided exceed the number of spaces provided in the 2014 plans.

Milone & MacBroom, Inc., 99 Realty Drive, Cheshire, Connecticut 06410 (203) 271-1773 Fax (203) 272-9733  
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Matthew Ranelli, Esq.  
December 21, 2016  
Page 2

- C3. The project shall meet or exceed the minimum applicable requirements of the Connecticut State Fire Code, where applicable.
- R3. The project will meet or exceed all applicable National Fire Protection Association (NFPA) codes. The final design plans will be submitted to the Easton Fire Marshal and Water Supply Officer for approval prior to construction.

Please feel free to contact me should you need any further information.

Very truly yours,

MILONE & MACBROOM, INC.



Ted Hart, P.E., Vice President  
Director of Civil Engineering

2683-01-29-d1416-ltr







**MILONE & MACBROOM®**

January 3, 2017

Matthew Ranelli, Esq.  
Shipman & Goodwin, LLP  
265 Church Street  
Suite 1207  
New Haven, CT 06510

**RE: Easton Crossing  
Easton, Connecticut  
DPH #2014-0188  
MMI #2683-01-29**

Dear Attorney Ranelli:

Milone & MacBroom, Inc. (MMI) is in receipt of a letter addressed to the Town of Easton Planning & Zoning Commission, dated December 9, 2016, from Edward Nagy, P.E., Director of Public Works for the Town of Easton Department of Public Works Engineering Department. To the comments provided in this letter, we offer the following responses:

**RESUBDIVISION MAP**

- C1. Subdivision Map shall meet all requirements of the State of Connecticut Regulation, Department of Consumer Protection, Minimum Standards for Surveys and Maps, Regulation: 20-300b-1 to 20-300b-20.
- R1. The resubdivision map provided in the plan set meets the Minimum Standards for Surveys and Maps, Regulation: 20-300b-1 to 20-300b-20.**
- C2. Provide table with area of wetland and area of upland soil of each lot.
- R2. These areas are not necessary or required on a per lot basis.**
- C3. Parcel A; Street lines shall comply with Subdivision Regulations. Street lines at intersections and cul-de-sacs shall be connected by a minimum radius of 25 feet. (See Section IV b of Subdivision Regulations)
- R3. The resubdivision map provided satisfies this requirement. The map in the plan set specifically shows the street line intersection at the intersection of Silver Hill Road and Sport Hill Road connected with a 25'-radius curve.**

- C4. Parcel A is a lot being created by this application. Note #19 states "Parcel 'A' should not be considered a building lot at this time. There have been buildings on this site for many years. This note seems erroneous.
- R4. **Note #19 states, "No new construction is proposed on Parcel 'A' at this time." Note #19 was added in response to this commenter in 2014 and is correct.**
- C5. Need to show monument to be set on the corner of Westport Road and Sport Hill Road at the start and end of the curve and on all other street line curves on the proposed Roads and the Common Access Driveways.
- R5. **Iron pins and monuments to be set on the corner of Westport Road and Sport Hill Road at the start and end of the curve will be shown on the final resubdivision map.**
- C6. All lot corners of all lots are to be marked with I. Pins or D. Holes. (See Subdivision Regulations, Section III h. Monuments and Lot Pins; . . . iron pins shall be used to mark the boundaries of easements . . .).
- R6. **Iron pins and monuments to be set at the corners of all lots will be shown on the final resubdivision map.**
- C7. Curve C37 is not showing in the curve table on Resubdivision Map Sheet 1 of 2.
- R7. **The curve data for Curve C37 will be added to the table on the final map.**
- C8. Need I. Pins or D. Hole at all property corners of Parcel A, Open Space #1, #2, and #3.
- R8. **Iron pins and monuments to be set at the corners of all lots, including Parcel A and Open Space Areas, are shown on the resubdivision map provided in the plan set.**
- C9. All run-off from driveways shall be collected and not allowed to run onto Town roads.
- R9. **A detail for a trench drain has been added to the plans and will be installed on approximately 12 of the driveways to intercept runoff upgradient of a town road and convey it safely to a point of discharge. This is stated in Note 13 on Sheet SD-1.**
- C10. Boxwood Court: The road curve centerline radius does not comply with Subdivision Street Design Table IV-1.
- R10. **The road curve centerline radius complies with the Subdivision Street Design Table IV-1.**
- C11. Curve on common drive to Lot #9 has to meet minimum radius. See street design table.
- R11. **Lot 9 is a private driveway not a street. It is also unchanged from the 2014 plan.**

- C12. Provide Index Map on Sheet # 2.
- R12. An index map is not necessary when there are only two plans that show the entire site. An index can be added to the final plans if required.
- C13. Need to label easement for D-Basin 140.
- R13. The easement for Basin 140 is clearly labeled on Sheet SD-2, and a label will be provided on the final Sheet 2 of 2 of the resubdivision map.
- C14. Label all easements with number or letter so they can be identified on the map.
- R14. The final easement map will be labeled accordingly.

**SITE DEVELOPMENT PLANS – SD1 – SD2**

- C1. Who from the Town inspected the test pits in the detention areas? The Engineering Department has not witnessed any tests that were done in the detention areas or water quality, basins or for the detention on the individual lots. This is required before we can review the proposed detention and water quality areas.
- R1. This commenter provided a similar comment in 2014. MMI inspected the test pits within the detention basins as suggested in the *2004 Connecticut Stormwater Quality Manual*. Also, see R4 of this section below.
- C2. We also need a copy of all the soil log reports and perc test reports.
- R2. The soil logs and testing were previously provided in 2014 and are incorporated into the record by agreement here.
- C3. Existing contour line elevations are too small. Need to enlarge numbers.
- R3. The contour line labels were previously enlarged and are adequate. We have provided a digital copy of the plan sets with our application materials so that users can enlarge the view of any area of the plans.
- C4. The detention pond and recharge areas for each lot need to have test pits and percolation tests done to determine ground water and ledge elevations to design the pond to function properly. The tests need to be witnessed by Town staff. See Page 11-P3-3 of "Connecticut Stormwater Quality Manual".
- R4. This same comment was addressed in 2014. The detention ponds are not designed to be infiltration basins. The basins are not proposed and were not modeled to infiltrate stormwater; therefore, no credit was taken for the release of stormwater into the ground. The *2004 Connecticut Stormwater Quality Manual* guidelines do not suggest test pits are required for detention ponds. Page 11-P3-3 of the manual does not refer to detention ponds.

Town staff witnessed over 350 soil test pits that were performed on site in addition to the soil percolation tests. The Town Sanitarian and/or the independent sanitarian hired by the town observed each of these test pits. In the Town Sanitarian's review memo dated November 10, 2008, she commented that, "The soils throughout the parcel are generally well-draining and suitable for on-site septic systems." The results of the percolation tests were also remarkably consistent, with over 95% of the percolation test results falling in the 5 to 10 minutes per inch to 10 to 20 minutes per inch range.

- C5. All sewage systems shall be a minimum of 50' up gradient of any stonewall that acts as a drain. Some septic areas do not meet the 50' up gradient requirement. Some systems are less than 50' from C.B.; these are open drains. See State of Connecticut Public Health Code Table 1 attached.
- R5. We have inspected the stone walls on site, and they are not retaining walls; they are simple stone walls that were constructed as the farmers cleared the land to make fields and piled the stones on top of the ground to form walls. The existing stone walls will not act as subsurface drains. This same comment was addressed in 2014.
- C6. All sewage systems shall be a minimum of 50' up gradient of any drain. Some of the systems are not 50' from street underdrains and some are within 50' of storm drainage pipes that are not marked tight jointed. See State of Connecticut Public Health Code Table 1 attached.
- R6. All subsurface sewage disposal systems are located 50' up gradient of any drain in accordance with the State of Connecticut Public Health Code. This same comment was addressed in 2014.
- C7. No sewage system shall be located within 50' up gradient of any cut in slope if bleed out conditions are possible. See State of Connecticut Public Health Code Table 1 attached.
- R7. In accordance with the State of Connecticut Public Health Code, all subsurface sewage disposal systems are located more than 50' up gradient of any slope where a bleedout condition might occur. This same comment was addressed in 2014.
- C8. All detention structures must be 75' away from all wells if they are a source of pollution and 150' if the well has a draw down rate greater than 10 gallons per minute.
- R8. The State of Connecticut Public Health Code says sources of pollution must be located 75' from a well. Rainwater from a residential roof directed to an infiltration unit is not considered a source of pollution. The separation distance from the wells meets the State of Connecticut Public Health Code requirements. The well drawdown rate is based on pump size that is normally 1 to 2 gallons per minute.
- C9. The duplex units should have separate septic systems and wells, if not then who will make repairs if they fail. Also, the Town doesn't allow community wells.
- R9. The Connecticut Public Health Code *Regulations and Technical Standards for Subsurface Sewage Disposal Systems* states, "Each building shall be served by a separate subsurface



sewage disposal system." This means more than one unit in a single building can be served by a single septic system. It should also be noted that the duplex buildings contain four bedrooms with the same design flow under the State of Connecticut Public Health Code as the proposed four-bedroom single-family buildings. The wells and septic systems are the same number as proposed in the 2014 plans except there are no five-bedroom homes in the present plans.

- C10. Note 12 states that all septic systems must be 50' up gradient of any drainage pipe that is not constructed with a tight joint. However, the plan shows several septic systems within 50'. See State of Connecticut Public Health Code Table 1 attached.
- R10. Where septic systems are 50' upgradient of drainage systems, they are noted to be watertight as allowed by the Public Health Code.
- C11. The existing contour lines needs to be darker; it is hard to see the contour line and the elevation on the plan.
- R11. Comment noted.
- C12. The text size is too small. Cannot read some of the text with all the information on this Plan, a 1" = 50' or 1" = 40' scale would be better for review and development of this site.
- R12. The size of the labels is adequate. We have provided a digital copy of the plan sets with our application materials so that users can enlarge the view of any area of the plans.
- C13. Some of the subsurface septic systems are too close to the open drain and U-drain. Make changes to plan.
- R13. The subsurface sewage disposal systems meet the required separation distances.
- C14. Label the U-drain on the plan – start and end.
- R14. The U-Drains are shown and labeled on the Roadway Plan and profile sheets.
- C15. Need to show elevation on the proposed contour line; cannot tell if grade is going up or down in some areas.
- R15. The contour lines are labeled with their elevations.

#### **SITE PLAN – LANDSCAPING**

- C1. Remove all reference to Landscape Architect and replace with Town Tree Warden.
- R1. The 2014 plan reviewed by this commenter and by Mr. Richard Dina, Tree Warden, contained the same references to a landscape architect. The project landscape architect is critical to the successful implementation of the planting plan and will remain in the notes on Sheet LA-1.

**EX-1 AND EX-2 PLAN**

- C1. Some of the text is covered by other text. Need to make it legible.
- R1. One label is overwritten with the larger contour numbers previously requested. The label will be relocated on the final plan.
- C2. Pipe on Silver Hill Road is not CMP is it 24" RCP.
- R2. Pipe type label will be modified accordingly on the final plans.
- C3. Pipes on Westport Road are (2) RCP pipe and one plastic pipe. Please revise plan.
- R3. Pipe type label will be modified accordingly on the final plans.

**LA-1 SITE PLAN – LANDSCAPING**

- C1. Tree and Shrub Plantings – The term for quantity TBD is not in compliance with the required Planting Map in the Subdivision Regulation V-b-5. New subdivision roads require street trees every 50 feet both sides. A revised planting plan needs to be submitted to the Commission.
- R1. TBD (To Be Determined) is not on the plans submitted with this application. All planting quantities are shown on the landscape plan LA-1 as per this commenter's 2014 comment.

**RP ROADWAY PLAN AND PROFILE – RP1 – RP7**

- C1. RP-1; Show curtain drains on both sides of Stonegate Lane in the road cut sections.
- R1. Curtain drains are shown on the plans in road cut areas where necessary. This same comment was addressed in 2014.
- C2. Show Dry Hydrant Easement. Label with number or letter on all Dry Hydrant Easements.
- R2. The easements, including the dry hydrant easements, are shown and appropriately labeled on the resubdivision map. This same comment was addressed in 2014.
- C3. Provide a Drainage Easement for the infiltrators adjacent to CB 39.
- R3. The easement is shown and appropriately labeled on the resubdivision map. This same comment was addressed in 2014.
- C4. At all catch basins the outlet inverts shall be at least .2 ft. lower than the inverts in.
- R4. The Connecticut Department of Transportation *Drainage Manual* followed by Easton does not require this. The drainage systems are all designed to convey the flow from a 100-year storm event with over 1 foot of freeboard for the hydraulic grade line, which is much more than the

**standard 10-year design storm required by Easton and the Department of Transportation Drainage Manual. This same comment was addressed in 2014.**

- C5. Detention Basins 140, 150, 210, 220 and 230; the end of the 12' gravel access road needs to terminate close to the flared ends and outlet control structures. The bottoms of the detention basins may be too soft to support rubber tired backhoe loaders and dump trucks.
- R5. **Suitable access (12'-wide gravel access road) is provided to each basin for the purpose of cleaning and maintenance. This same comment was addressed in 2014.**
- C6. Label all contour lines Proposed and existing on the Profile Plans.
- R6. **Additional labels will be shown on the final plans.**
- C7. Label start and end of U-drain with station +/-.
- R7. **Station labels will be provided on the final plans.**
- C8. Lot numbers for lots shall be labeled on all Plan & Profile sheets that they show on.
- R8. **Lot numbers are shown on each house on the Plan & Profile sheets.**

#### **DETAIL SHEETS**

- C1. Class one Bituminous Concrete is a binder course not the top course.
- R1. **The road detail will be modified on the final plans.**
- C2. Class two Bituminous Concrete is the top (finish) course.
- R2. **The road detail will be modified on the final plans.**
- C3. Provide specification for filter fabric for the curtain drain.
- R3. **The filter fabric to be used around the curtain drain will meet the specification of AASHTO M288 per Connecticut Department of Transportation specifications.**
- C4. Common Driveway Section – Regulation requires that the common driveways shall be constructed to the same specifications as a Town road except for the width.
- R4. **The driveway to the single-family homes on Lots 8 and 9 is 18 feet wide and has the same pavement section as the Town Road Section.**

- C5. Use the Town of Easton's Trash Rack Detail; see attached.
- R5. The Easton Trash Rack Detail shows that it is to be bolted flush to the face of the concrete structure. This will provide limited flow to the structure and will be prone to clogging. The trash rack detail in the plans provides a three-sided grate that has improved hydraulic characteristics that will be less susceptible to clogging. The same trash rack was included in the 2014 plans reviewed by this commenter.

#### **S-1 SITE SIGNAGE PLAN**

- C1. Proposed signs do not conform to the Zoning Regulations Section 2.1.30 and Section 5.6.
- R1. There is no S-1 Plan Sheet in this set of drawings. All signs will comply with the zoning regulations.

#### **GENERAL**

- C1. Note 9; No PVC pipe in Common Driveway or R.O.W. only PVC pipe for U Drain, footing and leader drains.
- R1. No PVC pipe other than the underdrain is shown in the proposed town right-of-way.
- C2. All final plans shall bear the original signatures and seals of the design professional.
- R2. Final plans will be appropriately signed and sealed.
- C3. All required documents shall be executed and recorded concurrently with the record map.
- R3. Comment noted.
- C4. Executed easement documents for the underground utilities shall be submitted and filed at the time of filing the Record Map.
- R4. Comment noted.
- C5. Applicant shall provide submittals on all drainage structures for review and approval prior to manufacture.
- R5. All submittals for drainage structures in the town right-of-way will be provided to the Town Engineer.
- C6. The Town staff reserves the right to review and approve all final construction details.
- R6. Comment noted.



- C7. All silt fences shall be properly installed prior to start of land clearing/disturbance.
- R7. Silt fence will be installed in accordance with the Connecticut Department of Energy & Environmental Protection's standards.
- C8. Submit Cut/Fill Earth Calculation.
- R8. A cut and fill analysis will be provided prior to the start of construction.
- C9. Prior to the start of work, a preconstruction meeting shall be held between the applicant, Town's Land Use staff and Aquarion Watershed Inspector.
- R9. Note #1 of the Construction Sequence calls for a preconstruction meeting. The Aquarion Watershed Inspector will be added to the list of invited attendees.
- C10. These plans have shown some Soil Erosion and Sediment Control. However, due to the disturbance of land greater than five acres, the applicant shall register and comply with the State of Connecticut D.E.P. "General Permit for the Discharge of Stormwater and Dewatering Wastewaters Associated with Construction Activities." The details of the General Permit to be submitted 5 days prior to the pre-construction meeting.
- R10. Prior to the start of construction, State of Connecticut Department of Energy & Environmental Protection "General Permit for the Discharge of Stormwater and Dewatering Wastewaters Associated with Construction Activities" will be obtained, and the permit will be provided to the town 5 days prior to the preconstruction meeting.
- C11. This plan shows 66 units to be built on an average lot area of less than one acre per unit. It is recommended that in watersheds for public drinking water supply reservoirs that the densities for development be two acres per dwelling unit. Once these units are built, if the septic system fails it is too late to change the density. Now is the time to make the density one dwelling unit per two acres.
- R11. Each lot has been designed with a code-complying reserve area to be used in the event a septic system fails. One house per 2 acres is no longer an accepted "Rule of Thumb" as noted by the commission's consultant, LandTech, the author of the 1990 Bulletin #11 that first proposed the rule of thumb. The density is less than the 2014 plan reviewed and recommended by the commission's prior consultant, GHD. GHD concluded that the 2014 plan with 68 units provided better protection than the one unit per two acres standard. The proposed density in bedrooms per acre is also less than the guideline provided in Easton's Plan of Conservation and Development. Finally, in a prior application, the Department of Public Health reviewed 99 septic systems for this same site and development area and recommended each system complied with the Public Health Code. There is adequate capacity for 48 septic systems on the site.

- C12. A Maintenance Plan for the private detention basins on the subdivision shall be submitted to the Commission for review and approval.
- R12. The maintenance plan for the detention basins will be included in the Homeowners' Maintenance Plan.**
- C13. What assurance other than a note on a plan does the Town have that the cleared land will be established per the plans, i.e. trees and shrubs?
- R13. Assurance will be through the bonding process. This same comment was addressed in 2014.**
- C14. What items are considered a "Public Improvement" for bonding?
- R14. Public improvements are the public roads, drainage basins, and detention basins receiving stormwater runoff from public roads, firewater cisterns, and street trees. This same comment was addressed in 2014.**
- C15. Submit Bond Calculation for all Subdivision Improvements.
- R15. Bonding will be in accordance with state statutes. This same comment was addressed in 2014.**
- C16. Add 15% contingency to Bond Calculations.
- R16. Bonding will be in accordance with state statutes. This same comment was addressed in 2014.**
- C17. Bond to be posted prior to recording of record map.
- R17. Bonding will be in accordance with state statutes. This same comment was addressed in 2014.**
- C18. The road name "Stonegate" and also "Boxwood" are similar to existing Town road names. Propose road names to be dissimilar to existing road names.
- R18. This same comment was addressed in 2014.**
- C19. Provide construction detail for the "PROPOSED DRY HYRDANT WITH STORAGE CISTERN". The western cistern adjacent to lots 4 and 5 is lacking metes and bounds of the easement locations.
- R19. Construction details are provided on Sheet D-2. The final resubdivision map will have the necessary metes and bounds shown on the easement.**
- C20. Do the proposed one-acre lots have the minimum requirement of 34,000 square feet of upland area that is in the current regulations?
- R20. The one-acre lots meet the requirement of the proposed zone change. All lots are the same size as the 2014 plans reviewed by this commenter and a minimum of one gross acre.**

- C21. Add limits of land disturbance.
- R21. Limits of disturbance are shown on the road profiles.
- C22. Provide curtain drains along all road shoulders that are in earthen cut.
- R22. Curtain drains are shown in all road cut areas.
- C23. Stonegate Lane @ Sport Hill Rd: Plans show an entrance wall on the road Right of Way. The Town of Easton does not allow fixed objects on its property. Entrance wall is also within the sightline triangle.
- R23. The proposed entrance walls are not in the road right-of-way, and they are not within the sight line triangles. This same comment was addressed in 2014.
- C24. All septic systems must be greater than 50' up gradient from any high water in any detention area or recharge basins; some septic area or reserve areas are scaling less than 50' on the plans.
- R24. The proposed septic systems (and reserve area) are located 50' upgradient of the high water mark of the stormwater basins. This same comment was addressed in 2014.

#### **OPEN SPACE**

- C1. The Open Space proposal of 42.8 acres that has a percentage of 55.8% of wetlands does not comply with Section 10.6(5). "THE RATIO OF THE AREA OF THE PROPOSED OPEN SPACE CLASSIFIED AS INLAND WETLANDS TO THE TOTAL AREA OF THE OPEN SPACE SHALL NOT BE GREATER THAN THE RATIO OF THE AREA OF ALL INLAND WETLANDS IN THE SUBDIVISION TO THE TOTAL AREA OF THE SUBDIVISION, UNLESS THE COMMISSION CONSIDERS SUCH INLAND WETLAND AREAS TO HAVE SPECIAL HABITAT OF OTHER UNIQUE ENVIRONMENTAL VALUE."
- R1. The open space area complies with the proposed zoning text and Section X.12 of the subdivision regulations. This same comment was addressed in 2014.
- C2. Open Space #3; Does not meet Section 10.6(1) Subdivision Regulation: "OPEN SPACE AREAS SHALL TYPICALLY ABUT OR HAVE DIRECT PUBLIC ACCESS TO A PUBLIC STREET AND AS APPROPRIATE, ANY EXISTING PARK OR PUBLIC LAND."
- R2. There is access to Open Space #3 from the cul-de-sac at the end of Boxwood Court.
- C3. There are two separate parcels labeled as "Open Space 2".
- R3. This comment does not apply to the plans submitted with this application. There are not two separate parcels labeled as "Open Space 2."

Matthew Ranelli, Esq.  
January 3, 2017  
Page 12

C4. The Open Space is proposed to be owned by who?

R4. The homeowners' association will own the open space.

Please feel free to contact me should you need any further information.

Very truly yours,

MILONE & MACBROOM, INC.



Ted Hart, P.E., Vice President  
Director of Civil Engineering

2683-01-29-d1316-ltr







Engineering, Planning,  
Landscape Architecture  
and Environmental Science

**MILONE & MACBROOM®**

January 3, 2017

Matthew Ranelli, Esq.  
Shipman & Goodwin, LLP  
265 Church Street  
Suite 1207  
New Haven, CT 06510

**RE: Easton Crossing  
Easton, Connecticut  
MMI #2683-01-29**

Dear Attorney Ranelli:

Milone & MacBroom, Inc. (MMI) is in receipt of a letter addressed to Coalition to Save Easton, dated December 12, 2016, from Michael S. Klein of Environmental Planning Services, LLC. To the comments provided in this letter, we offer the following responses:

**C1. A. Proposed Activities**

Saddle Ridge Developers proposes to develop a  $\pm 124.7$  acre property bounded by Sport Hill Road, Silver Hill Road, Cedar Hill Road, and Westport Road in Easton, CT into 48 lots. They propose to construct an affordable housing development, which appears<sup>1</sup> to include sixty-six dwelling units on  $\pm 110.5$  acres. The remaining  $\pm 14.2$  acres will be maintained as a separate parcel with a barn. The site lies in public water supply watershed lands; the wetlands and watercourses drain to Easton Reservoir and Aspetuck Reservoir. All surface and groundwater is classified accordingly. The development will be served by private wells and individual, sub-surface sewage disposal systems (aka septic systems). Runoff from paved and unpaved surfaces will be collected and discharged to a series of detention basins, which are also purported to treat and infiltrate stormwater to the ground. The overflow from the detention basins will discharge to the wetlands and watercourses at the site. Underground infiltrators are proposed to handle a portion of the roof run-off, any water that does not infiltrate will overflow and reach the detention basins and ultimately the wetlands.

<sup>1</sup> There is conflicting information in the plans, narratives, and various other materials submitted.

The revised site plans show a generic, 40 foot by 50 foot building footprint on each of the lots. Low flow water treatment wastewater discharge areas are also proposed on several of the lots. Concrete pavers are proposed for some areas. A network of public and private roads is proposed. Two of the lots are served by a long common driveway; the remainder is each served by a single, twelve (12) foot wide driveway.

The design of the roadway network and the drainage system in general, and the stormwater management measures in particular, remains largely unchanged from prior applications for development of that site that I have previously reviewed. It is unclear how much impervious area is proposed; the September 9, 2016 Drainage Narrative submitted by MMI, Inc, the design engineer, refers to "effective impervious coverage" and "impervious area", without distinguishing between them. At best, there may be a slight reduction. MMI notes that there are minimal site plan changes, and that while the runoff curve numbers will change slightly, the watershed areas and times of concentration remain unchanged. Therefore MMI concludes that the stormwater management design can remain unchanged. Based on my review of the 2014 and 2016 plans, it appears that the lot layout, grading, and drainage plans are largely identical.

- R1. By design, the current plan is practically identical to the 2014 plan. The only change other than the type of affordable units is the addition of permeable pavers on the driveways for the duplex houses. The stormwater basins are not designed to provide infiltration, and they were not designed to be infiltration basins in the final 2014 plans. The current 2016 plans include the design for a low-flow water treatment wastewater discharge area for each lot in the unlikely case that one is needed.
- C2. The proposed development density is 1 dwelling unit per 1.67 gross acres. CT DEP Bulletin #11 (1990) concludes that the "...maximum development density of 1 dwelling per 2 acres will provide adequate protection of water quality...". The proposed density of Easton Crossing exceeds that which is considered necessary to protect water quality in public water supply watersheds. Bulletin #11 also notes that "other factors [besides septic system discharges] associated with residential development (erosion and sedimentation, stormwater runoff, incidental non-point sources of pollution) may contribute to degradation of water quality" and that "sediment, with its affinity for adsorbed nutrients, as well as pesticides, heavy metals, and other toxins, appears to be the principal source of phosphorus enrichment of fresh water surface bodies [sic]." Aquarion Water Company, in their letter of November 15, 2016, states that the maximum density appropriate for a public water supply watershed is one dwelling unit per 2 acres, exclusive of wetlands. The proposed density, exclusive of wetlands, is 1 unit per 1.31 non-wetland acres.
- R2. The general density recommendation that the commenter relies on does not reflect the current state of engineering required for modern stormwater management and septic design. At the time that the recommendation was included in the Department of Energy & Environmental Protection (DEEP) Bulletin 11 and other documents of that era (i.e., late 1980s and early 1990s), the DEEP *Stormwater Manual* did not exist, and most stormwater systems relied upon for literature reviews such as Bulletin 11 involved areas that lacked stormwater controls. The public health code requirements for on-site septic systems have also been upgraded significantly from the time of those studies. When the commission's consultant in 2014, GHD, reviewed the plans, it agreed that the one unit per two acre recommendation "was based upon documentation of watershed development that did not likely including any substantial design measures for stormwater quantity control and stormwater quality treatment, and that septic system design standards at the time were not as advances as they

are under the current code standards of the Department of Public Health." GHD found that the density proposed in 2014 combined with the advanced protective measures included in Saddle Ridge's plans complied with the *Stormwater Manual* and was protective of the watershed. Saddle Ridge's current plans include all the same protective measures agreed to by GHD with slightly fewer units, fewer bedrooms, and fewer impervious surfaces. The commission's current consultant also agreed that the 10 percent coverage guidance is more recent and effective than the former general recommendation for one unit per two acres.

The DPH and the commission's own consultants do not share the opinion expressed by Mr. Roach. The DPH recommended conditions of approval for the proposed plans, which Saddle Ridge has agreed to accept. Similarly, the commission's prior consultant in 2014 reviewed the plans (which are essentially identical) and concluded that they were protective of the watershed. The recommendations of DPH and GHD reflect the changes to the POCD and current stormwater and septic practices. The commenter does not acknowledge or address these changed circumstances or identify any specific harm if the proposed development is constructed. Rather, the commenter just summarizes the comments of Mr. Roach without offering any professional opinion of his own.

- C3. The drainage system design, being essentially unchanged from the prior submissions, still has numerous deficiencies, as noted in the previous analyses by this office, by Stephen Trinkaus, P.E. by GHD, the town's prior peer reviewer, and by the Town Engineer. This includes a lack of sufficient information with respect to subsurface conditions and clear indications in the data that were presented that the performance of the stormwater basins (for both water quality and water quantity control) would be hindered by seasonal high water tables and restrictive soils. Construction and operation of basins that intercept the seasonal high groundwater table has a reasonable likelihood of altering the hydroperiod (length of saturation or ponding) in the adjacent wetlands. Mr. Trinkaus' engineering review concludes that the application has not demonstrated compliance with the CT DEP Stormwater General Permit and therefore cannot be deemed to be protective of water quality. Since the site is located in public water supply watershed lands, with surface and ground water standards reflective of that use, the failure to demonstrate the adequacy of the treatment system is a serious deficiency in the application.
- R3. The commenter's remarks about GHD are inaccurate. GHD reviewed the stormwater system and found it complied with the 2004 DEEP *Stormwater Quality Manual* and, in GHD's professional opinion, would protect the watershed. Specifically, in 2014, "Based on GHD's review of the original and supplemental application materials received to date (as noted in GHD's reports) for the Easton Crossing Development proposed by Saddle Ridge Developers, it is GHD's professional opinion that construction of the development in compliance with the current proposal, including the final recommendations provided by GHD in this report, will not result in foreseeable adverse impacts to public health, safety, wetlands, watercourses and the environment. Furthermore, the current design of the wet stormwater quality basins, which now generally comply with the 'Pocket Pond' and 'Micropool Extended Detention Pond' criteria of the 2004 DEEP Stormwater Quality Manual, should provide increased stormwater treatment capacity and performance as compared to the dry detention basins previously



approved by the Town for the Applicant's 21-lot subdivision on the property." Mr. Trinkaus's comments summarized by the commenter are inaccurate and are addressed in a separate response. Again, the commenter does not identify any harm that would occur and rather just summarizes the comments of Mr. Roach without offering any professional opinion of his own.

- C4. In summary, the engineering analyses by Trinkaus, GHD and Aquarion Water Company conclude that the September 8, 2016 plans do not meet the DEEP criteria for residential development in a public water supply watershed. Significant data in support of the design also are lacking and the application does not contain sufficient data to demonstrate that it will conform to the CT DEEP Stormwater General Permit for Construction and Dewatering Wastewaters. Absent such a showing, there is a reasonable likelihood of unreasonable pollution of the wetlands and waters of the state. Because these wetlands and watercourses drain into Easton and Aspetuck Reservoirs, this pollution represents a threat to public health and safety.
- R4. As noted above, the commenter does not correctly characterize GHD's comments on the 2014 plans. GHD's comments are essentially the opposite of what the commenter claims. GHD's final review of the 2014 plans (that we agree are nearly identical to the 2016 plans) concluded that it was their, "professional opinion that construction of the development...will not result in foreseeable adverse impacts to public health, safety, wetlands, watercourses and the environment." It should also be noted that the Connecticut DEEP does not regulate residential development density in water supply watersheds. The commission accepted the conclusions of GHD and found in its 2014 resolution of decision that the 2014 plans (which all agree are nearly identical to the 2016 plans) addressed the commission's "concerns regarding substantial public health and safety issues that were evident in the earlier applications by this applicant for this property."

Please feel free to contact me should you need any further information.

Very truly yours,

MILONE & MACBROOM, INC.

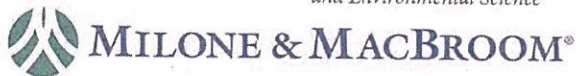


Ted Hart, P.E., Vice President  
Director of Civil Engineering

2683-01-29-d1416-1-ltr







January 3, 2017

Matthew Ranelli, Esq.  
Shipman & Goodwin, LLP  
265 Church Street  
Suite 1207  
New Haven, CT 06510

RE: Easton Crossing  
Easton, Connecticut  
MMI #2683-01-29

Dear Attorney Ranelli:

Milone & MacBroom, Inc. (MMI) is in receipt of a letter addressed to the Coalition to Save Easton, dated December 22, 2106, from Michael S. Klein of Environmental Planning Services. To the comments provided in this letter, we offer the following responses:

- C1. The application is characterized as a re-subdivision. While I am not qualified to address the legal status of that claim, it is clear that this is not a site plan approval. There is essentially no chance that the individual lots will be developed as shown. However, the overall performance of the stormwater management system, including its ability to properly protect downstream drinking water supplies, is predicated on developing the site as shown. More specifically, the stormwater treatment system is designed to accept and treat the flows from a specific amount of impervious area in specific locations. However, once the lots are sold, there are likely to be significant variations in home designs and the layout of the various improvements on the lots. Furthermore, it is reasonably likely that at least some of the homeowners will make improvements, such as swimming pools, decks, patios, additions, etc., that will increase the impervious areas in each individual drainage basin. Under a subdivision or re-subdivision, there is no way to control this aspect of the development.
- R1. As we have previously stated, the individual plot plans will be prepared and submitted for each lot, and the proposed home will fit within the 40'-by-50' rectangle shown on the plans. It should also be noted that the applicant also agreed to submit individual plot plans for the 21-lot subdivision approved in 2009. The applicant has agreed to limit the amount of the impervious coverage for the proposed subdivision, where this was not the case in the previously approved 21-lot subdivision. It is the applicant's intent to have one builder build the infrastructure and the homes and not to sell off individual lots. Mr. Klein's comments about future changes are really just speculation. All of the future activities about which he speculates could have occurred in the approved 2009 plan without any limitation on impervious area. For the 2016 plan, the applicant has agreed to a mechanism to prevent the impervious area of the project site from exceeding 10 percent (although there is no such regulatory requirement in Easton's regulation or elsewhere).

- C2. Long term maintenance of the stormwater system is essential to ensure its performance. The proposed system is complex and has many different elements in different locations, some of which drain private roads and some of which drain proposed public streets. Many are in remote locations. A legally enforceable funding, inspection and enforcement mechanism acceptable to the Town Attorney and the Public Works Director is critical to ensure water quality is protected in this drinking water watershed.
- R2. The responsibility for maintenance will be the same as it was in the 2014 plan. The Town of Easton Subdivision Regulations provide a mechanism for forming a homeowners' association that will be legally responsible for maintaining the stormwater management system as well as the other open space and common areas. The maintenance of the stormwater management system proposed for Easton Crossing involves similar maintenance to all other stormwater management systems in town.
- C3. The plans require direct wetland impacts, and a substantial amount of work in the upland review areas established by the Conservation Commission, yet they have not been reviewed or approved by that commission. The plans are not identical to those reviewed by the Conservation Commission in 2014. They are similar in some respects, but there are many differences, including differences in the activities in the upland review areas. For example some driveways have been relocated and/or reconfigured, some the stormwater treatment basins have been revised, the roof infiltrators have been modified, and low flow wastewater treatment systems have been added to the plans.
- R3. Mr. Klein previously concluded in his December 12 memorandum that the "lot layout, grading, and drainage plans are largely identical." Now, only 10 days later, he wants to change his conclusion but provides no explanation for doing so. He also provides no detail or description to identify any of the differences he now claims exist. Contrary to Mr. Klein's new opinions, there are no new direct wetland impacts or work in the upland review area that was not already reviewed and approved by the Conservation Commission in 2014. In response to Mr. Klein's general claims of differences between the 2014 plans and the current plans, we will address each comment:
- A. Driveways – The commenter is incorrect. No driveways in the upland review area have been changed, relocated, and/or reconfigured. There are only very small portions of two driveways on Lots 9 and 28 that are located in the upland review area, and they are located in exactly the same location on the current plan as on the 2014 plan.
- B. Stormwater treatment basins – Mr. Klein's comment regarding the basins is incorrect. There have not been changes to the stormwater basins since the revisions in 2014. Those changes were fully reviewed by GHD and recommended as protective of the watershed in its final report. We provided an updated Drainage Narrative dated September 2016 that specifically states this. At the public hearing, Mr. Klein conceded that he was unaware of and had not reviewed GHD's comments. Mr. Klein indicated that he was relying on GHD's

comments on the prior 99-unit plan. GHD's comments on the 99-unit plan do not apply to the 2014 and 2016 plans; both GHD and the commission concluded that the concerns raised in the 99-unit plan were satisfied in 2014.

- C. Roof infiltrators – Mr. Klein's comment regarding the roof infiltrators is incorrect. The roof infiltrators were modified in 2014, but there have been no revisions to them on the 2016 plans. The roof infiltrators were fully reviewed by GHD and the commission in 2014.
- D. Low flow wastewater treatment systems (LFWTS) – Mr. Klein's comment regarding the LFWTS are incorrect. The LFWTS were added to the plans at GHD's request in 2014, but there have been no revisions to them on the 2016 plans.

Mr. Klein in his December 12, 2016 letter stated, "The design of the roadway network and the drainage system in general, and the stormwater management measures in particular, remains largely unchanged from prior applications for development of that site that have previously reviewed." LandTech also compared the current application documents to the application documents from 2014, and in its December 12, 2016 letter to the Easton Planning and Zoning Commission, concluded, "The two sets of drawings are nearly identical. The basic lot layout, stormwater management system, erosion control plan and road network are substantially the same." Many other reviewers also described the plans as basically identical and simply submitted similar or the same comments as in 2014, including several town offices, the state Department of Public Health, Aquarion, and MetroCOG. GHD reviewed the previous (2014) application documents, which LandTech and Mr. Klein have found to be substantially the same as the current plans, and GHD concluded the following: "Based on GHD's review of the original and supplemental application materials received to date (as noted in GHD's reports) for the Easton Crossing Development proposed by Saddle Ridge Developers, it is GHD's professional opinion that construction of the development in compliance with the current proposal, including the final recommendations provided by GHD in this report, will not result in foreseeable adverse impacts to public health, safety, wetlands, watercourses and the environment."<sup>1</sup> There are no changes to the plans in the wetlands or in the upland review area.

Based on Mr. Klein's comments and his acknowledgement that he had not reviewed GHD's 2014 report, we wonder whether he was comparing the correct plans or if he in fact was noting the changes from the 99-unit plan instead.

- C4. The Planning and Zoning Commission cannot rely on the wetland permit as the Conservation Commission's report or approval for several reasons. The plans do not meet the conditions of the Conservation Commission 2014 permit, which included modifications to the design of the drainage and stormwater treatment systems, as well as permanent restrictions on impervious cover, restrictions on construction timing, and individual review of the site plan for each home

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<sup>1</sup> In addition, LandTech had reviewed the 2009 application for the Easton land use agencies, and many of the fundamental features such as basin locations are largely the same from that approved application to the 2016 plans.

lot that includes an upland review area. It appears that individual reviews will be required on 44 of the 49 lots. The current application and plans also do not address the condition calling for a third party engineering review of the construction, as required by the wetland permit. The Conservation Commission conditions are also consistent with my recommendations with respect to establishment and permanent funding of a long term maintenance mechanism for the stormwater management system. If it is true that the applicant has maintained an active appeal of the permit, these concerns are especially significant.

**R4.** The applicant received approval from the Conservation Commission for all proposed regulated activities in 2014. As detailed above and in other material already submitted, there are no changes to the regulated activities approved in 2014. There are no changes at all in the upland review area or the wetlands crossing. For this reason, no new approvals are needed from the Conservation Commission. The applicant already agreed when appearing before the Conservation Commission that plot plans to be reviewed for consistency with the approved regulated activities prior to construction would need to be submitted, as well as to a third-party engineer for inspections.

**C5.** It appears that many of the lot feasibility plans are dependent upon common grading that extends across proposed lot lines. This creates a reasonable likelihood of conflicts developing when detailed plans are prepared for each of the lots. Neither the plans nor the application materials make it clear who will perform the grading, the timing/sequencing, install and maintain erosion controls, and perform temporary stabilization of these areas. Nor is it clear how the overall earthwork requirements and phasing of the road, drainage and stormwater systems will interact with the development of the individual lots.

I would also note that there remain significant gaps in the site-specific data, which must be rectified to verify the assumptions used in the design of the stormwater management and drainage systems. These gaps include a pollutant loading analysis, identification of the ownership and restrictions on the open space, separate erosion and sediment control plans and financial responsibility for infrastructure versus home sites, etc.

Absent satisfactory resolution of all of the issues identified above, I believe that there is a reasonable likelihood of unreasonable pollution of the wetlands and waters of the state. Because these wetlands and watercourses drain into Easton and Aspetuck Reservoirs, this pollution represents a threat to public health and safety.

**R5.** The locations of the lots lines are unchanged since the 2014 plans that were reviewed by GHD and the commission and were found to address the commission's concerns. The plans contain a detailed Soil Erosion and Sediment Control Plan and a Phasing Plan. It is the applicant's intent to have one builder in charge of constructing the roads and houses and to control the site grading, project phasing, and implementation of the Soil Erosion and Sediment Control Plan. When individual plot plans are prepared for each lot, additional soil erosion and sediment controls will be designed for the lot construction. The lots will not be built-out individually.



There are no state or local regulations that require a pollutant loading analysis, and the commenter has not provided one; however, we have prepared a Simple Method pollution loading model for the plans that is a part of this application, and the results show the removal efficiency of at least 80% Total Suspended Solids as recommended by the Connecticut Department of Energy & Environmental Protection.

The previously submitted and approved plans for the 21-lot subdivision on this site had no restriction on the amount of clearing and impervious surface that could be constructed on each lot. Therefore, the individual lots that were 3 acres or more in size could build large lawn areas, barns/outbuildings, tennis/basketball courts, longer paved driveways, and parking areas for these outbuildings, which could add up to significantly more impervious coverage than the 10 percent limit that the applicant has agreed to in the current application.

We see no justification or factual support for Mr. Klein's opinion that there is a reasonable likelihood of unreasonable pollution of the wetlands and watercourses of the state.

Please feel free to contact me should you need any further information.

Very truly yours,

MILONE & MACBROOM, INC.



Ted Hart, P.E., Vice President  
Director of Civil Engineering

2683-01-29-d2816-ltr



## **RESPONSE TO NOVEMBER 21, 2016 LETTER FROM THE METROPOLITAN COUNCIL OF GOVERNMENTS**

The November 21, 2016 letter from the Metropolitan Council of Governments ("MetroCOG"), formerly the Greater Bridgeport Regional Council ("GBRC"), attaches its comments from Saddle Ridge's 2014 application. The 2014 letter alleges only that the proposed development "could pose a regional impact." The letter does not identify a specific impact that could occur or how such an impact could occur. For support, the GBRC sites to a section of the Easton Plan of Conservation and Development ("Easton POCD") that purports to state that Easton should conserve open lands as "permanently dedicated open space" and even where it is developed should preserve "as much open space as possible in each tract." GBRC does not provide a page cite for the quote that it uses. However, it is clearly unrealistic to expect that all open lands that are currently undeveloped be permanently preserved as dedicated open space. Importantly, the Easton Crossing plan preserves 42 acres of open space land. Easton's 1994 Open Space Plan referenced in the Easton POCD recommends that subdivisions set aside only 15 percent of the land as open space. Easton Crossing more than doubles the recommended open space from the Easton POCD.

The GBRC's suggestion that all open land be dedicated open space is also unwarranted given the fact that Easton enjoys a very high level of dedicated open space thanks in large part to the state-funded purchase of the former Bridgeport Hydraulic Company ("BHC") watershed lands. Easton POCD at 29-30. The amount of permanently preserved open space land has increased from just over one percent in 1977 to over 38 percent (7,040 acres of which approximately 5,520 acres is BHC land). *Id.* While open space land can be desirable, Easton has had made much more progress on open space land than on affordable housing. Saddle Ridge's application provides both.

The GBRC also claims, without citation, that the State Plan of Conservation and Development ("State POCD") calls for "low and rural densities" on all of Easton's watershed lands and in the adjunct towns "for Rural or Conservation uses." We could find no such recommendation in the State POCD. The State POCD was recently amended to delete the general recommendation suggesting a limit of one unit per two acres of watershed land. It is noteworthy that the GBRC fails to acknowledge that its own Regional Plan of Conservation and Development ("Regional POCD") for the Greater Bridgeport Regional Planning Agency defines low density development as density "less than 2 dwelling units per acre." Regional POCD at 15. Thus, based on GBRC's own POCD, Easton Crossing is a low density development. MetroCOG's revised POCD (p. 31) still calls for future use of Saddle Ridge's site to be low intensity development although it does not define the term. Similarly, even Easton's own POCD supports density up to six bedrooms per acre which is far greater than the density proposed by Saddle Ridge. Keeping in mind that the POCD's are advisory documents and that the Commission's own consultant has testified that the proposed plan is more protective of the watershed than the one unit per two acre guidance, the MetroCOG POCD (including the section referenced in the December 21 comments from First Selectman Dunsby) do not constitute a reason for denial.



**DECLARATION**  
**OF**  
**Saddle Ridge**

**ARTICLE I**  
**SUBMISSIONS; DEFINED TERMS**

Section 1.01. Submission of Real Estate. (a) Saddle Ridge Developers, Inc., a Connecticut corporation with an office at 68 Soundview Drive, Easton Connecticut, (the "Declarant"), does hereby submit the real property in the Town of Easton, Connecticut, described in Schedule A, and shown on a map entitled \_\_\_\_\_, Sport Hill Road, Silver Hill Road, Cedar Hill Road & Westport Road, Easton Connecticut which map is recorded in the Office of the Town Clerk of Easton as map number \_\_\_\_\_ (the "Survey") to the provisions of the Connecticut Common Interest Ownership Act, §47-20 et. seq. of the Connecticut General Statutes, as amended (the "Act"), for the purpose of creating Easton Crossing.

Section 1.02. Defined Terms. Each capitalized term not otherwise defined in this Declaration or in the Survey shall have the meanings specified or used in the Act.

**ARTICLE II**  
**NAME, TYPE, AND DESCRIPTION OF COMMON INTEREST**  
**COMMUNITY AND ASSOCIATION**

Section 2.01. Common Interest Community. The name of the Common Interest Community is Saddle Ridge. Saddle Ridge is a planned community.

Section 2.02. Association. The name of the Association is Saddle Ridge Homeowners Association, Inc., a non-stock Connecticut Corporation ("Association").

Section 2.03. Description of Land. The Common Interest Community is situated in the Town of Easton, Connecticut, and is located on land described in Schedule A.



### **ARTICLE III**

#### **THE ASSOCIATION**

Section 3.01. Authority. The business affairs of the Common Interest Community shall be managed by the Association. The Association shall be governed by its Bylaws, Rules and Regulations as amended from time to time.

Section 3.02. Powers.

(a) The Association shall have all of the powers, authority and duties permitted pursuant to the Act necessary and proper to manage the business and affairs of the Common Interest Community.

(b) The Association may assign its future income, including its rights to receive Common Expense assessments, only by the affirmative vote of Lot Owners which at least 51 percent of the votes in the Common Interest Community are allocated, at a meeting called for the purpose.

Section 3.03. Declarant Control. The Declarant shall have all the powers reserved in Section 47-245(d) of the Act to appoint and remove officers and directors of the Executive Board of the Association.

### **ARTICLE IV**

#### **LOTS**

Section 4.1. Number of Lots. The number of Lots in the Common Interest Community is 48. The Declarant reserves no rights to create or add additional Lots.

Section 4.2. Identification of Lots. The identification of each Lot is the lot number shown on the Survey.

Section 4.3. Lot Boundaries. The boundaries of each Lot are the lot lines as shown on the Survey.

Section 4.4. Common Elements. The Common Elements shall consist of all portions of the Common Interest Community other than the Lots and the Easton town roads.

**ARTICLE V**  
**DEVELOPMENT RIGHTS AND OTHER SPECIAL DECLARANT RIGHTS**

Section 5.01. Special Declarant Rights. The Declarant reserves the following Special Declarant Rights:

- (a) the right to complete or make improvements indicated on the Survey;
- (b) the right to maintain sales offices, management offices and models on one or more of the Lots or on the Common Elements;
- (c) the right to maintain signs on the Common Interest Community to advertise the sale of Lots and/or homes in the Common Interest Community;
- (d) the right to use, and permit others to use, easements through the Common Interest Community as may be reasonably necessary for the purpose of discharging its obligations under the Act and this Declaration; and
- (e) the right to appoint or remove any officer of the Association or the Executive Board during the period of Declarant control to the extent permitted by Section 47-245(d) of the Act.

Section 5.02. Reservation of Development Rights. The Declarant reserves the right to construct underground lines, pipes, wires, ducts, conduits and other facilities across the Lots on the Survey for the purpose of furnishing utility and other services to other Lots. The Declarant also reserves the right to grant easements to public utility companies and to convey improvements within those easements anywhere in the Community for the above-mentioned purpose. If the Declarant grants any such easements, Schedule A shall be amended to include reference to the recorded easement(s).

Section 5.03. Special Declarant Rights.

(a) *Models, Sales Offices and Management Offices.* As long as the Declarant owns a Lot, the Declarant and its duly authorized agents, representatives and employees may maintain any Lot owned by the Declarant or any portion of the Common Elements as a model home, sales office or management office.

(b) *Construction; Declarant's Easement.* The Declarant reserves the right to perform warranty work, and repairs and construction work, and to store materials in secure areas and Common Elements, and further the right to control all such work and repairs, and the right of access thereto, until its completion. All work may be performed by the Declarant without the consent or approval of the Association. The Declarant has such an easement through the Common Elements as may be reasonably necessary for the purpose of discharging the Declarant's obligations or exercise Special Declarant Rights, whether arising under the Act or reserved in this Declaration, as amended.

Section 5.04. Limitation on Special Declarant Rights. Unless sooner terminated by a recorded instrument signed by the Declarant, any Special Declarant rights may be exercised by the Declarant for the period of time authorized by the Act, but in no event for more than 7 years from the recording of this Declaration.

## **ARTICLE VI** **ALLOCATED INTERESTS**

Section 6.01. Determination of Allocated Interests. The interests allocated to each Unit or Lot are calculated as follows:

- (a) the percentage of liability for Common Expenses is 1/48 for each Lot; and
- (b) each Lot in the Common Interest Community shall have an equal vote.

## **ARTICLE VII** **RESTRICTIONS ON USE, ALIENATION AND OCCUPANCY**

Section 7.01. Use and Occupancy Restrictions. Subject to the Special Declarant Rights reserved under Article V, the following use restrictions apply to all Units or Lots and to the Common Elements:

(a) Each Lot is restricted to residential use as a single-family residence or duplex residence as shown on subdivision map including home professional pursuits not requiring regular visits from the public or unreasonable levels of mail, shipping, trash or storage. No sign indicating commercial or professional uses may be displayed outside a Lot. A single-family residence is defined as a single housekeeping Lot, operating on a non-profit, non-commercial basis between its occupants, cooking and eating with common kitchen and dining area.

(b) The use of Lots and Common Elements is subject to the Bylaws and the Rules of the Association.

Section 7.02. Restraints on Alienation. A Lot may not be conveyed pursuant to a time-sharing plan as defined under Chapter 734b of the Connecticut General Statutes.

**ARTICLE VIII**  
**EASEMENTS AND LICENSES**

Section 8.01. Encumbrances. All easements and licenses to which the Common Interest Community is presently subject are recited in Schedule A. In addition, the Common Interest Community may be subject to other easements and licenses granted by the Declarant pursuant to Section 5.01 of this Declaration.

Section 8.02. Easement of Enjoyment, Use and Access. The Declarant does hereby grant, transfer and convey to each Lot Owner the non-exclusive right and easement, subject to the terms and conditions of this Declaration and any rules promulgated by the Association:

- (a) In the Common Elements for the purposes of access to his or her Lot; and
- (b) To use the Common Elements for all other lawful purposes.

**ARTICLE IX**  
**LIMITATION ON ASSESSMENTS**

Section 9.01. Limitation. The average annual common expense liability of all Lots, and any insurance premiums paid by the Association, shall not exceed the amount specified in Connecticut General Statutes § 47-215(a)(2) as adjusted pursuant to Section 47-213 of the Connecticut General Statutes, as it may be amended. It is the intention of this section that neither the public offering statement nor a resale certificate need be prepared or delivered in connection with the disposition of a Lot in the Common Interest Community in accordance with Section 47-262(b)(8) of the Connecticut General Statutes.

**ARTICLE X**  
**ASSESSMENT AND COLLECTION OF COMMON EXPENSES**  
**TRANSFER ASSESSMENT UPON SALES**

Section 10.01. Assessment of Common Expenses.

- (a) Common Expense assessments shall begin on the first day of the month in which conveyance of the first Lot to a Lot Owner other than the Declarant occurs. Thereafter, assessments shall be made at least annually by the Association.

(b) Except as provided elsewhere in this Article, all Common Expenses shall be assessed against all the Lots in accordance with their percent of interest in the Common Elements as set forth in the Declaration. The Common Expenses shall include, among other things, the costs of repairs and maintenance of the Common Elements and the cost of all insurance premiums on all policies of insurance required to be or which have been obtained by the Association. The Common Expenses may also include such amounts as the Association may deem proper for the operation and maintenance of the property, including without limitation an amount for a working reserve fund for replacements, and to make up any deficit in the Common Expenses for any prior year.

(c) All Lot Owners shall be obligated to pay the Common Charges and Common Expenses assessed by the Association monthly on the first day of each month.

#### Section 10.02. Collection of Common Expenses.

(a) The Association has a statutory lien on a Lot for any assessment levied against that Lot from the time the assessment becomes due. If an assessment is payable in installments, the full amount of the assessment is a lien from the time the first installment thereof becomes due.

(b) Recording of this Declaration constitutes record notice and perfection of the lien. No further recordation of any claim of lien for assessment under this Article is required.

(c) This Article does not prohibit actions to recover sums for which subsection (a) of this Article creates a lien (which actions shall not be deemed to constitute a waiver of such lien or the right to foreclose it) or prohibit the Association from taking a deed in lieu of foreclosure.

(d) A judgment or decree in any action brought under this Article shall include costs and reasonable attorney's fees for the prevailing party.

(e) The Association's lien may be foreclosed in like manner as a mortgage on real property.

(f) No Lot Owner may exempt himself from liability for payment of the Common Expenses by waiver of the use or enjoyment of any of the Common Elements or by abandonment of the Lot against which the assessments are made.

### **ARTICLE XI** **MISCELLANEOUS**





# Saddle Ridge Homeowners Association, Inc.

## MAINTENANCE POLICY

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## **MAINTENANCE POLICY**

### **I. INTRODUCTION**

This policy statement defines the diverse responsibilities of the Association to the Lot Owners and Manager with regard to the maintenance of the Common Elements. Because during the period of interim management by the developer as Manager, the Manager intends to provide these services on a fixed fee basis and must operate within the budget established, the standards outlined below, which are to be considered a measure of the sole responsibility of the Association, are to be interpreted in the sole discretion of the Manager. The duties of the Association have been delegated to the Manager under the management contract.

It is important also that the Lot Owners be familiar with the provisions of the Declaration and the Declaration of Restrictions and Covenants.

The Association will endeavor to maintain the Common Elements which are the responsibility of the Association in a manner consistent with the Instruments. The Association is responsible for outdoor landscaping maintenance of the Common Elements. The Lot Owner shall be responsible for outdoor maintenance for the exterior of buildings and grounds located within Home Sites.

### **II. MAINTENANCE**

#### **A. GENERAL POLICY**

It is the policy of the Association to maintain the elements that are a part of the Common Elements. Cycle periods have been established for items, which require maintenance at regular intervals.

#### **B. SPECIFIC POLICY**

##### **1. Common Elements**

(a) Front Entrance, Private Roadways and Open Spaces. The following elements will be the responsibility of the Manager for Maintenance: Entrance flowers, bushes and grass areas. Manager will mow grass, and will trim grass edges of

paved and landscaped areas, but not edges of woodlands or natural areas.

**2. Catch Basins and Storm Drainage System**

(a) Catch Basins and Storm Drainage Systems. Catch basins shall be inspected twice annually. Sediment shall be removed when it extends to within six inches of the outlet pipe invert. Catch basins will be pumped out by the Association not less than once annually. Storm drainage systems consisting of detention basins, weirs and infiltration galleries shall be inspected twice annually will be de silted by the Association when necessary and trash and obstructions removed by the Association from weirs and dam overflows. Pipe and outfalls will be cleared by the Association so they can perform their function. The side slopes of the detention basins are to be mowed twice annually to discourage growth of woody vegetation.

**3. Private Roadways (Bridle Bend and Bradford Place)**

The roadway will be swept twice annually. Typically, sweeping should occur in the spring after winter sanding and in the fall after leaves have fallen.

**4. Snow Removal Private Roadways**

The Association will endeavor to clear snowfalls prior to 6:00 AM on the next day following such fall. In major storms, interim clearing (Open Up) will be provided. Sanding will be done in anticipation of and during icing conditions on those areas where needed. Large quantity snow removal shall be provided as needed to ensure clear sitelines, proper traffic flow and access for emergency vehicles.

**III. LANDSCAPING**

In general, it will be the policy of the Association to maintain the landscaped areas in the common areas such as the front entry, storm drainage detention basins. Lawn mowing will normally be scheduled as needed during the growing season. Clippings will be allowed to fall on the grass and will not be picked up. Lawns within the Home Sites / Lots will not be mowed and are the responsibility of the Lot Owner.

**IV. TRASH COLLECTION**

Trash collection will be performed by a private contractor on a regular schedule and will be the responsibility of the Lot Owner.

**V. MISCELLANEOUS**

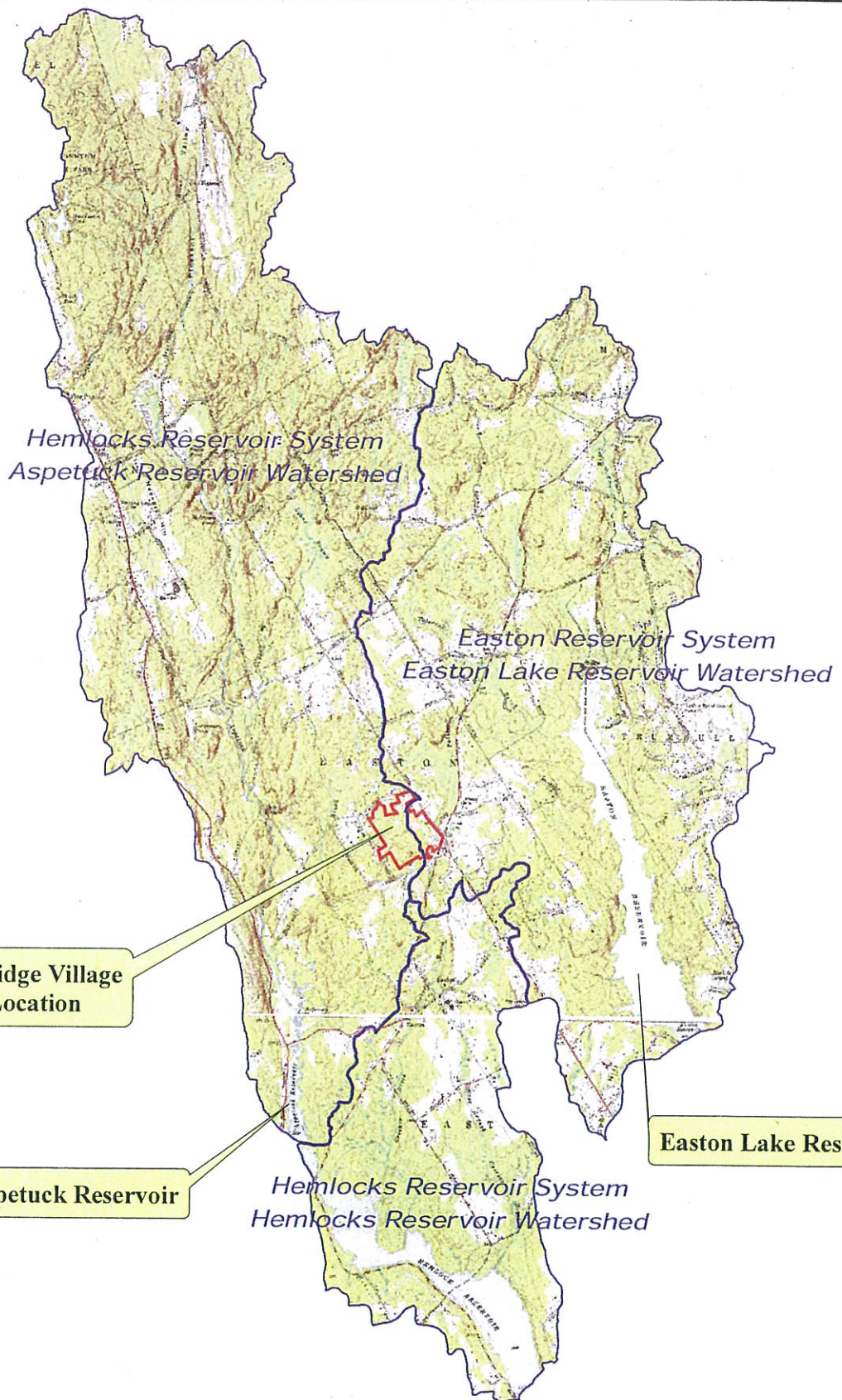
**A. FRONT ENTRY LIGHTING**

The Association shall maintain the operation of the front entry decorative

and landscape lighting.







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### Site Location and Reservoir Watersheds

MMI#: 2683-01  
MXD: G:\Figure1-1.mxd  
SOURCE: CT DEP

### Saddle Ridge Village

LOCATION:

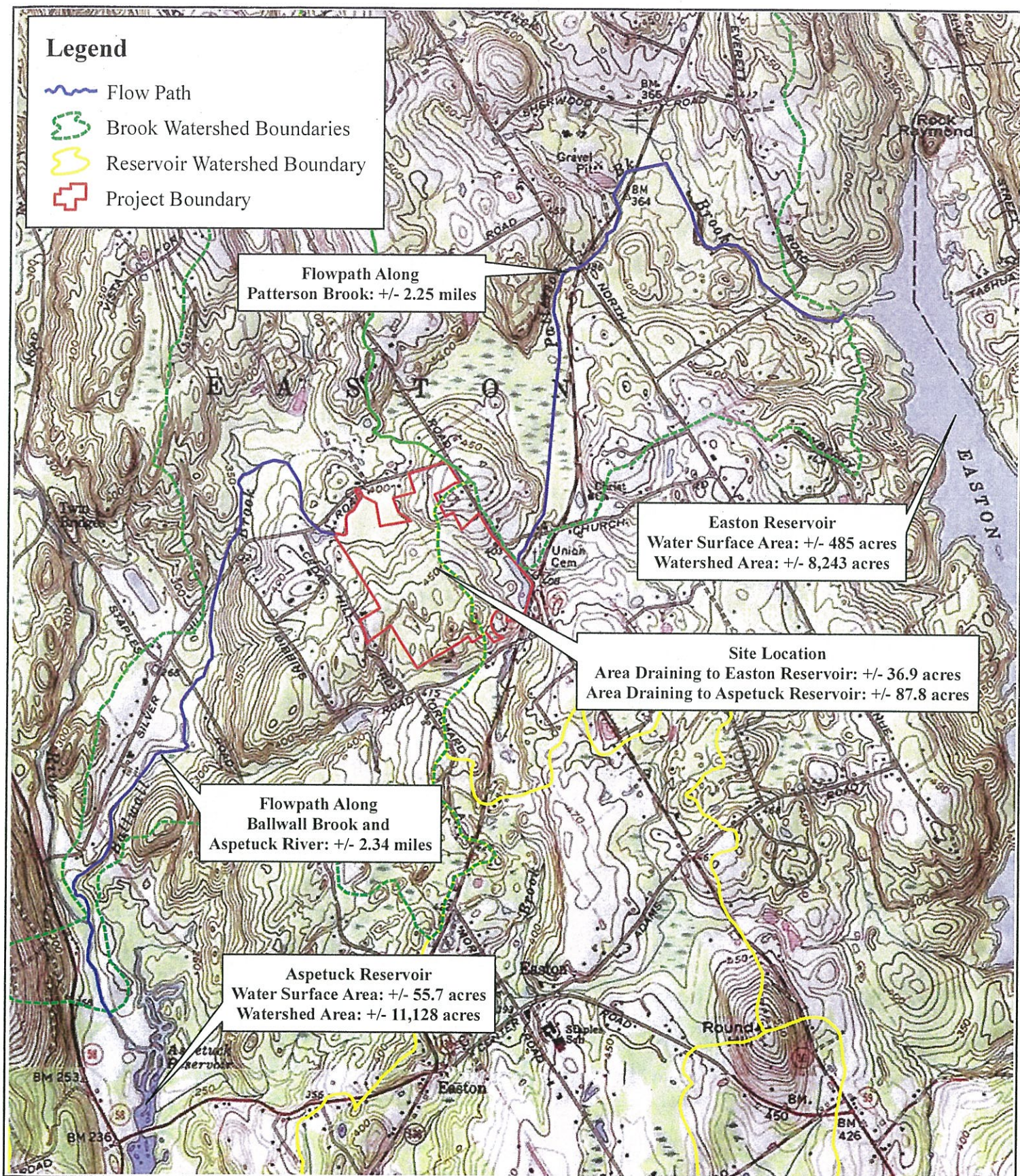
Easton, CT

Map By: BAM  
Date: 11/16/2010  
Scale: NTS

SHEET:

**Figure 1-1**





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### Watercourses in Vicinity of Site with Sub-Watersheds

MMI#: 2683-01  
MXD: G:\Figure2-1.mxd  
SOURCE: CT DEP

Saddle Ridge Village

LOCATION:

Easton, CT

Map By: BAM  
Date: 11/16/2010  
Scale: 1" = 2,000'

SHEET:

**Figure 2-1**





**PROPOSED AMENDMENT TO EASTON'S  
ZONING REGULATIONS**

**NEW SECTION \_\_\_\_\_**

**PLANNED HOUSING OPPORTUNITY DISTRICT  
DISTRICT C**

**~~September 2016~~  
Amended January 3, 2017**

Saddle Ridge Developers, LLC  
68 Soundview Drive  
Easton, CT 06612

Matthew Ranelli  
Shipman & Goodwin LLP  
One Constitution Plaza  
Hartford, CT 06103-1919

**NOTE:** Adoption of this amendment will also require that § 3.1 be amended to add the Housing Opportunity District to the list of zoning districts in Easton.





## **PLANNED HOUSING OPPORTUNITY DISTRICT**

### **A. Intent and Purpose.**

The Planned Housing Opportunity District ("HOD") is intended to expand residential housing opportunities by promoting housing choice, economic diversity, and homes for low and moderate income households within the Town.

### **B. Eligible Parcels.**

No parcel of land shall be rezoned to HOD unless it satisfies the following:

- (1) A total lot size of not less than one hundred (100) acres prior to subdivision.
- (2) Located within the boundaries formed by Sport Hill Road, Silver Hill Road, Cedar Hill Road, and Westport Road.

### **C. Permitted Use.**

Notwithstanding any provision of the Regulations to the contrary, the following use is permitted: single-family detached dwellings and duplex homes with up to thirty percent (30%) of the homes deed restricted as affordable consistent with Section 8-30g of the Connecticut General Statutes, as amended, subject only to the general requirements including but not limited to density, lot, yard area, shape, frontage, and bulk requirements set forth in this section of the Regulations.

### **D. Definitions.**

- (1) A "HOD Community" is a housing community in which up to forty percent (40%) of the lots may be used for duplex homes and the remaining lots will be single-family detached dwellings. Thirty percent (30%) of the dwelling units (distributed proportionally through the single-family and duplex homes) will be deed restricted to require, for a period of at least forty (40) years, that such affordable unit be offered at, or below, prices which will preserve them as affordable consistent with the formula in subsection (d) of Section 8-30g of the Connecticut General Statutes, as amended.
- (2) "Duplex Home" means a single structure containing two substantially equal sized units.
- (3) "Duplex Affordable Apartment" (or "DAA") means an apartment in a two unit building that is of substantially the same size as the other apartment within the same building and is deed restricted as affordable consistent with Section 8-30g of the Connecticut General Statutes, as amended.

**E. Lot Density.**

The maximum density in a HOD Community shall be one (1) single-family home or duplex home (two units) per two gross acre of land, provided that no more than forty percent (40%) of the lots may have duplex homes, provided if a site plan approval is sought concurrently with an application for zone change, the maximum density shall be further limited to the density requested for the building lots in the project area on the site plan.

**F. Bedrooms.**

The single-family homes shall not contain more than four (4) bedrooms per home. The Duplex Affordable Apartment shall not contain more than two (2) bedrooms.

**G. Lot Coverage.**

No more than five percent (5%) of the land of the project area shall be used for buildings.

**H. Impervious Coverage.**

No more than ten percent (10%) of the overall land in the project area to be rezoned and developed shall be used for buildings and impervious surfaces and no more than 13 percent of any individual lot shall be used for buildings and impervious surfaces. Impervious areas do not include pervious pavers or other porous surfaces or areas that infiltrate or retain at least the water quality volume.

**I. Setbacks.**

- (1) Front Yard: No part of any building shall be less than twenty-five (25) feet distant from the front line lot.
- (2) Side Yard: No part of any building shall be less than ten (10) feet from the side lot line.
- (3) Rear Yard: No part of any building shall be less than twenty-five (25) feet from the rear lot line.
- (4) Corner lots shall have two (2) Front Yard Setbacks.

**J. Building Height.**

Building height shall be measured from the average finished grade to the mean height between the eave and the ridge. No building or structure shall exceed thirty-five (35) feet in height.

**K. Interior Roadways; Off-Street Parking.**

- (1) The minimum number of parking spaces shall be two (2.0) per unit.

- (2) Driveways and interior roadways shall be adequately graded, drained, and maintained in all seasons to accommodate traffic and to afford satisfactory access to police, fire fighting, and snow removal equipment.

**L. Lot Size.**

The minimum lot size shall be one (1) acre (gross) with one hundred (100) feet of frontage on a public or private road except (a) flag lots may be consistent with Section 5.1.3 of these Regulations and be served by a driveway with at least twenty-five (25) feet of frontage; and (b) lots located on a cul-de-sac can have minimum frontage of at least fifty (50) feet if the average frontage on the cul-de-sac is greater than one hundred (100) feet.

**M. Screening; Landscaping.**

A landscape plan shall be prepared by a Connecticut registered landscape architect and shall provide reasonable screening by trees and shrubbery from adjoining properties.

**N. Utilities.**

All lots shall be capable of being served by private well. Each lot must be served by a sewage disposal system that satisfies the Public Health Code.

**O. Application Requirements for Rezoning to District C (HOD).**

An application for rezoning a parcel of land to HOD Community shall consist of the following:

- (1) An application form, approved by the Planning Director, prepared by the record owner or his or her properly-designated agent.
- (2) A fee in the amount of Two Hundred Fifty Dollars (\$250.00).
- (3) Six (6) copies of a certified survey map or maps at a scale not smaller than one (1) inch equals one hundred (100) feet showing perimeter dimensions; total area; abutting property owners; travelway of abutting streets; location of water mains; terrain contours at five (5) foot intervals, or less, but lesser intervals may be required by the Commission where warranted; wetland areas; limits of vegetation coverage; and all other documents and information required for a zone change for an affordable housing development consistent with subsection (b) of Section 8-30g of the Connecticut General Statutes, as amended, and any regulations adopted thereunder, including a conceptual site plan.
- (4) Six (6) copies of a statement of the proposal including:
  - (a) number of units proposed; and

- (b) density of proposed development in terms of units per gross acre.
- (5) Evidence confirming that the lot may be served by well water and can be served by an adequate sewage disposal system.
- (6) Conceptual architectural drawings showing proposed buildings.
- (7) Site plan or conceptual site and landscape plan prepared by a Connecticut registered landscape architect at a reasonable scale showing disposition of buildings upon the site; off-street parking provisions and circulation layout; lighting standards; proposed landscaping and planting layout; and pedestrian walks as appropriate.
- (8) The Commission may require a traffic report if deemed necessary.

**P. Application Procedure for HOD Site Plan Approval.**

The owner of record, or his or her properly designated agent, may file an application for site plan approval, together with an application fee in the amount of Two Hundred Fifty Dollars (\$250.00), for the construction and maintenance of an HOD Community on land so designated, or proposed in a concurrent application to be so designated, in the official zoning map of the Town of Easton. The Commission shall approve, disapprove, or approve with modifications a site plan application hereunder.

**Q. Requirements for Affordable Units.**

The following requirements shall apply to Affordable Units. In addition to the materials contained in Section N, the applicant shall demonstrate:

- (1) Affordable Units shall be of a construction quality that is comparable to single-family homes to which they are attached.
- (2) The Affordable Units shall be built on a *pro rata* basis as construction proceeds.
- (3) In conjunction with an application for approval of a site plan for a HOD Community, the applicant shall submit an "Affordability Plan," consistent with subsection (b) of Section 8-30g of the Connecticut General Statutes, which shall describe how the requirements regarding affordability will be administered. The Plan shall include provisions for administration of and compliance with this section, notice procedures to the general public of the availability of affordable units, identification of the method for designating affordable units, procedures for verification and periodic confirmation of unit occupancy income, and compliance with affordability requirements.

- (4) A violation of the regulations contained in this section shall not result in a forfeiture or reversion of title, but the Easton Planning and Zoning Commission or its designated agent shall otherwise retain all enforcement powers granted by the Connecticut General Statutes, including Section 8-12.