EXHIBIT 38
Received 1/23/17

GRAFTON
Massachusetts

Nicole Larson <larsonn@grafton-ma.gov>

Estates at Bull Meadow

Brian Marchetti <bmarchetti@mccartydb.com> Mon, Jan 23, 2017 at 3:56 PM
To: Jeffrey Walsh <JWalsh@gravesengineering.com>, Joe Laydon <laydonj@grafton-ma.gov>, Planning Department <PlanningDept@grafton-ma.gov>
Cc: Gordon Lewis <gordon@wachusett.com>, Patrick McCarty <pmccarty@mccartydb.com>

Joe / Jeff, I offer the following to address the remaining comments in Graves Engineering Inc.'s comment latter from last Thursday.

1. Comment #24 - The Revised Propose Conditions Watershed Plan is attached.

2. Comment #37 - The Water Quality Volume to Flow Rate calculations for DMH 12 and 13 are attached.

3. Comment #38 - The Roadway and Utility Profile (1 of 4), Sheet 14 of the Plan set has been revised to delete the STC 450 label from DMH 8. See attached.

4. Comment #39 – The configuration of the 18" diameter cross country drain pipe has not been revised. This outlet should not have been allowed to discharge across an adjacent private property without an established easement. This condition is causing a hardship on the Bullmeadow project and addressing the outlet is adding a significant cost to the project. Adding drops to the manholes will result in significantly deeper excavations and additional costs to the project. This item will be discussed with the Planning Board at tonight's meeting.

5. Comment #40 – The granite bound detail has been revised accordingly. The revised Sheet 24 is attached.

Joe, we will see you tonight at the Planning Board meeting.

RECEIVED
JAN 23 2017
PLANNING BOARD
GRAFTON, MA

Brian

Brian Marchetti, P.E.

Vice President, Engineering

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From: Jeffrey Walsh [mailto:JWalsh@gravesengineering.com]
Sent: Thursday, January 19, 2017 4:47 PM
To: Joe Laydon <laydonj@grafton-ma.gov>; Planning Department <PlanningDept@GRAFTON-MA.GOV>

McCarty Engineering, INC.	Project:	Bull Meadow Estates	Proj. No:	66
			Date:	1/18/17
	City:	North Grafton	Comp:	BRM
	State:	MA	Check :	PJM

Converting WQv to Fow Rate for Sizing Proprietary Stormwater Treatemnnt Practices

Required WQv = 0.5 inch

$Q_{0.5}$=(qu)(A)(WQv)

qu = Unit Peak Discharge in csm/in - This Variable derived from MADEP Flow rate table, Figure 2 (attached).
A = Impervious Area in square miles (sm) - 1 ac = 0.0015625 sm
WQv= Water Quality Volume in watershed inches (0.5 in)

Structure

DMH 7A

Tc= 5 minutes = 0.083 hours
qu= 773 csm/in
A= 0.388 ac = 0.00060 sm
WQv= 0.5 in

Required WQv= (773 csm/in)x(0.00060 sm)x(0.5 in)
Required WQv= 0.235 cfs

DMH 2

Tc= 5 minutes = 0.083 hours
qu= 773 csm/in
A= 0.567 ac = 0.00088 sm
WQv= 0.5 in

Required WQv= (773 csm/in)x(0.00088 sm)x(0.5 in)
Required WQv= 0.340 cfs

DMH 8

Tc= 5 minutes = 0.083 hours
qu= 773 csm/in
A= 0.633 ac = 0.00098 sm
WQv= 0.5 in

Required WQv= (773 csm/in)x(0.00098 sm)x(0.5 in)
Required WQv= 0.378 cfs

DMH 12

Tc= 5 minutes = 0.083 hours
qu= 773 csm/in
A= 0.238 ac =0.00037 sm
WQv= 0.5 in

Required WQv= (773 csm/in)x(0.00037 sm)x(0.5 in)
Required WQv= 0.143 cfs

DMH 13

Tc= 5 minutes = 0.083 hours
qu= 773 csm/in

A= 0.196 ac = 0.00031sm
WQv= 0.5 in

Required WQv= (773 csm/in)x(0.00031 sm)x(0.5 in)
Required WQv= 0.119 cfs

Brief Stormceptor Sizing Report - DMH 13

Project Information & Location			
Project Name	Estates at Bull Meadow	**Project Number**	066
City	Grafton	**State/ Province**	Massachusetts
Country	United States of America	**Date**	10/5/2016
Designer Information		**EOR Information (optional)**	
Name	Justin LeClair	**Name**	
Company	McCarty Engineering	**Company**	
Phone #	978-833-9055	**Phone #**	
Email	jleclair@mccartydb.com	**Email**	

Stormwater Treatment Recommendation

The recommended Stormceptor Model(s) which achieve or exceed the user defined water quality objective for each site within the project are listed in the below Sizing Summary table.

Site Name	DMH 13
Target TSS Removal (%)	80
TSS Removal (%) Provided	90
Recommended Stormceptor Model	STC 450i

The recommended Stormceptor Model achieves the water quality objectives based on the selected inputs, historical rainfall records and selected particle size distribution.

Stormceptor Sizing Summary	
Stormceptor Model	**% TSS Removal Provided**
STC 450i	90
STC 900	94
STC 1200	95
STC 1800	95
STC 2400	96
STC 3600	96
STC 4800	97
STC 6000	97
STC 7200	98
STC 11000	99
STC 13000	99
STC 16000	99
StormceptorMAX	Custom

Stormceptor®

Rinker MATERIALS™

Sizing Details

Drainage Area	
Total Area (acres)	0.3
Imperviousness %	65.3

Rainfall	
Station Name	WORCESTER WSO AP
State/Province	Massachusetts
Station ID #	9923
Years of Records	58
Latitude	42°16'2"N
Longitude	71°52'34"W

Water Quality Objective	
TSS Removal (%)	80.0
Runoff Volume Capture (%)	
Oil Spill Capture Volume (Gal)	
Peak Conveyed Flow Rate (CFS)	
Water Quality Flow Rate (CFS)	0.12

Up Stream Storage	
Storage (ac-ft)	Discharge (cfs)
0.000	0.000

Up Stream Flow Diversion	
Max. Flow to Stormceptor (cfs)	

Particle Size Distribution (PSD)
The selected PSD defines TSS removal

Fine Distribution		
Particle Diameter (microns)	Distribution %	Specific Gravity
20.0	20.0	1.30
60.0	20.0	1.80
150.0	20.0	2.20
400.0	20.0	2.65
2000.0	20.0	2.65

Notes

• Stormceptor performance estimates are based on simulations using PCSWMM for Stormceptor, which uses the EPA Rainfall and Runoff modules.
• Design estimates listed are only representative of specific project requirements based on total suspended solids (TSS) removal defined by the selected PSD, and based on stable site conditions only, after construction is completed.
• For submerged applications or sites specific to spill control, please contact your local Stormceptor representative for further design assistance.

For Stormceptor Specifications and Drawings Please Visit:
http://www.imbriumsystems.com/technical-specifications

Brief Stormceptor Sizing Report - Estates at Bull Meadow

Project Information & Location			
Project Name	Estates at Bull Meadow	**Project Number**	066
City	Grafton	**State/ Province**	Massachusetts
Country	United States of America	**Date**	1/18/2017
Designer Information		**EOR Information (optional)**	
Name	Justin LeClair	**Name**	
Company	McCarty Engineering	**Company**	
Phone #	978-534-8727	**Phone #**	
Email	jleclair@mccartydb.com	**Email**	

Stormwater Treatment Recommendation

The recommended Stormceptor Model(s) which achieve or exceed the user defined water quality objective for each site within the project are listed in the below Sizing Summary table.

Site Name	
Target TSS Removal (%)	80
TSS Removal (%) Provided	84
Recommended Stormceptor Model	STC 450i

The recommended Stormceptor Model achieves the water quality objectives based on the selected inputs, historical rainfall records and selected particle size distribution.

Stormceptor Sizing Summary	
Stormceptor Model	**% TSS Removal Provided**
STC 450i	84
STC 900	89
STC 1200	89
STC 1800	90
STC 2400	92
STC 3600	93
STC 4800	94
STC 6000	94
STC 7200	95
STC 11000	97
STC 13000	97
STC 16000	97
StormceptorMAX	Custom

Stormceptor®

Rinker MATERIALS™

Sizing Details

Drainage Area

Total Area (acres)	0.4
Imperviousness %	59.4

Rainfall

Station Name	WORCESTER WSO AP
State/Province	Massachusetts
Station ID #	9923
Years of Records	58
Latitude	42°16'2"N
Longitude	71°52'34"W

Water Quality Objective

TSS Removal (%)	80.0
Runoff Volume Capture (%)	
Oil Spill Capture Volume (Gal)	
Peak Conveyed Flow Rate (CFS)	
Water Quality Flow Rate (CFS)	0.14

Up Stream Storage

Storage (ac-ft)	Discharge (cfs)
0.000	0.000

Up Stream Flow Diversion

Max. Flow to Stormceptor (cfs)	

Particle Size Distribution (PSD)
The selected PSD defines TSS removal

Fine Distribution

Particle Diameter (microns)	Distribution %	Specific Gravity
20.0	20.0	1.30
60.0	20.0	1.80
150.0	20.0	2.20
400.0	20.0	2.65
2000.0	20.0	2.65

Notes

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