

The Jillson Company, Inc.
32 Fremont Street
Needham Heights, MA 02494

June 24, 2021

Stormwater & Erosion Control Report



Project Site:
#55 Colella Road
Newton, Mass.

Prepared For:
Michael Lohin
45 White Oak Road
Wellesley, MA 02481

Table of Contents

- A. Stormwater Narrative**
- B. Existing Conditions**
 - Hydrological Sub-Area Map
- C. Proposed Conditions**
 - Hydrological Sub-Area Map
- D. Proposed Conditions HydroCAD Printouts**
 - 100 Year Storm Event
- E. Erosion Control Management**
 - Site Disturbance
 - Erosion Control BMPs

A. Stormwater Narrative

The Jillson Company, Inc.

32 Fremont Street
Needham, MA 02494
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MEMO

Date: June 24, 2021
To: Michael Lohin
Job No: 3071
Site: #55 Colella Rd., Newton
From: Kevin O'Leary, PE
The Jillson Company, Inc.
RE: **Stormwater Narrative**

The subject property is a corner lot with Hansen Rd. It's flat having 7,541 sq ft of area, contains a 1-1/2 story single family house & 1400 sq ft of impervious area (roof, walks & driveway). There are no existing stormwater controls. All existing runoff flows are uncontrolled to the streets & abutting properties (i.e., stormwater discharges).

Your project's Post-Development hydrological analysis was performed using Hydro-CAD software. A Type III, 24 hour, 100 year storm having 8.78" of rainfall was applied & utilized to size both proposed, subsurface, stormwater infiltration basins. The proposed, 2 unit townhouse style, building with individual garages & driveways is proposed to be served by two, subsurface, infiltration basins (Cul-Tec systems or Recharge Basins labeled as RB #1 & #2 on plan). The Post-Development, 100 year stormwater runoff is contained & infiltrated in these Recharge Basins with neither a surcharge nor surface discharge.

Soil testing was performed by Jillson Co. (licensed soil evaluators) Sept. 2020. Three Deep Test Holes & 1 Perc Test were performed to determine estimated ground water depths & soil permeability or perc rate. Approximately 5' is the estimated depth to ground water & 7 minutes/inch is the observed & measured perc rate.

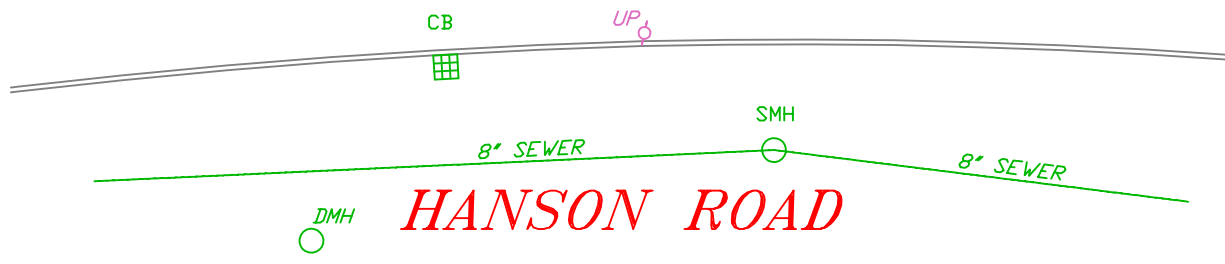
Post-Development runoff water for all storms occurring more frequently, than every 100 years, are also contained & absorbed in RB #1 & #2 without a surface discharge. New impervious area increase is 2136 sq ft greater than existing. Total Post-Development impervious area is 3536 sq ft & comprised of roof, driveways & walks.

On the site plan there's a "Roof Lines & Downspouts" diagram showing the roof area's (Sub Area 1 & 2 (SA-1 & 2)) downspouts & piping for flows to the RB's. Approximately 25% of the roof is piped to RB-1 & 75% to RB-2.

Both proposed driveways slope towards the street(s). Trench drains are proposed in each driveway & they're piped to RB-2. RB-1 is connected to a roof section only.

B. Existing Conditions

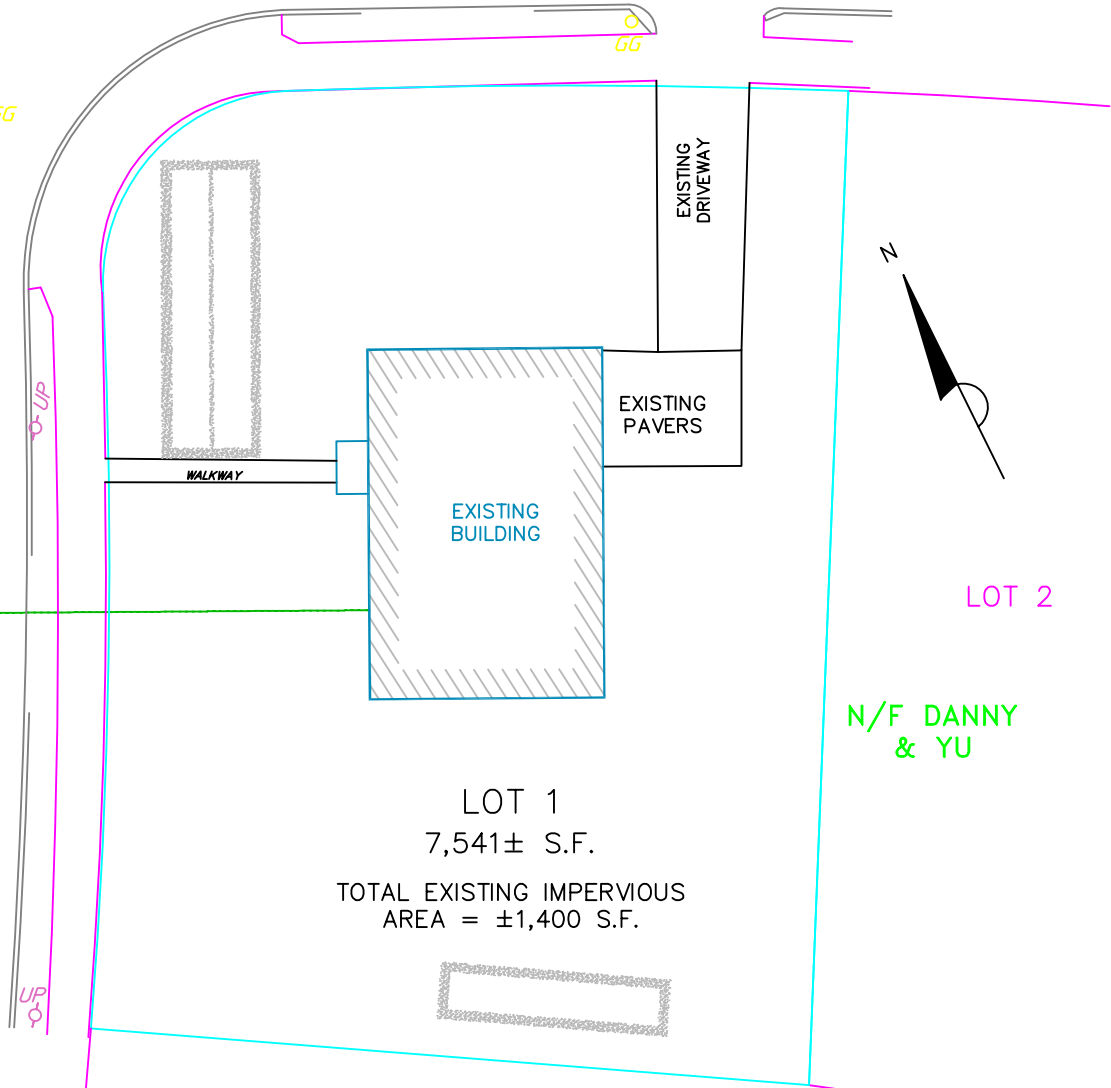
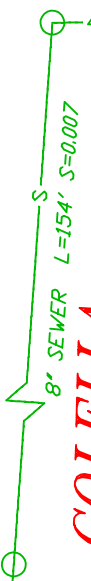
Hydrological Sub-Area Map



HANSON ROAD

ROAD

COLELLA



LOT 1
7,541± S.F.
TOTAL EXISTING IMPERVIOUS
AREA = ±1,400 S.F.

LOT 2

N/F DANNY
& YU

N/F NEWTON
HOUSING AUTHORITY

**"#55 COLELLA ROAD
PRE-DEV. HYDRO SITE CONDITIONS"**
LAND IN
NEWTON, MASS.

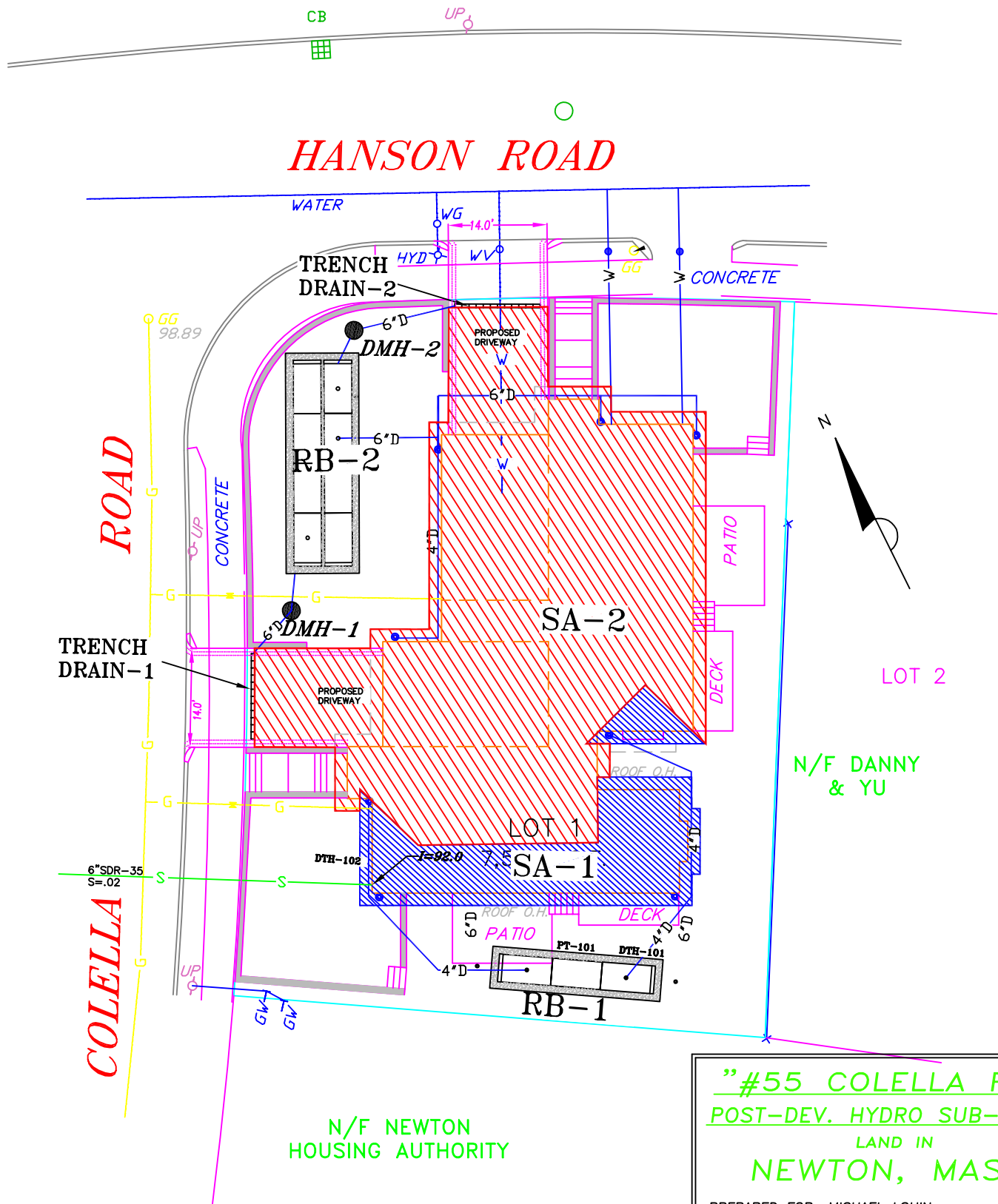
PREPARED FOR: MICHAEL LOHIN
45 WHITE OAK ROAD
WELLESLEY, MA 02481

SCALE: 1" = 20' DATE: 24 JUNE 2021

PREPARED BY: THE JILLSON COMPANY, INC.
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C. Proposed Conditions

Hydrological Sub-Area Map



**"#55 COLELLA ROAD
POST-DEV. HYDRO SUB-AREAS"
LAND IN
NEWTON, MASS.**

PREPARED FOR: MICHAEL LOHIN
45 WHITE OAK ROAD
WELLESLEY, MA 02481

SCALE: 1" = 20' DATE: 24 JUNE 2021

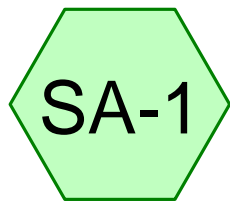
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N/F NEWTON
HOUSING AUTHORITY

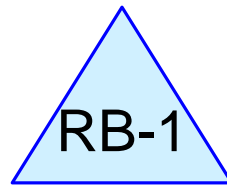
LOT 2
N/F DANNY
& YU

D. Proposed Conditions HydroCAD Printouts

100 Year Storm Event



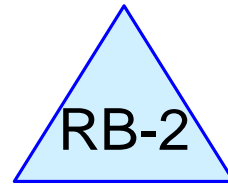
Roof



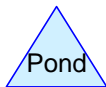
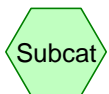
3 Units



Roof and driveways



8 Units



#3071 - Lohin - DSN2

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Page 2

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
500.0	98.0	Paved parking, HSG B (SA-2)
3,036.0	98.0	Roofs, HSG B (SA-1, SA-2)
3,536.0	98.0	TOTAL AREA

#3071 - Lohin - DSN2

Type III 24-hr 100 Year Rainfall=8.78"

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Page 3

Time span=0.00-25.00 hrs, dt=0.01 hrs, 2501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment SA-1: Roof Runoff Area=640.0 sf 100.00% Impervious Runoff Depth=8.54"
Tc=0.20 min CN=98.0 Runoff=0.1538 cfs 455.5 cf

Subcatchment SA-2: Roof and driveways Runoff Area=2,896.0 sf 100.00% Impervious Runoff Depth=8.54"
Tc=0.20 min CN=98.0 Runoff=0.6960 cfs 2,060.9 cf

Pond RB-1: 3 Units Peak Elev=95.89' Storage=59.2 cf Inflow=0.1538 cfs 455.5 cf
Outflow=0.0453 cfs 455.5 cf

Pond RB-2: 8 Units Peak Elev=97.68' Storage=541.2 cf Inflow=0.6960 cfs 2,060.9 cf
Outflow=0.0910 cfs 2,060.9 cf

Total Runoff Area = 3,536.0 sf Runoff Volume = 2,516.4 cf Average Runoff Depth = 8.54"
0.00% Pervious = 0.0 sf 100.00% Impervious = 3,536.0 sf

Summary for Subcatchment SA-1: Roof

Runoff = 0.1538 cfs @ 12.00 hrs, Volume= 455.5 cf, Depth= 8.54"

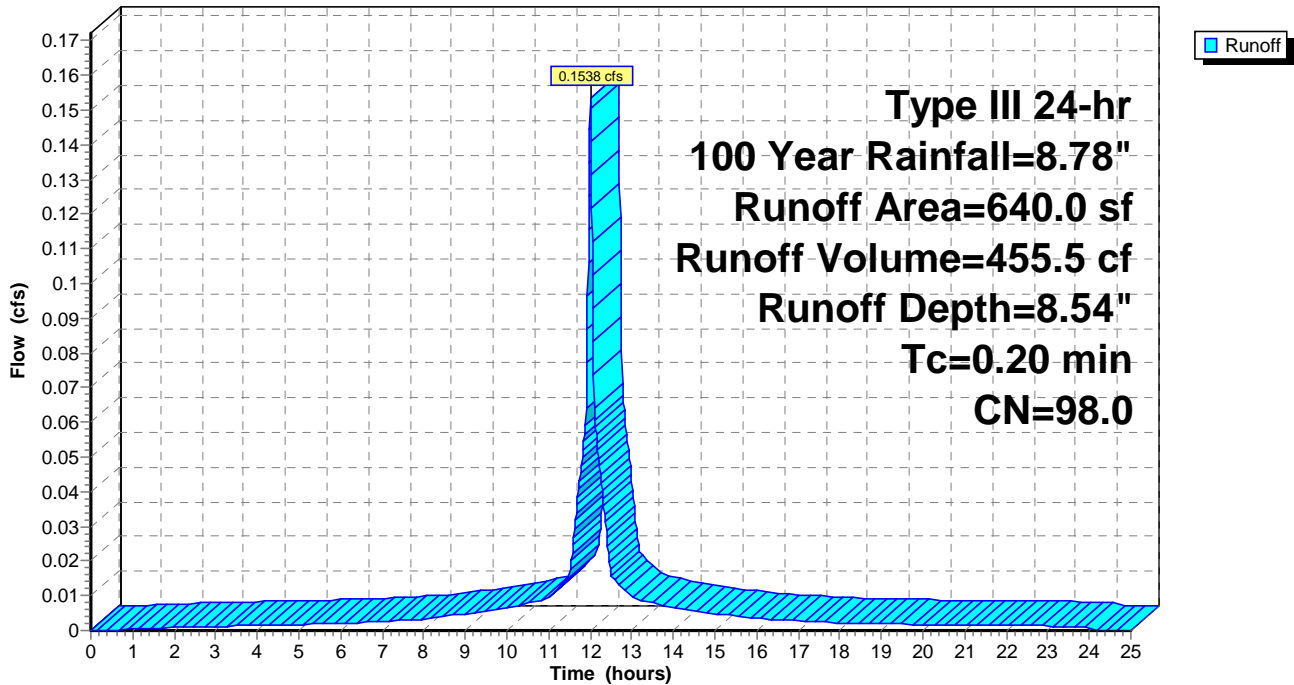
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 Year Rainfall=8.78"

Area (sf)	CN	Description
640.0	98.0	Roofs, HSG B
640.0		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.20					Direct Entry, Roof to downspouts

Subcatchment SA-1: Roof

Hydrograph



Summary for Subcatchment SA-2: Roof and driveways

Runoff = 0.6960 cfs @ 12.00 hrs, Volume= 2,060.9 cf, Depth= 8.54"

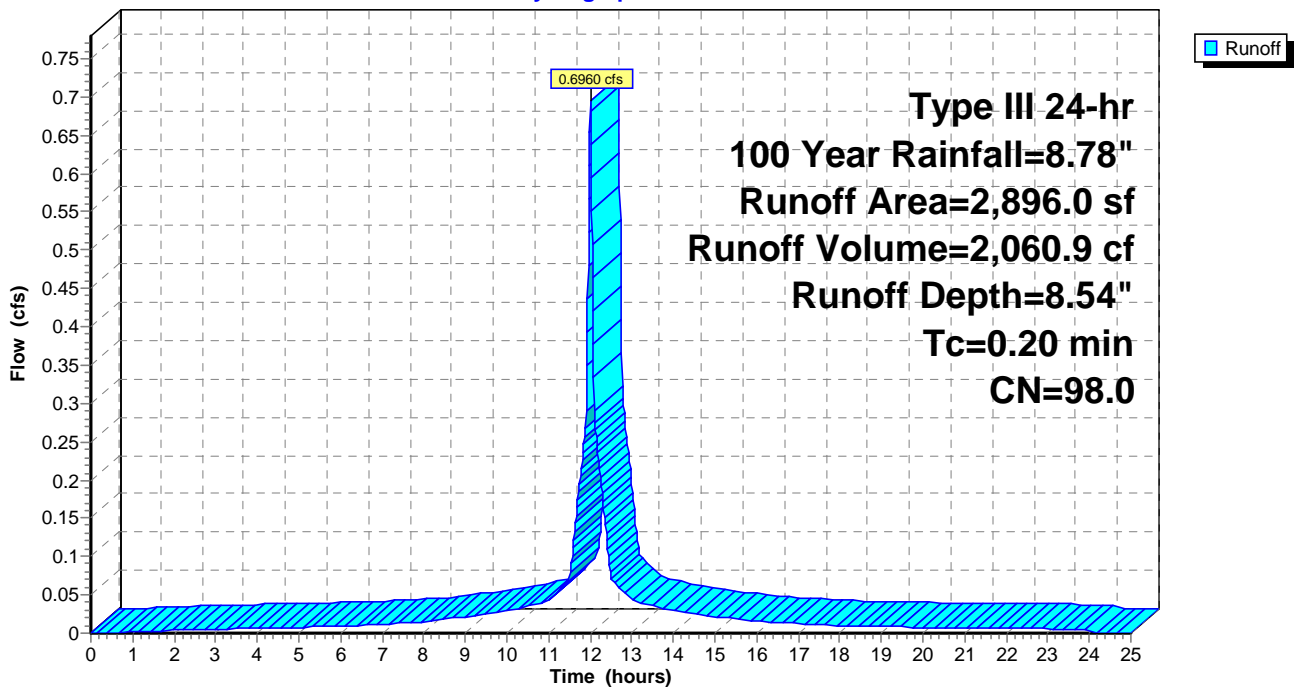
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 Year Rainfall=8.78"

Area (sf)	CN	Description
2,396.0	98.0	Roofs, HSG B
500.0	98.0	Paved parking, HSG B
2,896.0	98.0	Weighted Average
2,896.0		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.20					Direct Entry, Roof & Drives

Subcatchment SA-2: Roof and driveways

Hydrograph



Summary for Pond RB-1: 3 Units

Inflow Area = 640.0 sf, 100.00% Impervious, Inflow Depth = 8.54" for 100 Year event
Inflow = 0.1538 cfs @ 12.00 hrs, Volume= 455.5 cf
Outflow = 0.0453 cfs @ 11.86 hrs, Volume= 455.5 cf, Atten= 71%, Lag= 0.0 min
Discarded = 0.0453 cfs @ 11.86 hrs, Volume= 455.5 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Peak Elev= 95.89' @ 12.24 hrs Surf.Area= 142.0 sf Storage= 59.2 cf

Plug-Flow detention time= 6.4 min calculated for 455.3 cf (100% of inflow)
Center-of-Mass det. time= 6.4 min (741.1 - 734.7)

Table with 4 columns: Volume, Invert, Avail.Storage, Storage Description. Rows include #1A (Field A) and #2A (Cultec R-280HD) with detailed storage and volume information.

Storage Group A created with Chamber Wizard

Table with 4 columns: Device, Routing, Invert, Outlet Devices. Row #1 shows Discarded routing at 95.10' invert with 0.0453 cfs exfiltration.

Discarded OutFlow Max=0.0453 cfs @ 11.86 hrs HW=95.23' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.0453 cfs)

Pond RB-1: 3 Units - Chamber Wizard Field A

Chamber Model = Cultec R-280HD (Cultec Recharger® 280HD)

Effective Size= 46.9"W x 26.0"H => 6.07 sf x 7.00'L = 42.5 cf

Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap

Row Length Adjustment= +1.00' x 6.07 sf x 1 rows

3 Chambers/Row x 7.00' Long +1.00' Row Adjustment = 22.00' Row Length +12.0" End Stone x 2 = 24.00' Base Length

1 Rows x 47.0" Wide + 12.0" Side Stone x 2 = 5.92' Base Width

6.0" Base + 26.5" Chamber Height + 6.0" Cover = 3.21' Field Height

3 Chambers x 42.5 cf +1.00' Row Adjustment x 6.07 sf x 1 Rows = 133.6 cf Chamber Storage

455.6 cf Field - 133.6 cf Chambers = 322.0 cf Stone x 40.0% Voids = 128.8 cf Stone Storage

Chamber Storage + Stone Storage = 262.4 cf = 0.006 af

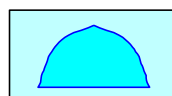
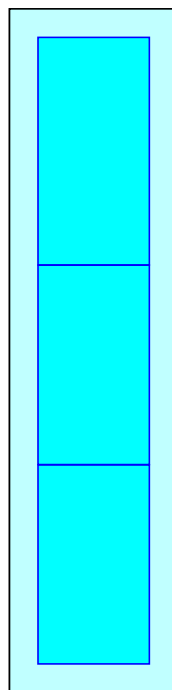
Overall Storage Efficiency = 57.6%

Overall System Size = 24.00' x 5.92' x 3.21'

3 Chambers

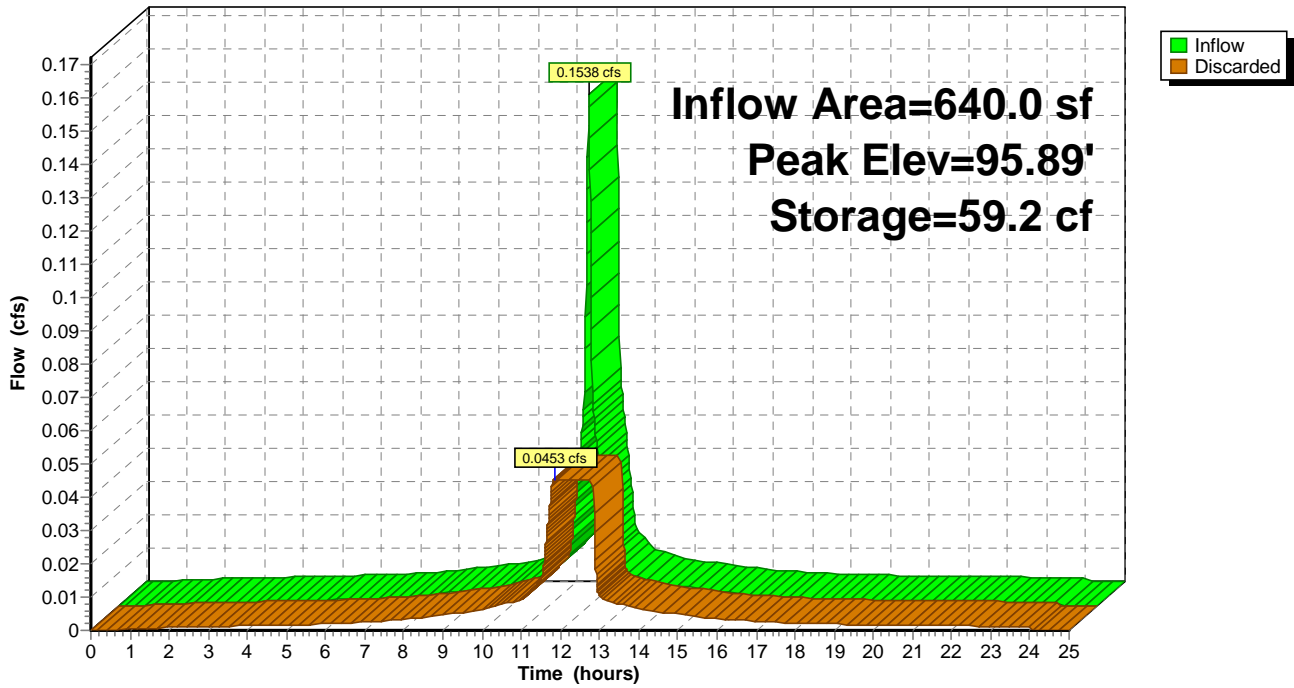
16.9 cy Field

11.9 cy Stone



Pond RB-1: 3 Units

Hydrograph



Summary for Pond RB-2: 8 Units

Inflow Area = 2,896.0 sf, 100.00% Impervious, Inflow Depth = 8.54" for 100 Year event
 Inflow = 0.6960 cfs @ 12.00 hrs, Volume= 2,060.9 cf
 Outflow = 0.0910 cfs @ 11.62 hrs, Volume= 2,060.9 cf, Atten= 87%, Lag= 0.0 min
 Discarded = 0.0910 cfs @ 11.62 hrs, Volume= 2,060.9 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
 Peak Elev= 97.68' @ 12.46 hrs Surf.Area= 320.3 sf Storage= 541.2 cf

Plug-Flow detention time= 32.5 min calculated for 2,060.1 cf (100% of inflow)
 Center-of-Mass det. time= 32.5 min (767.2 - 734.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	95.10'	270.2 cf	10.33'W x 31.00'L x 3.21'H Field A 1,027.7 cf Overall - 352.2 cf Embedded = 675.6 cf x 40.0% Voids
#2A	95.60'	352.2 cf	Cultec R-280HD x 8 Inside #1 Effective Size= 46.9"W x 26.0"H => 6.07 sf x 7.00'L = 42.5 cf Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap Row Length Adjustment= +1.00' x 6.07 sf x 2 rows
		622.4 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	95.10'	0.0910 cfs Exfiltration when above 95.10' Phase-In= 0.10'

Discarded OutFlow Max=0.0910 cfs @ 11.62 hrs HW=95.23' (Free Discharge)
 ↑**1=Exfiltration** (Exfiltration Controls 0.0910 cfs)

Pond RB-2: 8 Units - Chamber Wizard Field A

Chamber Model = Cultec R-280HD (Cultec Recharger® 280HD)

Effective Size= 46.9"W x 26.0"H => 6.07 sf x 7.00'L = 42.5 cf

Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap

Row Length Adjustment= +1.00' x 6.07 sf x 2 rows

47.0" Wide + 6.0" Spacing = 53.0" C-C Row Spacing

4 Chambers/Row x 7.00' Long +1.00' Row Adjustment = 29.00' Row Length +12.0" End Stone x 2 = 31.00' Base Length

2 Rows x 47.0" Wide + 6.0" Spacing x 1 + 12.0" Side Stone x 2 = 10.33' Base Width

6.0" Base + 26.5" Chamber Height + 6.0" Cover = 3.21' Field Height

8 Chambers x 42.5 cf +1.00' Row Adjustment x 6.07 sf x 2 Rows = 352.2 cf Chamber Storage

1,027.7 cf Field - 352.2 cf Chambers = 675.6 cf Stone x 40.0% Voids = 270.2 cf Stone Storage

Chamber Storage + Stone Storage = 622.4 cf = 0.014 af

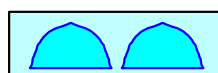
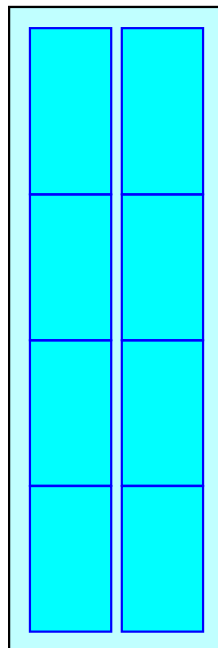
Overall Storage Efficiency = 60.6%

Overall System Size = 31.00' x 10.33' x 3.21'

8 Chambers

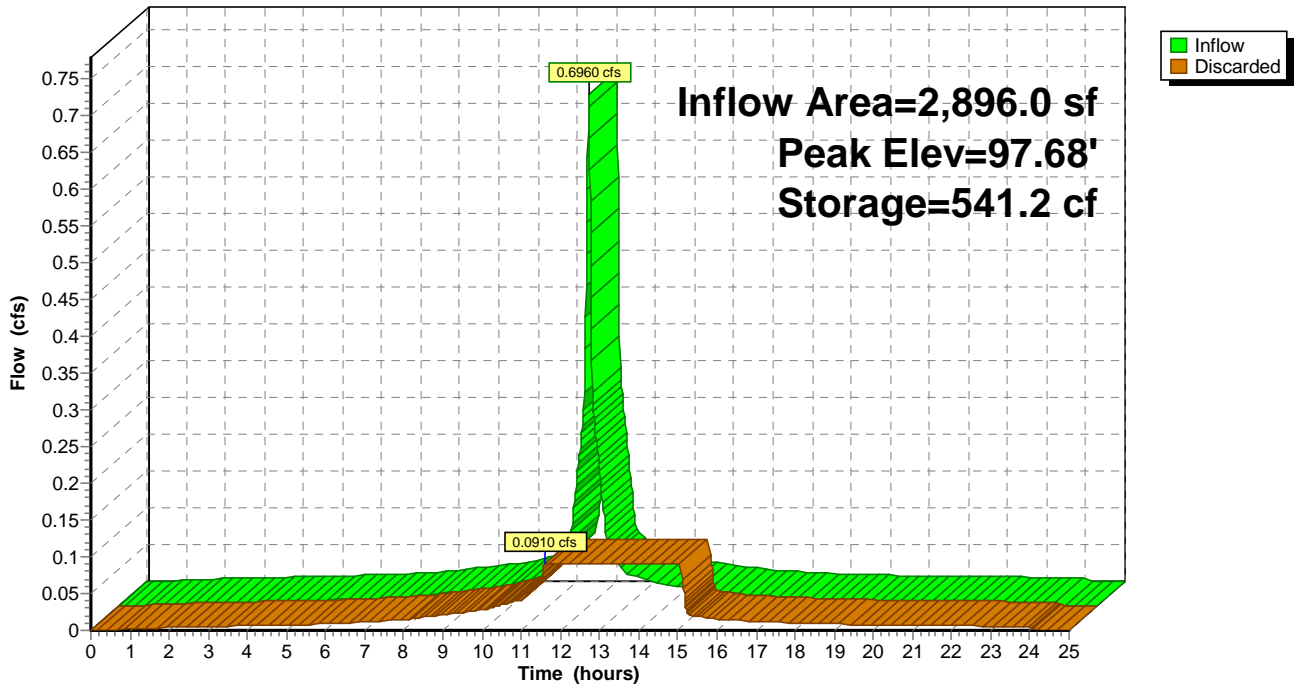
38.1 cy Field

25.0 cy Stone



Pond RB-2: 8 Units

Hydrograph



E. Erosion Control Management

Site Disturbance

Total disturbance during construction = 7,041 S.F.

Erosion Control Management BMPs

Stabilized Construction Exit

Existing Pavement/Stabilized Gravel Pad

BMP Description: Construction access drives will be determined between the project proponent & City. If the existing sidewalks or street pavement around the project become damaged, the site contractor shall contact the City to determine required remedial work required. Properly stabilized construction access points shall be established prior to & during construction to reduce mud & sediment tracking off-site.

Installation Schedule:	Prior to any demolition & commencement of site work.
Maintenance and Inspection:	Maintain stabilization of the site entrances until construction is complete. Sweep & remove sediment tracked offsite immediately for proper disposal. Repair as needed.
Responsible Staff:	TBD.

Erosion Control

Straw Wattles

BMP Description: A straw wattle can be used in place of a traditional sediment and erosion control tool such as a silt fence or straw bale barrier. Straw wattles will be installed in the locations depicted on and in accordance with the site plan. Furthermore, all stockpiled materials shall be encircled on the down gradient side with straw wattles and/or other erosion control measures. Straw wattles shall be installed as needed to augment on site erosion control measures as needed.

Installation Schedule:	Straw Wattles shall be installed as needed and at the time of the stockpiling.
Maintenance and Inspection:	Straw Wattles should be inspected weekly and after every storm event to ensure that they are intact and not filled with sediment. Straw Wattles should be replaced as soon as they are full of sediment and/or begin to deteriorate.
Responsible Staff:	TBD.

Slope Stabilization and Dust Control

Slope Stabilization and Jute Netting

BMP Description: All newly graded & disturbed areas shall be stabilized where construction activities have ceased for seven or more days.

<i>Installation Schedule:</i>	Slope Stabilization shall be implemented, as needed, once site grading has begun.
<i>Maintenance and Inspection:</i>	Areas shall be inspected weekly and after every storm event to check for erosion. If washout, breakage or erosion occurs, the surface shall be repaired & stabilized.
<i>Responsible Staff:</i>	TBD.

Dust Control

BMP Description: Dust from the site shall be controlled by using a mobile pressure-type distributor truck or equivalent means to apply potable water to disturbed areas. Water shall be applied in a manner that will prevent runoff and ponding. Trucks hauling imported or exported fill and/or debris shall be covered.

<i>Installation Schedule:</i>	Dust control shall be implemented as needed once site grading has begun.
<i>Responsible Staff:</i>	TBD.

Material handling and Waste Management

Waste Materials

BMP Description: All waste material will be collected & disposed within the on-site dumpster(s). Only trash & construction debris will be disposed within the dumpster(s). Dumpster(s) shall be placed away from stormwater conveyances & shall meet all federal, state & local solid-waste management regulations.

<i>Installation Schedule:</i>	Dumpster(s) shall be installed during initial house demo.
<i>Maintenance and Inspection:</i>	Dumpster(s) shall be inspected weekly and after every storm event. Dumpsters shall be emptied as needed and their contents transported off-site and disposed of properly.
<i>Responsible Staff:</i>	TBD.

Hazardous Waste

BMP Description: All hazardous waste such as petroleum products, paint and equipment maintenance fluids will be stored in structurally sound and seal containers. Hazardous material shall not be disposed of within the on-site dumpster(s) and shall be disposed of in accordance with federal, state and local regulations. These materials will be removed from the site when they are no longer needed.

<i>Installation Schedule:</i>	Prior to construction.
<i>Maintenance and Inspection:</i>	Storage areas shall be inspected weekly and after every storm event. Material safety data sheets, material inventory and emergency contact numbers will be maintained in the office trailer or other pre-designated on-site area.
<i>Responsible Staff:</i>	TBD.

Sanitary Waste

BMP Description: Portable toilets will be provided. Toilets will be located away from concentrated drainage flow paths and traffic areas and will have collection pans underneath.

<i>Installation Schedule:</i>	Prior to construction.
<i>Maintenance and Inspection:</i>	Portable toilets shall be inspected weekly and after every storm event. They shall be emptied as needed and their contents transported off-site and disposed of properly. Any leaking toilet will be removed from the site and replaced.
<i>Responsible Staff:</i>	TBD.