

Site Engineering Report
for
Parkside Apartments
and
Parkside Condominiums
a Chapter 40B Residential Project
at
383-385 Washington Street
in
Braintree, Massachusetts

Prepared by:

DeCelle-Burke & Associates, Inc.
1266 Furnace Brook Parkway, #401
Quincy, MA 02169

Prepared for:

383 Washington Street, LLC
The Holland Companies
519 Albany Street, Suite 200
Boston, MA 02118

February 2, 2017

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SECTION 1 - PROJECT NARRATIVE

Existing Conditions

The project locus is made up of three lots. One lot is a forty-foot wide private right-of-way owned by the applicant that provides access off of Storrs Avenue and is known as Alves Avenue. It is approximately 8,949 square feet (s.f.) and was improved to provide driveway access to the abutting property at 14 Storrs Avenue. The lot and driveway have a steep, transverse gradient, approximately 7.5%. The elevations range from elevation 66 at the southeast corner to elevation 54 at the northeast corner. All elevations are based on the North American Vertical Datum of 1988 (NAVD88). This private right-of-way also provides utility access for gas, overhead power and communications to the main project lot and appears to provide sewer service for the abutting property, 14 Storrs Avenue. No vegetation exists on the lot.

The adjacent second lot is approximately 28,720 s.f. and is unimproved. The surface is approximately 50% paved with the remaining surface being mostly broken pavement and gravel. No significant vegetation exists on the parcel except for the overgrowth near the southerly property line. It has a steep grade ranging in elevation from 64 at the southeast corner of the lot to elevation 50 located at the northwest corner. The lot directly abuts Archbishop Williams High School track and field facility. The property is encumbered by an existing twenty-foot sewer easement that runs parallel with the southerly and westerly property lines. An existing 8" sewer is located within the easement and provides public sewer service for several properties in the area including the project locus and the athletic field. The sewer connects to the public sewer located in Storrs Avenue. The property is currently used as unauthorized overflow parking for athletic, business and residential related routines.

The largest lot of the project locus is 76,524 s.f. and is improved with three buildings a parking lot and service utilities. It is benefitted and currently only accessed by a twenty-foot wide access easement from Washington Street. The site was previously used as an automobile related service lot for multiple owners. The site is serviced by public water from the Washington Street via the access easement, public sewer, gas, overhead electric and site drainage. The site is encumbered by an existing ten-foot wide drain easement near the northerly property line extending from Washington Street to the Archbishop Williams athletic field. A 12" drain pipe conveys stormwater generated off of the project site, abutting properties as well as Washington Street to a manhole located at the common property line for the athletic field. An 18" drain extends from this manhole under the athletic field to an eventual outfall located across Storrs Avenue. Project locus drainage is limited in treatment and control. The site is also steep in grade ranging from a high southeasterly elevation of 84 to a low elevation of 58 to 60 along the westerly property line. There is no significant vegetation except for the overgrowth along the edges of the property.

The entire project locus is 114,193 s.f., is zoned General Business with the Village Overlay District. It directly abuts a Residential B zone but the lot directly abutting the project locus is developed as an athletic field. The Braintree Masons Lodge and a detention basin abuts directly to the south, while a municipal parking lot and several business located along Washington Street abuts the project locus to the east. Storrs Avenue abuts the project locus to the north which has several uses such as single family homes, multi-family homes, mixed uses, businesses and a temple.

Proposed Conditions

The full project consists of two developments, Parkside Apartments and Parkside Condominiums. The larger development is a single 70-unit apartment building sitting on a 93,866 s.f. lot titled Parkside Apartments. The smaller development is a two-building, 8-unit condominium project on 20,327 s.f. lot known as Parkside Condominiums. The larger lot includes the current existing Lot A which includes all the existing buildings, the private right-of-way lot and subdivided portions of the gravel and pavement lot known as Lot 2. The remaining land of Lot 2 provides the land for smaller development and the newly subdivided Lot 2

Parkside Apartments includes one 70-unit residential building with an underground parking garage and surface parking. The building has a 29,860± square foot footprint, is 47 feet tall and has three (3) stories. The parking totals 128 parking spaces with 47 surface parking spaces 81 garage parking spaces. Access to the underground garage is on the north side of the building.

Parkside Condominiums consists of two town house buildings with eight (8) total units, five in the building off of Storrs Avenue and three units in the building off of the access easement. All units will have a one car garage with a tandem space in front for a total of sixteen (16) spaces for the development, an additional five (5) spaces have been set aside for condominium use only along the wall at the back of the parking lot area. The grand total of parking spaces available for the condominiums will be twenty-one (21).

New utility services will be installed and new mains will be installed to extend or upgrade existing infrastructure. A new 8" CLDI water main is proposed to be tapped off the 8" DI main on Storrs Avenue. The proposed 8" CLDI main will extend along the access easement and extend through to the existing 6" main located in the 20' wide easement with access off of Washington Street. The new main shall connect to the existing 6" main with an inline gate valve and an 8X6 reducer. One 4" CLDI domestic service with a gate valve, and one 6" CLDI fire protection service with a gate valve shall be extended to the new 70-unit building to provide fire protection and domestic water service off the new main. The two town house buildings will both be serviced from the new main and will both have a 2" copper service with a sidewalk curb valve shutoff with a 4" CLDI fire pipe and gate valve off the new main.

Sewer mains and manholes will be added to the system to upgrade and direct flows accordingly. A sewer main connecting two existing manholes will be removed and redirected to a new sewer main located in the access easement. A portion of the existing sewer running along the westerly property line shall remain in use. This existing sewer shall be extended to the Archbishop Williams High School field to provide sewer to the concession stand. The two condominium buildings 6" SDR 35 PVC sewer services shall connect to the new 8" sewer line located in the access easement. The new 8" sewer main shall provide continued service for all existing connected properties while also providing service to the new apartment building. An oil/water separator will be installed to collect spills inside of the parking garage. Area drains will connect with a ductile iron sewer pipe to the oil/water separator where wastewater will be treated and then conveyed to the public sewer system.

All existing stormwater management controls onsite will be removed and disposed of legally, except for the existing drain main that is located in the ten-foot wide drain easement. The stormwater management systems consist of three separate large Cultec Recharger V8HD chamber systems with deep sump catch basins and deep sump drain manholes. The Parkside Apartments roof runoff will be collected in a series of interior and exterior roof leaders and conveyed to the chamber systems. Parking lot and driveway stormwater runoff shall be captured by eight (8) deep sump catch basins and associated deep sump drain

manholes which will separate trash, debris and suspended solids. The stormwater will then be conveyed the Cultec Recharger systems where it will be allowed to infiltrate back into the soil.

The upper stormwater management system consists of 99 Cultec Recharger V8 chambers and is located in the entrance circle to Parkside Apartments. The chambers will be configured in a 9x11 layout with drain manholes feeding manifold pipes on each end. The stormwater management system B is located in the side parking lot, between the town homes and the apartment building. This system will be 42 units in size and laid out in a 6x7 configuration. System B will have an invert in of 61.0' and a 12" overflow at 60.5' which will connect to system C through the drain manhole. System C will be located between the town home buildings and the system will have 40 units, laid out in a 4x10 pattern. All systems will have observation ports on the four corners with caps brought to match the final grade.

New electric services, utility pole and manhole will be installed. A riser from the utility pole at the access point off Storrs Avenue will divert power underground. An electric conduit will connect to a new manhole which will then connect to a new utility pole and tie back into the existing utilities. Gas, electric and communication services will be provided, designed and installed per the utility purveyors. Gas service is proposed to be brought up the access easement to the apartment building. Underground electric service is proposed to be pulled off the utility pole on the eastern boundary of the locus. The underground electric will go to a transformer which will feed the apartment building. The town homes will be serviced by gas and overhead electric services as depicted on the site plans.

Stormwater Management

Stormwater calculations required to show compliance with the Massachusetts Stormwater Management Standards have been prepared by this office. We generated hydrographs for both existing and proposed conditions to compare overall storm water offsite for various storms. We calculated land coverage numbers (CN) and used minimums for times of concentration for both existing and proposed conditions for hydrograph generation. The proposed site drainage decreases the stormwater runoff volume and peak flows for each storm event. This allows the project to be in compliance with Standard 2 the MassDEP Stormwater Management Requirements. The results of the calculations are tabulated below for comparison with the existing and proposed condition values. The project also complies with the other stormwater management standards outlined in the MassDEP Stormwater Management Requirements. The project complies with the following Standards:

Standard 1	No new stormwater conveyances discharge untreated stormwater directly to the waters of the Commonwealth;
Standard 2	Post Development peak discharge rates are less than pre-development;
Standard 3	The recharge volume required for this project is exceeded.
Standard 4	The site currently has limited stormwater structures for capturing and treating the stormwater runoff. However, the proposed stormwater management structures capture and treat the stormwater runoff for the majority of the site as required.
Standard 5	- N/A

Standard 6	N/A
Standard 7	The project is re-development and complies with the Stormwater Management Standards to the maximum extent practicable. It is our understanding that all Standards are met despite the project being a redevelopment of a commercial site.
Standard 8	An Erosion Control Plan, which covers the “Best management” techniques to be used during construction, is attached to this report.
Standard 9	A Long Term Operation and Maintenance Plan is attached to this report.
Standard 10	All illicit discharges to the stormwater management system are and will be prohibited. The Operational and Maintenance Plan provided outlines that the Property Manager is responsible for the implementing of the OMP and overseeing activities at the facility to prevent illicit discharges to the drainage system from occurring.

It is our belief that the project complies with the Stormwater Management Standards to the maximum extent practicable. The project as proposed will protect the Abutters in the short term through proper construction and erosion protection techniques. It will also protect the environment from long term impacts due to the improved stormwater controls.

Stormwater Runoff Comparison Chart for Pre- and Post-Construction Off-site Flow

2-Year Storm (3.38")			
Existing Conditions		Proposed Conditions	
Area Description	Flow (CFS)	Area Description	Flow (CFS)
Flow off-site	5.77	Flow off-site	0.03

10-Year Storm (5.22")			
Existing Conditions		Proposed Conditions	
Area Description	Flow (CFS)	Area Description	Flow (CFS)
Flow off-site	10.0	Flow off-site	1.34

25-Year Storm (6.38")			
Existing Conditions		Proposed Conditions	
Area Description	Flow (CFS)	Area Description	Flow (CFS)
Flow off-site	12.64	Flow off-site	2.82

100-Year Storm (8.12")			
Existing Conditions		Proposed Conditions	
Area Description	Flow (CFS)	Area Description	Flow (CFS)
Flow off-site	16.72	Flow off-site	8.67

SECTION 2

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SUPPORTING MAPS

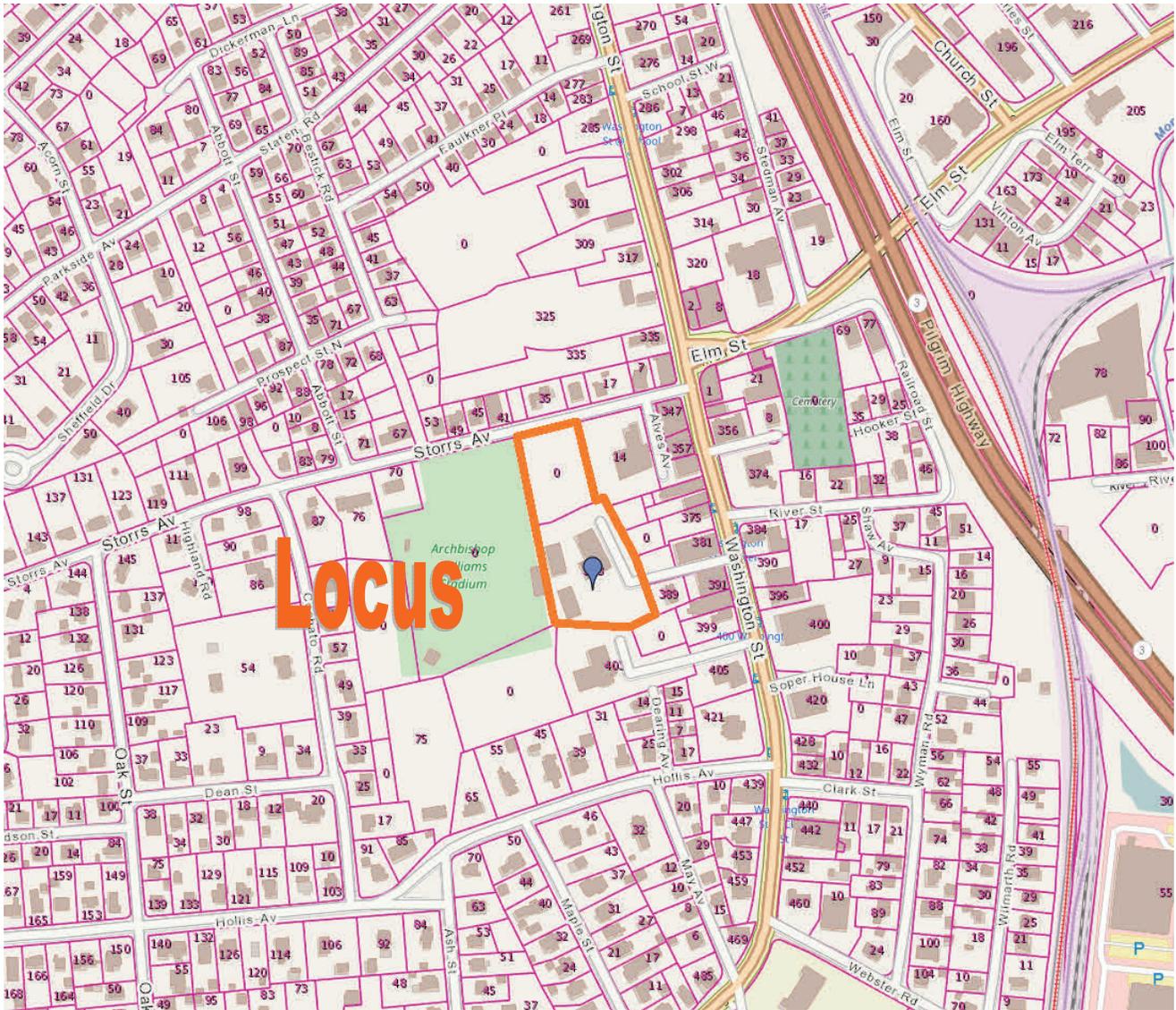
Assessors Map

USGS Map

Soils Map

NHESP Map

FEMA Map



Map 2028 Lots 31

DATE:
February 2, 2017

TITLE:

Assessors Map

SCALE:
NOT TO SCALE

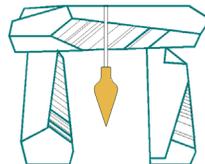
PREPARED FOR:

**383 Washington Street, LLC
The Holland Companies
519 Albany Street, Suite 200
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DeCELLE

PROJECT TITLE:

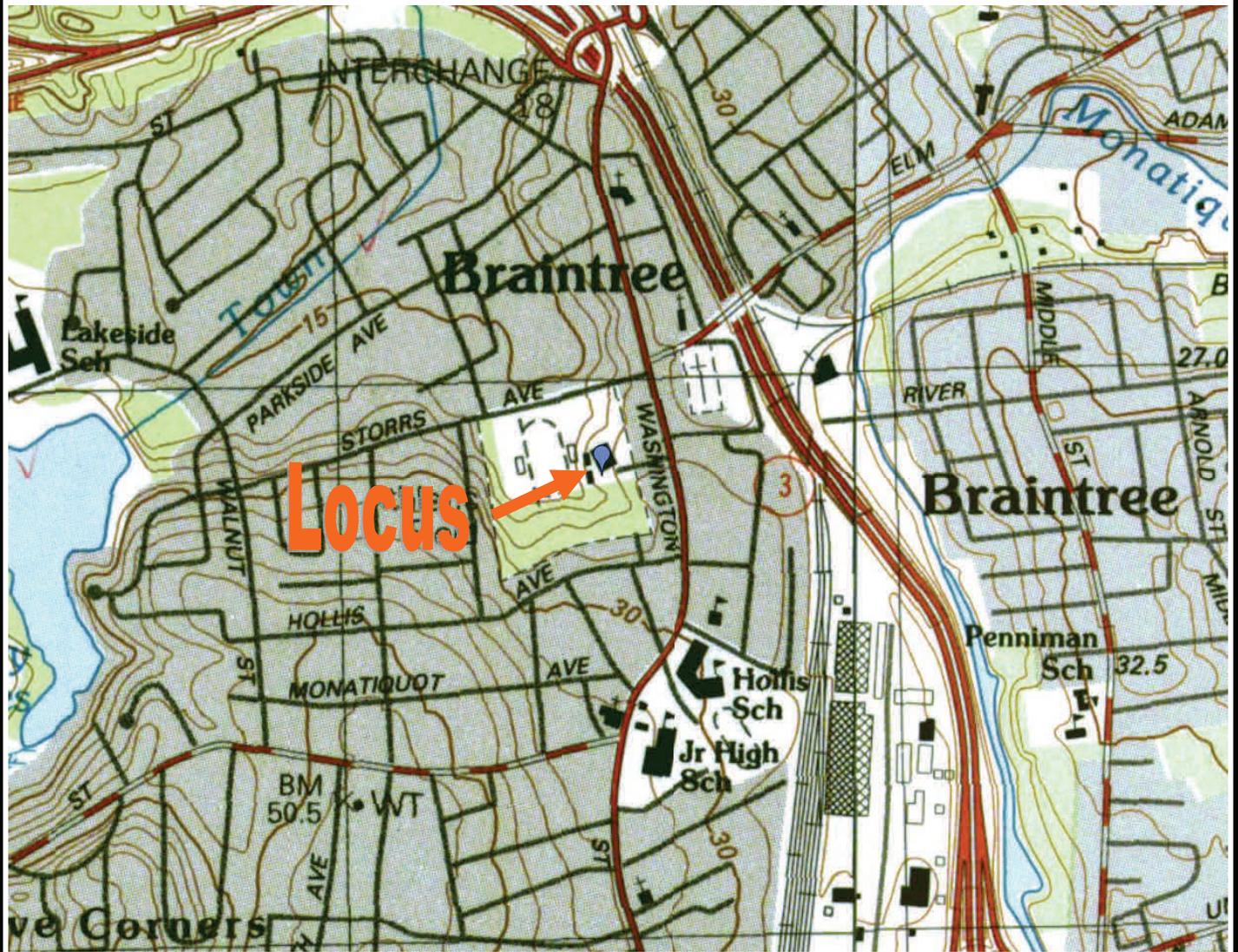
**Parkside Apartments
40B Residential Project
383-385 Washington Street
Braintree, MA 02184**



BURKE

& Associates, Inc.

1266 Furnace Brook Parkway, Suite 401 Quincy, MA 02169
(617) 405-5100 (O) (617) 405-5101 (F)



DATE:
February 2, 2017

TITLE:
USGS Map

SCALE:
NOT TO SCALE

PREPARED FOR:
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The Holland Companies
519 Albany Street, Suite 200
Boston, MA 02118**



PROJECT TITLE:
**Parkside Apartments
40B Residential Project
383-385 Washington Street
Braintree, MA 02184**

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Map Unit Name: **Urban land, 0 to 15 percent slopes** Symbol: **602**

▲ Map Unit Composition

99% - **Urban land**
Horizon data n/a

1% - **ROCK OUTCROPS**
Horizon data n/a

DATE:
February 2, 2017

TITLE:
Soils Map

SCALE:
NOT TO SCALE

PREPARED FOR:
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The Holland Companies
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PROJECT TITLE:
**Parkside Apartments
40B Residential Project
383-385 Washington Street
Braintree, MA 02184**



DATE:
February 2, 2017

TITLE:
NHESP Map

SCALE
NOT TO SCALE

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PANEL 0207E

FIRM
FLOOD INSURANCE RATE MAP
NORFOLK COUNTY,
MASSACHUSETTS
(ALL JURISDICTIONS)

PANEL 207 OF 430
 (SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

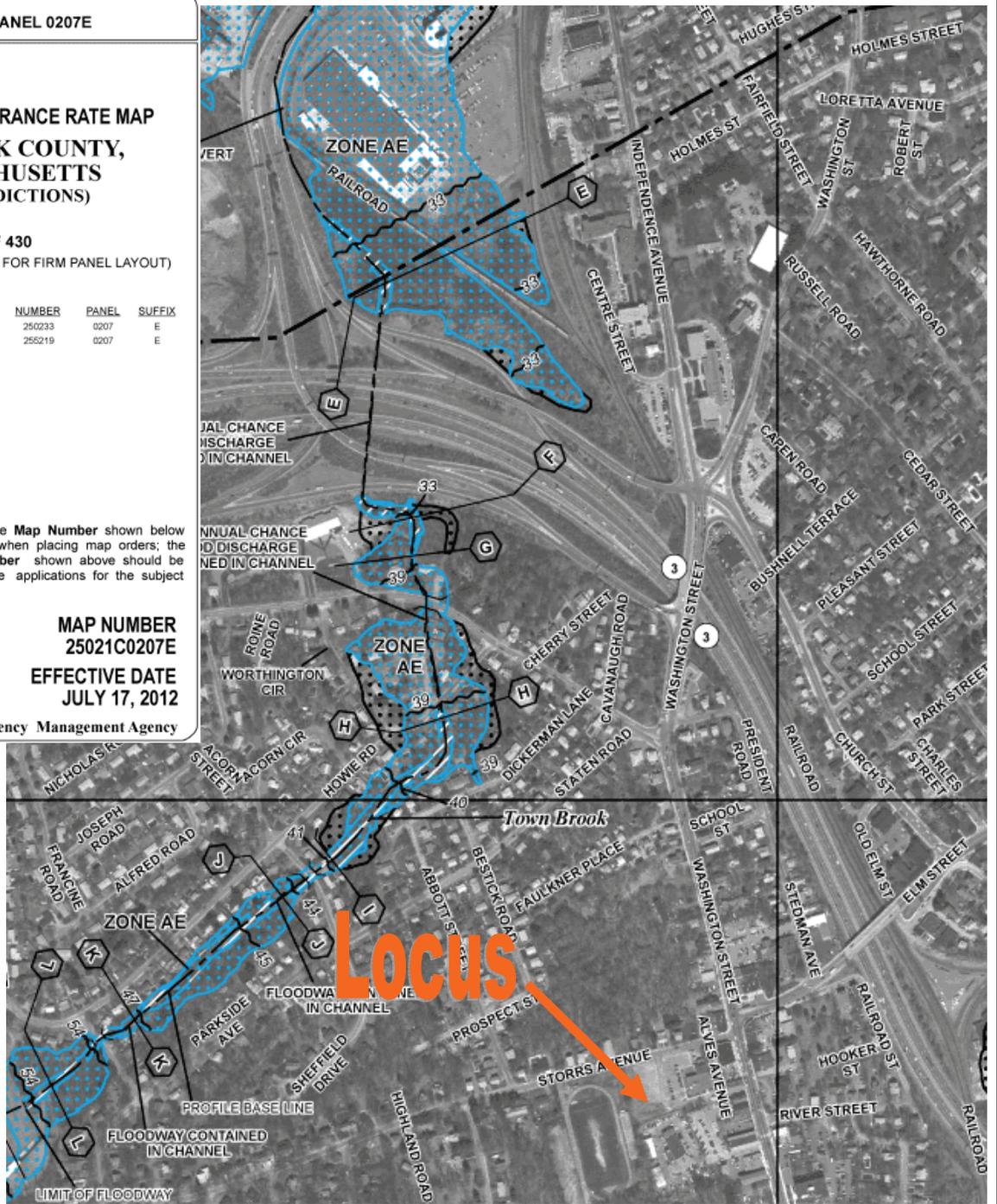
COMMUNITY	NUMBER	PANEL	SUFFIX
BRAINTREE, TOWN OF	250233	0207	E
QUINCY, CITY OF	255219	0207	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.



MAP NUMBER
25021C0207E
EFFECTIVE DATE
JULY 17, 2012

Federal Emergency Management Agency



DATE:
February 2, 2017

TITLE:
FEMA Flood Map

SCALE:
 NTS

PREPARED FOR:

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The Holland Companies
519 Albany Street, Suite 200
Boston, MA 02118



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PROJECT TITLE:

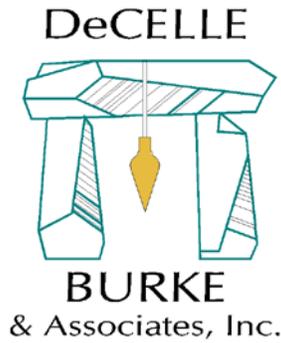
Parkside Apartments
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383-385 Washington Street
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SECTION 3

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MANAGEMENT PLANS

**Stormwater Operation & Maintenance Plan
Parkside Apartments Plan
Parkside Condominiums Plan
Erosion and Sedimentation Control Plan**



**Stormwater Operation & Site Maintenance Plan
for
Parkside Apartments
A Chapter 40B Residential Project
at
383-385 Washington Street
in
Braintree, Massachusetts**

Prepared by:

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Suite 401
Quincy, MA 02169

Prepared for:

383 Washington Street, LLC
The Holland Companies
519 Albany Street, Suite 200
Boston, MA 02118

February 2, 2017

Introduction

This Stormwater Operation & Maintenance Plan (OMP) for the residential building and property located at 383-385 Washington Street Braintree, Massachusetts. The OMP is outlined below to provide long term operation and maintenance procedures of the stormwater controls installed to manage the stormwater flow generated on the site and improve runoff quality. The landowners are required to implement the procedures and ensure the long term benefits of the stormwater controls approved and installed for this project. The OMP provides simple operational and maintenance procedures for the stormwater control structures as well as perform various tasks to remove pollutants from areas that would have potential to be picked up on site and moved via stormwater offsite.

The landowners shall be responsible to inspect, maintain and operate the stormwater management system as well as inspect the grounds for eroded areas and collected pollutants. Appointing a responsible person in charge to implement this OMP on behalf of the landowner is preferred but the landowners shall be responsible at all times for implementing this OMP. The purpose of the OMP is to maintain the long term benefits from the Stormwater Management features constructed that support groundwater recharge and pollution prevention.

Responsible Party - 383 Washington Street, LLC
The Holland Companies
519 Albany Street, Suite 200
Boston, MA 02118
617-556-2900

The responsible party listed above is responsible for inspecting, maintaining and keeping copies of maintenance records for the following plan and will be referred to as the Site Manager for the remainder of this report. If another individual/company is responsible for the every day management of the property the name and contact information shall be made available to the Braintree Conservation Commission. The responsible party can expect a yearly budget of \$2,000 to \$2,800 per year to maintain this site.

Non-Structural Operations

Surface Parking Lot Sweeping

Street sweeping will be performed twice during the year, in April-May and in September-October. The Site Manager shall contract with a property management company that provides street sweeping services. The contractor shall be a company in good standing in the Commonwealth of Massachusetts and experienced in performing these services. All sweepings shall be disposed of by the hired company off-site in a legal manner.

Snow Management

Proper snow management practices will be implemented to minimize runoff and pollutant loading impacts. Plowed or shoveled snow will be placed in pervious areas at the edges of the parking lot where it can slowly infiltrate. Snow will be placed on to pervious areas that are not subject to excessive shade from buildings or vegetation. All accumulated sediment from snowmelt shall be removed each spring. If excessive snow inhibits movement around the site or the stormwater management facilities the contractor will be responsible to remove the snow from the site and disposed of in a legal manner.

Structural Operations

Catch Basins and Deep Sump Drain Manholes (DMH)

The catch basins and drain manholes were installed to capture stormwater and separate sediment. To ensure maximum capacity and efficiency, the deep sump catch basins and DMH sumps will be cleaned when half of the available capacity of the sump has been used or at a minimum of once per year. The Manager shall inspect the sumps at least twice per year. The Manager shall hire a contractor in good standing in the Commonwealth of Massachusetts with experience in cleaning stormwater sumps with a vacuum truck. All sediment and water retrieved from the tanks and sumps shall be disposed of by the hired company off-site in a legal manner. The Manager shall provide a written inspection report of which an example form is attached.

Underground Cultec Chambers

The underground Cultec chambers were installed to recharge stormwater runoff from the roof of the building and recharge the driveway runoff. The roof runoff does not generate sediment and with two levels of treatment for the roadway and parking runoff, the infiltration chambers shall remain effective for a long period of time. Inspection ports are brought to grade to allow the Site Manager to observe if the chambers are ponding or accumulating sediment and clean as necessary. The Manager shall inspect the chambers twice per year. The Manager shall hire a contractor in good standing in the Commonwealth of Massachusetts with experience in cleaning underground chambers with a vacuum truck. All sediment and water retrieved from the chambers shall be disposed of by the hired company off-site in a legal manner. The Manager shall provide a written inspection report of which an example form is attached.

Oil/Water Separator

The oil/water separator is not part of the stormwater management system but it is designed to prevent the covered garage to be a source of pollution. The separator is designed to capture heavy amount of oil or perhaps gasoline by allowing the pollutants to float on top of a deep water sump. The separator is required in all covered parking garages and is connected to the public sewer. If a spill of gasoline or oil occurs within the garage the separator is designed to allow these pollutants to float on top of the water present in the separator. If a spill occurs the Manager shall contact a contractor in good standing in the Commonwealth of Massachusetts with experience in cleaning oil/water separators with a vacuum truck. The separator shall be filled with clean water before being put on line. All of the contaminated water retrieved from the separator shall be disposed of by the hired company off-site in a legal manner. The Manager shall provide a written report of the incident.

Site Management

The site shall be inspected on a quarterly basis for rutting, potholes, broken berms, depressions eroded areas and any other site damage caused by vehicular or human activity. The landscaped areas shall be raked as necessary to maintain a their grade. Grassed areas shall be raked out and seeded as needed to maintain an even vegetated surface. The Manager shall hire a contractor in good standing in the Commonwealth of Massachusetts with experience in paving to repair any potholes, broken berms or other damaged paved area. The Manager shall hire a landscaper in good standing in the Commonwealth of Massachusetts with experience in re-vegetating eroded areas.

Record Keeping

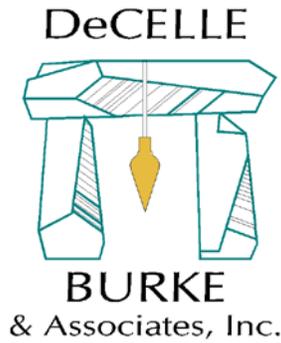
Records of the inspections and maintenance for the Non-Structural and Structural Operations performed or organized by Manager for the property shall be up to date and available for review and inspection. An example record keeping sheet is attached.

Parkside Apartments
Stormwater Operation & Site Maintenance Plan
INSPECTION SCHEDULE AND EVALUATION CHECKLIST

Best Management Practice	Inspection Frequency	Date Inspected	Contractor	Current Conditions and Minimum Maintenance / Repairs, if necessary	Completed Maintenance / Repair (i.e. date, contractor, tasks complete, etc...)
Site Sweeping	Biannual				
Catch Basins and Drain Manholes	Biannual				
Cultec Chambers	Biannual				
Oil/Water Separator	Biannual				
Parking Lot	Quarterly				
Vegetated Areas	Quarterly				
Overall Site Condition	Quarterly				

Property Manager: _____

Date _____



**Stormwater Operation & Site Maintenance Plan
for
Parkside Condominiums
A Chapter 40B Residential Project
at
383-385 Washington Street
in
Braintree, Massachusetts**

Prepared by:

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1266 Furnace Brook Parkway
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Quincy, MA 02169

Prepared for:

383 Washington Street, LLC
The Holland Companies
519 Albany Street, Suite 200
Boston, MA 02118

February 2, 2017

Introduction

This Stormwater Operation & Maintenance Plan is (OMP) for the two residential buildings and property located off of Storrs Avenue Braintree, Massachusetts and was constructed with the apartment building located at 383 Washington Street. The OMP is outlined below to provide long term operation and maintenance procedures of the stormwater controls installed to manage the stormwater flow generated on the site and improve runoff quality. The landowners are required to implement the procedures and ensure the long term benefits of the stormwater controls approved and installed for this project. The OMP provides simple operational and maintenance procedures for the stormwater control structures as well as perform various tasks to remove pollutants from areas that would have potential to be picked up on site and moved via stormwater offsite.

The landowners, who will form a condominium association, shall be responsible to inspect, maintain and operate the stormwater management system as well as inspect the grounds for eroded areas and collected pollutants. Appointing a responsible person in charge to implement this OMP on behalf of the condominium association is preferred but the landowners shall be responsible at all times for implementing this OMP. The purpose of the OMP is to maintain the long term benefits from the Stormwater Management features constructed that support groundwater recharge and pollution prevention.

Responsible Party - Parkside Condominium Association
c/o The Holland Companies
519 Albany Street, Suite 200
Boston, MA 02118
617-556-2900

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The site shall be inspected on a quarterly basis for rutting, potholes, broken berms, depressions eroded areas and any other site damage caused by vehicular or human activity. The landscaped areas shall be raked as necessary to maintain a their grade. Grassed areas shall be raked out and seeded as needed to maintain an even vegetated surface. The Manager shall hire a contractor in good standing in the Commonwealth of Massachusetts with experience in paving to repair any potholes, broken berms or other damaged paved area. The Manager shall hire a landscaper in good standing in the Commonwealth of Massachusetts with experience in re-vegetating eroded areas.

Record Keeping

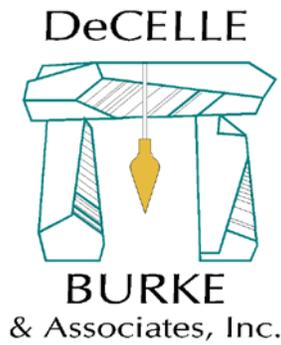
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Stormwater Operation & Site Maintenance Plan
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Catch Basins and Drain Manholes	Biannual				
Cultec Chambers	Biannual				
Parking Area	Quarterly				
Vegetated Areas	Quarterly				
Overall Site Condition	Quarterly				

Property Manager: _____

Date _____



**Erosion & Sedimentation Control Plan
for
Parkside Apartments & Parkside Condominiums
A Chapter 40B Residential Project
at
383-385 Washington Street
in
Braintree, Massachusetts**

Prepared by:

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February 2, 2017

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	5.2.2 - Sweeper	
	5.2.3 - Crushed Stone Apron	
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	5.2.5 - Dust Control	
	5.2.6 - Disturbed Surface Control	
	5.2.7 - Temporary Stormwater Control	

1.0 - Plan Objectives

- To protect abutting properties and wetland resources from construction related pollutant impacts generated from land disturbance and construction activities located adjacent to environmentally sensitive areas;
- Control existing, and potential erosion, sediment transport and pollutant impact events by installing and maintaining construction related Best Management Practices (BMP's) to reduce and/or prevent the discharge of stormwater pollutants into wetland resources of the Commonwealth of Massachusetts;
- To protect surface stormwater quality, ground water quality, and minimize off-site sediment transport into the wetland resources during construction;
- To prevent local and off-site flooding by controlling peak rates and volumes of stormwater runoff during construction; and
- To eliminate illicit discharges to stormwater drainage systems that causes pollution during construction.

2.0 - Introduction

This Erosion and Sedimentation Control Plan (The "Plan") has been devised for the construction of a 70-unit residential building and two town homes with eight additional units. Locus is 383 Washington Street, Braintree MA. The purpose of the Plan is to protect the surrounding environment from contaminated stormwater during construction of the development. The stormwater will be treated before release and surfaces stabilized to minimize erosive events by implementing, installing and maintaining construction related Best Management Practices (BMP's) to reduce and/or prevent the discharge of stormwater pollutants into wetland resources of the Commonwealth of Massachusetts. The BMP's are described in the Stormwater Management Standards developed by the Massachusetts Department for Environmental Protection and it is our belief that short term construction related pollution prevention generated from this site can be achieved.

3.0 - Current Site Conditions

The project locus is made up of three lots. One lot is a forty-foot wide private right-of-way owned by the applicant that provides access off of Storrs Avenue and is known as Alves Avenue. It is approximately 8,949 square feet (s.f.) and was improved to provide driveway access to the abutting property at 14 Storrs Avenue and the other two lots comprising of the project locus. The lot and driveway have a steep, transverse gradient, approximately 7.5%. The elevations range from elevation 66 at the southeast corner to elevation 54 at the northeast corner. All elevations are based on the North American Vertical Datum of 1988 (NAVD88). This private right-of-way also provides utility access for gas, overhead power and communications to the main project lot and appears to provide sewer service for the abutting property, 14 Storrs Avenue. No vegetation exists on the lot.

The adjacent second lot is approximately 28,720 s.f. and is unimproved. The surface is approximately 50% paved with the remaining surface being mostly broken pavement and gravel. No significant vegetation exists on the parcel except for the overgrowth near the southerly property line. It has a steep grade ranging in elevation from 64 at the southeast corner of the lot to elevation 50 located at the northwest corner. The lot directly abuts Archbishop Williams High School track and field facility. The property is encumbered by an existing twenty-foot sewer easement that runs parallel with the southerly and westerly property lines. An existing 8" sewer is located within the easement and provides public sewer service for several properties in the area including the project locus and the athletic field. The sewer connects to the public sewer located in Storrs Avenue. The property is currently used as unauthorized overflow parking for athletic, business and residential related routines.

The largest lot of the project locus is 76,524 s.f. and is improved with three buildings a parking lot and service utilities. It is benefitted and currently only accessed by a twenty-foot wide access easement from Washington Street. The site was previously used as an automobile related service lot for multiple owners. The site is serviced by public water from the Washington Street via the access easement, public sewer, gas, overhead electric and site drainage. The site is encumbered by an existing ten-foot wide drain easement near the northerly property line extending from Washington Street to the Archbishop Williams athletic field. A 12" drain pipe conveys stormwater generated off of the project site, abutting properties as well as Washington Street to a manhole located at the common property line for the athletic field. An 18" drain extends from this manhole under the athletic field to an eventual outfall located across Storrs Avenue. Project locus drainage is limited in treatment and control. The site is also steep in grade ranging from a high southeasterly elevation of 84 to a low elevation of 58 to 60 along the westerly property line. There is no significant vegetation except for the overgrowth along the edges of the property.

The entire project locus is 114,193 s.f., is zoned General Business with the Village Overlay District. It directly abuts a Residential B zone but the lot directly abutting the project locus is developed as an athletic field. The Braintree Masons Lodge and a detention basin abuts directly to the south, while a municipal parking lot and several business located along Washington Street abuts the project locus to the east. Storrs Avenue abuts the project locus to the north which has several uses such as single family homes, multi-family homes, mixed uses, businesses and a temple.

4.0 - Project Description

The full project consists of two developments, Parkside Apartments and Parkside Condominiums. The larger development is a single 70-unit apartment building sitting on a 93,866 s.f. lot titled Parkside Apartments. The smaller development is a two-building, 8-unit condominium project on 20,327 s.f. lot known as Parkside Condominiums. The larger lot includes the current existing Lot A which includes all the existing buildings, the private right-of-way lot and subdivided portions of the gravel and pavement lot known as Lot 2. The remaining land of Lot 2 provides the land for smaller development and the newly subdivided Lot 2

Parkside Apartments includes one 70-unit residential building with an underground parking garage and surface parking. The building has a 29,860± square foot footprint, is 47 feet tall and

has three (3) stories. The parking totals 128 parking spaces with 47 surface parking spaces 81 garage parking spaces. Access to the underground garage is on the north side of the building.

Parkside Condominiums consists of two town house buildings with eight (8) total units, five in the building off of Storrs Avenue and three units in the building off of the access easement. All units will have a one car garage with a tandem space in front for a total of sixteen (16) spaces for the development, an additional five (5) spaces have been set aside for condominium use only along the wall at the back of the parking lot area. The grand total of parking spaces available for the condominiums will be twenty-one (21).

New utility services will be installed and new mains will be installed to extend or upgrade existing infrastructure. A new 8" CLDI water main is proposed to be tapped off the 8" DI main on Storrs Avenue. The proposed 8" CLDI main will extend along the access easement and extend through to the existing 6" main located in the 20' wide easement with access off of Washington Street. The new main shall connect to the existing 6" main with an inline gate valve and an 8X6 reducer. One 4" CLDI domestic service with a gate valve, and one 6" CLDI fire protection service with a gate valve shall be extended to the new 70-unit building to provide fire protection and domestic water service off the new main. The two town house buildings will both be serviced from the new main and will both have a 2" copper service with a sidewalk curb valve shutoff with a 4" CLDI fire pipe and gate valve off the new main.

Sewer mains and manholes will be added to the system to upgrade and direct flows accordingly. A sewer main connecting two existing manholes will be removed and redirected to a new sewer main located in the access easement. A portion of the existing sewer running along the westerly property line shall remain in use. This existing sewer shall be extended to the Archbishop Williams High School field to provide sewer to the concession stand. The two condominium buildings 6" SDR 35 PVC sewer services shall connect to the new 8" sewer line located in the access easement. The new 8" sewer main shall provide continued service for all existing connected properties while also providing service to the new apartment building. An oil/water separator will be installed to collect spills inside of the parking garage. Area drains will connect with a ductile iron sewer pipe to the oil/water separator where wastewater will be treated and then conveyed to the public sewer system.

All existing stormwater management controls onsite will be removed and disposed of legally, except for the existing drain main that is located in the ten-foot wide drain easement. The stormwater management systems consist of three separate large Cultec Recharger V8HD chamber systems with deep sump catch basins and deep sump drain manholes. The Parkside Apartments roof runoff will be collected in a series of interior and exterior roof leaders and conveyed to the chamber systems. Parking lot and driveway stormwater runoff shall be captured by eight (8) deep sump catch basins and associated deep sump drain manholes which will separate trash, debris and suspended solids. The stormwater will then be conveyed the Cultec Recharger systems where it will be allowed to infiltrate back into the soil.

The upper stormwater management system consists of 99 Cultec Recharger V8 chambers and is located in the entrance circle to Parkside Apartments. The chambers will be configured in a 9x11 layout with drain manholes feeding manifold pipes on each end. The stormwater management system B is located in the side parking lot, between the town homes and the apartment building. This system will be 42 units in size and laid out in a 6x7 configuration.

System B will have an invert in of 61.0' and a 12" overflow at 60.5' which will connect to system C through the drain manhole. System C will be located between the town home buildings and the system will have 40 units, laid out in a 4x10 pattern. All systems will have observation ports on the four corners with caps brought to match the final grade.

New electric services, utility pole and manhole will be installed. A riser from the utility pole at the access point off Storrs Avenue will divert power underground. An electric conduit will connect to a new manhole which will then connect to a new utility pole and tie back into the existing utilities. Gas, electric and communication services will be provided, designed and installed per the utility purveyors. Gas service is proposed to be brought up the access easement to the apartment building. Underground electric service is proposed to be pulled off the utility pole on the eastern boundary of the locus. The underground electric will go to a transformer which will feed the apartment building. The town homes will be serviced by gas and overhead electric services as depicted on the site plans.

5.0 - Erosion & Sedimentation Control Plan

The contractor shall implement an Erosion and Sedimentation Control Plan that protects the surrounding environment from sediment laden stormwater runoff generated during construction activities and from other pollutants generated from construction activities such as litter and dust. Construction sequencing is part of managing a site as is implementing many BMP's that assist in controlling construction related pollutants.

5.1 - Major Construction Sequence for Site

The sequence is developed to contain all potential sedimentation and erosion incidents that could occur during the construction of the project. The contractor however is responsible to manage the site effectively to control offsite sediment transport which may not be included in this plan. The sequence will coordinate the work within the erosion barrier and coordinate other sedimentation control features to reduce the stress upon a silt fence as well as limit off-site sediment transport. The sequencing is as follows:

- Place safety fence around property to limit access and protect the public.
- Place erosion control barrier at limit of work where possible. The barrier shall be silt sock or stacked sand bags on any paved surfaces.
- Install crushed stone construction entrance to reduce soil tracking off-site by construction vehicles.
- Raze existing buildings.
- Extend utility mains onto property.
- Prepare area and install Cultec chambers to receive stormwater runoff.
- Excavate for new foundation.
- Extend utilities to foundation.
- Construct floor slab and foundation.
- Begin vertical construction of building.
- Install final landscaping, including hydroseed, plantings, lightpoles, walkways, handicap ramps and stairs.
- Clean up site.

The contractor has several procedures to perform to maintain the site. They include but are not limited to:

- Clean erosion control barrier of debris, silt and sand.
- Replace erosion control barrier at limit of work as needed. Barrier to be inspected on a weekly basis.
- Remove and replace crushed stone apron when stone is overburdened with silt.
- Sweep the site as necessary to minimize vehicle soil tracking and sediment laden runoff.
- Any stockpiled soils to be covered to minimize fugitive dust and ringed with erosion control barrier to minimize sediment transport.
- Maintain a covered dumpster on site to minimize wind blown debris from littering neighborhood and resource areas.
- Have a water truck onsite during the demolition portion of the project and during rough grading to minimize fugitive dust.
- Clean abutting property and nearby downstream catch basins of debris and sediment.

5.2 - Best Management Practices

The contractor shall use various types of structural and non-structural methodologies to minimize offsite polluting from construction activities. The following is a list of some BMP's that can be utilized; however, it is the contractor's responsibility to implement his strategies to minimize offsite sediment transport and fugitive dust and trash.

5.2.1 - Dumpster

The contractor shall have a dumpster on-site for the disposal of construction debris. The contractor shall cover the dumpster as needed to prevent wind blown debris from becoming litter in the environment.

5.2.2 - Mechanical or Hand Sweeper

The contractor shall sweep the site by mechanical means or by hand to reduce the sediment build-up on-site. This will reduce the surrounding area becoming impacted from construction related offsite sediment pollution.

5.2.3 - Crushed Stone Construction Apron

A crushed stone apron shall be installed at the entrance to the site to assist in removing caked soil on construction vehicles tires. The apron shall be a minimum of twenty-five feet long and twenty-five feet wide. The contractor shall inspect the apron on a daily basis and supplement new stone as needed

5.2.4 - Erosion Control Barrier

An erosion control barrier shall be installed at the down-gradient Limit of Work and used around the site as needed. The barrier shall be used around soil stockpiles and localized excavations on site. The barrier needs to be effective in controlling sediment transport and not becoming strained as the project moves forward. The contractor shall inspect the barrier weekly or after a large storm event to identify any stressed areas and replace the barrier as needed. The barrier can be one or many of several types. Stacked sand bags will be effective on paved sites. The contractor shall inspect the barriers on a daily basis and repair the barriers as needed.

5.2.5 - Dust Control

The use of a water truck or other method to spray water over the site during the dry season to minimize blown dust shall be implemented. The water shall not be excessively spread so erosive forces occur. The contractor shall sweep the pavement once installed and cover stockpiled soils as needed to minimize dust.

5.2.6 - Disturbed Surface Maintenance

The contractor shall stabilize the ground surface as needed to prevent erosion. Stabilization of surfaces includes the placement of pavement, rip rap, soldier piles, wood bark mulch and the establishment of vegetated surfaces. Upon the completion of construction of a particular phase, all surfaces should be stabilized even though it is apparent that future construction efforts will cause their disturbance. Vegetated cover should be established during the proper growing season and should be enhanced by soil adjustment for proper pH, nutrients and moisture content. Surfaces that are disturbed by erosion processes or vandalism should be stabilized as soon as possible. Areas where construction activities have permanently or temporarily ceased should be stabilized within 14 days from the date of last construction activity, except when construction activity will resume within 21 days (e.g., the total time period that construction activity is temporarily ceased is less than 21 days). Hydro-mulching of grass surfaces is recommended, especially if seeding of the surfaces is required outside the normal growing season. Mulching may be used for temporary stabilization. Haybale dikes or silt fences should be set where required to trap products of erosion and should be maintained on a continuing basis during the construction process. Wheel ruts should be filled in and graded to prevent concentration of stormwater runoff. Vehicle tracks leading downhill should be blocked during periods of intense precipitation by hay bales, dikes or silt fences which should be constructed to entrap the sediment.

5.2.7 - Temporary Stormwater Controls

The contractor shall rough grade the site as to not concentrate the stormwater runoff and cause erosive forces. The contractor shall use a level spreader or other temporary stormwater control device to treat construction site runoff for suspended solids. The catch basins and manholes can be installed to assist in capturing the construction site runoff once installed but the sumps will need to be cleaned out of all sediment before connecting the tanks to the recharge system and final paving. The use of silt sacks on the catch basin will help minimize the cleaning of the sumps. The contractor shall sweep the pavement once installed as needed to minimize suspended solids in the stormwater.

SECTION 4

– **STORMWATER MANAGEMENT DATA**

Standard 3 Compliance

Standard 3 HydroCAD Calculations

Standard 4 Compliance (TSS Removal)

HydroCAD Calculations

Existing Conditions

2-Year

10-Year

25-Year

100-Year

Proposed Conditions

2-Year

10-Year

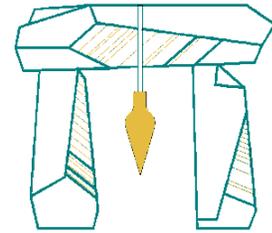
25-Year

100-Year

Watershed Maps

Calculation Sheet

DeCELLE



BURKE
& Associates, Inc.

Project: Parkside Apartments
383 Washington Street
Braintree, MA
 Client: The Holland Companies, LLC
519 Albany Street, Boston MA
 Date: February 2, 2017

Standard 3 Compliance

Find: Recharge Volume Requirement

Given: $R_v = (AF)$
 $R_v = (\text{impervious area} \times \text{depth factor})$
 $A = 78,631 \text{ s.f. impervious area}$ $F = 0.6 \text{ " for A-soils}$

Solve: $R_v = 78,631 \text{ s.f.} \times 0.6 \text{ "}/12' = 3931.55 \text{ c.f.}$
 $R_v = 3931.55 \text{ c.f.}/43,560 \text{ s.f.} = 0.090 \text{ acre/ft}$

Find: Recharge System Infiltration Rate; i

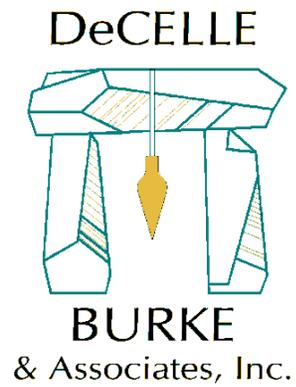
Given: $i = A \times RR$
 Rawls Rate for in-situ-soils = $RR = 2.41 \text{ in/hr}$
 Recharge System Size $A+B+C = 7363.78 \text{ s.f.}$

Solve: $i = 363.78 \text{ s.f.} \times 2.41 \text{ in/hr} / (12 \text{ in/ft} \times 60 \text{ min/hr} \times 60 \text{ sec/min})$
 $i = 0.4108 \text{ cfs}$

DeCelle-Burke Associates, Inc.

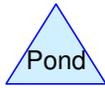
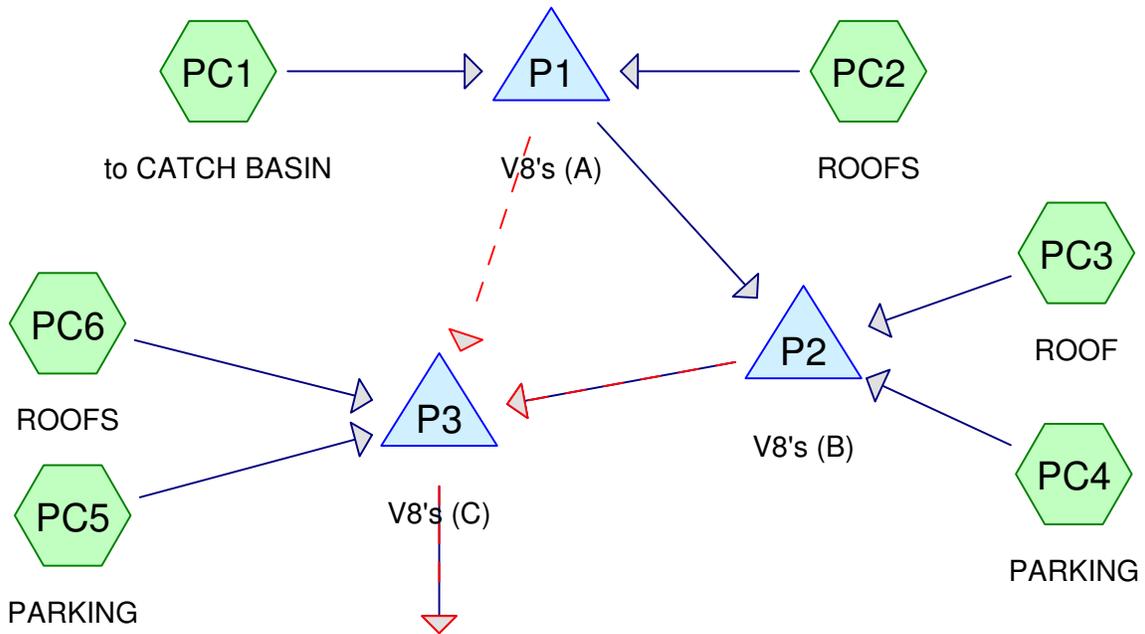
1266 Furnace Brook Pkwy., #401 Quincy, MA 02169
 617-405-5100 (o) 617-405-5101 (f)

Calculation Sheet



Project: Parkside Apartments
383 Washington Street
Braintree, MA
 Client: The Holland Companies, LLC
519 Albany Street, Boston MA
 Date: February 2, 2017

Standard 3 Compliance continued...	
Determine if Recharge System can handle Required Recharge Volume; Rv	
Given:	Rv = 0.090 acre/ft Recharge Field Height = 4.7 ft
Find:	Depth of Rv within Recharge Field
Solve:	See HydroCAD Calculations Attached
	Rainfall Depth generating 0.090 ac/ft is 1.25 in
	Corresponding Field Depth is 52.28 - 51.80 = 0.48 ft.
	OK
Find:	Drawdown Time, T $T = Rv / (A \times RR)$
Given:	Recharge System= 7363.78 s.f. RR= 2.41 in/hr Rv= 3931.55 c.f. $3931.55 \text{ c.f.} / (7363.78 \text{ s.f.} \times 2.41 \text{ in/hr}) = 2.66 \text{ hrs} < 72 \text{ hrs}$
	CHECKS OK



prop conditions-v4-stand3

Type III 24-hr Rainfall=1.25"

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Summary for Subcatchment PC1: to CATCH BASIN

Runoff = 0.05 cfs @ 12.20 hrs, Volume= 0.006 af, Depth> 0.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=1.25"

Area (sf)	CN	Description
6,131	39	>75% Grass cover, Good, HSG A
13,837	98	Paved parking, HSG A
19,968	80	Weighted Average
6,131		30.70% Pervious Area
13,837		69.30% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, 10

Summary for Subcatchment PC2: ROOFS

Runoff = 0.47 cfs @ 12.14 hrs, Volume= 0.038 af, Depth> 0.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=1.25"

Area (sf)	CN	Description
20,578	98	Unconnected roofs, HSG A
20,578		100.00% Impervious Area
20,578		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, 10

Summary for Subcatchment PC3: ROOF

Runoff = 0.18 cfs @ 12.14 hrs, Volume= 0.015 af, Depth> 0.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=1.25"

Area (sf)	CN	Description
8,018	98	Roofs, HSG A
8,018		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, 10

prop conditions-v4-stand3

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Type III 24-hr Rainfall=1.25"

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Summary for Subcatchment PC4: PARKING

Runoff = 0.02 cfs @ 12.30 hrs, Volume= 0.003 af, Depth> 0.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=1.25"

Area (sf)	CN	Description
10,217	98	Paved roads w/curbs & sewers, HSG A
5,210	39	>75% Grass cover, Good, HSG A
15,427	78	Weighted Average
5,210		33.77% Pervious Area
10,217		66.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, 10

Summary for Subcatchment PC5: PARKING

Runoff = 0.19 cfs @ 12.16 hrs, Volume= 0.015 af, Depth> 0.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=1.25"

Area (sf)	CN	Description
18,997	98	Paved roads w/curbs & sewers, HSG A
4,509	39	>75% Grass cover, Good, HSG A
23,506	87	Weighted Average
4,509		19.18% Pervious Area
18,997		80.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, 10

Summary for Subcatchment PC6: ROOFS

Runoff = 0.16 cfs @ 12.14 hrs, Volume= 0.013 af, Depth> 0.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=1.25"

Area (sf)	CN	Description
6,984	98	Roofs, HSG A
6,984		100.00% Impervious Area

prop conditions-v4-stand3

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Type III 24-hr Rainfall=1.25"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, 10

Summary for Pond P1: V8's (A)

Inflow Area = 0.931 ac, 84.88% Impervious, Inflow Depth > 0.57"
 Inflow = 0.51 cfs @ 12.14 hrs, Volume= 0.044 af
 Outflow = 0.22 cfs @ 12.43 hrs, Volume= 0.044 af, Atten= 56%, Lag= 17.0 min
 Discarded = 0.22 cfs @ 12.43 hrs, Volume= 0.044 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
 Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 70.19' @ 12.43 hrs Surf.Area= 4,012 sf Storage= 307 cf

Plug-Flow detention time= 11.4 min calculated for 0.044 af (99% of inflow)
 Center-of-Mass det. time= 10.2 min (780.0 - 769.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	70.00'	5,897 cf	51.00'W x 78.67'L x 5.17'H Field A 20,730 cf Overall - 5,987 cf Embedded = 14,743 cf x 40.0% Voids
#2A	71.50'	5,987 cf	Cultec R-V8HD x 99 Inside #1 Effective Size= 55.2"W x 32.0"H => 8.68 sf x 7.50'L = 65.1 cf Overall Size= 60.0"W x 32.0"H x 8.00'L with 0.50' Overlap Row Length Adjustment= -5.83' x 8.68 sf x 9 rows
#3	72.00'	126 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
		12,010 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
72.00	28	0	0
76.50	28	126	126

Device	Routing	Invert	Outlet Devices
#1	Discarded	70.00'	2.410 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 0.00'
#2	Primary	76.00'	2.0' long x 2.0' breadth Broad-Crested Rectangular Weir X 2.00 Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32
#3	Secondary	76.00'	2.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

prop conditions-v4-stand3

Type III 24-hr Rainfall=1.25"

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Discarded OutFlow Max=0.22 cfs @ 12.43 hrs HW=70.19' (Free Discharge)

↑1=Exfiltration (Controls 0.22 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=70.00' (Free Discharge)

↑2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=70.00' (Free Discharge)

↑3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond P2: V8's (B)

Inflow Area = 1.469 ac, 82.28% Impervious, Inflow Depth > 0.15"
 Inflow = 0.20 cfs @ 12.15 hrs, Volume= 0.018 af
 Outflow = 0.09 cfs @ 12.43 hrs, Volume= 0.018 af, Atten= 53%, Lag= 16.8 min
 Discarded = 0.09 cfs @ 12.43 hrs, Volume= 0.018 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 58.16' @ 12.43 hrs Surf.Area= 1,679 sf Storage= 106 cf

Plug-Flow detention time= 8.7 min calculated for 0.018 af (99% of inflow)
 Center-of-Mass det. time= 7.7 min (785.5 - 777.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	58.00'	2,163 cf	34.50'W x 48.67'L x 4.67'H Field A 7,836 cf Overall - 2,429 cf Embedded = 5,406 cf x 40.0% Voids
#2A	59.00'	2,429 cf	Cultec R-V8HD x 42 Inside #1 Effective Size= 55.2"W x 32.0"H => 8.68 sf x 7.50'L = 65.1 cf Overall Size= 60.0"W x 32.0"H x 8.00'L with 0.50' Overlap Row Length Adjustment= -5.83' x 8.68 sf x 6 rows
#3	59.00'	101 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
		4,693 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
59.00	28	0	0
62.60	28	101	101

Device	Routing	Invert	Outlet Devices
#1	Discarded	58.00'	2.410 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 1.00'
#2	Primary	61.00'	12.0" Round Culvert L= 50.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 61.00' / 56.50' S= 0.0900 '/ Cc= 0.900 n= 0.009 PVC, smooth interior, Flow Area= 0.79 sf

prop conditions-v4-stand3

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Type III 24-hr Rainfall=1.25"

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Discarded OutFlow Max=0.09 cfs @ 12.43 hrs HW=58.16' (Free Discharge)

↑1=Exfiltration (Controls 0.09 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=58.00' (Free Discharge)

↑2=Culvert (Controls 0.00 cfs)

Summary for Pond P3: V8's (C)

Inflow Area = 2.169 ac, 83.22% Impervious, Inflow Depth > 0.16"
 Inflow = 0.35 cfs @ 12.15 hrs, Volume= 0.028 af
 Outflow = 0.09 cfs @ 12.59 hrs, Volume= 0.028 af, Atten= 73%, Lag= 26.3 min
 Discarded = 0.09 cfs @ 12.59 hrs, Volume= 0.028 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 52.28' @ 12.59 hrs Surf.Area= 1,672 sf Storage= 322 cf

Plug-Flow detention time= 27.0 min calculated for 0.028 af (99% of inflow)
 Center-of-Mass det. time= 24.8 min (818.2 - 793.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	51.80'	2,162 cf	23.50'W x 71.17'L x 4.67'H Field A 7,805 cf Overall - 2,400 cf Embedded = 5,405 cf x 40.0% Voids
#2A	52.80'	2,400 cf	Cultec R-V8HD x 40 Inside #1 Effective Size= 55.2"W x 32.0"H => 8.68 sf x 7.50'L = 65.1 cf Overall Size= 60.0"W x 32.0"H x 8.00'L with 0.50' Overlap Row Length Adjustment= -5.83' x 8.68 sf x 4 rows
#3	59.00'	101 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
		4,663 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
59.00	28	0	0
62.60	28	101	101

Device	Routing	Invert	Outlet Devices
#1	Discarded	51.80'	2.410 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 1.00'
#2	Primary	57.70'	2.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

prop conditions-v4-stand3

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Type III 24-hr Rainfall=1.25"

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Discarded OutFlow Max=0.09 cfs @ 12.59 hrs HW=52.28' (Free Discharge)

↑1=Exfiltration (Controls 0.09 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=51.80' (Free Discharge)

↑2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

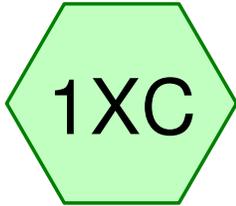


Project: **Parkside Apartments**
 Location: **383 Washington Street, Braintree MA**
 Date: **2/2/2017**

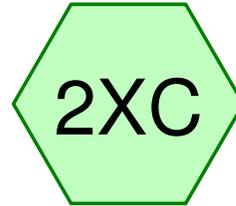
Subject: **Total Suspended Solids Removal Calculations**

BMP	TSS Removal	Start Load	Amount Removed	Remaining Load
4' Deep Sump Catch Basins	25%	100%	25%	75%
4' Deep Sump Water Quality Manho	25%	75%	19%	56%
Underground Recharge Chambers	90%	56%	51%	6%
Remaining Load		6%	0%	6%

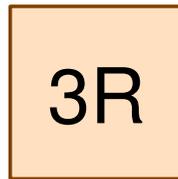
DeCelle-Burke & Associates, Inc.
 1266 Furnace Brook Pkwy., #401 Quincy, MA 02169
 PH:(617)-405-5100 FX:(617)-405-5101



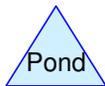
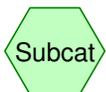
to CATCH BASIN



TO WEST



(new Reach)



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Type III 24-hr 2yr Rainfall=3.38"

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Summary for Subcatchment 1XC: to CATCH BASIN

Runoff = 2.62 cfs @ 12.14 hrs, Volume= 0.226 af, Depth> 2.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2yr Rainfall=3.38"

Area (sf)	CN	Description
31,100	98	Paved parking, HSG A
9,080	98	Roofs, HSG A
40,180	98	Weighted Average
40,180		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, 10

Summary for Subcatchment 2XC: TO WEST

Runoff = 3.15 cfs @ 12.14 hrs, Volume= 0.242 af, Depth> 1.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2yr Rainfall=3.38"

Area (sf)	CN	Description
30,168	98	Paved parking, HSG A
15,327	76	Gravel roads, HSG A
4,750	98	Unconnected roofs, HSG A
23,766	68	<50% Grass cover, Poor, HSG A
74,011	84	Weighted Average
39,093		52.82% Pervious Area
34,918		47.18% Impervious Area
4,750		13.60% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, 10

Summary for Reach 3R: (new Reach)

Inflow Area = 2.621 ac, 65.77% Impervious, Inflow Depth > 2.14" for 2yr event

Inflow = 5.77 cfs @ 12.14 hrs, Volume= 0.467 af

Outflow = 5.77 cfs @ 12.14 hrs, Volume= 0.467 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

existing conditions

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Type III 24-hr 10yr Rainfall=5.22"

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Summary for Subcatchment 1XC: to CATCH BASIN

Runoff = 4.08 cfs @ 12.14 hrs, Volume= 0.355 af, Depth> 4.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10yr Rainfall=5.22"

Area (sf)	CN	Description
31,100	98	Paved parking, HSG A
9,080	98	Roofs, HSG A
40,180	98	Weighted Average
40,180		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, 10

Summary for Subcatchment 2XC: TO WEST

Runoff = 5.92 cfs @ 12.14 hrs, Volume= 0.461 af, Depth> 3.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10yr Rainfall=5.22"

Area (sf)	CN	Description
30,168	98	Paved parking, HSG A
15,327	76	Gravel roads, HSG A
4,750	98	Unconnected roofs, HSG A
23,766	68	<50% Grass cover, Poor, HSG A
74,011	84	Weighted Average
39,093		52.82% Pervious Area
34,918		47.18% Impervious Area
4,750		13.60% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, 10

Summary for Reach 3R: (new Reach)

Inflow Area = 2.621 ac, 65.77% Impervious, Inflow Depth > 3.74" for 10yr event

Inflow = 10.00 cfs @ 12.14 hrs, Volume= 0.816 af

Outflow = 10.00 cfs @ 12.14 hrs, Volume= 0.816 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

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Type III 24-hr 25yr Rainfall=6.36"

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Summary for Subcatchment 1XC: to CATCH BASIN

Runoff = 4.98 cfs @ 12.14 hrs, Volume= 0.435 af, Depth> 5.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25yr Rainfall=6.36"

Area (sf)	CN	Description
31,100	98	Paved parking, HSG A
9,080	98	Roofs, HSG A
40,180	98	Weighted Average
40,180		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, 10

Summary for Subcatchment 2XC: TO WEST

Runoff = 7.66 cfs @ 12.14 hrs, Volume= 0.604 af, Depth> 4.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25yr Rainfall=6.36"

Area (sf)	CN	Description
30,168	98	Paved parking, HSG A
15,327	76	Gravel roads, HSG A
4,750	98	Unconnected roofs, HSG A
23,766	68	<50% Grass cover, Poor, HSG A
74,011	84	Weighted Average
39,093		52.82% Pervious Area
34,918		47.18% Impervious Area
4,750		13.60% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, 10

Summary for Reach 3R: (new Reach)

Inflow Area = 2.621 ac, 65.77% Impervious, Inflow Depth > 4.76" for 25yr event

Inflow = 12.64 cfs @ 12.14 hrs, Volume= 1.039 af

Outflow = 12.64 cfs @ 12.14 hrs, Volume= 1.039 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

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Type III 24-hr 100yr Rainfall=8.12"

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Summary for Subcatchment 1XC: to CATCH BASIN

Runoff = 6.37 cfs @ 12.14 hrs, Volume= 0.558 af, Depth> 7.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100yr Rainfall=8.12"

Area (sf)	CN	Description
31,100	98	Paved parking, HSG A
9,080	98	Roofs, HSG A
40,180	98	Weighted Average
40,180		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, 10

Summary for Subcatchment 2XC: TO WEST

Runoff = 10.35 cfs @ 12.14 hrs, Volume= 0.830 af, Depth> 5.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100yr Rainfall=8.12"

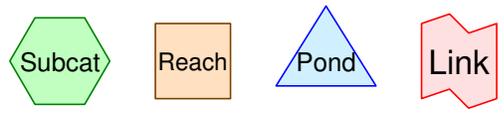
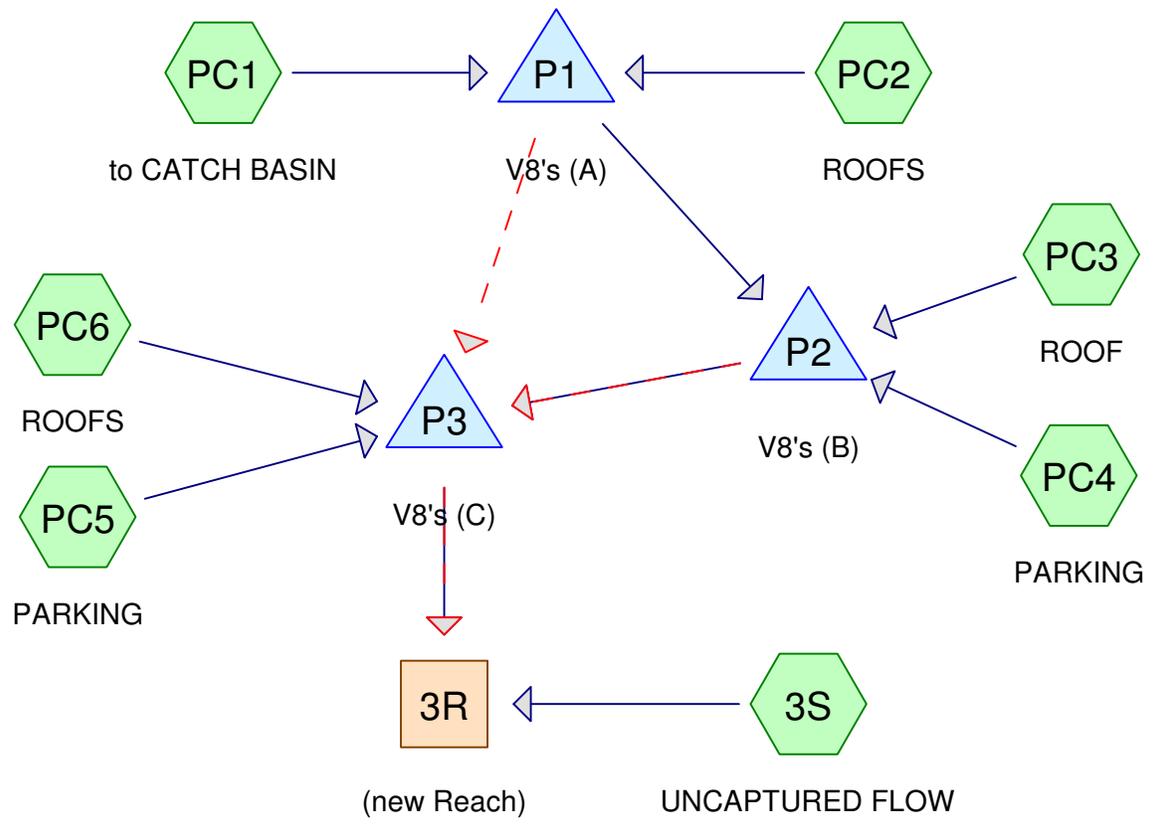
Area (sf)	CN	Description
30,168	98	Paved parking, HSG A
15,327	76	Gravel roads, HSG A
4,750	98	Unconnected roofs, HSG A
23,766	68	<50% Grass cover, Poor, HSG A
74,011	84	Weighted Average
39,093		52.82% Pervious Area
34,918		47.18% Impervious Area
4,750		13.60% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, 10

Summary for Reach 3R: (new Reach)

Inflow Area = 2.621 ac, 65.77% Impervious, Inflow Depth > 6.35" for 100yr event
Inflow = 16.72 cfs @ 12.14 hrs, Volume= 1.387 af
Outflow = 16.72 cfs @ 12.14 hrs, Volume= 1.387 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs



Routing Diagram for prop conditions-v4-CCC2
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Type III 24-hr 2yr Rainfall=3.38"

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Summary for Subcatchment 3S: UNCAPTURED FLOW

Runoff = 0.03 cfs @ 12.46 hrs, Volume= 0.006 af, Depth> 0.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2yr Rainfall=3.38"

Area (sf)	CN	Description
15,873	39	>75% Grass cover, Good, HSG A
2,591	98	Paved parking, HSG A
1,264	98	Roofs, HSG A
19,728	51	Weighted Average
15,873		80.46% Pervious Area
3,855		19.54% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, 10

Summary for Subcatchment PC1: to CATCH BASIN

Runoff = 0.71 cfs @ 12.15 hrs, Volume= 0.054 af, Depth> 1.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2yr Rainfall=3.38"

Area (sf)	CN	Description
6,131	39	>75% Grass cover, Good, HSG A
13,837	98	Paved parking, HSG A
19,968	80	Weighted Average
6,131		30.70% Pervious Area
13,837		69.30% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, 10

Summary for Subcatchment PC2: ROOFS

Runoff = 1.34 cfs @ 12.14 hrs, Volume= 0.116 af, Depth> 2.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2yr Rainfall=3.38"

Area (sf)	CN	Description
20,578	98	Unconnected roofs, HSG A
20,578		100.00% Impervious Area
20,578		100.00% Unconnected

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Type III 24-hr 2yr Rainfall=3.38"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, 10

Summary for Subcatchment PC3: ROOF

Runoff = 0.52 cfs @ 12.14 hrs, Volume= 0.045 af, Depth> 2.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2yr Rainfall=3.38"

Area (sf)	CN	Description
8,018	98	Roofs, HSG A
8,018		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, 10

Summary for Subcatchment PC4: PARKING

Runoff = 0.50 cfs @ 12.15 hrs, Volume= 0.038 af, Depth> 1.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2yr Rainfall=3.38"

Area (sf)	CN	Description
10,217	98	Paved roads w/curbs & sewers, HSG A
5,210	39	>75% Grass cover, Good, HSG A
15,427	78	Weighted Average
5,210		33.77% Pervious Area
10,217		66.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, 10

Summary for Subcatchment PC5: PARKING

Runoff = 1.13 cfs @ 12.14 hrs, Volume= 0.087 af, Depth> 1.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2yr Rainfall=3.38"

Area (sf)	CN	Description
18,997	98	Paved roads w/curbs & sewers, HSG A
4,509	39	>75% Grass cover, Good, HSG A
23,506	87	Weighted Average
4,509		19.18% Pervious Area
18,997		80.82% Impervious Area

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Type III 24-hr 2yr Rainfall=3.38"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, 10

Summary for Subcatchment PC6: ROOFS

Runoff = 0.46 cfs @ 12.14 hrs, Volume= 0.039 af, Depth> 2.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2yr Rainfall=3.38"

Area (sf)	CN	Description
6,984	98	Roofs, HSG A
6,984		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, 10

Summary for Reach 3R: (new Reach)

Inflow Area = 2.622 ac, 72.22% Impervious, Inflow Depth > 0.03" for 2yr event

Inflow = 0.03 cfs @ 12.46 hrs, Volume= 0.006 af

Outflow = 0.03 cfs @ 12.46 hrs, Volume= 0.006 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Pond P1: V8's (A)

Inflow Area = 0.931 ac, 84.88% Impervious, Inflow Depth > 2.19" for 2yr event

Inflow = 2.05 cfs @ 12.14 hrs, Volume= 0.170 af

Outflow = 0.23 cfs @ 13.02 hrs, Volume= 0.170 af, Atten= 89%, Lag= 52.7 min

Discarded = 0.23 cfs @ 13.02 hrs, Volume= 0.170 af

Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 71.62' @ 13.02 hrs Surf.Area= 4,012 sf Storage= 2,837 cf

Plug-Flow detention time= 101.8 min calculated for 0.170 af (100% of inflow)

Center-of-Mass det. time= 100.6 min (862.0 - 761.4)

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Type III 24-hr 2yr Rainfall=3.38"

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Volume	Invert	Avail.Storage	Storage Description
#1A	70.00'	5,897 cf	51.00'W x 78.67'L x 5.17'H Field A 20,730 cf Overall - 5,987 cf Embedded = 14,743 cf x 40.0% Voids
#2A	71.50'	5,987 cf	Cultec R-V8HD x 99 Inside #1 Effective Size= 55.2"W x 32.0"H => 8.68 sf x 7.50'L = 65.1 cf Overall Size= 60.0"W x 32.0"H x 8.00'L with 0.50' Overlap Row Length Adjustment= -5.83' x 8.68 sf x 9 rows
#3	72.00'	126 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
		12,010 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
72.00	28	0	0
76.50	28	126	126

Device	Routing	Invert	Outlet Devices
#1	Discarded	70.00'	2.410 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 0.00'
#2	Primary	76.00'	2.0' long x 2.0' breadth Broad-Crested Rectangular Weir X 2.00 Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32
#3	Secondary	76.00'	2.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Discarded OutFlow Max=0.23 cfs @ 13.02 hrs HW=71.62' (Free Discharge)
 ↑1=Exfiltration (Controls 0.23 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=70.00' (Free Discharge)
 ↑2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=70.00' (Free Discharge)
 ↑3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond P2: V8's (B)

Inflow Area = 1.469 ac, 82.28% Impervious, Inflow Depth > 0.68" for 2yr event
 Inflow = 1.02 cfs @ 12.14 hrs, Volume= 0.083 af
 Outflow = 0.10 cfs @ 13.33 hrs, Volume= 0.079 af, Atten= 90%, Lag= 71.3 min
 Discarded = 0.10 cfs @ 13.33 hrs, Volume= 0.079 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

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Type III 24-hr 2yr Rainfall=3.38"

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Peak Elev= 59.56' @ 13.33 hrs Surf.Area= 1,707 sf Storage= 1,485 cf

Plug-Flow detention time= 138.7 min calculated for 0.079 af (95% of inflow)
Center-of-Mass det. time= 120.2 min (892.7 - 772.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	58.00'	2,163 cf	34.50'W x 48.67'L x 4.67'H Field A 7,836 cf Overall - 2,429 cf Embedded = 5,406 cf x 40.0% Voids
#2A	59.00'	2,429 cf	Cultec R-V8HD x 42 Inside #1 Effective Size= 55.2"W x 32.0"H => 8.68 sf x 7.50'L = 65.1 cf Overall Size= 60.0"W x 32.0"H x 8.00'L with 0.50' Overlap Row Length Adjustment= -5.83' x 8.68 sf x 6 rows
#3	59.00'	101 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
		4,693 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
59.00	28	0	0
62.60	28	101	101

Device	Routing	Invert	Outlet Devices
#1	Discarded	58.00'	2.410 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 1.00'
#2	Primary	61.00'	12.0" Round Culvert L= 50.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 61.00' / 56.50' S= 0.0900 '/ Cc= 0.900 n= 0.009 PVC, smooth interior, Flow Area= 0.79 sf

Discarded OutFlow Max=0.10 cfs @ 13.33 hrs HW=59.56' (Free Discharge)
↑1=Exfiltration (Controls 0.10 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=58.00' (Free Discharge)
↑2=Culvert (Controls 0.00 cfs)

Summary for Pond P3: V8's (C)

Inflow Area = 2.169 ac, 83.22% Impervious, Inflow Depth > 0.70" for 2yr event
 Inflow = 1.59 cfs @ 12.14 hrs, Volume= 0.127 af
 Outflow = 0.10 cfs @ 14.40 hrs, Volume= 0.084 af, Atten= 94%, Lag= 135.6 min
 Discarded = 0.10 cfs @ 14.40 hrs, Volume= 0.084 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 54.36' @ 14.40 hrs Surf.Area= 1,672 sf Storage= 2,800 cf

Plug-Flow detention time= 180.0 min calculated for 0.084 af (66% of inflow)
Center-of-Mass det. time= 109.0 min (880.9 - 772.0)

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Type III 24-hr 2yr Rainfall=3.38"

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Volume	Invert	Avail.Storage	Storage Description
#1A	51.80'	2,162 cf	23.50'W x 71.17'L x 4.67'H Field A 7,805 cf Overall - 2,400 cf Embedded = 5,405 cf x 40.0% Voids
#2A	52.80'	2,400 cf	Cultec R-V8HD x 40 Inside #1 Effective Size= 55.2"W x 32.0"H => 8.68 sf x 7.50'L = 65.1 cf Overall Size= 60.0"W x 32.0"H x 8.00'L with 0.50' Overlap Row Length Adjustment= -5.83' x 8.68 sf x 4 rows
#3	59.00'	101 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
		4,663 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
59.00	28	0	0
62.60	28	101	101

Device	Routing	Invert	Outlet Devices
#1	Discarded	51.80'	2.410 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 1.00'
#2	Primary	57.70'	2.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Discarded OutFlow Max=0.10 cfs @ 14.40 hrs HW=54.36' (Free Discharge)

↑1=Exfiltration (Controls 0.10 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=51.80' (Free Discharge)

↑2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Subcatchment 3S: UNCAPTURED FLOW

Runoff = 0.27 cfs @ 12.18 hrs, Volume= 0.028 af, Depth> 0.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10yr Rainfall=5.22"

Area (sf)	CN	Description
15,873	39	>75% Grass cover, Good, HSG A
2,591	98	Paved parking, HSG A
1,264	98	Roofs, HSG A
19,728	51	Weighted Average
15,873		80.46% Pervious Area
3,855		19.54% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, 10

Summary for Subcatchment PC1: to CATCH BASIN

Runoff = 1.43 cfs @ 12.14 hrs, Volume= 0.110 af, Depth> 2.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10yr Rainfall=5.22"

Area (sf)	CN	Description
6,131	39	>75% Grass cover, Good, HSG A
13,837	98	Paved parking, HSG A
19,968	80	Weighted Average
6,131		30.70% Pervious Area
13,837		69.30% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, 10

Summary for Subcatchment PC2: ROOFS

Runoff = 2.09 cfs @ 12.14 hrs, Volume= 0.182 af, Depth> 4.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10yr Rainfall=5.22"

Area (sf)	CN	Description
20,578	98	Unconnected roofs, HSG A
20,578		100.00% Impervious Area
20,578		100.00% Unconnected

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Type III 24-hr 10yr Rainfall=5.22"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, 10

Summary for Subcatchment PC3: ROOF

Runoff = 0.81 cfs @ 12.14 hrs, Volume= 0.071 af, Depth> 4.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10yr Rainfall=5.22"

Area (sf)	CN	Description
8,018	98	Roofs, HSG A
8,018		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, 10

Summary for Subcatchment PC4: PARKING

Runoff = 1.04 cfs @ 12.14 hrs, Volume= 0.080 af, Depth> 2.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10yr Rainfall=5.22"

Area (sf)	CN	Description
10,217	98	Paved roads w/curbs & sewers, HSG A
5,210	39	>75% Grass cover, Good, HSG A
15,427	78	Weighted Average
5,210		33.77% Pervious Area
10,217		66.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, 10

Summary for Subcatchment PC5: PARKING

Runoff = 2.02 cfs @ 12.14 hrs, Volume= 0.160 af, Depth> 3.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10yr Rainfall=5.22"

Area (sf)	CN	Description
18,997	98	Paved roads w/curbs & sewers, HSG A
4,509	39	>75% Grass cover, Good, HSG A
23,506	87	Weighted Average
4,509		19.18% Pervious Area
18,997		80.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, 10

Summary for Subcatchment PC6: ROOFS

Runoff = 0.71 cfs @ 12.14 hrs, Volume= 0.062 af, Depth> 4.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10yr Rainfall=5.22"

Area (sf)	CN	Description
6,984	98	Roofs, HSG A
6,984		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, 10

Summary for Reach 3R: (new Reach)

Inflow Area = 2.622 ac, 72.22% Impervious, Inflow Depth > 0.27" for 10yr event
Inflow = 1.34 cfs @ 12.55 hrs, Volume= 0.059 af
Outflow = 1.34 cfs @ 12.55 hrs, Volume= 0.059 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Pond P1: V8's (A)

Inflow Area = 0.931 ac, 84.88% Impervious, Inflow Depth > 3.76" for 10yr event
Inflow = 3.52 cfs @ 12.14 hrs, Volume= 0.292 af
Outflow = 0.23 cfs @ 14.03 hrs, Volume= 0.212 af, Atten= 93%, Lag= 113.7 min
Discarded = 0.23 cfs @ 14.03 hrs, Volume= 0.212 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 72.55' @ 14.03 hrs Surf.Area= 4,040 sf Storage= 6,012 cf

Plug-Flow detention time= 167.2 min calculated for 0.212 af (73% of inflow)
Center-of-Mass det. time= 102.2 min (859.1 - 757.0)

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Type III 24-hr 10yr Rainfall=5.22"

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Volume	Invert	Avail.Storage	Storage Description
#1A	70.00'	5,897 cf	51.00'W x 78.67'L x 5.17'H Field A 20,730 cf Overall - 5,987 cf Embedded = 14,743 cf x 40.0% Voids
#2A	71.50'	5,987 cf	Cultec R-V8HD x 99 Inside #1 Effective Size= 55.2"W x 32.0"H => 8.68 sf x 7.50'L = 65.1 cf Overall Size= 60.0"W x 32.0"H x 8.00'L with 0.50' Overlap Row Length Adjustment= -5.83' x 8.68 sf x 9 rows
#3	72.00'	126 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
		12,010 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
72.00	28	0	0
76.50	28	126	126

Device	Routing	Invert	Outlet Devices
#1	Discarded	70.00'	2.410 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 0.00'
#2	Primary	76.00'	2.0' long x 2.0' breadth Broad-Crested Rectangular Weir X 2.00 Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32
#3	Secondary	76.00'	2.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Discarded OutFlow Max=0.23 cfs @ 14.03 hrs HW=72.55' (Free Discharge)
 ↑1=Exfiltration (Controls 0.23 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=70.00' (Free Discharge)
 ↑2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=70.00' (Free Discharge)
 ↑3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond P2: V8's (B)

Inflow Area = 1.469 ac, 82.28% Impervious, Inflow Depth > 1.23" for 10yr event
 Inflow = 1.85 cfs @ 12.14 hrs, Volume= 0.151 af
 Outflow = 0.11 cfs @ 14.75 hrs, Volume= 0.091 af, Atten= 94%, Lag= 156.7 min
 Discarded = 0.10 cfs @ 14.75 hrs, Volume= 0.091 af
 Primary = 0.00 cfs @ 14.75 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

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Type III 24-hr 10yr Rainfall=5.22"

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Peak Elev= 61.03' @ 14.75 hrs Surf.Area= 1,707 sf Storage= 3,424 cf

Plug-Flow detention time= 172.6 min calculated for 0.091 af (61% of inflow)
Center-of-Mass det. time= 94.4 min (861.4 - 767.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	58.00'	2,163 cf	34.50'W x 48.67'L x 4.67'H Field A 7,836 cf Overall - 2,429 cf Embedded = 5,406 cf x 40.0% Voids
#2A	59.00'	2,429 cf	Cultec R-V8HD x 42 Inside #1 Effective Size= 55.2"W x 32.0"H => 8.68 sf x 7.50'L = 65.1 cf Overall Size= 60.0"W x 32.0"H x 8.00'L with 0.50' Overlap Row Length Adjustment= -5.83' x 8.68 sf x 6 rows
#3	59.00'	101 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
		4,693 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
59.00	28	0	0
62.60	28	101	101

Device	Routing	Invert	Outlet Devices
#1	Discarded	58.00'	2.410 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 1.00'
#2	Primary	61.00'	12.0" Round Culvert L= 50.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 61.00' / 56.50' S= 0.0900 '/ Cc= 0.900 n= 0.009 PVC, smooth interior, Flow Area= 0.79 sf

Discarded OutFlow Max=0.10 cfs @ 14.75 hrs HW=61.03' (Free Discharge)
↑1=Exfiltration (Controls 0.10 cfs)

Primary OutFlow Max=0.00 cfs @ 14.75 hrs HW=61.03' (Free Discharge)
↑2=Culvert (Inlet Controls 0.00 cfs @ 0.61 fps)

Summary for Pond P3: V8's (C)

Inflow Area = 2.169 ac, 83.22% Impervious, Inflow Depth > 1.23" for 10yr event
 Inflow = 2.73 cfs @ 12.14 hrs, Volume= 0.222 af
 Outflow = 1.31 cfs @ 12.55 hrs, Volume= 0.130 af, Atten= 52%, Lag= 24.5 min
 Discarded = 0.11 cfs @ 12.53 hrs, Volume= 0.098 af
 Primary = 1.21 cfs @ 12.55 hrs, Volume= 0.031 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 58.20' @ 12.53 hrs Surf.Area= 1,672 sf Storage= 4,562 cf

Plug-Flow detention time= 148.2 min calculated for 0.130 af (58% of inflow)
Center-of-Mass det. time= 69.7 min (832.1 - 762.4)

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Type III 24-hr 10yr Rainfall=5.22"

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Volume	Invert	Avail.Storage	Storage Description
#1A	51.80'	2,162 cf	23.50'W x 71.17'L x 4.67'H Field A 7,805 cf Overall - 2,400 cf Embedded = 5,405 cf x 40.0% Voids
#2A	52.80'	2,400 cf	Cultec R-V8HD x 40 Inside #1 Effective Size= 55.2"W x 32.0"H => 8.68 sf x 7.50'L = 65.1 cf Overall Size= 60.0"W x 32.0"H x 8.00'L with 0.50' Overlap Row Length Adjustment= -5.83' x 8.68 sf x 4 rows
#3	59.00'	101 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
		4,663 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
59.00	28	0	0
62.60	28	101	101

Device	Routing	Invert	Outlet Devices
#1	Discarded	51.80'	2.410 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 1.00'
#2	Primary	57.70'	2.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Discarded OutFlow Max=0.10 cfs @ 12.53 hrs HW=57.98' (Free Discharge)

↑1=Exfiltration (Controls 0.10 cfs)

Primary OutFlow Max=1.15 cfs @ 12.55 hrs HW=58.07' (Free Discharge)

↑2=Broad-Crested Rectangular Weir (Weir Controls 1.15 cfs @ 1.57 fps)

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Type III 24-hr 25yr Rainfall=6.36"

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Summary for Subcatchment 3S: UNCAPTURED FLOW

Runoff = 0.54 cfs @ 12.17 hrs, Volume= 0.047 af, Depth> 1.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25yr Rainfall=6.36"

Area (sf)	CN	Description
15,873	39	>75% Grass cover, Good, HSG A
2,591	98	Paved parking, HSG A
1,264	98	Roofs, HSG A
19,728	51	Weighted Average
15,873		80.46% Pervious Area
3,855		19.54% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, 10

Summary for Subcatchment PC1: to CATCH BASIN

Runoff = 1.90 cfs @ 12.14 hrs, Volume= 0.147 af, Depth> 3.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25yr Rainfall=6.36"

Area (sf)	CN	Description
6,131	39	>75% Grass cover, Good, HSG A
13,837	98	Paved parking, HSG A
19,968	80	Weighted Average
6,131		30.70% Pervious Area
13,837		69.30% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, 10

Summary for Subcatchment PC2: ROOFS

Runoff = 2.55 cfs @ 12.14 hrs, Volume= 0.223 af, Depth> 5.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25yr Rainfall=6.36"

Area (sf)	CN	Description
20,578	98	Unconnected roofs, HSG A
20,578		100.00% Impervious Area
20,578		100.00% Unconnected

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Type III 24-hr 25yr Rainfall=6.36"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, 10

Summary for Subcatchment PC3: ROOF

Runoff = 0.99 cfs @ 12.14 hrs, Volume= 0.087 af, Depth> 5.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25yr Rainfall=6.36"

Area (sf)	CN	Description
8,018	98	Roofs, HSG A
8,018		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, 10

Summary for Subcatchment PC4: PARKING

Runoff = 1.39 cfs @ 12.14 hrs, Volume= 0.108 af, Depth> 3.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25yr Rainfall=6.36"

Area (sf)	CN	Description
10,217	98	Paved roads w/curbs & sewers, HSG A
5,210	39	>75% Grass cover, Good, HSG A
15,427	78	Weighted Average
5,210		33.77% Pervious Area
10,217		66.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, 10

Summary for Subcatchment PC5: PARKING

Runoff = 2.57 cfs @ 12.14 hrs, Volume= 0.206 af, Depth> 4.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25yr Rainfall=6.36"

Area (sf)	CN	Description
18,997	98	Paved roads w/curbs & sewers, HSG A
4,509	39	>75% Grass cover, Good, HSG A
23,506	87	Weighted Average
4,509		19.18% Pervious Area
18,997		80.82% Impervious Area

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Type III 24-hr 25yr Rainfall=6.36"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, 10

Summary for Subcatchment PC6: ROOFS

Runoff = 0.87 cfs @ 12.14 hrs, Volume= 0.076 af, Depth> 5.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25yr Rainfall=6.36"

Area (sf)	CN	Description
6,984	98	Roofs, HSG A
6,984		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, 10

Summary for Reach 3R: (new Reach)

Inflow Area = 2.622 ac, 72.22% Impervious, Inflow Depth > 0.74" for 25yr event
Inflow = 2.82 cfs @ 12.29 hrs, Volume= 0.162 af
Outflow = 2.82 cfs @ 12.29 hrs, Volume= 0.162 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Pond P1: V8's (A)

Inflow Area = 0.931 ac, 84.88% Impervious, Inflow Depth > 4.77" for 25yr event
Inflow = 4.44 cfs @ 12.14 hrs, Volume= 0.370 af
Outflow = 0.24 cfs @ 14.77 hrs, Volume= 0.225 af, Atten= 95%, Lag= 157.7 min
Discarded = 0.24 cfs @ 14.77 hrs, Volume= 0.225 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 73.31' @ 14.77 hrs Surf.Area= 4,040 sf Storage= 8,369 cf

Plug-Flow detention time= 166.3 min calculated for 0.225 af (61% of inflow)
Center-of-Mass det. time= 89.3 min (844.0 - 754.8)

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Type III 24-hr 25yr Rainfall=6.36"

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Volume	Invert	Avail.Storage	Storage Description
#1A	70.00'	5,897 cf	51.00'W x 78.67'L x 5.17'H Field A 20,730 cf Overall - 5,987 cf Embedded = 14,743 cf x 40.0% Voids
#2A	71.50'	5,987 cf	Cultec R-V8HD x 99 Inside #1 Effective Size= 55.2"W x 32.0"H => 8.68 sf x 7.50'L = 65.1 cf Overall Size= 60.0"W x 32.0"H x 8.00'L with 0.50' Overlap Row Length Adjustment= -5.83' x 8.68 sf x 9 rows
#3	72.00'	126 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
		12,010 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
72.00	28	0	0
76.50	28	126	126

Device	Routing	Invert	Outlet Devices
#1	Discarded	70.00'	2.410 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 0.00'
#2	Primary	76.00'	2.0' long x 2.0' breadth Broad-Crested Rectangular Weir X 2.00 Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32
#3	Secondary	76.00'	2.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Discarded OutFlow Max=0.24 cfs @ 14.77 hrs HW=73.31' (Free Discharge)
 ↑1=Exfiltration (Controls 0.24 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=70.00' (Free Discharge)
 ↑2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=70.00' (Free Discharge)
 ↑3=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond P2: V8's (B)

Inflow Area = 1.469 ac, 82.28% Impervious, Inflow Depth > 1.59" for 25yr event
 Inflow = 2.39 cfs @ 12.14 hrs, Volume= 0.194 af
 Outflow = 0.60 cfs @ 12.57 hrs, Volume= 0.130 af, Atten= 75%, Lag= 26.1 min
 Discarded = 0.10 cfs @ 12.57 hrs, Volume= 0.096 af
 Primary = 0.50 cfs @ 12.57 hrs, Volume= 0.034 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

prop conditions-v4-CCC2

Type III 24-hr 25yr Rainfall=6.36"

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Peak Elev= 61.35' @ 12.57 hrs Surf.Area= 1,707 sf Storage= 3,750 cf

Plug-Flow detention time= 140.0 min calculated for 0.130 af (67% of inflow)
Center-of-Mass det. time= 68.5 min (832.5 - 764.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	58.00'	2,163 cf	34.50'W x 48.67'L x 4.67'H Field A 7,836 cf Overall - 2,429 cf Embedded = 5,406 cf x 40.0% Voids
#2A	59.00'	2,429 cf	Cultec R-V8HD x 42 Inside #1 Effective Size= 55.2"W x 32.0"H => 8.68 sf x 7.50'L = 65.1 cf Overall Size= 60.0"W x 32.0"H x 8.00'L with 0.50' Overlap Row Length Adjustment= -5.83' x 8.68 sf x 6 rows
#3	59.00'	101 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
		4,693 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
59.00	28	0	0
62.60	28	101	101

Device	Routing	Invert	Outlet Devices
#1	Discarded	58.00'	2.410 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 1.00'
#2	Primary	61.00'	12.0" Round Culvert L= 50.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 61.00' / 56.50' S= 0.0900 '/ Cc= 0.900 n= 0.009 PVC, smooth interior, Flow Area= 0.79 sf

Discarded OutFlow Max=0.10 cfs @ 12.57 hrs HW=61.35' (Free Discharge)
↑1=Exfiltration (Controls 0.10 cfs)

Primary OutFlow Max=0.48 cfs @ 12.57 hrs HW=61.35' (Free Discharge)
↑2=Culvert (Inlet Controls 0.48 cfs @ 2.00 fps)

Summary for Pond P3: V8's (C)

Inflow Area = 2.169 ac, 83.22% Impervious, Inflow Depth > 1.75" for 25yr event
 Inflow = 3.44 cfs @ 12.14 hrs, Volume= 0.316 af
 Outflow = 2.51 cfs @ 12.29 hrs, Volume= 0.219 af, Atten= 27%, Lag= 9.1 min
 Discarded = 0.11 cfs @ 12.30 hrs, Volume= 0.104 af
 Primary = 2.41 cfs @ 12.29 hrs, Volume= 0.115 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 58.29' @ 12.30 hrs Surf.Area= 1,672 sf Storage= 4,562 cf

Plug-Flow detention time= 105.2 min calculated for 0.219 af (69% of inflow)
Center-of-Mass det. time= 41.1 min (803.3 - 762.2)

prop conditions-v4-CCC2

Type III 24-hr 25yr Rainfall=6.36"

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Volume	Invert	Avail.Storage	Storage Description
#1A	51.80'	2,162 cf	23.50'W x 71.17'L x 4.67'H Field A 7,805 cf Overall - 2,400 cf Embedded = 5,405 cf x 40.0% Voids
#2A	52.80'	2,400 cf	Cultec R-V8HD x 40 Inside #1 Effective Size= 55.2"W x 32.0"H => 8.68 sf x 7.50'L = 65.1 cf Overall Size= 60.0"W x 32.0"H x 8.00'L with 0.50' Overlap Row Length Adjustment= -5.83' x 8.68 sf x 4 rows
#3	59.00'	101 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
		4,663 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
59.00	28	0	0
62.60	28	101	101

Device	Routing	Invert	Outlet Devices
#1	Discarded	51.80'	2.410 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 1.00'
#2	Primary	57.70'	2.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Discarded OutFlow Max=0.11 cfs @ 12.30 hrs HW=58.29' (Free Discharge)

↑1=Exfiltration (Controls 0.11 cfs)

Primary OutFlow Max=2.26 cfs @ 12.29 hrs HW=58.27' (Free Discharge)

↑2=Broad-Crested Rectangular Weir (Weir Controls 2.26 cfs @ 1.98 fps)

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Type III 24-hr 100yr Rainfall=8.12"

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Summary for Subcatchment 3S: UNCAPTURED FLOW

Runoff = 1.04 cfs @ 12.16 hrs, Volume= 0.083 af, Depth> 2.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100yr Rainfall=8.12"

Area (sf)	CN	Description
15,873	39	>75% Grass cover, Good, HSG A
2,591	98	Paved parking, HSG A
1,264	98	Roofs, HSG A
19,728	51	Weighted Average
15,873		80.46% Pervious Area
3,855		19.54% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, 10

Summary for Subcatchment PC1: to CATCH BASIN

Runoff = 2.62 cfs @ 12.14 hrs, Volume= 0.206 af, Depth> 5.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100yr Rainfall=8.12"

Area (sf)	CN	Description
6,131	39	>75% Grass cover, Good, HSG A
13,837	98	Paved parking, HSG A
19,968	80	Weighted Average
6,131		30.70% Pervious Area
13,837		69.30% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, 10

Summary for Subcatchment PC2: ROOFS

Runoff = 3.26 cfs @ 12.14 hrs, Volume= 0.286 af, Depth> 7.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100yr Rainfall=8.12"

Area (sf)	CN	Description
20,578	98	Unconnected roofs, HSG A
20,578		100.00% Impervious Area
20,578		100.00% Unconnected

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Type III 24-hr 100yr Rainfall=8.12"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, 10

Summary for Subcatchment PC3: ROOF

Runoff = 1.27 cfs @ 12.14 hrs, Volume= 0.111 af, Depth> 7.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100yr Rainfall=8.12"

Area (sf)	CN	Description
8,018	98	Roofs, HSG A
8,018		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, 10

Summary for Subcatchment PC4: PARKING

Runoff = 1.95 cfs @ 12.14 hrs, Volume= 0.152 af, Depth> 5.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100yr Rainfall=8.12"

Area (sf)	CN	Description
10,217	98	Paved roads w/curbs & sewers, HSG A
5,210	39	>75% Grass cover, Good, HSG A
15,427	78	Weighted Average
5,210		33.77% Pervious Area
10,217		66.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, 10

Summary for Subcatchment PC5: PARKING

Runoff = 3.42 cfs @ 12.14 hrs, Volume= 0.279 af, Depth> 6.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100yr Rainfall=8.12"

Area (sf)	CN	Description
18,997	98	Paved roads w/curbs & sewers, HSG A
4,509	39	>75% Grass cover, Good, HSG A
23,506	87	Weighted Average
4,509		19.18% Pervious Area
18,997		80.82% Impervious Area

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Type III 24-hr 100yr Rainfall=8.12"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, 10

Summary for Subcatchment PC6: ROOFS

Runoff = 1.11 cfs @ 12.14 hrs, Volume= 0.097 af, Depth> 7.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100yr Rainfall=8.12"

Area (sf)	CN	Description
6,984	98	Roofs, HSG A
6,984		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, 10

Summary for Reach 3R: (new Reach)

Inflow Area = 2.622 ac, 72.22% Impervious, Inflow Depth > 1.59" for 100yr event
Inflow = 8.67 cfs @ 12.25 hrs, Volume= 0.347 af
Outflow = 8.67 cfs @ 12.25 hrs, Volume= 0.347 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Pond P1: V8's (A)

Inflow Area = 0.931 ac, 84.88% Impervious, Inflow Depth > 6.34" for 100yr event
Inflow = 5.88 cfs @ 12.14 hrs, Volume= 0.492 af
Outflow = 0.41 cfs @ 13.97 hrs, Volume= 0.253 af, Atten= 93%, Lag= 109.9 min
Discarded = 0.24 cfs @ 13.95 hrs, Volume= 0.244 af
Primary = 0.11 cfs @ 13.97 hrs, Volume= 0.006 af
Secondary = 0.06 cfs @ 13.97 hrs, Volume= 0.003 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 76.05' @ 13.95 hrs Surf.Area= 4,040 sf Storage= 11,997 cf

Plug-Flow detention time= 164.6 min calculated for 0.252 af (51% of inflow)
Center-of-Mass det. time= 75.6 min (827.5 - 751.8)

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Type III 24-hr 100yr Rainfall=8.12"

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Volume	Invert	Avail.Storage	Storage Description
#1A	70.00'	5,897 cf	51.00'W x 78.67'L x 5.17'H Field A 20,730 cf Overall - 5,987 cf Embedded = 14,743 cf x 40.0% Voids
#2A	71.50'	5,987 cf	Cultec R-V8HD x 99 Inside #1 Effective Size= 55.2"W x 32.0"H => 8.68 sf x 7.50'L = 65.1 cf Overall Size= 60.0"W x 32.0"H x 8.00'L with 0.50' Overlap Row Length Adjustment= -5.83' x 8.68 sf x 9 rows
#3	72.00'	126 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
		12,010 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
72.00	28	0	0
76.50	28	126	126

Device	Routing	Invert	Outlet Devices
#1	Discarded	70.00'	2.410 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 0.00'
#2	Primary	76.00'	2.0' long x 2.0' breadth Broad-Crested Rectangular Weir X 2.00 Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32
#3	Secondary	76.00'	2.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Discarded OutFlow Max=0.24 cfs @ 13.95 hrs HW=76.05' (Free Discharge)
 ↑1=Exfiltration (Controls 0.24 cfs)

Primary OutFlow Max=0.10 cfs @ 13.97 hrs HW=76.04' (Free Discharge)
 ↑2=Broad-Crested Rectangular Weir (Weir Controls 0.10 cfs @ 0.54 fps)

Secondary OutFlow Max=0.05 cfs @ 13.97 hrs HW=76.04' (Free Discharge)
 ↑3=Broad-Crested Rectangular Weir (Weir Controls 0.05 cfs @ 0.54 fps)

Summary for Pond P2: V8's (B)

Inflow Area = 1.469 ac, 82.28% Impervious, Inflow Depth > 2.20" for 100yr event
 Inflow = 3.22 cfs @ 12.14 hrs, Volume= 0.270 af
 Outflow = 1.95 cfs @ 12.31 hrs, Volume= 0.199 af, Atten= 39%, Lag= 10.3 min
 Discarded = 0.10 cfs @ 12.31 hrs, Volume= 0.102 af
 Primary = 1.85 cfs @ 12.31 hrs, Volume= 0.097 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

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Type III 24-hr 100yr Rainfall=8.12"

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Peak Elev= 61.75' @ 12.31 hrs Surf.Area= 1,707 sf Storage= 4,051 cf

Plug-Flow detention time= 106.8 min calculated for 0.199 af (74% of inflow)
Center-of-Mass det. time= 43.8 min (806.3 - 762.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	58.00'	2,163 cf	34.50'W x 48.67'L x 4.67'H Field A 7,836 cf Overall - 2,429 cf Embedded = 5,406 cf x 40.0% Voids
#2A	59.00'	2,429 cf	Cultec R-V8HD x 42 Inside #1 Effective Size= 55.2"W x 32.0"H => 8.68 sf x 7.50'L = 65.1 cf Overall Size= 60.0"W x 32.0"H x 8.00'L with 0.50' Overlap Row Length Adjustment= -5.83' x 8.68 sf x 6 rows
#3	59.00'	101 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
		4,693 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
59.00	28	0	0
62.60	28	101	101

Device	Routing	Invert	Outlet Devices
#1	Discarded	58.00'	2.410 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 1.00'
#2	Primary	61.00'	12.0" Round Culvert L= 50.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 61.00' / 56.50' S= 0.0900 '/ Cc= 0.900 n= 0.009 PVC, smooth interior, Flow Area= 0.79 sf

Discarded OutFlow Max=0.10 cfs @ 12.31 hrs HW=61.74' (Free Discharge)
↑1=Exfiltration (Controls 0.10 cfs)

Primary OutFlow Max=1.82 cfs @ 12.31 hrs HW=61.74' (Free Discharge)
↑2=Culvert (Inlet Controls 1.82 cfs @ 2.92 fps)

Summary for Pond P3: V8's (C)

Inflow Area = 2.169 ac, 83.22% Impervious, Inflow Depth > 2.63" for 100yr event
 Inflow = 4.73 cfs @ 12.25 hrs, Volume= 0.476 af
 Outflow = 7.95 cfs @ 12.25 hrs, Volume= 0.374 af, Atten= 0%, Lag= 0.0 min
 Discarded = 0.11 cfs @ 12.25 hrs, Volume= 0.111 af
 Primary = 7.84 cfs @ 12.25 hrs, Volume= 0.264 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 58.97' @ 12.25 hrs Surf.Area= 1,672 sf Storage= 4,562 cf

Plug-Flow detention time= 74.2 min calculated for 0.373 af (78% of inflow)
Center-of-Mass det. time= 25.1 min (786.1 - 760.9)

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Type III 24-hr 100yr Rainfall=8.12"

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Volume	Invert	Avail.Storage	Storage Description
#1A	51.80'	2,162 cf	23.50'W x 71.17'L x 4.67'H Field A 7,805 cf Overall - 2,400 cf Embedded = 5,405 cf x 40.0% Voids
#2A	52.80'	2,400 cf	Cultec R-V8HD x 40 Inside #1 Effective Size= 55.2"W x 32.0"H => 8.68 sf x 7.50'L = 65.1 cf Overall Size= 60.0"W x 32.0"H x 8.00'L with 0.50' Overlap Row Length Adjustment= -5.83' x 8.68 sf x 4 rows
#3	59.00'	101 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
		4,663 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
59.00	28	0	0
62.60	28	101	101

Device	Routing	Invert	Outlet Devices
#1	Discarded	51.80'	2.410 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 1.00'
#2	Primary	57.70'	2.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Discarded OutFlow Max=0.11 cfs @ 12.25 hrs HW=58.97' (Free Discharge)

↑1=Exfiltration (Controls 0.11 cfs)

Primary OutFlow Max=7.81 cfs @ 12.25 hrs HW=58.97' (Free Discharge)

↑2=Broad-Crested Rectangular Weir (Weir Controls 7.81 cfs @ 3.07 fps)



GENERAL NOTES:

ZONING: GENERAL BUSINESS
 MINIMUM REQUIREMENTS:
 AREA: 15,000 S.F.
 FRONT SETBACK: 10'
 SIDE SETBACK: 10'
 REAR SETBACK: 20'
 LOT FRONTAGE/WIDTH: 50'/100'
 MAX HEIGHT: 3 STY
 BUILDING COVERAGE: 70%
 MIN OPEN SPACE: 10%

CURRENT OWNER:
 383 WASHINGTON TREET LLC
 519 ALBANY STREET, SUITE 200
 BOSTON, MA 02122
 DEED REFERENCE:
 Book 30862 Page 314
 Book 14283 Page 545
 Book 14283 Page 550

PLAN REFERENCE:
 Book 455 Page 272
 Book 4284 Page 179
 LC PLAN 3751D

ASSESSORS REFERENCE:
 MAP 2028 LOT 31

PROJECT TITLE & LOCATION:

**PARKSIDE APARTMENTS
 40B RESIDENTIAL PROJECT**
 in
 BRAINTREE, MA

PLAN TITLE:

EXISTING WATERSHED

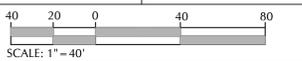
PREPARED FOR:

THE HOLLAND COMPANIES
 519 ALBANY STREET
 SUITE 200
 BOSTON, MA 02118

DATE: FEBRUARY 2, 2017

REVISED:

JOB NUMBER: 185.033 SHEET 1 OF 2



LEGEND:

EXISTING:		PROPOSED:	
	- LOCUS PROPERTY LINE		- TREE LINE
	- SEWER MANHOLE (SMH)		- SEWER MANHOLE (SMH)
	- DRAIN MANHOLE (DMH)		- DRAIN MANHOLE (DMH)
	- CATCH BASIN (CB)		- CATCH BASIN (CB)
	- STONEWALL		- STONEWALL
	- GAS VALVE		- GAS VALVE
	- WATER VALVE		- WATER VALVE
	- WATER SERVICE		- WATER SERVICE
	- HYDRANT		- HYDRANT
	- UTILITY POLE		- UTILITY POLE
	- NOW OR FORMERLY		- NOW OR FORMERLY
	- IRON PIPE OR REBAR		- IRON PIPE OR REBAR
	- DRAIN PIPE		- DRAIN PIPE
	- WATER MAIN		- WATER MAIN
	- GAS SERVICE		- GAS SERVICE
	- UNDERGROUND POWER		- UNDERGROUND POWER
	- UNDERGROUND TELEPHONE		- UNDERGROUND TELEPHONE
	- OVERHEAD WIRES		- OVERHEAD WIRES
	- SEWER MAIN		- SEWER MAIN
	- LANDSCAPED AREA		- LANDSCAPED AREA
	- SPOT GRADE		- SPOT GRADE
	- CHAIN LINK FENCE		- CHAIN LINK FENCE
	- TEST PIT		- TEST PIT
	- CONIFEROUS TREE		- CONIFEROUS TREE
	- DECIDUOUS TREE		- DECIDUOUS TREE
	- TO BE REMOVED		- TO BE REMOVED



GENERAL NOTES:

ZONING: GENERAL BUSINESS
 MINIMUM REQUIREMENTS:
 AREA: 15,000 S.F.
 FRONT SETBACK: 10'
 SIDE SETBACK: 10'
 REAR SETBACK: 20'
 LOT FRONTAGE/WIDTH: 50'/100'
 MAX HEIGHT: 3 STY
 BUILDING COVERAGE: 70%
 MIN OPEN SPACE: 10%

CURRENT OWNER:
 383 WASHINGTON TREET LLC
 519 ALBANY STREET, SUITE 200
 BOSTON, MA 02122
 DEED REFERENCE:
 Book 30862 Page 314
 Book 14283 Page 545
 Book 14283 Page 550

PLAN REFERENCE:
 Book 455 Page 272
 Book 4284 Page 179
 LC PLAN 3751D

ASSESSORS REFERENCE:
 MAP 2028 LOT 31

PROJECT TITLE & LOCATION:

**PARKSIDE APARTMENTS
 40B RESIDENTIAL PROJECT**
 in
 BRAINTREE, MA

PLAN TITLE:

PROPOSED WATERSHED

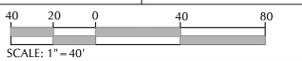
PREPARED FOR:

THE HOLLAND COMPANIES
 519 ALBANY STREET
 SUITE 200
 BOSTON, MA 02118

DATE: FEBRUARY 2, 2017

REVISED:

JOB NUMBER: 185.033 SHEET 2 OF 2



EXISTING:	LEGEND:	PROPOSED:
	- LOCUS PROPERTY LINE	
	- SEWER MANHOLE (SMH)	
	- DRAIN MANHOLE (DMH)	
	- CATCH BASIN (CB)	
	- STONEWALL	
	- GAS VALVE	
	- WATER VALVE	
	- WATER SERVICE	
	- HYDRANT	
	- UTILITY POLE	
	- NOW OR FORMERLY - IRON PIPE OR REBAR	
	- DRAIN PIPE	
	- WATER MAIN	
	- GAS SERVICE	
	- UNDERGROUND POWER	
	- UNDERGROUND TELEPHONE	
	- OVERHEAD WIRES	
	- SEWER MAIN	
	- LANDSCAPED AREA	
	- SPOT GRADE	
	- CHAIN LINK FENCE	
	- TEST PIT	
	- CONIFEROUS TREE	
	- DECIDUOUS TREE	
	- TO BE REMOVED	

