April 21, 2017
By: SRB
195350348 Unit 15 Second Tee Business Park

STORMWATER ANALYSIS SUMMARY

Task:

To perform an abbreviated stormwater runoff analysis of the Unit 15 watershed located at the Second Tee Business Park in Portland, Maine. The site is located within the Presumpscot River Watershed and Water Quantity Control (flooding standards) is not required, as has been approved over previous permitting submittals. The project is required to meet water quality treatment standards. A previously installed ADS Water Quality treatment unit is located on the north side of the Unit 15 area. This unit provides water quality treatment for a closed drainage system that captures the pavement area at the front of the unit 15 building. This treatment was contemplated during the original park design and construction. Additional Best Management Practices (BMP's) urrenlty proposed include a roof line drip edge to treat water runoff from the proposed building roof and a rain garden to treat water runoff from the Unit 15 pavement/gravel surface areas at the rear of the site.

References:

- Unit 15 Second Tee Business Park, Portland, Maine plan set submitted to City Planning Authority for Level II Site Plan approval, dated 04/21/17.
- Maine Department of Environmental Protection Volume III BMP Technical Design Manual

Analysis and Calculations:

The Unit 15 site area consists of an 8,000 SF building and approximately 6,600 SF of proposed impervious area for pavement and gravel surfaces. An additional 1,500 SF of developed area is associated with the landscaped or vegetated areas within the project limits but not otherwise impervious surface. The proposed building will contain a single roof pitch from the north side to the south side. Roof runoff will be collected and treated within a roof line drip edge BMP prior to discharging into a rain garden. A shallow (0.75 ft) raingarden will be constructed on the east perimeter of the paved/gravel area at the rear of the site. Runoff from the hard surfaces will sheet flow into the BMP for water quality treatment through a standard filtering layer. Overall the site's current drainage pattern of sheeting runoff towards the natural drainage gully that bisects the business park will continue. The front of the Unit 15 site area will sheet runoff towards several existing catch basins and these structures are part of an existing drainage collection system. This system discharges into an existing ADS water quality treatment devise that was installed during the original park construction back in 2006/07.

The proposed Drip edge filter will be 8.5 feet wide and contain a 24" stone layer to collect and store roof runoff for treatment. The contributing roof width is 80 ft. which generates a required storage volume of 6.67 CF/LF of building (80' x 1" rainfall/12 = 6.67 CF). The

drip edge will be 8.5 feet wide which provides a storage volume of 6.8 CF/LF of building (8.5' x 24" stone layer x 40% void ratio = 6.8 CF). Similar drip edge configurations have been approved and used on other buildings in the business park, thus this application is not considered unreasonable or extraordinary.

The proposed rain garden includes approximately 960 SF of surface area. The following calculations outline the analysis for the rain garden sizing:

- Contributing impervious area = 6,600 SF
- Contributing developed area = 1,500 SF
- Impervious area treatment volume = 6,600 SF x 1"/12 = 550 CF
- Developed area treatment volume = 1,500 SF x 0.4"/12 = 50 CF
- Required Treatment Volume = 550 CF + 50 CF = 600 CF
- Rain garden volume = 960 SF x 0.75 ft. (depth) = 720 CF

Volume provided @ 720 CF > volume required @ 600 CF therefore system sizing OK.

The plan details include various plantings to be placed in the rain garden in accordance with standard BMP practice.

Conclusions:

The proposed unit 15 development will include multiple water quality treatment systems including an existing ADS water quality treatment unit, a roof drip edge filter and a raingarden filter. The sizing of these systems is suitable to treat the required 1" rainfall from the contributing impervious areas and 0.4" rainfall from the contributing developed area. The owner will execute a stormwater maintenance agreement for recording, a copy of which will be provided for City records. The owner will also ultimately seek a credit related to the City's stormwater service fee, once the site is completed and systems are installed.

Attachments:

- Updated Plans

STORMWATER DRAINAGE SYSTEM
MAINTENANCE AGREEMENT AND
RELEASE FROM LIABILITY – UNIT 15

IN CONSIDERATION OF the Site plan and Subdivision plan approvals granted by the Planning Authority of the City of Portland to plans entitled *"Fifth Amended Condominium Plat"* approved on January 17, 2017 and recorded at the Cumberland County Registry of Deeds Plan Book 217, Page 20, (see Exhibit A) and "*Second Tee Condominium Association Business Park Expansion -Unit 1 Grading, Drainage and Erosion Control Plan*" Drawing C-5 prepared for 1039 Riverside, LLC (Unit 15 owner) by Stantec Consulting Services, Inc. dated last revised April 19, 2017 (the "Plan") (see Exhibit B), respectively, and pursuant to a condition thereof, 1039 Riverside, LLC having a mailing address of 7 Tee Drive, Portland, Maine 04103, the owner of the subject premises, does hereby agree, for itself, its successors and assigns (the "Owner"), as follows:

Maintenance Agreement

That it, its successors and assigns, will, at its own cost and expense and at all times in perpetuity, maintain in good repair and in proper working order the stormwater drainage system, as shown on said plan, including but not limited to the, roof line drip strip, piping, valves, etc. in strict compliance with the Maintenance of Facilities as described in the *Inspection and Maintenance Manual for Stormwater Management and Related Stormwater Facilities* dated April 19, 2017 (see Exhibit C) and Chapter 32 of the Portland City Code. Owner of the subject premises further agrees to keep a Stormwater Maintenance Log that will be made available for inspection by the City of Portland upon reasonable notice and request.

This Agreement is for the benefit of the said City of Portland and all persons in lawful possession of the property; further, that the said City of Portland may enforce this Agreement by an action at law or in equity in any court of competent jurisdiction; further, that after giving the Owner written notice as described in this Agreement, and a stated time to perform, that the said City of Portland, by its authorized agents or representatives, may, but is not obligated to, enter upon the property in question to maintain, repair, or replace said stormwater drainage system, including but not limited to the roofline drip strip, drainage structures, piping, valves etc. thereon in the event of any failure or neglect thereof, the cost and expense thereof to be reimbursed in

full to the said City of Portland by the Owner upon written demand. Any funds owed to the City under this paragraph shall be secured by a lien on the property.

This Agreement shall also not be construed to allow any change or deviation from the requirements of the subdivision and/or site plan most recently and formally approved by the Planning Board of the City of Portland.

This Agreement shall bind the undersigned only so long as it retains any interest in said premises, and shall run with the land and be binding upon the Owner's successors and assigns as their interests may from time to time appear. The Owner agrees to record a copy of this Agreement in the Cumberland County Registry of Deeds within thirty (30) days of final execution of this Agreement. The Owner further agrees to provide a copy of this Agreement to any successor or assign and to forward to the City an Addendum signed by any successor or assign in which the successor or assign states that the successor or assign has read the Agreement, agrees to all its terms and conditions and the successor or assign will obtain and forward to the City's Department of Public Services and Department of Planning and Urban Development a similar Addendum from any other successor or assign.

For the purpose of this Agreement and release "Owner" is any person or entity who is a successor or assign and has a legal interest in part, or all, of the real estate and any building. The real estate shown by chart, block and lot number in the records on file in the City Assessor's office shall constitute "the property" that may be entered by the City and liened if the City is not paid all of its costs and charges following the mailing of a written demand for payment to the Owner pursuant to the process and with the same force and effect as that established by 36 M.R.S.A. §§ 942 and 943 for real estate tax liens.

Any written notices or demands required by this Agreement shall be complete on the date the notice is mailed to the owner of record as shown on the tax roles on file in the City Assessor's Office. If the property has more than one owner on said tax rolls, service shall be complete by mailing it to only the first listed owner. The failure to receive any written notice required by this Agreement shall not prevent the City from entering the property and performing maintenance or repairs on the stormwater system, or any component thereof, or liening it or create a cause of action against the City.

Dated at Portland, Maine this _____ day of _____, 20___.

_____
By: _____
Its: _____

STATE OF MAINE
CUMBERLAND, ss. Date: _____

Personally appeared the above-named _____, and acknowledged the foregoing instrument to be his/his free act and deed in his/her said capacity, and the free act and deed of said _____.

Before me,

_____
Notary Public/Attorney at Law

Print name: _____

SCHEDULE OF AREAS

UNIT	BUILDING FOOTPRINT (S.F.)
1	7,500
2	7,500
3	7,500
4	12,185
5	30,036
6 - DELETED	0
7	30,000
8	9,800
9	10,925
10	4,800
11	12,625
12	53,120
13	4,800
14	14,028
15	8,000
UNIT TOTAL AREA	**212,819**
LCE (UNITS 1-4)	78,105
LCE (UNITS 1-4 & 12)	7,514
LCE (UNITS 5)	41,197
LCE (UNITS 7-9)	107,475
LCE (UNITS 10)	8,545
LCE (UNITS 10, 13 & 15)	12,275
LCE (UNITS 11)	20,279
LCE (UNITS 12)	42,306
LCE (UNITS 13)	19,822
LCE (UNITS 14)	32,321
LCE (UNITS 15)	17,037
LCE TOTAL AREA	**386,876**
CE TOTAL AREA	**210,889**
TOTAL AREA	**810,584**

STATION AND OFFSET

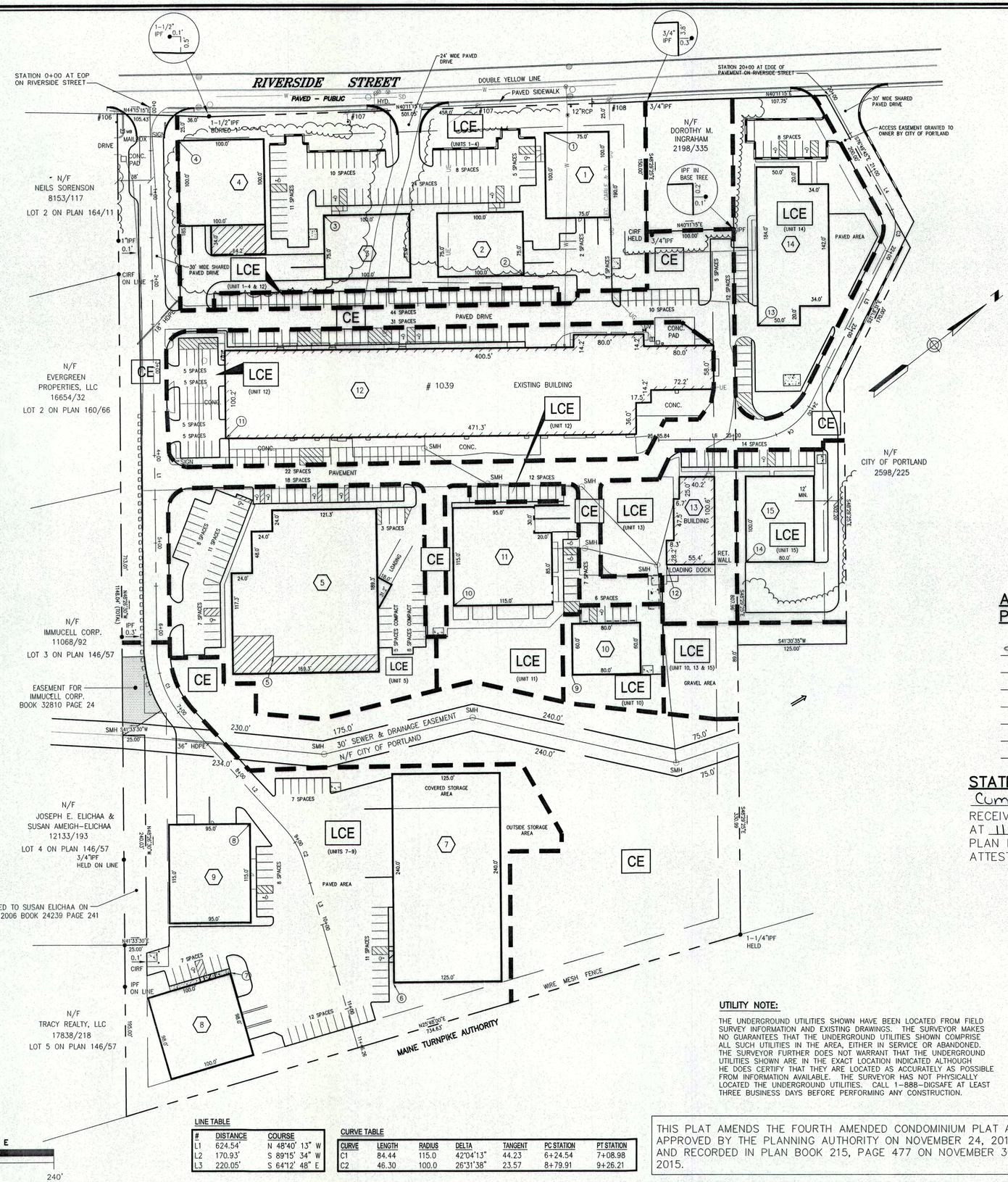
ID	STATION	OFFSET	
1.	0+35.57	467.09	L
2.	2+00.73	427.74	L
3.	1+41.65	192.51	L
4.	0+38.28	31.30	L
5.	7+28.02	123.77	L
6.	10+87.34	59.27	L
7.	10+23.29	116.73	R
8.	8+49.24	24.51	R
9.	9+00.66	369.73	L
10.	5+78.52	340.79	L
11.	3+82.09	82.15	L
12.	8+92.28	530.43	L
13.	2+62.63	694.04	L
14.	9+00.71	601.86	L

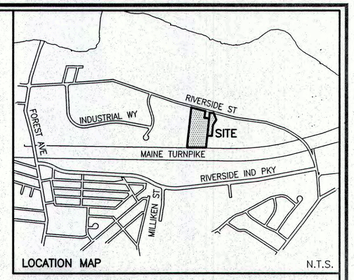
NOTES

1. OWNER OF RECORD: 1039 RIVERSIDE LLC, 55 HARDY ROAD, FALMOUTH, MAINE 04105 C.C.R.D. BOOK 19196 PAGE 308.
2. LOCUS IS SHOWN AS LOT A-1 ON PORTLAND ASSESSORS' MAP 131.
3. BEARINGS ARE TRUE NORTH AS BASED ON MARKERS FOUND AS SHOWN ON PLAN REFERENCE 1.
4. BOUNDARY IS TAKEN FROM LOCUS DEED AND PLAN REF. 1 ON WHICH THE DEED IS BASED.
5. UTILITIES TAKEN FROM PLAN REFERENCE 2 AND INFORMATION PROVIDED BY OWNER.
6. ELEVATION TAKEN FROM PLAN REFERENCE 2 (CITY DATUM).
7. ORIGINAL CONDOMINIUM PLAT – UNITS 12 AND 13 ARE EXISTING BUILDINGS. UNITS 1-11 NEED NOT BE BUILT. APPROVED 4/15/04 CCRD BOOK 204, PAGE 262
8. AMENDED CONDOMINIUM PLAT – DELETE UNIT 6. REVISE UNITS 5, 7, 8, 10, AND 11. APPROVED 12/16/04 CCRD BOOK 204, PAGE 916
9. SECOND AMENDED CONDOMINIUM PLAT – REVISE UNITS 4 AND 10 LCE AREAS FOR UNITS, 10, 13, AND 10 AND 13. APPROVED 6/2/05 CCRD BOOK 205, PAGE 459
10. THIRD AMENDED CONDOMINIUM PLAT – ADD UNITS 14 AND 15 AND LCE'S. APPROVED 9/5/06 CCRD BOOK 206, PAGE 565
11. FOURTH AMENDED CONDOMINIUM PLAT – REVISE UNITS 9, 11 AND 15, LCE UNIT 10, 13, & 15. ADD EASEMENT TO IMMUCELL CORP. SHOW OUTPARCEL TO SUSAN ELICHAA.
12. FIFTH AMENDED CONDOMINIUM PLAT – REVISE UNIT 11 BUILDING ALIGNMENT AND ADDED UNIT 5 LOADING DOCK AND MODIFIED PARKING LAYOUT
13. THE BUSINESS PARK WAS SUBJECT TO THE SITE LOCATION OF DEVELOPMENT ACT (SLODA) REVIEW IN 2004 (DELEGATED TO THE CITY OF PORTLAND PLANNING AUTHORITY BY MEDEP) AND ANY FUTURE AMENDMENTS NEED TO BE ADVISED TO THE MEDEP, IN ADDITION TO THE PLANNING AUTHORITY. THE SITE IS ALSO SUBJECT TO A MEDEP NATURAL RESOURCES PROTECTION ACT (NRPA) PERMIT ORDER (DEP #L-21677-TB-E-N) FOR WETLAND FILL. ANY ADDITIONAL WETLAND FILL SHALL REQUIRE AN AMENDMENT TO THE DEP / USACOE PERMITS.

PLAN REFERENCES

1. "PLAN OF PROPERTY IN PORTLAND, MAINE MADE FOR RIVERSIDE INDUSTRIAL PARK INC. 5-19, 1977 H.I. & E.C. JORDAN – SURVEYORS".
2. "EXISTING CONDITIONS SITE PLAN DOUGLAS BROTHERS DIV. ROBERT MITCHELL CO., INC. MAY 1994" BY BH2M.
3. "EVERGREEN INDUSTRIAL PARK RIVERSIDE STREET PORTLAND, ME SUBDIVISION PLAT NOV. 2, 1984 LAND USE CONSULTANTS" RECORDED IN PLAN BOOK 146 PAGE 57.
4. "EVERGREEN INDUSTRIAL PARK RIVERSIDE STREET PORTLAND, ME SECOND AMENDED SUBDIVISION PLAT FEB. 3, 1987" RECORDED IN PLAN BOOK 160 PAGE 66.
5. "FINAL SUBDIVISION PLAN FOR: MICHAEL LAPLANTE LOT 1, EVERGREEN INDUSTRIAL PARK RIVERSIDE STREET, PORTLAND, MAINE 1/13/87 SEBAGO TECHNICS, INC." RECORDED IN PLAN BOOK 164 PAGE 11.
6. "RIVERSIDE GOLF COURSE – DRIVING RANGE" BY PINKHAM AND GREER CONSULTING ENGINEERS, INC. DATE 8/7/91
7. "SECOND TEE BUSINESS PARK" WAREHOUSE / OFFICE PARK SITE DEVELOPMENT PLANS DRAWINGS 1-10 JANUARY 2004 BY DeLUCA-HOFFMAN ASSOCIATES, INC. GRANTED PORTLAND PLANNING AUTHORITY APPROVED ON APRIL 15, 2004.
8. "SECOND TEE CONDOMINIUM ASSOCIATION BUSINESS PARK EXPANSION WAREHOUSE/OFFICE PARK" DEVELOPMENT PLANS, DRAWINGS 1-11 JULY 2005 BY DeLUCA-HOFFMAN ASSOCIATES, INC. GRANTED PORTLAND PLANNING AUTHORITY APPROVED ON JANUARY 10, 2006.





LOCATION MAP N.T.S.

LEGEND:

- IRON PIPE OR ROD FOUND
- GV GAS VALVE
- WATER VALVE
- HYDRANT
- UTILITY POLE
- MANHOLE
- CATCH BASIN
- SIGN
- TRANSFORMER
- FENCE
- CURB
- UE UNDERGROUND ELECTRIC
- W WATER LINE
- SD STORM DRAIN
- EXISTING BUILDING
- PROPOSED UNIT AREAS
- LCE (UNITS) LIMITED COMMON ELEMENT (APPLICABLE UNITS)
- CE COMMON ELEMENT
- 13 UNIT NUMBER
- DIVISION LINE BETWEEN ELEMENTS
- POSSIBLE BUILDING EXPANSION WITHIN UNIT BOUNDARY

GRAPHIC SCALE
0 30' 60' 120' 240'

LINE TABLE

#	DISTANCE	COURSE
L1	624.54'	N 48°40' 13" W
L2	170.93'	S 89°15' 34" W
L3	220.05'	S 64°12' 48" E

CURVE TABLE

CURVE	LENGTH	RADIUS	DELTA	TANGENT	PC STATION	PT STATION
C1	84.44	115.0	42°04'13"	44.23	6+24.54	7+08.98
C2	46.30	100.0	26°31'38"	23.57	8+79.91	9+26.21

THIS PLAT AMENDS THE FOURTH AMENDED CONDOMINIUM PLAT AS APPROVED BY THE PLANNING AUTHORITY ON NOVEMBER 24, 2015 AND RECORDED IN PLAN BOOK 215, PAGE 477 ON NOVEMBER 30, 2015.

UTILITY NOTE:

THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES. CALL 1-888-DIGSAFE AT LEAST THREE BUSINESS DAYS BEFORE PERFORMING ANY CONSTRUCTION.

APPROVAL–CITY OF PORTLAND PLANNING AUTHORITY

1/17/17
DATE

PLANNING DIVISION DIRECTOR

STATE OF MAINE

Cumberland COUNTY SS REGISTRY OF DEEDS
RECEIVED January 18, 2017
AT 11 h 12 m A M. AND RECORDED IN
PLAN BOOK 217 PAGE 20
ATTEST _____ REGISTER

Exhibit A

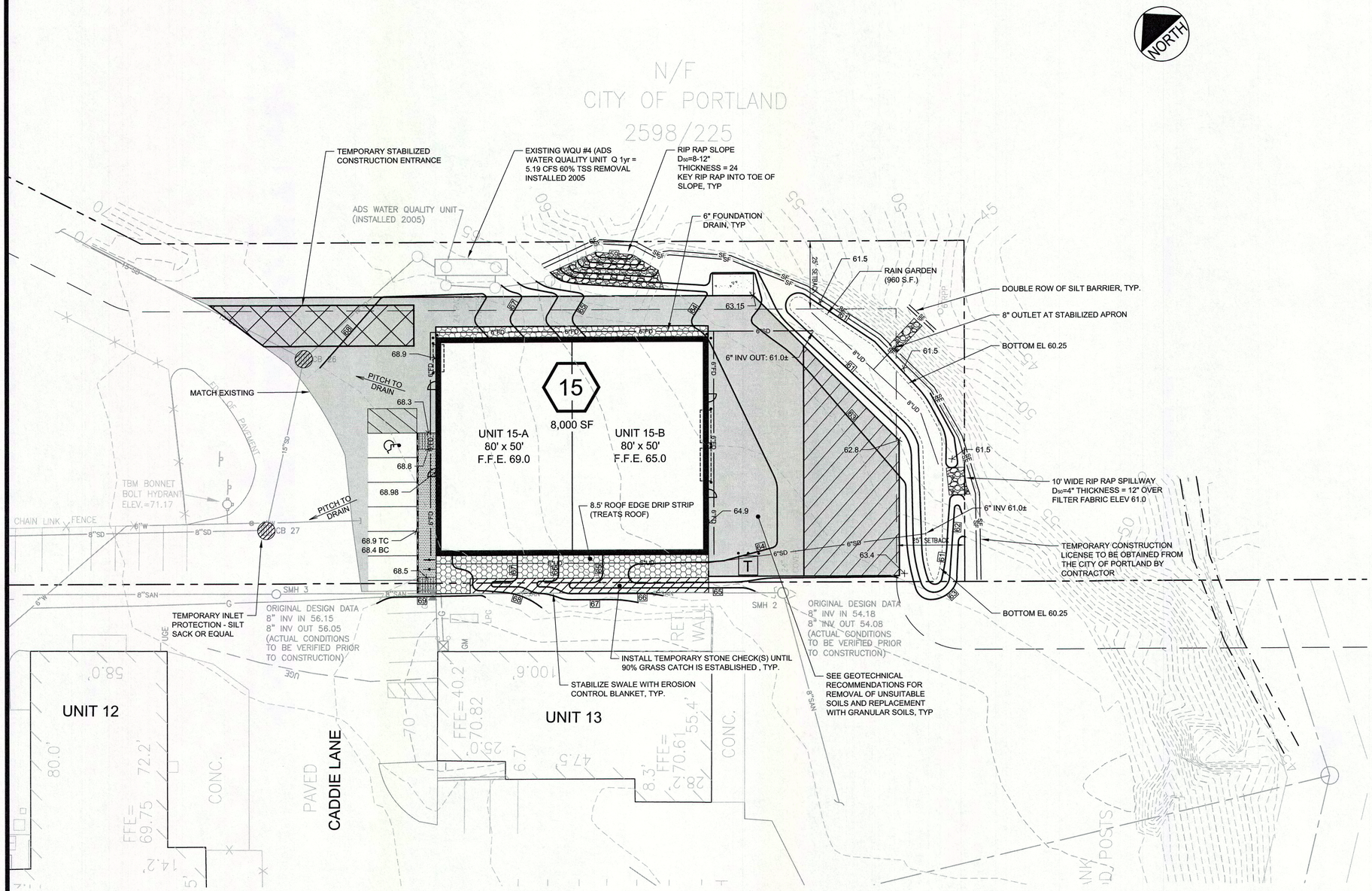
JOHN C. SCHWANDA, PLS #1252
DATE: 1-3-2017

FIFTH AMENDED CONDOMINIUM PLAT

OF
SECOND TEE BUSINESS PARK CONDOMINIUM
#1039 RIVERSIDE STREET, PORTLAND, MAINE
MADE FOR OWNER OF RECORD
1039 RIVERSIDE LLC
1039 RIVERSIDE STREET, PORTLAND, ME 04102

OWEN HASKELL, INC.
390 U.S. Route 1 Falmouth, Maine 04105 (207)774-0424
PROFESSIONAL LAND SURVEYORS

Drwn By	RS	Date	Job No.
Trace By	JLW	REVISED JAN. 2017 NOV. 18, 2004	2003-283P
Check By	JCS	Scale	Drwg. No.
Book No.	983	1" = 60'	C-3B



GRADING & DRAINAGE NOTES:

1. ALL STORM DRAIN PIPE SHALL BE SMOOTH BORE INTERIOR PROVIDING A MANNINGS ROUGHNESS COEFFICIENT OF n = 0.013 OR LESS. UNLESS A SPECIFIC PIPE MATERIAL IS CALLED FOR ON THE CONTRACT DRAWINGS. CPP AND PVC PIPING SHALL NOT BE USED IN AREAS OF EXPOSED SUNLIGHT.
2. ALL SLOPES STEEPER THAN 3:1 ARE TO RECEIVE RIPRAP SLOPE PROTECTION OR TURF REINFORCEMENT.
3. THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION DURING EARTHWORK OPERATIONS TO INSURE THAT THE STEEP SLOPE AREAS ARE NOT DISTURBED. THE LIMITS OF CLEARING SHALL BE 1' BEYOND THE GRADING LIMITS AS SHOWN ON THE SITE LAYOUT PLAN AND AS WELL AS ON THIS PLAN SHEET.
4. THE CONTRACTOR IS HEREBY CAUTIONED THAT ALL SITE FEATURES SHOWN HERON ARE ABASED ON FIELD OBSERVATIONS BY THE SURVEYOR AND BY INFORMATION PROVIDED BY UTILITY COMPANIES. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR SHALL CONTACT DIG SAFE (1-888-DIGSAFE) AT LEAST THREE (3) BUT NOT MORE THAN THIRTY (30) DAYS PRIOR TO COMMENCEMENT OF EXCAVATION OR DEMOLITION TO VERIFY HORIZONTAL AND VERTICAL LOCATION OF ALL UTILITIES.
5. ALL PAVEMENT JOINTS SHALL BE SAWCUT PRIOR TO PAVING TO PROVIDE A DURABLE AND UNIFORM JOINT.
6. NO HOLES, TRENCHES OR STRUCTURES SHALL BE LEFT OPEN OVERNIGHT IN ANY EXCAVATION ACCESSIBLE TO THE PUBLIC OR IN PUBLIC RIGHTS-OF-WAY.
7. THE CONTRACTOR SHALL TAKE FULL RESPONSIBILITY FOR ANY CHANGES AND DEVIATION OF APPROVED PLANS NOT AUTHORIZED BY THE ARCHITECT/ENGINEER AND/OR CLIENT/OWNER.
8. CONTRACTOR SHALL INCORPORATE PROVISIONS AS NECESSARY IN CONSTRUCTION TO PROTECT EXISTING STRUCTURES, PHYSICAL FEATURES, AND MAINTAIN SITE STABILITY DURING CONSTRUCTION. CONTRACTOR SHALL RESTORE ALL AREAS TO ORIGINAL CONDITION AND AS DIRECTED BY DESIGN DRAWINGS.
9. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. ANY UNUSUAL CONDITIONS SHALL BE REPORTED TO THE ATTENTION OF THE ENGINEER.
10. EXTERIOR GRADES AROUND PROPOSED STRUCTURES SHALL BE COORDINATED WITH FINAL BUILDING PLANS AND PROVIDE FOR ALL ACCESS OPENINGS INCLUDING MANDOORS, OVERHEAD DOORS AND LOADING DOOKS.

EROSION CONTROL NOTES:

1. LAND DISTURBING ACTIVITIES SHALL BE ACCOMPLISHED IN A MANNER AND SEQUENCE THAT CAUSES THE LEAST PRACTICAL DISTURBANCE OF THE SITE.
2. PRIOR TO BEGINNING ANY CLEARING/LAND DISTURBING ACTIVITIES, THE CONTRACTOR SHALL INSTALL THE PERIMETER SILT FENCES AND THE STABILIZED CONSTRUCTION ENTRANCES.
3. ALL GROUND AREAS DISTURBED DURING CONSTRUCTION WILL BE GRADED, LOAMED AND SEEDED AS SOON AS POSSIBLE.
4. SILT BARRIERS SHALL BE INSPECTED, REPAIRED AND CLEANED AS NOTED IN THE EROSION CONTROL NOTES SHOWN ON THE EROSION CONTROL DETAIL SHEET.
5. THE CONTRACTOR SHALL REPAIR AND ADD STONE TO THE CONSTRUCTION ENTRANCES AS THEY BECOME SATURATED WITH MUD TO ENSURE THAT THEY WORK AS PLANNED DURING CONSTRUCTION AND SHALL KEEP RIVERSIDE STREET CLEAR OF DIRT AND MUD.
6. SILT REMOVED FROM AROUND INLETS AND BEHIND THE SILT FENCES SHALL BE PLACED ON A TOPSOIL STOCKPILE AND MIXED INTO IT FOR LATER USE IN LANDSCAPING OPERATIONS.
7. CONTRACTORS SHALL NOTIFY OPERATORS WHO MAINTAIN UNDERGROUND UTILITIES IN THE AREA OF PROPOSED EXCAVATION OR BLASTING AT LEAST THREE (3) BUT NOT MORE THAN (30) DAYS PRIOR TO COMMENCEMENT OF EXCAVATION OR DEMOLITION. CONTRACTORS SHALL BE RESPONSIBLE FOR COMPLIANCE WITH THE REQUIREMENTS OF 23 MRSA 3360-A.
8. CONTRACTOR SHALL PROVIDE AND INSTALL ALL NECESSARY ELECTRICAL SERVICES IN CONDUIT TO SIGHT LIGHTING, COMPLYING WITH APPLICABLE CODES. COORDINATE WITH OWNER AND ARCHITECTURAL AND CMP PLANS. PRIOR TO CONSTRUCTION, CONTRACTOR SHALL CONFIRM WITH CMP, CABLE AND TELEPHONE COMPANIES INDIVIDUAL UTILITY REQUIREMENTS FOR INSTALLATION AND LOCATIONS OF UTILITIES.
9. CONTRACTOR SHALL OBTAIN ALL REQUIRED PERMITS PRIOR TO CONSTRUCTION.
10. FILL AREAS UNDER PAVEMENT SHALL BE GRANULAR BORROW. ALL OTHER FILL AREAS SHALL BE A COMMON BORROW MATERIAL SUITABLE FOR EMBANKMENT CONSTRUCTION, FREE FROM FROZEN MATERIAL, PERISHABLE RUBBLE, PEAT, ORGANICS, ROCKS LARGER THAN 12" IN DIAMETER, VEGETATION AND OTHER MATERIAL UNSUITABLE FOR ROADWAY AND SUBGRADE CONSTRUCTION. EXCAVATED ON-SITE MATERIALS MAY BE USED FOR FILL PROVIDED THE MATERIAL IS FREE FROM UNSUITABLE MATERIAL DESCRIBED IN THIS NOTE AND UPON APPROVAL OF THE ENGINEER GRANULAR BORROW AND COMMON BORROW SHALL COMPLY WITH THE MDOT SPECIFICATIONS.
11. ALL FILLS SHALL BE PLACED LAYERS NOT MORE THAN 12" LOOSE DEPTH AND COMPACTED BY HEAVY COMPACTION EQUIPMENT. MINIMUM COMPACTION SHALL BE 95% OF MAXIMUM DENSITY ASTM 1557, MODIFIED AND FIELD DENSITY ASTM D2922 (NUCLEAR METHODS).
12. IMMEDIATELY UPON COMPLETION OF CUTS/FILLS, THE CONTRACTOR SHALL STABILIZE DISTURBED AREAS IN ACCORDANCE WITH EROSION CONTROL NOTES AS SPECIFIED ON PLANS.
13. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH "MAINE EROSION AND SEDIMENTATION CONTROL HANDBOOK FOR CONSTRUCTION: BEST MANAGEMENT PRACTICES" PUBLISHED BY THE CUMBERLAND COUNTY SOIL AND WATER CONSERVATION DISTRICT AND MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION, MARCH 1991 OR LATEST EDITION. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO POSSESS A COPY OF THE EROSION CONTROL PLAN AT ALL TIMES.

NOTE:

STORM WATER MANAGEMENT: THE DEVELOPER/CONTRACTOR/SUBCONTRACTOR SHALL COMPLY WITH CONDITIONS OF THE SUBMITTED CONSTRUCTION STORMWATER MANAGEMENT PLAN, SEDIMENT AND EROSION CONTROL PLAN AND INSPECTION AND MAINTENANCE PLAN DATED APRIL 2017 AND PREPARED BY STANTEC AND BASED ON CITY STANDARDS AND STATE GUIDELINES. THE OWNER/OPERATOR OF THE APPROVED STORMWATER MANAGEMENT SYSTEM AND ALL ASSIGNS SHALL COMPLY WITH THE CONDITIONS OF CHAPTER 32 STORMWATER INCLUDING ARTICLE III, POST CONSTRUCTION STORMWATER MANAGEMENT, WHICH SPECIFIES THE ANNUAL INSPECTIONS AND REPORTING REQUIREMENTS.

A MAINTENANCE AGREEMENT FOR THE STORMWATER DRAINAGE SYSTEM, BE SUBMITTED, SIGNED AND RECORDED PRIOR TO THE ISSUANCE OF A BUILDING PERMIT WITH A COPY TO THE DEPARTMENT OF PUBLIC SERVICES.

GRAPHIC SCALE
20 0 10 20 40
(IN FEET)
1 inch = 20 ft.

PRELIMINARY - NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION
2	04.19.17	REVISED AND RESUBMITTED TO CITY
1	02.22.17	LEVEL II AMENDED SITE PLAN SUBMISSION

REVISIONS

STATE OF MAINE STEPHEN R. BUSHEY No. 7429 LICENSED PROFESSIONAL ENGINEER
P.E. STEPHEN BUSHEY
LIC. #7429

PROJECT
SECOND TEE CONDOMINIUM ASSOCIATION
BUSINESS PARK EXPANSION - UNIT 15

SHEET TITLE
GRADING, DRAINAGE AND EROSION CONTROL PLAN

CLIENT 1039 RIVERSIDE LLC
7 TEE DRIVE
PORTLAND, MAINE 04101

STANTEC CONSULTING SERVICES INC.
482 PAYNE ROAD
SCARBOROUGH, ME 04074
WWW.STANTEC.COM
Stantec

DRAWN:	DED	DATE:	FEBRUARY 2017
DESIGNED:	SRB	SCALE:	1" = 20'
CHECKED:	SRB	JOB NO.	195350348
FILE NAME:	195350348_GRADING		
SHEET	C-5		

V:\1953\active\195350348\civil\cadd\permit_unit_15\dwg\195350348-grading.dwg cddube 4/21/2017 11:49 AM

Exhibit B

Exhibit C

INSPECTION AND MAINTENANCE MANUAL FOR STORMWATER MANAGEMENT AND RELATED STORMWATER FACILITIES UNIT 15

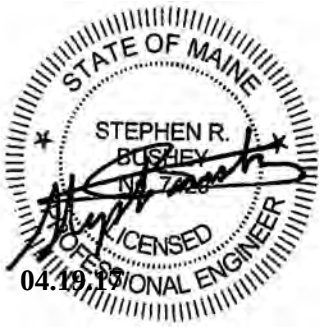
SECOND TEE BUSINESS PARK
1039 RIVERSIDE AVENUE
PORTLAND, MAINE

PREPARED FOR:

1039 RIVERSIDE LLC
7 TEE DRIVE
PORTLAND ME 04101

PREPARED BY

STANTEC CONSULTING SERVICES, INC.
482 PAYNE ROAD – SCARBOROUGH COURT
SCAROBOROUGH, MAINE 04074
(207) 883-3355



APRIL 2017

TABLE OF CONTENTS

APPENDICES

I. INTRODUCTION

Relatively complex stormwater management facilities are commonly installed in development projects including, commercial facilities, and many other developments. The complexity and goals of these systems vary with the nature of the receiving water, as well as the type of development. Runoff from developed areas of the project, including rooftops, paved, or lawn areas typically contain materials that can impact the receiving waters. Source control and the installation of wet ponds, infiltration galleries, and proprietary water quality units such as ADS Water Quality unit® and StormTreat™ units are often combined with pretreatment measures or vegetated buffer strips and other best management practices are also among the options that can significantly reduce the non-point pollution discharge from the developed area. These measures are particularly important to projects in the watersheds of sensitive water bodies, or projects with potential impacts to groundwater. With the increased cost of land and development, there is an increased tendency to construct portions of the stormwater management systems underground.

The effectiveness of water quality management provisions and other components of the stormwater management system are dependent on their design, upkeep, and maintenance to assure they meet their intended function over an extended period of years. It is critical that the stormwater management facilities are regularly inspected, and that maintenance is performed on an as-needed basis. It must also be recognized that the effectiveness of these facilities, and their maintenance requirements, are related to the stormwater drainage facilities that collect and transport the flow to the ponds, infiltration galleries, and other treatment measures. Thus, maintenance should be directed to the total system, not just the pond or primary stormwater management facility.

The purpose of this document is to define, in detail, the inspection and maintenance requirements deemed necessary to assure that the stormwater management facilities function as intended when they were designed. Subsequent sections identify individual maintenance items; give a brief commentary of the function and need for the item, a description of the work required, and a suggested frequency of accomplishment. While the suggested programs and schedules must be adapted to specific projects, the material presented should provide guidance for a successful long-term program for operation and maintenance. Certain facilities, specifically the potential water quality volume storage or treatment measures such as infiltration, Filterra®, and StormTreat® are not intended to be placed in service until the tributary catchment area has the permanent cover in place and any contributing turf areas have achieved a 90% catch of vegetation (i.e. established).

A. GUIDELINES OVERVIEW

A summary of the individual components of stormwater management facilities for this project has been prepared. The format used in the summary is as follows:

Preface: A general description of what function/benefit the element is intended to provide. This is a short summary and not intended to provide the design basis, which can be found in other sources.

Inspection: This section provides the inspection requirements for the individual component.

Maintenance: The section provides general information on the routine maintenance requirements of this element.

Frequency: This section outlines the best judgment of the designer on the system to the frequency of maintenance.

Comments: This section provides any particular comment on the site-specific features of this element. This is a summary only. The owner/operator should review the design drawings and documents carefully to understand the particular elements of the project. The end of this section should allow the owner/operator to make notes on the specific program. This may include the selected maintenance procedure, cross-references to applicable design drawings, etc.

A list of the individual inspection/maintenance elements is provided in the table of contents. The guidelines are proposed for initial use with adjustments made as appropriate based upon specific project experience.

This report includes the Operation and Maintenance requirements for any potential BMP identified in the Stormwater Management Report for this project. Many of these will not be required for the final stormwater management option selected for this project.

B. RESPONSIBLE PARTY

The responsible party for operation and maintenance of the stormwater and other site infrastructure is 1039 Riverside LLC and Bibeau Property Management.

II. PROJECT OVERVIEW

Key permits issued (or applied for) on the project include:

- City of Portland Level III Site Plan Review

A copy of the permits and Stormwater Management Report should be appended to this manual as Appendix B. The Owner/Operator of the stormwater management system should review these permits for a general

description and background of the project, as well as any specific permit conditions or requirements of the project.

The applicant has retained Stantec for civil engineering for the Motherhouse project. Stantec Consulting Services, Inc. has prepared the design for the stormwater management facilities and may be contacted at:

Stantec Consulting Services, Inc.
482 Payne Road – Scarborough Court
Scarborough, ME 04074
(207) 883-3355

It is recommended the preparer of the plan be contacted with any particular questions on the design intent or similar issues.

The applicable plans and design documents, which apply to the project, are:

1. Civil Site Plans Prepared by Stantec Consulting Services, Inc.
2. The Erosion Control/Sedimentation Control Plan for the project
3. The Stormwater Management Plan for the project

A copy of these documents should be retained with this manual.

The proposed design includes inlets, stormwater conveyance lines, bioswales, underdrained treatment swales, a wet detention pond, manholes, diversion structures, outlet control structures, and backwater isolation valves.

III. STANDARD INSPECTION/MAINTENANCE DESCRIPTIONS

The following narratives describe the inspection/maintenance provisions for the Stormwater Management system. These O&M procedures will complement scheduled sweeping of the parking deck which are anticipated to occur at least twice per year. Proper O&M is necessary to make sure the system will provide its intended purpose of conveying runoff, removing a substantial amount of the suspended solids, and other contaminants in the stormwater runoff.

A. STORMWATER INLETS

Preface: The success of any stormwater facility relies on the ability to intercept stormwater runoff at the design locations. Stormwater inlets may include catch basins, open culverts, culverts with bar screens, roof scuppers, plaza scuppers, trench drains, and field inlets. Inlets exist throughout the system.

Inspection: The inspection of inlet points will need to be coordinated with other maintenance items, these include:

- Landscape services
- Building maintenance areas
- Grounds maintenance

The key elements of the inspection are to assure the inlet entry point is clear of debris and will allow the intended water entry.

Maintenance: The key maintenance is the removal of any blockage which restricts the entry of stormwater to the inlet. The removed material should be taken out of the area of the inlet and placed where it will not reenter the runoff collection system. Snow should be removed from inlets within paved areas. Grass clippings and leaves should be bagged and removed.

Frequency: All inlets should be inspected on a quarterly basis, and after/during significant storm events.

Maintenance/Inspection Responsibility:

Maintenance Personnel: The maintenance personnel will perform the normal maintenance/inspections of the inlets and tributary drainage system.

Comments: Maintenance of inlets is critical on this project including semi-annual cleaning of all catch basin sumps.

POORLY STABILIZED INLET ALLOWS ENTRANCE OF DEBRIS AND REDUCED CAPACITY

B. TRIBUTARY DRAINAGE SYSTEM

Preface: The stormwater conveyance system will be principally overland flow discharging to piped drain systems. Most of the sediment is carried by the drainage system is intended to be trapped near the inlets or in pretreatment devices. Maintenance of this system can play a major role in the long-term maintenance costs and the effectiveness of the drainage system.

Inspection: The tributary drainage system should be periodically inspected to assure that it is operating as intended, and that its carrying capacity has not been diminished by accumulations of debris and sediment or other hydraulic impediments. On piped systems, the inlets must be inspected to ensure the rims are set at the proper elevation to

optimize flow entry and are not clogged with debris. The inlet catch basins are normally equipped with sumps and hooded outlets which will remove gross floatables and large sediment particles from the flow stream.

The level of sediment in the sumps should be checked to assure their effectiveness. Pipelines connecting the inlets should be checked to determine if siltation is occurring. This will be most critical on drain lines laid at minimal slopes. This can usually be accomplished by a light and mirror procedure.

In some projects most of the stormwater is carried in open swales, channels, or ditches. These conveyance channels may be rip rapped or vegetated, depending on the gradient and expected flow velocities. These facilities must be inspected to insure debris or sedimentation does not reduce their carrying capacity. Excess vegetative growth must also be noted. The surface protection for the channels, either stone or vegetation, must be inspected to insure its integrity. Any areas subject to erosion should be noted.

Maintenance: Maintenance of the storm drainage system must assure that it continues to serve its design function on a long-term basis, and that its operation does not transport excessive sedimentation to any downstream detention pond, or the receiving waters. Elevations on the rim of catch basins should be adjusted as needed to assure optimal water entry. Depending on the frost susceptibility of the soil, the rims may become elevated over time causing flow to circumvent the inlet. If a filter bag has been designated for the inlet silt or other deleterious materials, can significantly reduce capacity and the bags should be removed with the sediment and replaced. Catch basin cleaning would normally be accomplished with vacuum trucks contracted as a maintenance service for the retail center. The removed material must be disposed of at an approved site for such materials.

If sediment in the pipeline is observed, it should be removed. This may be accomplished by hydraulic flushing, or by mechanical means. If hydraulic flushing is used the downstream conditions should be analyzed. The tidal influence can aggregate sedimentation since there are periods of no flow. Backwater valves and connection points are intended to reduce this occurrence.

Frequency: The piped drainage system should be inspected on an annual basis. Adjustment of inlet rim elevations should be on an as needed basis. Cleaning catch basin sumps and pipelines will depend on the rate of accumulation.

Maintenance/Inspection Responsibility:

Special Services: The owner will contract with an independent agent for cleaning of replacement of catch basins, sumps, and pipelines.

Remedial source control measures may be performed by the owner or an outside service depending upon the nature of the particular situation.

Comments: Maintenance of inlets of utmost importance to the project to avoid unintended roof loading, ice accumulation, and cleanliness of the floors of the building.

A WELL-STABILIZED VEGETATED SWALE SHOWS LITTLE SIGNS OF EROSIVE VELOCITIES OR FLOWS. THIS SWALE ALSO FUNCTIONS AS A POND SPILLWAY

C. RAINGARDEN CELLS

Preface: Raingarden cells offer efficient and effective treatment of runoff from small contributing pavement and impervious areas. They can be integrated into existing landscaping and are generally low-maintenance BMPs. It is, however, still important to monitor these areas for sediment build up an erosion to assure that capacity remains to accomplish the intended water quality function.

Inspection: Inspections of raingarden cells should be undertaken on an annual basis by a qualified stormwater professional. Sediment build up or erosion of the cell should be identified, as should any evidence of standing water, or prolonged saturation.

Maintenance: Routine maintenance will include inspection of soils and plantings, removal of dead vegetation and any accumulated sediments. Should the cell show signs of reduced drainage capacity it may be necessary to rototill or remove the top soil layer.

Frequency: Inspections should be undertaken at a minimum on a bi-annual basis.

Maintenance/Inspection Responsibility:

1039 Riverside LLC or contracted agent.

Special Services: The owner will contract with an independent stormwater system maintenance Contractor to undertake maintenance inspections of these BMPs.

D. DRIP EDGE FILTERS

Preface: Roof drip edge filters perform two critical functions. They control erosion by accepting roof runoff on a stable, highly pervious surface, and then store and infiltrate the runoff to underlying soils, or an underdrain system.

Inspection/Monitoring: The surface of the drip edge should be inspected periodically for debris accumulation and function.

Maintenance: Periodic maintenance of the drip edge will include removal of debris and fine sediment that may accumulate in the surface stone. Occasional raking or smoothing of the surface may be required.

Frequency: Inspections of the drip edge stone should be undertaken at a minimum on a bi-annual basis.

Maintenance/Inspection Responsibility:

1039 Riverside LLC or contracted agent

Special Services: The owner will contract with an independent stormwater system maintenance Contractor to undertake maintenance inspections of these BMPs.

E. LITTER

Litter and solid waste should be removed as a matter of course by workers and a part of the grounds maintenance contract.

F. SUMMARY CHECKLIST

The above described inspection and maintenance items have been summarized on a checklist attached hereto as Appendix C.

IV. PROGRAM ADMINISTRATION

A. GENERAL

A reliable administrative structure must be established to assure implementation of the maintenance programs described in the foregoing section. Key factors that must be considered in establishing a responsive administrative structure include:

1. Administrative body must be responsible for long-term operation and maintenance of the facilities.

2. Administrative body must have the financial resources to accomplish the inspection and maintenance program over the life of the facility.

3. The administrative body must have a responsible administrator to manage the inspection and maintenance programs.

4. The administrative body must have the staff to accomplish the inspection and maintenance programs, or must have authority to contract for the required services.

5. The administrative body must have a management information system sufficient to file, retain, and retrieve all inspection and maintenance records associated with the inspection and maintenance programs.

6. A qualified post construction inspector shall be retained by the Owner. His duties shall include preparing schedules for the Owner's maintenance, summarizing the results of this maintenance and preparing an annual report on the operation, maintenance, and repair of the stormwater system which must be copied to the Town. (The Owner shall be responsible for retaining a separate entity to perform maintenance which cannot be performed by the management of building and property grounds.) This person shall also participate in troubleshooting of the stormwater management system if a problem develops.

If any of the above criteria cannot be met by the entity assigned inspection and maintenance responsibilities, it is likely that the system will fail to meet its water quality objectives at some point during its life. While each of the above criteria may be met by a variety of formats, it is critical to clearly establish the assigned administrative body in a responsible and sustainable manner.

B. RECORD KEEPING

Records of all inspections and maintenance work accomplished must be kept and maintained to document facility operations. These records should be filed and retained for a minimum 5-year time span. The filing system should be capable of ready retrieval of data for periodic reviews by appropriate regulatory bodies. Where possible, copies of such records should also be filed with the designated primary regulatory agency for their review for compliance with permit conditions. Typical inspection and maintenance record forms are attached hereto as Appendix B.

C. CONTRACT SERVICES

In some instances or at specific times, the Maintenance Personnel may not have the staff to conduct the required inspection and/or maintenance programs as outlined in this document. In such cases, the work should be accomplished on a contractual basis with a firm or

organization that has the staff and equipment to accomplish the required work.

The service contract for inspection and maintenance should be formal, well written legal document which clearly defines the services to be provided, the contractual conditions that will apply, and detailed payment schedules. Liability insurance should be required in all contracts.

APPENDIX A

Sample Inspection Logs

1039 Riverside LLC – Unit 15
PORTLAND MAINE

STORMWATER MANAGEMENT
WATER QUALITY STORAGE OR WET POND
ANNUAL INSPECTION & MAINTENANCE LOG

FACILITY:		**YEAR:**	
LOCATION:		**CONTRACTOR:**	
FUNCTION:		**INSPECTOR:**	
DATE OF INSPECTION:			
ITEM IDENTIFICATION	**DESCRIPTION OF CONDITIONS**	**MAINTENANCE ACCOMPLISHED**	**DATE OF MAINTENANCE**
GENERAL COMMENTS:			

SAMPLE

1039 Riverside LLC – Unit 15
PORTLAND MAINE

STORMWATER MANAGEMENT BMP
MONTHLY INSPECTION & MAINTENANCE LOG

FACILITY:			YEAR:			
LOCATION:			CONTRACTOR:			
FUNCTION:						
				OVERFLOW WEIR		
MONTH	DAY	INSPECTOR	WATER DEPTH	CLEAR	DEBRIS	WEIR CONDITION
JANUARY						
FEBRUARY						
MARCH						
APRIL						
MAY						
JUNE						
JULY						
AUGUST						
SEPTEMBER						
OCTOBER						
NOVEMBER						
DECEMBER						
LIST SPECIAL MAINTENANCE UNDERTAKEN:						

1039 Riverside LLC – Unit 15
PORTLAND MAINE

STORMWATER MANAGEMENT BMP
SEMI-ANNUAL INSPECTION & MAINTENANCE LOG

SEMI-ANNUAL INSPECT 1.2	FACILITY:
DATE:	LOCATION:
INSPECTOR:	FUNCTION:
BMP CONDITION:	
OUTLET CONDITION	

DEBRIS PRESENT	EST. DEPTH SED.	REMOVED? Y/N	EST. VOL. CY	WHERE DISPOSED OF	STRUCTURAL CONDITION

CONTROL STRUCTURE:
DESCRIBE CONDITIONS FOUND & MAINTENANCE ACCOMPLISHED:

APPENDIX B

Permits for Project

(To be Added at a Subsequent Time)

APPENDIX C

Summary Checklist
Inspection and Maintenance

Stormwater Management System Maintenance Program Summary Checklist						
		Frequency				
Item	**Commentary**	**Monthly**	**Quarterly**	**Semi-Annual**	**Annual**	**Long Term**
Stormwater Inlets	Stormwater inlets allow flow entry from a surface swale to a piped system. Entry may or may not be equipped with a bar rack. Inspect entry for debris accumulation. Remove debris to allow unimpeded entry. Lawn clippings and leaves should be removed from yard areas.		X		X Clearing	
Tributary Drainage System	Inspect to assure that the carrying capacity has not been diminished by debris, sediment or other hydraulic impediments.				X	
Rain garden Cells	Inspect outlet control structure, remove dead vegetation, check for erosion, or evidence of standing water.			X		
Drip Edge Filters	Observe surface stone, rake, and remove debris as necessary. Observed for ponding or poor water conveyance possibly indicating clogging			X		
Litter	Litter should be removed daily.					
Pavement Sweeping	Pavements should be swept at least twice annually, once in Spring			X		