



The

UNIVERSITY
of **VERMONT**

MS4 FLOW RESTORATION PLAN

September 29, 2016

**NATIONAL POLLUTANT DISCHARGE
ELIMINATIONS SYSTEMS (NPDES)**

GENERAL PERMIT 3-9014

**FOR STORMWATER DISCHARGES FROM SMALL MUNICIPAL SEPARATE
STORM SEWER SYSTEMS**

**Prepared by:
Krebs & Lansing
Consulting Engineers, Inc.
164 Main Street
Colchester, Vermont 05446
(802) 878-0375**

September 29, 2016

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September 29, 2016

Christy Witters
MS4 and MSGP Program Coordinator
VT DEC Stormwater Program
One National Life Drive
Montpelier, Vermont 05620-3522

Re: 2016 MS4 Flow Restoration Plan - General Permit 3-9014 (2013-2017)
University of Vermont

Dear Christy:

Please find enclosed the 2016 Flow Restoration Plan (FRP) for the University of Vermont under General Permit 3-9014 (Stormwater Discharges from Small Municipal Separate Storm Sewer Systems). The General Permit 3-9014 is the second phase of the Environmental Protection Agency National Stormwater Program. The 5-year permit (2013-2017) requires implementation of practices to prevent or control stormwater runoff from municipal separate storm sewer systems (MS4) located in urbanized areas. There are nine municipalities in Chittenden County that are classified as traditional MS4's; Burlington, Colchester, Essex, Essex Jct., Shelburne, South Burlington, Williston, Winooski and Milton. The University of Vermont, Vermont Agency of Transportation, and the Burlington International Airport are considered non-traditional MS4s and therefore are required to obtain coverage under General Permit #3-9014.

The University of Vermont has been collaborating with the City of Burlington, City of South Burlington, Town of Essex, and VTRANS on the Flow Restoration Plans. The University of Vermont participated in the following flow restoration plans: Centennial Brook, Englesby Brook, Potash Brook, Bartlett Brook and Sunderland Brook.

The traditional MS4's have gathered and submitted the FRP narrative including stormwater computer model runs and possible best management practices. This document supplements and clarifies the University's involvement and financial commitments in the Flow Restoration Plans.

Page Two
Christy Witters
September 29, 2016

Please call if you have any questions or comments.

Sincerely,



William H. Nedde III

Enclosure

cc: Richard Cate, Vice President for Finance and Treasurer*
Tom Gustafson, Vice President for University Relations and Administration*
Bob Vaughan, Director, Capital Planning and Management*
Linda Seavey, Director, Campus Planning Services⁽²⁾
Lani Ravin, Associate Planner, Campus Planning Services*
Lisa Kingsbury, Planning Relations Coordinator, Campus Planning Services*
Sal Chiarelli, Director, Physical Plant Department*
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Rose Leland, Grounds Manager, Physical Plant Department*
Rick Paradis, UVM Natural Areas Center Director, Lecturer, Advisor, Rubenstein School*
Francis Churchill, Senior Assistant Director Safety and Health Risk Management *
Jeff Rogers, Environmental Compliance Program, Safety and Health Risk Management*
(* Electronic copy only)

WHN/kee

2016 FLOW RESTORATION PLAN

EPA MS4 PHASE II - GENERAL PERMIT 3-9014

Prepared by Krebs and Lansing Consulting Engineers, Inc.
164 Main Street
Colchester, Vermont 05446

September 29, 2016

Introduction

The University of Vermont first applied for coverage under General Permit #3-9014 on March 10, 2003. The Application was revised and resubmitted on May 9, 2003 after receiving comments from the State of Vermont Agency of Natural Resources. On September 11, 2003 the State of Vermont acknowledged by letter the University's Stormwater Management Plan complies with the terms and conditions of the General Permit. They further indicated that the University's MS4 discharges are eligible for continued coverage under the terms and conditions of the General Permit.

On January 31, 2004, January 31, 2005, April 1, 2006, April 1, 2007, April 1, 2008, April 1, 2009, April 1, 2010, April 1, 2011, April 1, 2012, April 1, 2013, April 1, 2014, April 1, 2015 and April 1, 2016 the University of Vermont submitted their MS4 Annual Report.

On February 22, 2008, the University of Vermont prepared an application for coverage under General Permit #3-9014 for the second 5-year term. Additional information was provided on March 3, 2008 as requested by the State of Vermont.

On June 3, 2013, the University of Vermont prepared an application for coverage under General Permit #3-9014 for a third 5-year term (2013-2017). The application was deemed complete and effective on October 1, 2013.

The University of Vermont has been collaborating with the City of Burlington, City of South Burlington, Town of Essex and VTRANS on the Flow Restoration Plans (FRP). The University of Vermont participated in the following flow restoration plans: Centennial Brook, Englesby Brook, Potash Brook, Bartlett Brook and Sunderland Brook.

The traditional MS4's have gathered and submitted the FRP narrative including model runs and possible best management practices. This document supplements and clarifies the University's involvement and financial commitments in the Flow Restoration Plans.

The MS4 General Permit (3-9014), subpart IV.C.1 requires a Flow Restoration Plan be submitted to the Agency of Natural Resources by October 1, 2016. The FRP will serve all MS4's as a planning tool in the respective impaired waterways.

Centennial Brook

Since the University of Vermont has been proactive in establishing Best Management Practices (BMP), their future obligation for capturing untreated/undetained runoff is limited. See Table A attached. This table indicates that UVM currently treats/detains over 95% of its impervious surfaces in the Centennial Brook Watershed. With the BMPs proposed in the FRP, this increases to 97.4%. It is commendable that 97.4% of UVM's impervious would be fully treated and detained in accordance with the current State Stormwater Regulations.

The University is participating in three improvements through the Centennial Brook FRP; The North Campus Stormwater Treatment Facility upgrade, the Main Street stormwater treatment upgrade and a small drainage improvement at the UVM Physical Plant recycling area located behind Centennial Baseball Field.

- i) North Campus Stormwater Treatment Facility (see attached schematic plan - sheet SP-1 dated 9/20/2016) South Burlington ID CB0019. Construction estimated to be completed between 2021 and 2026.

The North Campus watershed drains approximately 84 acres of University of Vermont and the City of Burlington. The University had offered the use of the North Campus Stormwater Facility under two conditions;

- 1) There is sufficient capacity for UVM to expand the pond to facilitate full build out of UVM Campus.
 - 2) The entity using the UVM pond (City of Burlington) would have financial obligations toward the construction and maintenance. The City and University will negotiate the terms for use of the pond at a later date. The University of Vermont will have complete discretion regarding all terms of any agreement.
- ii) Main Street Stormwater Treatment Facility (see attached schematic plan - sheet SP-2 dated 9/27/2016) Retrofit M5A (Retrofit 24 on Sheraton/UVM property not accepted). Construction estimated to be completed between 2021 and 2026.

The Main Street Stormwater Treatment Facility currently drains approximately 27 acres of land owned by the University of Vermont, the City of South Burlington and the City of Burlington. The University had offered the use of the Main Street Stormwater Facility under two conditions;

- 1) There is sufficient capacity for UVM to expand the pond to facilitate full build out of UVM Campus.
- 2) The entity(s) using the UVM pond (City of South Burlington and City of Burlington) would have financial obligations toward the construction and maintenance. The City of South Burlington, the City of Burlington and UVM will negotiate the terms for use of the pond at a later date. The University of Vermont will have complete discretion regarding all terms of any agreement.

iii) UVM Physical Plant recycling area drainage improvements

(See sheet SP-2 dated 9/19/2016)

UVM has approx. 1/4 acre of gravel recycling yard that currently does not drain to the North Campus Stormwater Treatment Facility. UVM is proposing to capture the flows from this area and direct them to the North Campus Stormwater Treatment Facility.

We estimate completing this work in 2017.

The initial model runs prepared by Horsley Whitten for the Centennial FRP included other BMP on UVM properties. These were located in future building land banks or other areas that were not acceptable to UVM. Many of these BMPs were established to treat non-UVM properties.

The proposed retrofits include:

- Retrofit 24 Sheraton.
- Retrofit 17 Jug-Handle.
- Retrofit M1A (CB 0005) Centennial Court.
- Retrofit M7B Case Parkway (on UVM property).

The above listed items are not included in the FRP.

Potash Brook

The University of Vermont has limited properties subject to MS4 in the Potash Brook watershed. Most of the properties are agricultural in nature. The two non-agricultural properties include Bioresearch Facility at 720 Spear Street and Aiken Forestry at 705 Spear Street. There are just over five acres of impervious on these properties. The FRP proposed specific upgrades at both of these facilities, and while UVM is committed to providing stormwater improvements, the BMPs proposed would impact future building sites.

The University anticipates designing, permitting and constructing improvements before 2020 for both the Aiken Forestry and Bioresearch properties.

Englesby Brook

The southern end of the main UVM Campus drains to Englesby Brook. The University proactively constructed two stormwater ponds in full compliance with the state stormwater regulations. The combined watershed is approx. 53 acres. See sheet WS-1 dated 9/27/2016 for existing UVM watersheds.

The stormwater computer model runs completed for the Englesby FRP indicate the University stormwater ponds *exceed* the required detention for compliance with the FRP goals. There are no changes required to the ponds or UVM financial obligations in Englesby watershed.

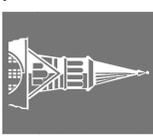
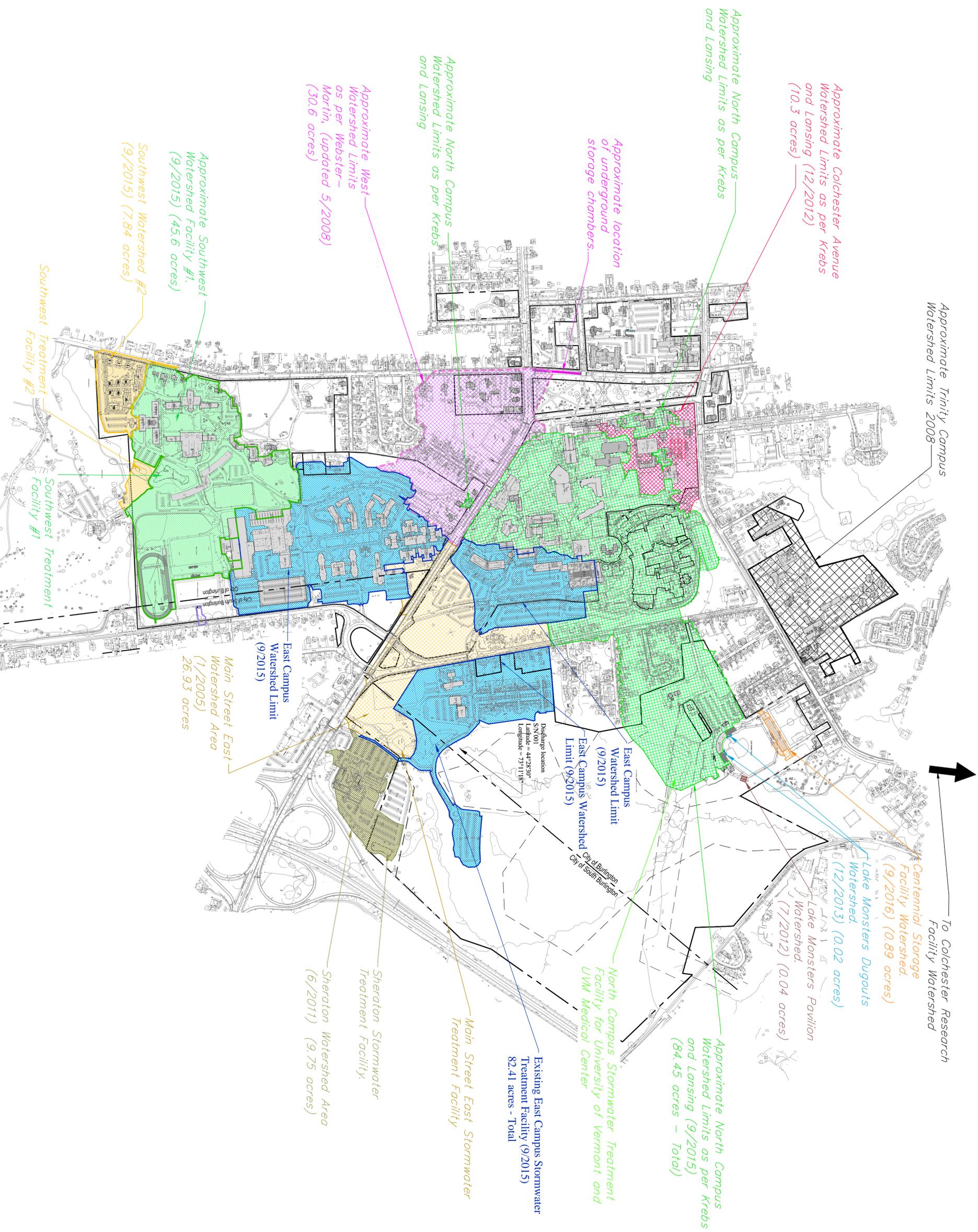
Sunderland Brook

The University participated in the Sunderland Brook FRP with the Town of Essex. The University owns a student housing complex (County Apartments) and some commercial buildings. The residential complex is located on the southwest corner of Fort Ethan Allen and has a comprehensive stormwater infiltration system that contains the 1 year 24 hour rain storm event.

The FRP did not identify any BMPs on University properties.

Financial Statement

Under the current budgeting process, the University would establish project funds to fulfill the University's obligation. We would endeavor to pursue federal and state stormwater grant opportunities.



The UNIVERSITY of VERMONT UVM

University of Vermont
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Project:
UNIVERSITY of VERMONT

Project No. _____
Scale 1" = 400'
Drawn by DMR
Checked by WHN
Date 9/27/2016

Revisions

No.	Date	Description

Drawing Title
OVERALL CAMPUS WATERSHED PLAN

Drawing No.
WS-1

Table A

SUMMARY OF UVM IMPERVIOUS AREAS

Centennial Brook Watershed

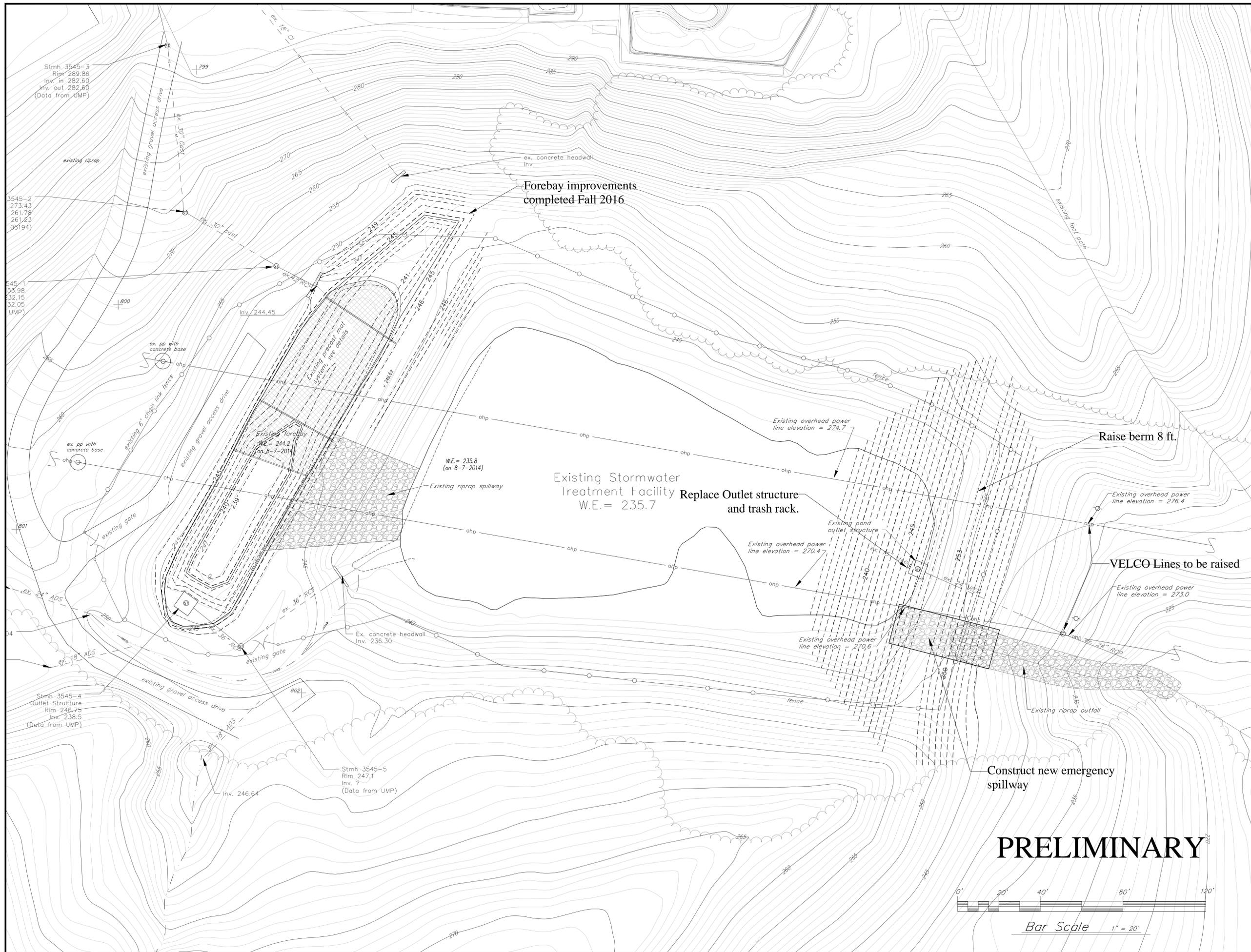
September 28, 2016

Project	Treated Impervious (acres)	Non-Treated Impervious (acres)	Non-Treated Impervious to be treated by FRP (acres)
North Campus Watershed Areas	24.74		
East Campus Watershed Areas	45.06		
UVM Game Operations Booth - 7028-9014.A1	0.01		
UVM Centennial Areas - 7028-9014.A1	0.67		
UVM Centennial Remaining Watershed Areas	1.14	0.20	
Main Street Campus Watershed	3.47		
Sheraton Parking Lot	1.16	1.85	
Spear Street Areas - East of East Watershed			1.42
Centennial Recycling Area			0.26
TOTAL:	76.25	2.05	1.68

Existing Percentage of UVM Impervious Treated	95.3%
UVM Impervious to be treated with FRP Improvements	97.4%

**CENTENNIAL
BROOK FLOW
RESTORATION
PLAN**

City of Burlington
City of South Burlington
Vermont Agency of Transportation
University of Vermont



Project:
**NORTH CAMPUS
STORMWATER
FACILITY
IMPROVEMENTS**

Project No. 13170
Scale 1" = 20'
Drawn by DMR/TJB
Checked by
Date 9/20/2016

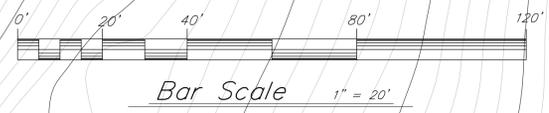
Revisions

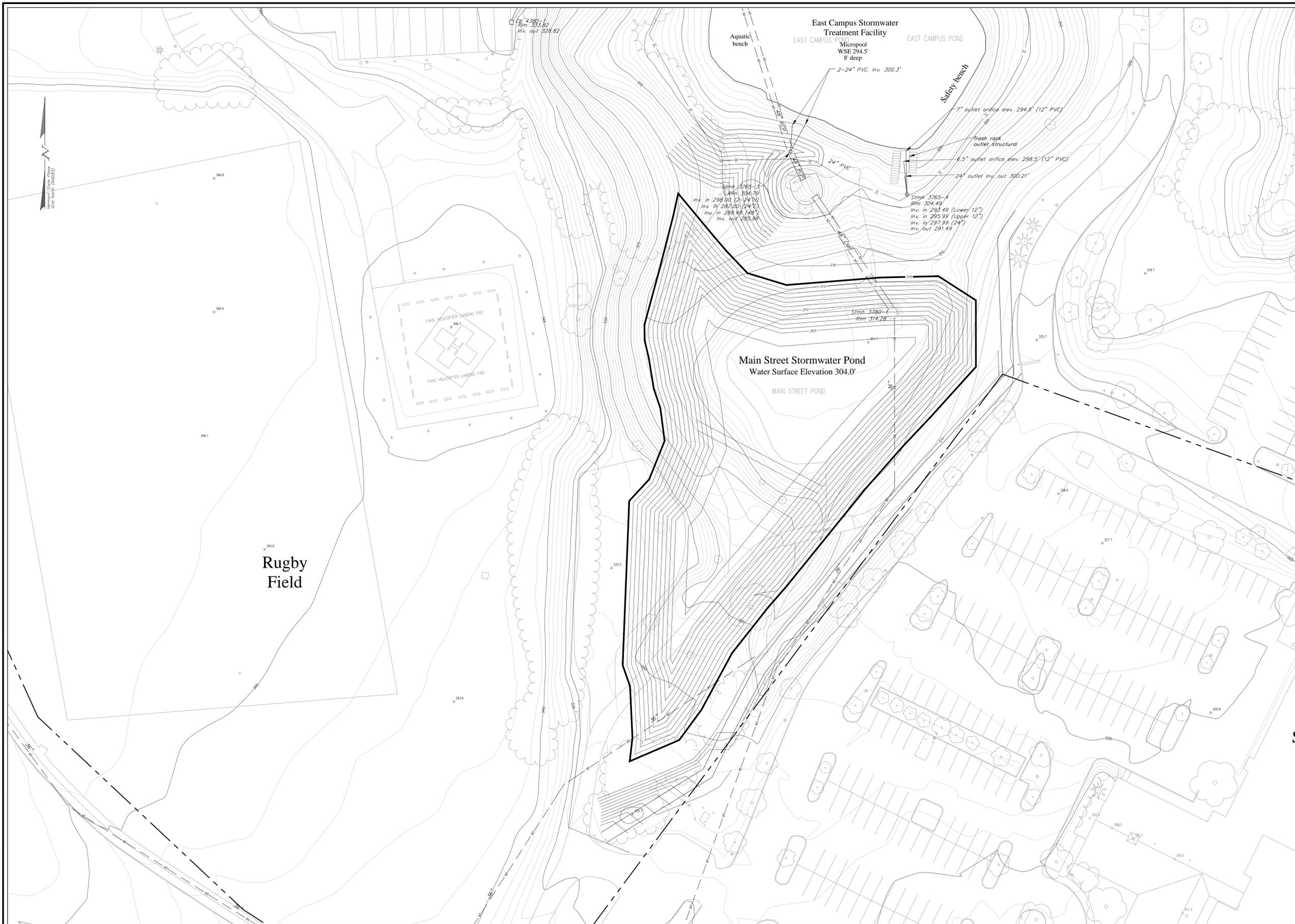
No.	Date

Drawing Title
**Schematic Site
Plan
8 FT BERM**

Drawing No.
SP-1

PRELIMINARY





The
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UVM

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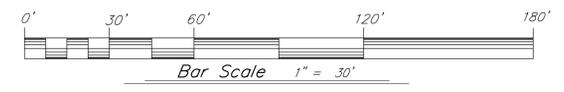
Project:
**University of Vermont
Main Street
Stormwater
Treatment Facility**

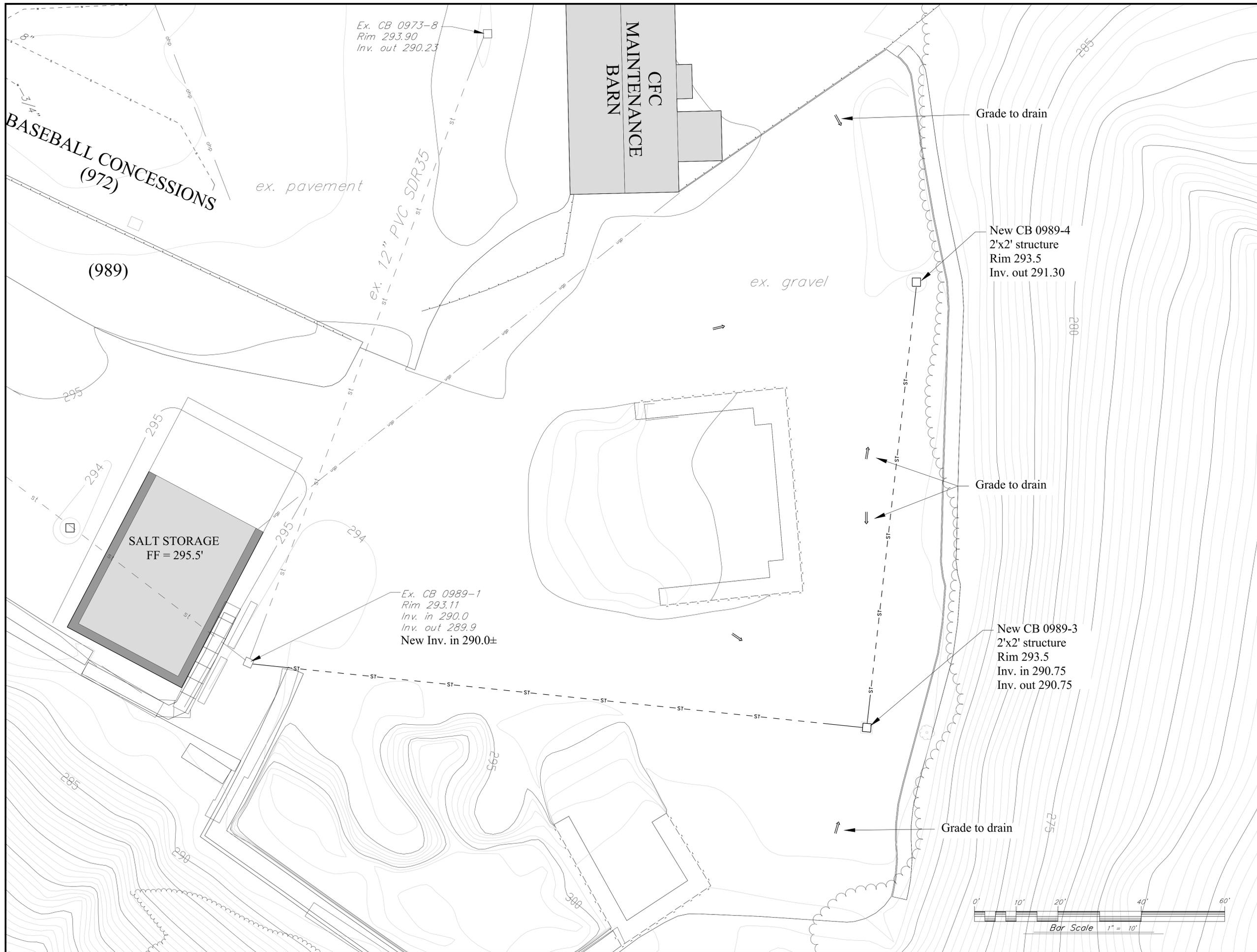
Project No. 03114
Scale 1" = 30'
Drawn by DMR
Checked by
Date 9/27/2016

Revisions	No.	Date

Drawing Title
**Schematic Site
Plan**

Drawing No.
SP-2



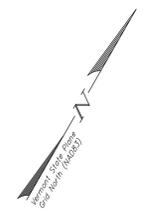


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FOR REVIEW ONLY



Project:
**University of Vermont
Recycling Area
Drainage**

Project No. 03114
Scale 1" = 10'
Drawn by DMR
Checked by
Date 09/27/16

Revisions	No.	Date

Drawing Title
**Schematic
Site Plan**

Drawing No.
SP-3