



CITY OF BURLINGTON

PHASE II STORMWATER  
2005 ANNUAL REPORT

General Permit #3-9014  
NPDES Permit #VTR040000

Submitted by:  
Burlington Public Works

March 2006

## A. INTRODUCTION

This report is being submitted as part of the City of Burlington's Phase II Stormwater Plan per the NPDES (National Pollution Discharge Elimination System) requirements. It follows the same format used in previous years and includes the following information as discussed in Section H of the city's plan:

- Status of compliance with permit conditions.
- Results of information collected.
- A summary of stormwater activities planned for the next annual cycle.
- Any proposed changes as outlined in Section F of the stormwater plan.
- If applicable, provide notice as to whether or not another entity is responsible for any of the permit obligations.

## B. STATUS OF COMPLIANCE WITH PERMIT CONDITIONS AND INFORMATION RESULTS

This section will outline the tasks originally proposed for the first year of this permit, the status of compliance with the plan, and applicable results. Each of these tasks are arranged in accordance with the six minimum control measures.

### **1. Public Education/Outreach Program**

The City of Burlington continues to be a participant in the Chittenden County Regional Stormwater Education Program (RSEP) in accordance with section E1 of the stormwater plan.

Marketing Partners Inc., a local marketing consultant, was selected to develop this 5 year program based upon their experience and commitment to socially responsible projects. In 2004, they launched a media campaign that included television and radio ads, newspaper ads, news releases and the regional stormwater website located at: [www.smartwaterways.org](http://www.smartwaterways.org).

In 2005, they developed a stormwater video and ran paid media campaigns throughout Chittenden County. Appendix A at the end of this report lists all the public education and outreach activities accomplished by Marketing Partners.

### **2. Public Involvement/Participation**

On May 7, 2005 the Community and Economic Development Office (CEDO) once again sponsored Green Up Day in Burlington. A total of 546 volunteers collected 326 bags of garbage and groomed 169 greenbelts that entailed raking debris and leaves. During 2005 CEDO also supported 11 street clean ups, disposing of an estimated 250 cubic yards of waste and recycleables.

As in past years the Englesby Brook watershed was targeted for trash removal. Debris sites in Englesby were mapped ahead of time by Public Works and a dozen volunteers were sent to different areas of the watershed. The Parks and Public Works Departments later collected all the trash, which included paper and plastic, metals, tires and shopping carts that had been dumped into the brook. The total volume of debris collected amounted to 2-3 small dump truck loads.

On May 27, 2005 Public Works partnered with Edmunds Middle School for a stormdrain stenciling project. Over twenty students were broken into teams and sent out within a mile radius of the school to paint fish and “Dump No Waste – Drains to Lake” next to approximately 25 stormdrains. The Vermont Department of Environmental Conservation’s Project WET (Water Education for Teachers) provided paint and stencils, and Public Works supplied traffic safety equipment for the students. Appendix B shows photos of Green Up Day 2005 and one of the Edmund’s Middle School stencil team.

On July 24, 2005 Assistant Public Works Director Laurie Adams worked at a Stormwater booth during a Green Up Day event at Shelburne Farms. She and Public Works Director Jim Jutras from Essex Junction handed out bookmarks/brochures on stormwater issues and had a hands-on exhibit for kids.

### **3. Illicit Discharge and Elimination**

An illicit discharge monitoring program was initiated in 2004 in accordance with the Phase II plan. All of the stormwater outfalls mapped in 2003 were visited and were sampled whenever possible. In order to look for direct or indirect wastewater discharges into stormwater systems, grab samples for *E. Coli* bacteria were taken on those outfalls that had dry weather flow and pads for optical brightener (OB) testing were placed in all outfalls. The optical brightener test is a low cost procedure that detects fluorescent white dyes added to nearly all the laundry detergents to whiten cotton fabrics without the use of chlorine bleach. These dyes fluoresce in the blue region of the visible spectrum when exposed to longwave ultraviolet (UV) light. Unbleached cotton pads are placed in stormwater outfalls where they continuously sample flow and absorb traces of this dye, if present, for the period of time they are in service, usually 1 to 2 weeks. The pads are removed, dried and then viewed under a UV lamp. Pads from stormwater outfalls that fluoresce more than the control pad would indicate a possible direct or indirect contamination from wastewater. More information can be found on this procedure at: <http://www.naturecompass.org/8tb/sampling/>. Appendix C at the end of this document shows the outfall locations along with discharge monitoring reports for sampled outfalls in a format approved by the Vermont Department of Environmental Conservation (VTDEC).

In the fall of 2004 an illicit discharge was discovered in a Plattsburgh Avenue outfall that flows into the Winooski River. Extensive bacteria and video work around Plattsburgh Avenue resulted in finding a house sewer connection into the stormwater pipe on Turf Road. The property owner was alerted to this situation and corrected the problem within a few weeks of notice. A follow up *E. Coli* sample a few weeks after the separation work showed bacteria concentrations greatly reduced but still above background levels. It was believed that with the absence of storm events to flush residual solids out of the pipe network we were seeing bacteria from this household discharge. While the first sample in January 2005 still had elevated bacteria levels a later sample had low bacteria levels, confirming that this discharge was eliminated.

A second illicit discharge was detected in a stormwater outfall that serves Shelburne Street and discharges into Englesby Brook. The source of contamination ended up being a leaking sewer pipe crossing through a stormwater pipe at the intersection of Shelburne and Hadley

Streets in South Burlington. A new manhole was installed in May 2005 and subsequent samples confirmed this illicit discharge was also eliminated.

The Alexis Drive stormwater outfall continues to have high bacteria counts this year as in 2004. This location will continue to be monitored in 2006.

**4. Construction Site Stormwater Runoff Control**

It is the opinion of the city that erosion is generated by all projects that disturb soils and that construction site erosion can be controlled in all cases. An erosion and sediment control checklist was submitted for review in the 2004 Annual Report.

This year, the city is undergoing a complete zoning rewrite that will include a comprehensive section on stormwater control. While it is still in draft form, the stormwater section will include ordinances and guidance on stormwater management (reference: 2002 Vermont Stormwater Management Manual), construction site erosion control, and post-construction maintenance.

The VTDEC had requested that the city provide a list of projects under construction in 2005 that met the one acre impervious and five acre disturbed area thresholds for state permitting requirements. While the city’s database still does not record this particular data, the table below lists large projects that were under construction in 2005 and are nearing completion. VTDEC should be able to cross-reference this list against their stormwater permit applicants.

109 Carrigan Dr.	UVM	Addition to Marsh Life Science
81 So. Williams	Pomerleau	27 units
557 Riverside	Charlebois	2 industrial bldgs.
438 College	UVM	Addition for offices and HC access
590 Main Street	UVM	Student Center- Gateway Commons
41 Cherry St	City/Retrov	13-unit “Loft” housing/office
40 Battery St	City/Retrov	30-unit condominiums
25 Cherry St	City/Westlake	127-room hotel
67 Cherry St	City (DPW)	Lakeview Garage 406 car expansion
633 Main St.	UVM	Dormitories –Univ. Heights-825 beds

**5. Post-Construction Stormwater Management in New Development and Redevelopment**

Our permit plan included recommendations that all developments and redevelopments at least attempt to meet standards set forth in the 2002 VTDEC Stormwater Management Manuals, and have the city create a requirement that all projects disturbing one acre or more of land conform to these standards. These requirements were informally started in 2003. Through the Technical Review Committee process, Public Works has been able to add this condition to projects. Those projects that have structural treatment systems are also required to provide an operation and maintenance (O&M) plan for their system.

## **6. Pollution Prevention and Good Housekeeping for Municipal Operations**

As discussed in the stormwater plan, the only requirement in year 1 was preparation for issuance of VTDEC's Multi-Sector General Permit (MSGP). Although the issuance of these permits are on hold, the city had their Public Works and wastewater facilities inspected by an Environmental Assistance Specialist from the State's Environmental Assistance Division. In summary, these facilities were deemed in excellent condition and only a few minor procedural changes were necessary to be in full compliance with provisions of the MSGP and other safety or environmental regulations.

A system for the inspection, cleaning and repair of catch basins continued in 2005. According to the right-of-way group in Public Works, we cleaned 153 and repaired 35 catch basins for the year. Street sweepers cleaned every street at least five (5) times this year.

In terms of education, a Powerpoint presentation was developed to train municipal employees on the telltale signs of illicit discharges, construction site erosion issues, and good housekeeping practices for municipal operations. This training took place on two separate days in October and lasted approximately 30 minutes. A total of forty-nine (49) employees from Public Works, Parks and Planning & Zoning attended these sessions.

### **C. ACTIVITIES PLANNED FOR THE CURRENT ANNUAL CYCLE**

This section outlines all activities planned for 2005 in accordance with the approved stormwater management plan.

#### **1. Public Education/Outreach Program**

As noted above, the RSEP consultant will begin media spots to increase awareness of stormwater pollution and show ways to minimize our impact to the environment. Burlington will continue to fund its share of this effort.

#### **2. Public Involvement/Participation**

Clean-Up Day 2006 will be once again sponsored in part by Burlington, both in Englesby Brook and throughout the city in the form of debris pickup and disposal. Additional stormdrain stenciling and public stormwater workshops are planned.

#### **3. Illicit Discharge and Elimination**

The storm outfall monitoring will continue in 2006 for those outfalls where bacterial data continues to be higher than normal.

#### **4. Construction Site Stormwater Runoff Control**

We expect implementation of the draft erosion and sediment control checklist shown in Appendix D of this document, including designation of inspection and enforcement responsibilities. A stormwater refresher course is recommended in order to keep this issue on people's minds.

#### **5. Post-Construction Stormwater Management in New Development and Redevelopment**

Since 2003, the city has been requesting or requiring that developers meet the standards set forth in the 2002 Vermont Stormwater Manual, depending on project size. We plan on

continuing this practice while determining whether or not we need a formal ordinance. As part of the original plan, additional training for municipal employees is encouraged.

**6. Pollution Prevention and Good Housekeeping for Municipal Operations**

The city will pursue application for a MSGP when that becomes available. In addition, various other municipal programs are planned for development and implementation this year.

**D. PROPOSED CHANGES TO THE STORMWATER PLAN OR TIMELINE**

As discussed above and as seen in the updated Phase II timeline shown in Appendix E, the only changes at this time are the timing of some of the program tasks. In particular, some of the construction site runoff control and post-construction management programs were not fully developed and implemented in 2004. This was due in part to available resources working on permit applications for coverage under general permit 3-9015 for those systems with expired stormwater permits.

**E. CHANGE IN RESPONSIBILITY FOR PERMIT OBLIGATIONS**

At this time, there are no changes in responsibility for any of the tasks outline in the approved plan.

**F. CERTIFICATION**

“I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering information, the information is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.”

\_\_\_\_\_  
Steven Goodkind, P.E. Director of Public Works

\_\_\_\_\_  
Date Signed

# APPENDIX A – REGIONAL STORMWATER EDUCATIONAL PROGRAM

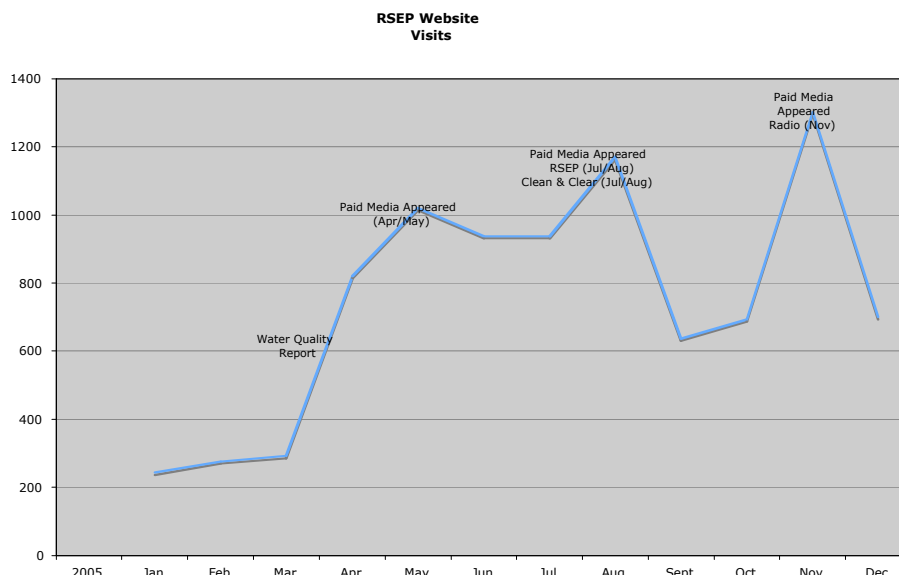
## Regional Stormwater Educational Program 2005 Calendar Year Recap

During 2005, RSEP continued its work on a public education and outreach campaign. The multi-faceted campaign included both paid and unpaid media, with an overall goal of increasing awareness and understanding of stormwater runoff pollution, prevention methods, and the connection between stormwater runoff and water quality. Marketing Partners, Inc. continues to work on contract with RSEP on the public outreach campaign.

RSEP accomplished various goals outlined in the Communication Plans for Program Years 2004-2005 and 2005-2006. The accomplishments include:

- Expand RSEP media toolbox to include an introductory five-minute video on stormwater and a more comprehensive one-hour video panel discussion.
- Conduct two paid media campaigns throughout Chittenden County. The eight-week campaign in the spring included four insertions placed every other week in 10 community newspapers, four spots per week on cable television with a total of 44 spots reaching all five target audiences, and 12 spots per week on three top radio stations. The three-week summer campaign included three insertions per week in nine community newspapers, 27 spots per week on cable television, and twelve spots per week on two top radio stations. Media makegoods were used for a two-week radio buy in November.
- In collaboration with the Governor’s Clean and Clear Initiative, broadcast television ads including a link to the Smart Water Ways website ran in July and August 2005.
- Continue planning for the upcoming program year with the presentation of the 2004-2005 Annual Review including accomplishments, visibility reports and upcoming goals.
- Develop the Communication Plan identifying goals, strategies and program objectives for the upcoming year. Building on program accomplishments from the previous year, refine and update messaging consistent with campaign brand identity.
- Monitor, update website and evaluate tracking data. Compile website tracking data in order to monitor outreach effectiveness.

Below is the website impression information for 2005. Website traffic increases are marked in conjunction with paid and unpaid media.

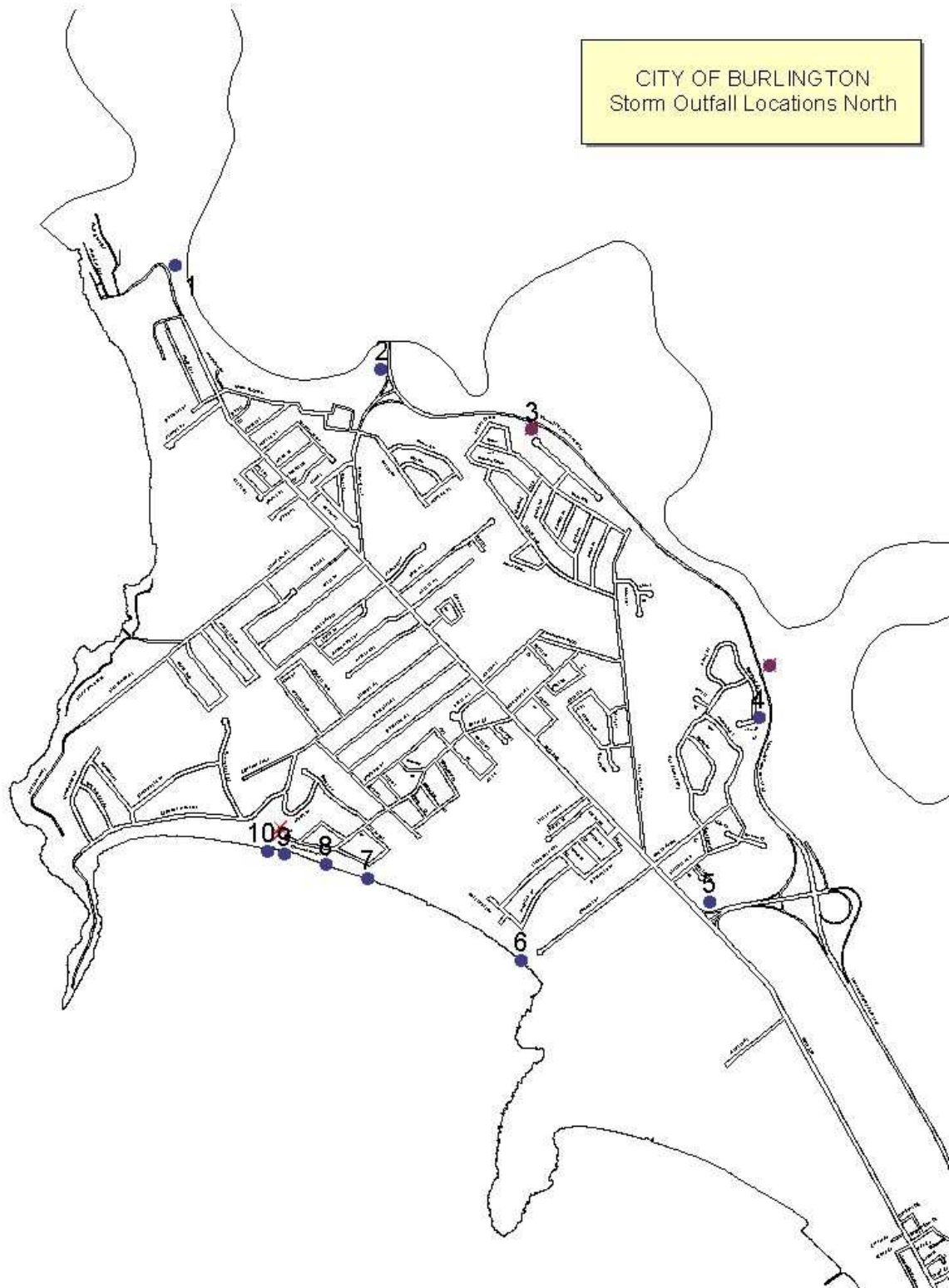


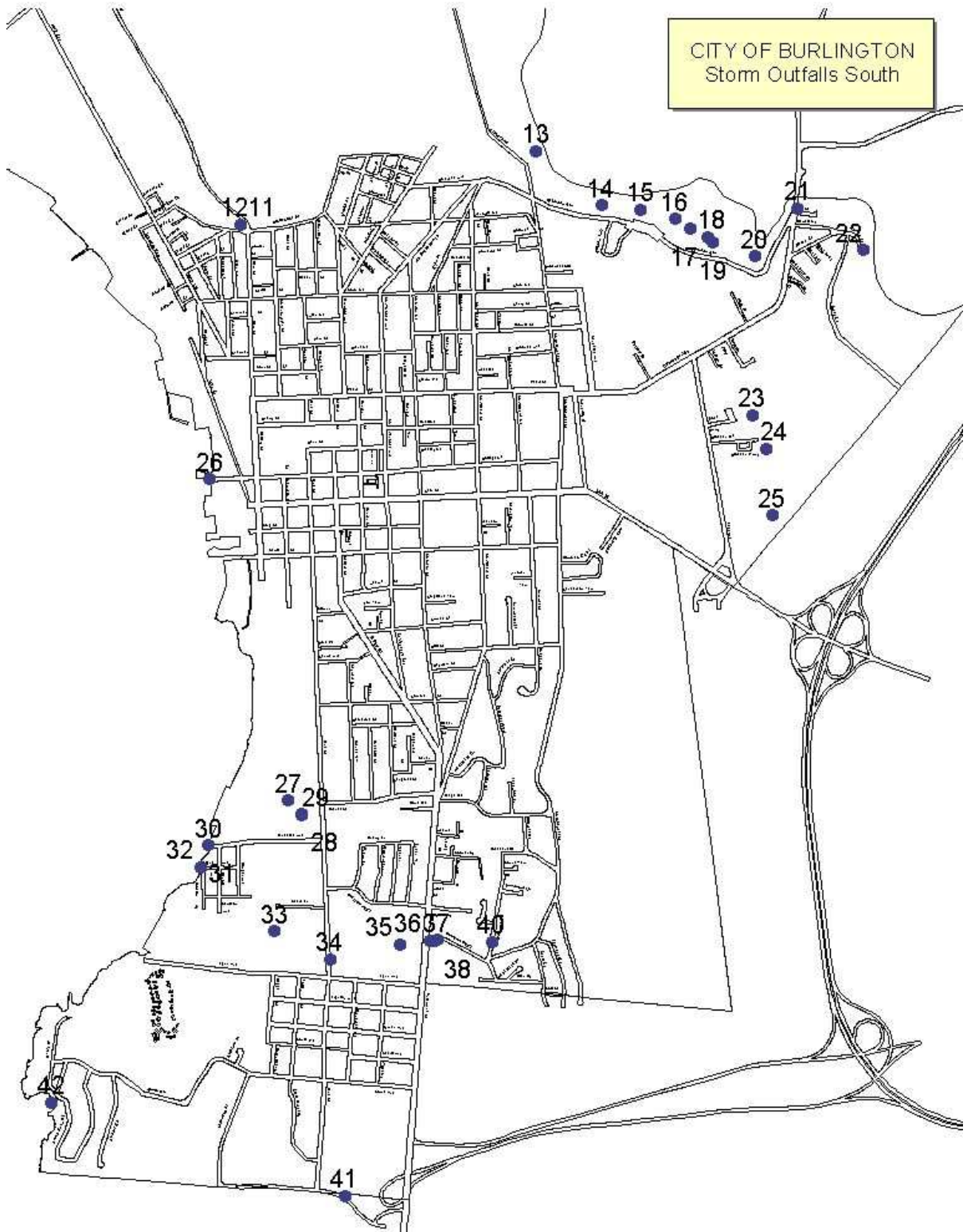
## APPENDIX B – GREEN UP DAY 2005 and STORMDRAIN STENCILING





# APPENDIX C – OUTFALL LOCATIONS AND DISCHARGE MONITORING REPORTS





MONITORING REPORT FOR DISCHARGES FROM MUNICIPAL STORM SEWER SYSTEMS AUTHORIZED BY GENERAL PERMIT #3-9014

MS4: Burlington                                      Comments/Additional Information: Illicit Discharge Corrected  
 Discharge Point Name: Map ID #2, Plattsburgh Ave 36" outfall  
 Location: Off Plattsburgh Avenue and Route 127, near the bikepath  
 Watershed/Drainage: Winooski River  
 Monitoring Dates: 1/5/05, 10/4/05  
 Sample Collected By: S. Roy  
 Analyst or Laboratory: Main WWTP Lab  
 Date(s) of Analysis: 1/5/05, 10/4/05  
 Analytical Methods: Standard Methods 9223 (*E. Coli*)

Date/Time	Parameter	Units	Results	Date/Time	Parameter	Units	Results
1/5 0745	<i>E. Coli</i>	cfu/100mls	4,884				
10/4 1515	<i>E. Coli</i>	cfu/100mls	213				

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein. Based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Approved by: *Steven Goodkind* (Authorized Agent for Permittee)

**MONITORING REPORT FOR DISCHARGES FROM MUNICIPAL STORM  
SEWER SYSTEMS AUTHORIZED BY GENERAL PERMIT #3-9014**

MS4: Burlington      Comments/Additional Information: E. Coli levels high, monitor  
Discharge Point Name: Map ID #10, Alexis Drive 24" outfall  
Location: Beach outfall into Lake Champlain  
Watershed/Drainage: Lake Champlain  
Monitoring Dates: 10/4/05  
Sample Collected By: S. Roy  
Analyst or Laboratory: Main WWTP Lab  
Date(s) of Analysis: 10/4/05  
Analytical Methods: E. Coli and Optical Brightener Test

Date/Time	Parameter	Units	Results	Date/Time	Parameter	Units	Results
10/4 1440	E. Coli	cfu/100mls	>24,192				
10/4	Optical B.	none	lost pad				

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein. Based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Approved by: *Steven Goodkind*                      (Authorized Agent for Permittee)

MONITORING REPORT FOR DISCHARGES FROM MUNICIPAL STORM SEWER SYSTEMS AUTHORIZED BY GENERAL PERMIT #3-9014

MS4: Burlington      Comments/Additional Information: Illicit Discharge Corrected  
 Discharge Point Name: Map ID #36, Shelburne Street 18" outfall  
 Location: Englesby Brook at former Panda House Restaurant  
 Watershed/Drainage: Lake Champlain  
 Monitoring Dates: 5/16/05, 6/23/05, 6/27/05  
 Sample Collected By: S. Roy and C. Line  
 Analyst or Laboratory: Main WWTP Lab  
 Date(s) of Analysis: 5/16/05, 6/23/05, 6/27/05  
 Analytical Methods: *E. Coli*

Date/Time	Parameter	Units	Results	Date/Time	Parameter	Units	Results
5/16 1118	<i>E. Coli.</i>	cfu/100 mls	9,768				
6/23 0735	<i>E. Coli.</i>	cfu/100 mls	200				
6/27 n/a	<i>E. Coli.</i>	cfu/100 mls	73				

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein. Based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Approved by: *Steven Goodkind*

(Authorized Agent for Permittee)

# APPENDIX D – DRAFT CONSTRUCTION EROSION AND SEDIMENT CONTROL PLAN

## CITY OF BURLINGTON SMALL PROJECT EROSION AND SEDIMENT CONTROL PLAN

1. Project Location\_\_\_\_\_
2. Brief Project Description (i.e. house foundation, swimming pool)\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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3. Will the Project Require:
  - a. \_\_\_ Building Permit (Contact Public Works at 863-9094)
  - b. \_\_\_ Zoning Permit (Contact Planning and Zoning at 865-7188)
  - c. \_\_\_ Development Review Board Approval
4. Owner Name/Address/Phone\_\_\_\_\_
5. Contractor Name/Address/Phone\_\_\_\_\_
6. Estimated Project Start Date\_\_\_\_\_ Estimated End Date\_\_\_\_\_
7. Area and Depth of Soil Disturbance \_\_\_\_\_ ft long by \_\_\_\_\_ ft wide by \_\_\_\_\_ ft deep
8. Distance in feet to nearest:  Drainage Ditch\_\_\_\_\_  
 Catch Basin\_\_\_\_\_  
 Lake/River/Stream\_\_\_\_\_  
 City Sidewalk\_\_\_\_\_  
 City Street\_\_\_\_\_

### QUESTIONNAIRE *(See last page for typical solutions to these questions)*

A) Nature of all site disturbances (check all that apply):  Underground utility trench(es),  
 curb cut/driveway  foundation  cut/fill/regarding  landscaping  
 other \_\_\_\_\_

B) Will excavated soil be stockpiled on the site?  Yes  No

- If yes, how long will the stockpile be on site? (i.e. 1 day, 1 week)\_\_\_\_\_. How do you propose to control erosion of the stockpile? \_\_\_\_\_
- If no, where is the ultimate disposal of excess soil? \_\_\_\_\_

C) Will site conditions (i.e. slope, soil type, distance to property boundary) allow disturbed soils to leave the property during rainstorms or snowmelt?  Yes  No

- If yes, tell us how you agree to prevent this situation or control soils from entering nearby ditches, catch basins or lakes, rivers, streams and/or city sidewalks and streets? \_\_\_\_\_

- If no, tell us why runoff from storms or snowmelt events will not leave the site.

D) Does your project require an Erosion Prevention and Sediment Control Plan (EPSCP) under either Construction General Permits #3-9001 or #3-9013?  Yes  No

If yes, please submit a copy of your state approved project EPSCP with this review application.

If no, have you demonstrated that the total amount of earth disturbance is less than one acre in area?

If you are not sure, contact Kim Greenwood at ANR Water Quality Division, 802-241-3770 and/or the ANR web page at

[http://www.vtwaterquality.org/stormwater/htm/sw\\_cgp.htm](http://www.vtwaterquality.org/stormwater/htm/sw_cgp.htm)

E) Do you plan to park construction vehicles on or disturb City owned property like the greenbelt area?  Yes  No

- If yes, tell us how you agree to repair all disturbances or damage to City owned property and provide a written approval from the City allowing construction vehicles to park on City owned property.
- If no, then please monitor all construction and visitor vehicles and advise all not to park on City owned property.

F) How do you propose to either prevent or clean sediment generated from construction vehicles and activities that becomes deposited on City streets, sidewalks, or bikepaths and how frequently this will be done.

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G) Will stockpiles or disturbed soils be present and/or exposed after Nov. 1<sup>st</sup> of any construction year?  Yes  No

- If yes, tell us how you plan to stabilize any stockpile and/or disturbed soils.

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### AGREEMENT

By filling out and signing this plan, I agree to abide by the terms and conditions outlined above. Failure to follow this plan can result in a stop work order by the City of Burlington, fines, or both.

By:  Owner  Contractor  Architect/Engineer

\_\_\_\_\_  
Name Signature Date

### REVIEW STATUS

Reviewed by: \_\_\_\_\_ Date: \_\_\_\_\_

Current Status:  Approved  Approved as Noted  Revise and Resubmit.

Site visit required?  Yes  No

Comments or Conditions: \_\_\_\_\_

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## TYPICAL SOLUTIONS TO PREVENT OR CONTROL SEDIMENT AND EROSION

### STOCKPILES

- Cover stockpiles with a tarp when not being used.
- Install silt fencing or other appropriate device around the stockpiles to filter sediment.
- Cover stockpiles with straw or other approved mulching material.
- Plant grass and mulch stockpiles that will be on site for more than 14 days.
  - Cover, vegetate or install erosion matting on stockpiles that will remain disturbed over the winter.

### DISTURBED AREAS

- Cover disturbed areas with a tarp when not being used.
- Maintain vegetated buffers around disturbed areas.
- Install silt fencing or other appropriate device to filter sediment washing off from disturbed areas.
- Cover disturbed areas with straw or other approved mulching material.
- Plant grass and mulch all disturbed areas that will remain exposed for more than 14 days.
- Cover, vegetate or install erosion matting on areas that will remain disturbed over the winter.

Protect ditches, catch basins or water bodies off-site by using silt fencing, gravel check dams or other approved sediment control methods.

### CONSTRUCTION VEHICLES

- Do not park construction vehicles on City owned green space. Vehicles disturb vegetation and compact the soil, thereby reducing its ability to infiltrate stormwater.
- Prevent sediment from leaving the project by cleaning the tires of vehicles.
- Sweep city streets, sidewalks and bikepaths daily or as needed to remove sediment transported from the project.

### RESOURCES

The Vermont Handbook for Erosion Prevention and Sediment Control at:

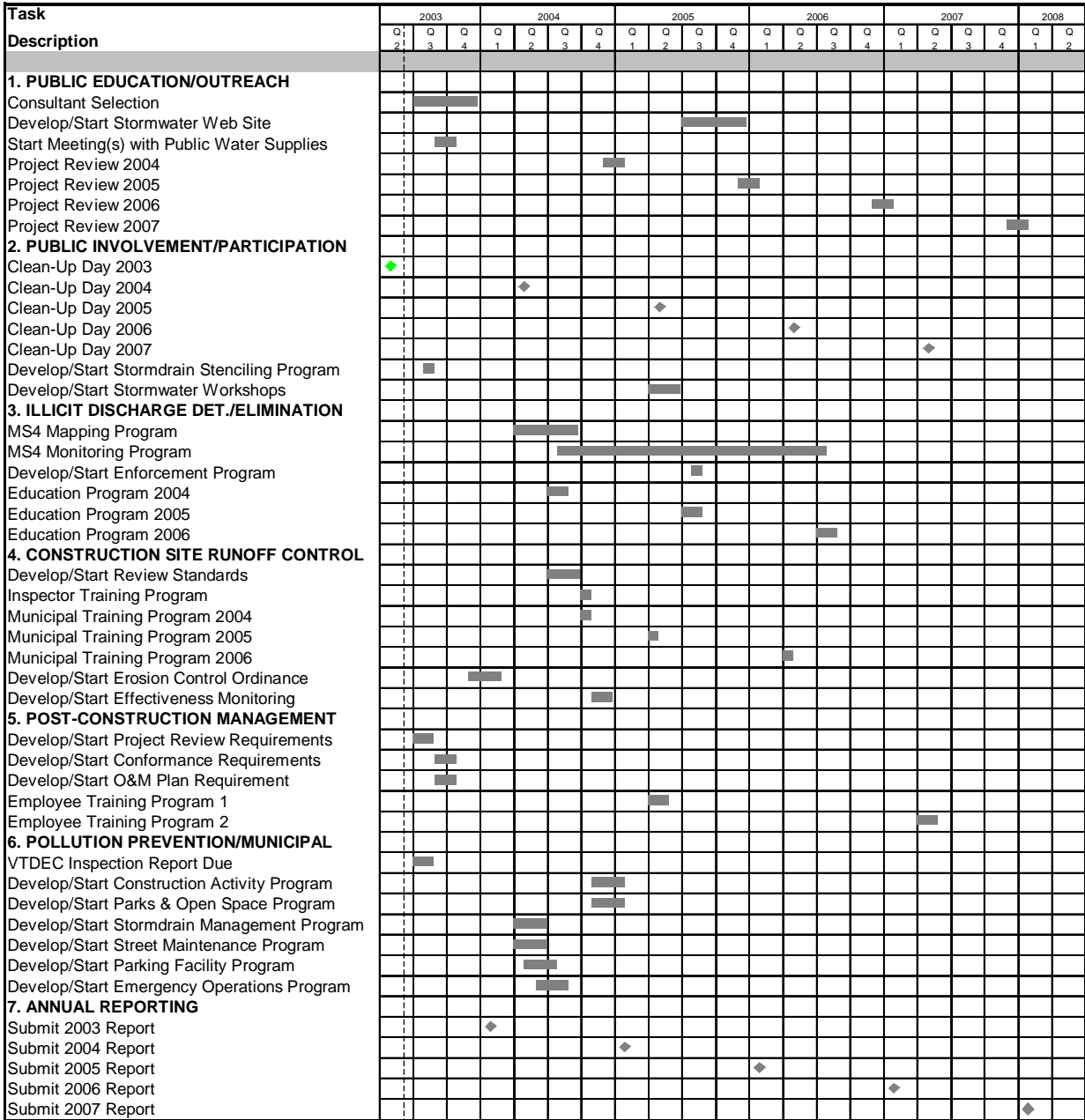
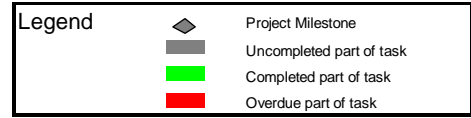
[http://www.anr.state.vt.us/dec/waterq/stormwater/htm/sw\\_erosionhandbk.htm](http://www.anr.state.vt.us/dec/waterq/stormwater/htm/sw_erosionhandbk.htm)

The Environmental Protection Agency's National Pollutant Discharge Elimination System web page at: [http://cfpub1.epa.gov/npdes/faqs.cfm?program\\_id=6#181](http://cfpub1.epa.gov/npdes/faqs.cfm?program_id=6#181)

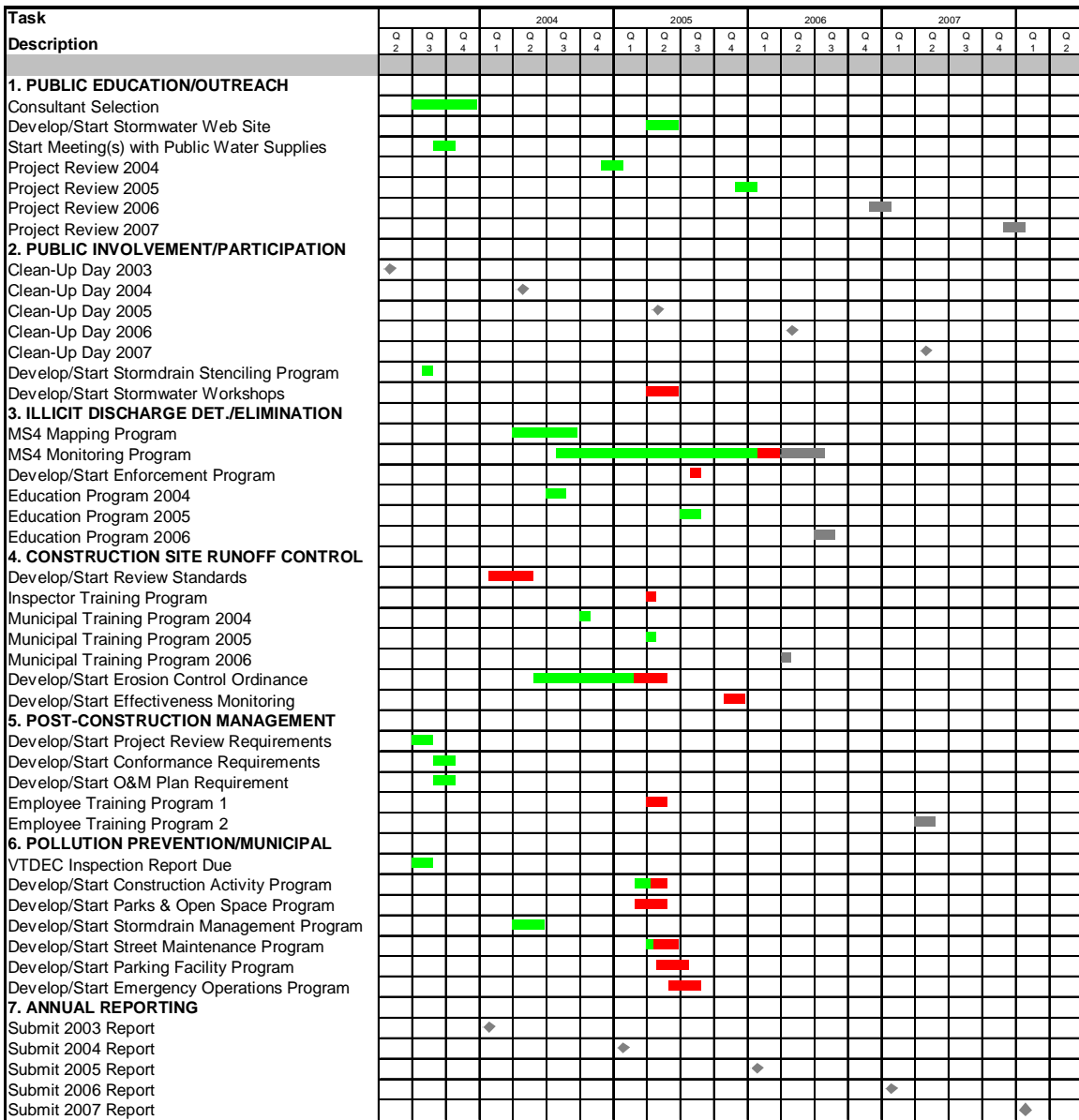
The City of Burlington Conservation Board Stormwater and Erosion Control Fact sheet at <http://www.ci.burlington.vt.us/planning/cb/stormwater/management.html>

# APPENDIX E – ORIGINAL AND UPDATED PHASE II TIMELINES

## BURLINGTON PHASE II TIMELINE



BURLINGTON PHASE II TIMELINE  
 March 2006 Update



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