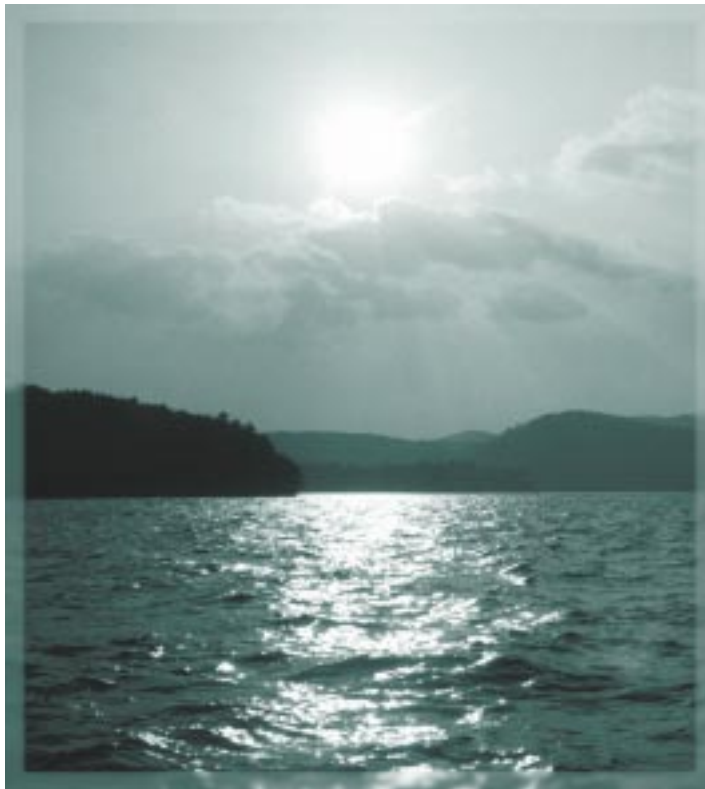


GUIDE FOR MINOR PROJECTS

# STORM WATER MANAGEMENT



FOR THE LAKE GEORGE BASIN

## STORMWATER MANAGEMENT GUIDE FOR MINOR PROJECTS

This manual's purpose is to inform and assist property owners in meeting stormwater management requirements when beginning building or land clearing and grading projects. Property owners are encouraged to consult with the Program Administrator before commencing or contracting for any project. ❖ A self-help guide, the manual presents an introduction to the stormwater program, defines jurisdictional projects, and discusses project application materials and procedures. It includes Best Management Practices (BMPs—actions and practices that can be used to reduce the flow rates and constituent concentrations in urban runoff) and design suggestions with information sheets and worksheets intended to aid the property owner in planning the site improvement.

### A MESSAGE FOR PROPERTY OWNERS

The program places primary responsibility for adherence to the regulations with the property owner. ❖ Property owners should take active steps to ensure that all agents such as contractors, builders, landscapers, etc., obtain and conform to necessary permits. ❖ Legally obligated, property owners should confirm permits and plans.

### A MESSAGE FOR AGENTS

Since regulations prohibit any person from building or clearing, grading, excavating, etc., without a permit, builders, contractors and agents are also responsible for ensuring that projects are undertaken in accordance with a valid permit. ❖ Contractors should confirm permits and take care to comply.

### ABOUT THE PROGRAM ADMINISTRATOR

The Program Administrator is responsible for permit decisions and for issuance of clear and enforceable permits. ❖ It is the Program Administrator who determines when a permit is required, follows up on inspecting projects, and initiates any enforcement actions. ❖ The Program Administrator is either the municipality or the Lake George Park Commission. For information, call the Lake George Park Commission: (518)668-9347.

## INTRODUCTION

The Lake George Watershed Stormwater Management Program (Program) is a basin-wide community effort designed to protect and improve the water quality of Lake George by reducing runoff and pollution contained in runoff as a result of development. ♦ Lake George is fed primarily by runoff from its land drainage basin. Pollutants accumulate rapidly on hard surfaces during dry periods. Runoff washes those pollutants away, directing them quickly to the lake. Stormwater runoff from developed areas of the drainage basin often contains grease, lead, oil, salt, pathogens, nutrients (phosphorus and nitrogen), and sediments among other contaminants.

### GUIDE FOR MINOR PROJECTS



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#### EXEMPT—NO PERMIT REQUIRED

- 1 Emergency repairs to any stormwater control measure.
- 2 Development involving land disturbance and land clearing of less than 5000 sq.ft. which does not result in the creation of new impervious surfaces of more than 1000 sq.ft.
- 3 Any logging or agricultural activity consistent with a soil conservation plan approved by the appropriate County Soil and Water Conservation District or a timber management plan prepared or approved by the Department of Environmental Conservation, as applicable.
- 4 Any building, construction or land clearing occurring outside the drainage basin of Lake George where all stormwater discharged from the development site is discharged outside of the basin, unless a permit is otherwise required by local ordinance.
- 5 Activities of an individual engaging in home gardening by growing flowers, vegetables and other plants primarily for use by that person and his or her family.
- 6 Construction of an approved wastewater treatment system and construction of an approved wharf, dock, boathouse, or mooring.

#### MINOR PROJECTS

- 1 *Any building, land clearing or development activity affecting between 5000 and 15,000 square feet.*
- 2 *Creation of a two-lot, three-lot, or four-lot subdivision which may result in the construction of no more than one single-family residential structure and related accessory structures per lot, and will require land clearing or alteration activities of less than 15,000 sq.ft. per lot and less than 15,000 sq.ft. total for any subdivision road.*
- 3 *Any building, alteration or modification of a stormwater control measure excluding the maintenance, cleaning, or repair of such stormwater control measure.*

#### MAJOR PROJECTS

Major projects are projects not defined as an exempt or a minor project. Stormwater controls for major projects must be designed by an engineer. *The Program Administrator may require that an engineer design the stormwater controls for minor projects where site characteristics such as slope and soil conditions are determined to be extreme.*

#### PREPARING PERMIT MATERIALS FOR A MINOR PROJECT

Considering stormwater management early in the project planning phase saves time and money. Preparing materials required for a minor permit, essentially a runoff control plan, should take about the same time it takes to complete an application for a building permit or site plan review. The review process is designed to run concurrently with the review process for a building permit or site plan review.

#### MINOR PROJECT PLAN PREPARATION STEPS:

- 1 *Prepare a scale drawing showing key features of the site.*
- 2 *Calculate the newly created impervious area.*
- 3 *Calculate the volume of stormwater runoff.*
- 4 *Identify/choose the appropriate stormwater and erosion control measures.*
- 5 *Size and place the selected stormwater control measures.*
- 6 *Add stormwater and erosion control measures to the Project Plan.*

## MINOR PROJECT PLAN

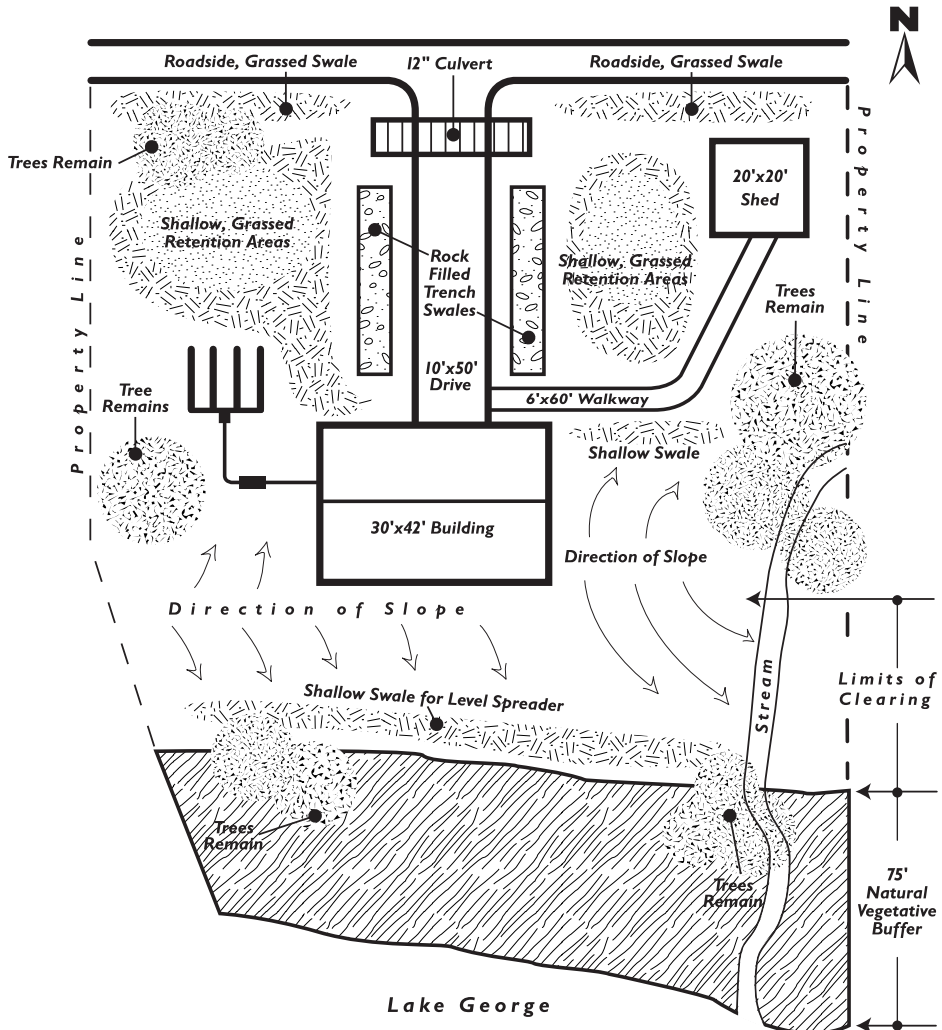
Property Owner: \_\_\_\_\_

Tax ID# \_\_\_\_\_

Proposed by: \_\_\_\_\_

Date: \_\_\_\_\_ Drawn by: \_\_\_\_\_

Scale: \_\_\_\_\_



## 1 Prepare a Project Plan: a scale drawing showing key features of the site.

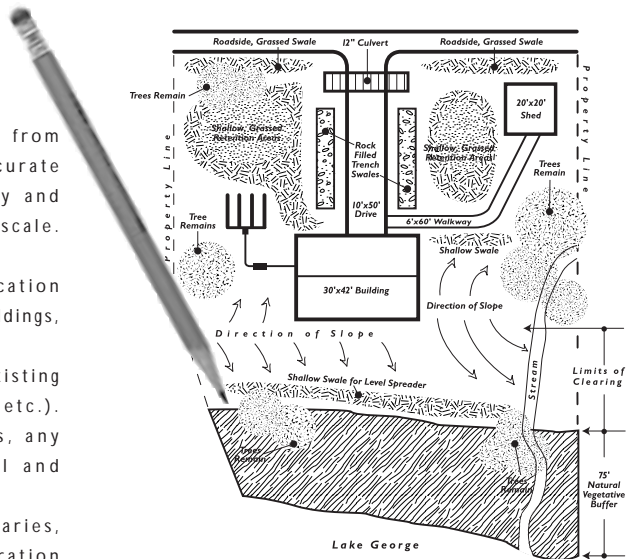
The project plan can be developed from a tax map, site survey, or other accurate drawing of the site. The property and boundaries should be accurate in scale. The project plan should include:

- a line showing the limit and location of area(s) that will be cleared for buildings, driveways and lawns.
- the location of all structures, existing and proposed (house, shed, garage, etc.). Include driveways, parking areas, any other impervious surfaces, well and septic system.
- the location of property boundaries, any streams or wetlands, and separation distances of structure(s) to any water body or stream.
- indication whether property soil is normally wet or dry, and the angle/slope of the property in relation to any water body or stream.

## 2 Calculate the newly created impervious area.

Identify the newly created impervious areas. Note on the plan the area of each proposed structure and impervious surface (paved, walkways, etc.) and calculate the sum of the areas. *For example:*

• 10' x 50' driveway =	500 sq.ft.
• 30' x 42' building footprint =	1,260 sq.ft.
• 20' x 20' shed =	400 sq.ft.
• 6' x 60' walkway =	360 sq.ft.
<b>Total impervious area =</b>	<b>2,520 sq.ft.</b>



## 3 Calculate the volume of stormwater runoff.

For small and medium size projects, simply multiply the total square footage of newly created total impervious surface by 1.5 gallons.

*For Example:*

$$2,520 \text{ sq.ft.} \times 1.5 \text{ gallons/sq.ft.} = 3,780 \text{ gallons}$$

This volume is now used to size the stormwater control storage devices. Information about selecting stormwater storage devices follows.

## 4 Identify/choose the stormwater and erosion control measures. (see page 6 & 7)

## 5 Size and place the selected stormwater control measures. (see page 7 & 8)

## 6 Add stormwater and erosion control measures to the project plan. (see page 9)

**VEGETATIVE BUFFERS ARE PREFERRED—**

try to use these before resorting to structural controls. Vegetative buffers can satisfy the stormwater control requirements in some situations. Vegetative buffers are suggested if the following conditions exist on the site:

**A—Sheet flow is maintained**—flow is not channeled with curbs, gutters, etc.

**B—Slope is less than 15%**—15 feet of rise over 100 feet of ground.

**C—Slope length is greater than 50-75 feet.**

*As in the sample project plan, retain and use as much natural vegetative buffering as possible.*

**OTHER VEGETATIVE CONTROLS**

**D—Shallow grassed retention areas**—effective, easy to construct and maintain—are recommended for some sites (smaller lots, poor soils, etc). Note the sample plan (page 4) for possible locations. Combination systems are also possible where the sheet flow would be directed to a vegetative buffer and the calculated, concentrated flow may need to be directed to a retention area. Shallow grassed retention areas can also often adequately capture and infiltrate the necessary amount of stormwater on level lots. Costs for these landscape measures are minimal when incorporated into the overall development plan. ♦ **Rule of thumb—build the shallow grassed retention area equal in size to the newly created impervious area and gradually slope the sides to a maximum depth of 6 inches.**

**Shallow Grassed Swales are applicable to:**

- open, flat areas
- sites with shallow groundwater or bedrock

**Shallow Grassed Swales are not suited for:**

- steep slopes or wooded areas

**For Design and Construction:**

- slopes should be very gradual to prevent erosion and allow mowing of grass

**A****B****C****D**

**Shallow Grassed Swale stormwater retention:**  
 $\text{length(ft.)} \times \text{width(ft.)} \times \text{depth(ft.)} \times 4 = \text{volume (gallons)}$

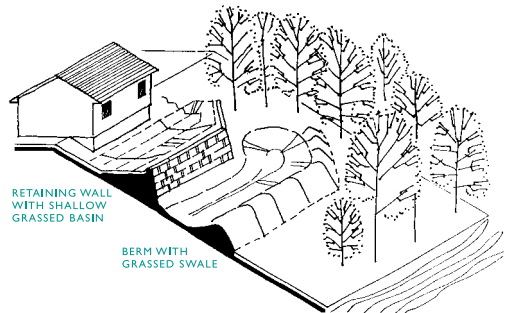
**STRUCTURAL MEASURES**—Properly installed, infiltration devices serve on a long-term basis with little maintenance. They attenuate peak flows and recharge groundwater systems. Standing water is avoided and they will provide benefits even when the ground surface is frozen and phosphorus loading to the lake may be at its highest. On certain sites, it may be easier to use a combination of strategies or devices.

#### TRENCHES AND WALLS

On sites with moderate slopes (greater than 15%), infiltration trenches and retaining walls can be a cost-effective solution.

#### DRYWELLS

For difficult sites (i.e., small lots with greater slopes), drywells may be a viable alternative.



#### INFILTRATION DEVICE SIZING

*Example:* 1300 sq.ft. of impervious surface requires 1950 gallons of stormwater storage/infiltration volume:

$$1300 \text{ sq.ft.} \times 1.5 \text{ gallon/sq.ft.} = 1950 \text{ gallons}$$

*Solution:* One drywell, 8 ft. diameter by 4 ft. high, installed on a bed of stone 1 ft. thick and surrounded by a 1 ft. ring of stone would provide 2005 gallons of storage—sufficient since it exceeds the required 1950 gallons.

*Or,* a combination system: 31 feet of stone trench, 2 ft. wide by 4 ft. deep (31 ft. x 24.4 gallons = 756 gallons) leading to a 6 ft. diameter by 4 ft. high dry well (1204 gallons) for a total volume of  $756 + 1204 = 1960$  gallons.

#### REQUIRED MINIMUM SEPARATION DISTANCES:

- Infiltration devices shall not be installed up gradient within 20 feet of the subsurface disposal portion of a wastewater treatment system (leaching device.)
- Infiltration devices for roadways, parking lots and other areas subject to vehicle traffic shall not be installed within 100 feet of any water well, wetland or water body.
- Infiltration devices and buildings shall be located to maintain maximum attainable horizontal distance separation from wells, wetlands and water bodies.
- The bottom of any infiltration device shall be a minimum of 2 feet above seasonal high ground water mark and 2 feet above bedrock.



## SELECTION OF THE APPROPRIATE STORMWATER CONTROL MEASURES DEPEND ON:

- The volume of storage (water) to be accommodated.
- Site conditions—the characteristics of your property that may limit the use of a particular device.
- The cost of purchase and installation.

CONTROL MEASURE	DESCRIPTION	PRO'S and CON'S
<b>Vegetative Buffers Filter Strips</b>	Vegetative sections of land designed to accept runoff as overland sheet flow.	Inexpensive, especially if established prior to development. Work well in clay soils. Best when combined with other control measures. Minimum length should be no less than fifty to seventy-five feet. Should not be used to control large impervious areas.
<b>Surface Basins Grassed Swales Depressed Area</b>	A natural depression or wide shallow ditch used to temporarily store, route or filter runoff.	Inexpensive, easy to maintain. Efficiency is increased when combined with other control measures. The wider the swale, the greater the benefit for pollutant removal.
<b>Infiltration Trench</b>	A shallow, excavated trench that has been backfilled with stone to create an underground reservoir.	Believed to have high capability to remove particulate pollutants. Without pre-treatment, have short life spans. Application is limited by site conditions.
<b>Drywells</b>	Open-ended concrete cylinders with openings in the walls.	Usually can be installed underground and out of sight. May be more costly than vegetative measures. May not be applicable in areas with shallow depth to bedrock or groundwater.
<b>Infiltrators</b>	Sections of plastic arches similar in use to dry wells.	Usually can be installed underground and out of sight. May be more costly than natural vegetative measures. Due to their lower profile, may be more applicable in areas with shallow depth to bedrock or groundwater than dry wells.

STORAGE DEVICE	SIZE	VOLUME GALLONS	VOLUME CUBIC FEET
1 <b>Shallow Grassed Swale</b> (see pg.6)	<b>L (ft.) x W (ft.) x D (ft.) x 4 = GALLONS</b>		
2 <b>Drywell</b>	4 ft. diameter, 32 in. high *	434	58
3 <b>Drywell</b>	6 ft. diameter, 48 in. high *	1204	161
4 <b>Drywell</b>	8 ft. diameter, 24 in. high *	1107	148
5 <b>Drywell</b>	8 ft. diameter, 48 in. high *	2005	268
6 <b>Drywell</b>	8 ft. diameter, 60 in. high *	2453	328
7 <b>Stone Trench</b>	2 ft. wide x 4 ft. deep **	21 per linear ft.	2.8 per linear ft.
8 <b>Stone Trench</b>	4 ft. wide x 4 ft. deep **	42 per linear ft.	5.6 per linear ft.
9 <b>High Capacity Infiltrator</b>	3 ft. wide x 6.25 ft. long x 1.25 ft. high ***	24.7 per linear ft.	3.3 per linear ft.
10 <b>Perforated Pipe</b>	3 ft. diameter	53 per linear ft.	7.1 per linear ft.

\* Drywells on 1 ft. stone bedding, surrounded by 1 ft. wide belt of stone, 35% stone porosity  
 \*\* Assumed 35% porosity of stone      \*\*\* Standard installation on 6 in. stone bedding



**WHAT IS AN EROSION AND SEDIMENT CONTROL PLAN?** An Erosion and Sediment Control Plan is required showing the site's existing surface features (buildings, slopes, clearing and grading) and how, where and when the site will be altered. For small projects, typical erosion control devices such as siltation fences and straw bale dikes are used to protect disturbed areas and temporary stockpiled soil. Select appropriate erosion control measures and show them on the Erosion Control Plan. Indicate how and when they will be implemented and maintained. Complete a Construction and Erosion Control Schedule to ensure the coordination of erosion and sediment control practices with construction activities. The Erosion and Sediment Control Plan may be drawn on the Stormwater Control Plan or may be prepared separately.

Information that can be used to select and design erosion controls can be found in the manual *New York Guidelines for Urban Erosion and Sediment Control*. This manual is available at most County Soil and Water Conservation District Offices. Planning assistance may also be available from the County Soil and Water Conservation District in your county.

**Warren County Soil & Water Conservation District Office**  
51 Elm Street, Warrensburg, New York 12885  
Telephone: (518) 623-3119

**Washington County Soil & Water Conservation District Office**  
USDA Service Center, 2530 State Route 40, Greenwich, NY 12834-9627  
Telephone: (518) 692-9940 ext. 3

## FIVE PRINCIPLES OF EROSION AND SEDIMENT CONTROL:

### 1. KEEP THE DISTURBED AREA SMALL.

The development plan should be prepared with a minimum of clearing and grading. Natural cover should be retained and protected wherever possible. Critically erodible soil, steep slopes, streambanks and drainageways need to be protected.

### 2. STABILIZE DISTURBED AREAS AS SOON AS POSSIBLE.

Two methods are available: vegetative and structural. Vegetative is mulching and seeding with grass, shrubs and/or trees. Structural is a constructed measure such as a diversion, storage basin, stone-lined channel, etc.

### 3. KEEP WATER RUNOFF VELOCITIES LOW.

The removal of existing vegetative cover during development and the increase in impermeable surfaces after development will add to both the volume and velocity of runoff unless managed properly.

### 4. PROTECT DISTURBED AREAS FROM WATER RUNOFF.

Conservation measures can be used to prevent water from entering and running over the disturbed areas. Diversions and other control structures intercept runoff and either store or divert it away from vulnerable areas to stable outlets.

### 5. RETAIN SEDIMENT WITHIN THE SITE.

Sediment can be retained by two methods: filtering runoff or detaining it. Filtering can be done with filter fabric, straw bales and/or finely graded gravel. Detaining uses a storage basin that contains the runoff until many of the sediments drop out. However, the best way to control sediment is to prevent erosion.

**Essex County Soil & Water Conservation District Office**  
Cooperative Extension Center, 67 Sisco Street, P.O. Box 232  
Westport, New York 12993 Telephone: (518) 962-8225

EXAMPLE

## EROSION and SEDIMENTATION CONTROL PLAN

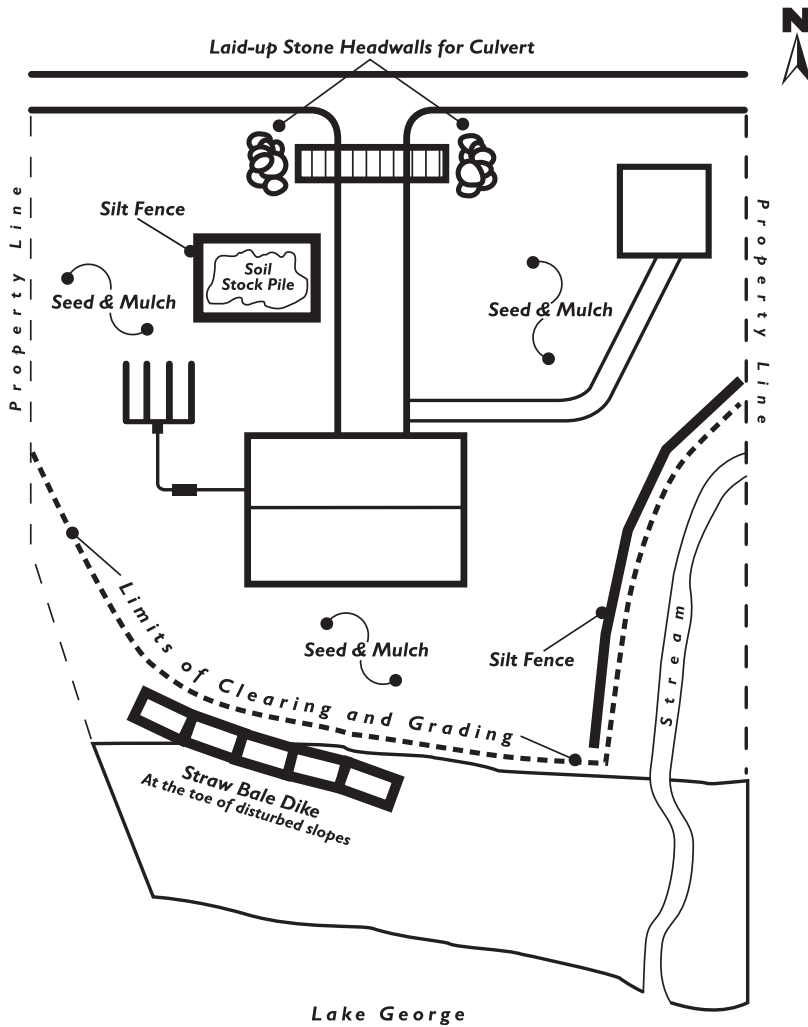
Property Owner: \_\_\_\_\_

Tax ID# \_\_\_\_\_

Proposed by: \_\_\_\_\_

Date: \_\_\_\_\_ Drawn by: \_\_\_\_\_

Scale: \_\_\_\_\_



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# STORM WATER MANAGEMENT



FOR THE LAKE GEORGE BASIN



Produced in cooperation with municipalities within the Lake George Park by the  
**Lake George Park Commission**  
P.O. Box 749, Lake George, NY 12845 • Tel: (518)668-9347 • email: [lgpc@superior.net](mailto:lgpc@superior.net)

*The following schedule can be used to help plan and keep track of erosion and stabilization measures during project construction.*

**CONSTRUCTION ACTIVITY**

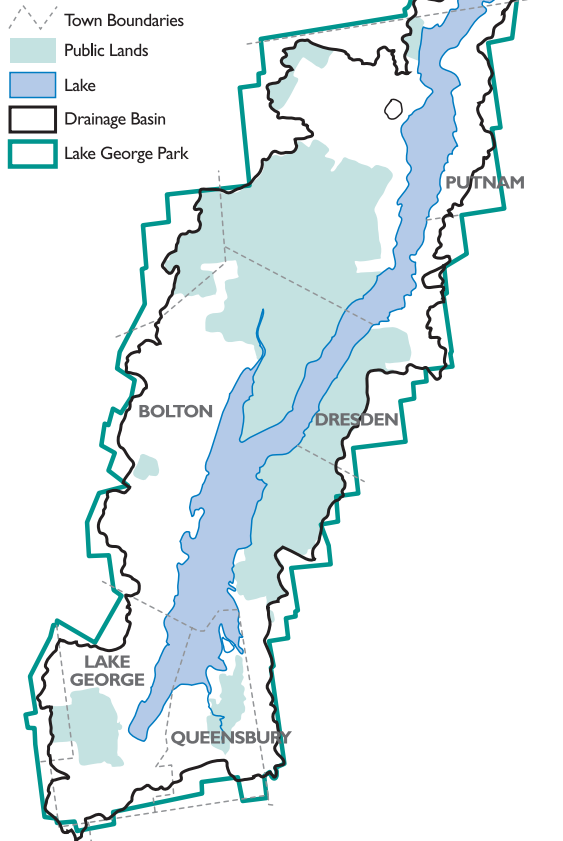
**START**

**COMPLETE**

<b>Obtain Permit</b> .....	_____	-----	_____
<b>Clearing</b> .....	_____	-----	_____
Install Erosion Controls .....	_____	-----	_____
Type of Erosion Controls _____			
<b>Utility Placement</b> .....	_____	-----	_____
Install Erosion Controls .....	_____	-----	_____
Type of Erosion Controls _____			
<b>Rough Grading</b> .....	_____	-----	_____
Install Erosion Controls .....	_____	-----	_____
Type of Erosion Controls _____			
<b>Building</b> .....	_____	-----	_____
Install Erosion Controls .....	_____	-----	_____
Type of Erosion Controls _____			
<b>Road Construction</b> .....	_____	-----	_____
Install Erosion Controls .....	_____	-----	_____
Type of Erosion Controls _____			
<b>Final Grading</b> .....	_____	-----	_____
Install Erosion Controls .....	_____	-----	_____
Type of Erosion Controls _____			
<b>Seeding &amp; Mulching</b> .....	_____	-----	_____

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