

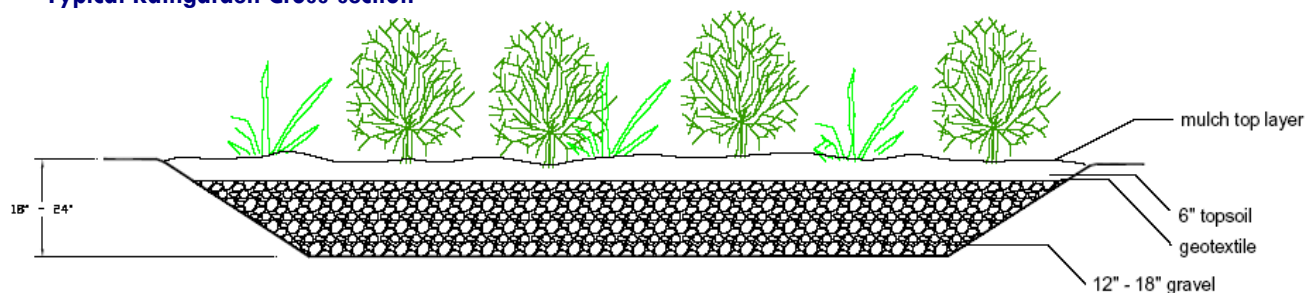
# RAINGARDENS



Raingardens are a great way for homeowners in the Long Lake watershed to help improve water quality while also beautifying their property and creating a natural area that will attract birds and butterflies. Rain gardens allow rain and snowmelt to seep naturally into the ground. This helps recharge the groundwater supply, and reduces polluted runoff to Long Lake. Information on how to design, plant and maintain a raingarden is provided below.

- **Location:** Raingardens should be located in areas with a slope between 1% and 10% that are more than 10 feet away from any building foundations. You may have to re-direct a down-spout towards your garden to ensure that your plants will receive sufficient levels of runoff. The downspout should end 4 feet from the outside edge of the garden.
- **Design Criteria:** The garden should be approximately 1/3 of the size of the surface area providing the runoff. All raingardens function as a vegetated depression which collects and infiltrates stormwater runoff into the ground. However, the specific design features of each raingarden should be determined on a site by site basis. The optimal depth and design features should be determined based on the size of the drainage area, slope, existing soils, etc. An example cross-section of raingarden is shown below.

Typical Raingarden Cross-section



- **Plants:** Hardy native species that thrive in our ecosystem without chemical fertilizers and pesticides are the best choices. Many rain gardens feature shrubs as well as wild flowers and grasses. Ideally, your raingarden should include a variety of plant species, planted at a density of 1 plant per 1 to 2 square feet (density depends the species). As the rain garden matures, you may need to thin the population of some plants to allow others to grow. When planting, put the tallest flowers and shrubs in the deepest part of the raingarden. For information on specific plant and shrub options, see (1) the attached suggested raingarden planting list and (2) the attached list of species approved by the Massachusetts EOE for ecological restoration projects.
- **Maintenance:** In the weeks following planting, you may want to hoe dandelions and other weeds until the mature garden plants crowd them out. Also, for the first year your rain garden will require monthly weeding during the growing season. It is only necessary to weed one time per year in the following years. Shrubs need to be pruned annually. During extremely dry periods, it may also be necessary to water several times per week.

## SUGGESTED RAINGARDEN PLANTING LIST:

### Native Plants for Wet Soils --- Sunny Areas:

- Sweet Flag (Acorus calamus)
- Giant Hyssop\* (Agastache foeniculum)
- Canada Anemone (Anemone canadensis)
- Marsh Milkweed\* (Asclepias incarnata)
- New England Aster\* (Aster novae-angliae)
- Marsh Marigold (Caltha palustris)
- Tussock Sedge (Carex stricta)
- Turtlehead\* (Chelone glabra)
- Joe Pye Weed\* (Eupatorium maculatum)
- Boneset (Eupatorium perfoliatum)
- Queen of the Prairie\* (Filipendula rubra)
- Sneezeweed (Helenium autumnale)
- Blueflag Iris (Iris versicolor)
- Soft Rush (Juncus effusus)
- Great Blue Lobelia (Lobelia siphilitica)
- Switchgrass\* (Panicum virgatum)
- Prairie Phlox (Phlox pilosa)
- Mountain Mint (Pycnanthemum virginianum)
- River Bulrush (Scirpus fluviatilis)
- Softstem Bulrush (Scirpus validus)
- Riddell's Goldenrod (Solidago riddellii)
- Tall Meadow Rue\* (Thalictrum dasycarpum)
- Culvers Root\* (Veronicastrum virginicum)
- Golden Alexander (Zizia aurea)

\* Likely to grow taller than three feet

### Native Plants for Wet Soils --- Shady Areas:

- Caterpillar Sedge (Carex crinita)
- Cardinal Flower\* (Lobelia cardinalis)
- Ostrich Fern\* (Matteuccia struthiopteris)
- Virginia Bluebells (Mertensia virginica)
- Sensitive Fern (Onoclea sensibilis)

### Shrubs --- Sunny or Shady Areas:

- Black Chokeberry (Aronia melanocarpa)
- Red Osier Dogwood (Cornus serotina)
- Low Bush Honeysuckle (Diervilla lonicera)
- Pussy Willow (Salix caprea)
- Blue Arctic Willow (Salix purpurea 'Nanna')

### Shrubs --- Sunny Areas Only:

- Meadow Sweet (Spiraea alba)
- Steeplebush (Spiraea tomentosa)
- High Bush Cranberry (Viburnum trilobum)

# Raingarden Examples





# Perennial Daylily Rain Garden

Approx. 20 ft.

Approx. 10 ft.

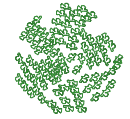


Plan View



**Autumn Joy Sedum**

*Sedum x 'autumn joy'*  
Approx. Qty. 50



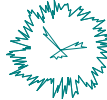
**Hearts Afire Daylily**

*Heemerocallis 'hearts afire'*  
Approx. Qty. 10



**Hearts Afire Daylily**

*Heemerocallis 'hearts afire'*  
Approx. Qty. 10



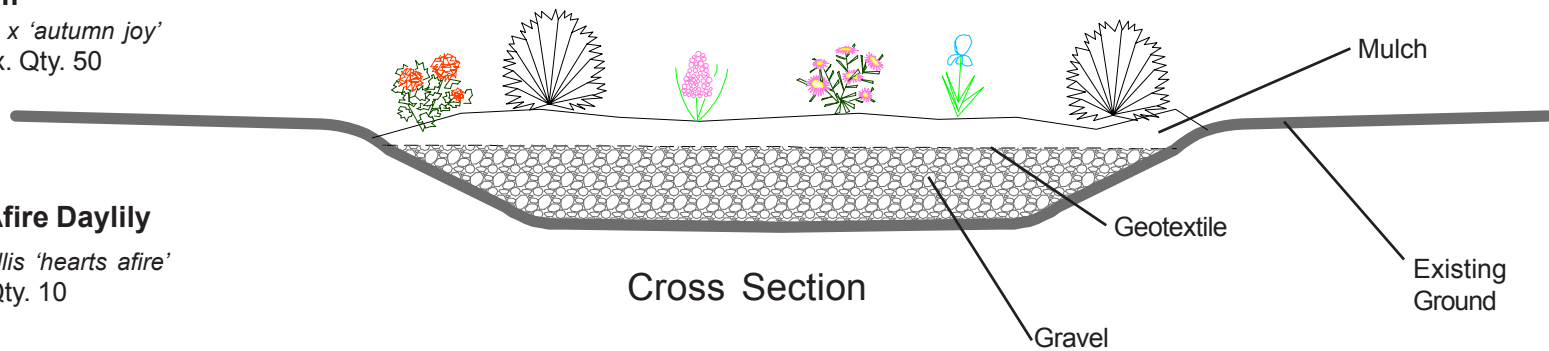
**Catherine Woodbury Daylily**

*Heemerocallis 'catherine woodbury'*  
Approx. Qty. 10



**Oxeye Sunflower**

*Heliopsis helianthoides*  
Approx. Qty. 10



Cross Section

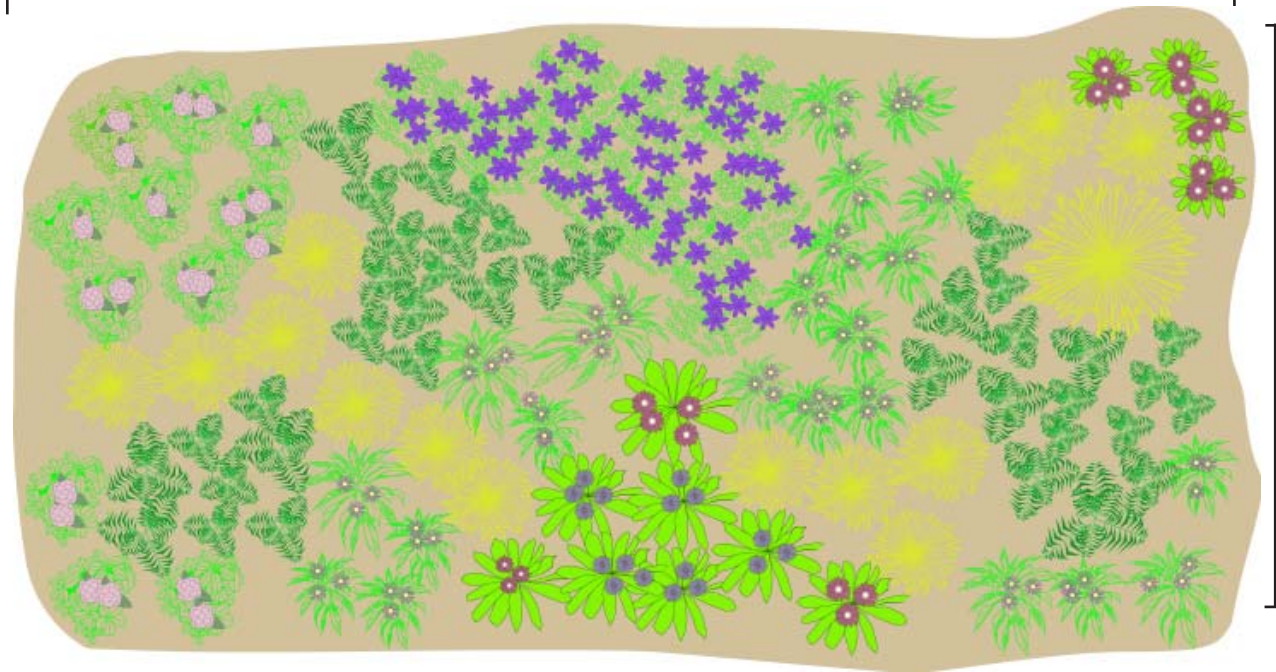


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# Perennial Rain Garden-Shady Conditions

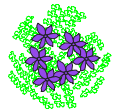
Approx. 20 ft.



**Ostrich Fern**  
*Mateuccia pennsylvanica*  
Approx. Qty. 20



**Lilac Beauty Lilyturf**  
*Liriope muscari 'lilac beauty'*  
Approx. Qty. 16



**Golden Japanese Forest Grass**  
*Hakonechola macra*  
Approx. Qty. 12



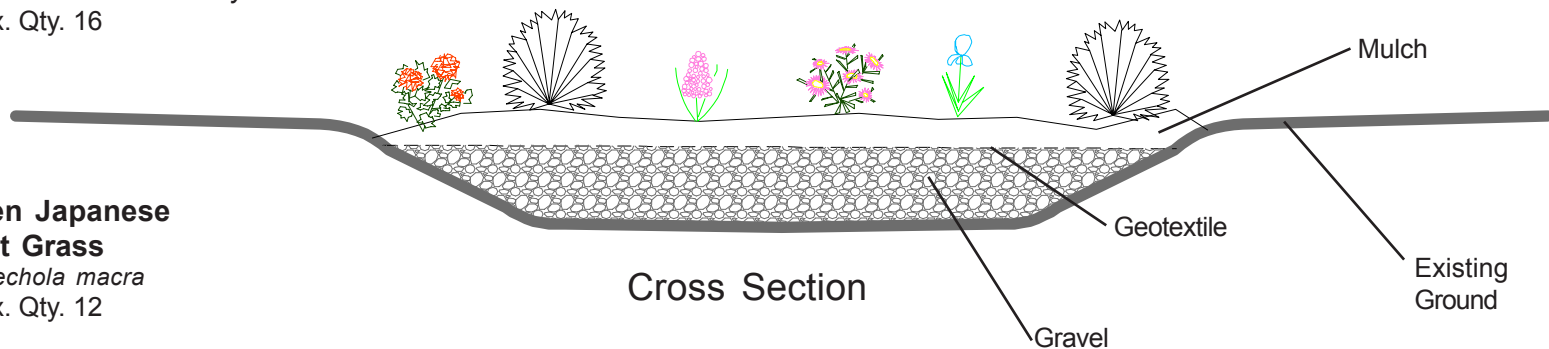
**Hosta 'Hottsy Tottsy'**  
*Hosta x 'hottsy tottsy'*  
Approx. Qty. 10



**Great Blue Lobelia**  
*Lobelia siphilitica*  
Approx. Qty. 10



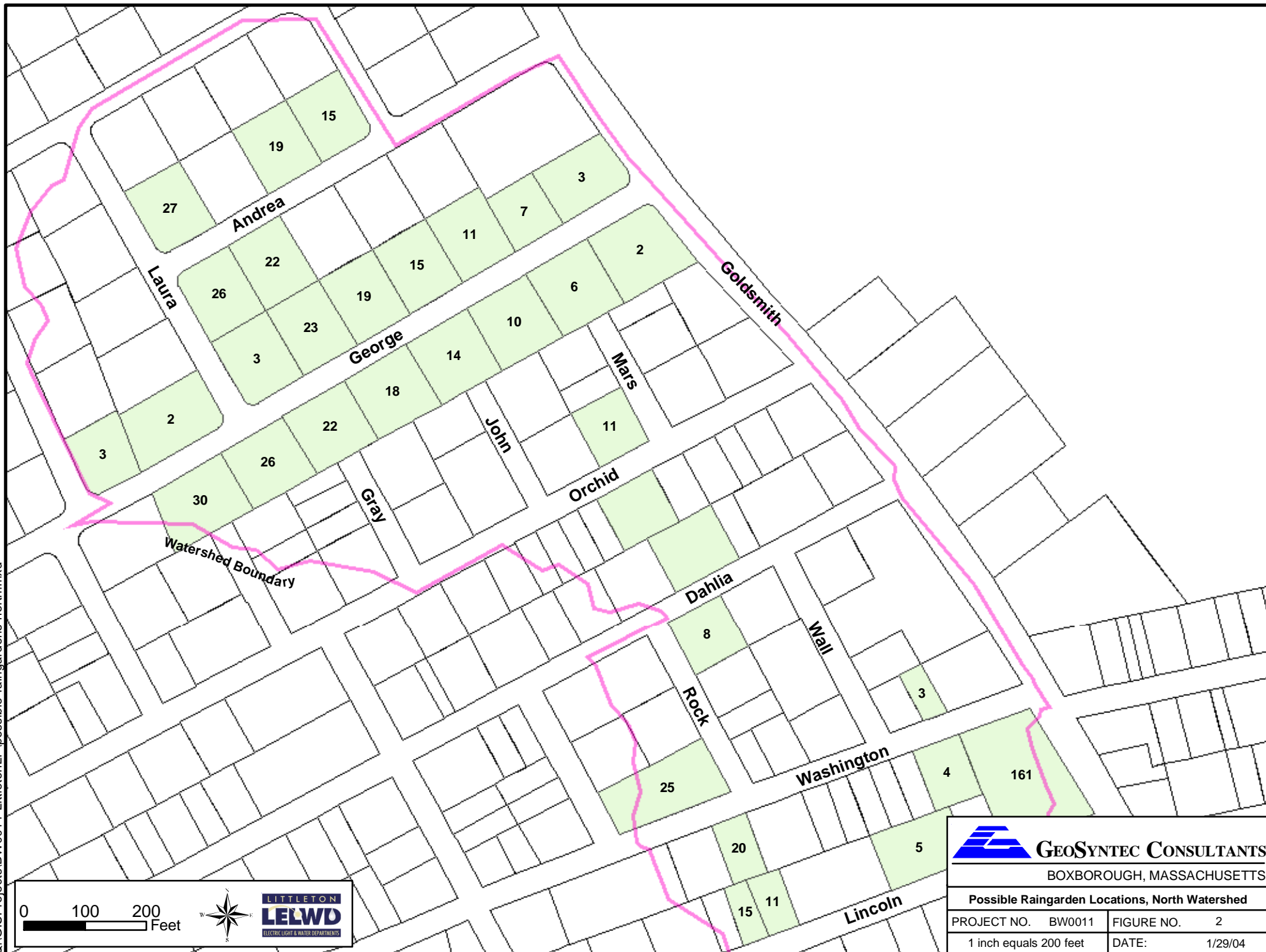
**Golden-edged Hosta**  
*Hosta fortunei*  
Approx. Qty. 20




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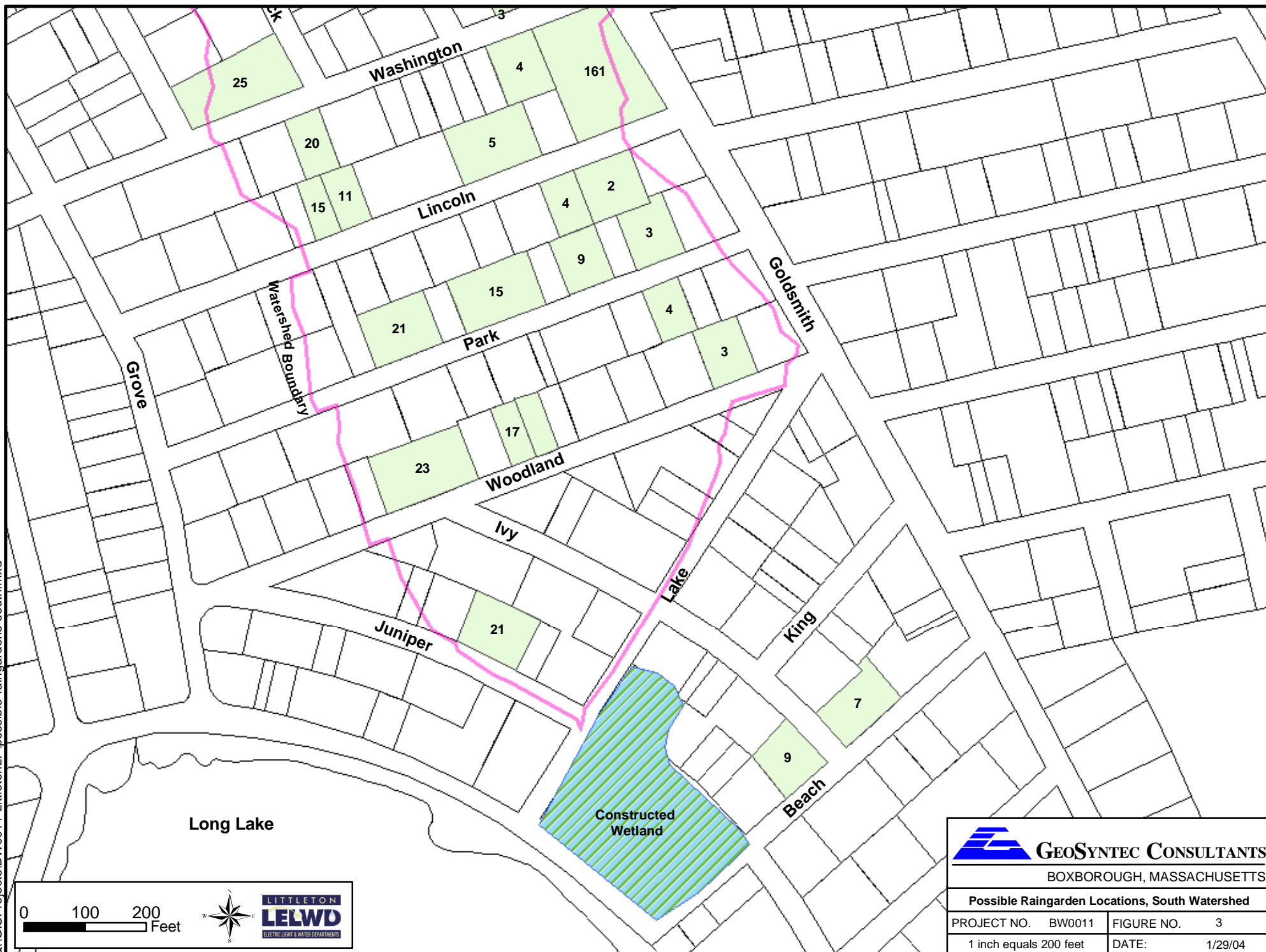
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sroy@geosyntec.com


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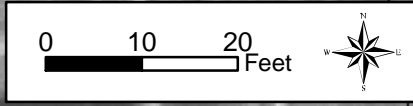
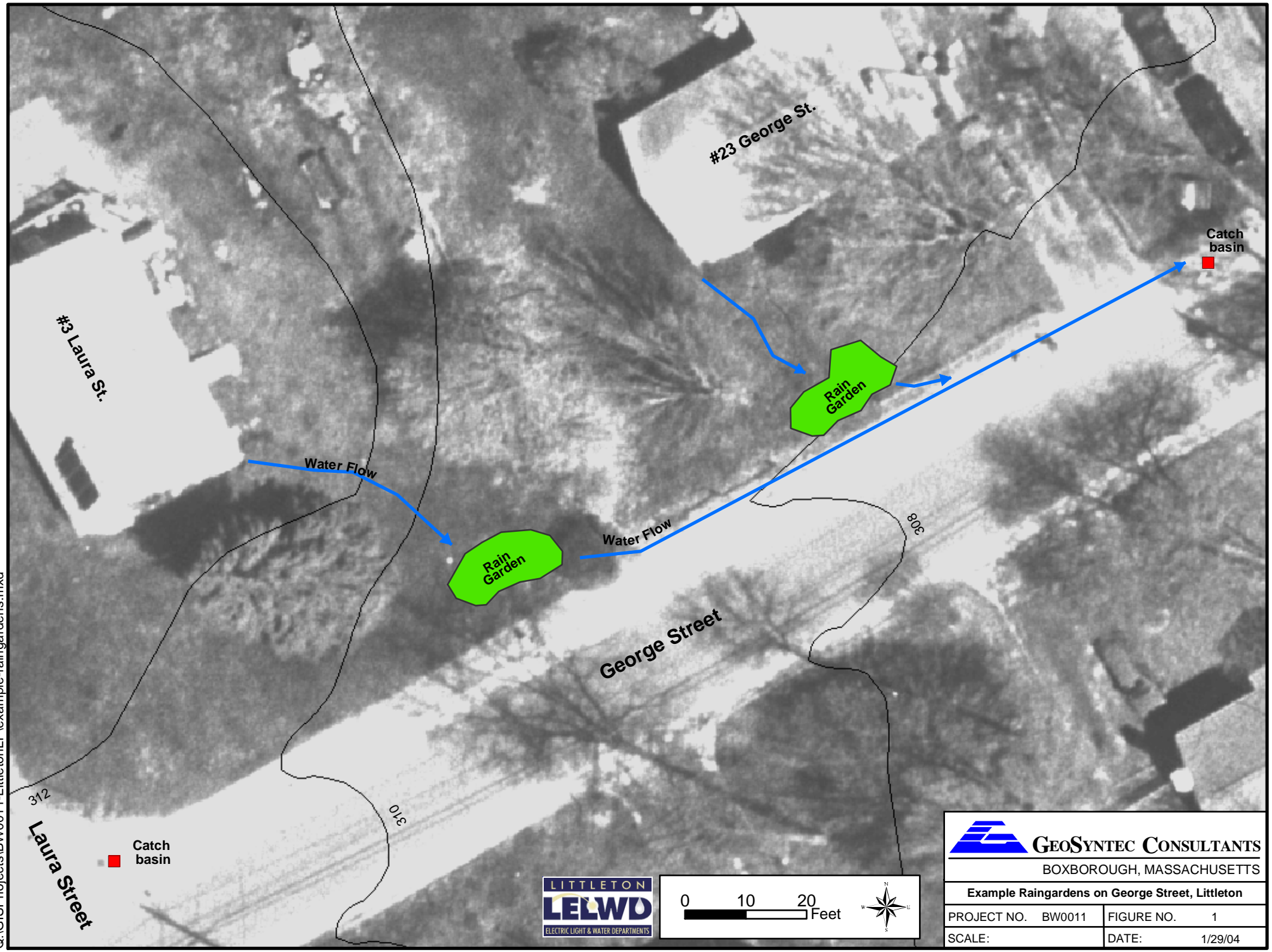
 <b>GEOSYNTEC CONSULTANTS</b>	
BOXBOROUGH, MASSACHUSETTS	
Possible Raingarden Locations, North Watershed	
PROJECT NO. BW0011	FIGURE NO. 2
1 inch equals 200 feet	DATE: 1/29/04






 <b>GEOSYNTEC CONSULTANTS</b> BOXBOROUGH, MASSACHUSETTS	
Possible Raingarden Locations, South Watershed	
PROJECT NO. BW0011	FIGURE NO. 3
1 inch equals 200 feet	DATE: 1/29/04

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 <b>GEOSYNTEC CONSULTANTS</b> BOXBOROUGH, MASSACHUSETTS	
Example Raingardens on George Street, Littleton	
PROJECT NO. BW0011	FIGURE NO. 1
SCALE:	DATE: 1/29/04