Mill View Estates Park Conceptual Design

Prepared for the Town of Bridgewater, VA

March 2014
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Mill View Estates Park Conceptual Design

ACKNOWLEDGMENTS

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CDAC Team Members: (left to right) Lauren Paul, Gray Pieri, Elizabeth Gilboy (standing), Lara Browning. Not Pictured: Jen Jessup
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The Town of Bridgewater is located near the southern border of Rockingham County and along the northern edge of the North River. The town currently encompasses 2.48 square miles with a population of approximately 5,774 in 2012.

The Community Design Assistance Center was tasked with developing a conceptual design for a 4.73 acre park at the Mill View Estates Subdivision. The site is located along the northwestern section of Bridgewater's corporate limits. The new park will serve residents of that part of town which currently do not have a park close by.

Throughout the design process, the Mill View Estates Park team, which consisted of the CDAC team and representatives from the Town of Bridgewater, worked collaboratively to develop a conceptual plan for the Town of Bridgewater. This report documents the design process and describes the final concept that was developed.
The project began with an initial site visit in August 2013, where town Superintendent Bob Holton gave the CDAC project team a tour of the site. The team conducted an initial inventory and analysis of the area. The CDAC team was then able to return to Blacksburg where they began to organize data and develop conceptual design alternatives.

The second meeting was a presentation of preliminary concepts to show town representatives a range of possibilities and voice their opinions. Additional feedback was given by the Parks and Recreation Commission. The design team used the feedback to combine the conceptual alternatives into one final plan.

The team returned for the final presentation in February 2014 where they presented the final conceptual master plan, planting palette, and supporting drawings/renderings.
The CDAC team prepared an inventory of parks and greenspace and their locations within the town. This inventory included noting the size and current amenities of each park/greenspace to get a sense of what amenities could be added to Mill View Estates Park to enhance Bridgewater’s park system as a whole. The maps also provide insight into which neighborhoods lack a nearby park.

A park service area study was conducted to determine which neighborhoods, in addition to the adjacent Millview Park, might use the park.

Existing conditions of the park site and surrounding elements were inventoried during the CDAC team’s site visit in August, 2013. Photos were taken to document existing conditions and aesthetic views that could potentially influence future design. At the same time, soil samples were taken at various areas on site and later analyzed at the Virginia Tech soils laboratory.

The photos of existing conditions help orient a view and visually depict existing physical conditions of the site. Case studies were conducted to establish precedents that would be useful in guiding the design process.

The final site synthesis provided the foundation for decisions made at the site scale. Maps of these inventories follow.
Parks and Greenspace
1) Cooks Creek Arboretum
2) Warm Springs Turnpike
3) Oakdale Community Park
4) Harrison Park
5) Wildwood Park
6) Bridgeview Park
7) Wynant Park
8) Seven Bridges Park
9) Edgebriar Park
10) Sandy Bottom Park

Key
- Site
- Park/Greenspace
- Town Building
- School/University
- Major Employment Center
- Town Line
- Annex Line
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Local Parks and Greenspace Inventory

October 16th, 2013

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Bridgewater Amenities
- Three "pocket parks"
- Four river front parks
- Two large open areas
- Six playgrounds
- Three sheltered picnic areas
- Six baseball fields (little league)
- Indoor tennis center
- Outdoor basketball court
- Horse shoe area
- Fitness path
- Nature walk
- Library

What’s Missing
- Town pool
- Outdoor event space
- Bike path
- Natural play area
- Community garden
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PARK SERVICE AREA

October 16th, 2013

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An Outreach Center of the College of Architecture + Urban Studies Virginia Polytechnic Institute and State University

SITE

Walking Radius

Primary Road
Secondary Road
Tertiary Road
Potential Pedestrian/Greenway Connection
Annex Line
Town Line

John Wayland Elementary

North River
Ottobine Rd.
Dry River Rd.
Cannery Woods Dr.
North Main Street
Old River Rd.
PHOTO INVENTORY
Atlanta’s Historic Fourth Ward Park

Historic Fourth Ward Park began as a barren contaminated site and was transformed into a vision for sustainable redevelopment. It was designed to "celebrate" water through artistic park features while disguising stormwater management solutions.

The Atlanta BeltLine, a proposed network of multiuse trails, transit and parks, runs adjacent to the property.

By HDR, Inc., and Wood+Partners, Inc.

Park includes a variety of amenities including:
- a splashpad and playground
- a recirculating stream and step-down river
- stone lined drainage channel
- wildflower meadow
- multipurpose recreation field
- skate park (Atlanta’s 1st)

One interesting feature in the park is the 40-foot waterfall which drops from a 13-foot retaining wall onto sculptural stones (seen in photograph below). This serves as the main inflow pipe and is distinctly different than traditional practices.

The park is also one of seven Georgia pilot projects selected for the Sustainable Sites Initiative (SITES) as a test for their rating system. Soil on site was reused in other local restoration projects, granite was used from a local quarry, rainwater is managed on site and impervious surfaces are limited. At the same time, the detention pond is located below the water table allowing for the generation and use of water on different areas of the park.
At the preliminary design presentation, the CDAC team members, Lauren Paul and Gray Pieri, each presented a variety of ideas to help the community decide what direction to move forward in design development. Each presented three concepts for a total of six options. The concepts ranged from minimal site design intervention to heavily programmed with a lot of activities. These concepts are summarized below. Plans for each concept are on the following pages.

Passive Park Concept
The Passive Park contains the most minimal design intervention and includes a walking path, an open lawn, a formal entry patio, and a sheltered picnic area.

Bird/Butterfly Sanctuary Concept
This concept is the most naturalistic of the six concepts. It includes meandering paths through bird sanctuaries, butterfly gardens, and a wildflower meadow. A traditional playground is also located at the center of the park.

Pocket Playground Concept
The Pocket Playground concept attempts to mimic the aesthetic of the surrounding corn fields by incorporating taller grasses throughout the site with both mowed and hardscaped paths. Interwoven within the grasses are areas like playgrounds, fountains, and gazebos.

Community Garden/Dog Park Concept
This concept includes a community garden at the north end of the site and a dog park in the middle. A natural play area and open lawns supplement these two main programs.

Skate Park/Track Concept
In the Skate Park/Track concept a 200 meter track is proposed to circumvent the existing retention ponds. At the same time, both a teenage and child skate park are located at the north end of the site. Also included is a lawn area and playgrounds.

Amphitheater/Town Pool
The most programmed concept includes an amphitheater to the north of the retention ponds with a stage facing south. At the north end is a small diving pool with splash pad and lap pool.
PASSIVE PARK CONCEPT

1. Street Trees
2. Sheltered Picnic Area
3. Formal Entry Patio
4. Native Plantings
5. Open Lawn
BIRD/BUTTERFLY SANCTUARY CONCEPT

1. Bird Sanctuary
2. Butterfly Garden
3. Wildflower Meadow
4. School Age Playground
5. Stormwater Basin
Pocket Parks Concept

October 16th, 2013

Mill View Estates Park

Disclaimer: This drawing is conceptual and was prepared to show approximate location and arrangement of site elements. This drawing is intended for use by those undertaking site work. The Community Design Assistance Center is not responsible for the inappropriate use of this drawing.
1. Community Garden
2. Flower Garden
3. Natural Play Area
4. Dog Park
5. Stormwater Basin

- Tool Shed
- Raised Planters
- Flower Garden
- Natural Grass Buffer
- Open Lawn
- Natural Play Area
- Tree/Vegetation Buffer
- Existing Parking
- Dog Park
- Wet Zone Plantings
- Stormwater Basin
- Path Overlook
- Dry River Road
Mill View Estates Park Conceptual Design

SKATE PARK/TRACK CONCEPT

1. Skate Park
2. Toddler Playground
3. Pavilion
4. School Age Playground
5. Track
6. Group Fitness Area
7. Stormwater Basin

Important Features:
- School Age Playground
- Tot Lot
- Ornamental Grass Planter
- Younger Kids Skate Park
- Older Kids Skate Park
- Pavilion
- Lawn Area
- Group Fitness Area
- Wet Zone Plantings
- Stormwater Basin
- Existing Parking Lot
- Hollen Mill Ct
- Dry River Road
- Entrance Parking Lot
- 200m Track
- Staircase Seating
Mill View Estates Park Conceptual Design

AMPHITHEATER/TOWN POOL CONCEPT

1. Rentable Gazebo Space
2a. Splash Pool
2b. Splash Pad
3. Open Lawn
4. Amphitheater
5. Overlook
6. Street Trees
Based on feedback from the preliminary concepts, initial designs were compiled into one final plan that featured elements that were agreed upon.

The final conceptual master plan consists of three main design elements. These include improvements to the existing retention pond, natural play areas for both school age children and toddlers, and a community garden consisting of a pavilion and tool shed.

Another design element includes a walking loop, along with stretching stations and benches, that encircles the property and offers views of the two ponds. Two bioretention areas are located at the north end of the site are designed to catch and infiltrate runoff from surrounding agricultural fields. Open lawns and winding perennial beds also supplement the design and provide areas for free programming.

On the following pages are the master plan and more detailed descriptions of the elements proposed in the final conceptual master plan.
The proposed Community Garden area will provide gardening opportunities for the surrounding neighborhoods. It is designed to respond to a variety of needs including those of children and the elderly by providing both raised planters and ground level gardening plots. The 20 plots are organized around a winding path accessible by maintenance and emergency vehicles. Throughout the garden are swaths of perennial beds highlighting the entrances. These beds add seasonal interest and create an entry statement into the garden. Also in the area is a pavilion and garden shed accompanied by a trellis and work bench area. The proposed pavilion could accommodate many uses, such as community events, picnics, and family gatherings.

Before Photo: A view across the north end of the lawn area. See “after” picture on following page.
A perspective of the proposed community garden area.
The Natural Play area is located at the center of the site between the retention areas and the community garden. It offers a variety of exploratory play elements including a fallen tree, stepping stumps, and sunflowers. Adjacent to the natural play area are mowed paths connecting various play elements that could serve as outdoor classrooms. Many of the natural play elements focus on coordination, balance and imaginative play. One navigates the area through a combination of hardscape paths and mowed paths through taller grasses. An adjacent tot lot provides swings, grass berms for climbing, and leap frog play elements for younger children.
A view of the proposed natural play area (left) and vegetative buffer between path and homes (right).
The proposed retention pond area focuses on creating a diverse ecosystem with the addition of a variety of native plantings and bird nesting boxes tucked within the ponds’ edges. The proposed plantings, nesting boxes, and existing water source (ponds) promote habitat by providing food and shelter for many different animals. A proposed fountain is also located in the largest of the two ponds to aid in water circulation and to create a visual focal point. Also included is a path which extends from the walking trail out onto the berm between the two ponds. Benches provide places for people to sit and view the ponds and the bird boxes located along its edges. This area can become a sanctuary for those wanting to step off the trail and take a moment to relax. The plantings along the ponds’ edges were designated into zones according to their ability to withstand fluctuating water conditions. Further planting descriptions can be found on page 30.

Before Photo: A view of the current retention pond area. The “after” picture can be seen on the following page.
A view of the proposed retention pond area.
A planting plan was created for Mill View Estates park that outlines trees, shrubs, and perennials. Native species were selected for their ability to withstand wet/dry soil conditions, for their hardiness, and for their aesthetic value. The planting plan focuses on year-around interest. For example, winter interest is provided through ornamental grasses, shrubs with berries, and trees with colorful, exfoliating bark. Spring and summer flowers and trees with an array of fall color provide visual interest for each season. In addition, the design team felt like it was particularly important to provide a visual buffer for residences adjacent to the park. The combination of evergreen and flowering shrubs provide an attractive screen. Lastly, special attention was given to the retention ponds and bioretention areas. Species in these areas were selected for their ability to withstand fluctuating water levels and to provide habitat for birds and butterflies.
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PLANTING PLAN

KEY

Scale: 0' 35' 70' 140'

Planting Plan Diagram

Arrowwood Viburnum
Common Winterberry
Highbush
Sweat Peppermill
Virginia Sweetbrier
Buckthorn Bush
Black Haw Viburnum

Black Gum
River Birch
Redbud
Basswood
Red Maple
Sycamore
Sweatergum
Pin Oak
Sweetbay Magnolia
Willow Oak
**Mill View Estates Park Conceptual Design**

**PLANTING PLAN SCHEDULE**

<table>
<thead>
<tr>
<th>QTY</th>
<th>Botanical Name</th>
<th>Common Name</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>TREES</strong></td>
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<tr>
<td>11</td>
<td><em>Acer rubrum</em></td>
<td>Red Maple</td>
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<tr>
<td>5</td>
<td><em>Amelanchier canadensis</em></td>
<td>Serviceberry</td>
</tr>
<tr>
<td>5</td>
<td><em>Betula nigra</em></td>
<td>River Birch</td>
</tr>
<tr>
<td>10</td>
<td><em>Cercis canadensis</em></td>
<td>Redbud</td>
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<tr>
<td>3</td>
<td><em>Liquidambar styraciflua</em></td>
<td>Sweetgum</td>
</tr>
<tr>
<td>2</td>
<td><em>Nyssa sylvatica</em></td>
<td>Black Gum</td>
</tr>
<tr>
<td>2</td>
<td><em>Magnolia virginiana</em></td>
<td>Sweetbay Magnolia</td>
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<tr>
<td>4</td>
<td><em>Platanus occidentalis</em></td>
<td>Sycamore</td>
</tr>
<tr>
<td>2</td>
<td><em>Quercus palustris</em></td>
<td>Pin Oak</td>
</tr>
<tr>
<td>10</td>
<td><em>Quercus phellos</em></td>
<td>Willow Oak</td>
</tr>
<tr>
<td></td>
<td><strong>SHRUBS</strong></td>
<td></td>
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<tr>
<td>19</td>
<td><em>Cephalanthus occidentalis</em></td>
<td>Button Bush</td>
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<tr>
<td>46</td>
<td><em>Clethra alnifolia</em> ‘Bumblebee’</td>
<td>Sweet Pepperbush</td>
</tr>
<tr>
<td>32</td>
<td><em>Hydrangea quercifolia</em></td>
<td>Oakleaf Hydrangea</td>
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<tr>
<td>75</td>
<td><em>Ilex glabra</em></td>
<td>Inkberry</td>
</tr>
<tr>
<td>28</td>
<td><em>Ilex verticillata</em></td>
<td>Common Winterberry</td>
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<tr>
<td>22</td>
<td><em>Itea virginica</em> ‘Henry’s Garnet’</td>
<td>Virginia Sweetspire</td>
</tr>
<tr>
<td>24</td>
<td><em>Viburnum dentatum</em></td>
<td>Arrowwood Viburnum</td>
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<tr>
<td>9</td>
<td><em>Viburnum prunifolium</em></td>
<td>Black Haw</td>
</tr>
<tr>
<td>Botanical Name</td>
<td>Common Name</td>
<td></td>
</tr>
<tr>
<td>----------------------------------------------------</td>
<td>------------------------------</td>
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<tr>
<td><strong>GRASSES</strong></td>
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<tr>
<td>Andropogon virginicus</td>
<td>Broomsedge Bluestem</td>
<td></td>
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<tr>
<td>Carex lurida</td>
<td>Shallow Sedge</td>
<td></td>
</tr>
<tr>
<td>Chasmanthium latifolium</td>
<td>Northern Sea Oats</td>
<td></td>
</tr>
<tr>
<td>Panicum virgatum ’Heavy Metal’</td>
<td>Switchgrass</td>
<td></td>
</tr>
<tr>
<td><strong>PERENNIALS.</strong></td>
<td></td>
<td></td>
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<tr>
<td>Aster novae-angliae</td>
<td>New England Aster</td>
<td></td>
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<tr>
<td>Echinacea sp.</td>
<td>Coneflower</td>
<td></td>
</tr>
<tr>
<td>Helinium autumnale</td>
<td>Sneezeweed</td>
<td></td>
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<tr>
<td>Iris versicolor</td>
<td>Blue Flag</td>
<td></td>
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<tr>
<td>Lobelia cardinalis</td>
<td>Cardinal Flower</td>
<td></td>
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<tr>
<td>Lobelia siphilitica</td>
<td>Blue Lobelia</td>
<td></td>
</tr>
<tr>
<td>Osmunda cinnamomea</td>
<td>Cinnamon Fern</td>
<td></td>
</tr>
<tr>
<td>Rudbeckia hirta</td>
<td>Black Eyed Susan</td>
<td></td>
</tr>
</tbody>
</table>
### Plant Palette

**Perennials**
- Swamp Milkweed: Asclepias incarnata
- Cardinal Flower: Lobelia cardinalis
- Blue Flag: Iris versicolor
- Joe Pye Weed: Eupatorium purpureum
- Turk’s cap lily: Lilium superbum
- Bee Balm: Monarda didyma
- Butterfly Weed: Asclepias tuberosa
- Blue Lobelia: Lobelia siphilitica
- Black Eyed Susan: Rudbeckia hirta
- Sneezeweed: Helianthus autumnale
- Cinnamon Fern: Osmunda cinnamomea
- Coneflower: Echinacea sp.
- Beardtongue: Penstemon digitalis ‘Husker Red’
- New England Aster: Aster novae-angliae
- Turk’s cap lily: Lilium superbum
- Common Winterberry: Ilex verticillata
- Inkberry: Ilex glabra
- Virginia sweetspire: Itea virginica ‘Henry’s Garnet’
- Sweet Pepperbush: Clethra alnifolia ‘Bumblebee’

**Shrubs**
- Button Bush: Cephalanthus occidentalis
- Black Haw: Viburnum prunifolium
- Arrowwood: Viburnum dentatum
- Oakleaf Hydrangea: Hydrangea quercifolia
- Common Winterberry: Ilex verticillata
- Inkberry: Ilex glabra
- Virginia sweetspire: Itea virginica ‘Henry’s Garnet’

**Trees**
- Willow Oak: Quercus phellos
- Black Gum: Nyssa sylvatica
- Red Maple: Acer rubrum
- Sweetgum: Liquidambar styraciflua
- Oakleaf Hydrangea: Hydrangea quercifolia
- Switchgrass: Panicum virgatum ‘Heavy Metal’
- Big Bluestem: Andropogon gerardii
- Sycamore: Platanus occidentalis
- Virginia sweetspire: Itea virginica ‘Henry’s Garnet’
- Shallow Sedge: Carex lurida
- Northern Sea Oats: Chasmanthium latifolium

**Grasses**
- Button Bush: Cephalanthus occidentalis
- Black Haw: Viburnum prunifolium
- Arrowwood: Viburnum dentatum
- Oakleaf Hydrangea: Hydrangea quercifolia
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- Sycamore: Platanus occidentalis
- Virginia sweetspire: Itea virginica ‘Henry’s Garnet’
- Shallow Sedge: Carex lurida
- Northern Sea Oats: Chasmanthium latifolium

**Vines**
- Serviceberry: Amelanchier canadensis
- Redbud: Cercis canadensis
- River Birch: Betula nigra
- Red Maple: Acer rubrum
- Sweetgum: Liquidambar styraciflua
- Oakleaf Hydrangea: Hydrangea quercifolia
- Switchgrass: Panicum virgatum ‘Heavy Metal’
- Big Bluestem: Andropogon gerardii
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CONCLUSION

From the initial design meeting to the final master plan with associated planting plan, the design team has constantly sought to make Mill View Estates Park a new and unique attraction for the Town of Bridgewater. It is intended to respond to the needs of the community and to the overall aesthetic of Bridgewater.

Ultimately, the proposed design for Mill View Estates Park will offer a place for the community to gather and garden, play and socialize along with offering new opportunities for outdoor recreation and events. The master plan is a result of a collaborative effort between the Town of Bridgewater and the CDAC team. It is our hope that this document serves as a catalyst for the future development of Mill View Estates Park.
Appendix A - Soil Results
40

Appendix B - Community Garden Start Up Guide
44

Appendix C - Madison's Inclusive Community Gardens
50
| sample_id | labid  | ph  | bph | pH | k  | ca | mg | zn  | mn | cu | fe  | b  | cec | pctacidity | pctbasesat | pctcasat | pctmgsat | pttksat | p_rating | k_rating | ca_rating | mg_rating |
|-----------|--------|-----|-----|----|----|----|----|-----|-----|----|-----|----|----|----|----------------|------------|----------|----------|----------|----------|----------|----------|----------|
| BRID1     | 34383  | 6.8 | 6.47| 136| 93 | 890| 65 | 5.5 | 10.7| 2.5| 16.4| 0.2| 5.2| 0.8| 99.2          | 84.6       | 10.1     | 4.5      | VH       | H        | H         | M+        |
| BRID2     | 34384  | 7.3 | N/A | 289| 158| 1742| 81 | 11.8| 15.4| 3.7| 17.1| 0.4| 9.8| N/A| 100           | 89         | 6.8      | 4.1      | VH       | VH       | H         | H-        |
| BRID3     | 34385  | 6.8 | 6.45| 211| 155| 990 | 76 | 7.8 | 11.7| 2.9| 16.3| 0.3| 6.0| 0.8| 99.2          | 82.2       | 10.4     | 6.6      | VH       | VH       | H         | H-        |
| BRID4     | 34386  | 7.7 | N/A | 85 | 82 | 1385| 143| 3   | 20.2| 1.7| 17.2| 0.2| 8.3| N/A| 100           | 83.3       | 14.2     | 2.5      | VH       | M+       | VH        | VH       |
| BRID5     | 34387  | 7.54| N/A | 188| 118| 1402| 100| 5.7 | 18.9| 2.4| 15.3| 0.3| 8.1| N/A| 100           | 86.1       | 10.1     | 3.7      | VH       | H        | H+        |
| BRID6     | 34388  | 7.25| N/A | 211| 111| 1134| 75 | 6.9 | 15  | 2.7| 17.4| 0.3| 6.6| N/A| 100           | 86.3       | 9.4      | 4.3      | VH       | H        | H-        |
| BRID7     | 34389  | 6.85| 6.46| 317| 186| 1229| 71 | 14.4| 12.7| 3.5| 17  | 0.4| 7.2| 0.6| 99.4          | 84.8       | 8        | 6.6      | VH       | VH       | M+        |
| BRID8     | 34390  | 6.47| 6.41| 204| 104| 1176| 62 | 17.2| 12  | 4.2| 16.2| 0.4| 6.7| 0.9| 99.1          | 87.6       | 7.6      | 4        | VH       | H-       | VH        | M+        |
The accompanying Soil Test Report (and supplemental Soil Test Notes, when provided) will help you assess your plant’s need for fertilizer and lime. The “History of Sampled Area” section restates the information you filled in on the Soil Sample Information Sheet you submitted with the soil sample. The “Lab Test Results” section shows the relative availability of nutrients numerically and if appropriate, as a rating. The rating may be interpreted as follows: L=Low, M=Medium, H=High, VH=Very High, EH=Excessively High (soluble salt test only), DEF=Deficient, or SUFF=Sufficient, and sometimes a “+” or “-.” When soils test Low, plants almost always respond to fertilizer. When soils test Medium, plants sometimes respond to fertilizer and a moderate amount of fertilizer is typically recommended to maintain fertility. When soils test High to Very High, plants usually do not respond to fertilizer. If there is no rating for a nutrient, the adequacy of that nutrient in the soil for the plant you specified has not been determined. The following is an explanation of the symbols and abbreviation used in the report:

**Report Symbols and Abbreviations**

- P = phosphorus
- K = potassium
- Ca = calcium
- Mg = magnesium
- Zn = zinc
- Mn = manganese
- Cu = copper
- Fe = iron
- B = boron
- SS = soluble salts
- lb/A = pounds per acre
- ppm = parts per million
- meq = milliequivalent
- g = gram
- pH = acidity
- Sat. = saturation
- N = nitrogen
- P₂O₅ = phosphate
- K₂O = potash
- % = percent
- Est-CEC = estimated cation exchange capacity
- AG = agricultural limestone (dolomitic or calcitic)

**Fertilizer Recommendation**

The fertilizer recommendations may be used for the same crop for two to three years. After this time, it is advisable to retest the soil to determine if significant changes have occurred in nutrient levels. When the soil tests Very High for phosphorus or potassium and no fertilizer for these nutrients is recommended, you should retest the following year to determine if fertilizer will be needed. Due to the variability associated with sampling, fertilizer application rates may be varied by a plus or minus 10 percent.

No soil test is performed for nitrogen because this element is too mobile in the soil for laboratory results to be useful. Nitrogen fertilizer recommendations are based on the crop/plant to be grown, the previous crop, and when applicable, the soil’s yield potential. Comments on the report and other enclosed Notes, if any, will have further information regarding nitrogen.

**Lime Recommendation**

If needed, a lime recommendation is given to neutralize soil acidity and should last two to three years. After that time, you should have the soil retested. The measured soil test levels of calcium and magnesium are used to determine the appropriate type of limestone to apply. If neither dolomitic nor calcitic lime is mentioned, or “Ag” type or “agricultural” limestone is stated on the report, then it does not matter which type is used. When no information on the Soil Sample Information Sheet was provided regarding the last lime application, the lab assumed you have not applied lime in the past 18 months. If this is not correct, contact your Extension agent for advice on adjusting the lime recommendation to take into consideration recent lime applications. Do not overlime! Too much lime can be as harmful as too little. For best results, apply lime, when possible, several months ahead of the crop/plant to be planted to allow time for more complete soil reaction.

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**publication 452-701**
Methods and Meanings

For more detail on the lab procedures used, visit www.soiltest.vt.edu and click on “Laboratory Procedures.”

Soil pH (or soil reaction) measures the “active” acidity in the soil’s water (or hydrogen ion activity in the soil solution), which affects the availability of nutrients to plants. It is determined on a mixed suspension of 1:1, volume to volume ratio of soil material to distilled water.

Virginia soils naturally become acidic, and limestone periodically needs to be applied to neutralize some of this acidity. A slightly acid soil is where the majority of nutrients become most available to plants, and where soil organisms that decompose organic matter and contribute to the “overall health” of soils are the most active. When a soil is strongly acidic (< 5.0-5.5), many herbicides lose effectiveness and plant growth is limited by aluminum toxicity. When soils are overlimed and become alkaline (> 7.0), micronutrients, such as manganese and zinc, become less available to plants.

For most agronomic crops and landscaping plants, lime recommendations are provided to raise the soil pH to a slightly acid level of between 5.8 and 6.8. Blueberries and acid-loving ornamentals generally prefer a 4.5 to 5.5 pH, and an application of liming material is suggested when the soil pH drops below 5.0. For the majority of other plants, lime may be suggested before the pH gets below 6.0. This is to keep the soil pH from dropping below the ideal range, since lime is slow to react and affects only a fraction of an inch of soil per year when the lime is not incorporated into the soil. If the soil pH is above the plant’s target pH, then no lime is recommended. If the pH is well above the ideal range, then sometimes an application of sulfur is recommended to help lower the pH faster; however, most of the time, one can just let the soil pH drop on its own.

A Mehlich buffer solution is used to determine the Buffer Index to provide an indication of the soil’s total (active + reserve) acidity and ability to resist a change in pH. This buffer measurement is the major factor in determining the amount of lime to apply. The Buffer Index starts at 6.60 and goes lower as the soil’s total acidity increases and more lime is needed to raise the soil pH. A sandy soil and a clayey soil can have the same soil pH; however, the clayey soil will have greater reserve acidity (and a lower Buffer Index) as compared to the sandy soil, and the clayey soil will require a greater quantity of lime to be applied in order to raise the soil pH the same amount as the sandy soil. A reported Buffer Index of “N/A” means that it was not measured since the soil (water) pH was either neutral or alkaline and not acidic (soil pH ≥ 7.0) and therefore requires no lime.

Nutrients that are available for plant uptake are extracted from the soil with a Mehlich 1 solution using a 1:5 vol:vol soil to extractant ratio, and are then analyzed on an ICP-AES instrument. An extractable Mehlich 1 level of phosphorus from 12 to 35 pounds per acre (lb/A) is rated as medium or optimum. A medium level of potassium is from 76 to 175 lb/A. Medium levels of calcium and magnesium are 721 to 1440 and 73 to 144 lb/A, respectively. Calcium and magnesium are normally added to the soil through the application of limestone. It is rare for very high fertility levels of P, K, Ca and Mg to cause a reduction in crop yield or plant growth. Levels of micronutrients (Zn, Mn, Cu, Fe and B) are typically present in the soil at adequate levels for plants if the soil pH is in its proper range. See Soil Test Note 4, at www.soiltest.vt.edu/stnotes, for documented micronutrient deficiencies in Virginia.

Soluble Salts (S. Salts) or fertilizer salts are estimated by measuring the electrical conductivity of a 1:2, vol:vol ratio of soil material to distilled water. Injury to plants may start at a soluble salts level above 844 ppm when grown in natural soil, especially under dry conditions and to germinating seeds and seedlings. Established plants will begin to look wilted and show signs related to drought. This test is used primarily for greenhouse, nursery and home garden soils where very high application rates of fertilizer may have led to an excessive buildup of soluble salts.

Soil Organic Matter (SOM) is the percentage by weight of the soil that consist of decomposed plant and animal residues, and is estimated by using either the weight Loss-On-Ignition (LOI method) from 150° to 360°C, or a modified Walkley-Black method. Generally, the greater the organic matter level, the better the overall soil tilth or soil quality, as nutrient and water holding capacities are greater, and improved aeration and soil structure enhance root growth. The percent of organic matter in a soil can affect the application rate of some herbicides. Soil organic matter levels from 0.5% to 2.5% are ordinary for natural, well-drained Virginia soils. A soil organic matter greater than 3% would be considered very high for a cultivated field on a farm, but can be beneficial. Due to relatively large amounts of organic materials being commonly added to gardens, the soil organic matter in garden soils can be raised into the range of 5% to 10%.
The remaining values that are reported under the “Lab Test Results” section are calculated from the previous measured values and are of little use to most growers.

Estimated Cation Exchange Capacity (Est-CEC) gives an indication of a soil’s ability to hold some nutrients against leaching. Natural soils in Virginia usually range in CEC from 1 to 12 meq/100g. A very sandy soil will normally have a CEC of 1 to 3 meq/100g. The CEC value will increase as the amount of clay and organic matter in the soil increases. This reported CEC is an estimation because it is calculated by summing the Mehlich 1 extractable cations (Ca + Mg + K), and the acidity estimated from the Buffer Index and converting to units commonly used for CEC. This is also an Effective CEC since it is the CEC at the current soil pH. This value can be erroneously high when the soil pH or soluble salts level is high.

The percent **Acidity** is a ratio of the amount of acid-generating cations (as measured by the Buffer Index) that occupy soil cation exchange sites to the total CEC sites. The higher this percentage, the higher the amount of reserve acidity in the soil, and the higher the amount of acidity there will be in the soil solution and the lower the soil pH will be. A reported Acidity% of “N/A” means that a buffer index was not determined, and the acidity is probably less than 1 meq/100g and/or 5%, and the soil pH is alkaline (greater than 7.0).

The percent **Base Saturation** is the ratio of the quantity of non-acid generating cations (i.e., the exchangeable bases, Ca, Mg, and K) that occupy the cation exchange (CEC) sites.

The percent **Ca, Mg, or K Saturation** refers to the relative number of CEC sites that are occupied by that particular nutrient and is a way of evaluating for any gross nutrient imbalance.

### Additional Information

For questions and more information, contact your local Virginia Cooperative Extension (VCE) office or go to [www.ext.vt.edu](http://www.ext.vt.edu). Contact information for your local Extension office appears on the upper left of your soil test report.

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### Conversion Factors

**Conversion Factors**

(Some Values are Approximate)

- 1 acre = 43,560 square feet
- 1 pound of 5-10-5, 5-10-10 or 10-10-10 fertilizer = 2 cups
- 1 pound of ground limestone or ground dolomitic limestone = 1.5 cups
- 1 pound of aluminum sulfate or magnesium sulfate = 2.5 cups
- 1 pound of sulfur = 3.3 cups
- 1 quart = 2 pints = 4 cups
- 1 pint = 2 cups = 32 tablespoons
- 1 tablespoon = 3 teaspoons
- 1 bushel = 35.24 liters = 1.25 cubic feet

Pounds per 100 square feet x 0.54 = lbs per cubic yard

100 square feet = 5 feet x 20 feet, 10 feet x 10 feet, or 2 feet x 50 feet

1,000 square feet = 50 feet x 20 feet, 10 feet x 100 feet, or 25 feet x 40 feet

Pounds per 100 square feet x 436 = pounds per acre

Pounds per 1,000 square feet x 43.6 = pounds per acre

Pounds per acre x 0.0023 = pounds per 100 square feet

Pounds per acre x 0.023 = pounds per 1,000 square feet
COMMUNITY GARDEN START-UP GUIDE

By
Rachel Surls, UCCE County Director
With Help of Chris Braswell and Laura Harris, Los Angeles Conservation Corps
Updated March 2001 by
Yvonne Savio, Common Ground Garden Program Manager, UCCE

This "Community Garden Start-Up Guide" is intended to help neighborhood groups and organizations along the path to starting and sustaining a community garden.

Why Start a Community Garden?

Many families living in the city would like to grow some of their own fruits, vegetables, herbs, and flowers. Some want to save money on their food bills. Others like the freshness, flavor and wholesomeness of home-grown produce. And for many, gardening is a relaxing way to exercise and enjoy being out-of-doors. There are also families from other cultures who would like to grow traditional foods not available in the supermarket.

Community gardens beautify neighborhoods and help bring neighbors closer together. They have been proven as tools to reduce neighborhood crime—particularly when vacant, blighted lots are targeted for garden development. Community gardens provide safe, recreational green space in urban areas with little or no park land, and can contribute greatly to keeping urban air clean.

Those who are lucky enough to have sunny backyards or balconies can plant a garden whenever they have the time and energy. But what about those who do not have a place to garden? For these people, community gardens may be the answer.

Step by Step To Your Own Community Garden

1. Get Your Neighbors Involved

There is a lot of work involved in starting a new garden. Make sure you have several people who will help you. Over the years, our experience indicates that there should be at least ten interested families to create and sustain a garden project. Survey the residents of your neighborhood to see if they are interested and would participate. Hold monthly meetings of the interested group to develop and initiate plans, keep people posted on the garden's progress, and keep them involved in the process from day one.

2. Form a Garden Club

A garden club is a way of formally organizing your new group. It helps you make decisions and divide-up the work effectively. It also ensures that every one has a vested interest in the garden and can contribute to its design, development, and maintenance. It can be formed at any time during the process of starting a community garden; however, it's wise to do so early on. This way, club members can share in the many tasks of establishing the new garden. The typical garden club will have many functions, including:

- Establishing garden rules (see sample)
- Accepting and reviewing garden applications
- Making plot assignments
- Collecting garden dues (if any)
- Paying water bills
- Resolving conflicts

The typical garden club has at least two officers: a president and a treasurer; although your garden club may have more if necessary. Elections for garden officers usually are held annually.

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The University of California, Los Angeles County and U.S. Department of Agriculture cooperating since 1894
Find Land for the Garden

Look around your neighborhood for a vacant lot that gets plenty of sun—at least six to eight hours each day. A garden site should be relatively flat (although slight slopes can be terraced). It should be relatively free of large pieces of concrete left behind from demolition of structures. Any rubble or debris should be manageable—that is, it can be removed by volunteers clearing the lot with trash bags, wheelbarrows, and pick up trucks. Ideally, it should have a fence around it with a gate wide enough for a vehicle to enter. It is possible to work with a site that is paved with concrete or asphalt by building raised beds that sit on the surface or using containers. You can also remove the asphalt or concrete to create areas for gardens, but such a garden will be much more difficult, expensive, and time-consuming to start. A site without paving, and soil relatively free of trash and debris is best.

The potential garden site should be within walking, or no more than a short drive from you and the neighbors who have expressed interest in participating. If the lot is not already being used, make sure the community supports establishing a garden there.

It's best to select three potential sites in your neighborhood and write down their address and nearest cross streets. If you don't know the address of a vacant lot, get the addresses of the properties on both sides of the lot—this will give you the ability to make an educated guess on the address of the site. We suggest you identify at least three potential sites because one or more might not be available for you to use for various reasons, and you want to end up with at least one that works out.

3. Find out Who Owns the Land

It is illegal to use land without obtaining the owners permission. In order to obtain permission, you must first find out who owns the land.

Take the information you have written down about the location of the sites and bring it to your county's tax assessor's office. The Los Angeles County Tax Assessor's office is located at 225 North Hill Street, Room 205. Or go to a branch office listed in the white pages of the telephone directory. At this office, you will look through the map books to get the names and addresses of the owner of the sites you are interested in.

4. Find out if Your Proposed Site has Water

While you are researching site ownership, contact the water service provider in your area to find out if your potential site(s) has/have an existing water meter to hook-in to. Call your water provider's customer service department, and ask them to conduct a "site investigation". They will need the same location information that you took with you to the Tax Assessor's office.

Existing access to water will make a critical difference in the expense of getting your project started. Depending on the size of your garden site, you will need a 1/2-inch to 1-inch water meter. If there has been water service to the site in the past, it is relatively inexpensive to get a new water meter installed (if one doesn't already exist). If there has never been water service to that site, it might cost much more for your water provider to install a lateral line from the street main to the site and install your new meter.

5. Contact the Land Owner

Once you have determined that your potential site is feasible, write a letter to the landowner asking for permission to use the property for a community garden. Be sure to mention to the landowner the value of the garden to the community and the fact the gardeners will be responsible for keeping the site clean and weed-free (this saves landowners from maintaining the site or paying city weed abatement fees).

Establish a term for use of the site, and prepare and negotiate a lease. Typically, groups lease garden sites from land owners for $1 per year. You should attempt to negotiate a lease for at least three years (or longer if the property owner is agreeable). Many landowners are worried about their liability for injuries that might occur at the garden. Therefore, you should include a simple "hold harmless" waiver in the lease and in gardener agreement forms. For more information on the lease, and the hold harmless waiver, see 8, "Signing a Lease".

Be prepared to purchase liability insurance to protect further the property owner (and yourself) should an accident occur at the garden. For more information on the hold harmless waiver, and liability insurance, see 8, "Signing a Lease", and 9, "Obtaining Liability Insurance".

6. Get Your Soil Tested

It might be advisable to have the soil at the site tested for fertility pH and presence of heavy metals. Contact a private lab.

7. Signing a Lease

Landowners of potential garden sites might be concerned about their liability should someone be injured while working in the garden. Your group should be prepared to offer the landowner a lease with a "hold harmless" waiver. This "hold harmless" waiver can simply state that should one of the gardeners be injured as a result of negligence on the part of another gardener, the landowner is "held harmless" and will not be sued. Each gardener should be made aware of this waiver and should be required to sign an
agreement in order to obtain a plot in the community garden. A sample gardener agreement form is attached which your group can use as a model.

8. Obtaining Liability Insurance

Landowners may also require that your group purchase liability insurance. Community gardeners in the Los Angeles area can obtain inexpensive policies from Metro Farm Gardens. Contact Toby Leaman at (323) 663-7441 or fax (323) 663-5715, for more information on obtaining an insurance policy.

Once you have a lease signed by the landowner and liability insurance, you're free to plan and plant your garden!

9. Planning the Garden

Community members should be involved in the planning, design, and set-up of the garden. Before the design process begins, you should measure your site and make a simple, to-scale site map. Hold two or three garden design meetings at times when interested participants can attend. Make sure that group decisions are recorded in official minutes, or that someone takes accurate notes. This ensures that decisions made can be communicated to others, and progress will not be slowed. A great way to generate ideas and visualize the design is to use simple drawings or photos cut from garden magazines representing the different garden components--flower beds, compost bins, pathways, arbors, etc.--that can be moved around on the map as the group discusses layout.

a. Basic Elements of a Community Garden

Although there are exceptions to every rule, community gardens should almost always include:

- At least 15 plots assigned to community members. These should be placed in the sunniest part of the garden. Without plots for individual participation, it is very difficult to achieve long-term community involvement. Raised bed plots, which are more expensive, should be no more than 4 feet wide (to facilitate access to plants from the sides without stepping into the bed), and between 8 and 12 feet long (it is advisable to construct your raised beds in sizes that are found in readily-available lumber, or that can be cut without too much waste). In-ground plots can be from 10 x 10 up to 20 x 20 feet. Pathways between beds and plots should be least 3 to 4 feet wide to allow space for wheelbarrows. The soil in both raised bed and in-ground plots should be amended with aged compost or manure to improve its fertility and increase its organic matter content.

- A simple irrigation system with one hose bib or faucet for every four plots. Hand watering with a hose is the most practical and affordable for individual plots (and it's almost a necessity when you start plants from seed). Drip and soaker-hose irrigation can be used in all areas of the garden for transplanted and established plants, but especially for deep-rooted fruit trees and ornamentals. If no one in your group is knowledgeable about irrigation, you might need some assistance in designing your irrigation system. Seek out a landscape contractor or nursery or garden center professional to help you develop a basic layout and materials list.

- An 8-foot fence around the perimeter with a drive-through gate. In our experience, this is a key element of success. Don't count on eliminating all acts of vandalism or theft, but fencing will help to keep these to tolerably low levels.

- A tool shed or other structure for storing tools, supplies, and materials. Recycled metal shipping containers make excellent storage sheds, and are almost vandal-proof. Contact the Port Authority for leads on where to find them.

- A bench or picnic table where gardeners can sit, relax, and take a break--preferably in shade. If there are no shade trees on the site, a simple arbor can be constructed from wood or pipe, and planted with chayote squash, bougainvillea, grapes, kiwis, or some other vine.

- A sign with the garden's name, sponsors, and a contact person's phone number for more information. If your community is bilingual, include information in this language.

- A shared composting area for the community gardeners. Wood pallets are easy to come-by and (when stood on-end, attached in a U-shape, and the inside covered with galvanized rabbit-wire) make excellent compost bins.

b. Nice Additions to Your Garden Plan

- A small fruit tree orchard, whose care and harvest can be shared by all the members. The orchard can also create shade for people as well as shade-loving plants.

- A water fountain. This can be a simple drinking fountain attachment to a hose bib (or faucet) you can purchase at a hardware store.

- Perimeter landscaping, which can focus on drought tolerant flowers and shrubs, plants which attract butterflies and hummingbirds, or roses and other flowers suitable for cutting bouquets. Herbs are also well-suited to perimeter landscaping and help to create barriers to unwanted pest insects who do not like the smell of their essential oils.

- A children's area, which can include special small plots for children, a sand box, and play equipment.

- A meeting area, which could range from a semi-circle of hay bales or tree stumps, to a simple amphitheater built of recycled, broken concrete. Building a shade structure above would be beneficial as well.
• A community bulletin board where rules, meeting notices, and other important information can be posted.

10. Creating a Garden Budget

Use your design to develop a materials list and cost-out the project. You will need to call-around to get prices on fencing and other items. You might be surprised at the cost. A community garden with just the Basic Elements (listed above) typically costs between $2,500 to $5,000. At this point, your group might decide to scale back your initial plans and save some design ideas for a "Phase Two" of the garden.

11. Where to Get Materials and Money

While some start-up funds will be needed through determination and hard work, you can obtain donations of materials for your project. Community businesses might assist, and provide anything from fencing to lumber to plants. The important thing is to ask. Develop a letter that tells merchants about your project and why it's important to the community. Attach your "wish list", but be reasonable. Try to personalize this letter for each business you approach. Drop it off personally with the store manager, preferably with a couple of cute kids who will be gardening in tow! Then, follow-up by phone. Be patient, persistent, and polite. Your efforts will pay-off with at least some of the businesses you approach. Be sure to thank these key supporters and recognize them on your garden sign, at a garden grand opening, or other special event.

Money, which will be needed to purchase items not donated, can be obtained through community fund-raisers such as car washes, craft and rummage sales, pancake breakfasts, and bake sales. They can also be obtained by writing grants, but be aware grant writing efforts can take six months or longer to yield results, and you must have a fiscal sponsor or agent with tax-exempt 501(c)3 status (such as a church or non-profit corporation) that agrees to administer the funds.

12. Make Sure Your Garden Infrastructure is in Place

If you have not yet formed a garden club, now is the time to do so. It's also time to establish garden rules, develop a garden application form for those who wish to participate, set up a bank account, and determine what garden dues will be if these things have not already been done. This is also the time to begin having monthly meetings if you have not already done so. Also, if you haven't already contacted your city councilperson, he or she can be helpful in many ways including helping your group obtain city services such as trash pick-up. Their staff can also help you with community organizing and soliciting for material donations.

13. Get Growing!

Many new garden groups make the mistake of remaining in the planning, design and fundraising stage for an extended period of time. There is a fine line between planning well and over planning. After several months of the initial research, designing, planning, and outreach efforts, group members will very likely be feeling frustrated and will begin to wonder if all their efforts will ever result in a garden. That's why it's important to plant something on your site as soon as possible. People need to see visible results or they will begin to lose interest in the project. To keep the momentum going, initiate the following steps even if you are still seeking donations and funds or your project (but not until you have signed a lease and obtained insurance).

a. Clean up the Site

Schedule community workdays to clean up the site. How many work days you need will depend on the size of the site, and how much and what kind of debris are on site.

b. Install the Irrigation System

Without water, you can't grow anything. So get this key element into place as soon as possible. There are plenty of opportunities for community involvement—from digging trenches to laying out PVC pipes.

c. Plant Something

Once you have water, there are many options for in-garden action. Stake out beds and pathways by marking them with stakes and twine. Mulch pathways. If your fence isn't in yet, some people might still want to accept the risk of vandalism and get their plots started. You can also plant shade and fruit trees and begin to landscape the site. If you do not yet have a source of donated plants, or don't wish to risk having them vandalized, plant annual flower seeds which will grow quickly and can be replaced later. Seeds for Los Angeles County community and school gardens can be obtained through the Common Ground Garden Program (323) 260-3348.

d. Continue to construct the garden as materials and funds become available.

14. Celebrate!

At this point, your ideas and hard work have finally become a community garden! Be sure to take time to celebrate. Have a grand opening, barbecue, or some other fun event to give everyone who helped to make this happen, a special thank-you. This is the time to give all those who gave donated materials or time a special certificate, bouquet, or other form of recognition.

15. Troubleshooting as the Garden Develops
All community gardens will experience problems somewhere along the way. Don't get discouraged--get organized. The key to success for community gardens is not only preventing problems from ever occurring, but also working together to solve them when they do inevitably occur. In our experience, these are some of the most common problems that "crop-up" in community gardens, and our suggestions for solving them

a. Vandalism
Most gardens experience occasional vandalism. The best action you can take is to replant immediately. Generally the vandals become bored after a while and stop. Good community outreach, especially to youth and the garden's immediately neighbors is also important. Most important--don't get to discouraged. It happens. Get over it and keep going. What about barbed wired or razor wire to make the garden more secure? Our advice--don't. It's bad for community relations, looks awful, and is sometimes illegal to install without a permit. If you need more physical deterrents to keep vandals out, plant bougainvillea or pyracantha along your fence, their thorns will do the trick!

b. Security
Invite the community officer from your local precinct to a garden meeting to get their suggestions on making the garden more secure. Community officers can also be a great help in solving problems with garden vandalism, and dealing with drug dealers, and gang members in the area.

c. Communication
Clear and well-enforced garden rules and a strong garden president can go a long way towards minimizing misunderstandings in the garden. But communication problems do arise. It's the job of the garden club to resolve those issues. If it's something not clearly spelled out in the rules, the membership can take a vote to add new rules and make modifications to existing rules.

Language barriers are a very common source of misunderstandings. Garden club leadership should make every effort to have a translator at garden meetings where participants are bilingual--perhaps a family member of one of the garden members who speaks the language will offer to help.

d. Trash
It's important to get your compost system going right away and get some training for gardeners on how to use it. If gardeners don't compost, large quantities of waste will begin to build up, create an eyesore, and could hurt your relationships with neighbors and the property owner. Waste can also become a fire hazard. Make sure gardeners know how to sort trash properly, what to compost, and what to recycle. Trash cans placed in accessible areas are helpful to keep a neat and tidy garden.

e. Gardener Drop-Out
There has been, and probably always will be, a high rate of turnover in community gardens. Often, people sign up for plots and then don't follow through. Remember, gardening is hard work for some people, especially in the heat of summer. Be sure to have a clause in your gardener agreement which states gardeners forfeit their right to their plot if they don't plant it within one month, or if they don't maintain it. While gardeners should be given every opportunity to follow through, if after several reminders either by letter or phone nothing changes, it is time for the club to reassign the plot. It is also advisable that every year, the leadership conduct a renewed community outreach campaign by contacting churches and other groups in the neighborhood to let them know about the garden and that plots are available.

f. Weeds
Gardeners tend to visit their plots less during the winter time, and lower participation, combined with rain, tends to create a huge weed problem in January, February, and March. Remember, part of your agreement with the landowner is that you will maintain the lot and keep weeds from taking over. In the late summer/early fall, provide gardeners with a workshop or printed material about what can be grown in a fall and winter garden. Also, schedule garden workdays for the spring in advance since you know you'll need them at the end of winter to clear weeds. If you anticipate that plots will be untended during the winter, apply a thick layer of mulch or hay to the beds and paths to reduce weed proliferation.

Good luck with your community garden project!
Yvonne Savio, Common Ground Garden Program Manager, University of California Cooperative Extension, Los Angeles County

APPENDIX B - COMMUNITY GARDEN START-UP GUIDE

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It's important to get your compost system going right away and get some training for gardeners on how to use it. If gardeners don't compost, large quantities of waste will begin to build up, create an eyesore, and could hurt your relationships with neighbors and the property owner. Waste can also become a fire hazard. Make sure gardeners know how to sort trash properly, what to compost, and what to recycle. Trash cans placed in accessible areas are helpful to keep a neat and tidy garden.

e. Gardener Drop-Out
There has been, and probably always will be, a high rate of turnover in community gardens. Often, people sign up for plots and then don't follow through. Remember, gardening is hard work for some people, especially in the heat of summer. Be sure to have a clause in your gardener agreement which states gardeners forfeit their right to their plot if they don't plant it within one month, or if they don't maintain it. While gardeners should be given every opportunity to follow through, if after several reminders either by letter or phone nothing changes, it is time for the club to reassign the plot. It is also advisable that every year, the leadership conduct a renewed community outreach campaign by contacting churches and other groups in the neighborhood to let them know about the garden and that plots are available.

f. Weeds
Gardeners tend to visit their plots less during the winter time, and lower participation, combined with rain, tends to create a huge weed problem in January, February, and March. Remember, part of your agreement with the landowner is that you will maintain the lot and keep weeds from taking over. In the late summer/early fall, provide gardeners with a workshop or printed material about what can be grown in a fall and winter garden. Also, schedule garden workdays for the spring in advance since you know you'll need them at the end of winter to clear weeds. If you anticipate that plots will be untended during the winter, apply a thick layer of mulch or hay to the beds and paths to reduce weed proliferation.

Good luck with your community garden project!
Yvonne Savio, Common Ground Garden Program Manager, University of California Cooperative Extension, Los Angeles County

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All community gardens will experience problems somewhere along the way. Don't get discouraged--get organized. The key to success for community gardens is not only preventing problems from ever occurring, but also working together to solve them when they do inevitably occur. In our experience, these are some of the most common problems that "crop-up" in community gardens, and our suggestions for solving them

a. Vandalism
Most gardens experience occasional vandalism. The best action you can take is to replant immediately. Generally the vandals become bored after a while and stop. Good community outreach, especially to youth and the garden's immediately neighbors is also important. Most important--don't get to discouraged. It happens. Get over it and keep going. What about barbed wired or razor wire to make the garden more secure? Our advice--don't. It's bad for community relations, looks awful, and is sometimes illegal to install without a permit. If you need more physical deterrents to keep vandals out, plant bougainvillea or pyracantha along your fence, their thorns will do the trick!

b. Security
Invite the community officer from your local precinct to a garden meeting to get their suggestions on making the garden more secure. Community officers can also be a great help in solving problems with garden vandalism, and dealing with drug dealers, and gang members in the area.

c. Communication
Clear and well-enforced garden rules and a strong garden president can go a long way towards minimizing misunderstandings in the garden. But communication problems do arise. It's the job of the garden club to resolve those issues. If it's something not clearly spelled out in the rules, the membership can take a vote to add new rules and make modifications to existing rules.

Language barriers are a very common source of misunderstandings. Garden club leadership should make every effort to have a translator at garden meetings where participants are bilingual--perhaps a family member of one of the garden members who speaks the language will offer to help.

d. Trash
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Sample Community Garden CONTRACT
(Information in parentheses is to be determined by individual garden)

Common Ground Garden Program, University of California Cooperative Extension, Los Angeles County
P.O. Box 22255, 4800 E. Cesar E. Chavez Avenue, Los Angeles CA 90022
Phone (323) 260-3407, Fax (323) 881-0067, Email <ydsavio@ucdavis.edu>

Rules, Terms, and Conditions for Participation

Introduction
A. The (organization/garden manager) is the highest governing authority at the (Name) Community Garden.
B. Breaking any rules, terms, and conditions is cause for exclusion from the garden and loss of your plot.
   1. You will receive one verbal warning from the garden manager.
   2. If no response or correction has been made, you will receive written notice two weeks later.
   3. In another two weeks, if no response or correction has been made, you will receive written final notification that you have forfeited your gardening privileges and plot.
   4. You will be allowed to reapply for another garden plot only after one year, and only at the discretion of the garden manager.

Rules, Terms, and Condition for Participation

If accepted as a gardener, I will abide by the following rules, terms, and conditions.

1. I use this garden at the sole discretion of (Watts Family) Community Garden. I agree to abide by its policies and practices.
2. The fee for the use of the garden is ($32.00) per plot, per year (January 1 – December 31), due on or before January 1). Fee for half year after (beginning July 1 or later) is ($16.00). There are no refunds.
3. Once I have been assigned a plot, I will cultivate and plant it within two weeks. I will garden year round. My plot cannot be left fallow or unused for any period of three weeks or longer, more than one time a year.
4. My plot is (20 x 20) feet. I will not expand my plot beyond this measurement or into paths or other plots. I will keep all my plants within the limits of my garden plot and will not allow any plants to grow more than six feet high. I must keep my plot free of weeds pests and diseases.
5. I will keep my plot, paths, and surrounding areas clean and neat. I will completely separate my trash into three groups: 1) dead plant leaves, and other green waste plant parts; 2) rocks, stones, and asphalt; and 3) paper, plastic, cardboard, wood, metal, etc. I will put each type of trash only in the areas designated specifically for each. Anything I bring from my home I will take back home. I will not bring household trash and leave it at the (Watts Family) Community Garden.
6. If I now have more than one plot, I will give up my additional plots by the end of this gardening year (December 31).
7. I will not plant any illegal plant. I will not smoke, drink alcoholic beverages, use illegal drugs, or gamble in the garden. I will not come to the garden while under the influence of alcohol or illegal drugs. I will not bring weapons or pets or other animals to the garden.
8. Guests and visitors, including children, may enter the garden only if I accompany them. They must follow all rules, terms, and conditions stated here. I will supervise my children at all times when they are in the garden. I am solely responsible for the behavior of my guests.
9. The garden manager will assign me general garden maintenance tasks each month, and I must complete them by the end of the month that I am assigned them
10. I will water my plot according to water-wise guidelines. (If I use more than the recommended amount of water, I will pay a fee each month to cover the cost of this additional water.
11. I will attend the regular (bi-monthly) garden club meetings. If workshops are offered, I will attend at least one of each of the following topics: soil preparation and maintenance, watering the vegetable garden, and pest and disease control.
12. I will not apply any pesticides in the garden without the approval of the garden manager.
13. I will not make duplicate keys of any locks at the garden or give my key or lock combination to another person.
14. I will not take food or plants from other gardeners’ plots. I will not take anything from the garden that is not rightfully mine.
15. I will respect other gardeners, and I will not use abusive or profane language or discriminate against others.
16. I will work to keep the garden a happy, secure, and enjoyable place where all participants can garden and socialize peacefully in a neighborly manner.
17. I forfeit my right to sue the owner of the property

Commitment
I have read and understand the application and accept these rules, terms, and conditions stated above for the participation in the (Name) Community Garden

Signed __________________________ Date:_________________________
Gardener

Approved: __________________________ Date:_________________________
Garden Manager
APPENDIX C - MADISON’S INCLUSIVE COMMUNITY GARDENS

Madison’s Inclusive Community Gardens

INTRODUCTION:

Community gardens provide common ground for growing plants that feed and heal and provide aesthetic pleasure. They are civic spaces where people work and recreate to nourish themselves, their families and friends. The gardeners’ shared labor also builds a stronger sense of belonging to their physical environment and connection to other gardeners. Community gardens are the collective effort of people with the patience and determination to make things grow.

The individuals, families and households with plots in Madison’s community gardens are a diverse group. They include people of all ages, many races and levels of income. Many have come to Madison from other parts of the United States and from other countries, bringing with them their connection to the earth and a wealth of gardening skills. Those with physical and other challenges can still find gardening a valuable and satisfying activity.

BACKGROUND:

The City of Madison supports community gardening as an activity for everyone. While it may not be possible for every garden to have the facilities needed by a particular gardener, the goal is to provide anyone that could to garden.

This document provides suggestions for community gardens to incorporate universal design principles that will make them more accessible to any gardener. These principles could be incorporated into the design of new gardens when they are created and could be helpful when an established garden wishes to add features that will improve its design. It is also intended to be a resource for anyone interested in how the principles of universal design can be applied to community gardens.

UNIVERSAL DESIGN:

Universal Design is a broad, comprehensive "design-for-all" approach. It recognizes the changing diversity of needs important to all people regardless of their age, ability or condition during an entire lifespan. By comparison,
Mill View Estates Park Conceptual Design

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"accessibility" has traditionally focused on addressing the needs of a few people with separate circumstances from those of the public at large.

Universal Design is a worldwide movement that approaches the design of the environment, products and communications with the widest range of users in mind, without the need for adaptation or specialized design. Origins of this philosophy in the U.S. date back three decades to the disability rights movement, when it was recognized that most of the features needed by people with disabilities were useful to others, justifying their inclusion as common practice. The intent of UD, according to the Center for Universal Design at North Carolina State University, is to simplify life for everyone by making products, communications and the built environment more usable by as many people as possible at little or no extra cost, thereby benefiting people of all ages and abilities.

The ADA currently does not have accessibility standards that apply to community gardens, other than those decided on a case-by-case process called reasonable modification. A qualified person with a disability who needs a garden space modified for their needs should contact the garden management organization (for most Madison community gardens, the Community Action Coalition) and request the accessibility features they need.

The request would begin a process of negotiations to reach a reasonable balance of what the person needs and what the organization can afford—a process that often puts programs in the position of having to retrofit needed accessibility features.

Incorporating UD standards in the creation or remodeling of garden spaces makes gardens welcoming to all, including those that may not have a disability, without the cumbersome retrofit process currently available through the ADA.

The seven governing principles of Universal Design are:

1. Equitable Use – designed to be useful and marketable to people with diverse abilities without segregating, stigmatizing or disadvantaging any group of users.
2. Flexibility In Use – designed to accommodate a wide range of individual preferences and abilities.
3. Simple and Intuitive Use – designed to be easily understood regardless of the user's experience, knowledge, language skills, or current concentration level.
4. Perceptible Information – designed to communicate necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities.
5. Tolerance for Error – designed to minimize hazards and the adverse
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consequences of accidental or unintended actions.

6. Low Physical Effort – designed to be used efficiently and comfortably and with minimum fatigue.

7. Size and Space for Approach and Use – appropriate size and space is provided for approach, reach, manipulation, and use regardless of user’s body size, posture, or mobility.

Examples of Universal Design for Community Gardens to consider:

- **Main public entryways** and spaces should be level or ramped, useful for small children, seniors, and people with mobility difficulties.
- **Parking** with disability access
- **Design that blends with existing landscape and is unobtrusive** -- the ability to move confidently through the landscape or garden is the key to enjoyment. Regardless of vision, dexterity, balance, endurance or mobility, it should be easy to find your way around (or your way back).
- **Steps** -- Replace steps with long ramps. Slopes should be flat or gentle.
- **Pathways** – should be firm, wide, flat, level, well drained and maneuverable. Avoid abrupt or extreme drop-offs and pavement edges. Paths need to be 36” wide for a wheelchair, five feet wide for two people to walk side by side. A five-foot turnaround area is required for wheelchairs. (See resources below for more information and resources for pathways.)
- **Water** in a garden setting is almost essential. Assure that the water spigot height is accessible to people using wheelchairs. A lever handle is advantageous because it can be operated without a tight grasp or twisting. An added benefit of water in gardens is that the look and sound of water attracts both people and wildlife.
- **Bench** -- A comfortable bench to rest on is a welcome addition to any garden. One that allows easy transfer from a wheelchair is an added plus.
- **Portable Toilets ADA/Wheelchair accessible** --- include a full-width handrail, ground floor access designed for wheelchair access, an oversize door frame, roomy interior allowing for caregiver assistance and the interior allows for wheelchairs to turn a full 360 degrees. These larger units are beneficial for parents or guardians with children.
- **Raised garden boxes** provide spaces for gardening by seniors, children and persons using wheelchairs or with limited mobility. A variety of styles and heights can be used. If possible, use a mixture of heights to accommodate the greatest range of individuals.
  - Raised garden boxes to allow seniors, children, and people using wheelchairs to do gardening.
  - Containers—Whiskey barrels, hanging baskets, large pots (on the ground or on platforms with casters) can make plants accessible without excessive bending or banging knees.
  - Vertical Gardens — Trellises, arbors and fences allow vining plants to be used in the landscape.

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- **Tool storage** provides a secure, waterproof place in the garden to store hand tools, gloves and other gardening items.
- **Tools that are lightweight**, made from plastic or light metal such as aluminum are less tiring to use.
  - Long-handled tools offer greater leverage and are critical for gardening from a seated position.
  - Telescopic tools that can be adjusted to various lengths are designed to allow gardeners to reach into the garden bed from a seated position.
  - Ergonomically designed lightweight pruners and floral shears, as well as other hand tools are available from several vendors.
- **Gadgets** such as
  - Kneepads or foam kneeling pads offer support for gardening on the ground.
  - Gloves with nonslip, sticky grips on the palms improve grasp.
- **Garden carts** for moving plants, mulch or other heavy objects are easier to maneuver and better balanced than wheelbarrows.
- **Signage or information kiosks** should be easily understood, and if possible include voice-enabled output.
- **Web sites** should be compliant with accessibility standards and use the languages of the participants. Web accessibility impacts everyone. Following web accessibility standards or guidelines will make a Web site easy to read in screen readers, PDAs, mobile phones and other emerging technologies.

**DEFINITIONS:**

**Community** can be defined in many ways. For purposes of this discussion, community is defined as a group of different populations (Planetpals Ecology Dictionary http://www.planetpals.com). Different populations include children, youth, seniors, inter-generational groups and people with different languages, cultures and abilities. Ideally, gardens should be accessible to people of diverse ages, abilities, and cultural backgrounds and accommodate gardeners with differences, including physical, psychological or mental challenges. These differences should be considered as community gardens are designed, developed, expanded and maintained.

**Accessible environments** are covered in the codes, standards, and regulations, beginning with the Architectural Barriers Act in 1968 and culminating with the Americans with Disabilities Act (ADA) of 1990 enacted by the federal government. These laws require public places and publicly funded projects to provide physical and programmatic accessibility to people with disabilities. It covers employment, state and local government services, telecommunications for the deaf and public accommodations.
An estimated 49 million Americans in the United States have some form of physical disability (U.S. Census Bureau, 1990). Accessibility is a mandate addressing why and how to make gardens adaptable to persons with mobility or functional limitations, including accessible routes between parking areas, sidewalks and common areas. While providing access to all is a legal requirement, incorporating Universal Design concepts assures ease of use for as many individuals as possible and makes gardens more usable by everyone, including people with disabilities.

Public accommodations are any place, building or outdoor space that a member of the public can enter with or without a fee. A public accommodation cannot deny goods or services because a person has a disability or is associated with a person with a disability. It cannot offer only unequal or separate benefits and must offer services in the most integrated setting possible. A newly constructed public accommodation must meet all of the physical access requirements of the ADA Access Guidelines (which can be found at www.access-board.gov/adaag/html/adaag.htm), unless a state standard is stricter. For community gardens, see the sections pertaining to grades, widths, and material options, etc.

RESOURCES:

Pathways -- Grass can be uneven and difficult for a person using a wheelchair to navigate, and a person using a walker may be thrown off balance by its uneven surface characteristics. Grass does benefit the natural environment, however, by absorbing heat and stormwater, as well as its natural aesthetic appeal in a garden setting.

A path that is hard and stable enough for wheelchairs, strollers and garden carts to roll on should also cushion a person’s fall. Here are some materials that will accommodate both needs.

- Fibar is a product that is used for accessible playgrounds solves both of these problems. It is a surface composed of 8-12” of specialty shredded wood fibers. The fibers lock together to form a solid surface that resists movement of material www.fibar.com 800-342-2721.

- Wood Carpet is a similar product used for the same playground surfaces. It is another engineered, wood-like product designed for public playground accessibility. This is 6-8” for trails/paths for playgrounds. Prices vary per quantities, but these are not inexpensive alternatives www.woodcarpet.com (800) 346-8524.

- Presto, Geo Runner is a plastic open mesh, flexible access system for
Mill View Estates Park Conceptual Design

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pedestrian and wheelchair use. These units have an 87% open area that allows the grass to grow in between but still provide a solid level strolling surface [www.prestogeo.com](http://www.prestogeo.com) (800)-548-3424

- Eco-Trak is a product similar to Presto in 2'x4'x2" panels that can be temporarily connected for portability available from Bike Track Inc. [www.biketrack.com](http://www.biketrack.com) (802)-457-3275

- Privacy (Long Life Lattice) Lattice serves the same purpose and is very affordable. It is plastic that allows a rolling surface and grass to grow through it and costs about $20 per 4’x8’.

- Recycled rubber mats that combine textured surfaces and provide cushioned comfort [www.bigsunproducts.com](http://www.bigsunproducts.com) (800) 366-9645

- P.A.T.H.S (Providing Access Through Hard Situations) for areas that are sand and a variety of other soft surfaces [www.paths.com](http://www.paths.com) (416) 816-7130.

- Brik-Trak is a common hard material of crushed brick, often referred to as brick dust. Crushed limestone and Bedford Plastic Timbers are good choices for wetland areas [www.plasticlumber.com](http://www.plasticlumber.com).

- National Center on Accessibility (Recreation-Parks-Tourism) has a website to research various surfaces for all kind of outdoor recreation areas including stabilizers available that bind dirt and stone together, making them one solid surface [http://www.ncaonline.org/about/](http://www.ncaonline.org/about/).

Raised planters -- should not be wider than four feet for a two-sided planter and two feet for a one-sided planter. Length should be limited to 10-20 feet to prevent over exertion while circling the bed. It should be 28-30” high, which will allow for a sitting surface as well. Plastic timbers or Keystone Walls are good material choices as railroad timbers may cause creosote stains and are not environmentally friendly. Remember: mulching is a must with most raised planters as it slows evaporation of water from the beds and keeps the soil cool for the roots.

A raised planter with or without wheels can be built as well. The bottom of this should not be lower than 30”, which will allow a wheelchair to roll underneath. These should be no longer than 6'-0”. They should have pressure treated 4x4 posts at all four corners and two in the middle on both sides. This will provide 4 3’ wide sitting positions around the planter. It will also provide the required support. Put casters on all six legs, which will allow it to roll. Use pressure treated 2x10’s or 2x12’s which will provide a deep enough planting area. Use pressure treated or marine grade plywood for the box/ ¾” thick. Provide a ¼” slope at the bottom, fill with 2 “deep washed gravel for drainage and provide drainage holes 2’ on
center, cover with a plastic geo mesh so the gravel does not fall out. Line the box with a 6 mil. Visqueen vapor barrier to protect the wood box and fill with topsoil.

For people in wheelchairs or using walkers, provide smooth, wide pathways and beds built high enough to reach into easily. Design beds so that the center can be reached comfortably without stretching.

Twelve inches is a good depth for planting boxes, but remember that wet soil is heavy. Construction must be sound. Shallower boxes are sufficient for many plants such as annual flowers and herbs.

Provide a place for tool storage that is close to the garden, either a small shed, a cabinet, or even a large mailbox mounted on a fence or fencepost, or on the edge of an elevated garden bed. Adapt tool pouches into hanging pouches that can be hung from wheelchairs, walkers, and the edges of raised beds.

**Tools**

- A variety of adaptive gardening tools are available including those with longer handles, with adaptive handles and tools that are lightweight and have comfort grip. The handles of traditional gardening tools can be modified with tape, foam, or bandage material for gardeners with limited muscle strength, coordination, or dexterity of the hands. You can also use simple household items such as ice cream scoops and long-handled spoons.

- Gardeners who have difficulty in carrying items can wear an apron with pockets or secure a lightweight bag or basket on their wheelchair or walker.

- If possible, provide a tool storage shed in or near the habitat.

- Kneelers, kneepads and small stools can increase the comfort of gardeners have gardeners or joint pain or difficulty in bending.

- Use tools with brightly colored handles or paint or tape the handles in a contrasting color to provide contrast for gardeners with low vision.

**Signage:**

- Interpretive signs should not be text heavy; text should be in large, no-glare block letters. When possible, utilize pictures and/or symbols.

- Make Braille plant labels for raised bed sensory gardens.

- For larger public gardens, incorporate an auditory interpretation system into signage.
Furniture:

- Add benches for people to rest. Benches should have back supports and an arm rest on at least one end for safety purposes. If possible, place benches in shade. Recommended spacing for benches is no greater than 100 feet, depending on the size of the habitat.
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REFERENCES

General: The National Center on Physical Activity and Disability (NCPAD) is an information center concerned with physical activity and disability [http://www.ncpad.org/] that provides a wealth of information and resources for assuring people with disabilities have access to public or community gardens, including information about:

- Adapt the Garden for Access, Comfort and Safety
- Getting Around in the Garden
- Containers - 1, 2 & 3 – a variety of materials, sizes, shapes and colors
- Raised Beds - 1 & 2
- Vertical Gardening

