

# Sydnor Jennings Elementary School Teaching Garden and Facilities Improvement Project



Prepared for the faculty, staff, and students of Sydnor Jennings Elementary  
and the north central Halifax County community

June 2011

**cd** community design  
**dc** assistance center

College of Architecture and Urban Studies  
Virginia Polytechnic Institute and State University

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# Project Team

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<b>Elizabeth Gilboy</b>	Director
<b>Dr. Susan Day</b>	Assistant Professor, Urban Forestry and Horticulture, Virginia Tech
<b>Kim Steika</b>	Landscape Architecture Project Coordinator
<b>Jordan Thomas</b>	Graduate Student, Landscape Architecture
<b>Bee Choi</b>	Undergraduate Student, Landscape Architecture
<b>Tish Poteet</b>	Undergraduate Student, Horticulture

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# Acknowledgements

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<b>C.L. Bohannon</b>	CDAC Design Review Panel Member, PhD Candidate, School of Architecture + Design, VT
<b>Jason Bomar</b>	PE teacher, Sydnor Jennings Elementary School
<b>Ed Brooks</b>	Librarian, Virginia Tech
<b>Sandra Cash</b>	Kindergarten teacher, Sydnor Jennings Elementary School
<b>Francine Davis</b>	Fourth grade teacher, Sydnor Jennings Elementary School
<b>David Duffer</b>	Principal, Sydnor Jennings Elementary School
<b>Dan Goerlich</b>	Central District Leader, Virginia Cooperative Extension; President, Sydnor Jennings PTO
<b>Roger Harris</b>	Professor, Horticulture, Virginia Tech
<b>Charles Tilley</b>	Associate, BCWH, Richmond, VA

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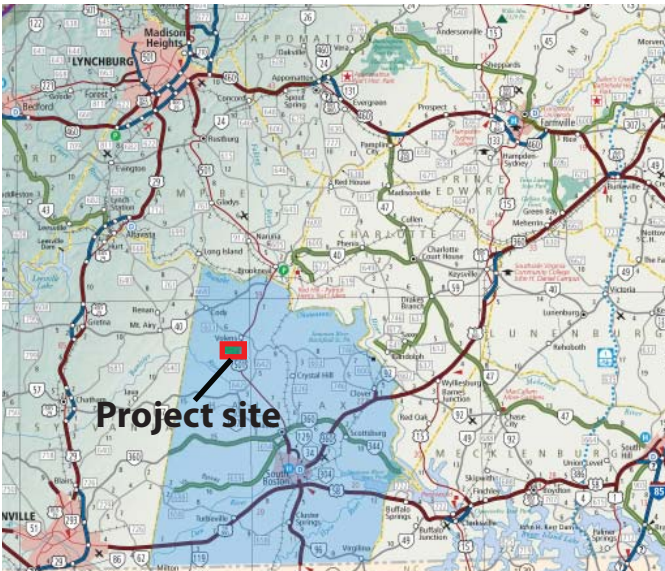
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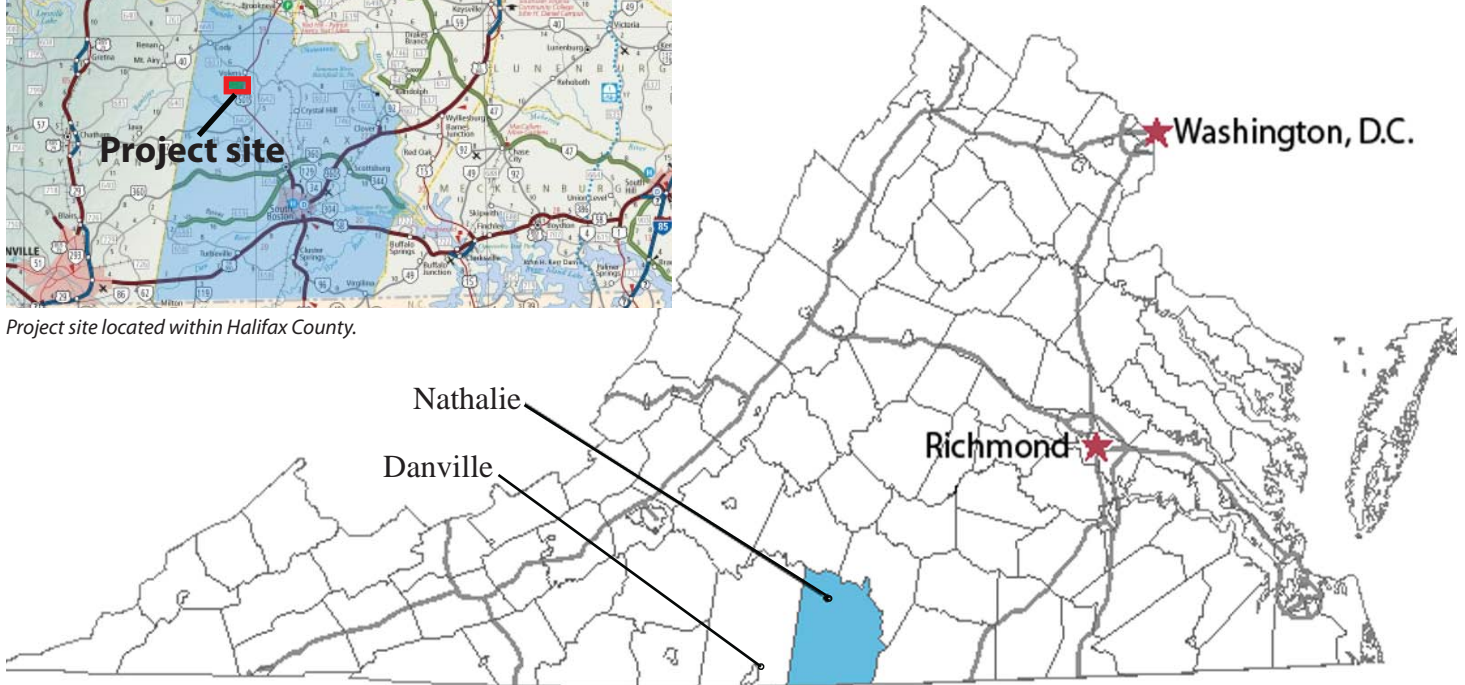
# Project Description

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State map highlighting Halifax County and the Nathalie community.

Project site located within Halifax County.



Sydnor Jennings Elementary School (SJES) is a small elementary school in the Volens community in north central Halifax County. SJES serves 276 students and has 50 employees. Students primarily attend from Nathalie Township, an area that covers 189.4 square miles. Nathalie's population is approximately 5,529 according to the 2000 United States Census. In 2002, nearby Volens Elementary School was closed and the youth were merged with the SJES student population. An addition was built on the northwest side of SJES to accommodate the need for increased classroom space. An undeveloped courtyard was retained in the center of the school complex. The courtyard is approximately 9,200 square feet. Initially designed as an 'exterior learning space', the courtyard quickly became a maintenance challenge. The current courtyard surface is grass, which must be mowed on a regular basis. County maintenance must bring lawn mowers through the school halls in order to mow the courtyard grass. Classroom windows open onto a barren space that lacks aesthetic appeal.

Recognizing the importance of outdoor experiential education to children's health, well-being, and academic achievement, the SJES faculty want to "turn the courtyard into a teaching garden for hands-on activities and experimentation. The expectation is that expanded environmental education will also help boost academic achievement. In addition, an improved courtyard will benefit the school aesthetically and instill a sense of pride and accomplishment in faculty and students."

The Community Design Assistance Center was asked to work with SJES to develop a conceptual master plan for the courtyard as a teaching garden. Additionally, CDAC was asked to address the rest of the school's grounds and provide a concept for improving the site's aesthetics, increasing the site's usability to the larger community by adding plantings, improving the playgrounds, and exploring opportunities for walking trails.

CDAC worked with the faculty and students of SJES, the SJES Parent-Teacher Organization, and Halifax County Extension to develop conceptual plans for these areas. This short supporting report documents the design process and describes the concepts developed.

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# Design Process

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CDAC team members Tish Poteet (l), Susan Day (l center), and Jordan Thomas (r) discuss the courtyard area with PTO President Dan Goerlich (r center).



CDAC team member Jordan Thomas (l) presents preliminary design concepts for the courtyard.

The project began with an initial site visit to Sydnor Jennings Elementary School (SJES) in September 2010. The CDAC team and Dr. Susan Day toured the site, photographing different conditions, measuring soil percolation rates, and taking soil pH samples. After gathering site information, the team met with SJES Principal David Duffer and Kindergarten and Fourth grade teachers, Ms. Cash and Ms. Davis to discuss ideas for the courtyard and the site as a whole.

The CDAC team returned later that month for the school's fall open house and the first PTO meeting of the school year. There CDAC was able to tell parents and family members about the project and seek their input for improving the school grounds (see Appendix A). The CDAC team returned to Blacksburg and prepared inventory and analysis drawings as well as preliminary conceptual designs for both the courtyard and the school site. These drawings were presented to SJES faculty and staff in December 2010. Additional feedback was sought from the community in April 2011 at the Parent Teacher Organization's Community Fair event at the school.

The preliminary concepts were revised based on feedback from SJES faculty, staff, and community comments. Final concepts for the courtyard and the larger site were presented in May 2011. This report was prepared to describe the design process and design concepts developed for the courtyard and the school site.

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# Site Inventory and Analysis

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CDAC team member Tish Poteet conducts a percolation test of the courtyard soil.



Tish Poteet (l), Bee Choi (c) and Susan Day (r) test the pH of soil near the library.

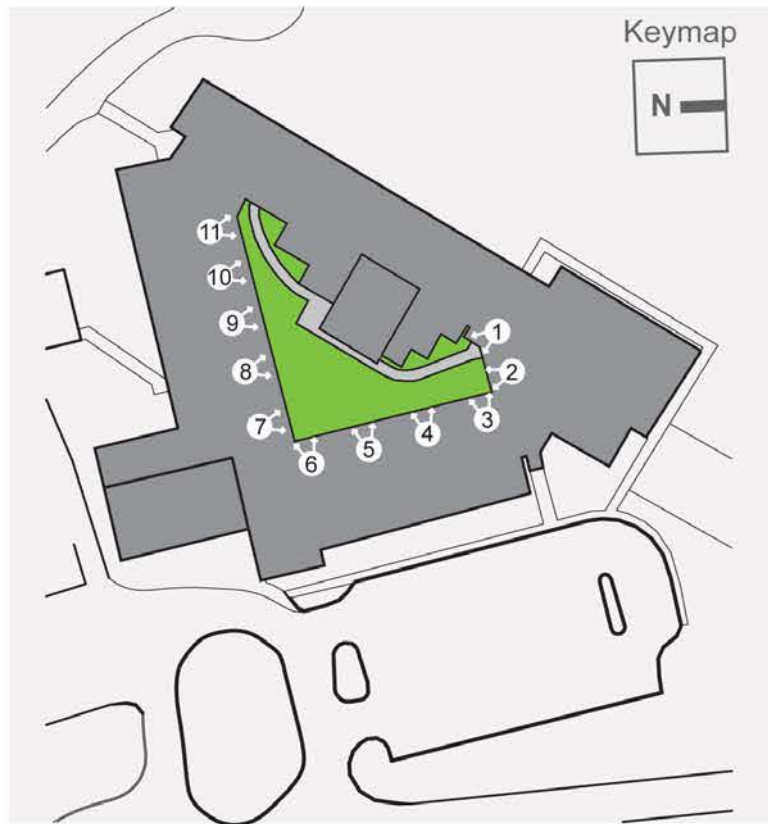
Existing conditions of the courtyard and school grounds were inventoried during the CDAC team's initial site visit in September 2010. This process provided up-to-date data on the condition of the site and helped the CDAC team identify the location of critical site elements. Numerous photos were taken to document specific views and aesthetic conditions of areas around the site that could contribute to the site design. In areas where future planting was desired, the CDAC team ran several soil tests that included percolation rates and fertility, as well as compaction tests and overall soil condition analysis.

Soil samples were taken in areas around the school and within the courtyard (see Vegetation & Soils Analysis 11x17 for locations) and later analyzed at Virginia Tech soils laboratory. The tests concluded that soil fertility was not limiting, but would require that organic amendments be applied in the courtyard, the front sign bed, and in front of the school. Compaction was mild in most areas and could be relieved by tilling when organic amendments are applied. In the grassed island that holds the sign and flag pole (the sign bed), compaction was higher, and soil fertility was low. The sign bed would require the most amount of additional organic amendments and tillage up to 18" in depth. Percolation rates were satisfactory in all areas.

A meeting with the faculty on the same day revealed several ideas and concepts for the courtyard and school grounds that could be implemented in the design process. Teachers relayed ideas for the design that would support in-class activities and provide educational opportunities for their students. Safety concerns and current maintenance issues were discussed with the faculty as well (see Appendix D).

Upon completion of the site inventory and data gathering in September, the CDAC team returned to Blacksburg to continue the site analysis process using the data gathered along with GIS information and other provided files. During this time, site processes and elements including hydrology, vegetation & soil data, pedestrian and vehicular circulation, site use areas were inventoried. Site analyses specific to the courtyard area including sun and shade analysis, view analysis, and a building usage diagram were conducted to gain finer understanding of the courtyard area (this information can be seen on the following pages). Analysis of this data produced valuable information contributing to the development of design concepts for the site.

# Inventory & Analysis: CLASSROOM VIEWS



Picture no. 1



picture no. 2



picture no. 3



picture no. 4



picture no. 5



picture no. 6



picture no. 7



picture no. 8



picture no. 9



picture no. 9



picture no. 10



picture no. 10



picture no. 11



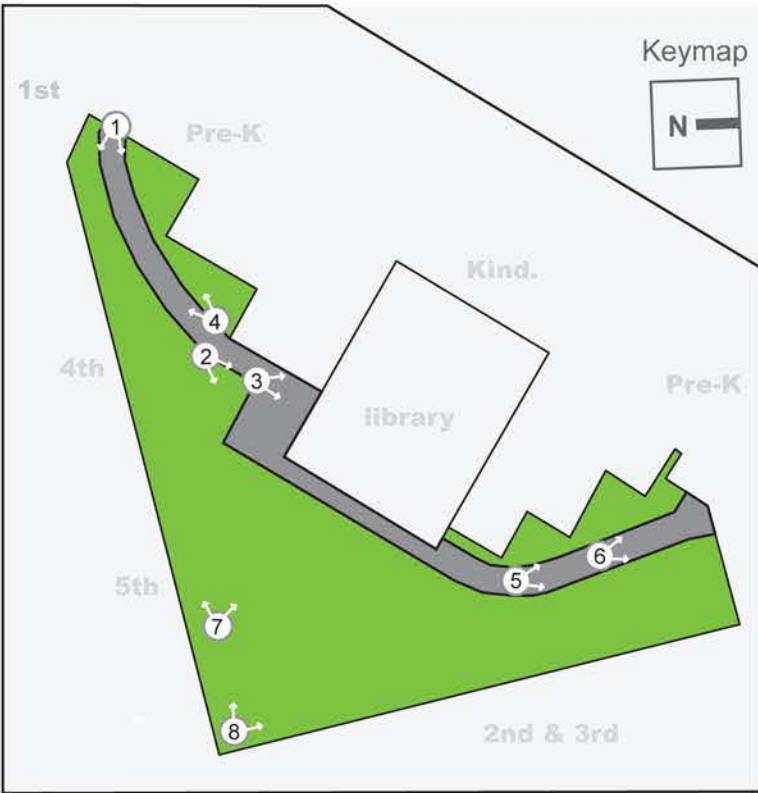
picture no. 11

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This drawing is conceptual and was prepared to show approximate location and arrangement of site features. It is subject to change and is not intended to replace the use of construction documents. The client should consult appropriate professionals before any construction or site work is undertaken. The Community Design Assistance Center is not responsible for the inappropriate use of this drawing.



# Inventory & Analysis: COURTYARD



picture no.①



picture no.②



picture no.③



picture no.④



picture no.⑤



picture no.⑥



picture no.⑦



picture no.⑧

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# Inventory & Analysis: SCHOOL GROUNDS



picture no. ①



picture no. ②



picture no. ③



picture no. ④



picture no. ⑤



picture no. ⑥



picture no. ⑦

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picture no. ⑧

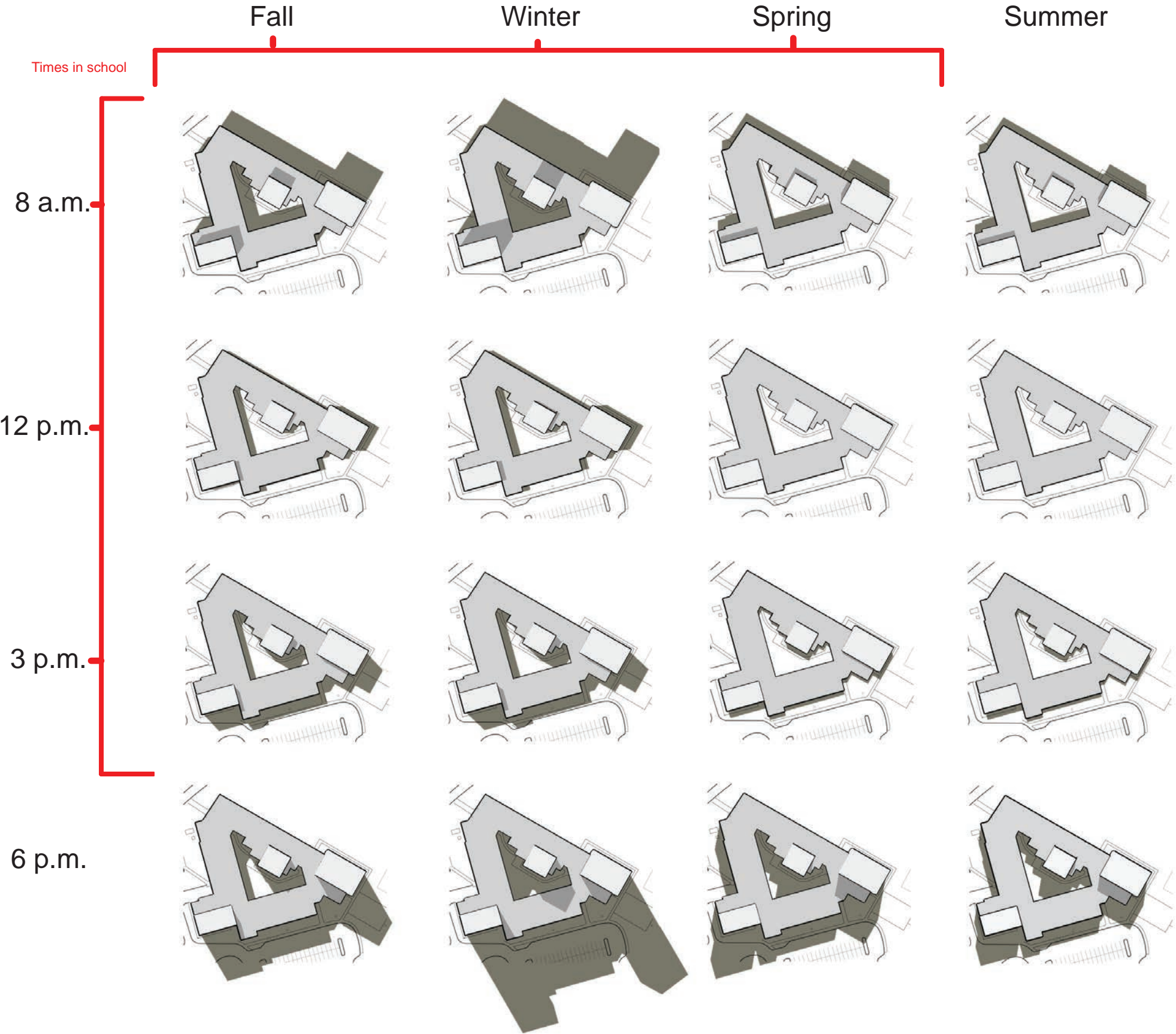


picture no. ⑨

# Inventory & Analysis: BUILDING ANALYSIS

## Average seasonal sunlight

The comfortability of the courtyard is highly dependent upon the time of day and season. Since there is no vegetation, shade providing structure, and little air circulation, the conditions can vary from extremely hot in the summer to extremely cold in the winter



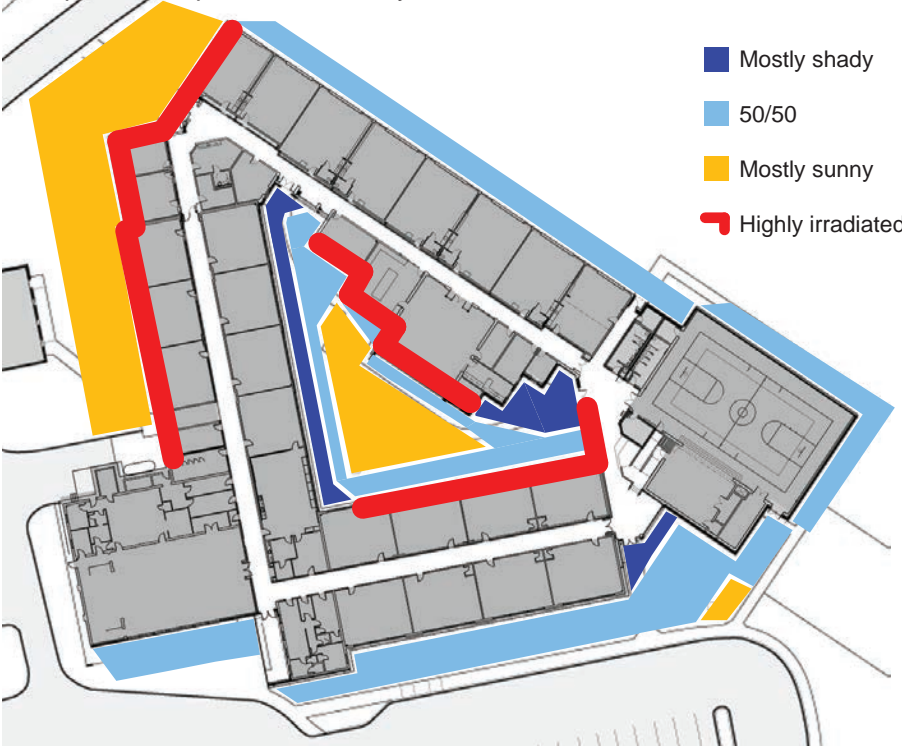
## Building usage diagram

Certain learning environments will require different facilities for teaching and activities which may correspond with their location within the building



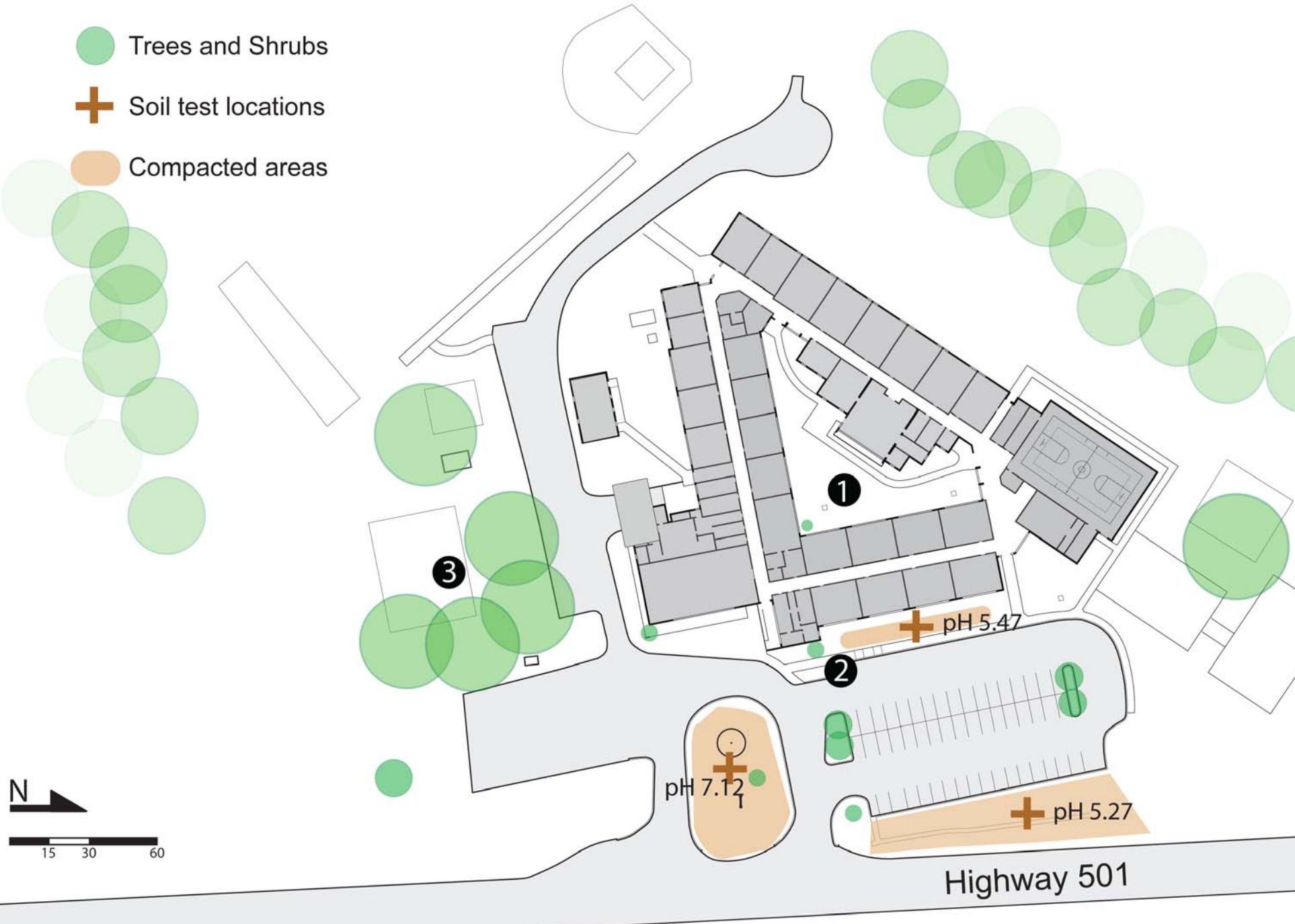
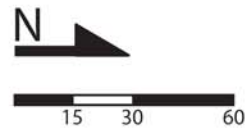
## Composite sunlight analysis

Areas with high amounts of insolation will require different vegetative species selection as well as proposed uses that correspond with the comfortability of the space at a specific time of day



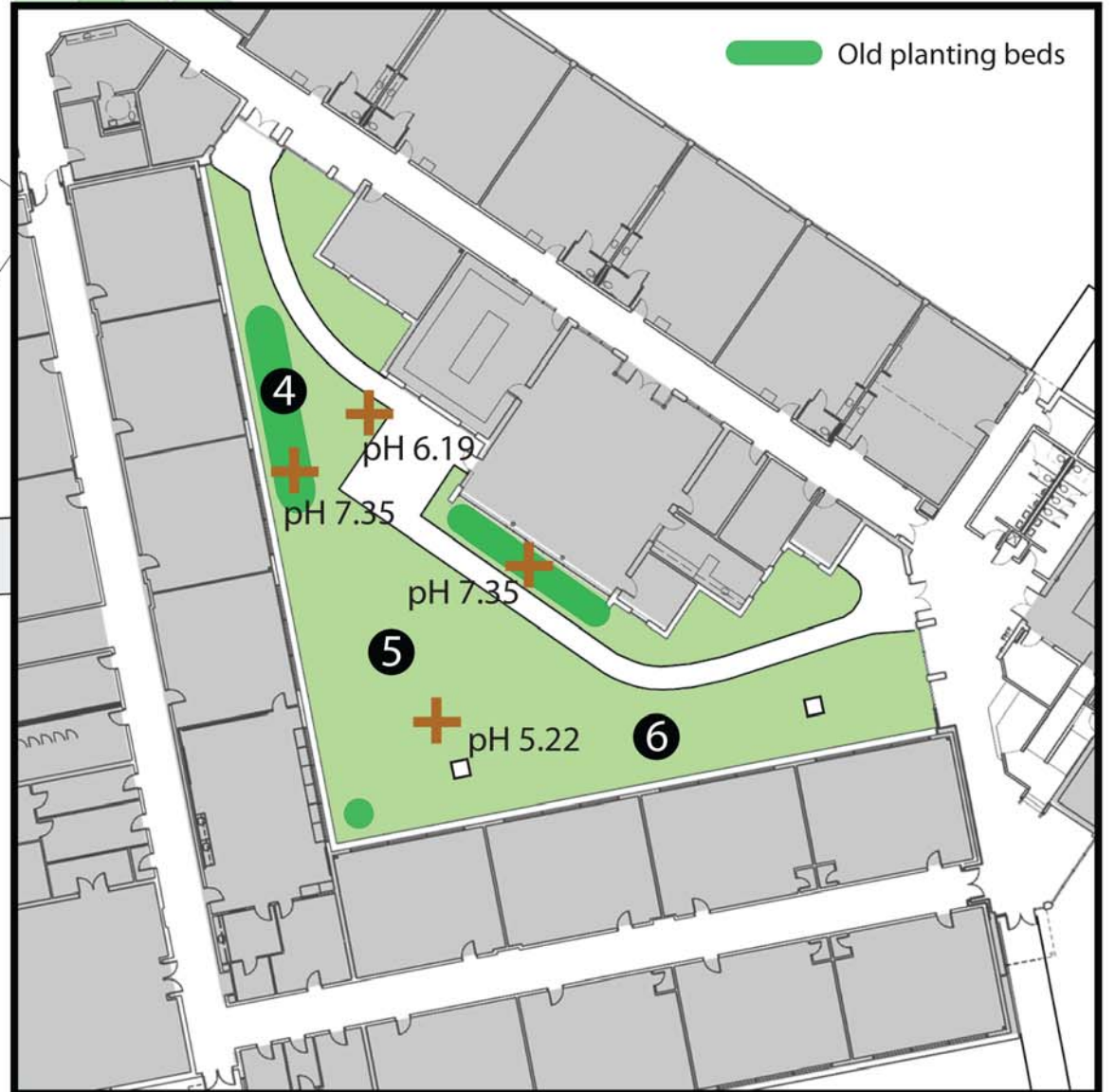
# Inventory & Analysis: VEGETATION & SOILS

- Trees and Shrubs
- + Soil test locations
- Compacted areas

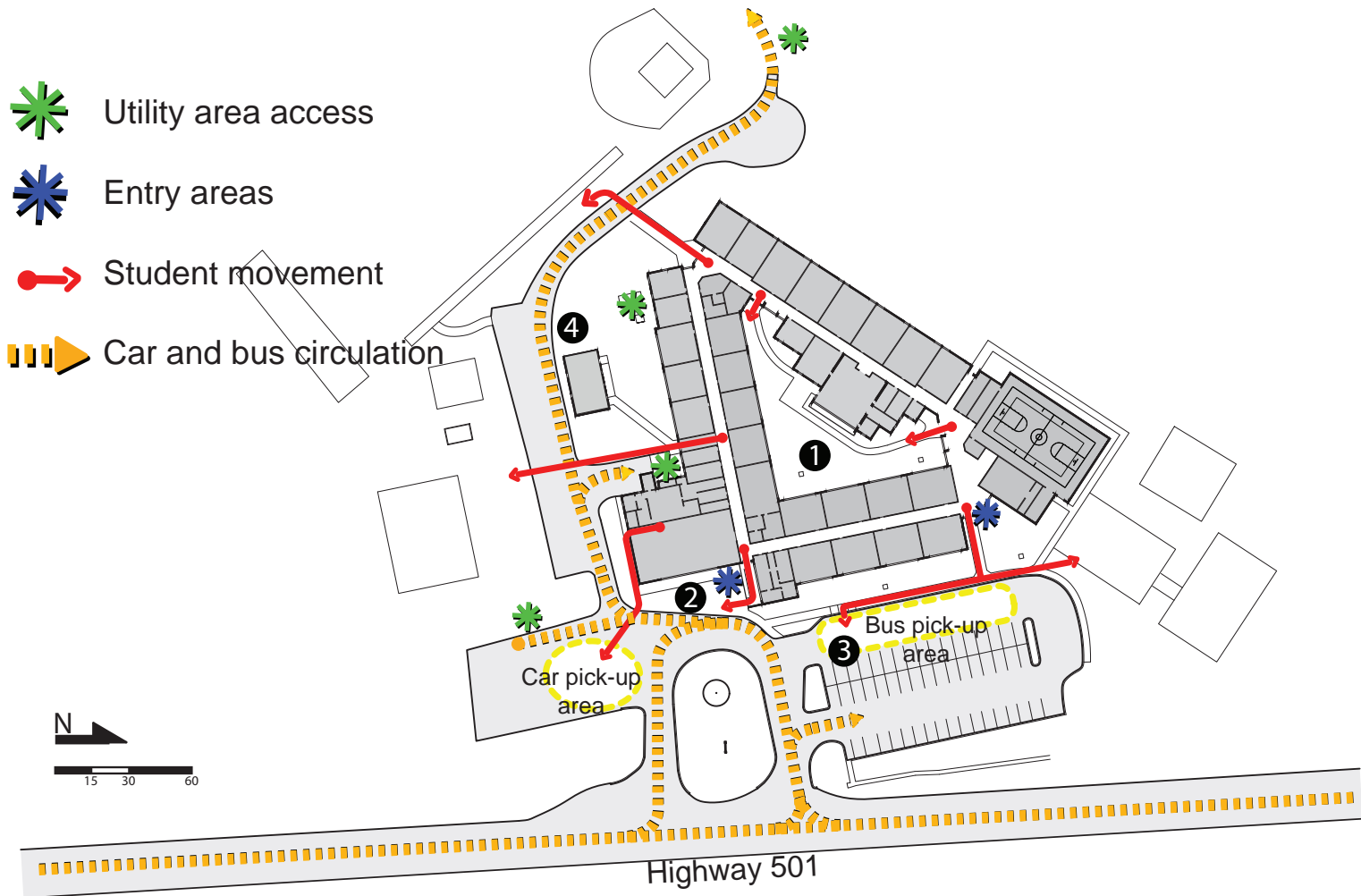


- 4** Planting beds will require fabric removal and tilling to reduce compaction and allow for planting
- 5** Turfgrass in the courtyard requires regular mowing that causes noise and debris buildup
- 6** Parts of the courtyard suffer from moderate compaction requiring tilling for planting

- 1** Courtyard has no shade or insulation from the elements due to lack of vegetation
- 2** School facade and parking lot vegetation is marginal and in poor health
- 3** Good stand of oaks providing comfortable shade for playgrounds








# Inventory & Analysis: CIRCULATION



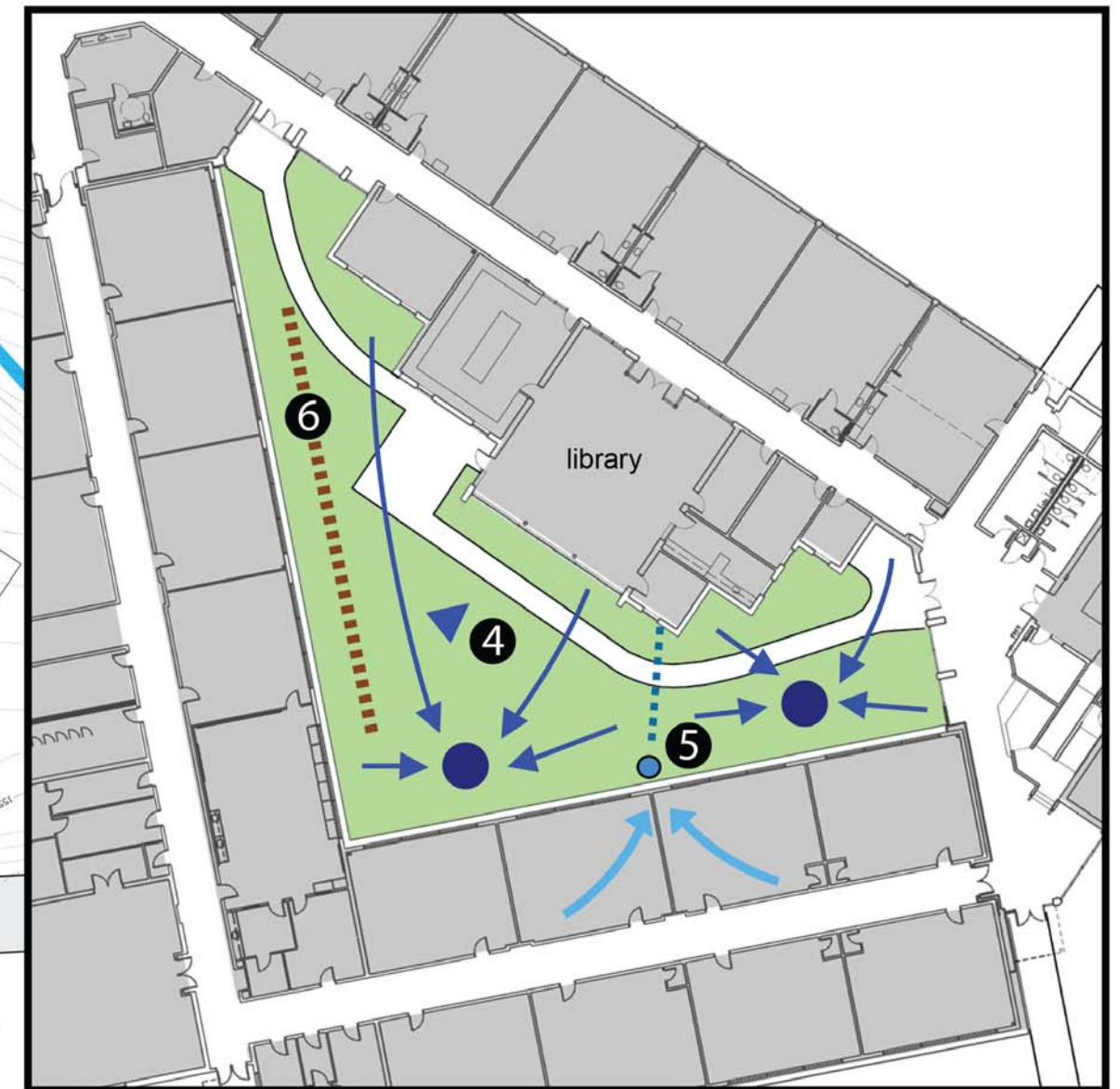
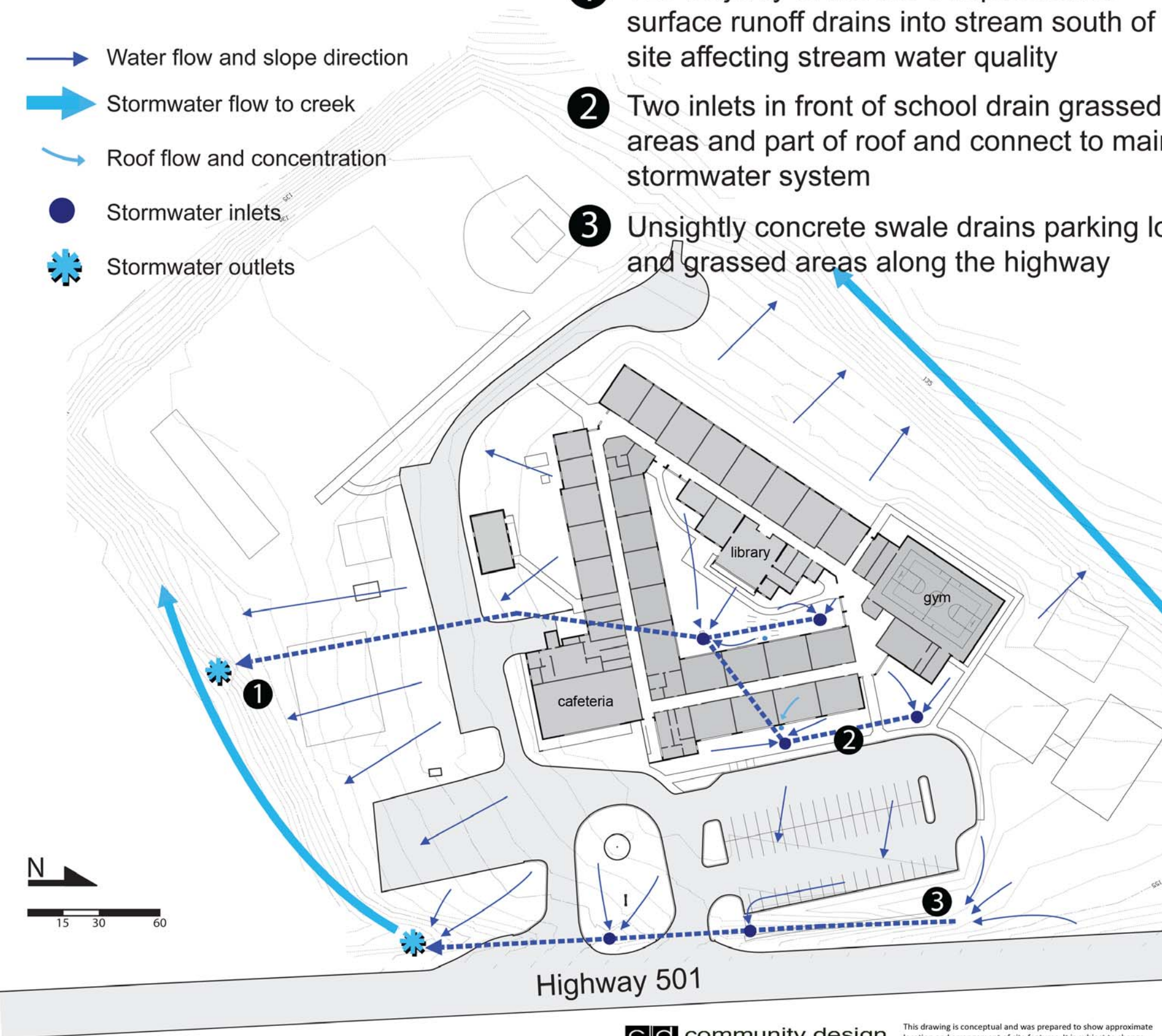
- 1 Courtyard serves no connective purpose nor does it serve as a destination area
- 2 Student and visitor circulation conflicts with cars and buses moving through parking lot
- 3 Bus waiting area is uncomfortable and exposed to a busy parking lot
- 4 Maintenance and utility circulation to rear of school conflicts with student access to recreation areas

# Inventory & Analysis: HYDROLOGY & STORMWATER

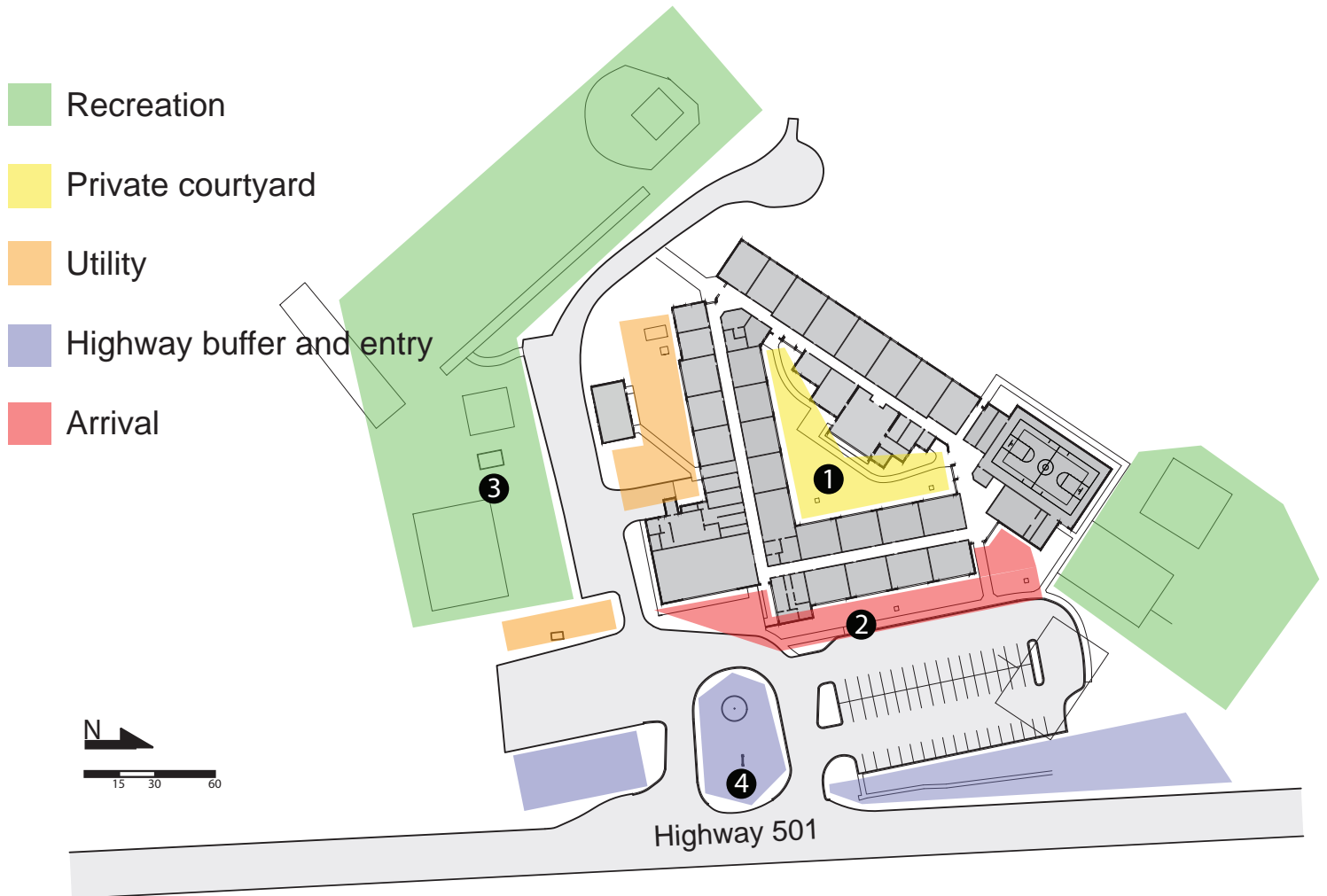
-  Water flow and slope direction
-  Stormwater flow to creek
-  Roof flow and concentration
-  Stormwater inlets
-  Stormwater outlets

- 1** The majority of the site's impermeable surface runoff drains into stream south of site affecting stream water quality
- 2** Two inlets in front of school drain grassed areas and part of roof and connect to main stormwater system
- 3** Unsightly concrete swale drains parking lot and grassed areas along the highway

- 4** 6 inch terra cotta tile drain 1 - 2 feet beneath surface could affect planting issues
- 5** Roof downspout drains large quantities of unclean water into courtyard during rain events
- 6** Two large inlet structures drain courtyard and part of the roof into concrete pipe infrastructure and pose excavation issues



# Inventory & Analysis: SPATIAL ORGANIZATION



- 1** Courtyard serves as a private enclosed space for school use but is underutilized at the moment due to microclimate issues and lack of organizational structure
- 2** The school facade and arrival space are not attractive to visitors
- 3** Recreation spaces surround the school but are disconnected from the building by vehicular circulation and maintenance areas
- 4** Entry turnaround has no visual presence and provides no sense of arrival

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# Preliminary Design Concepts

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CDAC team member Jordan Thomas presents ideas for improving the SJES grounds.



Faculty at SJES offer their feedback on the preliminary design concepts.

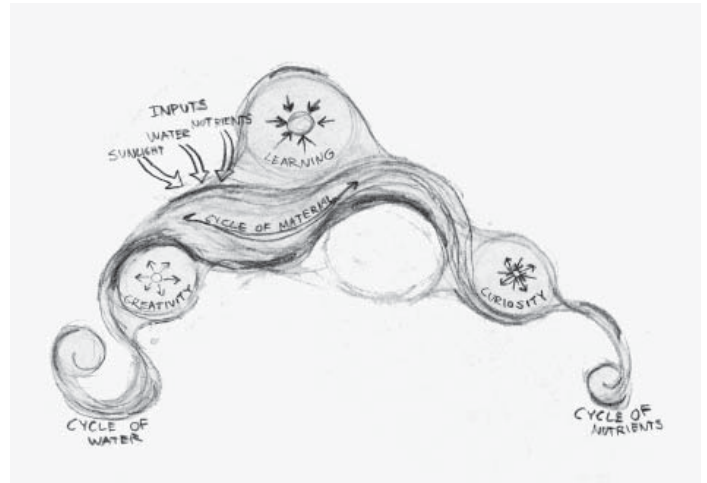
After completion of the inventory and analysis phase, the CDAC team began developing preliminary design concepts. Two concepts were created, both addressing the site in different ways to produce as many design ideas as possible. The two concepts were presented to the faculty of Sydnor Jennings Elementary in December of 2010. The faculty offered critiques and new ideas for future design development. Several ideas were chosen from each preliminary concept and used to refine the design into a final conceptual plan for the courtyard, the front of the school, and the overall school site. Detailed descriptions of concepts as well as 11x17 pullouts of the designs can be found on the following pages.



# Teaching Courtyard



Preliminary Concept A: formal garden and play space



Preliminary Concept B: natural cycles

## Preliminary Concept A

Preliminary Concept A addressed the courtyard as an extension of the classrooms inside the building. The building structure served as inspiration for the organization of spaces and elements. The concept took its cues from a formal design stance that blends traditional and modern elements. Ideas for the space included a hop-scotch play area, planting beds for vegetables, and a shallow drainage rivulet for stormwater.

## Preliminary Concept B

Preliminary Concept B gained inspiration from the natural cycles of earth. From the water cycle to the carbon cycle, the shapes and the elements of the design reflect the natural processes. Within these cycles and processes are numerous opportunities for education, creativity, and curiosity. The water cycle is presented in a rainwater collection system which feeds watering buckets for the planting beds. The water then drains down a long elevated channel to end up in a lush rain garden. The carbon cycle is represented by the growth and decomposition of plant material from the gardens that is put into the compost area. Numerous opportunities exist for teachers to relate classroom learning materials and subjects to the elements within this design concept.

*11x17 pullouts of the preliminary design concepts for the teaching courtyard can be found on the following pages.*

# Courtyard Plan: CONCEPT A



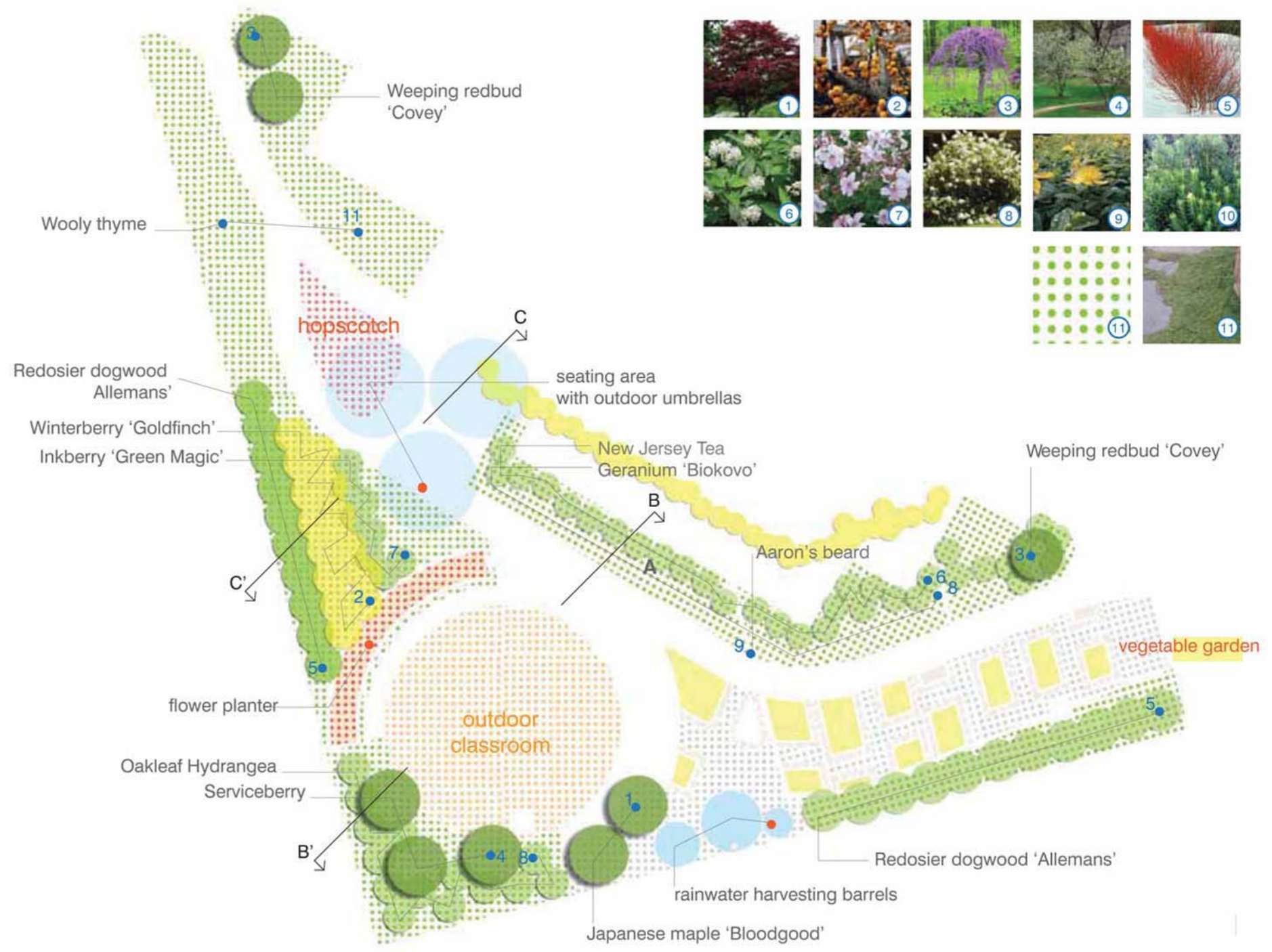
A. Butterfly Garden



B-B'. Outdoor Classroom



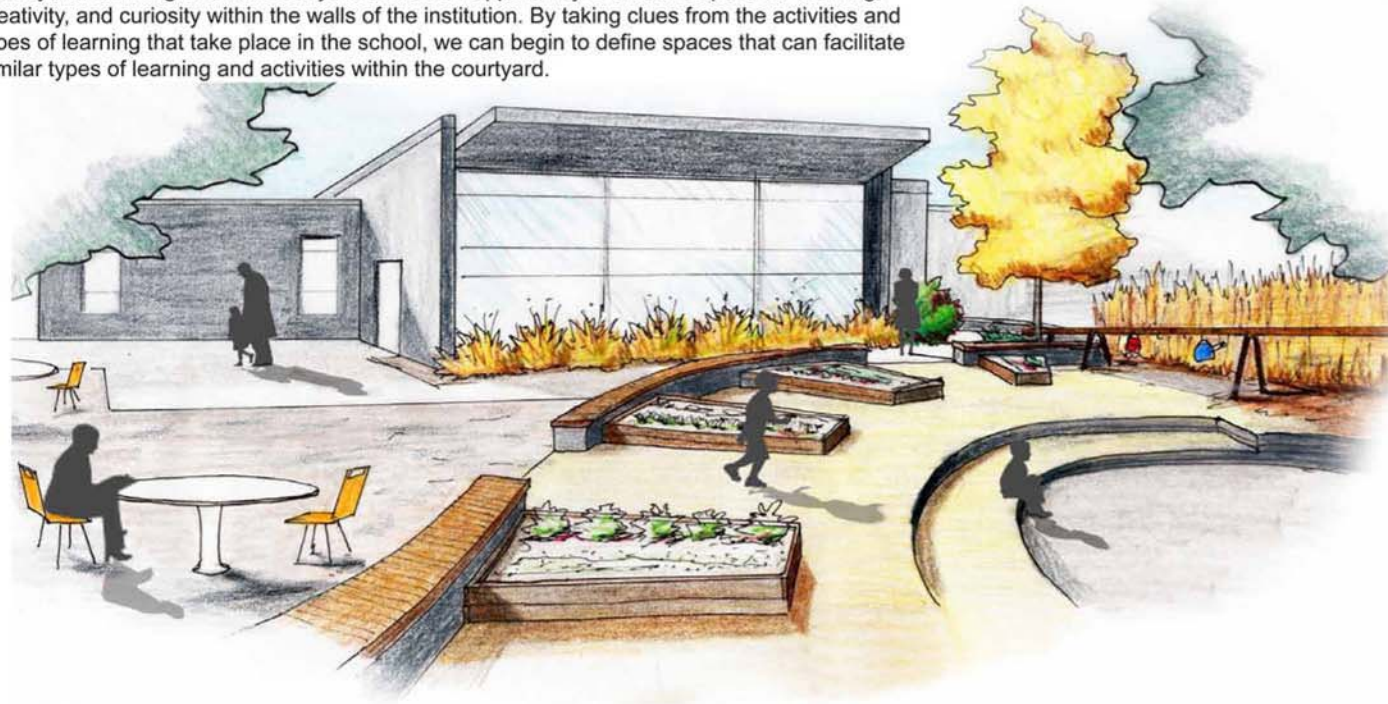
C-C'. Seating Area



# Courtyard Plan: CONCEPT B

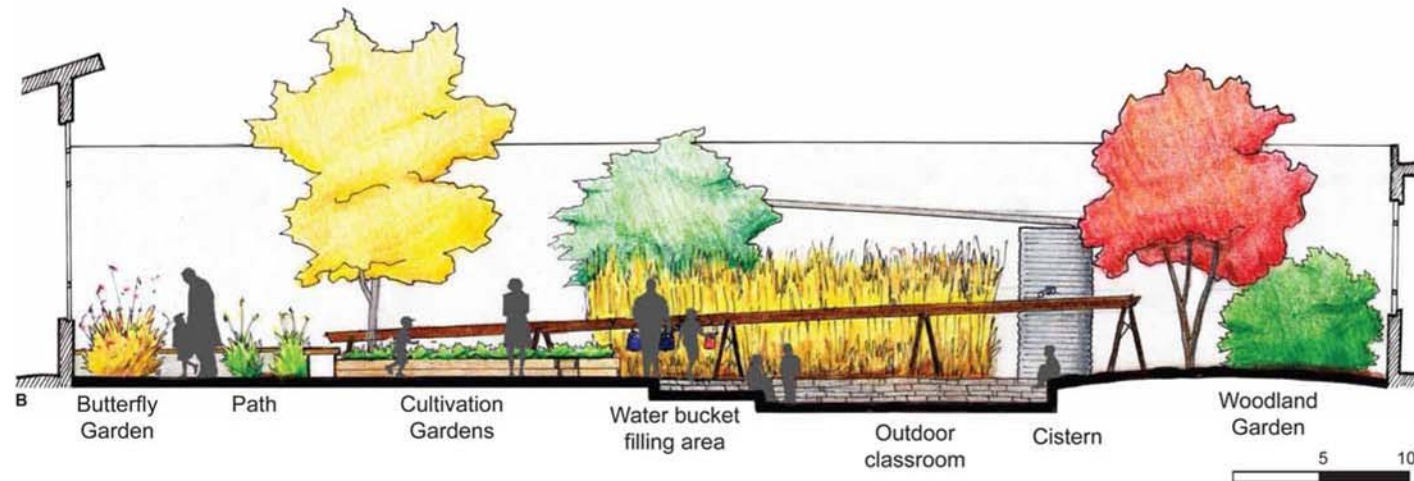
## A Space for Education

The Sydnor Jennings school courtyard offered an opportunity to create a space for learning, creativity, and curiosity within the walls of the institution. By taking clues from the activities and types of learning that take place in the school, we can begin to define spaces that can facilitate similar types of learning and activities within the courtyard.



## A Space for Curiosity

Views into the courtyard were important to the selection and placement of vegetation. Looking out from the gym lobby and east courtyard entrance, the visitors are given a view to a lush, shady, and inviting space. Sitting and watching the butterflies, the rain garden, or investigating the weather station can satisfy any child's or adult's curiosity.

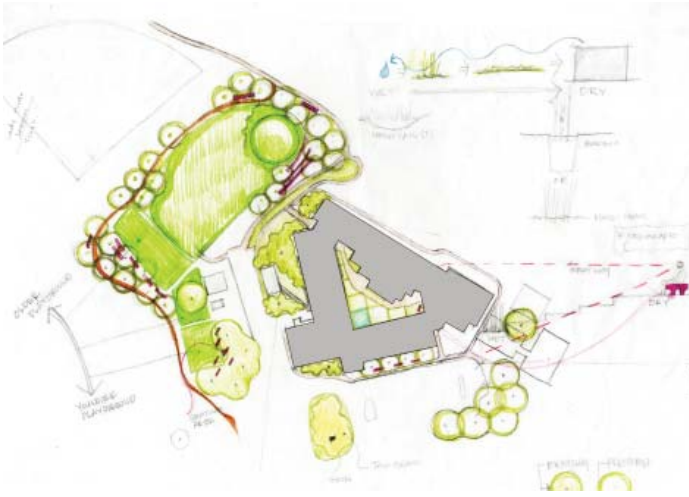


## A Space for Interaction

Several areas within the courtyard offer students and faculty the opportunity for interaction with natural cycles including the water, carbon, and energy cycles. A 40' long iron waterway allows the students to open the cistern faucet and watch water flow down into the raingarden. Along the way, mechanisms that impede the flow let the water build up and overflow out of openings in the waterway's side to fill buckets. These buckets can then be taken to water any one of the four cultivation gardens. Other cycles, like the carbon cycle and energy cycle, are evident in the planting, growing, and composting of the cultivation gardens and their plants.



# SJES Grounds



Concept A



Concept B

## Design Concept Diagram A

In concept A, educational opportunities are taken beyond the courtyard and into the school grounds. There is a walking trail that circulates around the entire school grounds that offers several different routes and difficulties for student and community exercise. Along the walking trail a native Virginia tree arboretum creates educational opportunities for students and offers areas of shaded respite with benches.

## Design Concept Diagram B

Concept B adds an amphitheater and new centralized playground on the school grounds. The amphitheater can be used for school performances as well as community events. The new playground is arranged by grade level and includes the placement of numerous trees for shade. Formal arrangements of trees create different spaces throughout the grounds. New planting beds in front of the school create a more welcoming view from Highway 501.

## Preliminary Concept Master Plan

The preliminary concept combines several ideas from both concept diagrams. The playground becomes centralized with different areas for different ages of student. The amphitheater becomes a part of the recreation field. Several crosswalks are installed around the school's periphery to create safer movement for children and faculty. The entire school grounds becomes an arboretum of native Virginia tree species with a multi-route walking trail.

*An 11x17 pullout of the SJES grounds conceptual master plan can be found on the following page.*

# Preliminary Site Plan Concept

## Sydnor Jennings's Playground and County Park

Sydnor Jennings Elementary school sits on a large site that offered an opportunity for development of a park for the community. Halifax County has no county or regional park to serve its people. The land around the school could serve as an asset to the community and the students.

## Exercise, Education, and Entertainment

The walking path around the school offers visitors a short, medium and long distance walk for exercise. The amphitheater, during warmer months, can provide an entertainment space for school plays and performances. The recreational fields can serve the needs of the school as well as the surrounding community

## The Arboretum

### Native Large Trees

- Acer rubrum - Red maple
- Betula nigra - River birch
- Diospyros virginiana - Persimmon
- Fagus grandifolia - American beech
- Liquidambar styraciflua - Sweetgum
- Liriodendron tulipifera - Tulip poplar
- Platanus occidentalis - Sycamore
- Quercus alba - White oak
- Quercus falcata - Southern red oak
- Quercus rubra - Northern red oak
- Quercus bicolor - Swamp white oak
- Sassafras albidum - Sassafras
- Oxydendrum arboreum - Sourwood

### Native Small Trees

- Cornus florida - Dogwood
- Cercis canadensis - Redbud
- Amelanchier arborea (and canadensis) - Serviceberry
- Asimina triloba - Paw paw
- Cornus alternifolia - Alternate leaf dogwood
- Ilex opaca - American holly
- Magnolia virginiana - Sweetbay magnolia
- Ostrya virginiana - Eastern hophornbeam



## The Arboretum

Along the walking path and throughout the school site, trees native to Virginia are planted with informational signs about their historical importance to the state. The arboretum can serve as an educational piece for the school and the community. These large and small native trees survive with limited care and maintenance in Virginia to save on costs.

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# Final Conceptual Master Plan

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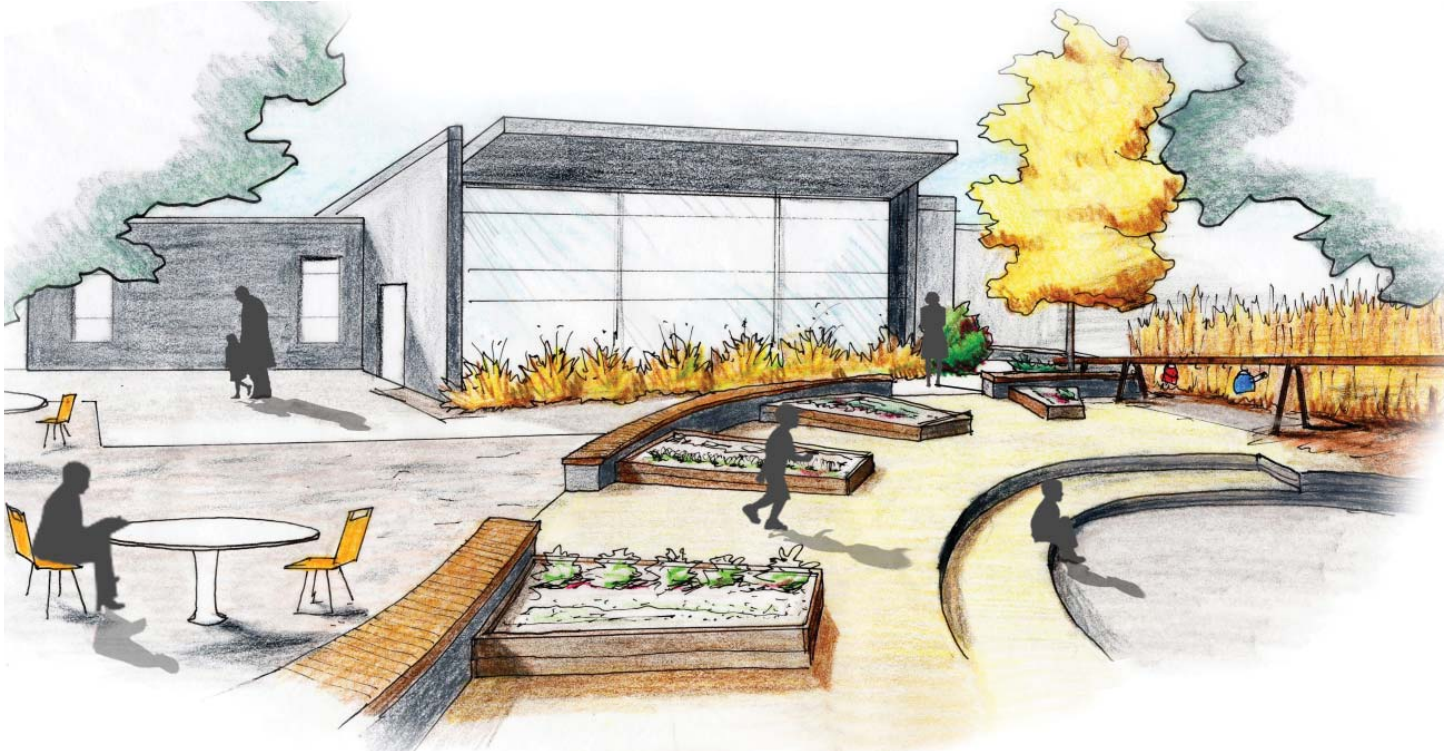
CDAC team member Jordan Thomas presents final design plans to the SJES faculty.



SJES faculty discuss final plans with CDAC team.

The final conceptual master plan was presented to the SJES faculty on May 5th, 2011. These plans were the result of 9 months of analysis, synthesis, and design. Feedback and suggestions from the SJES faculty over the course of the design process added a great amount of richness to the final designs. Detailed plans were developed for the courtyard and the front of the school. Additionally, a final conceptual master plan to enhance the overall school grounds was also developed. Concepts for each area are described in detail on the following pages.

# Courtyard



Sketch of outdoor classroom, raised planter beds , and library with butterfly garden

The final conceptual plan for the courtyard replaces the underutilized interior courtyard with a vibrant outdoor classroom and garden. Students are offered numerous learning opportunities that can easily tie into school curriculum. The existing sidewalk infrastructure is maintained. Additional walkway/gathering space is added with a dry laid stone hardscape. A curvilinear shape is introduced into the geometry of the space through a dry laid gabion seat wall. This wall could feature different rock types found in Virginia for added educational value. New tables and chairs with umbrellas will provide faculty and students with spaces to relax and enjoy outdoor lunches. An outdoor classroom area with seating for up to two 20 student classes has also been added. The proposed weather station and rain gauge will help teach students about weather cycles and storms and how to measure them. The vegetable gardens and compost pile will allow for the recycling of old plants to create food for new plants highlighting the carbon cycle and reducing the need to remove material from the courtyard for maintenance purposes.

A proposed rainwater cistern will collect water from the roof of Syndor Jennings school during rainstorms. The water is then stored and filtered for use in the vegetable gardens. A regulatory flow valve ensures that a portion of the rainfall bypasses the cistern to flow down the elevated runnel. The runnel can be used to fill water jugs for the vegetable garden, otherwise the water flows into the rain garden near the gym lobby entrance.

The design is meant to be minimal in construction needs and very low in maintenance requirements. Any fallen leaves or dead plant material can be put into the compost pile and later reused. There is no grass to mow, or additional irrigation needed. Many of the selected plant species within the courtyard are native to the region. All were selected with maintenance and hardiness in mind. The existing storm drain depressions form the basin for the proposed rain garden and lower plaza of the outdoor classroom. A wash station and small tool shed allow for the students and faculty to keep regular maintenance if they choose so.

*An 11x17 pullout of the final conceptual master plan for the courtyard can be found on the following page.*

# Courtyard Final Conceptual Master Plan

Sydnor Jennings Elementary School, Nathalie, Virginia

## A space for education

The Sydnor Jennings' school courtyard offered an opportunity to create a space for learning, creativity, and curiosity within the walls of the institution. By taking clues from the activities and types of learning that take place in the school, we can begin to define spaces that can facilitate similar types of learning and activities within the courtyard.

## Natural cycles

The concept receives inspiration from the earth's natural cycles that happen all around us everyday. These processes continuously circulate material and energy throughout the environment. Taking note of these natural cycle's complexity, and our dependence on them for food, water and energy, we can better understand the importance of preserving them for future generations. These cycles can teach children about consequences of their actions, satisfy curiosities, and facilitate scientific learning. A rain garden, vegetable gardens, butterfly gardens, and a weather station can give students hands-on experience and engagement with nature.

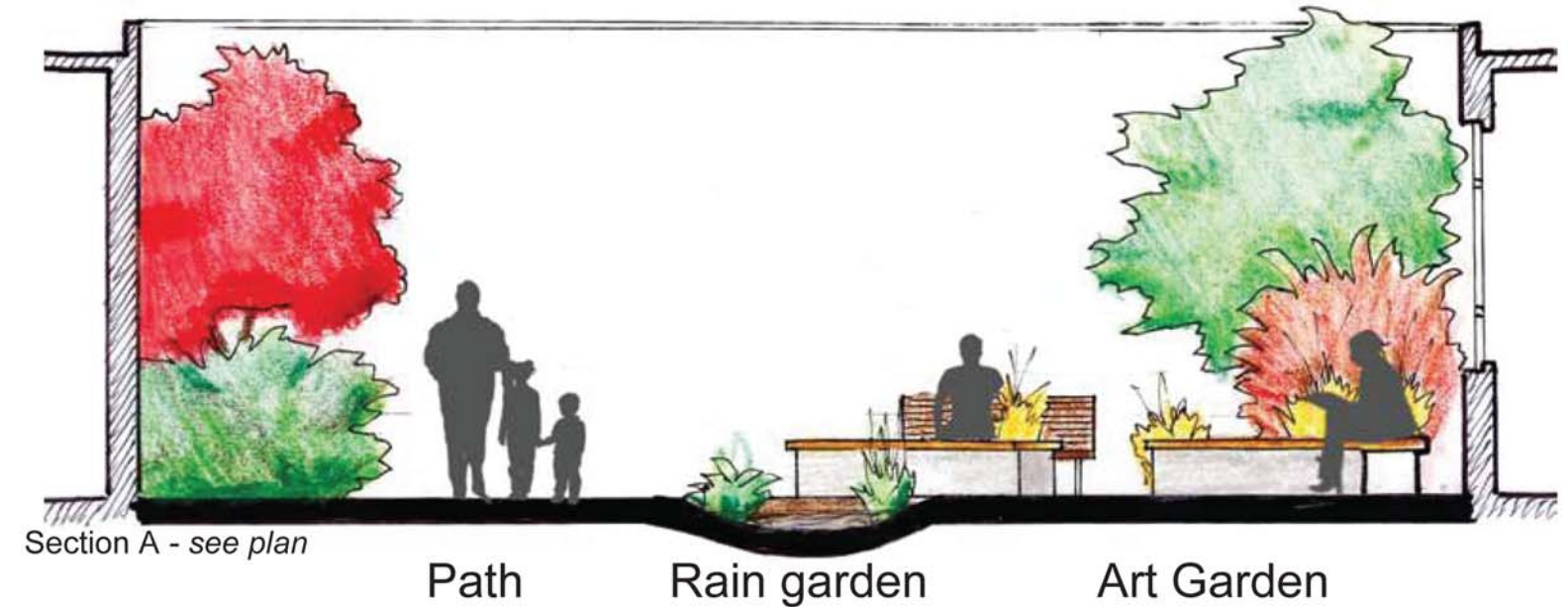
*Sections A-A and B-B can be found on the next page*





## A space for interaction

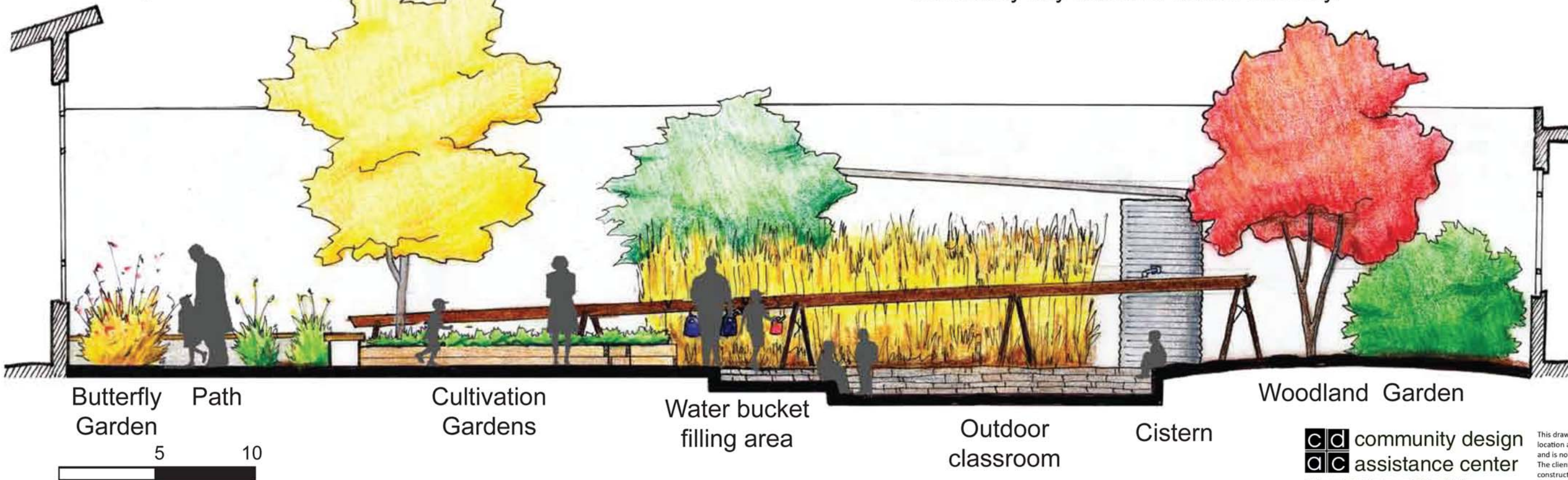
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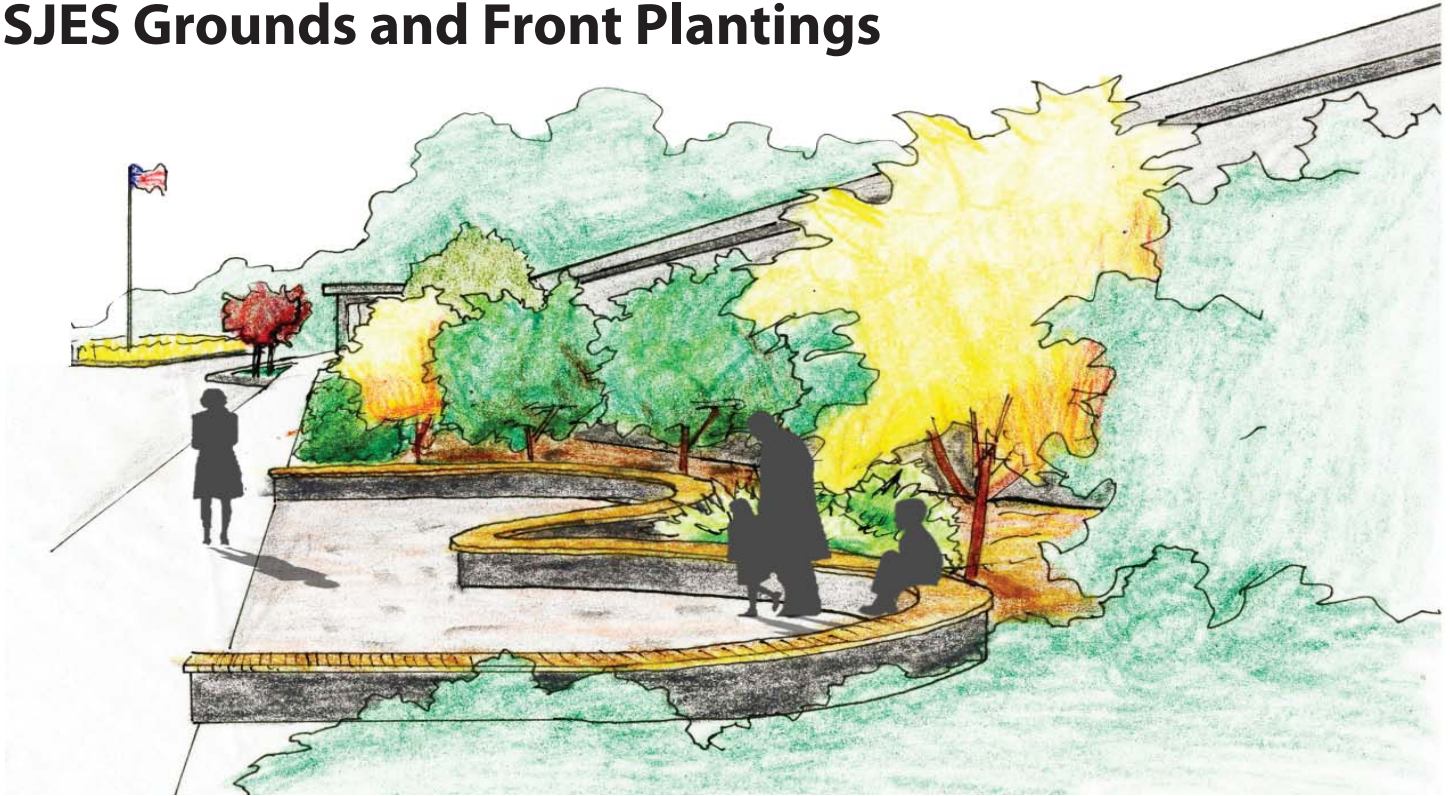
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Section B - see plan



# SJES Grounds and Front Plantings



Sketch of front plaza plantings and rain garden

The final conceptual design for the school grounds and frontage improvement carries planting and material choices from the courtyard throughout the rest of the site. Around the grounds there are numerous educational and recreational components. A half-mile trail network with several route and length options highlights the opportunities for the community outside of the school. During hours when school is not in session and on weekends, people from the surrounding communities can come to Sydnor Jennings school and use the trails for exercise and recreation. Along the trail system, native trees from Virginia are planted offering an educational component for walkers and students.

The front of the school, along Highway 501, was designed to be more appealing for passers-by and for visitors and faculty of the school. Concepts from the courtyard were applied to the grassed areas immediately in front of the school for continuity. Rain gardens and native plants add aesthetic and educational components to the school. Improved plantings and seating create a more comfortable area that can function as a waiting area for the school bus or a gathering area for visitors during school events.

*11x17 pullouts of the final conceptual master plan for the SJES grounds and proposed front plantings can be found on the following pages.*

# Final Site Conceptual Master Plan

## Sydnor Jennings' Playground and County Park

Sydnor Jennings' Elementary school sits on a large site that offered an opportunity for development of a park for the community. Halifax County has no county or regional park to serve its people. The land around the school could serve as an asset to the community and the students.

## Exercise, Education, and Entertainment

The walking path around the school offers visitors a short, medium and long distance walk for exercise. The amphitheater, during warmer months, can provide an entertainment space for school plays and performances. The recreational fields can serve the needs of the school as well as the surrounding community.

## The Arboretum

Along the walking path and throughout the school site, trees native to Virginia are planted with informational signs about their historical importance to the state. The arboretum can serve as an educational piece for the school and the community. These large and small native trees survive with limited care and maintenance in Virginia to save on costs.



## Playground Tree Options

- Red Maple
- Sweetgum
- Tulip Poplar
- Lonleaf Pine
- Acer rubrum
- Liquidambar styraciflua
- Liriodendron tulipifera
- Pinus palustris

## The Arboretum

### Native Large Trees

- Acer rubrum - Red maple
- Betula nigra - River birch
- Diospyros virginiana - Persimmon
- Fagus grandifolia - American beech
- Liquidambar styraciflua - Sweetgum
- Liriodendron tulipifera - Tulip poplar
- Platanus occidentalis - Sycamore
- Quercus alba - White oak
- Quercus falcata - Southern red oak
- Quercus rubra - Northern red oak
- Quercus bicolor - Swamp white oak
- Sassafras albidum - Sassafras
- Oxydendrum arboreum - Sourwood

### Native Small Trees

- Cornus florida - Dogwood
- Cercis canadensis - Redbud
- Amalanchier arborea (and canadensis) - Serviceberry
- Asimina triloba - Paw paw
- Cornus alternifolia - Alternate leaf dogwood
- Ilex opaca - American holly
- Magnolia virginiana - Sweetbay magnolia
- Ostrya virginiana - Eastern hophornbeam

— Benches

○ Proposed Trees

● Existing Trees

# School Entry Final Conceptual Master Plan

Sydnor Jennings Elementary School, Nathalie, Virginia

## A Space for Welcoming

The Sydnor Jennings' frontage plantings and courtyard serve to welcome visitors, students, and teachers with a pleasant series of stone seating walls and rain gardens. Using the similar native, low-maintenance motif of the courtyard, the frontage plan aims to provide identity and a sense of place to the Sydnor Jennings' faculty and students. The two courtyards offer visitors the opportunity to sit on wood benches and enjoy the multiple seasonality of the plant species and watch how a rain garden works to clean rainwater runoff from the roof.

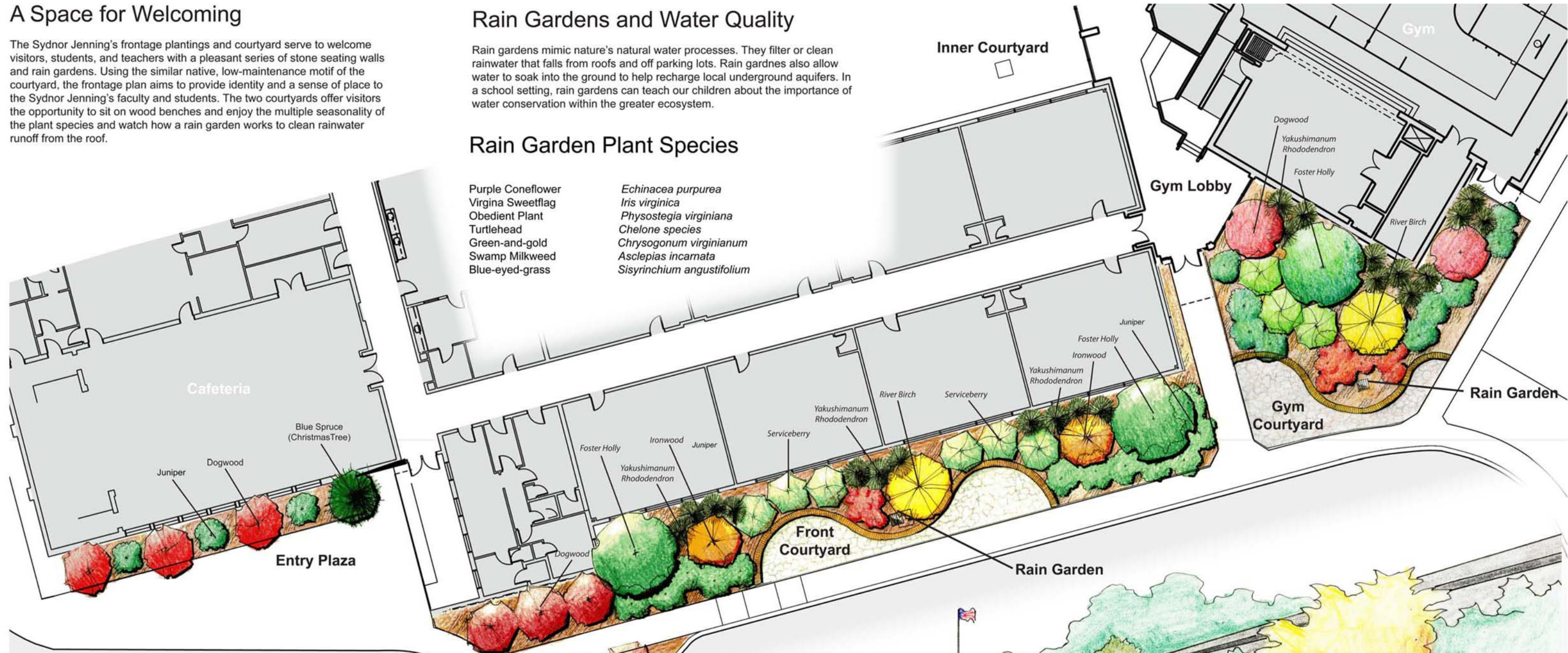
## Rain Gardens and Water Quality

Rain gardens mimic nature's natural water processes. They filter or clean rainwater that falls from roofs and off parking lots. Rain gardens also allow water to soak into the ground to help recharge local underground aquifers. In a school setting, rain gardens can teach our children about the importance of water conservation within the greater ecosystem.

## Rain Garden Plant Species

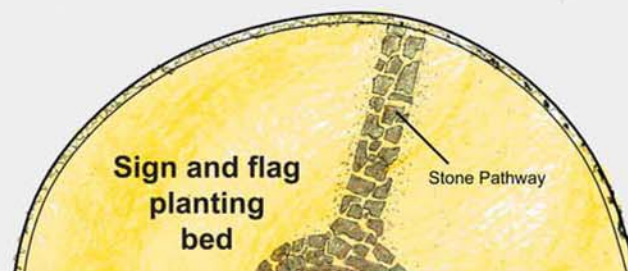
Purple Coneflower  
Virginia Sweetflag  
Obedient Plant  
Turtlehead  
Green-and-gold  
Swamp Milkweed  
Blue-eyed-grass

*Echinacea purpurea*  
*Iris virginica*  
*Physostegia virginiana*  
*Chelone species*  
*Chrysogonum virginianum*  
*Asclepias incarnata*  
*Sisyrinchium angustifolium*

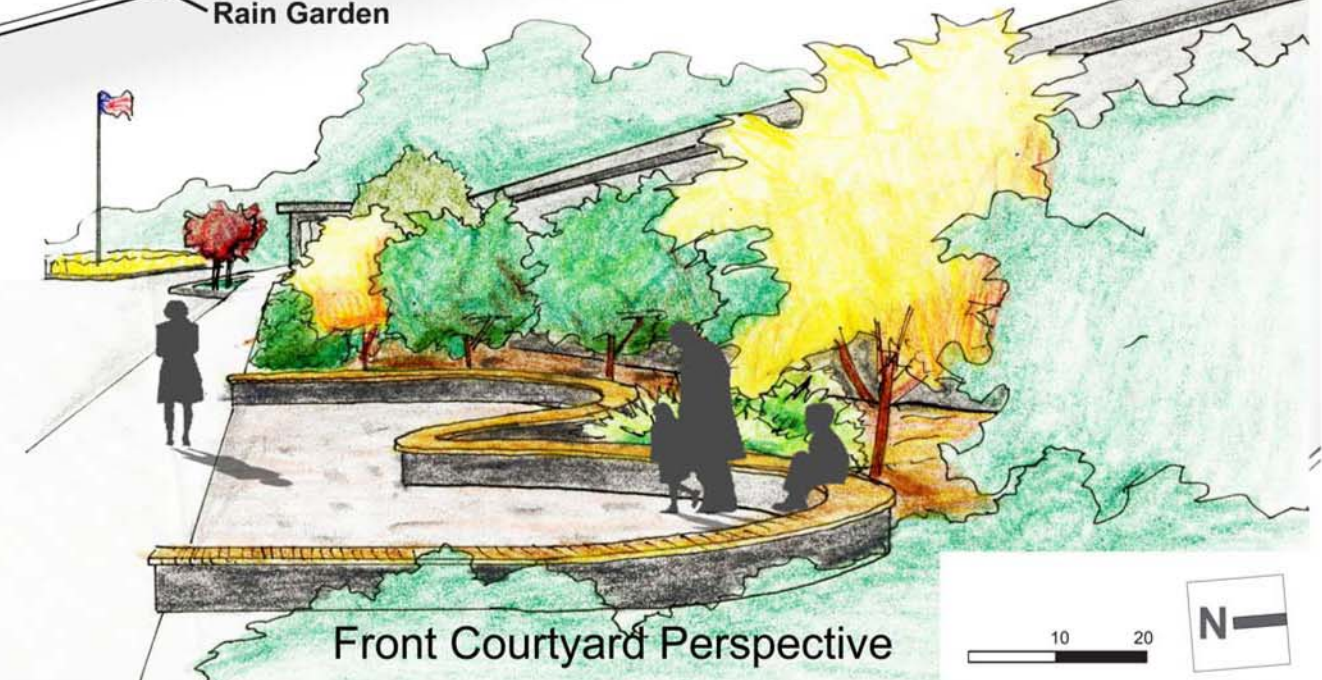


## Landscape Features

The frontage plan uses native deciduous and evergreen species along with several flowering species to create year round interest. The entry island is planted with native prairie grasses to create a more pleasing bed for the Sydnor Jennings' Sign and flag pole.



Crepe Myrtle



Front Courtyard Perspective



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# Conclusion

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Upon the first visit to the Sydnor Jennings school grounds the CDAC team saw numerous opportunities for the underutilized spaces on the school campus. The team realized that the learning environments within the school could be extended outside to provide a richer and more memorable experience for the students and faculty. Enhancing the barren courtyard and worn out playgrounds with new spaces that functioned as extensions of the school and as an amenity for the community would bring vitality and recognition to Sydnor Jennings Elementary School.

Within these spaces, learning takes place tangibly and engages all of the senses. Through experience, learning can be fun while forming strong memories. Whether it is playing with water that has been fed by rain drained from the roof, or planting vegetables in the garden, these experiences provide an extra knowledge that books simply do not. Within these new places, teachers will be able to better demonstrate what they teach in the classroom. An added identity and “sense-of-place” provided by the new designs will bring recognition to Sydnor Jennings Elementary School and hopefully will spread these ideas to other schools in the County.

*“Let Nature be your teacher” - William Wordsworth*

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# Appendices

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Appendix D - Teachers' Input Request-----Page 43

Appendix E - Preliminary Concept Case Studies-----Page 45

# Appendix A: Soil Survey Information & Results

14 Sep 2010

## VIRGINIA COOPERATIVE EXTENSION SOIL TESTING LABORATORY

Person Submitting Samples: STEIKA KIM  
101 SOUTH MAIN ST S-2  
CDAC/0450  
911  
Unit: VPI & SU CAMPUS

### LABORATORY RESULTS

Sample ID	Lab ID	pH	SpH	P	K	Ca	Mg	Zn	Mn	Cu	Fe	B	meq/100g		Base Sat		Ca Sat	Mg Sat	K Sat	OM	SS
													CEC	Acidity	EST.	Sat					
38999	501	5.27	6.20	2	63	258	77	0.5	8.4	0.5	10.3	0.2	3.3	36.4	63.6	39.4	19.3	4.9	1.7		
38996	CTYCT	5.22	6.15	3	56	373	85	2.3	3.7	0.7	11.1	0.2	4.2	35.4	64.6	44.4	16.7	3.4	3.8		
39000	FRONT	5.47	6.19	4	94	485	91	2.2	7.0	0.6	9.0	0.2	4.6	26.8	73.2	52.0	16.0	5.2	4.7		
38997	LIBBD	7.35	N/A	4	120	1349	136	4.1	13.1	1.0	12.4	0.5	8.2	N/A	100.0	82.6	13.7	3.8	4.3		
38998	LIDDR	6.19	6.31	3	85	690	102	2.1	5.7	1.1	19.4	0.3	5.0	10.6	89.4	68.4	16.7	4.3	4.4		
38995	SIGN	7.12	N/A	22	84	974	128	16.2	18.9	2.2	16.6	0.4	6.1	N/A	100.0	79.4	17.2	3.5	3.0		

*Water content  
pH  
Lib  
LIDDR  
CTYCT*

*Read - 501  
with  
Lib  
LIDDR  
SIGN  
pH  
2.7  
Red  
pH  
6.31*

# Appendix B: Plant Lists

**Areas:**

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Courtyard-----40

Butterfly garden-----42



Site/Arboretum					
Common Name	Botanical Name	Minimum Installation size	Quantity	Mature size	Notes
red maple	<i>Acer rubrum</i>	4-5'		40-60' tall, spread equal or slightly less than height	Tolerant of a wide range of soils. Full sun.
river birch	<i>Betula nigra</i>	4-5'		40-70' tall, 40-60' wide	Resistant to birch borer. Should be pruned in early winter. Don't prune in late winter or early spring, as the tree will bleed sap more heavily.
persimmon	<i>Diospyros virginiana</i>	4-5'		35-60' tall, 20-35' spread	Best planted in early spring. Full sun.
American beech	<i>Fagus grandifolia</i>	4-5'		50-70' tall, spread less than or equal to height	
sweetgum	<i>Liquidambar styraciflua</i>	4-5'		50-75' tall, 30-50' wide	Choose a cultivar that does not have seeds, like 'Rotundiloba'.
tulip poplar	<i>Liriodendron tulipifera</i>	4-5'		70-90' tall, 35-50' wide	Full sun.
sycamore	<i>Platanus occidentalis</i>	4-5'		75-100' tall, spread same or greater	A beautiful tree, but tends to drop twigs and fruit, as well as leaves. Plant where this does not pose a problem.
white oak	<i>Quercus alba</i>	4-5'		50-80' tall with similar spread	Prefers acid soils, 5.5-6.5.
southern red oak	<i>Quercus falcata</i>	4-5'		70-80' tall with similar spread	
northern red oak	<i>Quercus rubra</i>	4-5'		60-75' tall with similar spread	
swamp white oak	<i>Quercus bicolor</i>	4-5'		50-60' tall, spread same or greater	Prefers acid soils, 5.5-6.5.
sassafras	<i>Sassafras albidum</i>	4-5'		30-60' tall, 25-40' wide	Best to plant young, container-grown trees in early spring. This tree can sucker and become a copse.
Common Name	Botanical Name	Minimum Installation size	Quantity	Mature size	Notes
sourwood	<i>Oxydendrum arboreum</i>	4-5'		20-25' tall, 20' spread	Beautiful flowering tree with great fall color. Transplant young trees into acid soil. Slow growing/
dogwood	<i>Cornus florida</i> 'Appalachian Spring'	4-5'		15-20' tall, spread wider than height when mature	A disease resistant cultivar. Prefers moist, well-drained soil. Part shade to full sun.
redbud	<i>Cercis canadensis</i>	4-5'		20-30' tall, 25-35' wide	
serviceberry	<i>Amalanchier arborea</i> (and <i>A. canadensis</i> )	4-5'		15-25' tall and wide	Berries are edible. Full sun to part shade.
paw paw	<i>Asimina triloba</i>	4-5'		15-20' tall and wide	Best to transplant a young tree. Full sun to part shade.
alternate leaf dogwood	<i>Cornus alternifolia</i>	4-5'		15-20' tall, spread wider than height when mature	Best in moist, acid well-drained soils with some shade.
American holly	<i>Ilex opaca</i>	4-5'		40-50' tall, 18-40' wide	
sweetbay magnolia	<i>Magnolia virginiana</i>	4-5'		12-20' tall (sometimes much larger), spread equal to or less than height	Will do fine with some shade.
eastern hophornbeam	<i>Ostrya virginiana</i>	4-5'		25-40' tall, 15-25' wide	Transplant in early spring. Sun to part shade. Can be slow growing.

### Site/Arboretum planting tips:

When purchasing plants, the larger the plant, the more immediate the visual impact. However, larger plants are more expensive and for some species, can be harder to establish. While one can find a size and price that suits your goals and resources, it is not recommended to plant trees less than 4-5 feet tall. Smaller trees might be more easily overlooked by maintenance personnel, students or staff, and so vulnerable to damage. In certain protected areas, it may be possible to plant a slightly smaller tree. Maintaining a mulch ring around trees planted in a grassy area keeps lawn mowers and trimmers from damaging the trunk. These injuries can be entry sites to disease and insects. Mulch rings should only be 3-4 inches deep and **mulch kept away from the trunk of the tree**. At this depth, soil will be insulated from strong temperature fluctuations, soil moisture will be conserved and weeds will be much less of a problem. Most trees can be pruned, if necessary, in late winter.

Playground				
Common Name	Botanical Name	Minimum Installation size	Quantity	Notes
red maple	<i>Acer rubrum</i>	4-5'	40-60' tall, spread equal or slightly less than height	Tolerant of a wide range of soils. Full sun.
sweetgum	<i>Liquidambar styraciflua</i>	4-5'	50-75' tall, 30-50' wide	Choose a cultivar that does not have seeds, like 'Rotundiloba'.
tulip poplar	<i>Liriodendron tulipifera</i>	4-5'	70-90' tall, 35-50' wide	Full sun.
longleaf pine	<i>Pinus palustris</i>	4-5'	60' tall	Full sun.

Amphitheater					
Common Name	Botanical Name	Minimum Installation size	Quantity	Mature Size	Notes
Saucer magnolia	<i>Magnolia xsoulangiana</i>	4-5'	6	20-30' tall, roughly similar spread in maturity	Beautiful spring flowering tree, the one potential drawback to this tree is that a late spring freeze will kill the blooms and cause some dieback on branches. In Blacksburg this is a problem about 1-2 out of every four years. However, when it does bloom without problem, it's well worth the risk. In zone 7, this may be less of a problem. However, if you have concerns, consider substituting with 'Spring Snow' or 'Ballerina' loebner magnolia ( <i>Magnolia xloebneri</i> ).

**Playground & Amphitheater planting tips:**

If mulch is maintained at 3-4 inches, soil will be insulated from strong temperature fluctuations, soil moisture will be conserved and weeds will be much less of a problem. Try to keep mulch away from the bases of plants. If any pruning is necessary, it's best to do this in later winter to early spring.

A note on planting sizes: Installing larger plants makes the landscape look more mature and can give some instant shade. However, larger plants are more expensive. Balance immediate visual impact with what the budget allows. It is best to plant trees no smaller than 4-5 feet tall. Trees much smaller than this are less noticeable by maintenance personnel and other, and so more prone to accidental injury. In certain protected areas, you may be able to plant a slightly smaller tree.

**Saucer Magnolia**



Photo courtesy of plantworksny.com

**Sweetgum**



Photo courtesy of meridian.k12.il.us

Sign Bed				
Common Name	Botanical Name	Minimum Installation size	Quantity	Notes
switchgrass	<i>Panicum virgatum</i>	1 quart	3-7' tall, 2-3' wide, depending on cultivar	There are many cultivars of this grass to choose from. Full sun.
prarie dropseed	<i>Sporobolus heterolepis</i>	1 quart	2-3' tall and wide	Full sun.
indian grass	<i>Sorghastrum nutans</i> 'Indian Steel'	1 quart	3-4' tall (up to 7' tall in bloom), plant 2-4 feet apart	Foliage is 3-4' tall, blooms go up to 5'. Full sun.
blue grama	<i>Bouteloua gracilis</i> 'Bad River'	1 quart	1' tall, 1' wide	Full sun.
black-eyed Susan	<i>Rudbeckia fulgida</i> var. <i>Sulivantii</i> 'Goldsturm'	1 quart	2-3' tall, 1-2' wide, though this spreads for form large clumps	Can be attractive in the winter and provide food for wildlife. However, seeds left to fall on the ground can produce too many seedlings. If this is not desired, cut back in the fall. Full sun.
purple coneflower	<i>Echinacea purpurea</i>	1 quart	3' tall, 2-3' wide	This perennial can look appealing if left standing for the winter. Cut back in late winter. Best in full sun, but can grow in a little shade.
daylily	<i>Hemerocallis hybrids</i>	1 quart	1-3' tall depending on cultivar, spreads to form large clumps	Full sun to part shade.
liatris	<i>Liatris spicata</i>	1 quart	2-4' tall, 1-1.5' wide	Kobold' is shorter and does not need the staking that other varieties do. Full sun.
moutain bluet	<i>Centaurea montata</i>	1 quart	1-2' tall, spreads to form large clumps	This plant likes to spread out, give it plenty of room.

### Sign bed planting tips:

This site has very poor soil and would benefit from being loosened and improved with compost. A backhoe or similar machinery would be best to loosen the soil. If there is a parent with construction or farm connections, they might be able to arrange this at a reasonable cost or even volunteer their services. The grasses can usually be purchased in one gallon containers. Some producers will sell flats of plugs (much smaller plants) which is an economical way to cover a larger area. The perennials can also be found in smaller sizes through reputable mail order companies. However, you would need to water more often, as the plugs have a smaller root system. If mulch is maintained at 3-4 inches, soil will be insulated from strong temperature fluctuations, soil moisture will be conserved and weeds will be much less of a problem. Try to keep mulch away from the bases of trees and plants that are established.

### Purple Coneflower



Photo courtesy of John M. Hagstrom, on Flickr.com

### Daylily



Photo courtesy of Flowergardeningtips.net

Front of School					
Common Name	Botanical Name	Minimum Installation size	Quantity	Mature Size	Notes
Foster holly	<i>Ilex xattenuata</i> 'Fosteri'	4-5'	3	20-30' tall, 10-20' wide	
Yakushimanum rhododendron	<i>Rhododendron yakushimanum</i>	3 gallon	22	3' tall, 3' wide	Part shade. No pruning necessary.
blue shore juniper	<i>Juniperus conferta</i> 'Blue Pacific'	1 gallon		1' tall, 6-9' wide	Full sun.
serviceberry	<i>Amalanchier</i> 'Autumn Brilliance'	4-5'	8	15-25' tall and wide	Berries are edible. Full sun to part shade.
dogwood	<i>Cornus florida</i> 'Appalachian Spring'	4-5'	9	15-20' tall, spread wider than height when mature	A disease resistant cultivar. Prefers moist, well-drained soil. Part shade to full sun.
juniper	<i>Juniperus chinensis</i> 'Armstrong'	1 gallon		3-4' tall and wide	Full sun. Does not require pruning.
river birch	<i>Betula nigra</i> 'Heritage'	4-5'	1	40-70' tall, 40-60' wide	Resistant to birch borer. Should be pruned in early winter. Don't prune in late winter or early spring, as the tree will bleed sap more heavily.
Colorado blue spruce	<i>Picea pungens</i> 'Bakeri'	4-5'	1	dwarf cultivar	In his Manual of Woody Landscape Plants, Michael Dirr notes a 32 year old specimen that was 12' tall and 6' wide specimen. Full sun.
ironwood	<i>Carpinus caroliniana</i>	4-5'	2	20-30' tall with similar spread	Transplant in winter to early spring from a container or ball and burlap. Grows slowly. Sun to shade.

### Front of school planting tips:

When purchasing plants, the larger the plant, the more immediate the visual impact. However, larger plants are more expensive and for some species, can be harder to establish. While one can find a size and price that suits your goals and resources, it is not recommend to plant trees less than 4-5 feet tall. Smaller trees might be more easily overlooked by maintenance personnel, students or staff, and so vulnerable to damage. Maintaining a mulch ring around trees planted in a grassy area keeps lawn mowers and trimmers from damaging the trunk. These injuries can be entry sites to disease and insects. Mulch rings should only be 3-4 inches deep and **mulch kept away from the trunk of the tree**. At this depth, soil will be insulated from strong temperature fluctuations, soil moisture will be conserved and weeds will be much less of a problem. Try to keep mulch away from the bases of plants that have been established

### Flowering Dogwood



Photo courtesy of Jim-AR, on Flickr.com

### Rhododendron



Photo courtesy of Flowerbeauty.info

## Rain Garden

Common Name	Botanical Name	Minimum Installation size	Quantity	Mature Size (range)	Notes
purple coneflower	<i>Echinacea purpurea</i>	1 quart		3' tall, 2-3' wide	This perennial can look appealing if left standing for the winter. Cut back in late winter. Best in full sun, but can grow in a little shade.
Virginia sweet flag	<i>Iris virginica</i>	1 quart		1-3' tall and wide	Full sun.
obedient plant	<i>Physostegia virginiana</i>	1 quart		3-4' tall, 2-3' wide	Best in full sun.
turtlehead	<i>Chelone species</i>	1 quart		2-4' tall, 1.5-2.5' wide, can spread to form large clumps	Cut back in early spring. Full sun to part shade.
green-and-gold	<i>Chrysogonum virginianum</i>	1 quart		0.5-1' tall and wide	Full sun to part shade.
swamp milkweed	<i>Asclepias incarnata</i>	1 quart		3-5' tall, 2-3' wide	Remove seedheads if reseeding is not desired. Full sun.
blue-eyed grass	<i>Sisyrinchium angustifolium</i>	1 quart		0.5-1' tall and wide	Full sun.

### Rain Garden planting tips:

Most of these perennials can be purchased in quart size containers. Larger sizes are sometimes sold, but this may not give much of an advantage for the extra cost. If there is someone who is skilled at raising flowers from seed, that would be an inexpensive way to add to this garden. Some mail order companies will sell smaller sizes. Make sure to order from companies with a good reputation for quality. Also, be aware that the smaller the plant, the more often it will need to be watered.

Consult the Virginia Department of Forestry for a technical guide on rain garden construction and additional recommended species. This guide can be downloaded for free via: [http://www.dof.virginia.gov/mgt/resources/pub-Rain-Garden-Tech-Guide\\_2008-05.pdf](http://www.dof.virginia.gov/mgt/resources/pub-Rain-Garden-Tech-Guide_2008-05.pdf)

### Purple Coneflower



Photo courtesy of John M. Hagstrom, on Flickr.com

### Turtlehead



Photo courtesy of thebattery.org

Courtyard					
Common Name	Botanical Name	Minimum Installation size	Quantity	Mature size	Notes
littelleaf linden	<i>Tilia cordata</i>	8-10'	1	60-70' tall, 30-44' wide	Full sun.
ironwood	<i>Carpinus caroliniana</i>	4-5'	2	20-30' tall with similar spread	Transplant in winter to early spring from a container or ball and burlap. Grows slowly. Sun to shade.
Little Gem' magnolia	<i>Magnolia grandifolia</i> 'Little Gem'	4-5'	1	20' tall, 10' wide, see notes	In his Manual of Woody Landscape Plants, Michael Dirr notes a 20' tall, 10' wide specimen after 20 years of growth. Full sun.
Japanese maple	<i>Acer palmatum</i>	4-5'	1	15-25' tall, spread wider than height when mature, size varies greatly by cultivar	
serviceberry	<i>Amalanchier</i> 'Autumn Brilliance'	4-5'	2	15-25' tall and wide	Berries are edible. Full sun to part shade.
redbud	<i>Cercis canadensis</i>	4-5'	1	20-30' tall, 25-35' wide	Full sun to part shade.
Appalachian Spring' dogwood	<i>Cornus florida</i> 'Appalachian Spring'	4-5'	1	15-20' tall, spread wider than height when mature	A disease resistant cultivar. Prefers moist, well-drained soil. Part shade to full sun.
river birch	<i>Betula nigra</i> 'Fox Valley'	4-5' (possibly 3-4')	1	dwarf cultivar, 10' tall, 12' wide, see notes	In his Manual of Woody Landscape Plants, Michael Dirr notes a 10' tall, 12' wide specimen after 15-20 years of growth. If this plant needs pruning, prune in early winter.
chinese juniper	<i>Juniperus chinensis</i> 'Armstrong'	1 gallon	6	3-4' tall and wide	Evergreen, drought tolerant shrub that grows 3-4 feet tall and just as wide or slightly wider. Full sun
dwarf mountain laurel	<i>Kalmia latifolia</i> 'Elf'	3 gallon	7	4-7' tall and wide	Evergreen shrub, slow growing, blooms in May. Part shade is best.
Common Name	Botanical Name	Minimum Installation size	Quantity	Mature size	Notes
Snow Queen' oakleaf hydrangea	<i>Hydrangea quercifolia</i> 'Snow Queen'		1	6' tall, wider than tall	This shrub does not typically need pruning. Once this shrub is as wide as desired, dig up suckers from the base of the plant to control spread. If pruning is desired, do so just after flowering.
switchgrass	<i>Panicum virgatum</i>		8	3-7' tall, 2-3' wide, depending on cultivar	Cut back in late winter to early spring, as close to the ground as possible. To make clean-up easy, tie the dead stems up with string before cutting so they stay together in a bunch.
Japanese plum yew	<i>Cephalotaxus harringtonia</i> 'Prostrata'	1-3 gallon	15	3' tall and wide	Soft textured evergreen shrub that grows to 3 feet tall and as wide or wider. Sun to shade.
<b>Ideas for groundcovers</b>					
There are areas in the courtyard that could have groundcovers added. Below is a list of suggestions.					
pachysandra	<i>Pachysandra terminalis</i>			0.5' tall	Evergreen, needs some shade. Spreads by rhizomes.
Alleghany spurge	<i>Pachysandra procumbens</i>			6-10" tall	Mostly evergreen, needs some shade especially in the afternoon. Spreads by rhizomes.

continued on next page...

blue pacific juniper	<i>Juniperus conferta</i> 'Blue Pacific'			1' tall, 6-9' wide	About a foot tall, spreads well, is quite dense, and keeps its color in winter. Requires a sunny exposure
garden juniper	<i>Juniperus procumbens</i> 'Nana'			0.5' tall, 10' or more in spread	A fine textured juniper
Common Name	Botanical Name	Minimum Installation size	Quantity	Mature size	Notes
Pennsylvania sedge	<i>Carex pensylvanica</i>			10" tall, spreads by stolons, plant about 1-2 feet apart	Fine textured, semi-evergreen grass, does not need mowing. Prefers partial to full shade.
sedum	<i>Sedum kamschaticum</i>			0.25-5' tall, 0.5-1.5' spread	Full sun groundcover with yellow blooms.
Dragon's blood stonecrop	<i>Sedum spurium</i> 'Schorbuser Blut'			up to 0.25' tall, up to 1.5' in spread	Spreads well in full sun, red foliage.
Autumn Bride' alumroot	<i>Heuchera villosa</i> 'Autumn Bride'			1-1.5' tall, 1.5 -2' spread	White blooms in Aug-Sept. over green leaves. Spreading plant that likes part shade.
geranium	<i>Geranium macrorrhizum</i> 'Album'			9-12" tall, 1.5-2' spread	White blooms over a spreading mass of green foliage. Likes part shade and can tolerate dry soil.

### Courtyard planting tips:

If mulch is maintained at 3-4 inches, soil will be insulated from strong temperature fluctuations, soil moisture will be conserved and weeds will be much less of a problem. Try to keep mulch away from the bases of plants. Most trees can be pruned in late winter to early spring.

When purchasing plants, the larger the plant, the more immediate the visual impact. However, larger plants are more expensive. While it is possible to find a size and price that suits your goals and resources, it would be not be advisable to plant trees less than 4-5 feet tall. Smaller trees might be more easily overlooked by maintenance personnel, students or staff, and may be vulnerable to damage. In certain protected areas, a slightly smaller tree may work.

**Sedum**



Photo courtesy of KingsbraeGarden, on Flickr.com

**Laurel**



Photo courtesy of Oregonstate.edu

**Serviceberry**



Photo courtesy of Thesupernursery.com

Butterfly Garden					
Common Name	Botanical Name	Minimum Installation size	Quantity	Mature Size	Notes
butterfly weed	<i>Asclepias tuberosa</i>	1 quart		3' tall, 3' wide	If you don't want this plant to reseed, cut seedheads off before they split open. Butterfly weed should be cut back in the spring. Best in sun.
purple coneflower	<i>Echinacea purpurea</i>	1 quart		3' tall, 2-3' wide	This perennial can look appealing if left standing for the winter. Cut back in late winter. Best in full sun, but can grow in a little shade.
aster	<i>Syphiotrichum laevis</i> , <i>S. novi-belgii</i>	1 quart		depends on cultivar	You can cut this down to the ground after flowering to prevent seedlings from growing. Seedlings often do not grow like the parent, and can be tall and need staking. Best in sun.
black-eyed susan	<i>Rudbeckia fulgida</i> var. <i>sulivantii</i>	1 quart		2-3' tall, 1-2' wide, though this spreads for form large clumps	Can be attractive in the winter and provide food for wildlife. However, seeds left to fall on the ground can produce too many seedlings. If this is not desired, cut back in the fall. Full sun.
yarrow	<i>Achillea fillipendula</i>	1 quart		3-4' tall, 1-2' spread	Another yarrow ( <i>Achillea millefolium</i> ) can spread quickly, and require division. It seems like the yarrow listed here might behave better in the garden and not take over its neighbors. Best in sun.
monarda	<i>Monarda didyma</i>	1 quart		2-4' tall, 2-3' wide	Powdery mildew can be a problem with these plants. In "The Well-Tended Perennial Garden", Tracey DiSabato-Aust recommends 'Blaustrumpf', 'Colrain Red', 'Gardenview Scarlet', 'Marshall's Delight', 'Sunset', and 'Violet Queen' as resistant cultivars. Grow in full sun to part shade.
liatris	<i>Liatris spicata</i>	1 quart		2-4' tall, 1-1.5' wide	Kobold' is shorter and does not need the staking that other varieties do. Full sun.
goldenrod	<i>Solidago rugosa</i> 'Fireworks'	1 quart		2.5-4' tall, 2-3' wide	Grow in full sun.
Common Name	Botanical Name	Minimum Installation size	Quantity	Mature Size	Notes
garden phlox	<i>Phlox paniculata</i>	1 quart		2-3' tall, 1-3' wide	Powdery mildew can be a problem with these plants. Some that DiSabato-Aust recommends as resistant are: 'Bright Eyes', 'David', 'Franz Schubert', 'Sandra', 'Tenor' and 'The King'. Full sun.
globe thistle	<i>Echinops ritro</i>	1 quart		3-4' tall, 2-3' wide	Full sun.
agastache	<i>Agastache</i> species and hybrids	1 quart		2-4' tall, 2-3' wide, depending on cultivar	Full sun.
Gateway'Joe-pye weed	<i>Eupatorium purpureum</i> 'Gateway'	1 quart		up to 6' tall, 2-3' wide, can use shorter cultivars (2-3' tall)	Great native butterfly plant, but prefers moist soil. If the garden may dry out periodically, consider using another plant. Full sun.
turtlehead	<i>Chelone glabra</i>	1 quart		2-4' tall, 1.5-2.5' wide, can spread to form large clumps	Cut back in early spring. Full sun to part shade.
blue-eyed grass	<i>Sisyrinchium angustifolia</i>	1 quart		0.5-1' tall and wide	Full sun.
amsonia	<i>Amsonia hubrectii</i>	1 quart		2-3' tall and wide	Full sun.
coreopsis	<i>Coreopsis verticillata</i>	1 quart		1.5-3' tall, 2-3' wide	Full sun.
blanket flower	<i>Gaillardia xgrandiflora</i>	1 quart		1-3' tall, 1-2' wide	Full sun.
thyme	<i>Thymus vulgaris</i>	1 quart		0.5-1' tall and wide	Full sun.

### Butterfly Garden planting tips:

Most of the perennials listed above can be purchased in quart size containers. Larger sizes are sometimes sold, but not much of an advantage is given for the extra cost. If there is someone who is skilled at raising flowers from seed, that would be an inexpensive way to add to this garden. Some mail order companies will sell smaller sizes. Make sure to order from companies with a good reputation for quality. Also, be aware that the smaller the plant, the more often it will need to be watered. Tilling a few inches of good compost into the soil will greatly improve the health and vigor of this garden.



# Appendix C: Information Shared with PTO

September 21, 2010

## Sydnor Jennings Courtyard Learning Garden & Site Master Plan

The Virginia Tech Community Design Assistance Center (CDAC) is working with teachers, staff, and community members to gather ideas to improve the school grounds at Sydnor Jennings Elementary School.

A CDAC design team is working to prepare ideas for the internal courtyard. This area will be used by school classes during school hours for outdoor educational opportunities. Some ideas for this space include:

- butterfly and/or hummingbird garden to help teach about lifecycles
- creating an ecosystem
- adding a greenhouse, with outdoor sinks
- adding shade and additional outdoor seating
- weather station
- root vegetable garden
- cool season garden
- rain barrel/cistern and storage shed



The CDAC team will also be developing design ideas for how the site can serve the students and community. Some ideas for the larger grounds include: walking trails, improving the playgrounds, adding additional plantings, and adding seating areas.

## Share Your Ideas!

We would love to hear from parents and community members about their ideas for how the school site can be improved. A comment sheet is attached for you to share any ideas you may have. If you don't have any ideas at the moment but think of one later, **feel free to drop off your comment sheet at the school office through October 29<sup>th</sup>, 2010.** You can also call, mail, or email Kim Steika at CDAC with your ideas.

Kim Steika, Landscape Architecture Project Coordinator at CDAC  
Email: [ksteika@vt.edu](mailto:ksteika@vt.edu)  
Phone: 540-231-5644  
Address: 101 South Main Street, Suite 2; Blacksburg, VA 24061



# Appendix D: Teachers' Input Request

September 21, 2010

Dear Sydnor Jennings Elementary School Faculty and Staff:

The Community Design Assistance Center (CDAC), an outreach center in the College of Architecture and Urban Studies at Virginia Tech, is delighted to be working with you and your school this semester to develop a conceptual master plan for a teaching garden for the courtyard and for the larger school landscape!

The CDAC team has recently met with Principal Duffer and teachers Sandra Cash and Francine Davis. We are very grateful to Ms. Cash and Ms. Davis for the feedback they have sought and given us related to the courtyard space. We also commend all those who have used the courtyard space in the past for gardens and teaching. We want to make sure we are not missing any ideas other faculty and staff may have for the space. Below is a list of ideas we are considering as we work on preliminary conceptual designs for the space:

- Hummingbird Garden
- Butterfly garden – something to address life cycles
- Greenhouse
- Creating an ecosystem
- Get rid of as much grass as possible
- Adding a compost bin, rain barrel/cistern and storage shed
- Enough picnic tables to accommodate a fall class
- Creating some type of shade/cover over the concrete pad with tables by the library
- Board for writing (by library) for an outdoor class
- Seating in the grass/planted area for reading or eating lunch outside
- Outdoor sink/wash area
- Weather unit (rain gauge, thermometer)
- Root vegetable garden
- Cool season garden (spring/fall)

We are also looking to enhance the larger school grounds with additional plantings by the marquee sign, by the front of the school and along 501; enhancing playgrounds; and adding a walking trail on site. We would like to ask for your help in two ways:

1. Please let us know if you have any other ideas for the design of the courtyard or school site.
2. Please take a few moments to ask your classes a question or two about the courtyard – if there is anything they would like to see included or what could be added that would help them to learn in that space.

You can leave ideas in the school office, share them with Ms. Cash and/or Ms. Davis, or direct them to Dan Goerlich (cell phone: 434-579-5727; email: [dalego@vt.edu](mailto:dalego@vt.edu)). We look forward to presenting conceptual design ideas to you for your review and feedback in the future!

Kind regards,

Kim Steika

Landscape Architecture Project Coordinator

+ Dan Goerlich

Syndor Jennings PTO President

## **Appendix E: Preliminary Concept Case Studies**

The CDAC team looked at some exemplary sites as inspiration during the design development process of the project. Case studies highlighting project research are presented on the following pages.

## 1. Buga Playground Munich, Germany 2005

Designers:  
Rainer Schmidt Landschaftsarchitekten



BUGA playground, Munich

This playground in Munich, Germany, designed by Rainer Schmidt for the BUGA Garden Show, offers a different example of a play space than the traditional playground. Devoid of swings, ramps, or slides, this color place uses topography and different surface materials to create a unique play space for active free play for children.

## 2. Gary Comer Youth Center Chicago, Illinois 2006

Designers:  
John Ronan Architect



Gary Comer Youth Center Chicago, Illinois

The Gary Comer Youth Center, located in the Gran Crossing neighborhood on Chicago's southside, offers positive extracurricular alternatives in a welcoming and safe environment to youth ages 8-18. A highlight at the Center is the 8,600 square foot rooftop garden. Here a variety of vegetables, fruit, herbs, and flowers are grown by youth and community members. The produce is used by the Center's cooking classes and for meal preparation. Community garden volunteers are also able to take home some fresh produce.

## Mount Tabor Middle School Rain Garden

Portland, Oregon 2006

Designers:

Kevin Robert Perry, ASLA

City of Portland Environmental Services, Brandon Wilson



This project transformed an underutilized asphalt parking area into an innovative rain garden that melds the concepts of art, education, and ecological function. Built in the summer of 2006, the Mount Tabor Middle School Rain Garden has not only turned a “gray space” into a “green space,” but it is also helping solve the local neighborhood’s combined sewer infrastructure problems.

The Mount Tabor Middle School Rain Garden project essentially disconnects a portion of the school’s stormwater runoff from the neighborhood’s combined sewer system and manages it on-site using a landscape approach. Approximately 30,000 square feet of impervious area runoff generated by the school’s asphalt play area, parking lot, and rooftops, is elegantly captured and conveyed into the rain garden via a series of trench drains and concrete runnels. Once inside the landscape space, the water is allowed to interact with both plants and soil while soaking into the ground.

