

Samuel Clemens School

Conceptual Schoolyard Redevelopment Plan

December 2023

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Conceptual Plan Drawings:

Existing Site Plan

Proposed Site Plan

Stormwater Green Infrastructure Plan

Arts, Outdoor Education, and Community Engagement Plan

Land Acknowledgment

We acknowledge that Milwaukee lies on traditional Menominee, Potawatomi, and Ho-Chunk homeland along the southwest shores of Lake Michigan, part of North America's largest system of freshwater lakes. On this site, the Milwaukee, Menominee, and Kinnickinnic rivers meet, and the people of Wisconsin's Menominee, Ojibwe, Ho-Chunk, Oneida, and Mohican sovereign nations remain present to this day.

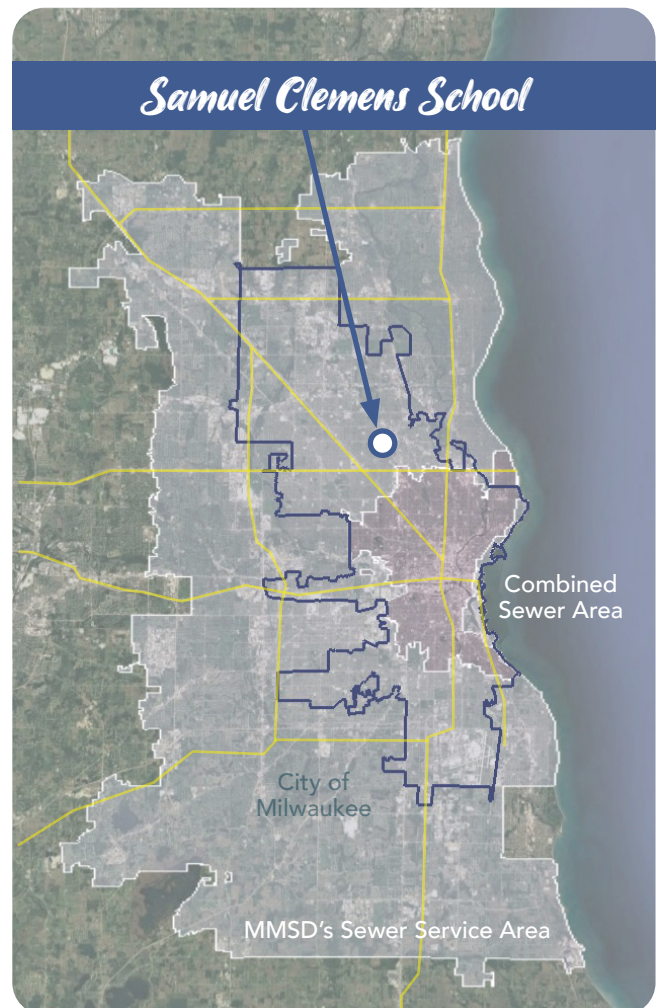


Existing schoolyard at Samuel Clemens

Introduction

Impervious surfaces (hardscapes including asphalt and concrete) characterize so much of our built environment that we no longer even notice how they shape the contours of our urban communities. Excessive imperviousness leads to sewage overflows and basement backups, degrades the quality of our rivers and lake, and costs us millions each year in economic losses and infrastructure repair, all of which deter investment and impede socioeconomic progress. Schools surrounded by seas of splintering asphalt offer opportunities to replace imperviousness with beautiful, nature-inspired landscapes that increase urban biodiversity, educate, and inspire.

Through funding provided by the Milwaukee Metropolitan Sewerage District and the Fund for Lake Michigan, the nonprofit Reflo and its partners collaborate with five schools annually to develop conceptual schoolyard redevelopment plans that holistically address the issue of each school's imperviousness. This document compiles over a year of conceptual planning in order to provide a single, feasible vision for redeveloping a greener, healthier schoolyard. These projects also provide a multitude of STEAM (science, technology, engineering, arts, and mathematics) curricular connections as well as triple-bottom-line (social, environmental, and economic) benefits for the students, school, and community.



School Story

Located in Milwaukee's Lincoln Creek neighborhood, Samuel Clemens is a true learning community where students love coming to school and families support each other. We offer a warm and welcoming school climate where high expectations, collaboration, respect, and strong character are core values. We passionately refer to our expectations as, **"The Tiger Way"**.

Our school aspires to be a world-class educational community that honors diversity and promotes high expectations for all students while preparing them for the future. The opportunity to provide our students with these green spaces will allow us to further prepare our students to be stewards of their environment.

We provide every student with learning opportunities to become responsible citizens and are united in helping children thrive to be prepared for middle school, high

school, and beyond. Our caring staff teaches students to think critically, act responsibly, and work collaboratively. We encourage students to celebrate their unique strengths and talents while building self-esteem and confidence to achieve their full potential. We believe in the power of yet. We teach our students that they can do anything, as long as they work hard and push through by saying, "You think you can't do something? **No, you just can't do it, yet"**.

Strong community partnerships offer the opportunity to learn outside the classroom and to interact with successful Milwaukee leaders and organizations. We believe that with the commitment, support, and collaboration of our community, our students will be empowered and inspired to be lifelong learners and our next generation of leaders. We truly believe, **it is always a great day to be a Tiger!**



Samuel Clemens School

3600 W HOPE AVENUE,
MILWAUKEE, WI 53216

- Milwaukee Public School
- Grades: K4 through 5th
- 331 students
- 89% economically disadvantaged
- 22% special education
- < 1% English learners
- Separated sewer area
- Milwaukee River watershed

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Conceptual Redevelopment Plans

On an annual basis, the nonprofit Reflo and its partners, with the support of the Milwaukee Metropolitan Sewerage District (MMSD), works through the Green Schools Consortium of Milwaukee (GSCM) to select and collaborate with schools that are interested in redeveloping their schoolyards. Planning efforts incorporate creative applications of stormwater green infrastructure, outdoor educational elements, and other features that improve the social, environmental, and economic health of the school and community. With the approval of school and district administrators, schools apply for and are selected to receive conceptual planning support. The over year-long collaborative planning process has resulted in the production of this

conceptual planning document, which is intended to guide the multi-year redevelopment.

Samuel Clemens' conceptual plan includes many stakeholder perspectives including those of students, parents, teachers, administrators, maintenance staff, neighborhood residents, and project partners. The plans are intended to be feasible and to support the school's and project stakeholders' needs and interests. Significant care was taken to consolidate project ideas and coalesce around one unified project vision. As the project progresses through the fundraising and detailed design phases, project components will be further defined and best fit to the amount of funds raised.

Samuel Clemens School's Vision:

Samuel Clemens School aspires to be a world-class educational community that honors diversity and promotes high expectations for all students while preparing them to reach their fullest potential.

Network of Support

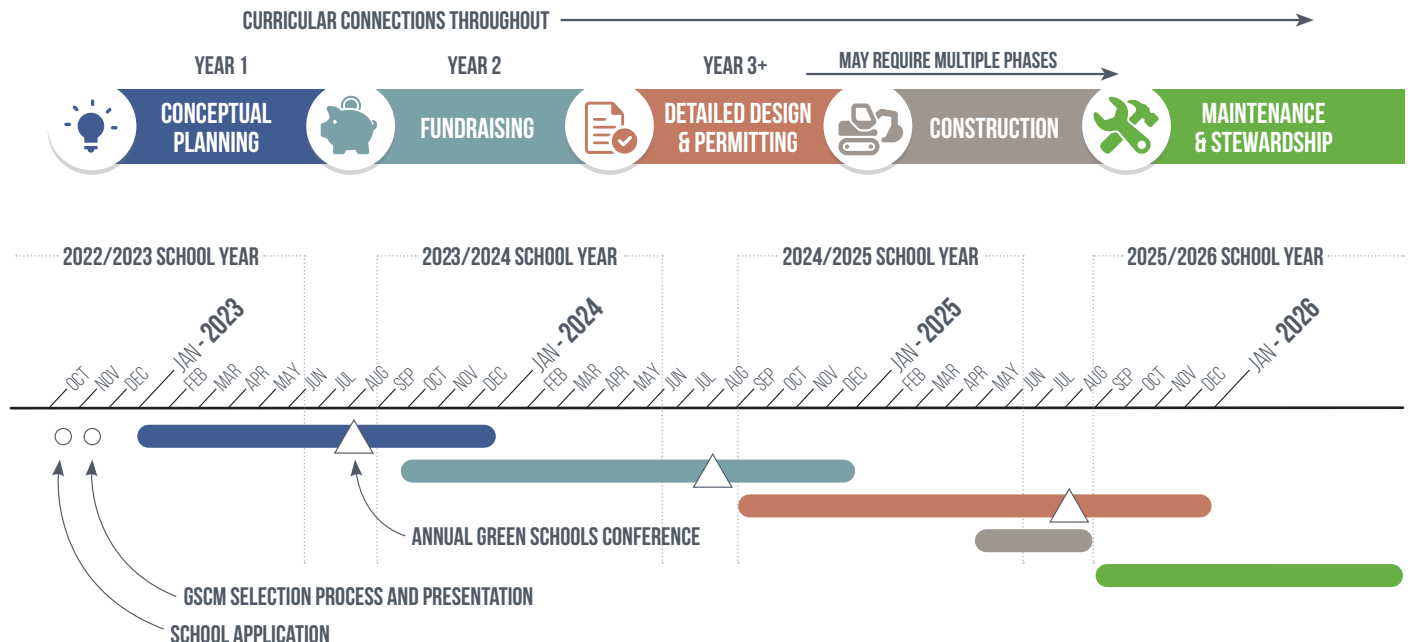
The GSCM is a local network of practitioners, agencies, and funders that are committed to supporting greener, healthier schools and ecoliteracy in the Milwaukee area. The GSCM gathers on a bimonthly and annual basis to share resources and lessons learned. The 7th Annual Green & Healthy Schools Conference hosted more than 600 participants and over 80 exhibitors. Each year the GSCM also hears from schools that are interested in schoolyard redevelopment projects and collectively decides which projects to support, in part, based on need and enthusiasm.



Project Development Process and Timeline

The following process diagram and timeline visualizes the major project development phases that a typical schoolyard redevelopment project in the Milwaukee area undertakes when supported by Reflo and the Green Schools Consortium of Milwaukee. The process begins in October with schools applying to receive a conceptual planning grant provided by Reflo and the

Milwaukee Metropolitan Sewerage District. Schools that advance to the second stage are then asked to present to the GSCM's Project Selection Committee on their need and enthusiasm. Following the selection, five schools are awarded the planning grant and begin the conceptual planning process with monthly Green Team meetings starting in January the following year.





Stormwater Green Infrastructure

Green infrastructure is a strategy that diverts stormwater runoff from entering the sewer system and **manages stormwater where it falls** through a more sustainable means, mimicking natural water systems. Green infrastructure can also provide creative opportunities to incorporate STEAM (science, technology, engineering, arts, and math) concepts in student learning and promote community engagement. The school grounds currently contribute a significant amount of stormwater runoff that can lead to area flooding and impaired water quality for our rivers and lake. The conceptual redevelopment plan includes multiple green infrastructure strategies to manage as much stormwater as feasible on the school grounds.

Samuel Clemens School's conceptual plan calls for removal of approximately **43,100 sq. ft.** of asphalt and replacing it with new green space and mixed-use recreation and educational areas. The design includes multiple outdoor learning spaces, mindfulness gardens, and the addition of 45 stormwater trees helping to provide shade and reduce the urban heat island effect. The inclusion of a variety of native plantings allow for unique spaces on the schoolyard that can represent natural Wisconsin ecosystems, complete with student-created signage. The vision also includes a porous, synthetic turf soccer field with an underground cistern beneath it to further manage rainwater where it falls. The plan manages approximately **233,045 gallons** of stormwater per rain event.

The Clemens Schoolyard Redevelopment will be transformative not only for the school itself, but also for the neighborhood and community as a whole. I'm excited to see this catalytic project build on existing positive momentum around green infrastructure, especially so children can be immersed in environmental stewardship and sustainable practices at an early age.

**Sarah Bergant – Planning & Community Development Manager,
Northwestside Community Development Corporation**





Asphalt Removal

Hard surfaces like asphalt and concrete are the primary sources of stormwater runoff. Replacing hardscapes with more porous landcovers and other types of green infrastructure helps infiltrate stormwater into the ground and prevent it from running off into the sewer system. These changes promote better stormwater management, reduce the heat island effect, improve social-emotional outlook, improve urban habitats, and increase biodiversity.



Bioswales

Bioswales typically capture polluted stormwater runoff from roads and parking lots, infiltrating that water into the ground and cleaning it naturally. They are planted with vegetation that helps to soak up and clean the polluted runoff. They can be installed as meandering or straight channels depending on the land that's available, and are designed to maximize the time rainwater spends in the swale.



Porous Groundcover

Built surfaces that allow for stormwater to pass through them and infiltrate into the soil below, come in many varieties including synthetic turf, pavers, concrete, rubber, or asphalt. These surfaces allow for play or other uses while also supporting stormwater management that may otherwise be difficult to accomplish in areas that are heavily used.



Native Plantings

Vegetation native to Wisconsin has adapted to the region's climate and soils. Native plants typically have deeper root systems that help them withstand both droughts and heavy rains and also allow for greater stormwater infiltration. These native plant sensory gardens also promote biodiversity and provide habitat for pollinator species.



Rendering of Samuel Clemens School's conceptual schoolyard redevelopment by CDS



Green Schools Consortium of Milwaukee
A Green & Healthy Schools Wisconsin Regional Network



Outdoor Education and Healthy Food Access

As illustrated in the infographics produced by Children & Nature Network and Cream City Conservation Corps (found in the Planned Curricular Connections section of this document), access to outdoor classrooms on school grounds can significantly **enhance learning** outcomes and social-emotional well-being. Raised bed gardens also offer the opportunity to provide low-cost, **healthy food** options to students, their families, and the surrounding communities. Successful Green Teams use school gardens as **educational opportunities** to explore topics such as water and life cycles, ecosystems, economics, geometry, conservation, and social studies.

Samuel Clemens' schoolyard redevelopment includes a shaded **outdoor classroom** complete with seating and materials to support outdoor learning. **Raised beds** and **mindfulness gardens** will provide pollinator habitat and calm, relaxing areas to support social-emotional well-being. Nearby green infrastructure including trees, bioswales, and native plantings also serve as unique learning spaces. **Interpretative signage** will support student-curated tours and encourage learning through self-guided exploration. Communication boards will provide additional support for students to share their learning and emotions as they explore the schoolyard.

Green schoolyards promote academic achievement through hands-on, experiential learning and by enhancing the cognitive and emotional processes important for learning.

The schoolyard redevelopment project means a lot to our whole school, especially our students with disabilities. The communication board will allow our nonverbal students to communicate with others and all of the different green spaces and walking areas are great for sensory development. Many of our students with disabilities need to take frequent breaks and the new schoolyard is going to be the perfect space for us.



Allegra Capozzi – Special Education Teacher



School Gardens

School gardens range in scale from the typical 4-by-8-foot raised bed garden, to hoop houses, to larger-scale greenhouses. Milwaukee-area schools have successful demonstrations of each scale of school garden and are best sized based on the interest level and capacity of the school's Green Team to manage the gardening operations.



Healthy Food Access

Some communities do not have easy access to low-cost, healthy foods. On top of providing engaging outdoor learning opportunities, school gardens are excellent opportunities to provide fresh, locally grown produce. Culinary arts lesson plans and tasting programs can demonstrate how healthy food can also be tasty food.



Culturally Relevant Curricular Connections

Developing lesson plans that are culturally relevant to students can help to create a sense of inclusiveness and promote positive learning outcomes for all students. For example, school gardens can include a diversity of crops that support exploration of different cultures and can demonstrate that food production is an important component of all cultures.



Outdoor Classrooms and Interpretative Signage

Outdoor classrooms can include natural green space and/or built shade structures. Seating and shade elements are common design features to accommodate longer class periods outdoors. Interpretative signage can serve to engage local artists and support learning not only by students, but also by the surrounding community.



Arts and Community Engagement

The arts can be a simple yet profound way to address **educational equity** in our communities. Through the use of arts-enhanced and arts-integrated classroom methodologies, teachers can implement strategies that support curricular connections, maximize student engagement, and further academic success. Green and healthy themes can be explored through visual and performing art forms as students build their knowledge, investigate human impacts on the environment, analyze perceptions, and enhance personal connections to the natural world.

Green and healthy schools provide a unique opportunity to support the development of **social-emotional learning (SEL)** through the integration of the arts and environmental education. Milwaukee Public Schools are committed to designing programs that promote SEL while creating supportive learning environments that address the needs of the whole child. School staff receive training about the impacts of trauma, explore ways to meaningfully **engage families**, and support youth through experiential learning to better position them for potential future careers.

Natural areas promote child-directed free play that is imaginative, constructive, sensory rich and cooperative.

I am very elated to see a new playground for our students here at Clemens School. I have been a long-time resident of this neighborhood and attended Clemens myself as a child. Seeing the addition of the greenery, instruments, plants, and trees will allow for more creative and safe play. Clemens students, my children, and this neighborhood will greatly benefit from the redevelopment of this playground.



Rochelle Poe – Parent Coordinator, Clemens Alum & Life-time Neighborhood Resident



Social-Emotional Learning

The arts can be an incredible vehicle to model best practices in Social-Emotional Learning (SEL). SEL is the process of developing fundamental skills for life success within supportive, participatory learning environments. These skills include recognizing, managing emotions, setting/achieving goals, feeling/demonstrating empathy for others, establishing/maintaining positive relationships, and making responsible decisions.



Visual Arts

The use of visual arts strategies in the classroom can lead to greater engagement and deeper learning by the student. When paired with a project such as a schoolyard redevelopment, the works of art created by the students will not only beautify the space, but also provide a sense of ownership and accomplishment to celebrate with the students and their families. With the visual arts, the invisible becomes visible!



Performing Arts

The performing arts can be an incredible tool to activate spaces within the school environment. Theatrical performances and activities are a great way to explore a space and learn how to create meaningful interactions between students and nature, develop empathy for other forms of life, and learn to embrace sustainability as a community practice.



Exhibition

Creating student-led exhibitions is a great way to build an understanding of how nature sustains life. Through research and design, students can learn from content experts and share their experiences and knowledge through docent-led exhibits.



Rendering of Samuel Clemens School's conceptual schoolyard redevelopment by CDS



Recreation and Other Site Improvements

Naturalized spaces provide opportunity for cooperative play and help children **develop resilience** skills as they navigate novel environments and encounter new challenges. Well-supported and engaging recreational opportunities can also help increase attention spans, improve social-emotional learning, and encourage team building. Creative applications of **visual arts** on walls and ground coverings can help guide students in independent and group physical fitness activities. These recreational improvements can enhance critical thinking and problem-solving skills, reduce instances of childhood obesity, and promote other **positive health outcomes**.

Samuel Clemens' conceptual plan includes a **synthetic turf soccer field**, a gaga ball pit, nature play area, and colorful asphalt markings. The plan calls for **balance logs** and stumps to support gross motor development and the addition of musical instruments to provide a variety of play experiences. To increase accessibility to the schoolyard, **artistically designed** benches are intended to help beautify the space and provide areas for rest. Significant thought was put into the flow of how students move through the various spaces with special consideration for activities such as soccer, tag, and pavement marking activities like four square and hopscotch.

Meaningful, positive experiences in nature guide children, youth and adults toward care for nature.

I have been around Samuel Clemens since 2014 and am so thankful that the school is getting a new playground. The new and improved green space will give our kids a place to play and learn while making friendships.

Melissa Johnson – Parent





Nature Play

The incorporation of balance beams, loose parts, boulders, play mounds, and other nature-inspired features encourages imaginative, cooperative free play as students work together to explore their environment. These naturalized play features support the physical, social-emotional, and motor skill development of youth while promoting creativity and critical thinking.



Outdoor Recreation

Green schoolyards support a wide range of recreation activities that provide additional opportunities for student choice compared to traditional schoolyards. Youth may participate in quiet, solitary explorations or opt for organized group play. Varied recreation components allow children to build cooperation and negotiation skills and strengthen the connection between play and learning.



Game Play

Organized game play can provide students with the structure and support needed to approach challenges with confidence and build negotiation skills. Popular playground games like hopscotch and four square are often maintained while new games are also introduced through structured play activities. Youth are encouraged to experience the green schoolyard through free play and create new games led by their curiosity and imagination.



Mindfulness

Mindfulness practices encourage us to be present, attentive, and accepting. They provide an opportunity to learn how to be peaceful and kind while also reducing anxiety and promoting happiness. Areas designed for quiet play, sensory exploration, and reflection help students build self-awareness and emotional regulation by connecting with the natural world.

3

READ



MILWAUKEE
PUBLIC SCHOOLS



WISCONSIN DEPARTMENT OF
PUBLIC INSTRUCTION



Positive Behavioral
Interventions and Supports



COMMON CORE
STATE STANDARDS INITIATIVE
PREPARING AMERICA'S STUDENTS FOR COLLEGE & CAREER

Planned Curricular Connections

It is important that the schoolyard redevelopment include plans for actively using the redeveloped space. This section provides a high level overview of how the school plans to make the most out of the new schoolyard components and connect the exciting redevelopment to the curriculum.

The envisioned outdoor spaces will help build strong classroom communities, with dedicated areas for play and exploration, while supporting a variety of curricular lessons for our students. The green spaces will provide a variety of structured and free-form learning activities including creative play and multi-sensory experiences in a vibrant, natural classroom. Children will be able to experience hands-on learning in natural areas while supporting their growth and

development and drawing meaningful connections to promote a positive mental well-being with Social-Emotional Learning (SEL) connections.

Children will be able to apply academic skills and improve comprehension through hands-on, engaging experiences in a learning environment that extends beyond the traditional classroom and builds a positive relationship with nature. These experiences allow Samuel Clemens School to promote a spirit of inclusion and support involvement in recreation and wellness activities. These connections further support our school's core values of high expectations, collaboration, respect, and strong character that empower and inspire students to be lifelong learners and our next generation of leaders.

I am so excited for our students, families and staff. This is going to open a whole new world of discovery and exploration. This is going to be a game changer for the community at-large.

Garry Lawson – Principal

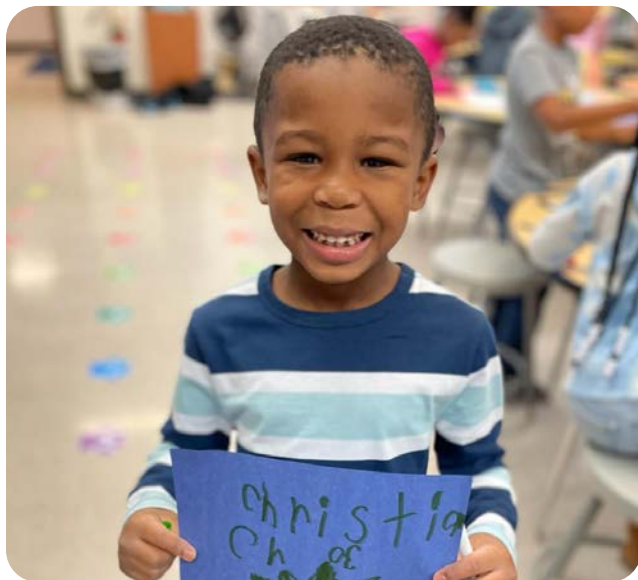


Literacy and Language

The redeveloped schoolyard offers many opportunities to enhance our students' literature and language skills. Students will be encouraged to observe and make direct connections with their environment as they learn new **vocabulary**.

The green spaces will provide real-life examples of new concepts and a relaxing environment to build confidence in **speech and language** skills. Interpretive signs will help communicate scientific concepts to promote an inclusive school community. In addition, the natural environment will provide inspiration for creative and informational writing, read-alouds, and **journaling** for all grades.

Kindergarten students (K4–K5) will develop their writing skills through outdoor **alphabet and writing games**, and expand their vocabulary as they explore and observe new features of the schoolyard. Children will take **seasonal walks** to make observations and use their senses to inspire their creative writing and be encouraged to find evidence of species interactions on the schoolyard. Calming green spaces will allow our children the chance to practice their **guided and accountable independent reading** (GRAIR).



Lower elementary students (1st–3rd) will use the new schoolyard to further develop their **descriptive language** skills as they engage all five senses to explore nature on the playground. Children may practice their **creative writing** with inspiration from nature as they observe native plants, insects, and varied textures on the schoolyard. Students will return to the classroom with rich experiences that will inform their writing and awaken their imaginations as they engage with different texts.

Upper elementary students (4th–5th) will use the outdoor spaces as alternative environments for creative and **persuasive writing** based on their opinions. Students may be inspired to share about the benefits of urban biodiversity, outdoor learning, nature, and environmental stewardship. Children will develop a deeper understanding of complex vocabulary and continue to build their background knowledge that is important for **reading comprehension**.





Social Studies

In social studies, students explore themes of family, home, neighborhood, and community throughout their elementary learning. Our school supports and celebrates its students through **community-building** activities that encourage children to consider their relationship between the environment and living things. Through these experiences, we aim to encourage a sense of pride and **stewardship** for the Earth.

Social studies introduces **early childhood** students (K4–K5) to the concept of community. Beginning in Kindergarten, students learn to embrace their **unique identities** while also celebrating their friends' differences. This understanding sets the foundation for their years-long exploration of the value of **different cultures**, and the impact of individuals and institutions on the world around them. Children learn about community helpers and the role they play in keeping people, animals, and our environment safe and healthy. Students also will learn about gardening and the importance of **healthy eating**.

Students in **lower elementary** (1st–3rd) will extend their geography learning by studying important landmarks in their communities and drawing **connections** to new features on the schoolyard. Students will investigate themes of environmental justice, **community engagement**, and discuss examples of how individuals can work together to create **positive changes** in their communities.

In the **upper elementary** (4th–5th) grades, social studies instruction expands from students' local community to their city and state, the nation, and the world. As the curriculum shifts to focus on Wisconsin and Milwaukee's history and major waterways, children will investigate our state's **indigenous plants** and trees growing on the schoolyard as part of their First Nations units of study. Children may investigate the histories of the lives of wolves and other animals found throughout the state of Wisconsin as they complete a **document based question (DBQ)** as part of the curriculum.

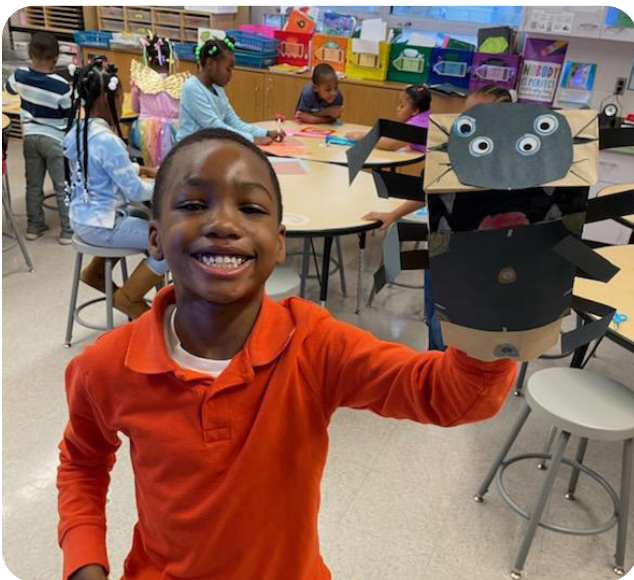


STEM Connections

The green schoolyard offers many STEM (science, technology, engineering, math) curricular connections. Children will discover living examples of **geometry, symmetry, and patterns** that support math curriculum across grade levels.

Students of all ages will explore green infrastructure and the **water cycle** using the schoolyard as their classroom. Cisterns, bioswales, rain gardens, and runoff will soon be common knowledge to Samuel Clemens' students as they learn how their playground area affects their neighborhood, city, and Lake Michigan. These vibrant, living classrooms will provide a variety of enrichment activities to support hands-on learning that activate the **curiosity and engagement** of our students.

Our **early childhood** students (K4–K5) will investigate science concepts through play and curiosity. Children will explore the **physical science** forces of pushes, pulls, and friction on the different groundcovers on the schoolyard. Our youngest scholars will search for evidence of **biodiversity** such as animal tracks, pollinator species, and a variety of colors found in nature, extending their learning of **seasonal changes** with nearby nature on the schoolyard. Children will measure the distances objects travel and make drawings from observation as they study the gardens.



Lower elementary students (1st–3rd) will use the green spaces while studying earth and physical science concepts such as **weather**, climate and the water cycle. Children will plant, maintain, and observe a variety of species as they grow and see firsthand how they help **manage stormwater** in the area and change throughout the seasons. These planting areas will provide a living laboratory to investigate the **life cycles** of insects, plants, and animals on the schoolyard. The varying leaf types, patterns, and shapes will inspire scientific drawings from observation.

Children in **upper elementary** (4th–5th) will dive into life science concepts of ecology, food webs, and species relationships. The new outdoor gardens will support the study of **ecosystems** and habitats allowing children to compare and contrast growing cycles and the needs of different plants and varying environments. Students will explore physical science with **simple machines** and build and test their own on the schoolyard.



Art & Community Connections

The arts will come to life with the redeveloped schoolyard. Children will be encouraged to exercise their visual art skills through observational drawings and learn the different **components of art** including texture, line, space, and color. Students will be able to use the natural outdoor spaces to experience and better express their **visual and auditory senses** through art media.



Emphasizing experiential learning, the revitalized schoolyard encourages movement and exploration of nature for inspiration in various artistic endeavors, from creative writing to poetry. Our youngest students may expand their **creative expression** throughout the schoolyard with chalk drawings and the creation of colorful murals with paint. Additionally, the green areas will host **outdoor arts** experiences, fostering positive community connections.

Samuel Clemens' commitment to a **culturally responsive** environment is exemplified by the accessible public space created through the redevelopment. The expansion of creative outlets beyond the school building not only benefits students and their families but also nurtures **empathy** and understanding of the wider world. Expanding a student's art and cultural experience is essential to making youth more compassionate to the wider world will make Samuel Clemens' public spaces **inclusive** and accessible for all to enjoy.

In the spring of 2024, a collaborative art project between high school interns from **ArtWorks for Milwaukee** and Samuel Clemens' students aims to educate and inspire through the creation of stormwater green infrastructure-themed murals.

Samuel Clemens' students will delve into learning about various stormwater facts, channeling their newfound knowledge into vibrant drawings. These drawings will serve as the inspiration for ArtWorks' interns to craft into captivating **mural designs**, adorning the school's storm drains. This project will be celebrated during an unveiling event with the school's community and local organizations.

This innovative schoolyard art project isn't just about beautification; it's a catalyst for **community awareness**, fostering student enthusiasm, and promoting family involvement in the schoolyard's redevelopment. Beyond the aesthetic enhancement, this initiative offers invaluable educational opportunities, empowering students with knowledge about sustainable practices while amplifying **environmental consciousness** within the community.



As teaching artists, we look to expand imaginations, not only in terms of creativity, but in how young people envision their futures. Programs like this create spaces that combine nature with architecture, as well as community, science, and art. We're excited to have Clemens be a part of that initiative and are looking forward to it being a place where communities can come together to work, play, create, and imagine greener futures.



**Marco Romantini – ArtWorks for Milwaukee,
Environmental Arts Lead Artist**

Health & Physical Wellness

Students will acquire much-needed motor skills in the green space which will allow them to run, skip, jump, dance, and play with **fewer injuries** than they experienced before the redevelopment. Children will learn to take turns, build patience, and follow rules as they practice **healthy risk-taking** and gain confidence through play and physical education classes on the revitalized schoolyard.

Students will learn game rules and procedures, practice turn-taking, and participate in cooperative play in the gaga ball pit, basketball court, and soccer field. A traffic garden will teach our learners **bike and pedestrian safety**, supporting physical education standards and building vital life skills.



Students will participate in creative and imaginative play as they practice their balance when playing on the **agility pathways**, logs, and stumps placed throughout the schoolyard. Teachers from all grade levels will lead team-building activities outdoors and use the variety of seating and natural spaces for learning.

The **gardens** will continue to impact students and the community's lives by promoting healthy eating. The addition of bike racks will assist with the promotion of a healthy, active lifestyle.

Social-Emotional Well-Being



The holistic schoolyard redevelopment supports our vision that all students will grow and learn within a safe, respectful, and responsible environment. **Self-confidence** and self-worth will develop as each student's **cultural identity** is both recognized and valued.

Our students practice self-regulation and mindfulness activities every day. Fresh air, green space, and native planting areas will support creative **mindfulness activities**, encouraging students to connect to their environment through **sensory experiences** enriched with bright colors, scents, and textures.

The natural spaces will provide the prime environments for mindful **listening walks** where children will observe nature right outside their classrooms. In addition, these calm environments offer students dedicated areas where they can **reflect**, develop independent skills related to managing their feelings, and reset.

Students in all grades will benefit from taking brain breaks outdoors, practicing **yoga** on an open grass field, and enhancing their communication skills through turn-taking, use of communication boards, participating in restorative circles, and **cooperative play**.

Benefits of Green and Healthy Schoolyards

Nature Can Improve Academic Outcomes

Spending time in nature enhances educational outcomes by improving children's academic performance, focus, behavior, and love of learning.

BETTER ACADEMIC PERFORMANCE

Learning in natural environments can:



BOOST PERFORMANCE
in reading, writing, math, science and social studies
1, 2, 3, 4, 5



ENHANCE
creativity, critical thinking and problem solving⁹

Seeing nature from school buildings can foster academic success^{6, 7, 8}

ENHANCED ATTENTION

Spending time in nature can help children focus their attention:



FOCUS AND ATTENTION
10, 11, 12, 13



ADHD SYMPTOMS
14, 15

The greener the setting, the better the focus^{14, 15}

INCREASED ENGAGEMENT & ENTHUSIASM

Exploration and discovery through outdoor experiences can promote motivation to learn:



INCREASED ENTHUSIASM FOR LEARNING
1, 16



GREATER ENGAGEMENT WITH LEARNING¹⁷



MORE IMPULSE CONTROL¹⁰



LESS DISRUPTIVE BEHAVIOR
20

Nature-based learning is associated with reduced aggression and fewer discipline problems:^{18, 19}



ADDITIONAL RESEARCH ON THE BENEFITS OF NATURE AVAILABLE AT childrenandnature.org/research

SUPPORTING RESEARCH

Lieberman & Hoody (1998). Closing the achievement gap: Using the environment as an integrating context for learning. Results of a Nationwide Study. *San Diego: SEER*.² Chawla (2015). Benefits of nature contact for children. *J Plan Lit*, 30(4), 433-452.³ Berezowitz et al. (2015). School gardens enhance academic performance and dietary outcomes in children. *J School Health*, 85(8), 508-518.⁴ Williams & Dixon (2012). Impact of garden-based learning on academic outcomes in schools: Synthesis of research between 1990 and 2010. *Rev Educ Res*, 83(2), 211-235.⁵ Wells et al. (2015). The effects of school gardens on children's science knowledge: A randomized controlled trial of low-income elementary schools. *Int J Sci Edu*, 37(17), 2858-2878.⁶ Li & Sullivan (2016). Impact of views to school landscapes on recovery from stress and mental fatigue. *Landscape Urban Plan*, 148, 149-158.⁷ Wu et al. (2014). Linking student performance in Massachusetts elementary schools with the "greenness" of school surroundings using remote sensing. *PLoS ONE* 9(10): e108548.⁸ Matsuoka, R. H. 2010. Student performance and high school landscapes. *Landscape and Urban Planning* 97 (4), 273-282.⁹ Moore & Wong (1997). *Natural Learning: Rediscovering Nature's Way of Teaching*. Berkeley, CA: MIG Communications.¹⁰ Faber Taylor et al. (2002). Views of nature and self-discipline: Evidence from inner-city children. *J Environ Psy*, 22, 49-63.¹¹ Mårtensson et al. (2009). Outdoor environmental assessment of attention promoting settings for preschool children. *Health Place*, 15(4), 1149-1157.¹² Wells (2000). At home with nature effects of "greenness" on children's cognitive functioning. *Environ Behav*, 32(6), 775-795.¹³ Berto et al. (2015). How does psychological restoration work in children? An exploratory study. *J Child Adolesc Behav* 3(3).¹⁴ Faber Taylor et al. (2001). Coping with ADD: The surprising connection to green play settings. *Environ Behav*, 33(1), 54-77.¹⁵ Amoly et al. (2014). Green and blue spaces and behavioral development in Barcelona schoolchildren: The BREATHE Project. *Environ Health Perspect*, 122,1351-1358.¹⁶ Blair (2009) The child in the garden: An evaluative review of the benefits of school gardening. *J Environ Educ*, 40(2), 15-38.¹⁷ Rios & Brewer (2014). Outdoor education and science achievement. *Appl Environ Educ Commu*, 13(4), 234-240.¹⁸ Bell & Dymont (2008). Grounds for health: The intersection of green school grounds and health-promoting schools. *Environ Educ Res*, 14(1), 77-90.¹⁹ Nedovic & Morrissey (2013). Calm, active and focused: Children's responses to an organic outdoor learning environment. *Learn Environ Res*, 16(2), 281-295.²⁰ Ruiz-Gallardo & Valdés (2013). Garden-based learning: An experience with "at risk" secondary education students. *J Environ Educ*, 44(4), 252-270.

Green Schoolyards Can Provide Mental Health Benefits

Green schoolyards can enhance mental health and well-being and promote social-emotional skill development.

GREEN SCHOOLYARDS HELP KIDS FEEL:

CALMER & LESS STRESSED^{2,3}

Views of green landscapes from classroom windows helped high school students recover more quickly from stressful events.⁴

POSITIVE & RESTORED³

Forest schools enhanced positive and decreased⁵ negative emotions.

RESILIENT²

Natural areas enhanced feelings of competence and increased supportive social relationships that help build resilience.²



GREEN SCHOOLYARDS PROMOTE SOCIAL-EMOTIONAL SKILLS

PRACTICE RELATIONSHIP SKILLS² *****

Children demonstrated more cooperative play, civil behavior and positive social relationships in green schoolyards.^{6,7}



DEVELOP SELF-AWARENESS & SELF-MANAGEMENT

Green schoolyards can reduce aggression and discipline problems.^{6,7}

Gardening at school helped students feel proud, responsible & confident.²



SUPPORTING RESEARCH

¹www.nlm.nih.gov/health/statistics/prevalence/any-disorder-among-children.shtml ²Chawla et al. (2014). Green schoolyards as havens from stress and resources for resilience in childhood and adolescence. *Health Place*, 28, 1-13. ³Kelz et al. (2015). The restorative effects of redesigning the schoolyard: A multi-methodological, quasi-experimental study in rural Austrian middle schools. *Environ Behav*, 47(2), 119-139. ⁴Li & Sullivan (2016). Impact of views to school landscapes on recovery from stress and mental fatigue. *Landscape Urban Plan*, 148, 149-158. ⁵Roe & Aspinall (2011). The restorative outcomes of forest school and conventional school in young people with good and poor behaviour. *Urban For Urban Gree*, 10(3), 205-212. ⁶Bell & Dymont (2008). Grounds for health: The intersection of green school grounds and health-promoting schools. *Environ Educ Res*, 14(1), 77-90. ⁷Nedovic & Morrissey (2013). Calm, active and focused: Children's responses to an organic outdoor learning environment. *Learn Environ Res*, 16(2), 281-295.

ADDITIONAL RESEARCH USED FOR THIS INFOGRAPHIC AVAILABLE AT childrenandnature.org/gsybibliographies

C&NN recognizes that not all studies support causal statements.

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INFOGRAPHICS PROVIDED BY THE CHILDREN & NATURE NETWORK

Supporting references and research on the benefits of nature can be found at childrenandnature.org/research



Green Schoolyards Encourage Beneficial Play

Natural areas promote child-directed free play that is imaginative, constructive, sensory-rich, and cooperative.



ENCOURAGING IMAGINATIVE, COOPERATIVE FREE PLAY

GREEN SCHOOLYARDS CAN:

- Accommodate different ages & abilities ^{2,3}
- Sustain children's interest ^{4,5}
- Offer a variety of options that appeal to a wide range of play interests ²
- Promote cooperation & negotiation ^{4,6}
- Strengthen links between play & learning ^{2,3,4}

GREEN SCHOOLYARDS CAN SUPPORT DIFFERENT TYPES OF PLAY ^{2,4,7,8}

DRAMATIC PLAY

Loose parts—such as sticks, stones, acorns & pinecones—engage the imagination.

EXPLORATORY PLAY

Natural areas provide opportunities for children to explore.

SOLITARY PLAY

Areas under bushes or other nooks allow children to engage in alone time and contemplation.

CONSTRUCTIVE PLAY

Building things out of natural materials helps children learn hands-on skills.

LOCOMOTOR PLAY

Natural items such as logs and rocks can be carried. Looping paths allow walking, running and biking.



SUPPORTING RESEARCH

¹Rideout et al. (2010). Generation M2: Media in the lives of 8-18 year olds. Kaiser Family Foundation <https://kaiserfamilyfoundation.files.wordpress.com/2013/01/8010.pdf> ²Dyment & Bell (2008). Grounds for movement: Green school grounds as sites for promoting physical activity. *Health Educ Res*, 23(6), 952-962. ³Stanley (2011). The place of outdoor play in a school community: A case study of recess values. *Child Youth Environ*, 21(1), 185-211. ⁴Dennis et al. (2014). A post-occupancy study of nature-based outdoor classrooms in early childhood education. *Child Youth Environ*, 24(2), 35-52. ⁵Luchs & Fikus (2013). A comparative study of active play on differently designed playgrounds. *J Adven Educ & Outd Learn*, 13(3), 206-222. ⁶Acar & Torquati (2015). The power of nature: Developing pro-social behavior towards nature and peers through nature-based activities. *Young Children*, 70(5), 62-71. ⁷Chawla (2015). Benefits of nature contact for children. *J Plan Lit*, 30(4), 433-452. ⁸Cloward Drown & Christenson (2014). Dramatic play affordances of natural and manufactured outdoor settings for preschool-aged children. *Child Youth Environ*, 24(2), 53-77.

Green Schoolyards Can Increase Physical Activity

Green schoolyards can promote physical activity by offering a variety of active play options that engage children of varying fitness levels, ages, and genders.

85%

OF EDUCATORS AND PARENTS

said green schoolyards support a wider range of play activities than other types of schoolyards.²

MORE OPTIONS, MORE ACTIVITY

PROMOTE

running
jumping
climbing
lifting²

trees
logs
shrubs
rocks

Variety in landscaping increases variety in active play.²

MEETING DIVERSE & CHANGING NEEDS

GREEN SCHOOLYARDS COMPLEMENT CONVENTIONAL PLAYGROUNDS WITH OPPORTUNITIES FOR

LIGHT & MODERATE PHYSICAL ACTIVITY

that are more appealing to some children.^{3,4}

GREEN SCHOOLYARDS CAN CONTRIBUTE TO

GIRLS' PHYSICAL FITNESS ★★★★★

Physical activity decreases as children grow, especially for girls. Green schoolyards sustain activity as children age and preferences change.^{5,6,7}

SUPPORTING RESEARCH

¹www.cdc.gov/physicalactivity/data/facts.htm ²Dymnt & Bell (2008). Grounds for movement: Green school grounds as sites for promoting physical activity. *Health Educ Res*, 23(6), 952-962. ³Barton et al. (2015). The effect of playground- and nature-based playtime interventions on physical activity and self-esteem in UK school children. *In J Environ Health Res*, 25(2), 196-206. ⁴Dymnt et al. (2009). The relationship between school ground design and intensity of physical activity. *Child Geogr*, 7(3), 261-276. ⁵Brink et al. (2010). Influence of schoolyard renovations on children's physical activity: The Learning Landscapes Program. *Am J Public Health*, 100(9), 1672-1678. ⁶Mårtensson et al. (2014). The role of greenery for physical activity play at school grounds. *Urban For Urban Gree*, 13(1), 103-113. ⁷Pagels et al. (2014). A repeated measurement study investigating the impact of school outdoor environment upon physical activity across ages and seasons in Swedish second, fifth and eighth graders. *BMC Public Health*, 14(1), 803.

4



Maintenance and Stewardship

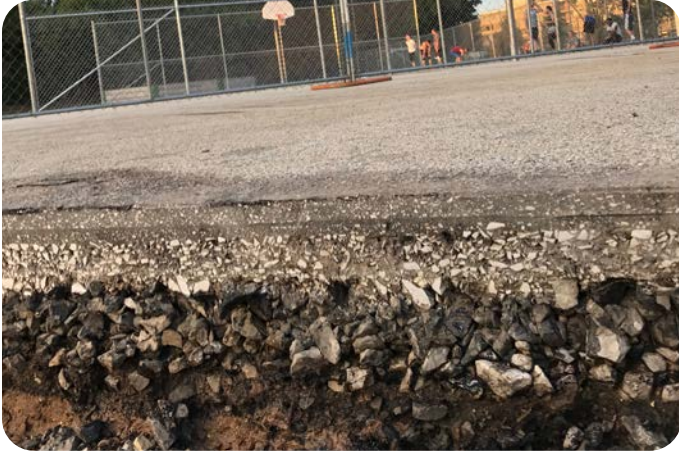
Green infrastructure features require varying levels of maintenance and offer opportunities to engage youth in active environmental stewardship, raise awareness of environmental impacts, and make meaningful curricular connections. Some maintenance activities such as weeding, debris pickup, inspection of plant health, crop harvesting, watering, etc. can further engage faculty, students, parents, and the surrounding neighborhood in school activities and outdoor learning, while also sharing the responsibility of maintaining the new green space. It should be noted that generally, the school's Green Team will be responsible for additional maintenance needs.

To promote the longevity and active use of the redeveloped schoolyard, recommendations were made to provide features that match the maintenance capacity and planned curricular connections of the school and community. The following section provides a summary of seasonal and monthly maintenance needs for the school's new green features. Comprehensive maintenance plans will need to be developed in the project's detailed design phase to fully support the new elements.



Well-maintained green infrastructure and play spaces can help reduce the potential need for costly repairs.





Asphalt Removal

Ongoing/Monthly Considerations:

Depending on the groundcover replacement such as grass, woodchips, permeable pavement, etc., the replacement may require additional maintenance such as grass cutting, woodchip replacement, vacuuming, etc.

Seasonal/Annual Considerations:

Some asphalt areas at schools are used in winter as snow management locations. Confirming the seasonal use of the asphalt areas can help with determining the feasibility of asphalt removal and/or ways to adjust snow management.



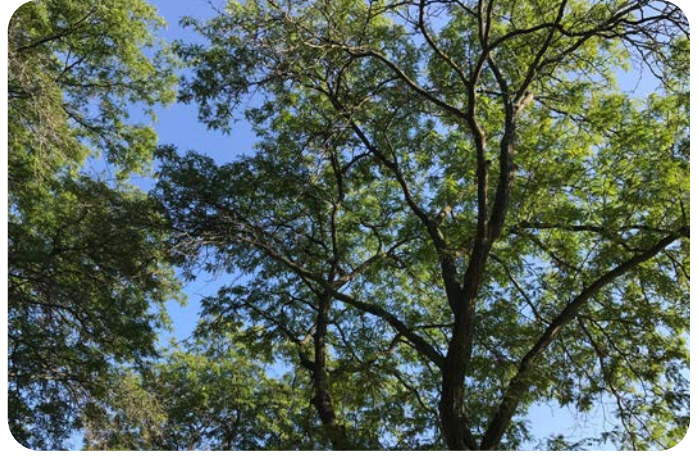
Porous Groundcover

Ongoing/Monthly Considerations:

Debris and sediment washing into pavement pores can lead to clogging — monthly inspection is recommended to remove leaves, woodchips, and other debris. Also monitor for turf sections that need to be pinned down or replaced due to damage/heavy use.

Seasonal/Annual Considerations:

Reapplication or raking of the rubber pellets may be needed to keep the synthetic turf weighed down. Replacing sections of turf or re-securing to the perimeter edging by trained technicians.



Tree Plantings

Ongoing/Monthly Considerations:

Newly planted trees will require protection from children wanting to play around them for the first few years. Strategies such as temporary or permanent fencing, signage, or planting boxes can help allow the trees space and time to grow.

Seasonal/Annual Considerations:

Berries, leaves, sticks, and branches often fall from trees during spring or fall. The litter may not need to be actively managed. However, large amounts may need to be composted or discarded.



Native Plantings

Ongoing/Monthly Considerations:

Similar to raised bed gardens, native plantings will require ongoing weeding (weekly) as they mature. Determining who will be responsible (ideally multiple people/groups/classrooms) beyond planting is important, especially over summer months.

Seasonal/Annual Considerations:

Native plants are more resilient and require less ongoing maintenance as they mature. One to three years of weeding is required initially, but long-term expected maintenance is minimal.

5



Rendering of Samuel Clemens School's conceptual schoolyard redevelopment by CDS



Fundraising Targets

An important component of the conceptual planning effort was to develop plans that are feasible. Estimates of funding requirements were discussed throughout the planning effort in order to keep the designs within reasonable cost ranges. The following table of estimated costs are presented in terms of "fundraising targets" to better represent the approximate budgetary nature of the numbers.

It should be noted that the following funding targets represent conceptual, high-level estimates with many assumptions, not consultant or contractor bids based on detailed design work, which would be more accurate.

The following estimates are expected to vary from actual incurred expenses. However, significant consideration and review of the fundraising targets were provided from engineers, contractors, and school administrators with experience in schoolyard redevelopment projects.

Although the following fundraising targets are intended to incorporate reasonable cost expectations for schoolyard redevelopment, changes to the design, contracting requirements, or amount of in-kind contributions can significantly impact the following numbers either upward or downward.



It's ideal to raise enough funds to be able to complete the schoolyard redevelopment in one pass; however, in some cases, projects can take several years to be completed due to funding constraints.

Invitation for Support

We invite your enthusiastic review of this conceptual plan document and welcome any questions you may have on the schoolyard redevelopment. Please visit Reflo's website for status updates and how to donate to the schoolyard redevelopment project:

www.RefloH2o.com



Conceptual Redevelopment Plan Fundraising Targets

	Apx. Fundraising Targets	Apx. In-kind Contribution
Stormwater Green Infrastructure		
Asphalt removal, sawcutting, mobilization, etc.	\$ 225,000	
Soil, grass, and other porous resurfacing	\$ 80,000	
Trees (and protective fencing)	\$ 45,000	
Bioswales (native plantings and protective fencing)	\$ 250,000	
Porous Pavement - Syn. Turf Soccer Field	\$ 200,000	
Underground cistern	\$ 100,000	
Engineering, surveying, and construction admin.	\$ 55,000	
Facilities project management	\$ 10,000	\$ 28,000
Continued Reflo project development support	\$ 25,000	\$ 25,000
Project signage	\$ 10,000	\$ 7,500
Demonstrations, workshops, tours		\$ 5,000
Water-focused curricular activities	\$ 10,000	\$ 10,000
Vegetation establishment	\$ 10,000	\$ 5,000
Stormwater Green Infrastructure Subtotal	\$ <u>1,020,000</u>	\$ <u>80,500</u>
School Gardens & Healthy Food Access		
Raised bed gardens	\$ 2,500	\$ 5,000
School Gardens & Healthy Food Access Subtotal	\$ <u>2,500</u>	\$ <u>5,000</u>
Recreational Improvements		
Gaga Ball pit (1) with ADA door	\$ 5,000	
Asphalt crackfilling and striping	\$ 45,000	
Tot lot improvements	\$ 10,000	
Nature play area (embedded logs and stumps)	\$ 50,000	
Recreational Improvements Subtotal	\$ <u>110,000</u>	\$ <u>-</u>
Educational Elements		
Arts programming	\$ 25,000	\$ 5,000
Musical instruments and sensory boards	\$ 25,000	
Communications board	\$ 7,500	
Outdoor classroom		
Surfacing	\$ 25,000	
Seating	\$ 50,000	
Amenities	\$ 7,500	
Educational Elements Subtotal	\$ <u>140,000</u>	\$ <u>5,000</u>
Other Site Improvements		
Bike parking equipment	\$ 2,500	
Pathways and fencing	\$ 65,000	
Schoolyard benches and other amenities	\$ 45,000	
Other Site Improvements Subtotal	\$ <u>112,500</u>	\$ <u>-</u>
Total Estimated Fundraising Target: \$ <u>1,385,000</u> \$ <u>90,500</u>		



Project Timeline and Next Steps

Although there has already been a significant amount of time and energy invested in the schoolyard redevelopment project by Samuel Clemens School and its partners, the compilation of this conceptual plan document realistically represents step one of a multi-year, major construction-focused redevelopment project.

The next phase of project development is fundraising, which is intended to conclude by the end of 2024. The scope of the construction is based on the funds obtained through budget allocations, grants, donations, and school fundraisers. Engineering, surveying, and

architecture firms are typically hired in fall to support the detailed design and permitting process. To minimize disruption to regularly scheduled school functions, it is preferred to conduct construction over a relatively short time frame in summer months.

Big changes like this project require a great deal of time, resources, and, most of all, commitment. Accomplishing this conceptual redevelopment plan is a major milestone itself. This plan shows the school's desire and ability to focus its efforts on meaningful outdoor education and healthy learning spaces for their students and community.



For information on how to support Samuel Clemens School's schoolyard redevelopment:

Please go to Reflo's website: www.RefloH2o.com or send an email to: lisa.neeb@RefloH2o.com

Supporting Organizations



The Milwaukee Metropolitan Sewerage District (MMSD) is a regional government agency that provides water reclamation and flood management services for about 1.1 million people in 28 communities in the Greater Milwaukee Area. MMSD is a strong supporter of green infrastructure, with many available resources.



Milwaukee Public Schools is committed to accelerating student achievement, building positive relationships between youth and adults, and cultivating leadership at all levels. Many departments are engaged on an ongoing basis to support the multifaceted schoolyard redevelopment projects.



The mission of the Milwaukee Public Schools Foundation is to inspire and motivate the community, including philanthropic partners, businesses, families, and former and current staff and students in the support of Milwaukee Public Schools and the academic achievement of its students.



As a nonprofit, Reflo partners with Milwaukee-area schools, neighborhood associations, community garden groups, and local governments to promote sustainable water management such as green infrastructure through education, research, and the implementation of community-based water projects.



Community Design Solutions (CDS) is a funded design center in the UWM School of Architecture & Urban Planning (SARUP) that assists communities, agencies, civic groups, and campuses throughout Wisconsin. CDS provides preliminary design and planning services to underserved communities and agencies.



The Environmental Collaboration Office (ECO) strives to make Milwaukee a world class eco-city. ECO develops practical and racially equitable solutions that improve people's lives and the economy while working to protect and restore the natural ecosystems that support our long-term prosperity. ECO collaborates with the community, develop global partnerships, offer award-winning programs, and implement the Milwaukee Climate and Equity Plan.



The Green Schools Consortium of Milwaukee (GSCM) is a robust local network of schools and resource providers that are motivated to promote greener, healthier schools. Through bimonthly meetings and an annual conference, hundreds of local participants have collectively shared ideas, resources, and lessons learned.



ArtWorks for Milwaukee combines arts engagement with workforce development through intensive paid internships for teens with a mission to prepare youth for tomorrow by providing transferable career skills through art internships today. Their programs encourage development and practice in professionalism, collaboration, leadership, accountability, and other soft skills.



The Fund for Lake Michigan (FFLM) provides grants to support organizations and communities committed to enhancing the Lake's health through projects with both immediate and long-term benefits. The FFLM has been a longtime partner of the green and healthy schools movement and continuously promotes its expansion.

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NEED FOR STORMWATER MANAGEMENT

Stormwater flows across the playground causing asphalt erosion and icy conditions in the winter months. There is opportunity to install green infrastructure and divert stormwater into bioswales and an underground cistern on Samuel Clemens' schoolyard to further manage stormwater where it falls.



EXISTING GREEN SPACE

Samuel Clemens has green space and mature trees on the schoolyard. These areas are often muddy due to runoff and high use, however they provide an opportunity to optimize recreation and regular use with additional design considerations.

ASPHALT GAMES

Students play several asphalt games on Samuel Clemens' schoolyard. Hopscotch, four square, and other pavement markings help guide students to use a variety of spaces during recess and physical education classes.



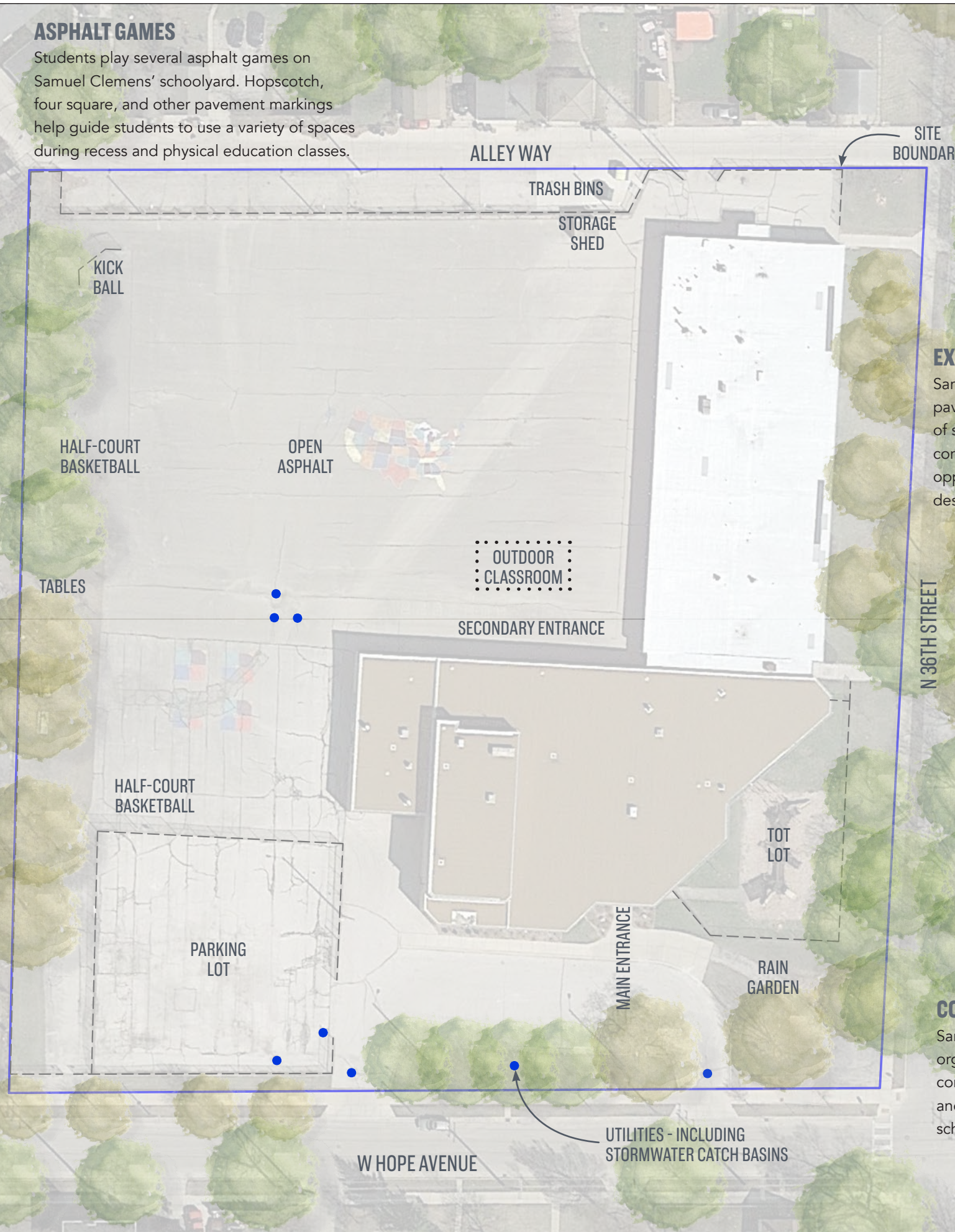
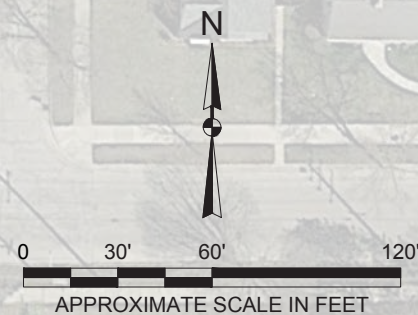
EXISTING SCHOOLYARD IMPROVEMENTS

Samuel Clemens School received an outdoor classroom pavilion in 2023. This existing structure provides an island of shade and rest area for students and surrounding community who utilize the schoolyard. However, there is opportunity to optimize its use with additional seating and design elements that support outdoor education.



COMMUNITY PARTNERSHIPS & ENGAGEMENT

Samuel Clemens School actively partners with local organizations to enrich the lives of its students and community. Through these collaborations, a rain garden and colorful crosswalk mural have been installed on school grounds.



EXISTING SITE PLAN

Drawing Title:

Project: Samuel Clemens School
3600 W Hope Avenue,
Milwaukee WI, 53216

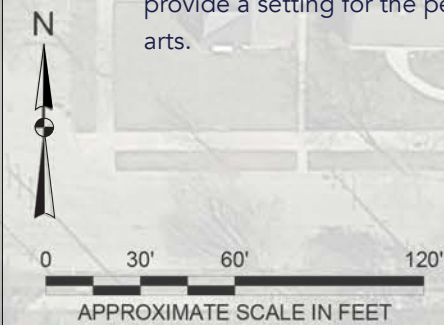
Project No: C7.MPS.37

Figure No: 1

Designed By: Reflo, CDS, and Samuel Clemens' Green Team
Drawn By: Justin Hegarty

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NATURE PLAY ELEMENTS

Samuel Clemens School would like to incorporate natural playscape elements that nurture childhood creativity, foster wonder and imagination, and inspire healthy risk-taking.



ADDITIONAL GREEN SPACE AND RECREATIONAL IMPROVEMENTS

Reducing the amount of asphalt on the school grounds is a central component of the redevelopment plan. Along with new green space, earthen mounds, and tree plantings, Samuel Clemens would like to add a synthetic turf soccer field, colorful pavement markings, and gaga ball pits to support physical activity, team building, and cooperative play.

STORMWATER GREEN INFRASTRUCTURE

Green infrastructure including bioswales, native plantings, and a synthetic turf field with an underground cistern beneath it, will help to better manage stormwater on the school grounds, where it falls, improving the aesthetics, biodiversity, recreational facilities, and the health of local watersheds.



MULTIPLE ARTS OPPORTUNITIES

There are many opportunities to include artistic elements throughout the schoolyard including art posts, murals, and educational signage to support the redevelopment project. The outdoor classrooms will also provide a setting for the performing arts.



OUTDOOR CLASSROOMS & INCLUSIVE LEARNING

To help facilitate ecoliteracy and all of the sensory exploration that comes with outdoor learning, Samuel Clemens School would like to enhance their current outdoor learning spaces with natural seating options and envisions sensory panels and communications boards to further promote an inclusive environment for all learners.



PROPOSED SITE PLAN

Drawing Title:

Project:
Samuel Clemens School
3600 W Hope Avenue,
Milwaukee, WI 53216

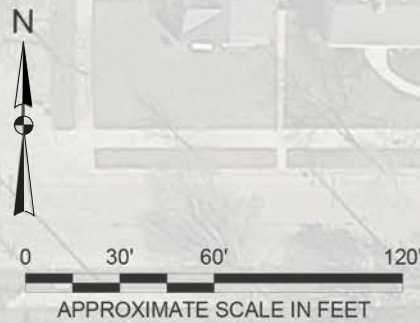
Project No:
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Figure No:

Designed By: Reflo, CDS, and Samuel Clemens' Green Team
Drawn By: Justin Hegarty

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NOTES

The planned green infrastructure is intended to manage at least a 25-year, 24-hour storm event (4.53 inches of rainfall) as described in the National Oceanic and Atmospheric Administration (NOAA) Atlas 14 point precipitation frequency estimates for Milwaukee. Green infrastructure estimates calculated using MMSD's Capacity Table and engineer's estimates for conceptual bioswale capacity; up to a 100-year, 24-hour storm event. Conceptual planning depictions and estimates, including stormwater management capacity, will need to be confirmed during the detailed design and construction as-built processes.

STORMWATER TREES

45 stormwater trees are intended to be planted.
Managing approx. 1,125 gallons

POROUS PAVEMENT

Approximately 9,800 sq. ft. of porous pavement will be installed to create a synthetic turf soccer field.
Managing approx. 29,400 gallons

UNDERGROUND CISTERN

A 50,000-gallon cistern will store stormwater and further manage water where it falls.
Managing approx. 50,000 gallons

BIOSWALES

Bioswales will be added to the school grounds to promote biodiversity and further manage stormwater.
Managing approx. 143,900 gallons

ALLEY WAY

N 36TH STREET

W HOPE AVENUE

TOTAL POTENTIAL GREEN INFRASTRUCTURE CAPTURE CAPACITY = 233,045 GALLONS

DEPAVING

Total asphalt removal is anticipated to be approximately 43,100 sq. ft. and replaced with more porous ground cover including synthetic grass, native plantings, bioswales, walking paths, and porous pavement.
Managing approx. 8,620 gallons



STORMWATER GREEN INFRASTRUCTURE PLAN

Drawing Title:

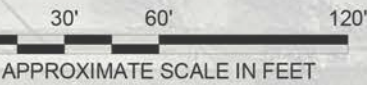
Project: Samuel Clemens School
3600 W Hope Avenue,
Milwaukee, WI 53216

Project No:

C7.MPS.37

Figure No:

Designed By: Reflo, CDS, and Samuel Clemens' Green Team
Drawn By: Justin Hegarty



MUSICAL PLAY ELEMENTS

To enhance the learning experience and create a full sensory experience, Samuel Clemens would like to add secured musical instruments to provide students the opportunity to hone their creativity by freely creating music on the schoolyard.



OUTDOOR SEATING

Currently there are limited seating options throughout the schoolyard. Seating is important for students that would like to socialize, quietly read or journal during outdoor free time, as well as for parents waiting for their children during dismissal. Benches also provide an opportunity for visual arts and sponsor recognition.



OUTDOOR CLASSROOMS

The outdoor learning areas will serve as an important focal point in the schoolyard. These spaces can support classroom learning objectives, relaxation and mindfulness activities, and serve as an intimate space for smaller scale performing arts and community-based activities.



EDUCATIONAL SIGNAGE AND EXHIBITION

Looking at the redeveloped school grounds through the lens of exhibition, there are several opportunities to display educational themes through artistic means. Students can participate in the original creation of the signs and if panels are to be easily replaceable, portions of the signs could be refreshed with new thematic student art on a regular basis.

Potential Sign Themes

- ① Bioswales and Stormwater Management
- ② School Gardens and Healthy Food Access
- ③ Outdoor Classroom - Use Schedule
- ④ Benefits of Nature Play
- ⑤ Project Partners and Site History
- ⑥ Native Plantings and Pollinator Species



MURALS AND PAVEMENT MARKINGS

Samuel Clemens would like to further activate the schoolyard through the visual arts. There are opportunities to add murals and colorful pavement markings to support sensory and curricular connections. Adding professionally developed murals with themes that reflect the schoolyard redevelopment can help to make the space feel more welcoming and connected while also providing an opportunity for local artists.



Project: Samuel Clemens School
3600 W Hope Avenue,
Milwaukee, WI 53216
Designed By: Reflo, CDS, and Samuel Clemens' Green Team
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Project No: C7.MPS.37

Figure No: 4

ARTS, OUTDOOR EDUCATION, AND COMMUNITY
ENGAGEMENT PLAN



For more information on how to support the
Samuel Clemens School
schoolyard redevelopment project please contact:

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For additional information please visit

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