



# *Milwaukee Sign Language and Morse Middle School*

Conceptual Schoolyard Redevelopment Plan

*December 2022*

# Acknowledgments

## Milwaukee Sign Language School's

### Green Team

Julie Anderson  
Suzanne Gahan  
Kristi Hepp  
Koryn Koneazny  
Tamara Ligman

### Community Partners

Florentine Opera  
Halquist  
Hawk's Nursery  
Milwaukee Admirals Hockey Team  
Minor's Garden Center

## Morse Middle School for the Gifted and Talented's

### Green Team

Tanzanique Carrington  
Caleb Crossot  
Melissa Maxwell

### Community Partners

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Michael Timm  
José Basaldua  
Kareem Benson-White



Sean Kane  
Michelle Lenski  
Heather Dietzel  
Denise Fields  
Kimberly Talarico



Carolyn Esswein  
Elise Osweiler  
Kelly Iacobazzi  
Tess Richard  
Roe Draus  
Alex Lopez  
Erin Seaverson



## *Table of Contents*

1	Introduction and School Story
2	Redevelopment Process Timeline and Components
3	Planned Curricular Connections Benefits of Green and Healthy Schoolyards
4	Maintenance and Stewardship
5	Fundraising Targets
6	Project Timeline and Next Steps Supporting Organizations

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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.



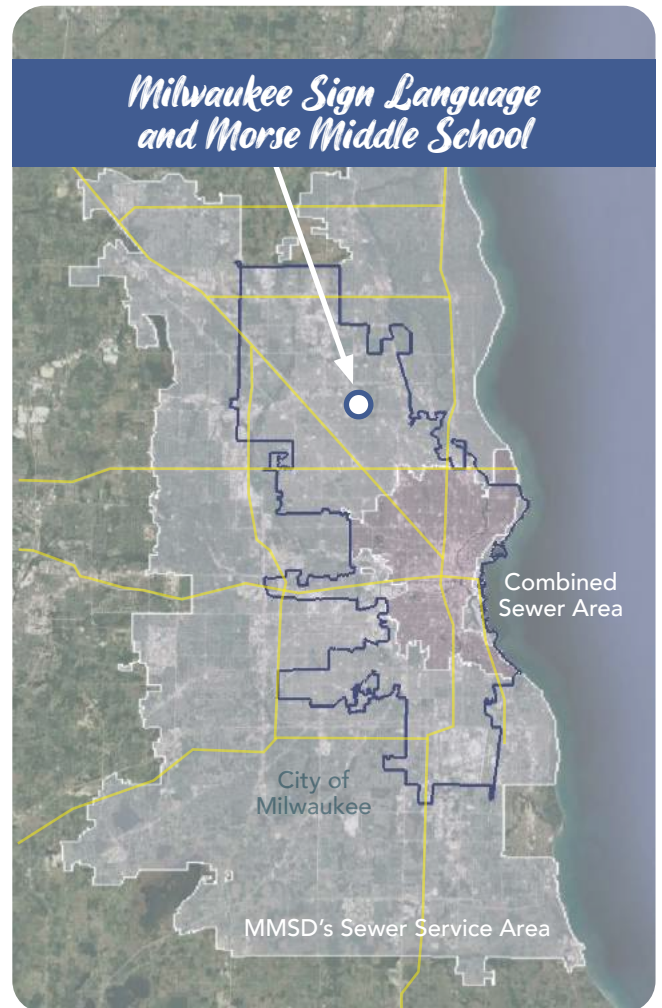


Existing schoolyard at Milwaukee Sign Language School & Morse Middle School For the Gifted and Talented

## 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

Milwaukee Sign Language School (MSLS) and Morse Middle School for the Gifted and Talented are nestled in a quiet neighborhood on the northwest side of Milwaukee. Sharing adjoining schoolyards, our vast outdoor spaces provide exciting opportunities to extend learning outside of the school buildings and into an inclusive, natural environment as we transform the schoolyard to include green space, improved recreational facilities, and a safe, calming space for all to enjoy.

MSLS serves students in K4 through 8th grade bringing together hearing, deaf, and hard-of-hearing children in a supportive environment. In addition to a regular elementary curriculum, all students receive instruction in American Sign Language and are expected to use it daily. A bicultural and immersive climate exists throughout our program emphasizing a respect for all members of the community, high quality instruction aligned to state

standards, high expectations to meet the individual needs of students, cultural diversity with a special emphasis on Deaf Culture and American Sign Language, and being a collaborative community of learners.

Morse provides advanced programming for youth in 6th through 8th grades that supports the academic, social, and emotional growth necessary to become life-long learners, productive citizens, and future leaders of our community. The Gifted and Talented program focuses on science, technology, engineering and math (STEM), and college preparation. Students also enjoy a wide variety of sports, arts, and extracurricular opportunities.

Our schools welcome and celebrate the individuality and diversity of our students, staff, parents, and the community and are excited to collaborate to create a greener, healthier school communities.



## Milwaukee Sign Language and Morse Middle School

7900 Acacia St. and 6700 N 80th St.  
Milwaukee, WI 53223

- Milwaukee Public School
- Grades: K4 through 8th
- 944 students
- 80% economically disadvantaged
- 23% special education
- 1% English learners
- Separated sewer area
- Menomonee River watershed

# 2



## *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.

Milwaukee Sign Language's and Morse Middle School's 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.

### **Milwaukee Sign Language School's Vision:**

*Students will achieve individual academic goals through the use of the Common Core State Standards measured by formative and summative assessments. We will do so by creating independent, critical thinkers empowered to become lifelong culturally-sensitive learners and responsible, productive global citizens.*



# Network of Support

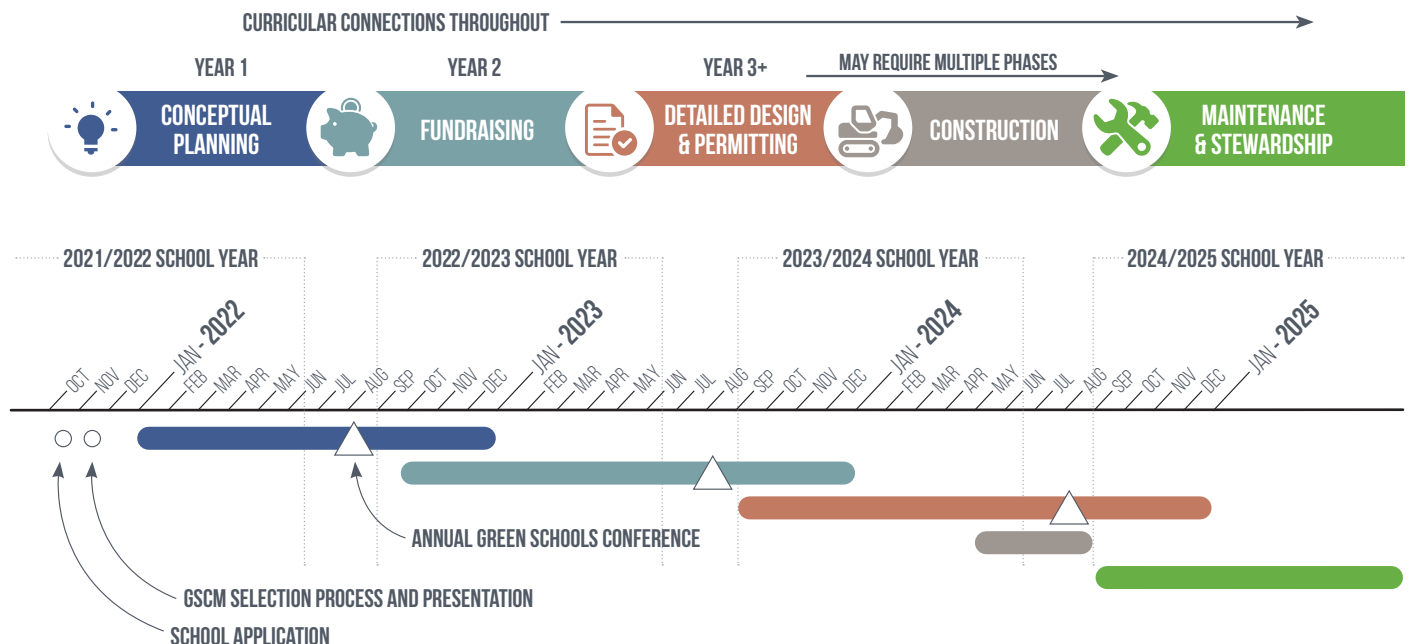
The GSCM is a local network of practitioners, agencies, and funders that are committed to supporting greener, healthier schools and ecoliteracy in the Milwaukee area. The GSCM gathers on a bimonthly and annual basis to share resources and lessons learned. The 6th Annual Green & Healthy Schools Conference hosted nearly 500 participants and over 70 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.

MSLS and Morse's conceptual plan calls for removal of approximately **191,400 sq. ft.** of asphalt and replacing it with new green space and mixed-use recreation and educational areas. The design includes seven new outdoor classroom areas, bioswales, a greenhouse, porous groundcovering, and the addition of over 200 stormwater trees. 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 plan manages approximately **836,080 gallons** of stormwater per rain event.

### **Morse Middle School for the Gifted and Talented's Vision:**

*We envision every student will grow academically, socially, and emotionally to become lifelong-learners, productive citizens and future leaders of our community and the world.*





## 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.



## Stormwater Trees

Trees reduce stormwater runoff by capturing and storing water, improving water quality by decreasing the amount of pollutants that enter rivers, streams, and lakes. Tree roots help slow down and store runoff, which further promotes infiltration into the soil, decreasing erosion and flooding events. Stormwater trees also improve air quality, reduce urban heat island effect, increase habitat for wildlife, and provide recreational and aesthetic value.



## 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 Milwaukee Sign Language's and Morse Middle School's conceptual outdoor classroom area 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.

MSLS & Morse's schoolyard redevelopment includes seven **outdoor classroom areas** each complete with seating and materials to support outdoor learning. Pavilion structures provide a central location for student learning on each end of the schoolyard. Nearby green infrastructure including bioswales and native planting areas also serve as unique learning spaces. Mindfulness gardens, and a large amphitheater performance area round out the classroom offerings. A new **greenhouse** and **raised beds** will support a variety of curricular connections. **Interpretative signage** throughout the schoolyard will support student-curated tours and encourage learning through self-guided exploration.

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

*Our students deserve the best learning environment possible in an urban setting. Many of our students deal with traumatic events, have difficulty expressing themselves appropriately, do not enjoy the outdoors with their families, and have limited experiences in nature. A greener schoolyard will have so many positive effects on the mental health and confidence of our students. These are reason enough for our school to make this change.*



**Susan Liimatta – K5 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.



Professional local artist Reynaldo Hernandez with students from Parkside School for the Arts during an unveiling of the new outdoor murals they created together at the school.



## 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. Arts @ Large and 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'm excited that the kids will have so many areas in which they can not only play, but EXPLORE! Goodbye, endless concrete! Hello, outdoor learning and fun! I think the community will also see that this can be a valuable resource for everyone.

**Kory Koneazny – K4 Teacher**







## 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 Milwaukee Sign Language's and Morse Middle School's conceptual outdoor classroom area 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**.

MSLS & Morse's conceptual plan includes an **ADA accessible walking trail**, colorful asphalt markings that support game play and agility, and a variety of sports fields. **Nature play areas** with balance logs and stumps will support gross motor development and the addition of **musical instruments** will 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 team sports and pavement marking activities like four square and hopscotch.

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

*The Green Schoolyard Project will bring endless possibilities to our school! We will be able to move class outdoors on hot days and provide real world opportunities for children to explore conservation, biodiversity, or engage students in gardening to learn about plants firsthand. I envision activities to engage children of all ages, providing a safe place for whole families to enjoy nature together.*







## 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



Rendering of Milwaukee Sign Language's and Morse Middle School's conceptual outdoor classroom area by CDS



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



PROJECT LEAD THE WAY  
PLTW

## 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 schools plan on making the most out of the new schoolyard components and connecting the exciting redevelopment to the curriculum.

The envisioned outdoor spaces will help build strong school communities, promote Social-Emotional Learning (SEL), provide dedicated spaces for conflict resolution, and support a variety of curricular activities. The redeveloped spaces will not only improve academic performance, they can also positively impact a person's mental well-being. Students who interact with nature on a regular basis have shown increased attention in class, in addition to increased enthusiasm for learning and

sustained time on task. The green spaces will also provide a variety of structured and free-form learning activities including creative play and multi-sensory experiences in a vibrant, natural classroom.

These experiences allow both Milwaukee Sign Language School and Morse Middle School for the Gifted and Talented to promote a spirit of inclusion and support involvement in recreation and wellness activities. Children will be able to apply academic skills and improve comprehension through hands-on, engaging experiences in a learning environment that extends beyond the indoor classroom and builds a positive connection to nature. These connections further support each school's vision that students grow academically, socially, and emotionally to become responsible, life-long learners.

*Our students deserve to have the best learning environment inside and outside of the school building. I believe our students will flourish by having natural, green spaces on the schoolyard that will enrich their minds, nurture their growth, and expand their understanding of what the outdoors can offer a person.*

**Suzanne Gahan – Milwaukee Sign Language School Principal**





## STEM Connections

The green schoolyard offers many STEM (science, technology, engineering, math) curricular connections that align with our **Project Lead the Way** coursework. These vibrant, living classrooms will provide a variety of enrichment activities to support hands-on, **project-based learning** that activate the curiosity and engagement of our students.

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 and will investigate life science concepts including **biodiversity**, life cycles, animal habitats, conservation, and the changing of seasons.



Our **early childhood** students (K4–K5) will investigate science concepts through **play and curiosity**. They may collect data to create graphs of different living and nonliving things found outside. Children will search for evidence of urban biodiversity such as animal tracks, **pollinator species**, and a variety of colors found in nature, extending their learning with nearby nature on the schoolyard.

**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.



Children in **upper elementary** (4th–5th) will dive into life science concepts of ecology, food webs, and **species relationships**. In addition, the new schoolyard will provide opportunities to study math concepts such as **graphing**, comparing and contrasting measurements on different scales, and using shadows to determine the height of trees.

**Middle school** students (6th–8th) will use the **green infrastructure** features of the schoolyard to examine systems and design criteria in their **engineering** units. Children will have ample opportunity to collect **real-world data** from rain gauges in the bioswales, conduct biodiversity counts of urban flora and fauna, and investigate urban design with **sustainability** in mind.

*For generations, Morse Hawks have been stewards of excellence and growth in Milwaukee; this project allows current Morse students to have a tangible piece of Milwaukee that they, themselves, can be stewards and protectors of! Morse pledges to help cultivate “life long-learners, productive citizens and future leaders of our community and the world.” This redevelopment project brings home this school-community connection and will prompt students to think about their role in uplifting and maintaining our community!*



**Caleb Crossot – Morse Middle School Counselor**

## Literacy & Language

Students will be encouraged to observe and make direct connections with their environment as they learn new **vocabulary**. In addition, the natural environment will provide inspiration for creative and informational writing, **read-alouds**, and journaling for all grades.

**Early childhood** students (K4–K5) will be encouraged to explore the green spaces to build **background knowledge** for texts about plants and life cycles. They may also practice **scientific storytelling** using animal footprints and evidence of species interactions on the schoolyard as inspiration.

**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.



**Upper elementary** students (4th–5th) will develop a deeper understanding of complex vocabulary and continue to build their background knowledge that is important for **reading comprehension** in the calming green spaces. They may practice **persuasive writing** about littering and pollution and human impacts on the environment and conduct **expository research** on how the redevelopment project affects behavior in the classroom.

**Middle school** students (6th–8th) will dive into writing prompts related to the benefits of outdoor learning, nature, and environmental stewardship. The green spaces will provide a relaxing backdrop for nature-inspired **poetry**.

## Art Connections

The arts will come to life with the redeveloped schoolyard. Children will be encouraged to exercise their visual art skills through **observational drawings** of living organisms and explore different art media. Students will be able to use the natural outdoor spaces to experience and better express themselves while enhancing their **visual and auditory senses** through creative means.



Expanding a student's art and cultural experience is essential to making youth more **compassionate** to the wider world, supporting our core values of respecting all people, valuing equality, and celebrating diversity. Vibrant green spaces will become the backdrop for **performing arts** experiences. These activities provide students the opportunity to develop positive shared experiences with their community.





## Health & Wellness

Spending time in green spaces provides **mental health benefits** to help students feel less stressed, have improved focus, and experience less fighting and disciplinary issues. The redevelopment will allow us to extend our social-emotional learning (SEL) lessons outside where we can support students as they learn to **resolve conflicts**, develop problem-solving skills and build community with their peers. The fresh air, and green spaces will support creative **mindfulness activities**, encouraging students to connect to their environment through sensory experiences enriched with bright colors, scents, and textures.



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. They will acquire much-needed motor skills in the green space which will allow them to run, skip, jump, dance, and play with **fewer injuries**. Students will learn game rules and procedures, 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.

Playing outdoors in a safe space promotes creative play and **cooperation**. Experiences in nature can also support our students who need to practice their relationship skills and develop more **self-awareness** and self-management. All children will benefit from taking **brain breaks** and nature walks outdoors, enhancing their communication and sportsmanship skills while participating in sports, **restorative circles**, and cooperative play. The holistic schoolyard redevelopment supports our vision that all students will grow and learn within a safe, respectful, and responsible environment.

## Community Engagement



MSLS and Morse work to provide family and community engagement opportunities in a **safe and supportive climate**. Our staff encourages respecting, taking care of their school environment, and learning more about nature. We look forward to connecting family and community members to help support the **maintenance and stewardship** of the new green spaces and the ability to host fun, school-wide events in a welcoming outdoor space. Continued **collaboration** with our community partners will provide rich connections with the neighbors and local businesses that will bring additional opportunities for engagement, relationship-building, and a strong sense of support in our community.



# 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 solving<sup>9</sup>

Seeing nature from school buildings can foster academic success<sup>6, 7, 8</sup>

### 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<sup>14, 15</sup>

### INCREASED ENGAGEMENT & ENTHUSIASM

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



**INCREASED ENTHUSIASM FOR LEARNING**  
1, 16



**GREATER ENGAGEMENT WITH LEARNING**<sup>17</sup>



**MORE IMPULSE CONTROL**<sup>10</sup>



**LESS DISRUPTIVE BEHAVIOR**  
20

Nature-based learning is associated with reduced aggression and fewer discipline problems:<sup>18, 19</sup>



ADDITIONAL RESEARCH ON THE BENEFITS OF NATURE AVAILABLE AT [childrenandnature.org/research](http://childrenandnature.org/research)

#### SUPPORTING RESEARCH

<sup>1</sup>Lieberman & Hoody (1998). Closing the achievement gap: Using the environment as an integrating context for learning. Results of a Nationwide Study. *San Diego: SEER*. <sup>2</sup>Chawla (2015). Benefits of nature contact for children. *J Plan Lit*, 30(4), 433-452. <sup>3</sup>Berezowitz et al. (2015). School gardens enhance academic performance and dietary outcomes in children. *J School Health*, 85(8), 508-518. <sup>4</sup>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. <sup>5</sup>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. <sup>6</sup>Li & Sullivan (2016). Impact of views to school landscapes on recovery from stress and mental fatigue. *Landscape Urban Plan*, 148, 149-158. <sup>7</sup>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. <sup>8</sup>Matsuoka, R. H. 2010. Student performance and high school landscapes. *Landscape and Urban Planning* 97 (4), 273-282. <sup>9</sup>Moore & Wong (1997). Natural Learning: Rediscovering Nature's Way of Teaching. Berkeley, CA: MIG Communications. <sup>10</sup>Faber Taylor et al. (2002). Views of nature and self-discipline: Evidence from inner-city children. *J Environ Psy*, 22, 49-63. <sup>11</sup>Mårtensson et al. (2009). Outdoor environmental assessment of attention promoting settings for preschool children. *Health Place*, 15(4), 1149-1157. <sup>12</sup>Wells (2000). At home with nature effects of "greenness" on children's cognitive functioning. *Environ Behav*, 32(6), 775-795. <sup>13</sup>Berto et al. (2015). How does psychological restoration work in children? An exploratory study. *J Child Adolesc Behav* 3(3). <sup>14</sup>Faber Taylor et al. (2001). Coping with ADD: The surprising connection to green play settings. *Environ Behav*, 33(1), 54-77. <sup>15</sup>Amoly et al. (2014). Green and blue spaces and behavioral development in Barcelona schoolchildren: The BREATHE Project. *Environ Health Perspect*, 122,1351-1358. <sup>16</sup>Blair (2009) The child in the garden: An evaluative review of the benefits of school gardening. *J Environ Educ*, 40(2), 15-38. <sup>17</sup>Rios & Brewer (2014). Outdoor education and science achievement. *Appl Environ Educ Commun*, 13(4), 234-240. <sup>18</sup>Bell & Dymont (2008). Grounds for health: The intersection of green school grounds and health-promoting schools. *Environ Educ Res*, 14(1), 77-90. <sup>19</sup>Nedovic & Morrissey (2013). Calm, active and focused: Children's responses to an organic outdoor learning environment. *Learn Environ Res*, 16(2), 281-295. <sup>20</sup>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<sup>2,3</sup>

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

### POSITIVE & RESTORED<sup>3</sup>

Forest schools enhanced positive and decreased negative emotions.<sup>5</sup>

### RESILIENT<sup>2</sup>

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

## GREEN SCHOOLYARDS PROMOTE SOCIAL-EMOTIONAL SKILLS

### PRACTICE RELATIONSHIP SKILLS<sup>2</sup> ★★★★★★

Children demonstrated more cooperative play, civil behavior and positive social relationships in green schoolyards.<sup>6,7</sup>

### DEVELOP SELF-AWARENESS & SELF-MANAGEMENT

Green schoolyards can reduce aggression and discipline problems.<sup>6,7</sup>  
Gardening at school helped students feel proud, responsible & confident.<sup>2</sup>

#### SUPPORTING RESEARCH

<sup>1</sup>[www.nlm.nih.gov/health/statistics/prevalence/any-disorder-among-children.shtml](http://www.nlm.nih.gov/health/statistics/prevalence/any-disorder-among-children.shtml) <sup>2</sup>Chawla et al. (2014). Green schoolyards as havens from stress and resources for resilience in childhood and adolescence. *Health Place*, 28, 1-13. <sup>3</sup>Kelz 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. <sup>4</sup>Li & Sullivan (2016). Impact of views to school landscapes on recovery from stress and mental fatigue. *Landscape Urban Plan*, 148, 149-158. <sup>5</sup>Roe & 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. <sup>6</sup>Bell & Dymont (2008). Grounds for health: The intersection of green school grounds and health-promoting schools. *Environ Educ Res*, 14(1), 77-90. <sup>7</sup>Nedovic & Morrissey (2013). Calm, active and focused: Children's responses to an organic outdoor learning environment. *Learn Environ Res*, 16(2), 281-295.

INFOGRAPHICS PROVIDED BY THE CHILDREN & NATURE NETWORK

Supporting references and research on the benefits of nature can be found at [childrenandnature.org/research](http://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 <sup>2,3</sup>
- Sustain children's interest <sup>4,5</sup>
- Offer a variety of options that appeal to a wide range of play interests <sup>2</sup>
- Promote cooperation & negotiation <sup>4,6</sup>
- Strengthen links between play & learning <sup>2,3,4</sup>

## GREEN SCHOOLYARDS CAN SUPPORT DIFFERENT TYPES OF PLAY <sup>2,4,7,8</sup>

### 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

<sup>1</sup>Rideout 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> <sup>2</sup>Dyment & Bell (2008). Grounds for movement: Green school grounds as sites for promoting physical activity. *Health Educ Res*, 23(6), 952-962. <sup>3</sup>Stanley (2011). The place of outdoor play in a school community: A case study of recess values. *Child Youth Environ*, 21(1), 185-211. <sup>4</sup>Dennis et al. (2014). A post-occupancy study of nature-based outdoor classrooms in early childhood education. *Child Youth Environ*, 24(2), 35-52. <sup>5</sup>Luchs & Fikus (2013). A comparative study of active play on differently designed playgrounds. *J Adven Educ & Outd Learn*, 13(3), 206-222. <sup>6</sup>Acar & Torquati (2015). The power of nature: Developing pro-social behavior towards nature and peers through nature-based activities. *Young Children*, 70(5), 62-71. <sup>7</sup>Chawla (2015). Benefits of nature contact for children. *J Plan Lit*, 30(4), 433-452. <sup>8</sup>Cloward 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.<sup>2</sup>

## MORE OPTIONS, MORE ACTIVITY

PROMOTE

running  
jumping  
climbing  
lifting<sup>2</sup>

trees logs  
shrubs rocks

Variety in landscaping increases variety in active play.<sup>2</sup>

## MEETING DIVERSE & CHANGING NEEDS

GREEN SCHOOLYARDS COMPLEMENT CONVENTIONAL PLAYGROUNDS WITH OPPORTUNITIES FOR

**LIGHT & MODERATE PHYSICAL ACTIVITY**

that are more appealing to some children.<sup>3,4</sup>

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.<sup>5,6,7</sup>

### SUPPORTING RESEARCH

<sup>1</sup>[www.cdc.gov/physicalactivity/data/facts.htm](http://www.cdc.gov/physicalactivity/data/facts.htm) <sup>2</sup>Dyment & Bell (2008). Grounds for movement: Green school grounds as sites for promoting physical activity. *Health Educ Res*, 23(6), 952-962. <sup>3</sup>Barton 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. <sup>4</sup>Dyment et al. (2009). The relationship between school ground design and intensity of physical activity. *Child Geogr*, 7(3), 261-276. <sup>5</sup>Brink et al. (2010). Influence of schoolyard renovations on children's physical activity: The Learning Landscapes Program. *Am J Public Health*, 100(9), 1672-1678. <sup>6</sup>Mårtensson et al. (2014). The role of greenery for physical activity play at school grounds. *Urban For Urban Gree*, 13(1), 103-113. <sup>7</sup>Pagels 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.

INFOGRAPHICS PROVIDED BY THE CHILDREN & NATURE NETWORK

Supporting references and research on the benefits of nature can be found at [childrenandnature.org/research](http://childrenandnature.org/research)

# Diversity, Equity & Inclusion Lens In Green & Healthy Schools

As schools across the Milwaukee area take part in greening their schoolyards for the health benefits of students and teachers alike, this segment is offered as an addendum to addressing environmental injustice and cultivating culturally relevant curricular activities.

## DIVERSITY: The unique differences between us that make a difference.

*What diversity is not: a  
euphemism for people of color.*

There are many facets of diversity, such as ability, socio economics, gender identity/expression, sexual orientation, immigration status, religion, etc.

It is important for educators not to discredit the significance of their students' unique identities and lived experience. It is also important to acknowledge difference as a *value-add* to the classroom. Allowing students the opportunity to practice navigating conversations about a difference in an affirming way helps build empathy, innovation, and collaboration. Consequently, educators should be mindful of how their own unique identities and experiences, consciously and unconsciously, inform how they lead the classroom.

*Source: Hines, Mack T., White Teachers, Black Students, Rowman & Littlefield, 2017*



## EQUITY: A process of ensuring everyone has access to what they need to thrive.

*What equity is not: giving everyone  
the same thing, such as equality.*

We all have strengths and areas of growth opportunity. Educators with a **growth mindset** recognize that their students can learn anything, it's a matter of identifying the teaching style that will create the most impact for each student. This also means recognizing that not all students start out at the same place, nor have access to the same resources or experiences.



**Critical takeaways:** Diversity is often used as a euphemism for people of color. This notion promotes the fallacious assumption that 1. A single person can be diverse and 2. White people are not racialized and therefore excluded from diversity efforts and problematically perceived as the "norm," the "baseline" against which people from all other ethnicities and cultures are measured.



For more information and educator support in embedding equity into curricular connections, please email [info@creamcityconservation.org](mailto:info@creamcityconservation.org)



No matter how homogeneous or diverse the classroom, every student benefits from culturally relevant curricula. When educators use materials that depict characters, language, culture, and more from a diversity of backgrounds, perspectives, and abilities it creates a sense of belonging as students see themselves reflected in the teachings.

## INCLUSION: Celebrating, welcoming, valuing, and leveraging differences.

*What inclusion is not: ignoring,  
overcoming, or tolerating difference.*



### WHY AN EQUITY LENS IS IMPORTANT TO SCHOOLYARD DEVELOPMENT

#### Climate Change – With regards to environmental injustice, people of color are hit first and worst.

The U.N. Climate Report 2018 states our world has 12 years to take critical action before the effects of climate change are irreversible.

*Source: Climate Change Is Not A Future Problem for POCs., U.N. Climate Report 2018*

#### 82% of public school educators are white.

Culturally competent educators contribute positively to the social-emotional well-being of students. Educators that push color-blindness and discourage exploration of difference may harm students by making them feel as though they themselves are not seen and that diversity is taboo.



*Source: The State of Racial Diversity in the Educator Workforce, July 2016 US Dept. of Education; White Teacher, Black Students by Mack T. Hines III.*

**Critical takeaways:** The health, education, and economic disparities experienced by marginalized communities is not a coincidence. A firm understanding of the historical context and current policies and practices that fuel disproportionate effects of environmental injustice is paramount. Without this foundation, educators will not be empowered to systematically dismantle institutional oppression and rebuild social structures that ensure equitable access for all students to thrive.





# 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 schools' Green Teams 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.



## 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.



## Raised Bed Gardens

### Ongoing/Monthly Considerations:

Gardens will require ongoing weeding and watering (weekly/daily). Determining who will be responsible (ideally multiple people/groups/classrooms) beyond planting the gardens is important, especially over summer months.

### Seasonal/Annual Considerations:

Spring planting and harvest events are great ways to engage the school and prepare the garden. Accounting will be needed for the cost and storage of required hoses, shovels, gloves, buckets, etc.



## 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



## 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](http://www.RefloH2o.com)

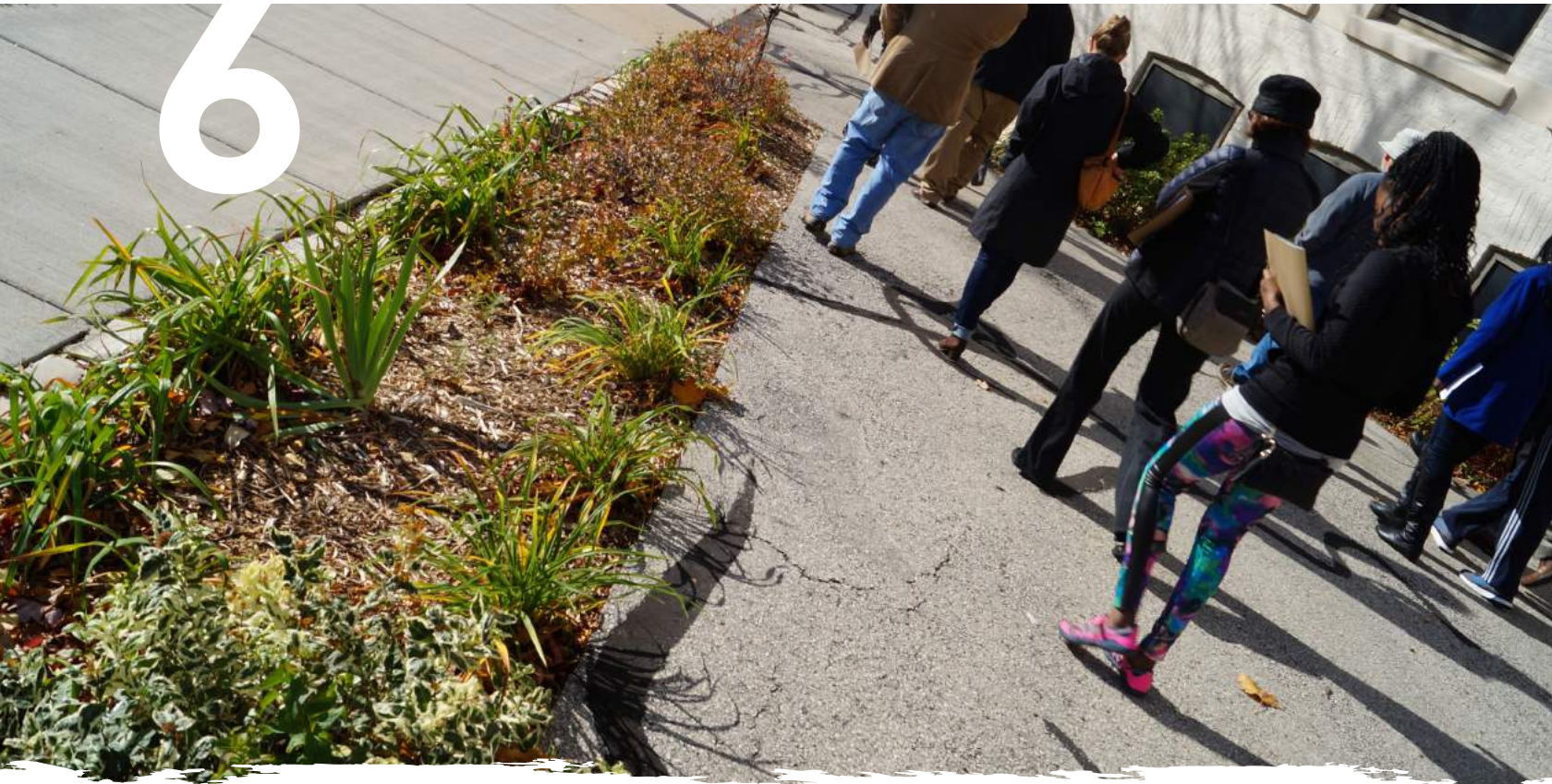




# Conceptual Redevelopment Plan Fundraising Targets

	Apx. Fundraising Targets	Apx. In-kind Contribution
<b>Stormwater Green Infrastructure</b>		
Asphalt removal, sawcutting, mobilization, etc.	\$ 800,000	
Soil, grass, and other porous resurfacing	\$ 500,000	
Trees (and protective fencing)	\$ 150,000	
Bioswales (native plantings and protective fencing)	\$ 400,000	
Porous Pavement - Outdoor Classrooms	\$ 75,000	
Engineering, surveying, and construction admin.	\$ 100,000	
Facilities project management	\$ 20,000	\$ 50,000
Continued Reflo project development support	\$ 20,000	\$ 20,000
Project signage	\$ 20,000	\$ 10,000
Demonstrations, workshops, tours		\$ 5,000
Water-focused curricular activities	\$ 20,000	\$ 20,000
Vegetation establishment	\$ 40,000	\$ 10,000
<b>Stormwater Green Infrastructure Subtotal</b>	<b>\$ 2,145,000</b>	<b>\$ 115,000</b>
<b>School Gardens &amp; Healthy Food Access</b>		
Greenhouse	\$ 200,000	
<b>School Gardens &amp; Healthy Food Access Subtotal</b>	<b>\$ 200,000</b>	<b>\$ -</b>
<b>Recreational Improvements</b>		
Gaga Ball pits (4) with ADA doors	\$ 20,000	
Asphalt crackfilling and striping	\$ 50,000	
Existing tot lot improvements	\$ 35,000	
New play structure	\$ 180,000	
Nature play features (embedded logs and stumps)	\$ 75,000	
<b>Recreational Improvements Subtotal</b>	<b>\$ 360,000</b>	<b>\$ -</b>
<b>Educational Elements</b>		
Arts programming	\$ 50,000	\$ 10,000
Musical instruments and sensory boards	\$ 50,000	
Outdoor classrooms (5)		
Structures (2)	\$ 100,000	
Surfacing	\$ 75,000	
Seating	\$ 75,000	
Amenities	\$ 15,000	
<b>Educational Elements Subtotal</b>	<b>\$ 365,000</b>	<b>\$ 10,000</b>
<b>Other Site Improvements</b>		
Storage sheds (2)	\$ 80,000	
Bike parking equipment	\$ 5,000	
Pathways and fencing	\$ 100,000	
Schoolyard benches and other Amenities	\$ 50,000	
<b>Other Site Improvements Subtotal</b>	<b>\$ 235,000</b>	<b>\$ -</b>
<b>Total Estimated Fundraising Target: \$3,305,000</b>		
		<b>\$ 125,000</b>

# 6



## Project Timeline and Next Steps

Although there has already been a significant amount of time and energy invested in the schoolyard redevelopment project by Milwaukee Sign Language School and Morse Middle School for the Gifted and Talented and their 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 2023. 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 Milwaukee Sign Language & Morse Middle School's schoolyard redevelopment:**

Please go to Reflo's website: [www.RefloH2o.com](http://www.RefloH2o.com) or send an email to: [lisa.neeb@RefloH2o.com](mailto: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 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.



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.



Cream City Conservation is a two-prong social enterprise: working with organizations to address internal cultures and practices that contribute to workforce homogeneity; and training and employing young adults 15–25 whose social identities are traditionally underrepresented in the environmental industry.



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.

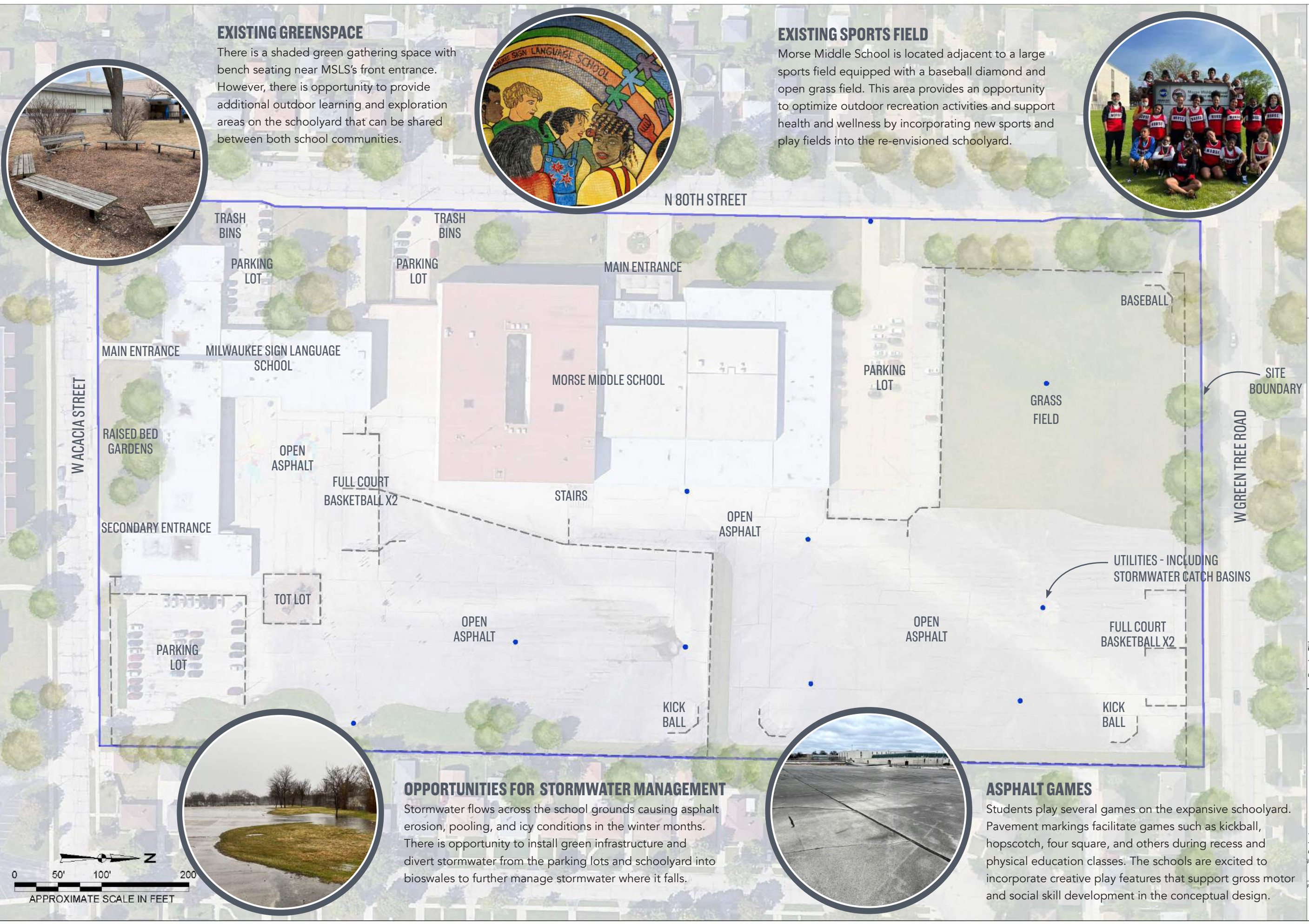


Arts @ Large activates Milwaukee's education communities to build environments that support arts-rich, lifelong learning. Arts @ Large uses the arts as a tool to engage students in academic learning and provide meaningful work for artists.



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**EXISTING GREENSPACE**

There is a shaded green gathering space with bench seating near MSLS's front entrance. However, there is opportunity to provide additional outdoor learning and exploration areas on the schoolyard that can be shared between both school communities.



**EXISTING SPORTS FIELD**

Morse Middle School is located adjacent to a large sports field equipped with a baseball diamond and open grass field. This area provides an opportunity to optimize outdoor recreation activities and support health and wellness by incorporating new sports and play fields into the re-envisioned schoolyard.



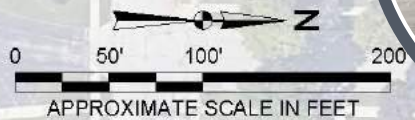
**OPPORTUNITIES FOR STORMWATER MANAGEMENT**

Stormwater flows across the school grounds causing asphalt erosion, pooling, and icy conditions in the winter months. There is opportunity to install green infrastructure and divert stormwater from the parking lots and schoolyard into bioswales to further manage stormwater where it falls.



**ASPHALT GAMES**

Students play several games on the expansive schoolyard. Pavement markings facilitate games such as kickball, hopscotch, four square, and others during recess and physical education classes. The schools are excited to incorporate creative play features that support gross motor and social skill development in the conceptual design.



Drawing Title:

Project: Milw. Sign Language & Morse Middle School  
 7900 Acacia St. & 6700 N 80th St.  
 Milwaukee, WI 53223  
 Designed By: Reflo, CDS, and MSLS & Morse's Green Team  
 Drawn By: Justin Hegarty

Project No: C6.MPS.32

Figure No: 1

**EXISTING SITE PLAN**



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### OUTDOOR CLASSROOMS AND SENSORY CONNECTIONS

To help facilitate ecoliteracy and all of the benefits that come with outdoor learning, MSLS and Morse would like to build seven outdoor classrooms, each completed with natural seating options. The schools would also like to incorporate interpretive signage in American Sign Language (ASL) and a variety of native planting area to further support sensory exploration on the schoolyard.



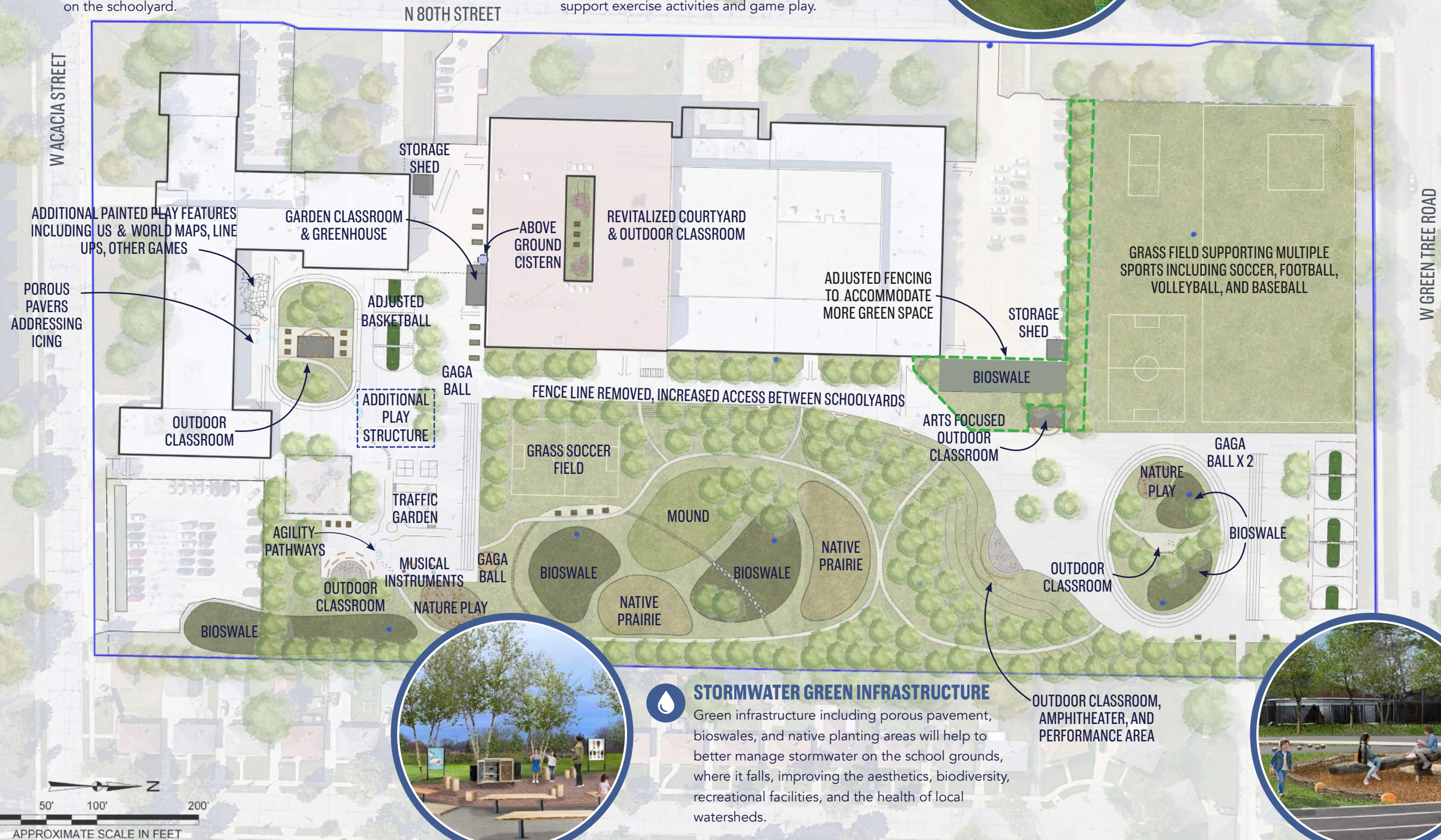
### ADDITIONAL GREEN SPACE AND RECREATIONAL IMPROVEMENTS

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, MSLS & Morse would like to include walking paths, colorful pavement markings including features such as agility pathways, line up markings, US and world maps, gaga ball pits, and nature play features to support exercise activities and game play.



### MULTIPLE ARTS OPPORTUNITIES

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



### STORMWATER GREEN INFRASTRUCTURE

Green infrastructure including porous pavement, bioswales, and native planting areas 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.



OUTDOOR CLASSROOM, AMPHITHEATER, AND PERFORMANCE AREA

Drawing Title:

Milw. Sign Language & Morse Middle School  
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Milwaukee, WI 53223

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Figure No:



## PROPOSED SITE PLAN



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**TOTAL POTENTIAL GREEN INFRASTRUCTURE CAPTURE CAPACITY = 836,080 GALLONS**



**POROUS PAVEMENT**

Approximately 2,000 sq. ft. of porous pavement will be installed to create pathways and play spaces.  
**Managing approx. 6,000 gallons**



**ABOVE GROUND CISTERN**

A 2,500 gallon above ground cistern will be installed to support rainwater harvesting for urban agriculture.  
**Managing approx. 2,500 gallons**

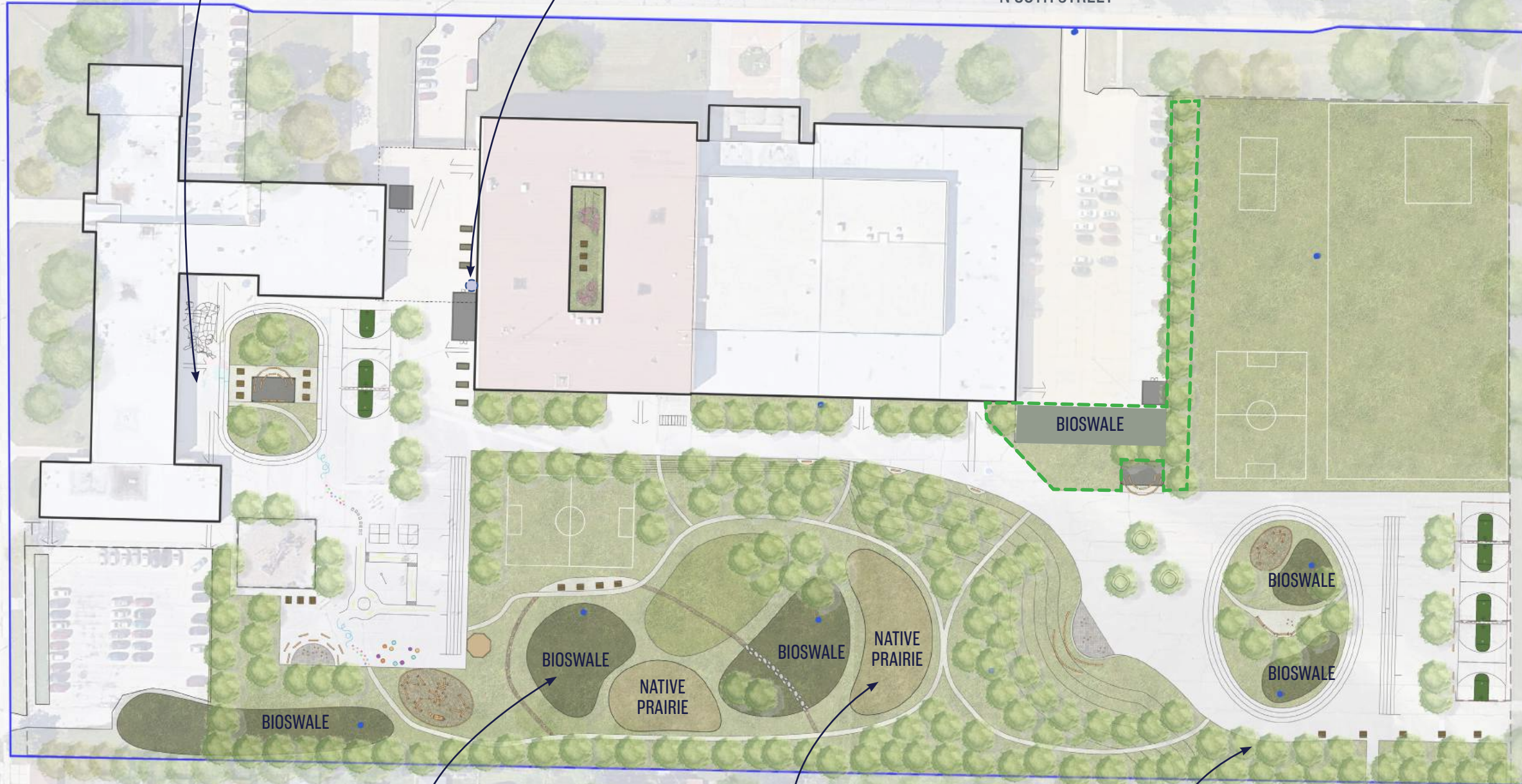
**DEPAVING**

Total asphalt removal is anticipated to be 191,400 sq. ft. and replaced with more porous ground cover including grass, native plantings, bioswales, walking paths, and porous pavement.  
**Managing approx. 38,280 gallons**

WACACIA STREET

N 80TH STREET

W GREEN TREE ROAD



**BIOSWALES**

Bioswales will be added to the school grounds to promote biodiversity and further manage stormwater.  
**Managing approx. 776,700 gallons**



**NATIVE LANDSCAPING**

A total of 19,000 sq. ft. of native planting areas will be installed throughout the schoolyard.  
**Managing approx. 7,600 gallons**

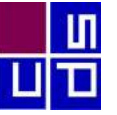
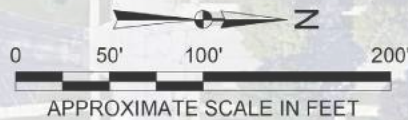


**STORMWATER TREES**

200 stormwater trees are intended to be planted.  
**Managing approx. 5,000 gallons**

**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.



**Reflo**  
Sustainable Water Solutions

Drawing Title:

**STORMWATER GREEN INFRASTRUCTURE PLAN**

Project: Milw. Sign Language & Morse Middle School  
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Project No: C6.MPS.32

Figure No:



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### 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. The following is a preliminary list of potential themes:

#### Potential Sign Themes

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



### MURALS AND PAVEMENT MARKINGS

MSLS and Morse would like to further activate the schoolyard through the visual arts. There are opportunities to add murals and 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 more welcoming and connected while also providing an opportunity to engage local artists.



W ACACIA STREET

N 80TH STREET

W GREEN TREE ROAD



### SCHOOL GARDENS

The schoolyard redevelopment project includes additional raised beds and a greenhouse to support gardening and culinary arts activities while providing students, teachers, and families with access to healthy, local food.



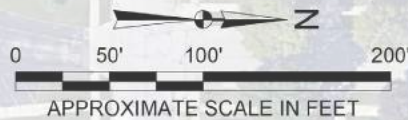
### OUTDOOR CLASSROOMS AND PERFORMANCE AREA

The outdoor classroom will serve as an important focal point on the schoolyard. The space can serve classroom activities while also double as an intimate space for smaller-scale performing arts activities and community gatherings.



### 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. Benches also provide an opportunity for visual arts and sponsor recognition.



Reflo  
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## ARTS, OUTDOOR EDUCATION, AND COMMUNITY ENGAGEMENT PLAN

Drawing Title:

Project: Milw. Sign Language & Morse Middle School  
7900 Acacia St. & 6700 N 80th St.  
Milwaukee, WI 53223  
Designed By: Reflo, CDS, and MSLS & Morse's Green Team  
Drawn By: Justin Hegarty

Project No: C6.MPS.32

Figure No:



For more information on how to support the  
*Milwaukee Sign Language and Morse Middle School*  
schoolyard redevelopment project please contact:

**Suzanne Gahan – Principal**

Milwaukee Sign Language School  
gahansm@milwaukee.k12.wi.us

**Kristi Hepp – 5th Grade Teacher**

Milwaukee Sign Language School  
heppkl@milwaukee.k12.wi.us

**Tanzanique Carrington – Principal**

Morse Middle School for the Gifted & Talented  
harrisc@milwaukee.k12.wi.us

**Lisa Neeb – Green & Healthy Schools Program Manager**

Reflo - Sustainable Water Solutions  
lisa.neeb@RefloH2o.com



For additional information please visit

[www.RefloH2o.com](http://www.RefloH2o.com)