Reflo
Sustainable Water Solutions

MMSD
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Fund for
Lake Michigan
Clearly making a deep impact.

HAWLEY ENVIRONMENTAL CONCEPTUAL SCHOOLYARD REDEVELOPMENT PLAN

March 2018

MPS
MILWAUKEE
PUBLIC SCHOOLS

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

cds

TABLE OF CONTENTS

Acronyms

GSCM ..... Green Schools Consortium of Milwaukee
STEAM ..... Science, Technology, Engineering, Arts, and Mathematics
Reflo ..... Reflo - Sustainable Water Solutions (nonprofit)
MMSD ..... Milwaukee Metropolitan Sewerage District
FFLM ..... Fund for Lake Michigan
GI ..... Green Infrastructure
MPS ..... Milwaukee Public Schools
sf ..... square feet
Hawley ..... Hawley Environmental School

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Existing schoolyard at Hawley

INTRODUCTION

City youth grow up surrounded by imperviousness. 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 retard socioeconomic progress. Yet imperviousness also has other human impacts—consider how it affects the development of a young person's mind. 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 began collaborating with Hawley in early 2017 to develop the following conceptual schoolyard redevelopment plan that holistically address the issue of the school's imperviousness. This document compiles over a year of conceptual planning in order to provide the school, administrators, potential funders, and project partners with a single feasible vision for redeveloping a greener and healthier schoolyard. Redeveloping the existing outdated schoolyard also provides a multitude of potential STEAM (science, technology, engineering, arts, and mathematics) curriculum connections as well as triple-bottom-line (social, environmental, and economic) benefits for the students, school, and community.

SCHOOLYARD REDEVELOPMENT INTEREST

Hawley is most interested in providing a safe, healthy, and educational space for their students to learn and explore through creatively designed and inspiring green open space.

ACKNOWLEDGMENTS

The successes at Hawley to date and all of the planned activities laid out in this document are the result of many individuals and organizations that have worked for several years to support the school. The following is a short list of those that we would like to thank for their contributions:

HAWLEY'S GREEN TEAM:

Hawley boasts multiple Green Teams at the student level; each grade level has a Green team that assists in lunch program recycling, a Compost Crew manages the lunch compost for the school, and the Plastic Patrol Team recycles 10-20lbs. of plastic film each week. The faculty Green Team includes members from all grade levels and has been in existence for over 20 years. Current members include:

Michele Bavuso
JoEllen Haberlie
LeeAnne Chappelle
Shari Kromrey
Barbara Grundl
JoAnn Lens
Terry Becker
Terri Doucette
Lesley Zylstra

SPECIAL THANKS TO THOSE INVOLVED IN THE SCHOOLYARD REDEVELOPMENT PLANNING:

Reflo Sustainable Water Solutions

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Rose Kuzj

CDS

Carolyn Esswein
Bill Noelck
Jack Grover

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

Angeline Koch

ARTS @ LARGE
Beyond Education. Beyond Expectations.

Sean Kiebzak

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Karen Sands
Lisa Sasso

Fund for Lake Michigan
Clearly making a deep impact.

Vicki Elkin

eco ENVIRONMENTAL COLLABORATION OFFICE
ecoCITY of MILWAUKEE

Erick Shambarger

MPS MILWAUKEE PUBLIC SCHOOLS

John Linn
Rochelle Sandrin

BENEFITS OF GREEN 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 [9]

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 LEARNING [17]

IMPROVED BEHAVIOR

Nature-based learning is associated with reduced aggression and fewer discipline problems: [18, 19]

MORE IMPULSE CONTROL [10]

LESS DISRUPTIVE BEHAVIOR [20]

children & nature NETWORK | NLC NATIONAL LEAGUE OF CITIES | THE JPB FOUNDATION

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

SUPPORTING RESEARCH

[1]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 Commun*, 13(4), 234–240. [18] Bell & Dyment (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.

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

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 & RESTORED[3]

Forest schools enhanced positive and decreased negative emotions.[5]

RESILIENT[2]

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

GREEN SCHOOLYARDS PROMOTE SOCIAL-EMOTIONAL SKILLS

PRACTICE RELATIONSHIP SKILLS[2]

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

[1]www.nimh.nih.gov/health/statistics/prevalence/any-disorder-among-children.shtml [2]Chawla et al. (2014). Green schoolyards as havens from stress and resources for resilience in childhood and adolescence. *Health Place*, 28, 1-13. [3]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. [4]Li & Sullivan (2016). Impact of views to school landscapes on recovery from stress and mental fatigue. *Landscape Urban Plan*, 148, 149-158. [5]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. [6]Bell & Dyment (2008). Grounds for health: The intersection of green school grounds and health-promoting schools. *Environ Educ Res*, 14(1), 77-90. [7]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

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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

[1]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 [2]Dyment & Bell (2008). Grounds for movement: Green school grounds as sites for promoting physical activity. *Health Educ Res*, 23(6), 952-962. [3]Stanley (2011). The place of outdoor play in a school community: A case study of recess values. *Child Youth Environ*, 21(1), 185-211. [4]Dennis et al. (2014). A post-occupancy study of nature-based outdoor classrooms in early childhood education. *Child Youth Environ*, 24(2), 35-52. [5]Luchs & Fikus (2013). A comparative study of active play on differently designed playgrounds. *J Adven Educ & Outd Learn*, 13(3), 206-222. [6]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. [7]Chawla (2015). Benefits of nature contact for children. *J Plan Lit*, 30(4), 433-452. [8]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.

MORE OPTIONS, MORE ACTIVITY

85%
OF EDUCATORS AND PARENTS
said green schoolyards support a wider range of play activities than other types of schoolyards.[2]

PROMOTE
running
jumping
climbing
lifting[2]

trees
logs
shrubs
rocks

Variety in landscaping increases variety in active play.[2]

MEETING DIVERSE & CHANGING NEEDS

GREEN SCHOOLYARDS COMPLEMENT CONVENTONAL 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

[1]www.cdc.gov/physicalactivity/data/facts.htm [2]Dyment & Bell (2008). Grounds for movement: Green school grounds as sites for promoting physical activity. *Health Educ Res*, 23(6), 952–962. [3]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. [4]Dyment et al. (2009). The relationship between school ground design and intensity of physical activity. *Child Geogr*, 7(3), 261-276. [5]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. [6]Mårtensson et al. (2014). The role of greenery for physical activity play at school grounds. *Urban For Urban Gree*, 13(1), 103–113. [7]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.

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Supporting references and research on the benefits of nature can be found at childrenandnature.org/research
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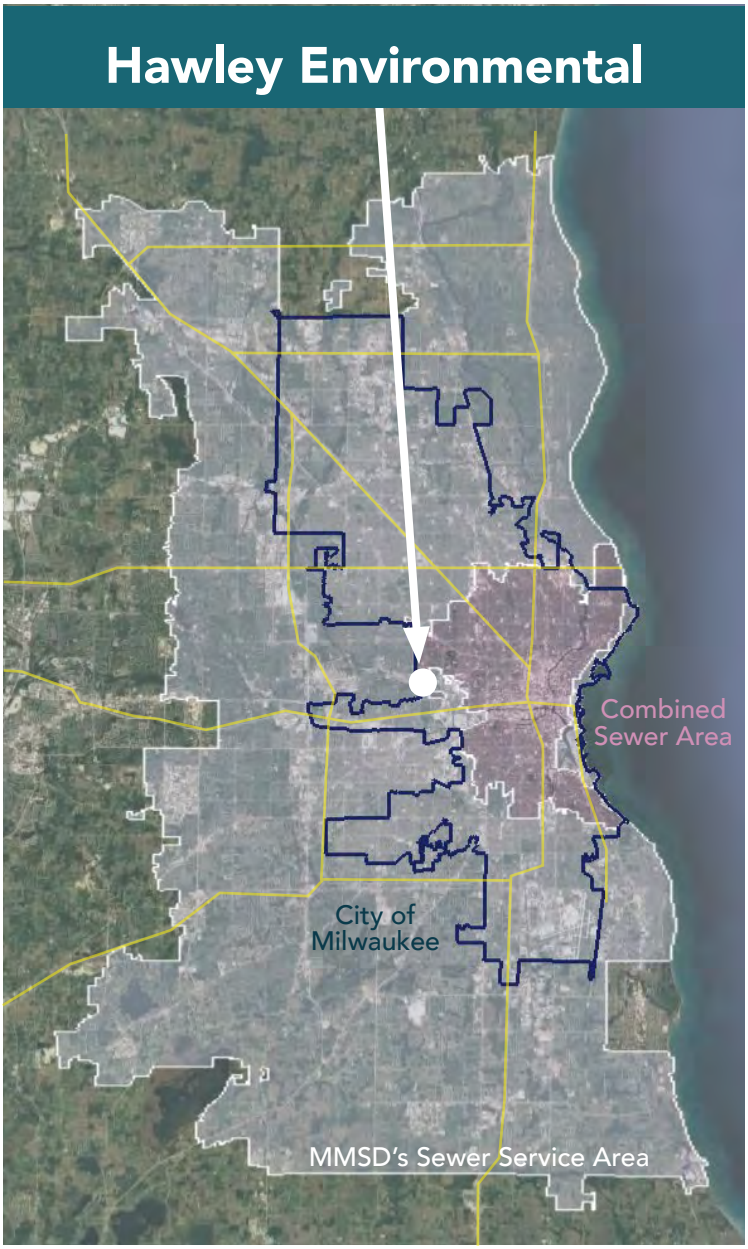
Hawley's existing playground

SCHOOL BACKGROUND

Hawley Environmental School is an MPS K4-5th grade Elementary School with a special focus on Environmental Education. We have a school greenhouse, an Aquaponics lab, weekly environmental education classes, school gardens and other special programs and resources to support our special environmental focus.

We offer an educational program that is centered on the global child of the 21st century. A strong academic curriculum and a professional teaching staff ensure all students achieve academic success. Our school has a solid history of academic achievement based on the state Wisconsin Knowledge and Academics Examination (WKCE).

Hawley Environmental School has the honor of many awards and recognitions including: DPI/DNR Green and Healthy School (the first in MPS), numerous Herb Kohl Education Foundation Teacher Awards, Wisconsin Humane Society Teacher of the Year, multiple winner of New Wisconsin Promise School of Excellence, Wisconsin Teacher of the Year for 2009, U.S. Department of Education High Achieving School, as well as other recognitions throughout the years. Our talented staff works hard to create an outstanding school community.



Entrance to Hawley - originally built in 1927

5610 W Wisconsin Ave., Milwaukee

- Milwaukee Public School
- Grades: K4 - 5th
- 366 students
- 74% free and reduced lunch
- Separated Sewer Area
- 83,400 sf of impervious surfaces
- 92% of the school is impervious

Green School Tour in 2015 - learning about Hawley's environmental programing

Raised garden bed program at Hawley

ENVIRONMENTAL PROGRAMMING

Hawley has a strong emphasis on environmental programing and is backed by a committed Green Team. Environmental programming includes recycling, year-round outdoor focused field trips, Green and Healthy Schools engagement, raised bed gardens, native landscaping, etc.

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CONCEPTUAL REDEVELOPMENT PLANS

On an annual basis, the nonprofit Reflo works through the Green Schools Consortium of Milwaukee (GSCM) to select and work with schools that are interested in conceptually redeveloping their schoolyards. Plans produced incorporate creative green infrastructure and green space that improves the social, environmental, and economic health of the school and community. With the approval of school and district administrators, Hawley applied for and was selected to receive the conceptual planning grant. Over the 2016-'17 school year, the collaborative planning effort resulted in the production of the following conceptual redevelopment plans.

Schools submitted two-page **applications** and provided verbal **presentations** to a 20-person panel representing green school stakeholder organizations from across the Milwaukee-area.

School **Green Teams** met on a monthly basis (+) throughout the school year to collaboratively develop the redevelopment plans.

Schools presented their plans and other green school efforts at the annual Milwaukee-area **Green Schools Conference.**

CONCEPTUAL REDEVELOPMENT PLANNING ORGANIZATIONS	
Reflo Sustainable Water Solutions	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.
cds	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.

Green Infrastructure Improvements:
- ~12,100 sqft of impervious surface removal
- ~2,900 sqft of native landscaping (existing gardens)
- ~700 sqft of rain garden plantings
- ~200 sqft of bioswale plantings
- 5+ stormwater trees
- 20,000+ gallon underground cistern
- Multiple arts and learning opportunities on local water resources

WEST WELLS STREET

Clean out woodchips from stormwater inlet and plumbing - replace with stormwater filter and manage woodchips around the tot lot

Green Wall

Mural on lower portion of wall

Possible Bioswale

~4,400 sq ft of asphalt removal

Existing stormwater inlets to be modified and stormwater to be diverted to trench drain to manage stormwater in the bioswales

Potential location of 2nd basketball court, if desired

~7,700 sq ft of asphalt removal

Bioswale

Asphalt Removed and Replaced with Grass Kickball Field with Underground Cistern

Two Half Basketball Courts (one existing)

Asphalt Removal and Replacement with Outdoor Classroom with mounds, trails, plantings, etc. (SEE DETAIL)

Tot Lot

Signage

Signage

Composting

Raised Bed Planters

Signage

Signage

Equipment Storage Shed

Bike Racks

Open Hardscape

Paver paths around trees

Misc. logs and other natural play equipment

Native plantings / rain garden plantings to promote infiltration of stormwater runoff from the parking lot

Green Walls (maintaining vision corners - ie no plantings on the corners of the fencing to allow for cars to see around the fence corners)

NORTH 55TH STREET

NORTH HAWLEY ROAD

Prairie Garden

Raised Bed Planters

Outdoor Classroom

Sensory Garden

Pollinator Garden

Bus Stop

Signage for Bus Stop

Underground Utility Structures

WEST WISCONSIN AVENUE

N

0 20' 40' 80'

APPROXIMATE SCALE IN FEET

Prepared by:
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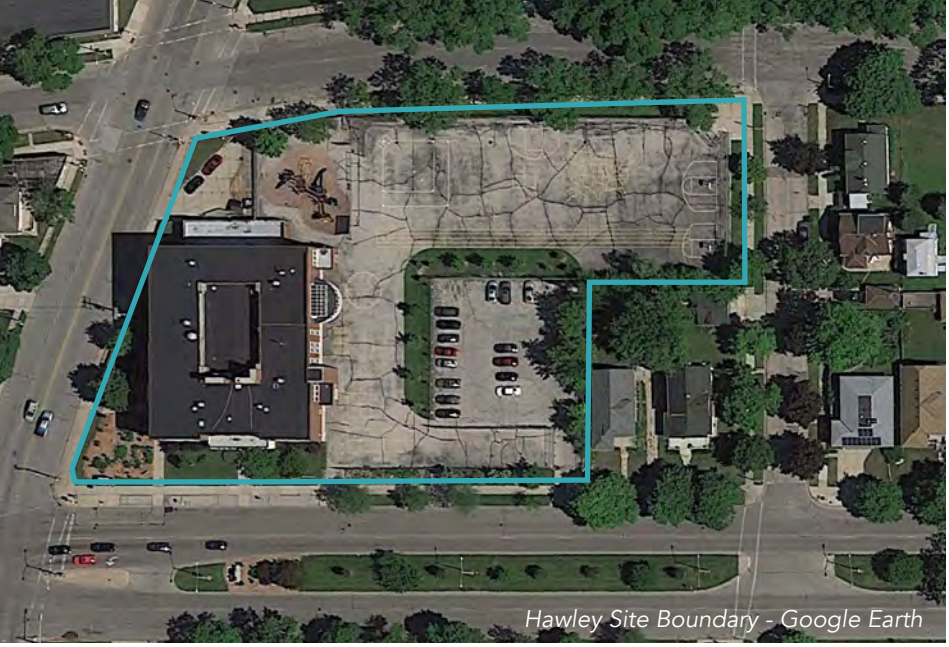
Drawing Title:
CONCEPTUAL SCHOOLYARD REDEVELOPMENT PLAN

Project:
Hawley Environmental School
5610 W Wisconsin Ave.
Milwaukee, WI

Designed By: Reflo and Hawley's Green Team
Drawn By: Justin Hegarty
Dated: 5/12/2017

Project No.
2017.Sch.06

Figure No.



Hawley Site Boundary - Google Earth

Woodchip runoff from the tot lot, clogging the surrounding stormwater inlet

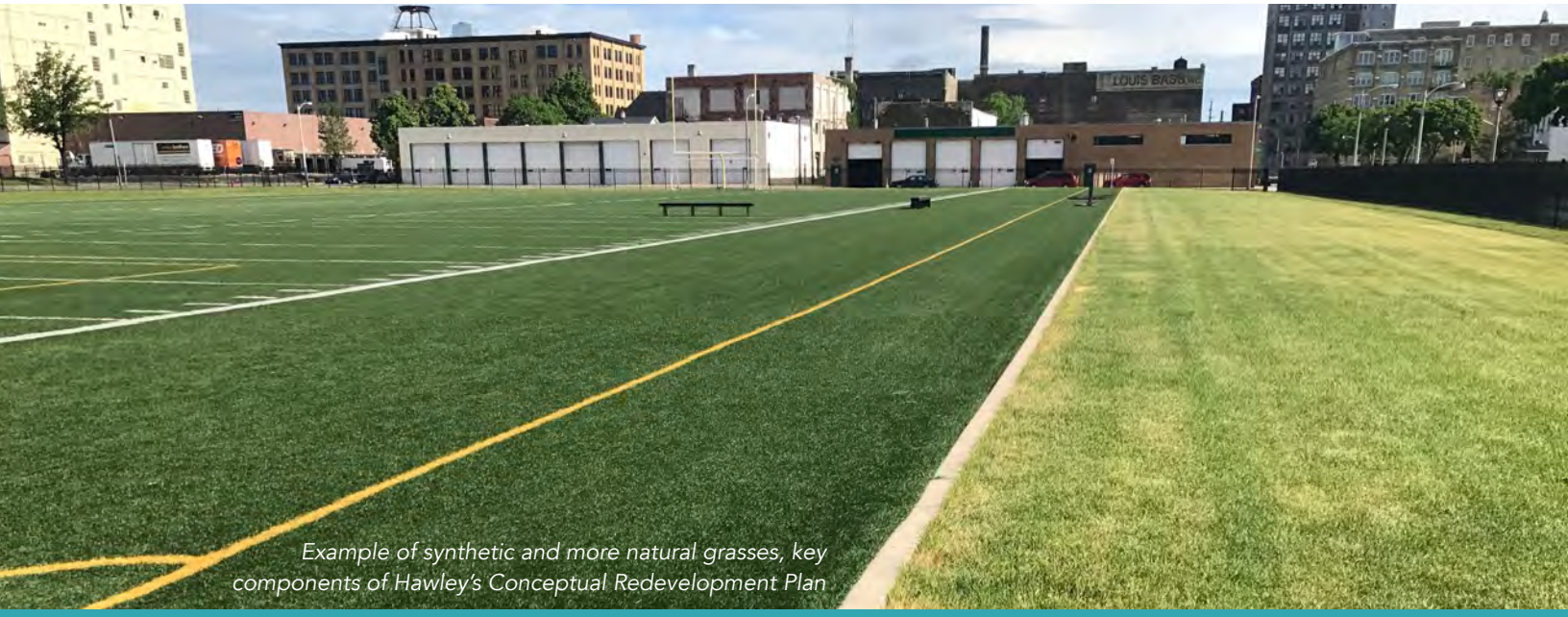
Raised garden bed planters with opportunity for expansion

The existing kickball field requires students to run over the depressed stormwater inlets

Existing schoolyard, school side entrance and 2nd floor greenhouse

SCHOOLYARD REDEVELOPMENT INTEREST

Hawley is most interested in providing a safe, healthy, and educational space for their students to learn and explore through creatively designed and inspiring green open space.



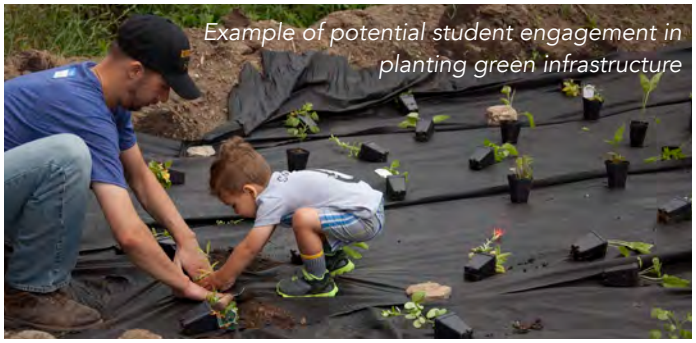
Example of synthetic and more natural grasses, key components of Hawley's Conceptual Redevelopment Plan

GREEN INFRASTRUCTURE CONCEPTUAL PLAN

Reflo Sustainable Water Solutions

Green infrastructure is a stormwater management strategy that diverts stormwater from entering the sewer system and manages stormwater where it falls through a more sustainable means, mimicking natural water systems. Green infrastructure can also serve as an opportunity for creative STEAM-based student and community engagement. Hawley's building and schoolyard currently contributes 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 including asphalt removal and replacement with permeable surfaces and natural ground cover, tree plantings, native landscaping, and an underground cistern.

The plan includes a reduction of >25% of the schoolyard asphalt, replacing it with green space and a mixed use recreation and educational space. Because of Hawley's successful gardening program, the plan also incorporates a additional raised bed planters and rain gardens. The inclusion of multiple green infrastructure components allows for student created signage throughout the school grounds. Furthermore, the planned underground cistern is intended to be artistically represented in the above kickball field so every time students run the bases they are running the dimensions of the cistern and reminded of the hidden infrastructure



Example of potential student engagement in planting green infrastructure

Example of student engaged arts and touring activities of green infrastructure - picture taken at Milwaukee Environmental Sciences Academy

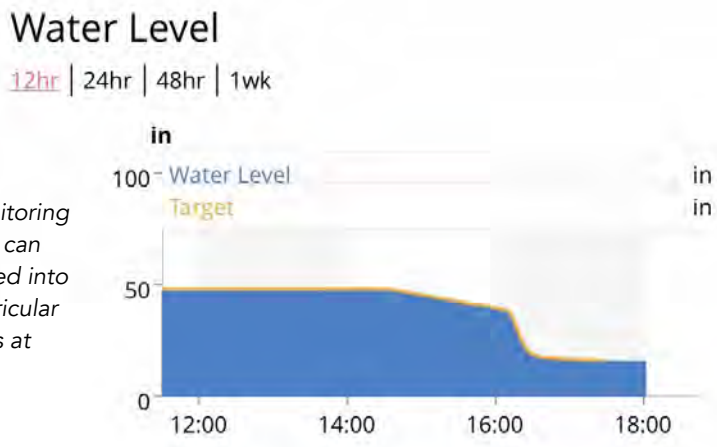
Examples illustrating the interest to include tree planting

Example of a <1 year old bioswale, complete with a water level monitoring system and passive overflow

Example of schoolyard asphalt removal, replacement with green infrastructure, and community engagement

Example of volunteer engagement in the construction of an Aquablox(R) underground cistern

Example of a trench drain to convey stormwater



Example of cistern monitoring system that can be integrated into STEAM curricular connections at Hawley

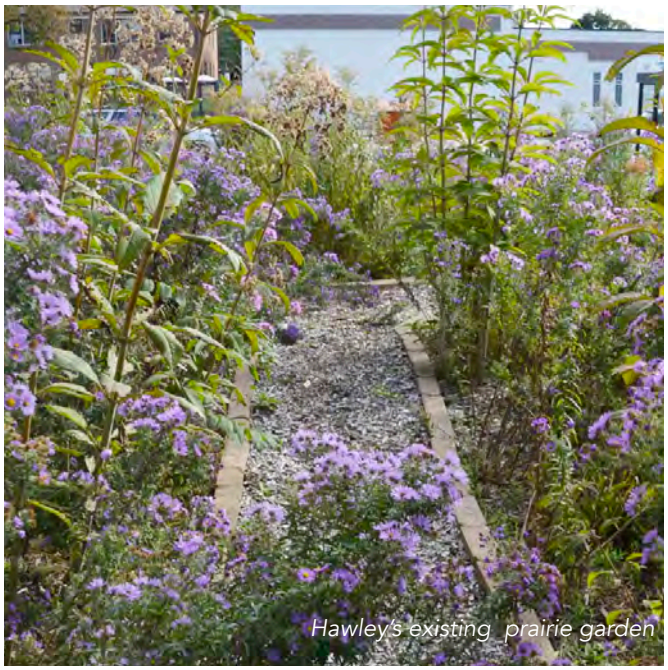
Example of raised bed planters

Rendering by CDS of Hawley's proposed outdoor classroom

OUTDOOR CLASSROOM AND RECREATIONAL PLAN

CDS proposes design details for an outdoor classroom space and play space for the area around the bioswale proposed by Reflo. This portion of the site is situated near a primary entrance to the schoolyard. The entrance looks out immediately onto a bioswale where the pathway forks into two crushed granite pathways. The first crosses the space diagonally and the other goes up along the side of the site. The rest of the space is defined by the no-mow grass which bumps out to allow for two natural seating spaces and one natural stump play space. The natural seating spaces are shaded with sun sail shades supported on vertical metal posts. Trees fill in the natural spaces and provide shade as well. CDS also considered options on how to treat a small fenced in space near the parking lot. CDS recommends using a greenwall system that has a planter base and a wire or wood frame for various plants to grow and latch onto.

Significant thought was put into the flow of students through the various spaces with special consideration for recreational activities such as soccer, tag, and pavement marking activities like foursquare. The outdoor classroom space is uniquely designed to accommodate quieter, programmed outdoor classroom activities while also serving as gross motor area during recess with seats transformed into balance beam features.



Hawley's existing prairie garden

Hawley's existing raised bed planters, to be expanded in the schoolyard redevelopment

Proposed conceptual layout of the outdoor classroom, by CDS.

crushed granite pathway (A)

sun sail shading system (B)

natural stump seating and playspace (C)

log retaining wall and bench seating (D)

Existing signage at Hawley to be expanded to include multiple exhibits / learning opportunities throughout the schoolyard

Example of student based agricultural programs at MPS schools

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PLANNED CURRICULUM CONNECTIONS

It's important that the schoolyard redevelopment include plans for actually using the redeveloped space. This section provides a high level overview of how the school plans on making the most out of the new schoolyard components and connecting the exciting redevelopment into the curriculum.

Students will have the opportunity to learn, understand and discuss academic content related to several of the components in the schoolyard redevelopment. The gardens and outdoor classroom will provide highly motivational and hands-on opportunities for young students to learn basic sequencing skills, such as the water cycle and life cycle of a plant. Older students will better understand and discuss more complex processes such as global warming and decomposition. Students of all ages will learn and use new vocabulary and concepts in ways that a normal classroom does not allow. Access to the unique ecosystems across the schoolyard will help further these skills. When students return to their families, they will be excited to express what they've learned because they will have continuous exposure to the plants, animals and insects they have experienced within their school environment, further perpetuating learning at home. Having this resource a few steps from our school doors will provide the repetition students often need to obtain and learn this valuable information.

WISCONSIN DEPARTMENT OF PUBLIC INSTRUCTION

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

MPS MILWAUKEE PUBLIC SCHOOLS

ARTS @ LARGE
Beyond Education. Beyond Expectations.

Green&Healthy Schools Wisconsin

The proposed schoolyard redevelopment will help us expand our outdoor place-based learning environment and support academic and social development. This significant improvement to our school campus and neighborhood community supports Hawley Environmental School's Vision for our students to be **"globally-minded, critical thinkers and environmentally conscious leaders."**

In 2015, Hawley's Environmental Implementer was invited to the White House to receive the Presidential Innovators Award for Environmental Education from the Environmental Protection Agency (EPA)

ACADEMIC DEVELOPMENT

The conceptual design, including the cistern and outdoor classroom, will allow us to better meet the needs of our students in the following academic areas:

- Social Studies / Career Readiness
- Science, Technology, Engineering and Math
- Writing and the Arts

SOCIAL DEVELOPMENT

The diverse recreation areas will allow more opportunities for developing social skills in the following areas:

- Recreation and motor skill development
- Social Emotional learning
- Cooperative learning, communication and play skills
- Mindfulness & self-regulation opportunities

The schoolyard redevelopment will impact our students' academic and social skill development. It will also connect to Hawley Environmental School's guiding principles of **Conservation**, **Preservation**, **Beautification**, and **Stewardship**.

Green School Tour in 2015 - learning about Hawley's environmental programing

5

MAINTENANCE CONSIDERATIONS

Consideration for maintenance, especially for green infrastructure, can often be overlooked. As part of the conceptual redevelopment planning process, special consideration was given to recommend easier-to-maintain features. However, many features called for in this conceptual plan require some level of maintenance. The following section provides a summary of seasonal and monthly maintenance needs for the school's new, green features. Full, more in-depth maintenance requirements will need to be developed in the project's detailed design phase.

It should be noted that generally the school's engineer/janitorial staff are responsible for additional maintenance needs. However, some maintenance activities such as weeding, debris pickup, inspection of plant health, crop harvesting, watering, etc. can provide an opportunity to further engage faculty, students, and the surrounding neighborhood in school activities and outdoor learning.

Well-maintained green infrastructure and playspaces can help reduce the potential need for costly repairs and/or replacement.

Permeable Pavement and Porous Synthetic Turf

Ongoing/Monthly Considerations:

- Debris and sediment washing into pavement pores can lead to clogging—monthly inspection is recommended to monitor pavement function and identify the source of any clogging.
- Depending on the pavement and installation, chipping can occur - monthly inspection can help identify areas of high wear or heaving and can prevent debris build-up and/or trip hazards.

Seasonal/Annual Considerations:

- Periodic vacuuming of the pavement pores using a vacuum truck will be necessary to minimize clogging.

Raised-Bed Gardens and Native Plantings

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.

Tree Plantings

Ongoing/Monthly Considerations:

- Newly planted trees (first few years) will require protection from children wanting to play around them—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. Tree litter may not need to be actively managed. However, depending on amount of tree litter, it may need to be disposed of or composted.

Rainwater Cisterns/Storage

Ongoing/Monthly Considerations:

- Rainwater harvesting systems can become complex and may require site specific strategies; however, monthly inspection is typically recommended to remove debris, prevent stagnated water, and confirm that the cistern is draining as intended.

Seasonal/Annual Considerations:

- Most cisterns need to be drained in late fall to prevent winter freezing water damage. Then in spring, cisterns will again need to be adjusted to accept rainwater.

Asphalt Removal

Ongoing/Monthly Considerations:

- Depending on the groundcover replacement such as grass, wood chips, permeable pavement, etc., the replacement may require additional maintenance such grass cutting, wood chip 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.

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FUNDRAISING TARGETS

An important component of the conceptual planning effort was to develop plans that were 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 actually 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.

Most schoolyard redevelopment projects occur in phases over multiple years to allow for ongoing fundraising efforts.

A successful strategy is to develop a segregated schoolyard redevelopment account and/or school foundation that can assist with managing larger ongoing contributions.

CONCEPTUAL REDEVELOPMENT PLAN FUNDRAISING TARGETS

	Apx. Fundraising Targets	Apx. Inkind Contribution
Green Infrastructure		
Asphalt removal, sawcutting, etc.	$ 36,000	
Soil, grass, and woodchip re-surfacing	$ 20,000	
Kickball field, grass replacement	$ 15,000	
Rain Garden Plantings	$ 5,000	$ 1,500
Trench Drain and Bioswale soils and plantings	$ 20,000	$ 2,500
(potential) underground cistern	$ 60,000	$ 5,000
Survey, Detailed Design and Permitting	$ 25,000	
Detailed Design and Permitting for potential items	$ 15,000	
Education and Outreach		
Project Coordination		$ 10,000
Continued Reflo Support	$ 7,500	$ 7,500
Project Signage	$ 5,000	$ 2,500
Arts Programing		$ 10,000
Demonstrations, Workshops, Tours		$ 2,500
Water Focused Curricular Activities	$ 10,000	
Vegetation Establishment	$ 5,000	$ 5,000
Green Infrastructure Subtotal	***$ 223,500***	***$ 46,500***
School Garden/Planting Developments		
Planter boxes for southern outdoor classroom	$ 5,000	$ 1,500
Maintenance for plantings		$ 2,500
School Garden/Planting Developments Subtotal	***$ 5,000***	***$ 4,000***
Recreational Developments		
Natural play equipment - logs, stumps etc.	$ 7,500	
Paths (assuming short tree stumps)	$ 5,000	
(optional) turf running lanes for the Kickball field	$ 15,000	
Recreational Developments Subtotal	***$ 27,500***	***$ -***
Educational Developments		
Outdoor Classroom (north east)		
Shade structures	$ 15,000	
Plantings and seating	$ 7,500	$ 1,500
Pathways	$ 5,000	
Outdoor Classroom (south)		
Outdoor classroom materials	$ 2,500	
Seating	$ 2,500	
Educational Developments Subtotal	***$ 32,500***	***$ 1,500***
Other Site Improvements		
Storage Shed	$ 10,000	
Existing stormwater inlet debris removal	$ 10,000	
Installing edging to prevent additional debris	$ 5,000	
Other Site Improvements Subtotal	***$ 25,000***	***$ -***
Total Estimated Fundraising Targets:	***$ 313,500***	***$ 52,000***

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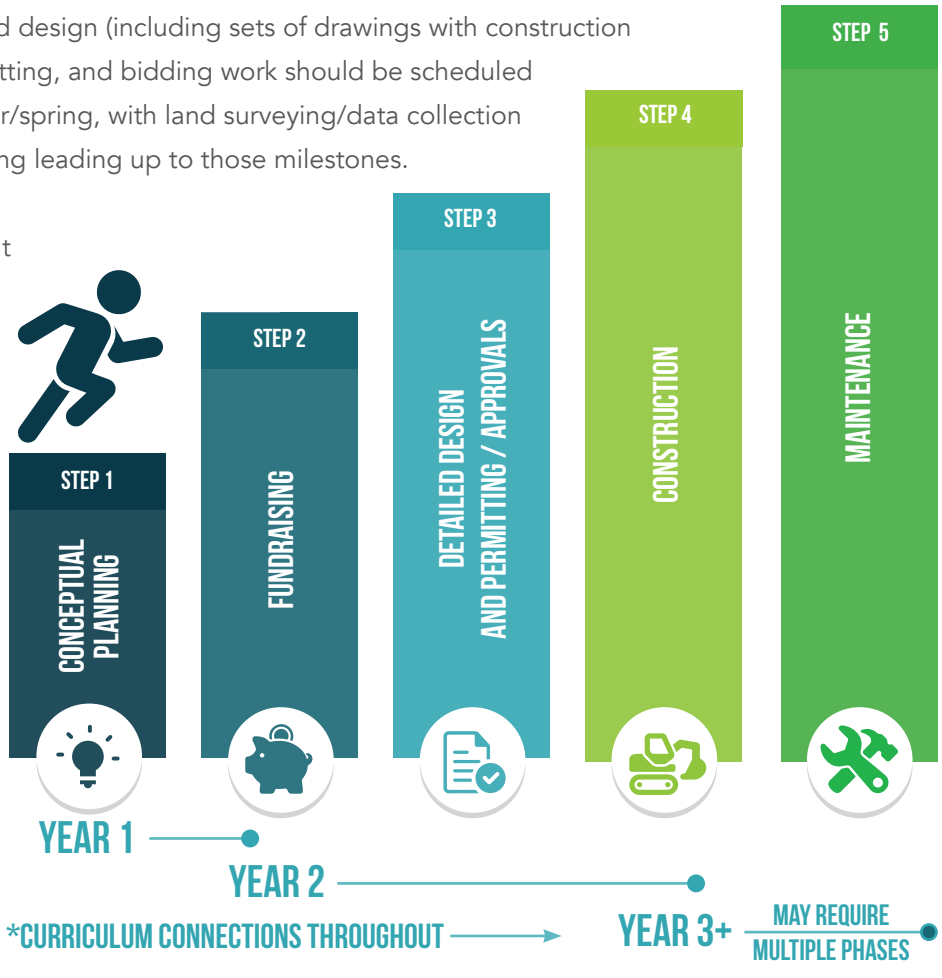
PROJECT TIMELINES AND NEXT STEPS

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

Construction season in Wisconsin typically runs from late April through November; however, most school construction takes place over summer when students are not in regular session. Generally with construction at schools taking place over summer months, detailed design (including sets of drawings with construction details, dimensions, and quantities), permitting, and bidding work should be scheduled to be completed over the preceding winter/spring, with land surveying/data collection occurring the preceding fall, with fundraising leading up to those milestones.

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.

Additional support for greening schools in the Milwaukee area can be found at the Green Schools Consortium of Milwaukee's (GSCM) website: www.gscm.refloh2o.com



ADDITIONAL RESOURCES

Green Schools Consortium of Milwaukee

Local network of green school practitioners, funders, and supporting agencies. Bi-monthly meetings, an annual conference and multiple local grants and resources can be found at: www.gscm.refloh2o.com

Reflo's Educational Page

Compilation of various water-related curricular connections including the Resource Replication Guide: Green Infrastructure for Milwaukee-Area Schoolyards: www.refloh2o.com/educational-resources/

Milwaukee Metropolitan Sewerage District

Grant opportunities and a guidebook on green infrastructure for schools: www.mmsd.com

Green and Healthy Schools Wisconsin

Compilation of green school curricular connections and a guidebook on: Growing a Green and Healthy School: www.ghswisconsin.org

Children in Nature Network

National green school news, training, and research (source for infographics used in this document's introduction): www.childrenandnature.org/learn/research/

U.S. Green Building Council - Center for Green Schools

National green school research, articles, project examples, and lesson plans. Connection to the LEED accreditation program and Green Apple Day of Service: www.centerforgreenschools.org/green-school

Green Schoolyards America

Green school research, policy, activity guides, and case studies: www.greenschoolyards.org

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