



Resilient San Carlos Schoolyards

Final Grant Report

March 16, 2023

Acknowledgments

The creation of the Resilient San Carlos Schoolyards project was fully funded by the 2020 California Resilient Challenge Grant Program administered by the Bay Area Council. The City/County Association of Governments of San Mateo County was the grantee and project manager. The overall project vision and goals were created with representatives from several agencies who are referred to as the Project Team, with leadership from San Carlos School District as the primary community partner. The development of each site's Resilient Schoolyard Concept Plan was created with school community members (including principals, teachers, parents and teachers) and overseen by the schools' Stakeholder Advisory Committees who acted as ambassadors for each project site plan and community engagement process. The deliverables throughout the project were developed by the Consultant Team, led by BayTree Design, who worked closely with the Project Team and the school communities to develop Resilient Schoolyard Concept Plans for each school site.

Executive Summary

The Resilient San Carlos Schoolyards (RSCS) Project is a precedent-setting project in San Mateo County, which comes at a time when addressing climate resilience is increasingly urgent and vitally important to incorporate into all planning efforts. The focus on schoolyard resilience planning provides a critical opportunity to incorporate schools, often an important and overlooked application for greening, into the broader efforts in our communities to reduce the impacts of climate change with respect to less frequent but larger storms, periodic drought, high heat and water quality degradation. The RSCS Project was developed for the San Carlos School District (SCSD) in partnership with the City/County Association of Governments of San Mateo County (C/CAG) under the Bay Area Council's California Resilience Challenge Grant Program. The RSCS focuses on the opportunity to transform the ecological function of asphalt schoolyards through seamless integration of child-compatible green infrastructure.

The five tasks of the project were:

Task 1 - Project Initiation and Vision included developing the goals and selecting the sites;

Task 2 - Stakeholder Engagement encompassed all school community input prior to and during the creation of the concept plans to understand the communities, uses, and desires for each site;

Task 3 - School Site Surveys comprised developing base maps of each site and studying the physical elements of each site and its relationship to its watershed;

Task 4 - Resilient Schoolyard Concept Plans incorporated the information from the first three tasks to develop comprehensive concept plans for each site;

Task 5 – The Final Report is the record of the previous four tasks and a guide for next steps.

Each of these tasks built on the previous tasks with the culmination being an engaged community, campus-wide resilient schoolyard concept plans that can support fundraising and implementation.

With the completion of this report the next steps to bring the concept plans to life include fundraising, technical drawings, permits, and construction at each site. Beyond construction, resilient schoolyards featuring green stormwater infrastructure must also be properly maintained to ensure durable and lasting benefits to schools and school communities. The RSCS report provides guidance and resources to help the SCSD and sites grow their resilient schoolyard programs into complete and sustainable programs backed by the necessary stewardship and maintenance practices. To support achievable implementation given time and resource constraints, this report recommends that elements within each plan may be developed separately via sequential grants or as part of SCSD Bond or Modernization processes. This multi-year process will require significant and dedicated engagement from the school communities.

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1. Key Personnel

City/County Association of Governments of San Mateo County | Project Manager/Grantee
Staff to the San Mateo Countywide Water Pollution Prevention Program, a program of the City/County Association of Governments of San Mateo County, led the Resilient San Carlos Schoolyards project grant administration and project management in partnership with the San Carlos School District and community partners.

Bay Tree Design | Lead Author

Bay Tree Design is a woman-owned landscape architecture firm that was established in 2007 to create landscapes that simultaneously optimize ecological sustainability and community quality of life in pioneering landscape genres such as green schoolyards, urban farms, and age-in-place campuses. Bay Tree Design led the development and execution of the grant deliverables with a consultant team including Green Schoolyards America and Lotus Water.

Project Team

Reid Bogert, Senior Program Specialist, C/CAG, Grant Manager and Project Lead
Dr. Jennifer Frentress, Superintendent, San Carlos School District
Hans Barber, Assistant Superintendent, San Carlos School District
Christine Gong, Chief Financial Officer, San Carlos School District
Eric Chiu, Director of Facilities, Maintenance and Operations, San Carlos School District
Ilana Yakubovich, Director of Health and Wellness, San Carlos School District
Andra Yeghoian, Environmental Literacy and Sustainability Coordinator, San Mateo County Office of Education
Vatsal Patel, Senior Engineer, City of San Carlos
Adam Lokar, Senior Sustainability Analyst, City of San Carlos
Elizabeth Wada, Associate Civil Engineer, City of Belmont

Stakeholder Advisory Committee | Arundel Elementary School

Jennifer Gaboury, Principal Arundel
Ray Turner, Custodian Arundel
Carrie Moreci, Arundel 2nd Grade Teacher, Parent
Julie Polati, Arundel Kindergarten Teacher
Erin Granados, Arundel Kindergarten Teacher
Becky Quigley, Parent, PTA co-president, Each Green Corner Program Coordinator
Cindy Tsang, Parent
Adrienne Ancheta, Parent
Ellen Hohbach Scheetz, Parent

Stakeholder Advisory Committee | Mariposa Elementary School

Theresa Fox, Principal, Mariposa

Stephanie Brickman, Mariposa Teacher
Sarah Koh, Mariposa Teacher
Michele Lago, Parent, PTA President

Stakeholder Advisory Committee | Tierra Linda Middle School

Kristen Ugrin, Principal, Tierra Linda
Charu Gulati, Assistant Principal, Science Teacher, TLEC (Enviro Club)
Leader/Advisor/Founder
Christina Morrison, Science Teacher, SMELC fellowship, Parent
Nicholas Negro, Math and Science teacher
Ella Painter, History Teacher, TLEC (Enviro Club) Leader/Advisor
Natalie Carbone, PTA Board Secretary
Margaret Marshall, Tierra Linda School Site Representative
Sonya Rowen, Parent, Each Green Corner
Becky Quigley, Each Green Corner Program Coordinator
Shreya Chandrasekar, 7th grade student and TLEC member
Soren Hillesland, 7th grade student and TLEC member
Yashvi Shah, 7th grade student and TLEC member
Shrada Sivaraman, Parent Sean Westcott, Parent, 7th grade students TLEC member

Community Engagement Participants

All Students of Mariposa Upper Elementary
All Students of Tierra Linda Environmental Club (TLEC)
Naomi Stern, San Mateo County Office of Education
Cindy Matsuyama, Administrative Assistant, San Mateo County Office of Education
Jennifer Pellegrine, Executive Director, San Carlos Learning Center

Consultant Team

Bay Tree Design Landscape Architecture, Community Facilitation, and Living Schoolyard Experts

Lisa Howard, Principal
Willa Caughey, Associate Aurore
Develay, Associate Maya Ito, Associate
Agathe Danzanvilliers, Associate
Beth Brannigan, Designer Kendra Christensen, Student Intern

Lotus Water

Civil Engineers and Stormwater Experts

Rob Dusenbury, Principal
Terrence Ngu, Landscape + Natural Systems Designer

Green Schoolyards America

Living Schoolyard Experts and District Strategists

Sharon Danks, CEO and Founder
Rachel Pringle, Director of Operations and Strategy

2. Problem Statement

Schools provide a significant opportunity for integrating green stormwater infrastructure into the urban landscape in San Mateo County due to their large parcels and overall levels of imperviousness that generate significant stormwater runoff and are more susceptible to heat impacts, especially for younger students. By creating resilient schoolyard concepts, C/CAG and the SCSD are helping advance resilient schools that capture, use, infiltrate, and clean stormwater runoff for water quality, while reducing heat island impacts through increased tree canopy and vegetation in San Mateo County but also for other school districts and sites throughout California.

Overarching goals of the Resilient San Carlos Schoolyards Project include supporting participatory engagement in the schoolyard greening planning process and effectively integrating climate resilience and green stormwater Infrastructure with campuswide planning for water quality, environmental and student health and learning benefits. A core aspect of the RSCS approach linking these goals, is demonstrating how green elements can help protect schools and students from weather extremes, especially increased precipitation, high heat and drought.

3. Project Description

The Project team worked collaboratively to develop each milestone and deliverable from visioning to site selection and evaluation to community engagement and developing the Resilient Schoolyard Concept Plans and Report. Specifically, the Project Team set out to:

1. Define what a Resilient Schoolyard is;
2. Create a vision and goals to achieve resilient schoolyards for the District;
3. Design a clear and objective process for site selection based on set quantitative and qualitative resilient schoolyard metrics;
4. Develop a participatory school community engagement process to integrate school stakeholder input into the design process three sites (Arundel Lower Elementary School, Mariposa Upper Elementary School, and Tierra Linda Middle School);
5. Provide Resilient Schoolyard Concept Plans that are both unique to the SCSD but could be replicated in other school districts.

The Project Team was comprised of a multi-agency group (representatives from SCSD, C/CAG, the Cities of San Carlos and Belmont, and the San Mateo County Office of Education) with shared regional interests on climate adaptation with respect to stormwater management and capacity to help with future investments. The Stakeholder Advisory Committees (SACs) facilitated the participatory design process and prioritize near term site improvements for each school.

4. Project Results

Actual outcomes

The outcomes of the RSCS Project included a multi-part process to establish and complete the initial planning for three Resilient School Sites in the San Carlos District:

1. Project Initiation and Vision
 - Project Team (PT) formation and brainstorming
 - Informational interviews
 - Vision and goals developed with PT
 - Guiding principles developed with PT
 - School site studies of all sites in District
 - Site selection
2. Stakeholder Engagement
 - Curriculum integration session with District staff
 - Stakeholder Advisory Committee (SAC) formed for each school
 - Brainstorming session with each school community
 - Student workshop with each school
 - Dedicated Resilient San Carlos Schoolyards website - <https://www.flowstobay.org/preventing-stormwater-pollution/in-my-community/schoolyard-greening/resilient-san-carlos-schoolyards/>
3. School Opportunities and Constraints
 - Develop base map for each site
 - Conduct site analysis
 - Walk the site at each school with each SAC
4. Resilient San Carlos Concept Plans
 - Draft concept plan
 - Workshop review with SAC Final concept plan
5. Report
 - Draft report
 - Meeting review with SAC
 - Final report

The tools and resources developed as part of this project are intended to be available and accessible to other agencies and school districts advancing schoolyard resiliency efforts, in

particular, the Vision and Goals document, Guiding Principles for Resilient Schoolyards, Site Study Analysis, the Student Design Workshop resources and Curriculum Integration Guidance. These resources are included in the text of the report and/or as appendices to the report.

Barriers encountered

The primary barriers encountered in the RSCS Project were related to ongoing challenges for the San Carlos School District and sites in managing COVID-19 and associated impacts on staffing and school resources. The initial intent of the project was to have in-person community engagement sessions, including initial meetings with district administrative staff and site leaders as well as to support the full participatory design process with school community groups and stakeholders. Due to site and staff constraints, the Project Team shifted to full remote meeting and engagement, with the exception of one in-person Student Design Workshop at one of the schools and School Stakeholder Advisory Committee site walkthroughs, which were originally not planned for and scoped as part of the project proposal, but were deemed necessary for having the level of input needed from site leaders on resilient schoolyards project priorities. Though the in-person engagement was forfeited, which may have in some ways limited the breadth and/or depth of engagement among school communities, resorting to online meetings was supportive of the overall desire from the School District and the site leaders to reduce the meeting burden and limit the time and resources required of staff to provide input on this project. Meeting remotely and reducing the overall number of planned meetings, allowed for the district staff and site leads to attend as available and to provide input on the most important elements of community engagement. As a result of limited opportunities to engage and the additional time needed to coordinate schedules for meetings that aligned with the school calendar, the project ended up spanning one and a half school years. Ideally this planning effort should happen in one school calendar year to support consistent student body/teacher/administrator engagement and buy-in.

External Factors

External factors during the project included managing for COVID-19 impacts on schools and district staff resources, as well as the San Carlos School District staffing transitions and planning processes that coincided with the project. At the outset of the grant award and prior to kick-off the Project Team Meetings, the District was in the process of hiring a new Superintendent, Facilities Director and Wellness Director, each of which would be pivotal to the success of the proposed Resilient Schoolyards program in San Carlos. The project was slightly delayed due to this hiring process and there was a need ultimately to have two “kick-off” meetings to ensure all relevant parties were involved and up to speed from the start of the project to finish. Once staff were hired, the project was executed without significant challenges in schedule or deliverables, with the exception of minor project scope amendments to better accommodate the remote meeting setting and process of engagement with the school communities. The School District coincidentally was also in the process of initiating its Facilities Master Plan during the same timeframe as the RSCS project. This was subsequently a very valuable alignment, as an ultimate outcome of the project was to support working with the School District to integrate the RSCS Resilient Schoolyard Concept Plans into the Master Planning process.

Participating Stakeholders

Participating stakeholders on the project for each school included a full range of school representatives from the site Principal, to teachers and staff, to students, to family members, and Non-Profit Organization volunteers. The stakeholder group also included members from the County Office of Education Eco-Literacy Program.

Lessons for other communities considering similar projects

The process of establishing and advancing a Resilient Schoolyards program in any school district is inherently going to be in iterative and challenging process because in most cases it will require new institutional structures to be developed across departments and within or across public agencies (including potentially new partnerships with other public agencies like local municipalities, flood control districts, water providers, etc., as well as non-profit partners, such as community gardens groups, urban forestry organizations, climate resiliency organizations and others). This shift in perspective, programming, planning and implementation can take years and will necessitate strong leadership and champions at all levels and across entities. Bringing in green stormwater infrastructure components adds another important layer of facilities management at schools, which is integrating and adapting site maintenance activities to ensure green elements are properly stewarded in perpetuity to maintain their intended resilience and water management benefits. Additionally, school districts and sites have their own long-standing facilities planning and modernization processes that operate according to internal policies, which also may need to be addressed to fully account for and effectively integrate climate resilience in a proposed resilient schoolyards program. The following provides key lessons learned and take-aways from this project to help inform future Resilient Schoolyard program developments in other communities:

- If partnering with agencies or organizations outside of a school district, have clear expectations for roles and responsibilities on different aspects of the planning effort and for what level of engagement is appropriate for school district and site staff.
- If working at a district scale, propose an overarching quantitative/qualitative site evaluation and assessment process at the project outset, including interviews with site leadership to help identify and prioritize sites for advancing planning work, especially if resources are limited.
- Maintain flexibility for school engagement to allow for appropriate and timely integration with the project (i.e., time student design workshops with teacher/curriculum schedule) and plan coordination meetings around typical/site specific school schedules.
- Core Project Team should include reps from key partner entities, as well as the Superintendent, and director staff representing facilities, business administration, finance from the School District; potentially could include site administration leadership/champions though these representatives could participate in stakeholder groups.
- Set clear goals for the scope of the project and ensure project partners, especially school district and site leaders are aware of planning efforts vs. implementation and what the proposed timeline and phases for full implementation might look like.

- Identify early on in the project opportunities to integrate resilient schoolyards planning with other district or site policies and programs (i.e., master planning, sustainability initiatives, etc.)
- It is helpful to have a website to refer community partners and engagement audience to develop the project and promote the overall program.
- Clearly articulate how projects should or might be constructed in phases and identify high likely and high priority funding strategies.
- Support long-term vision of advancing and maintaining resilient schoolyards by promoting ongoing focused engagement with site Stakeholder Advisory Committees and developing tools and resources to support actual stewardship and maintenance of facilities once constructed.

5. Next Steps

With the completion of the RSCS Project, the next steps to bring these plans to fruition include advancing through the multi-phase Resilient Schoolyard program design (shown below), including fundraising, technical drawings, permits, and construction at each site. Beyond construction, resilient schoolyards featuring green stormwater infrastructure must also be properly maintained to ensure durable and lasting benefits to schools and school communities. The RCSC Report provides guidance and resources to help the SCSD and sites grow their resilient schoolyard programs into complete and sustainable programs backed by the necessary stewardship and maintenance practices for long-term success. To support achievable implementation given time and resource constraints, this report recommends that elements within each plan may be developed separately via sequential grants or as part of SCSD Bond or Modernization processes. This could be a multi-year process will require significant and dedicated engagement from the school communities. The proposed overarching strategy and sequential process for developing Resilient Schoolyards in San Mateo County is shown in the graphic below. The project partners, including C/CAG and the County Office of Education, plan to continue to advance this model of scaling Resilient Schoolyards in collaboration with other interested School Districts throughout the county in coming years. Ideally, a pilot funding program would be established to create a pipeline of districts and sites to move through the planning and implementation process.



Phasing diagram from ideas to implementation, with continued engagement from schools, District and partner agencies and organizations.

6. Appendices

For reference, the complete Resilient San Carlos Schoolyards Report is provided via the link below to C/CAG's Countywide Water Pollution Prevention Program outreach website, www.flowstobay.org. The full project development process and associated project resources, including video presentations and workshops/materials are also available on the project website.

Resilient San Carlos Schoolyards Project Website - <https://www.flowstobay.org/preventing-stormwater-pollution/in-my-community/schoolyard-greening/resilient-san-carlos-schoolyards/>