Phase 7

Scope 7: Targeted Local Outreach for Green Infrastructure in Vulnerable Areas

May 27, 2022

Skeo conducted the following tasks in close coordination with the Technical Project Lead and local representatives from the pilot areas to incorporate comments and finalize all four community reports. The reports include a summary of the GI Workshops and future implementation discussions; illustrative design concepts, menu of GI options, next steps, and funding options to support potential implementation.

- Incorporate comments and develop final report City of Cambridge
- Incorporate comments and develop final report for City of Williamsport
- Incorporate comments and develop final report for Upper Mattaponi Tribe
- Incorporate comments and develop final report for Mattaponi Tribe
- Finalize spreadsheet summarizing funding options for implementation
- Finalize summary presentation of TOGI pilot project for GIT lead

The following materials are attached to validate this work:

- City of Cambridge final report
- City of Williamsport final report
- Upper Mattaponi Tribe final report
- Mattaponi Tribe final report
- Funding option spreadsheet
- Final TOGI summary presentation

TARGETED OUTREACH FOR GREEN INFRASTRUCTURE

Cambridge, Maryland

Chesapeake Bay Program
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THE CITY OF CAMBRIDGE · MARYLAND · 1684

CONTENTS

Acknowledgments

The TOGI project team acknowledges the contributions of all those who participated in this planning effort.

TOGI Project Team

- Chris Guy, U.S. Fish and Wildlife Service & Chesapeake Bay Program
- Briana Yancy, U.S. Environmental Protection Agency
- Katlyn Fuentes, Chesapeake Research Consortium
- Alisa Wilson, Skeo Solutions
- Catherine Brown, Skeo Solutions
- Marissa Sperry, Skeo Solutions

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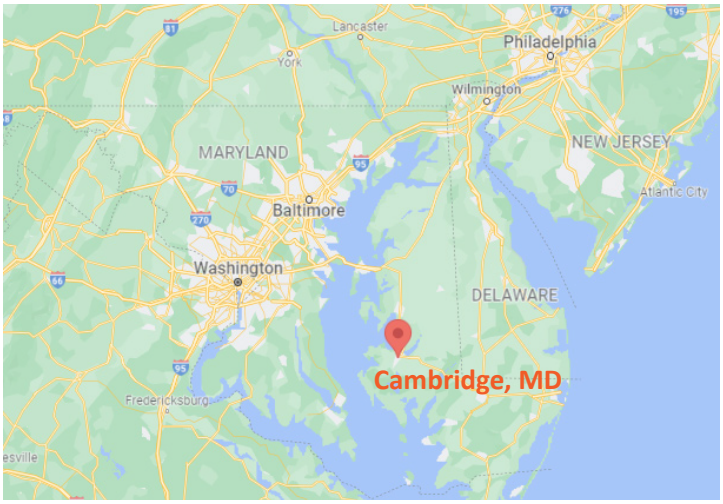
Targeted Outreach for Green Infrastructure in Vulnerable Areas Project

Overview

Many communities are adopting green infrastructure as a strategy to manage stormwater, improve water quality, add habitat and provide community benefits such as open space, pedestrian safety, shade and beautification. The Targeted Outreach for Green Infrastructure in Vulnerable Areas (TOGI) is a pilot project being led by the Chesapeake Bay Program Habitat Goal Implementation Team. The goal of this pilot project is to work with communities in the Chesapeake Bay watershed to design green infrastructure projects that meet both community and habitat conservation goals.



Cambridge is located on the Eastern Shore of Maryland.

Areas within the City of Williamsport, Pennsylvania; Middle Peninsula, Virginia' and Cambridge, Maryland were selected as areas susceptible to climate change within the Chesapeake Bay watershed that could benefit from green or nature-based Infrastructure projects. These communities also met criteria for diversity, equity, inclusion and justice based on income and demographic data.

The process included listening sessions to help identify local opportunities where climate change problems can be addressed through green infrastructure options, while also helping to meet community needs. Following the listening sessions, a design workshop was held to develop a preliminary design concept for a community-identified project. The outcome is a design concept for the selected project and assistance in identifying implementation funding.

Cambridge, Maryland

A Cambridge Steering Committee was formed to guide the process and included local, state and federal, government staff as well as representatives from regional and local environmental and community organizations. The Steering Committee helped identify and engage local stakeholders and identify resources and opportunities to refine the design and construct the project.

The outcome is a green infrastructure design concept that can serve as a catalyst to help the city move forward with broader community engagement and grant applications for implementation. The design concept is anticipated to evolve as more information becomes available through the site design process and additional community input.

CAMBRIDGE STEERING COMMITTEE

- Lejan Cephas - President Commissioner, City of Cambridge
- Pat Escher, Charlene Shaw - City of Cambridge, Planning
- Jermaine Anderson, Adrian Holmes - Alpha Genesis CDC
- Minnie Woods - Cambridge Resident
- Matt Pluta - ShoreRivers
- Bhaskar Subramanian, Carrie Decker, Wesley Gould - MD Department of Natural Resources
- Breck Sullivan - Chesapeake Bay Program
- Wendy O'Sullivan, Britt Slattery - National Park Service, Chesapeake Office
- Dan Murphy, U.S. Fish and Wildlife Services
- Julie Reichert-Nguyen, Lauren Taneyhill - National Oceanic and Atmospheric Administration

PLANNING PROCESS

Listening Sessions and Workshop

At the listening session held on Wednesday, May 5, 2021, participants discussed community needs and priorities, challenges and opportunities, relevant community initiatives, and helped to identify potential areas of collaboration. A range of projects were identified including Leonards Lane; Water, Pine, and Cedar Street neighborhoods; Sailwinds Waterfront, and Cannery Park. A second listening was held to discuss these options in more detail. During the second listening session, participants selected the city owned property on Leonards Lane as the focus for the project. The community's vision for this space is to establish a park for the neighborhood to enjoy.

Leonards Lane is city owned property located in a residential area near the intersection of Leondards Lane and Hudson Road.

The listening session helped to establish goals and needs for the proposed park including green infrastructure strategies to help alleviate site stormwater issues and introduce a variety of amenities, recreation opportunities, education and wellness elements. The listening session was followed by a design workshop to develop a design concept for the vacant property and discuss implementation opportunities.

INVITED STAKEHOLDERS

Many community leaders and organizations shared input about the community's needs, priorities and resources to guide the project. The following people were invited to participate in the listening sessions and design workshop.

- Adrian Green Holmes, Jermaine Anderson, Joseph Manokey - Alpha Genesis CDC
- Alan Girard - Chesapeake Bay Foundation
- Amanda Fenstermaker - Dorchester Tourism
- Ameatria Johnson, Nancy Jackson - Residents of 2nd Ward
- Avis Bell, Karen Lynn Bell - Advanced Resiliency Consultants
- Bhaskar Subramanian, Carrie Decker, Wesley Gould - MD Department of the Environment
- Bobbi Ennels
- Breck Sullivan - Chesapeake Bay Program
- Brent R. Jett
- Charmaine Brown - The Mortgage Bankers Association
- Dan Murphy - US Fish and Wildlife Services
- Jeanne Elliott
- Jennifer Dindinger - UMD Sea Grant Extension
- Jennifer Starr - Alliance for the Chesapeake Bay
- Jerry Burroughs - City Planning Department
- Jody Couser - Maryland Commission of Climate Change Education
- Joe Kelley - Frederik County Trails Coordinator
- Johnny Shockley - Blue Oyster Environmental
- Julie Reichert-Nguyen, Lauren Taneyhill - NOAA
- Kathy Burtman - Waugh Chapel Community Garden
- Katie Walker - Chesapeake Conservancy
- Kimberlee Drake - Maryland Department of the Environment
- Larry White - Consultant Engineer
- La-Shon Foster - Former Commissioner
- Lejan Cephas, President Commissioner and Jameson Harrington, Ward 3 Representative - City of Cambridge
- Linda Harris - Harriet Tubman Museum and Education Center
- Linda Walker
- Lisa Wool - Nanticoke River
- Lynette Wongus - Black Heritage and Culture Group
- Marcos Garcia
- Matt Pluta - Shore Rivers
- Pat Escher, Charlene Shaw, Jeannie Bellina, George Hyde - City of Cambridge
- Rhodana Fields - Habitat Choptank
- Susan Casey - State of Maryland
- Wendy O'Sullivan, Britt Slattery - National Park Service, Chesapeake Office

Site Conditions

The 6.2 acre city-owned property on Leonards Lane is located within a residential area that lacks community park amenities and sidewalks along major pedestrian routes. The property is relatively flat and includes a drainage area that runs diagonally through the property. The primary soil type on the property is Othello Silt Loam and has poor drainage. Addressing stormwater management provides environmental and community benefits.

The area receives full direct sunlight and has an existing parking area and access off Leonards Lane. The property also has a "paper street" (or right of way) on the northern side that connects Greenwood and Leonards Lane.

Previously, the area was used as a dredge disposal site when the city marina was expanded in 2006. Trash and recycling were available on the property until recently.

Leonards Lane lacks sidewalks. Safer access for residents walking to the neighborhood store at Cosby Avenue and Leonards Lane is needed.

During the design workshop, participants reviewed two design options and discussed a preferred alternative which was developed further into a design concept described on the following page.

Leonards Lane (parcel #2342) is a large vacant city-owned property that can help address stormwater management and support a range of amenities.

CONCEPT PLAN

Concept Plan

This concept plan illustrates amenities and green infrastructure features (see numbered features) for Leonards Lane Park

The Leonards Lane Park concept plan includes features and amenities to meet the community's needs for gathering, gardening, and passive and active recreation while enhancing the natural beauty, water quality and ecology of the site.

- Enhanced wetland garden in the drainage area that runs diagonally through the property to provide additional capacity to hold and clean water; plantings that provide habitat and aesthetic appeal; and environmental educational signage.
- Community garden space (such as raised planter boxes) conveniently located near parking with water access.
- Walking paths throughout the large site connecting the various amenities
- Improved connection to surrounding area, including a walking path connecting to Greenwood Avenue and sidewalk along Leonards Lane to the local convenience store.
- Children's playground area.
- Picnic shelter / pavilion for outdoor gatherings and events.
- Technical bike skills area that can include small ramps and obstacles for children of all ages.
- Skate park skills area with rain garden to address stormwater runoff from paved surface.
- Full size basketball court with rain garden to address stormwater runoff from paved surface.
- Multi-use recreation field for pick up sports and games.
- Memorial space to honor community members who have passed away.
- Parking with stormwater best management features to address stormwater runoff.
- Plantings throughout to provide shade, habitat and stormwater management benefits.
- Educational signage and public art to celebrate local culture and ecology.
- Plantings throughout to provide shade, habitat and stormwater management benefits.
- Educational signage and public art to celebrate local culture and ecology.

Green Infrastructure Strategies

Green infrastructure strategies use vegetation, soils and other natural landscape features to manage and treat stormwater at its source. The site's proximity to the Chesapeake Bay and existing drainage features provide an opportunity to integrate green infrastructure features as integral components of the park. The following green infrastructure strategies are keyed to the concept plan on the previous page.

1. Planted swale along Leonards Lane to capture street runoff and buffer sidewalk

2. Stormwater plantings (small rain gardens) to capture runoff from basketball court and paved skate area

3. Planted swale to capture surface water and oil from parking area

4. Low mow (6-12") areas between paths and programmed areas

5. Parking surface such as gravel (existing) or pervious pavers to reduce runoff

6. Water loving plants to absorb rain water that collects along the low lying drainage area / wetland garden

7. Pollinator and native plantings to infiltrate rain water flowing toward swale

PARK AMENITIES

Concept Plan

This concept plan identifies a range of park amenities for Leonards Lane Park

Park Amenities

1. Community garden space with water access.
2. Walking paths connecting the amenities.
3. Children's playground area.
4. Picnic shelter/pavilion for outdoor gatherings and events.
5. Technical bike skills area that can include small ramps and obstacles for children of all ages.
6. Skate park skills area.
7. Full size basketball court.
8. Multi-use recreation field for pick up sports and games
9. Memorial space to honor community members who have passed away.
10. Educational signage and public art to celebrate local culture and ecology (throughout)
11. Improved connection to surrounding area, including a walking path connecting to Greenwood Avenue and sidewalk along Leonards Lane to local convenience store.

Park Amenities

A range of park amenities have been identified to support community goals to provide a rich park experience for residents of all ages. The amenities range from community garden space, walking trails with fitness stations to active uses like basketball and skateboard features. Green infrastructure strategies are integrated into built features to capture runoff from paved areas (see previous page).

1. Community garden space with water access

2. Stormwater friendly walking paths connecting the park amenities

3. Children's playground area that incorporates natural play elements

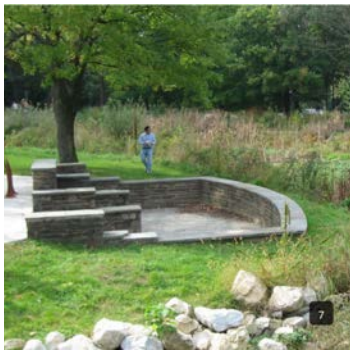
4. Picnic shelter/pavilion for outdoor gatherings and events

5. Technical bike skills area that can include small ramps and obstacles for children of all ages

6. Neighborhood scale skate park skills area

7. Full size basketball court

8. Mulit-use recreation field for pick up sports and games



9. Memorial space to honor community members who have passed away.

10. Educational signage and public art to celebrate local culture and ecology.

Preliminary Cost Estimate

The Leonards Lane Park Concept Plan includes a number of features that could be implemented all at once or phased over time. A preliminary budget below provides a range of potential costs associated with the different features and can help guide implementation discussions. Not all the features include a cost, but are included in the budget as a line item as they were noted as important features to the participants. Costs provided below are for planning purposes only. A detailed site plan is a key next step for developing a full cost estimate and phasing strategy.

Feature	Quantity	Unit	Rate ($) Low	Rate ($) High	Cost (Low)	Cost (High)
Utilities						
Water line (tap provided by city)	50	LF	$20.00	$30.00	$1,000	$1,500
Frost free hydrant w/ backflow prevention	1	EA	$3,500.00	$5,000.00	$3,500	$5,000
Electrical connection					$0	$0
Pole Lights					$0	$0
Stormwater Management						
Wetland Restoration (low) or Bioretention Swale (high) (500'x75')	37,500	SF	$2.75	$15.00	$103,125	$562,500
Rain Gardens (for park elements)	2,500	SF	$3.00	$4.00	$7,500	$10,000
Trails					$0	$0
Permeable Paved Path	3,400	LF	$4.00	$5.00	$13,600	$17,000
Soft Path (3 foot wide soft surface)	1,500	LF	$2.00	$3.00	$3,000	$4,500
Bridge or Boardwalk	3	EA			$0	$0
Park Elements						
Basketball Court (full size)	4,700	SF	$10.00	$17.00	$47,000	$79,900
Small Skate Park	8,000	SF	$40.00	$60.00	$320,000	$480,000
Pavilion	1,000	SF	$40.00	$50.00	$40,000	$50,000
Plaza (paved)	5,000	SF	$1.50	$2.00	$7,500	$10,000
Community Garden Beds (donated)					$0	$0
Bike Skills Area (youth)	1	EA	$10,000.00	$25,000.00	$10,000	$25,000
Bike Skills Area (teen)	1	EA	$10,000.00	$30,000.00	$10,000	$30,000
Open Field Area	20,000	SF	$1.50	$2.00	$30,000	$40,000
Nature Playground	12,000	SF	$10.00	$20.00	$120,000	$240,000
Parking Lot Improvement		SF			$0	$0
Amenities						
Interpretive Signs	10	EA	$1,000.00	$2,000.00	$10,000	$20,000
Trash Cans	3	EA	$500.00	$700.00	$1,500	$2,100
Benches	5	EA	$500.00	$700.00	$2,500	$3,500
Landscape						
Shade Trees	50	EA	$150.00	$300.00	$7,500	$15,000
Habitat Gardens (Low Mow Areas)	15,000	SF	$2.00	$3.00	$30,000	$45,000

Community Engagement

The TOGI pilot project and initial park concept plan is intended to be a springboard for a full community planning process and support grant applications for implementation. The Cambridge Steering Committee and community stakeholders underscored the importance of broader community engagement to refine the concept plan as the project moves forward. There are a range of ways to reach and engage residents. Participants noted the importance of engaging the neighborhood youth that would use the park.

- Work with nearby schools and Boys and Girls Club to engage students in design development
- Pursue sponsorship and partnership opportunities, such as interest in a Harriet Tubman Museum sponsored garden.
- Coordinate with existing community organizations to engage residents and pursue partnership opportunities. Harriet Tubman Museum at Church Creek could be involved in historic education opportunities
- Work with local faith-based organizations to engage congregations.
- Hold community events or pop-up events like a bike clinic to raise awareness and engage residents. Cambridge Multisport may be a partner to pursue for pop-up bike events.
- Partnering with Habitat for Humanity to build projects (such as raised garden beds)
- Engage educators and schools around environmental aspects and practices for all ages, this could include demonstration features.

Next Steps

Participants noted that early implementation of a combination of green infrastructure and community amenities could help bolster support for the project and secure additional funding by strengthening partnerships.

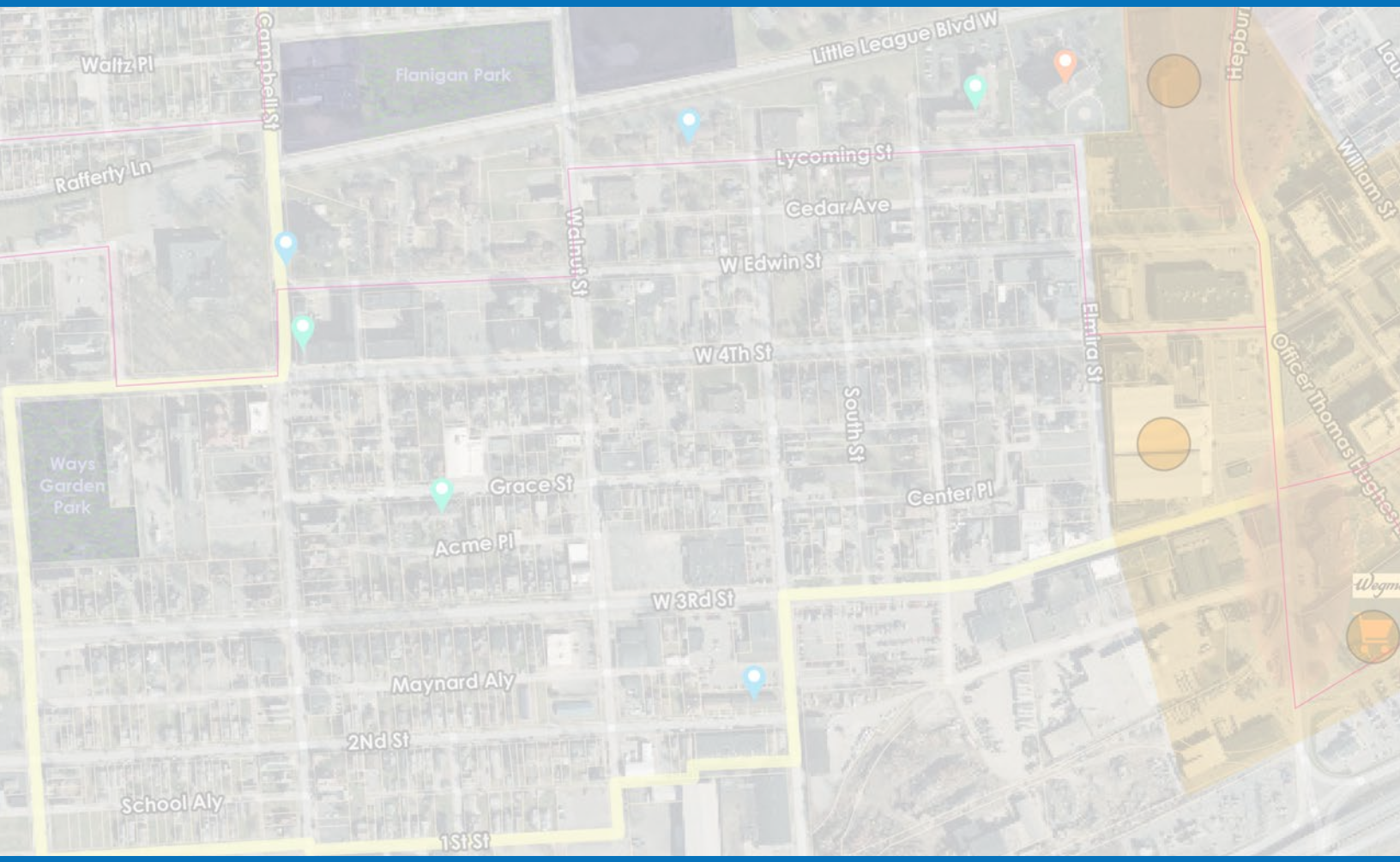
The park concept plan can be used to support grant applications and serve as a catalyst to engage and spark community interest in transforming the vacant Leonards Lane property into a community amenity. There are a range of funding opportunities that can support moving this project forward.


Leonards Lane
memorial
skate
basket-
ball
court
flex
field
pavilion
performance
parking
childrens
play
garden
bike
skills
(older)
bike
skills
(younger)

May 2022

TARGETED OUTREACH FOR GREEN INFRASTRUCTURE

Williamsport, Pennsylvania



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CITY OF WILLIAMSPORT INCORPORATED JANUARY 15TH 1806 PENNSYLVANIA

CONTENTS

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- Briana Yancy, U.S. Environmental Protection Agency
- Katlyn Fuentes, Chesapeake Research Consortium
- Alisa Wilson, Skeo Solutions
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Targeted Outreach for Green Infrastructure in Vulnerable Areas Project

Overview

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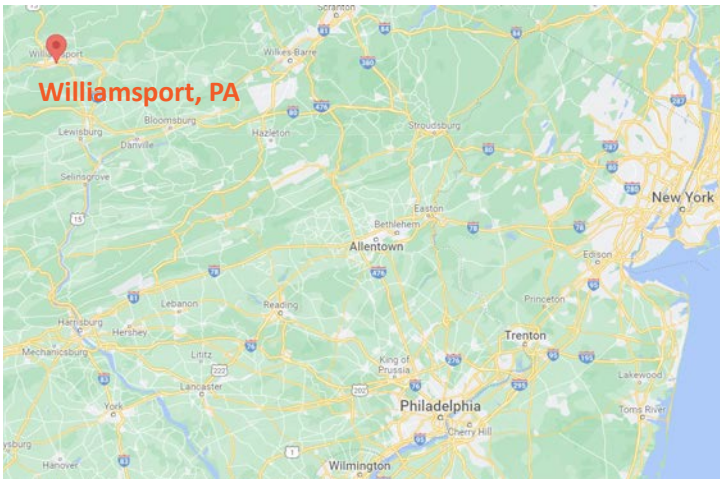


Williamsport is located in central Pennsylvania.

Areas within the City of Williamsport, Pennsylvania; Middle Peninsula, Virginia; and Cambridge, Maryland were selected as areas susceptible to climate change within the Chesapeake Bay watershed that could benefit from green or nature-based Infrastructure projects. These communities also met criteria for diversity, equity, inclusion and justice based on income and demographic data.

The process included a listening session to help identify local opportunities where climate change problems can be addressed through green infrastructure options, while also helping to meet social needs. Following the listening session, a design workshop was held to develop a preliminary design concept for a community-identified project. The outcome is a design concept for the selected project and assistance in identifying implementation funding.

Williamsport, Pennsylvania

A Williamsport Steering Committee was formed to guide the process and included local, state and federal government staff as well as representatives from regional and local environmental and community organizations. The Steering Committee helped identify and engage local stakeholders and identify resources and opportunities to refine the design and construct the project.

The outcome is a green infrastructure design concept that can serve as a catalyst to help the city move forward with broader community engagement and grant applications for implementation. The design concepts is anticipated to evolve as more information becomes available through the site design process and additional community input.

WILLIAMSPORT STEERING COMMITTEE

- Renee Carey, Northcentral Pennsylvania Conservancy
- Stan Carey, University of Pittsburgh Medical Center (UPMC) Community Outreach Specialist
- Billy Clees, Lycoming County
- Wes Fahringer, Pennsylvania Department of Conservation and Natural Resources (PA DCNR)
- Sid Furst, Salvation Army Community Garden
- Kelsey Green, Lycoming County
- Sonja Jahrsdoerfer, United States Fish and Wildlife Service
- Ralph Kisberg, Responsible Drilling Alliance
- Meghan Lehman, Pennsylvania Department of Environmental Protection (PA DEP)
- Alice Trowbridge, Heart of Williamsport
- Scott Williams, Lycoming County
- Lori Yeich, Pennsylvania Department of Conservation and Natural Resources (PA DCNR)
- Mel Zimmerman, Lycoming College Clean Water Institute

PLANNING PROCESS

Listening Sessions and Workshop

A listening session held on Tuesday, October 26, 2021 included 30 participants from across the community for a discussion about community needs, priorities, challenges, opportunities, relevant initiatives, and potential areas and partners for collaboration. A range of projects were identified including:

- Little League Boulevard Streetscape and Safety Improvements
- Improved Connectivity to Downtown
- Expanded Community Garden and Sensory Parks
- Flanigan Park Stormwater and Landscape Improvements
- Round House Multi-use Field Stormwater Improvements
- Street Tree Plantings

Listening session participants were polled to prioritize projects to focus on during a design workshop held on January 19, 2022. The workshop focused on design concepts for

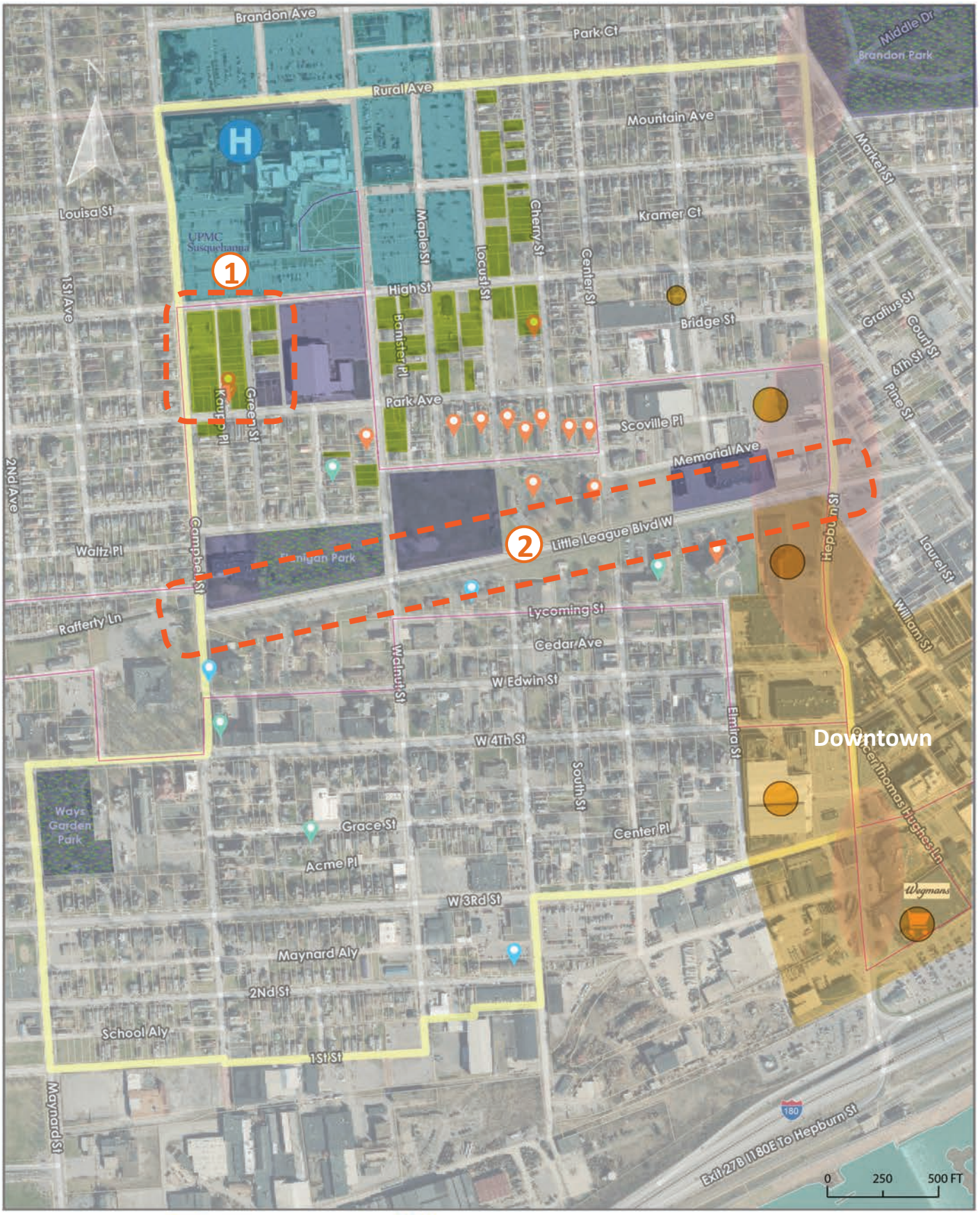
① Expanded community garden and park space on vacant lots owned by University of Pittsburgh Medical Center (UPMC) along Greene Street and Kauppe Place, and

② Little League Boulevard streetscape enhancements and improved connectivity to downtown.

INVITED STAKEHOLDERS

Many community leaders and organizations shared input about the community's needs, priorities and resources to guide the project. The following people were invited to participate in the listening sessions and design workshop.

- Alice Trowbridge, Heart of Williamsport
- Andrew Leidich, Susquehanna State Park
- Angelique Labadie-Cihanowyz, Sojourner Truth Ministries
- Bill O'Connell, Brandon Park Commission
- Billy Dayton, Firetree Place
- Carey Entz-Rine, Lycoming County Conservation District
- Chris Kemmerer, DCNR PA State Parks
- Connie Robinson, Bethel A.M.E. Church
- Corinne Stammel, Lycoming Habitat for Humanity
- David Banks, City Council
- Dawn Linn, YWCA Williamsport
- Drew Leidich, Susquehanna State Park
- Eric Ryder, Williamsport Manor
- Eric Smithgall, Williamsport Water and Sewer Authority
- Wendy Walter, Williamsport Water and Sewer Authority
- Drew Zimmerman, Williamsport Water and Sewer Authority
- Father David Bechtell, St. Joseph Worker's Parish
- Jackie Oliva-Strus, River Valley Health and Dental Center
- Jared Fencil, Assistant Regional Manager
- Jenny Hull, Family Promise Center
- Jo Jo Potts, Community Advocate
- John Breakeall, PA DEP
- Kelsey Green, Lycoming County
- Billy Clees, Lycoming County
- Scott Williams, Lycoming County
- Kendra Park, American Rescue Workers
- Laura Templeton, Salvation Army
- Lori Yeich, PA DCNR
- Wes Fahringer, PA DCNR
- Megan Lehman, PA DEP
- Mel Zimmerman, Lycoming College Clean Water Institute
- MerilLyn Severson, Lycoming County Housing Authority
- Mike Davis, Williamsport YMCA
- Mike Strunk, Hiawatha Paddlewheel Boat Concession
- Nicole Miller, Transitional Living Center
- Pastor Marwin Reeves, Christ Community Worship Center
- Pastor Washington, Antioch Baptist Church
- Rachelle A. Abbott, STEP, Inc.
- Ralph Kisberg, Responsible Drilling Alliance
- Renee Carey, Northcentral Pennsylvania Conservancy
- Ron Frick, Lycoming County United Way
- Sid Furst, Salvation Army Community Garden
- Sonja Jahrsdoerfer, U.S. Fish and Wildlife Service
- Stan Carey, UPMC Community Outreach
- Tim Mahoney, Lycoming Health Improvement Coalition
- Todd Wright, Hiawatha Paddlewheel Boat Concession
- Travis Berg, Central Pennsylvania Food Bank
- Valerie Fessler, American Rescue Workers



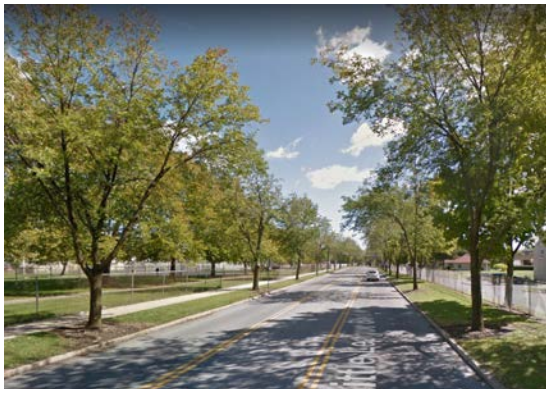
Project Area
UPMC owned vacant lots
UPMC Campus
Community Amenities
Commercial Areas
HUD Properties
Bus Route
TOGI Design Projects

Green Infrastructure Strategies

Green Infrastructure uses vegetation, soils and other natural landscape features to manage precipitation, reduce and treat stormwater at its source and create sustainable and healthy communities. Strategies can include rain gardens, bioswales, urban tree canopies, permeable pavement as well as techniques to redirect and capture stormwater. The photos below are examples of green infrastructure elements that may be incorporated into community projects.

Conservation landscaping including native plantings, pollinator gardens and edible landscapes provide shade, habitat and stormwater management benefits.

Low-mow meadow zones around high traffic and programmed areas provide wildlife habitat and infiltrate stormwater.



Urban tree canopy including street trees, groves, and shade trees provide cooling, water quality and habitat benefits.

Permeable parking areas including trees and planted swales reduce stormwater runoff.

Rainwater storage including rain barrels or cisterns can hold water for irrigation or maintenance use, like washing vehicles.

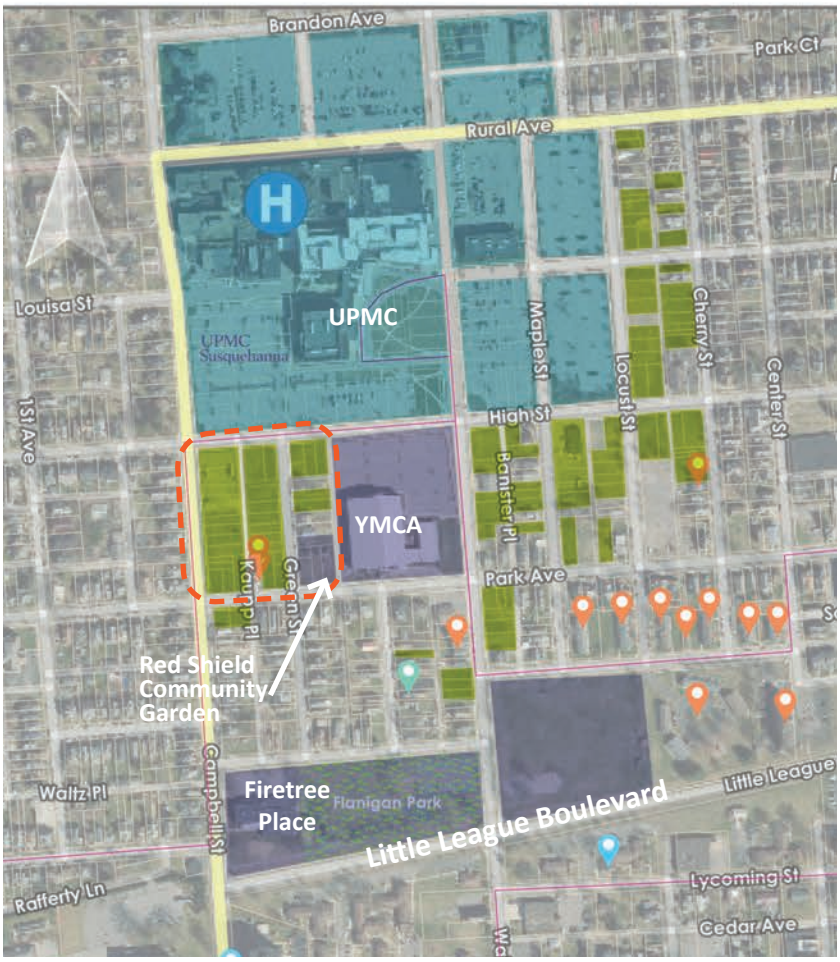
Rain gardens and swales planted with grasses, flowering perennials and shrubs detain and clean water that pools in low lying areas.

Pocket Park and Expanded Community Gardens

One of the major daily issues faced by community members is food-insecurity. The vacant lots owned by UPMC may provide an opportunity to expand the existing Red Shield Community Garden to include fruit and nut trees as well as expanded pollinator habitat to help with food production and planted areas designed to absorb and clean stormwater.

Red Shield Salvation Army Community Garden

The series of vacant lots on Green Street between Park Avenue and High Street may be a prime location for an expanded community garden and a community pocket park with amenities for residents and hospital patients. These improvements could also provide better connections to the hospital, YMCA, Firetree Place and residents along Little League Boulevard. Added benefits include bolstering a sense of community, supporting community health, youth education and outreach opportunities, and an added sense of safety as more people are outside in public spaces.




Existing vacant UPMC-owned lots along Green Street


Community garden example

Community Amenities

Several park and community amenities have been identified to support community goals to provide access to open spaces and restorative spaces for residents. The amenities include expanded community gardens, gathering spaces, and walking paths. Green infrastructure strategies are integrated into the concept to capture runoff from paved areas and provide pollinator habitat areas. Below are examples of these amenities.

Lawn/flexible use area provides space for play and gathering.

Educational signage and public art features celebrate local culture and ecology.

Sensory and healing gardens enhance health and wellness.

Community garden provides a place to work, learn and grow with neighbors.

Children's play area using natural materials provides connection to nature and opportunity for free play.

Contemplative gardens offer respite in urban environment.

This concept plan illustrates amenities and green infrastructure features.

The Expanded Community Gardens concept plan includes features and amenities to meet the community's needs for gathering, gardening, and passive and active recreation while enhancing the natural beauty, water quality and ecology of the site.

Community Amenities

1. Lawn area for gathering and play
2. Educational signage and art (across site)
3. Sensory/Healing Garden (location TBD)
4. Community garden
5. Children's play area
6. Contemplative garden (location TBD)

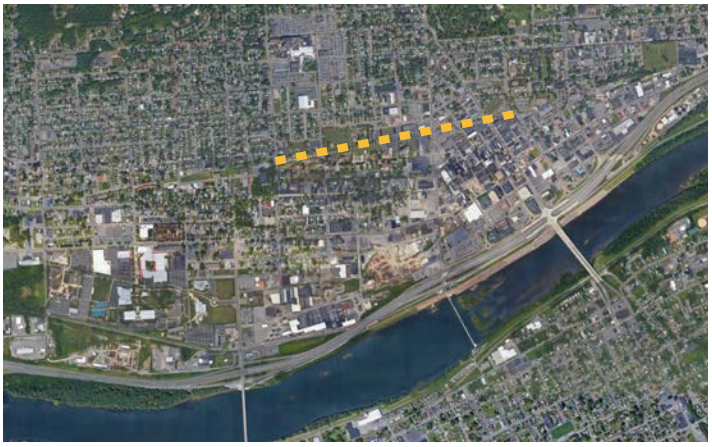
Green Infrastructure Strategies

1. Conservation landscaping
2. Low mow and meadow area
3. Urban tree canopy
4. Permeable parking areas
5. Rainwater storage
6. Rain gardens and swales

Little League Boulevard

Existing Conditions

Little League Boulevard is a main east-west corridor in Williamsport, with wide lanes and limited intersections, which encourages high speed traffic. Chain link fencing lines long sections of the street. Past development combined city blocks into megablock higher density residential, which interrupts the city street grid and limits north-south pedestrian movement to and across Little League Boulevard. Street trees were recently removed along sections of Little League Boulevard to install street lighting. The available median between the sidewalk and curb is too narrow for street trees. New street trees will likely need to be planted between sidewalk and private property or on private property.



Little League Boulevard

Potential Opportunities

The community's vision for Little League Boulevard is to establish a safer pedestrian corridor that integrates traffic calming features and stormwater management best practices. The listening session helped to establish goals and needs for the corridor including:

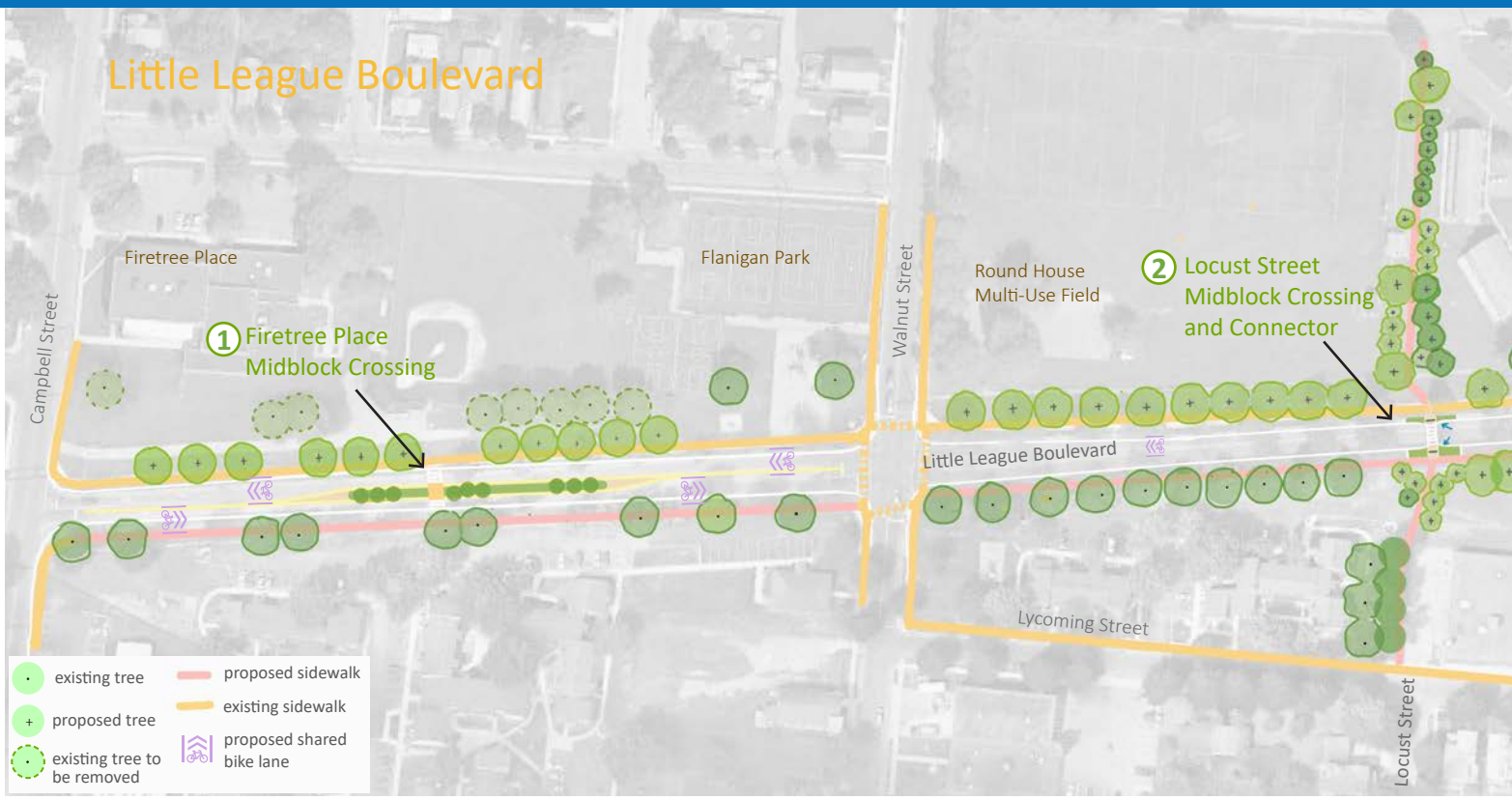
- Traffic calming
- Crosswalks
- Bike lanes
- Greening with street trees
- Green stormwater infrastructure to manage runoff
- Safer and easier connection to community amenities
- Street enhancement and beautification

The following strategies are described in more detail on the following pages.

- **Planted Median.** A planted median on the western end of Little League Boulevard could help slow traffic, provide a safe space for pedestrians and serve as a stormwater feature.
- **Midblock Crossings.** The concept proposes three midblock pedestrian crossings along the boulevard to improve connectivity and walkability. The proposed Locust Street midblock crossing features a curb cut and bioswale that ties into the existing street storm drain. Flashing lights can alert cars of pedestrians crossing for additional visibility. This midblock crossing can connect to a walkway along Round House field that extends to Locust Avenue. Another midblock crossing can reconnect Center Street to Little League Boulevard and include bumpouts at pedestrian crosswalks to slow traffic.
- **Intersection Improvement.** The wide intersection at Hepburn Street and Little League Boulevard creates a long pedestrian crosswalk. Tightening the intersection on the Hepburn Plaza side of the street by extending the curb along the southwest corner can decrease traffic speed and shorten the crosswalk for pedestrian safety.
- There is also an opportunity to enhance the pedestrian experience by removing the chain-link and implementing a barrier, if needed, using natural materials such as trees and shrubs. This concept is discussed further on pages 14-15.

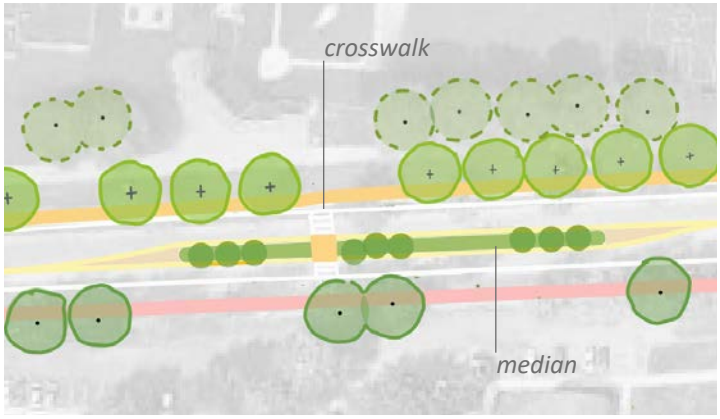
Diagram showing how the urban street grid can be restored with midblock crossings to provide additional pedestrian crossings and access to Little League Boulevard and help reduce speed of traffic.

CONCEPT PLAN



The concept design for Little League Boulevard includes street trees north of the sidewalk, midblock crossings to slow traffic and manage stormwater, new sidewalks on south side of the street, bike lanes and fence removal alternatives.

1 Firetree Place Midblock Crossing

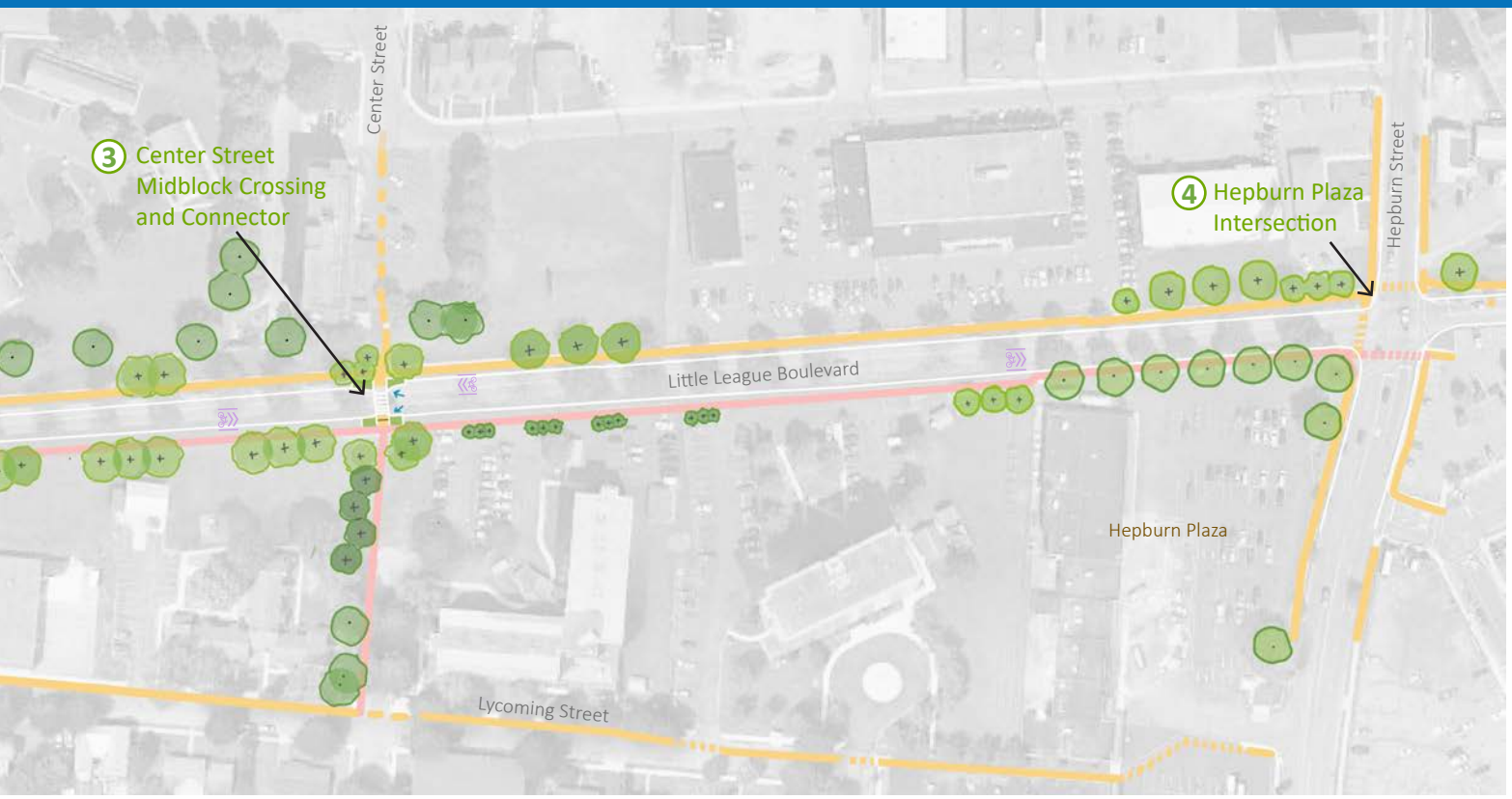


View of existing conditions near Firetree Place on Little League Boulevard

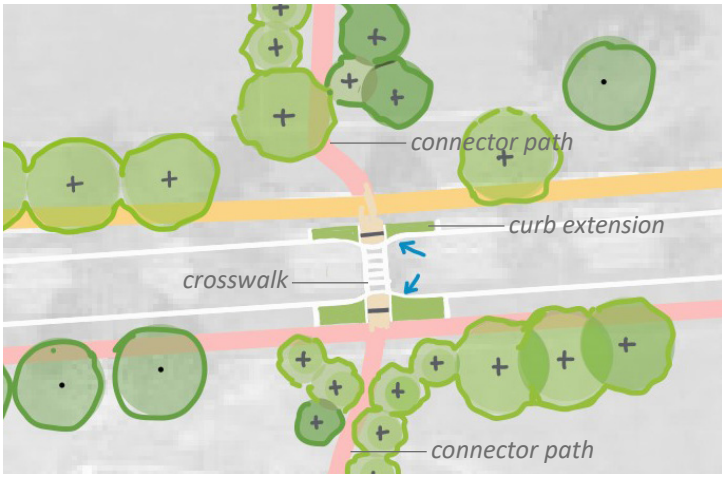
Proposed features:

- Planted median to slow traffic and provide safe space for pedestrians
- Median to capture and infiltrate stormwater
- Crosswalk and flashing lights to improve pedestrian safety
- Plant new trees to replace trees along sidewalk

Example of proposed mid-block crossing



2 Locust Street Midblock Crossing and Connector

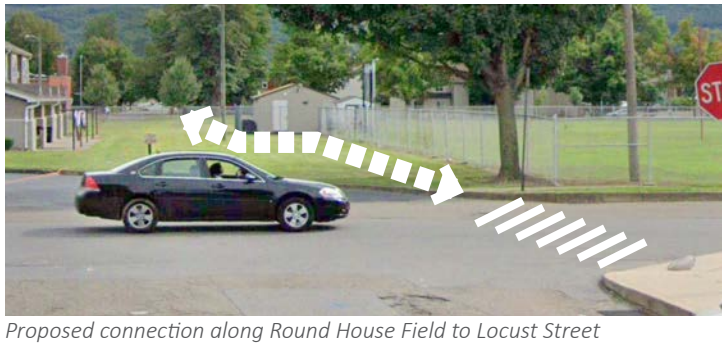


Proposed features:

- Curb extension (or bumpout) with integrated sidewalk connection and bioswale* at midblock
- New sidewalk along fence line with plantings
- Extended walking paths north and south of Little League Boulevard to connect to Locust Street
- Plant new trees for shade and wayfinding along new sidewalk and connecting path

*aligns with existing street storm drains for connection to existing drainage network

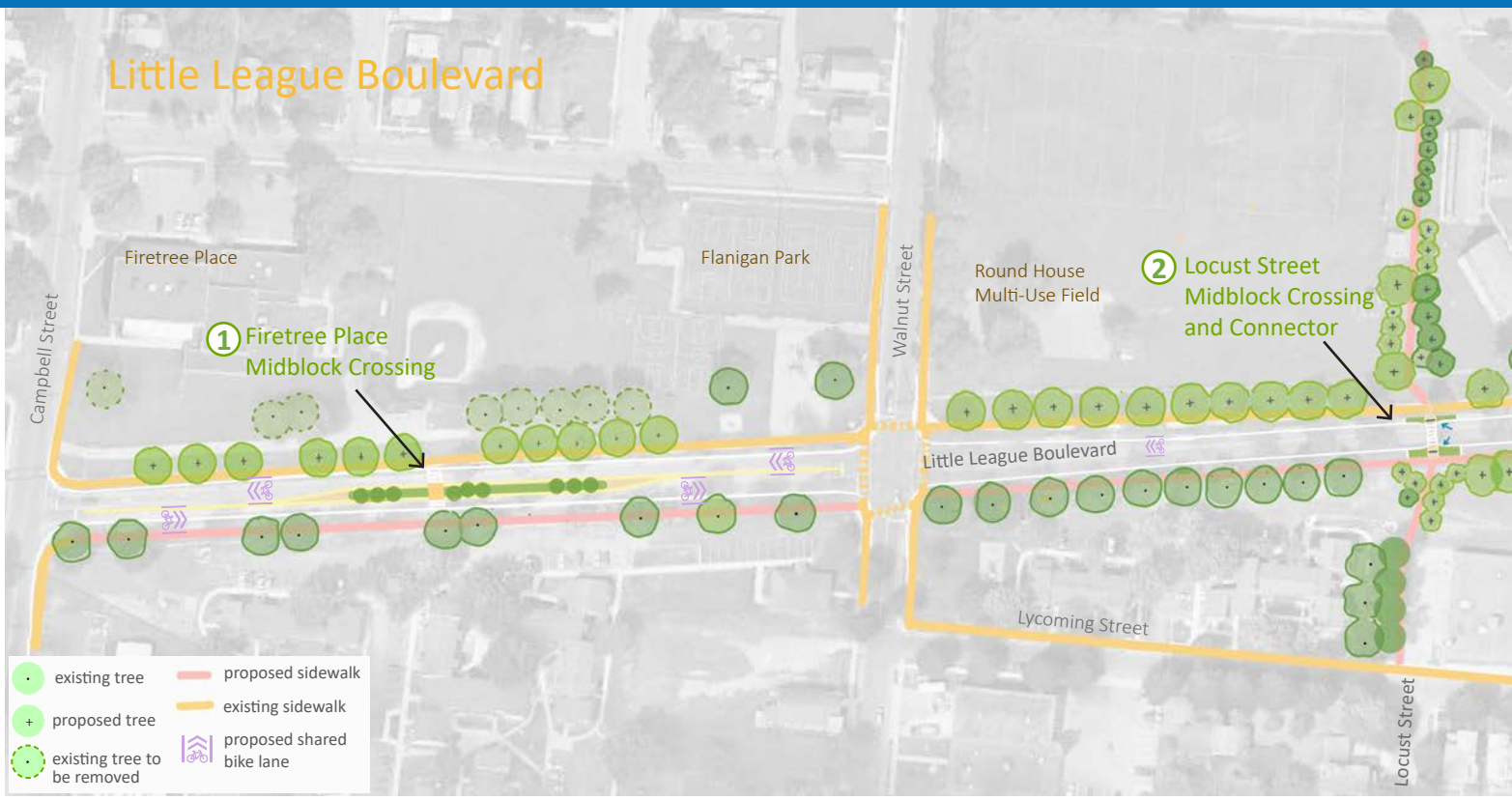
View of existing conditions near Round House Field



Proposed connection along Round House Field to Locust Street

Example of curb extension with integrated sidewalk connection and bioswale

CONCEPT PLAN



The concept design for Little League Boulevard includes street trees north of the sidewalk, midblock crossings to slow traffic and manage stormwater, new sidewalks on south side of the street, bike lanes and fence removal alternatives.

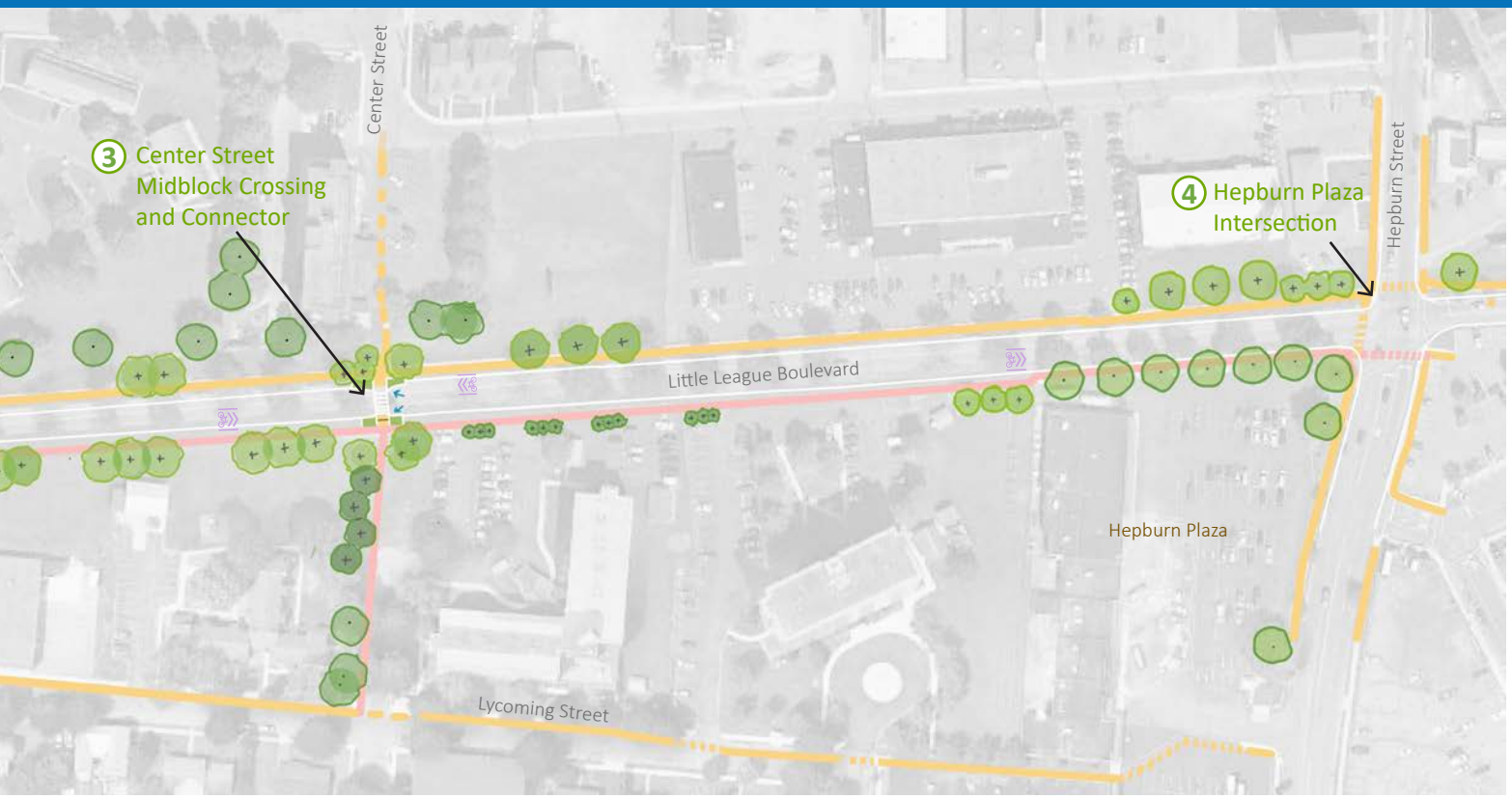
3 Center Street Midblock Crossing and Connector

Proposed features:

- Add traffic calming curb extension (or bumpout) with crosswalk and sidewalk connection
- Consider integrating green infrastructure by including a curb cut inlet and bioswale in curb extension
- Extended sidewalk to connect Center Street to Lycoming Street
- Plant street trees and shrubs along new sidewalk

Example of proposed mid-block crossing

Proposed connection to Center Street and Lycoming Street



4 Hepburn Plaza Intersection

View of existing conditions at intersection of Little League Boulevard and Hepburn Street

Proposed features:

- Extend curb to create shorter crosswalk distance and improve pedestrian safety
- Plant street trees for shade and natural buffer between properties and sidewalk

Proposed curb extension and sidewalk to shorten crosswalk

LITTLE LEAGUE BOULEVARD

Natural Fencing Options

Currently, Little League Boulevard has chain link fencing on both sides from Campbell Street to Heburn Street. The chain link fencing may only be necessary in specific areas, such as playgrounds and residential yards, and some sections could be replaced with natural materials or alternative barriers.

Natural buffers or barriers along Little League Boulevard could include street trees, boulders, evergreen hedges and plantings. Increasing planting areas can provide more pervious surfaces to catch and filter stormwater, create urban habitat areas, and enhance streetscapes.

There is an inequity throughout the city with regards to where the trees have been planted. Lower income neighborhoods tend to have less trees. Increasing shade trees can reduce heat island effects, manage stormwater, increase habitat and contribute to beautification efforts in the community.

The plan below proposes areas for fence removal and replacement to improve the streetscape and pedestrian experience.

The concept plan proposes areas for fence removal and replacement with alternative buffer materials.

① FireTree Place

- Install fencing for safety.
- Plant trees and shrubs for shade and beautification.

② Timberland Apartments

- Retain existing fencing to comply with operations requirements.
- Reduce fencing to areas where access restriction is needed.
- Install boulders and screening plants in areas where access or sightlines need to be limited.

① Round House Field

- Fencing needed for safety
- Trees and other plantings could be added to provide shade and beautification.

② Memorial Townhouses

- Fencing needed for safety around playground and residential backyards.
- Trees and other plantings could be added to provide shade and beautification.

③ Senior and Elderly Housing

- Reduce fencing to areas where access restriction is needed.

④ Housing Along South Little League Boulevard

- Consider reducing fencing to areas where access restriction is needed.
- Trees and other plantings could be added to provide shade and beautification.

Alternative Fencing Illustration

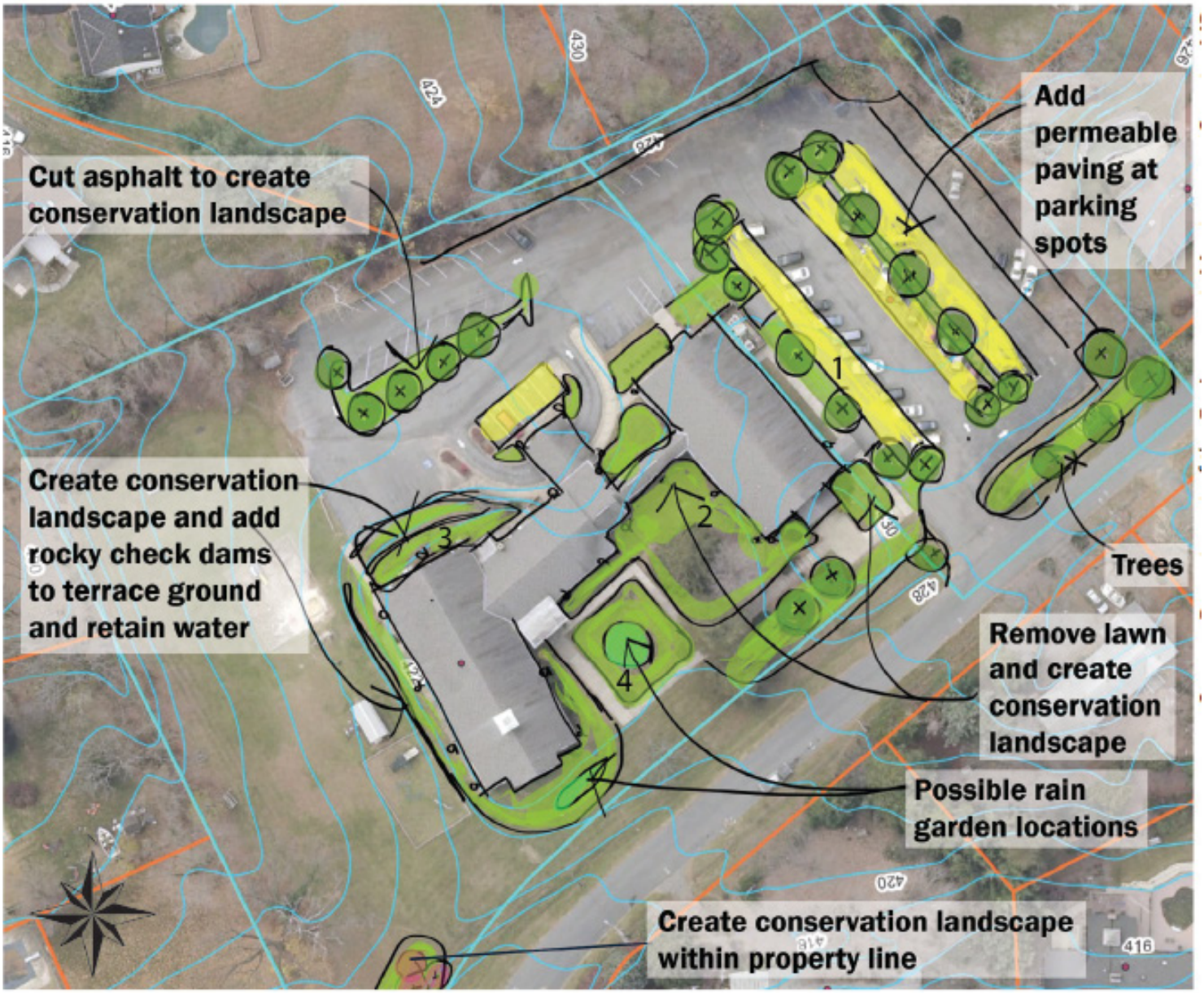
The illustration below shows how a combination of shade trees, hedge row, and boulders to prevent vehicular access can achieve safety, access and neighborhood beautification goals.

Existing

Illustrative rendering of alternative fencing options

Parking Lot Retrofits

The existing parking lots at the apartment complexes, churches and businesses provide an opportunity to improve stormwater management. The diagram below illustrates how an existing church parking lot could be retrofitted to include features for improved stormwater management, additional shade trees to reduce urban heat and planting areas that reduce mowing requirements and support urban habitat.



Parking Lot Retrofits. Image source: Saving the Rain: Green Stormwater Solutions for Congregations, EPA. Available at: www.epa.gov/nps/saving-rain-green-stormwater-solutions-congregations

Community Engagement

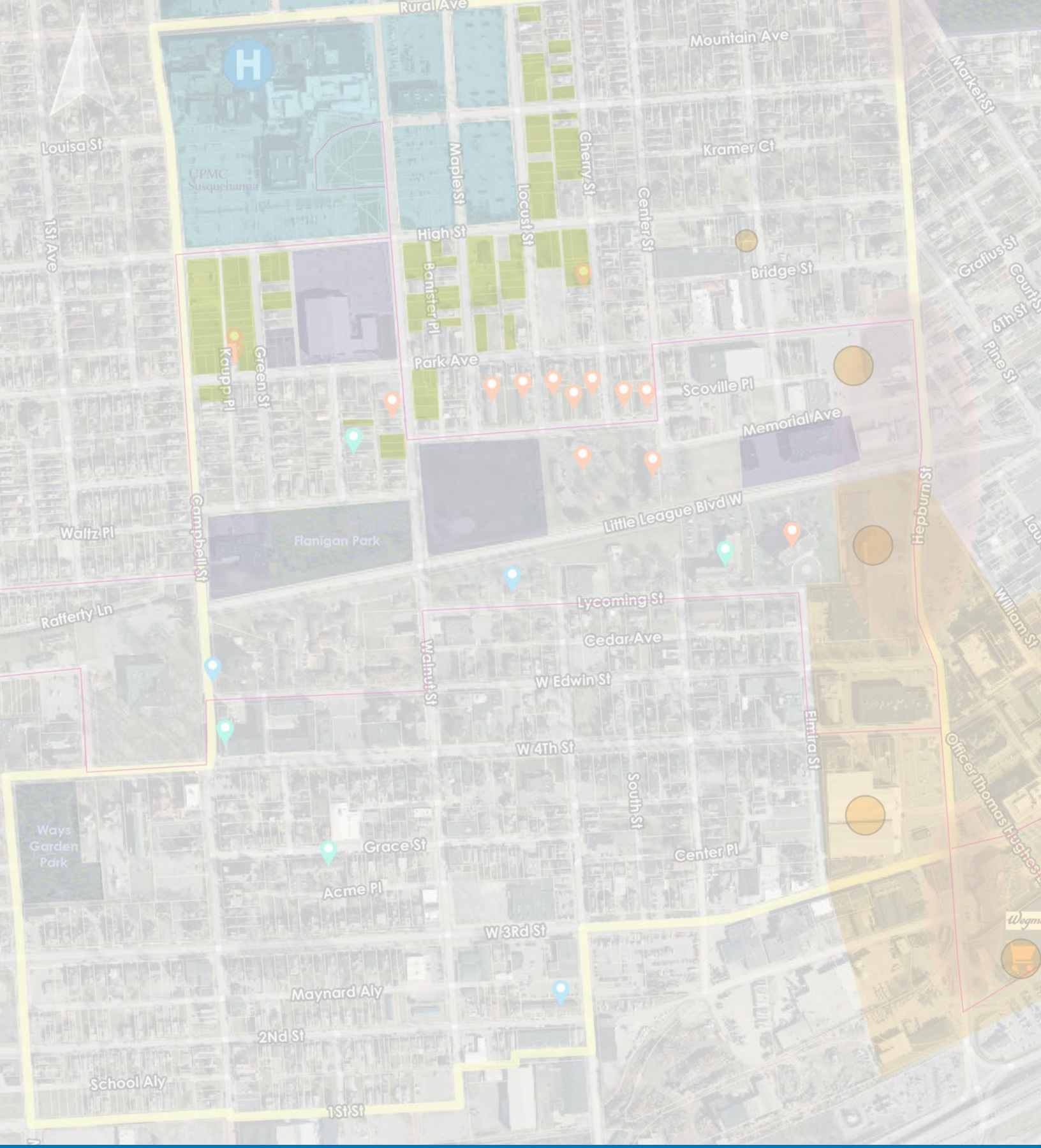
The TOGI pilot project and initial designs are intended to be a springboard for a full community planning process and a means to organize partners to support efforts to secure funding for implementation, through grants and other resources. The Williamsport Steering Committee and community stakeholders underscored the importance of broader community engagement to refine the concepts as any of the projects move forward. There are a range of ways to reach and engage residents, especially those living in this area. Examples of community engagement opportunities include the following:

- Coordinate with existing community organizations on community outreach to involve residents in planning and volunteer opportunities, such as planting and maintenance.
- Work with local faith-based organizations to engage congregations in planning, implementation and volunteer opportunities.
- Pursue sponsorship and partnership opportunities, such as interest in job training opportunities through the Pennsylvania Recreation and Parks Society.
- Work with Pennsylvania DCNR on green infrastructure in parks and green space along Little League Boulevard.
- Work with educators and schools around environmental aspects and practices for all ages, this could include demonstration features.
- Hold community events or pop-up events to raise awareness and build support for the park project.
- Convene property owners along Little League Boulevard to discuss a strategic fencing plan.

Next Steps

The concept plans can be used to support grant applications and serve as a catalyst to engage and spark community interest in transforming the vacant lots into a community amenity and improve safety and access along Little League Boulevard. There are a range of funding opportunities that can support moving this project forward.

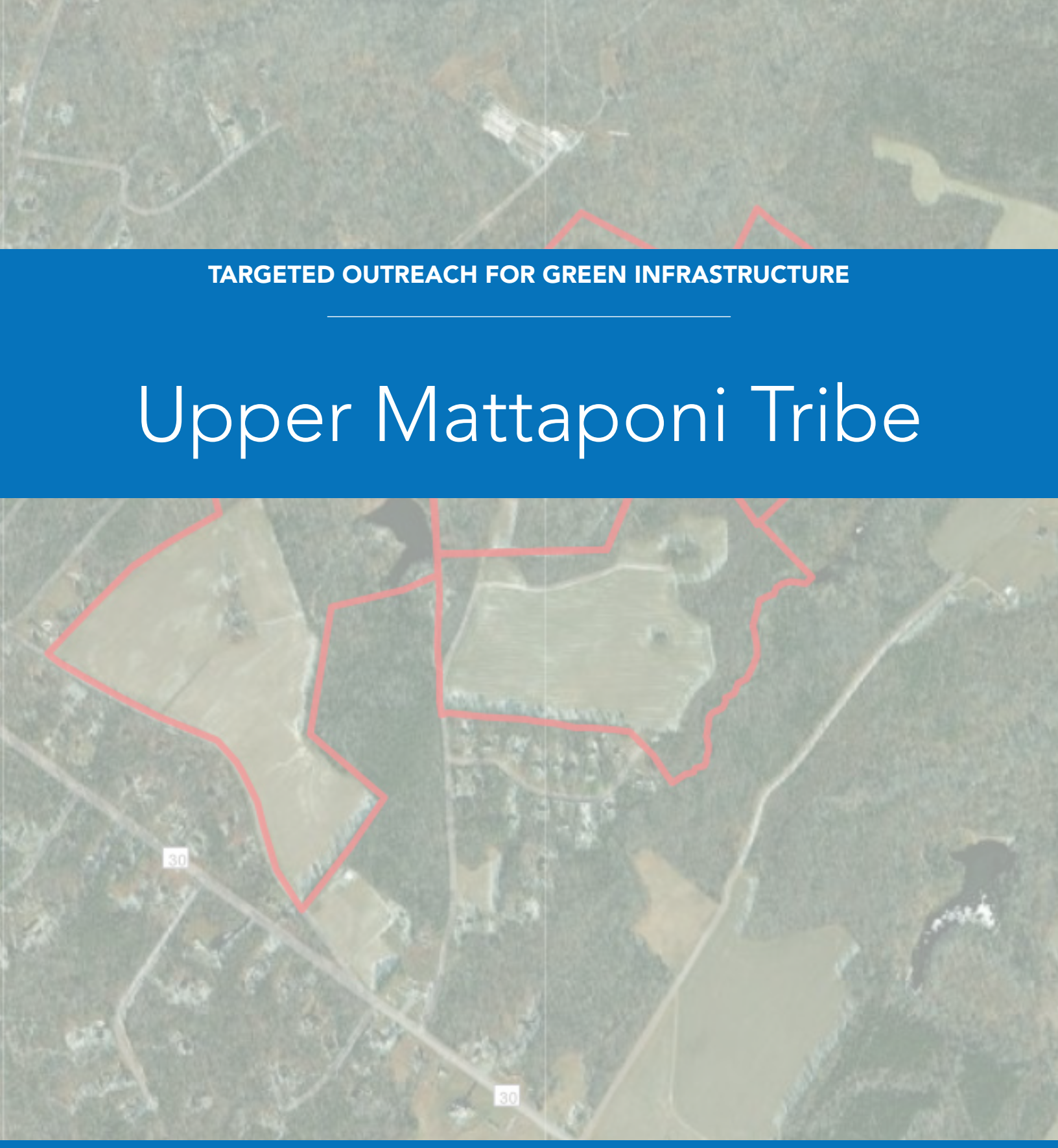
Participants noted that local champions are needed to seek funding for grant applications and that projects identified during this planning process could be considered as part of the citywide green infrastructure plan that is expected to launch soon. Early implementation of smaller projects could help bolster support for the larger projects and secure additional funding by strengthening partnerships.


Rural Ave
Mountain Ave
Louisa St
UPMC Susquehanna
Maple St
Locust St
Cherry St
Center St
Kramer Ct
Market St
1St Ave
High St
Banister Pl
Bridge St
Grafius St
Court St
6th St
Pine St
Kaupp Pl
Green St
Park Ave
Scoville Pl
Memorial Ave
Waltz Pl
Flanigan Park
Campbell St
Little League Blvd W
Hepburn St
Lycoming St
Rafferty Ln
Cedar Ave
Walnut St
W Edwin St
William St
W 4Th St
Elmira St
South St
Officer Thomas Hughes
Ways Garden Park
Grace St
Center Pl
Acme Pl
W 3Rd St
Maynard Aly
2Nd St
School Aly
1St St

May 2022

TARGETED OUTREACH FOR GREEN INFRASTRUCTURE

Upper Mattaponi Tribe



Chesapeake Bay Program
Science. Restoration. Partnership.

UPPER MATTAPONI INDIAN TRIBE
King William Virginia

CONTENTS

Acknowledgments

The TOGI project team acknowledges the contributions of all those who participated in this planning effort.

TOGI Project Team

- Chris Guy, U.S. Fish and Wildlife Service & Chesapeake Bay Program
- Briana Yancy, U.S. Environmental Protection Agency
- Katlyn Fuentes, Chesapeake Research Consortium
- Alisa Wilson, Skeo Solutions
- Catherine Brown, Skeo Solutions
- Marissa Sperry, Skeo Solutions

Targeted Outreach for Green Infrastructure in Vulnerable Areas Project

Overview

Many communities are adopting green infrastructure as a strategy to manage stormwater, improve water quality, add habitat and provide community benefits such as open space, pedestrian safety, shade and beautification. The Targeted Outreach for Green Infrastructure in Vulnerable Areas (TOGI) is a pilot project being led by the Chesapeake Bay Program Habitat Goal Implementation Team. The goal of this pilot project is to work with communities in the Chesapeake Bay watershed to design green infrastructure projects that meet both community and habitat conservation goals.

Areas within the City of Williamsport, Pennsylvania; Middle Peninsula, Virginia (includes Upper Mattaponi Tribe property and Mattaponi Tribe property) and Cambridge, Maryland were selected as areas susceptible to climate change within the Chesapeake Bay watershed that could benefit from green or nature-based infrastructure projects. These communities also met criteria for diversity, equity, inclusion and justice based on income and demographic data.

The process for each community included a listening session to help identify local opportunities where climate change problems can be addressed through green infrastructure options, while also helping to meet community needs. Following the listening session, a design workshop was held to develop a preliminary design concept for a community-identified project. The outcome is a design concept for the selected project and assistance in identifying implementation funding.

Upper Mattapponi Tribe

An Upper Mattaponi Steering Committee was formed to guide the process and included Upper Mattaponi Tribal leaders, state and federal agencies, and a local university. The Steering Committee helped identify and engage local stakeholders and identify resources and opportunities to refine the design and construct the project.

The outcome is a green infrastructure design concept that can serve as a catalyst to help the city move forward with broader community engagement and grant applications for implementation. The design concepts is anticipated to evolve as more information becomes available through the site design process and additional community input.

The Upper Mattaponi Tribe is located in King William, Virginia.

UPPER MATTAPONI STEERING COMMITTEE

- Frank Adams, Chief of Upper Mattaponi Tribe
- Tommy Tupponce, Assistant Chief of the Upper Mattaponi Tribe
- Reggie Tupponce, Upper Mattaponi Tribal Administrator
- Leigh Mitchell, Environmental and Cultural Director
- Aaron Wendt, Virginia Department of Conservation and Recreation and Recreation Shoreline Erosion Advisory Service (VA DCR-SEAS)
- Elizabeth Andrews, William & Mary Law School Virginia Coastal Policy Center
- Andrew Larkin, National Oceanic and Atmospheric Administration (NOAA)
- Julie Reichert-Nguyen, NOAA
- Lauren Taneyhill, NOAA
- Renee Thompson, USGS & Chesapeake Bay Program

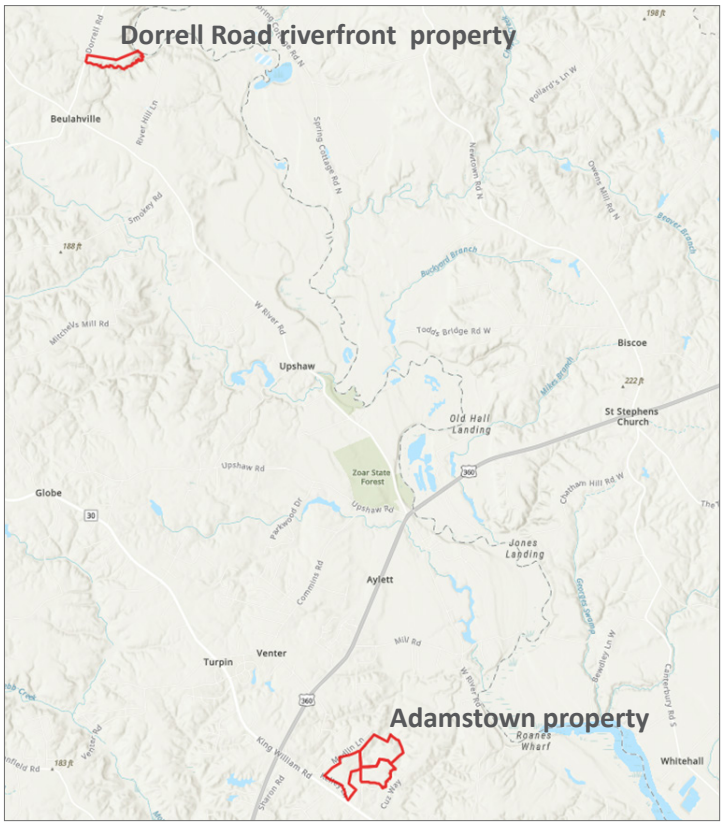
PLANNING PROCESS

Listening Session and Workshop

A listening session held on Thursday, December 9, 2021, included Upper Mattaponi Tribal Council members and steering committee members for a discussion about community needs and priorities, challenges, opportunities, relevant initiatives, potential project locations, and partners for collaboration.

Participants identified two priority projects: 1) the development of the Adamstown property for a tribal center, housing and recreation, and 2) river access and recreation amenities for property acquired between Dorrell Road and the Mattaponi River.

The Tribe's vision for the historic Adamstown property is to create an Upper Mattaponi Tribal Center for tribal members that includes administrative, community, recreation and housing facilities using sustainable and ecologically restorative practices. On the riverfront property on Dorrell Road, the Tribe would like to establish outdoor recreation amenities for tribal members to enjoy.



The two Upper Mattaponi properties are located approximately 10 miles apart.

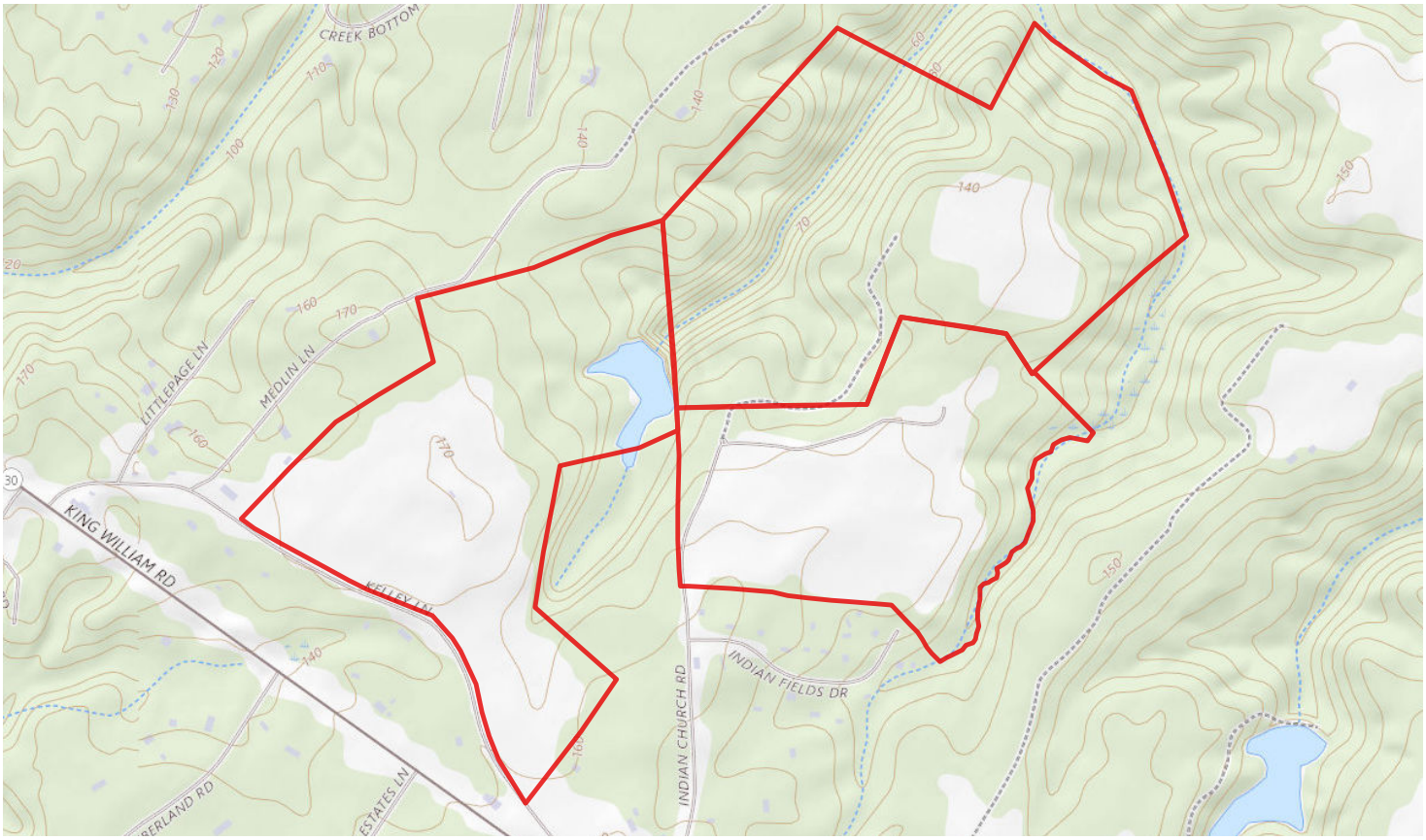
View of the Mattaponi River from the Dorrell Road property

INVITED STAKEHOLDERS

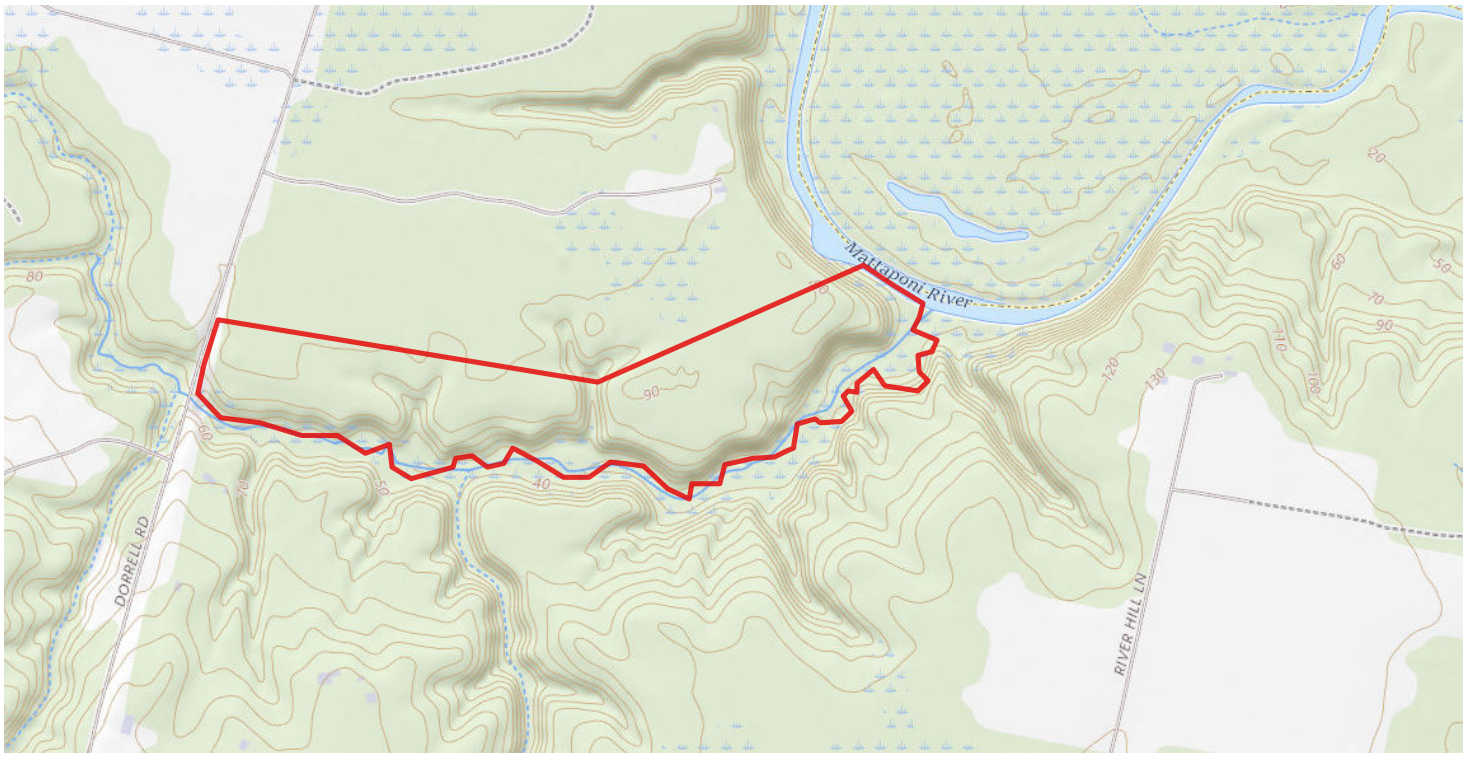
Tribal members and organizations shared input about the Tribe's needs, priorities and resources to guide the project. The following people were invited to participate in the listening session and design workshop.

- Frank Adams, Chief of Upper Mattaponi Tribe
- Tommy Tupponce, Assistant Chief of the Upper Mattaponi Tribe
- Reggie Tupponce, Upper Mattaponi Tribal Administrator
- Kyle McLemore, Environmental Technician
- Leigh Mitchell, Environmental and Cultural Representative
- Aaron Wendt, VA DCR-SEAS
- Elizabeth Andrews, William & Mary Law School Virginia Coastal Policy Center
- Andrew Larkin, NOAA
- Julie Reichert-Nguyen, NOAA
- Lauren Taneyhill, NOAA
- Renee Thompson, USGS and Chesapeake Bay Program

PROPERTY OVERVIEW



Historic Adamstown is a 300-acre property proposed for tribal center development, housing, conservation, farming and recreation.



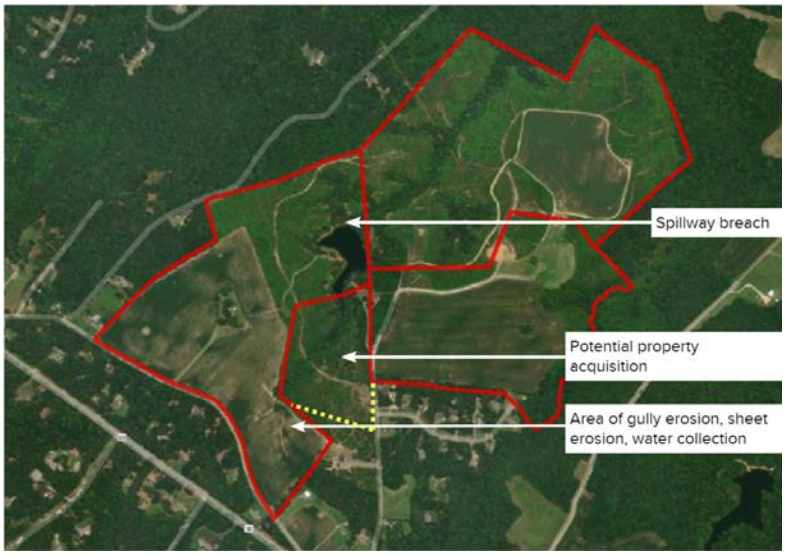
The Dorrell Road riverfront property is 44 acres and borders the Mattaponi River on the east side. The Tribe would like to use this property for hiking and riverfront recreation.

Existing Conditions

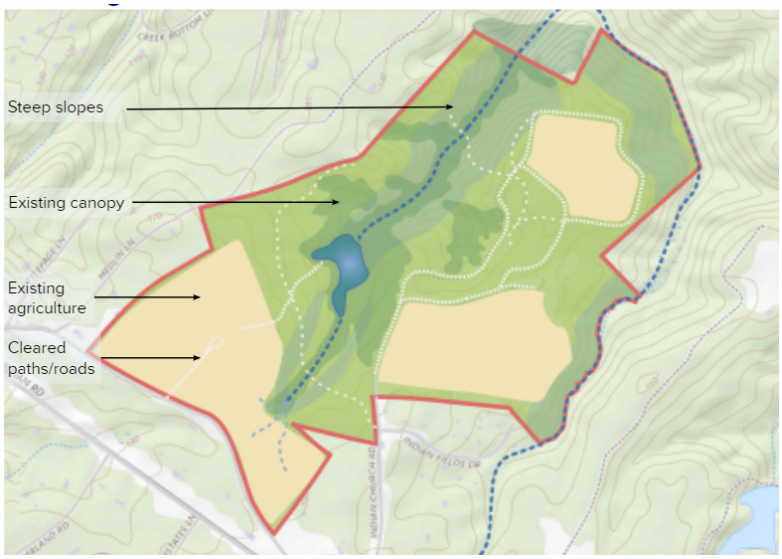
The Upper Mattaponi Tribe plans to develop a tribal center on the historic Adamstown property, which includes land that has been inhabitated and farmed by members of the tribe for many years. A stream flows through the middle of the site, creating a small pond, shored up by a small dam and spillway. Elevation varies across the property, creating some areas with steep grades, particularly along the stream. Agricultural practices on the site have compromised natural drainage, causing severe flooding and erosion including gullies, steep banks and damage to the pond's spillway.

A listening session helped to establish overarching goals for developing the site. The Upper Mattaponi Tribe's vision for Historic Adamstown is to establish a tribal center that includes facilities for government and administration, recreation, gathering and housing. The Tribe plans to build the project to minimize ecological impact, and members identified the following strategies to guide development planning:

- enhance biodiversity and ecological health
- design tribal structures that minimize impacts to the natural environment during construction and operation
- minimize water use
- manage stormwater on site



Site conditions: parcels and stream features



Site conditions: ground cover and topography

Pond

Proposed site for tribal center in current agricultural use

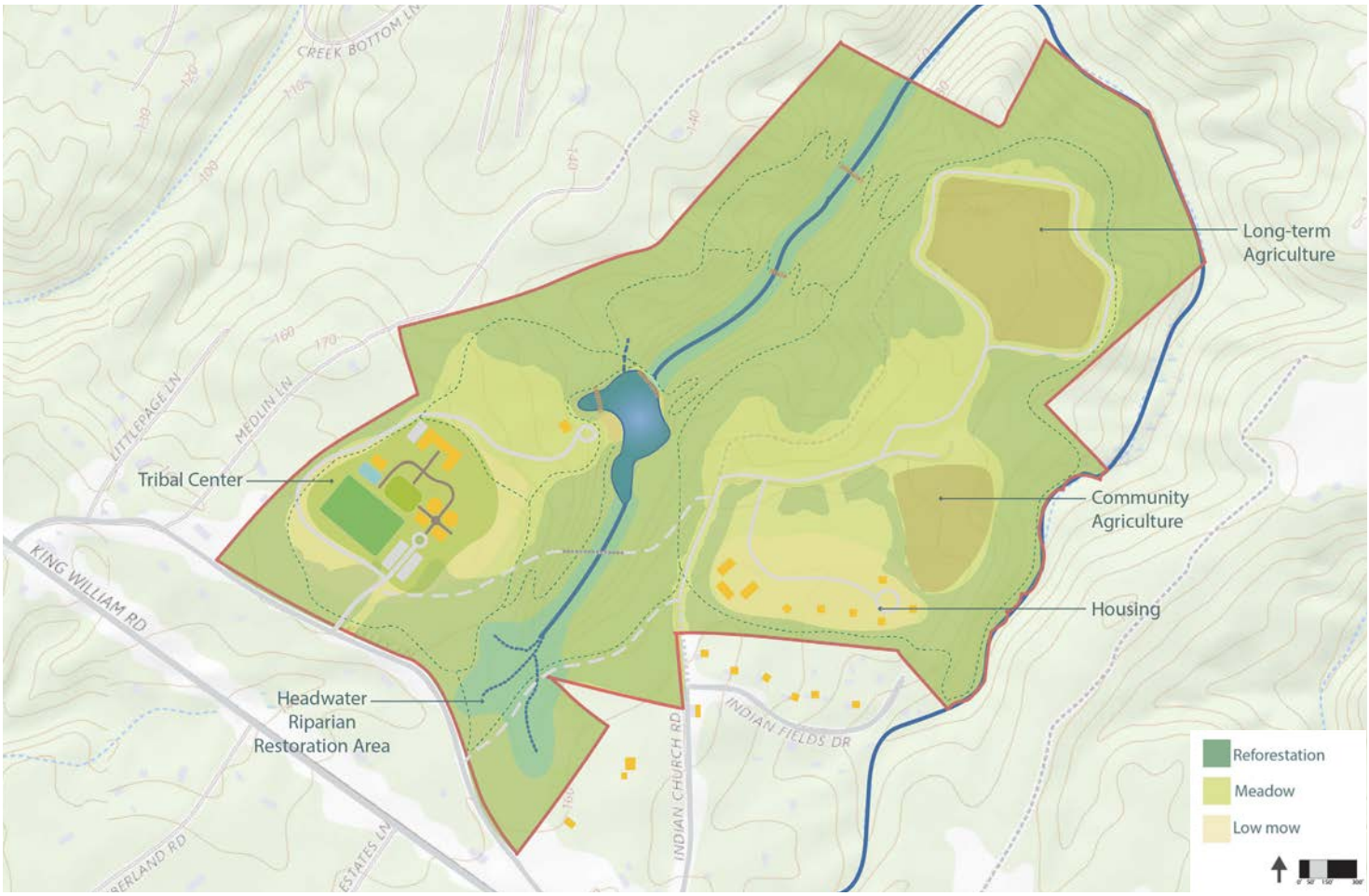
Gullies formed by erosion in headwater area

Concept Plan

Based on the Tribal goals and site conditions, the concept plan proposes features and best management practices for low impact development that organizes structures for tribal community use and a landscape that promotes recreation and ecosystem restoration.

On the following pages, the concept design is shown in more detail to focus on three goals:

- Ecosystem Restoration of Tribal Land and Waters
- Sustainable Tribal Center and Residential Development
- Recreation and Access with Low Impact



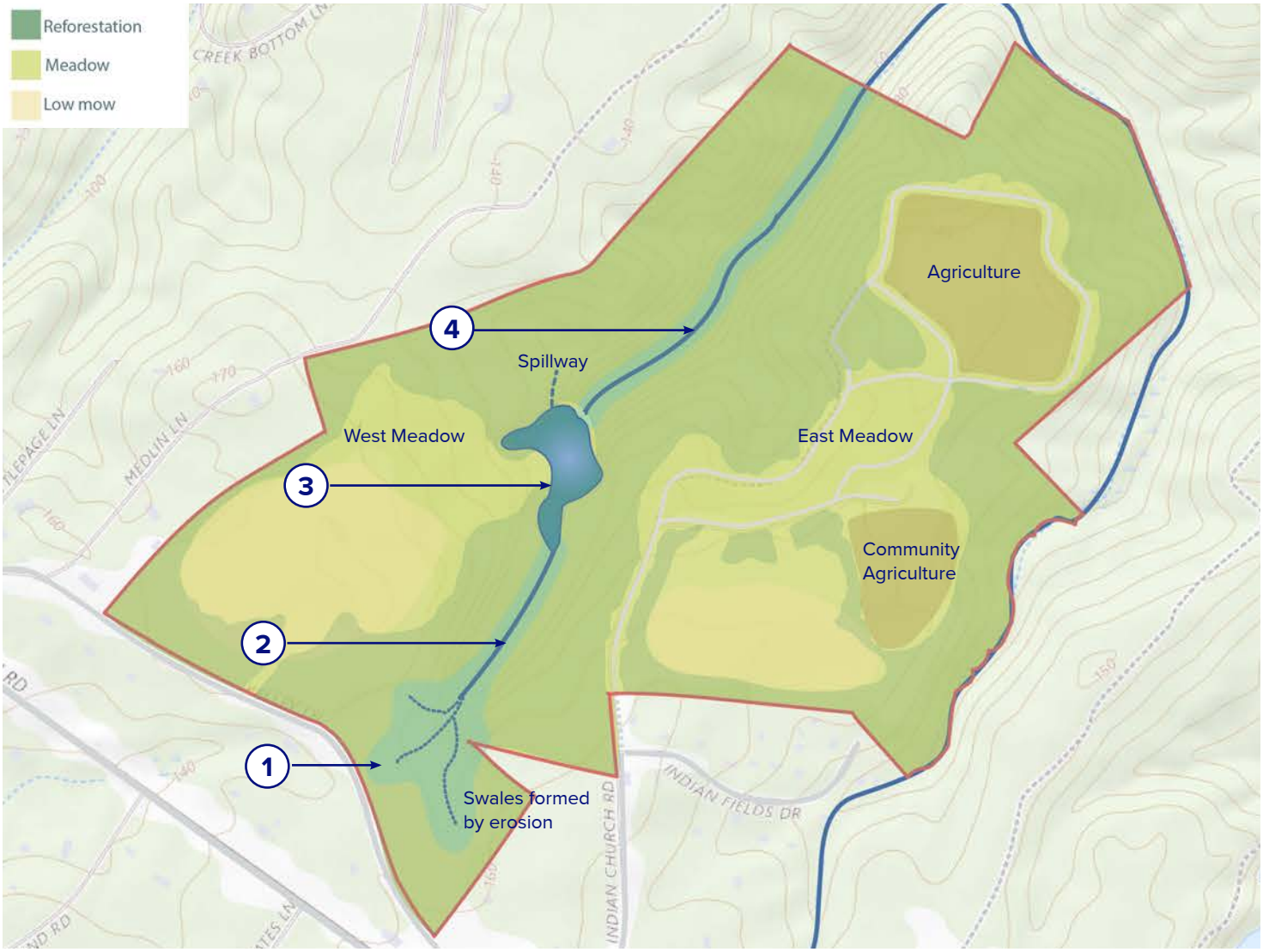
Design Concept for Upper Mattaponi Adamstown property

Ecosystem Restoration of Tribal Land and Waters

Land clearing and long-term agricultural use has contributed to the degradation of soil and riparian system across the property, which slopes gently from Kelly Lane toward the stream flowing north on site.

Implementing best management practices for farming and stormwater management, and installing features such as plantings and checkdams can help restore the ecological health of the soil and water systems on the property.

Ecosystem restoration components of the concept include features and practices for the landscape and water system, detailed on the next page.



Key ecosystem restoration features of the concept plan

Water

1 Headwaters*

Priorities: Control erosion and increase infiltration

Proposed steps:

- Replant groundcover and shrub layers in immediate area
- Install check dams in swales to stabilize soil and slow waterflow during regrowth
- Reforest surrounding area
- Install wetland planting at convergence/basin area

2 Upstream

Priorities: Preserve and protect

Proposed steps:

- Retain existing riparian buffer
- Widen riparian buffer

3 Downstream area

Priorities: Reduce flow by increasing plantings and drainage features in the headwater area. Repair spillway breach and channel cuts and restore riparian system.

Proposed steps:

- Identify priority locations for repair
- Restore surrounding groundcover and tree canopy
- Conduct hydrologic study for large scale stream restoration (reshaping, regrading, planting, stabilization)

4 Pond

Priorities: Preserve and protect

Proposed steps:

- Habitat enhancement for wildlife (fish, birds)
- Widen riparian buffer

** recommended for first phase*

Land

Agriculture practices

Promote low impact growing methods, including:

- Erosion control
- Mechanical pest control
- Crop cover selection
- Crop rotation

Landscape restoration

Install plantings to restore ecosystem functions

- Re-establish tree canopy in sloped and riparian areas
- Establish native meadow areas for habitat diversity

No till farming can improve soil health and reduce erosion.

Check dams made of stone or gabion baskets slow water flow and stabilize soil while allowing water to soak into the soil and support vegetation..

Native meadows provide habitat diversity and support riparian health.

Sustainable Tribal Center and Residential Development

The Upper Mattaponi Tribe is committed to developing a tribal center that includes community and administrative facilities, recreation amenities, and housing with minimal impact on the environment. The proposed concept plan includes recommendations for site planning, design, construction and features to support sustainable development.

Concept design for tribal center and housing

Construction and Materials

Design tribal structures and codes that eliminate negative impacts to natural environment during construction and operation.

- Green building materials
- Energy and water saving products and appliances
- Integrate solar

Parking lot integrates solar structures that provide multiple benefits including power, cooling and stormwater conveyance.

Architecture and Design

Design structures and landscape to reflect tribal heritage.

The Yocha Dehe Tribe sought an architectural design that was modern and expressive of their forward momentum, while being strongly related to both their cultural history and that of the Capay Valley. The resulting work attempts to articulate the Tribe's culture with a contemporary architecture that does not trivialize or mimic.

Colusa Indian Community, Colusa Rancheria. The architects worked closely with the Tribal Council to incorporate cultural significance and elements that reflect the tribe's history, core values and symbols in the design.

Site Planning

Minimize water use, manage stormwater on site (reuse/treat/infiltrate), and enhance biodiversity to improve ecological health.

Placement

- Cluster structures to minimize footprint
- Consider housing location in context of septic requirements (housing might have to shift north to higher elevation)

Parking Lots

- Use pervious materials (permeable pavers, gravel)
- Integrate plantings to reduce heat and absorb stormwater
- Planted swales to capture runoff (if paved or limited permeability)
- Consider solar panels over parking area

Landscape

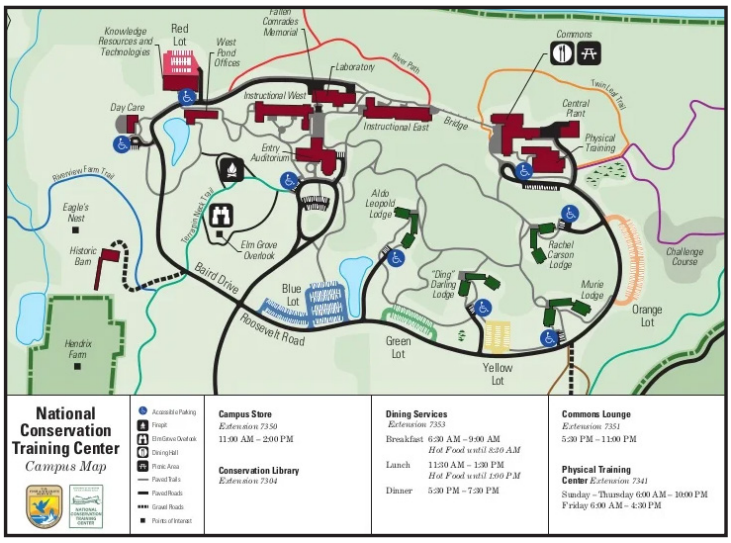
- Utilize drought tolerant native plants, grasses and trees
- Designate low mow or no mow zones in low traffic areas planted as lawn
- Include energy efficient outdoor lighting

Stormwater management

- Capture stormwater in cistern for irrigation or other reuse
- Install planted swales and/or rain gardens to capture runoff from buildings and other impervious surfaces (i.e., sport court, sidewalks/hardscape)

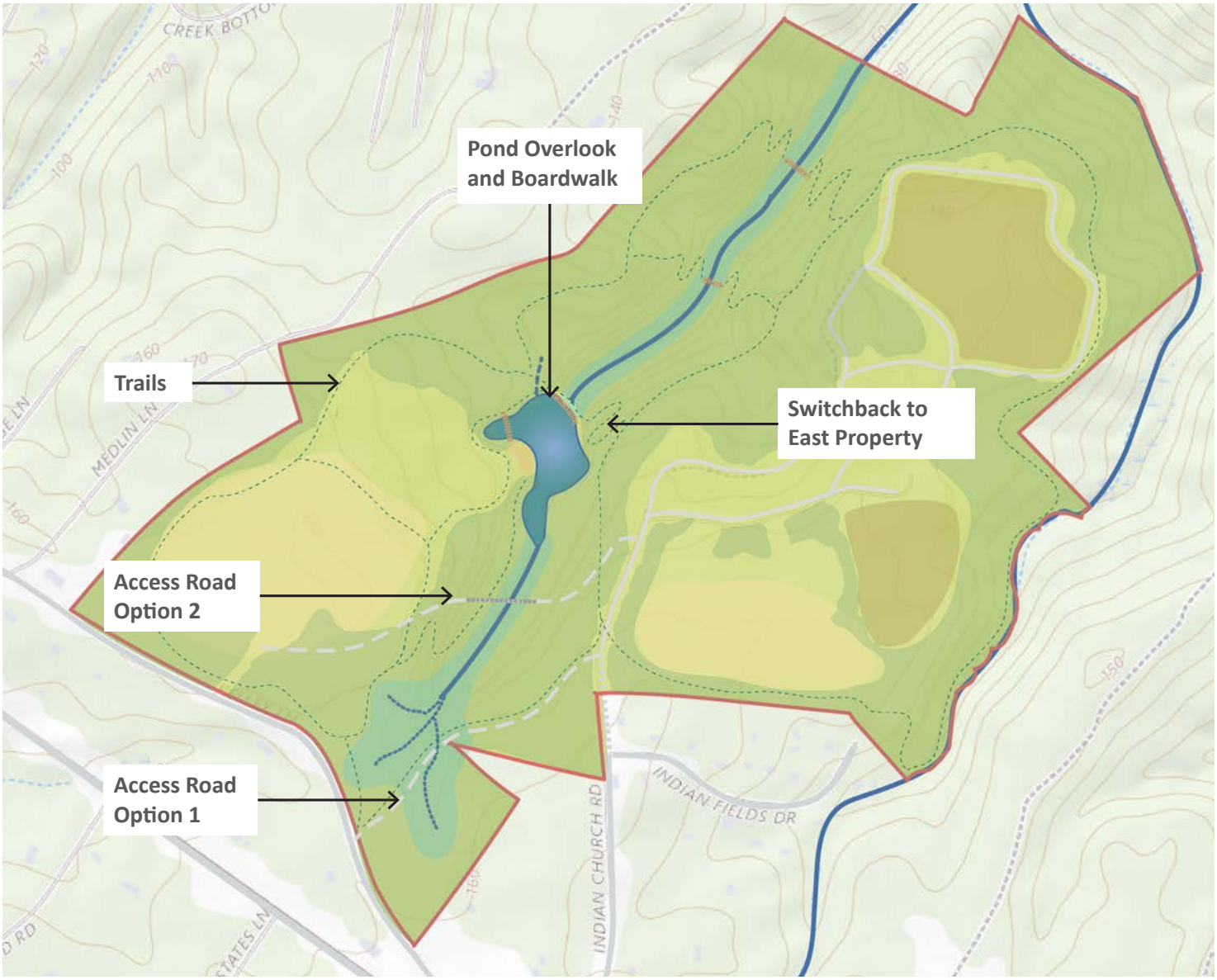
Planted swales in the parking lot capture and treat stormwater runoff.

The design of the Skokomish Community Center provides a new gathering and recreation place for the Skokomish Tribe that expresses and celebrates the culture and traditions of the Tribe. The building was designed to be as "green" and sustainable as possible within the constraints of budget and the site conditions.



The National Conservation Training Center in West Virginia provides a strong example for low impact development of a lodging/learning complex.

Recreation and Access with Low Impact



Recreational trail and vehicular access components of concept plan

The Upper Mattaponi Tribe plans to designate an area by the pond for gathering and to improve access along the pond's western edge for fishing and seating.

The tribe also plans to create and maintain a network of trails for access across the property. Some of the trails, including those immediately around the complex and connecting to the pond, need to be accessible for members with mobility limitations.

The tribe also requires a road for vehicular use that connects the tribal center directly to the property east of Indian Church Road. The road should include access to Kelley Lane, using a separate entrance or by tying into the main (existing) entry road on Kelley Lane.

View of the pond fom the northwest bank

The proposed concept shows trail and road routes and design recommendations to meet the tribe's connectivity needs while limiting disturbance in riparian areas, minimizing runoff and erosion, and minimizing slope.

Waterfront gathering and access

- Use sturdy permeable material for surface of gathering area
- Install elevated walkway and platform along segment of pond edge for fishing and seating
- Retain and protect trees, shrubs and perennials along pond edge

Mobility and accessibility

- Identify trails and recreation areas where accessible design and materials are needed to accommodate wheelchairs, walkers, strollers and other mobility support devices.
- Design accessible paths and trails to minimize slope and select sturdy material for trail surface.

Trails

- Use permeable, natural materials for surface, if needed in addition to cleared path (mulch, gravel).
- Install elevated boardwalks in riparian areas to minimize stream impact.
- Install water bars using on site materials such as fallen trunks or stones to reduce erosion.

Vehicular access to Tribal Center and Kelley Lane

- Option 1: Road extends along property line to Kelley Lane, avoiding stream crossing. Integrate planted swales and a drainage grate or culvert to minimize downstream effects.
- Option 2: Road extends over stream to connect to Tribal Center and Kelley Lane. This option requires an elevated structure to cross the steam.

Mowed path through meadow.

Water bars along cleared trail.

Elevated boardwalks minimize disturbance and help traverse steep grade in riparian areas.

TRIBAL CENTER PRECEDENTS

Tribal Center Complex Examples

The following are examples of other tribal complexes that incorporate green building and sustainability components.

Skokomish Tribe - Skokomish, WA

The design of the Skokomish Community Center is intended to provide a vital new gathering and recreation place for the Skokomish Tribe as well as express and celebrate the culture and traditions of the Tribe. The building was designed to be as "green" and sustainable as possible within the constraints of budget and the site conditions.

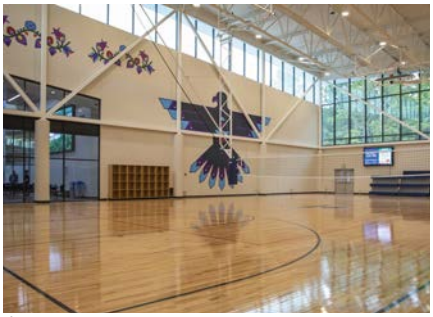
Source: https://www.7directionsarchitects.com/project/skokomish-tribal-master-plan-community-center/

Yocha Dehe Tribe - Brooks, CA

The Yocha Dehe Tribe sought an architectural design that was modern and expressive of their forward momentum, while being strongly related to both their cultural history and that of the Capay Valley. The resulting work attempts to articulate the Tribe's culture with a contemporary architecture that does not trivialize or mimic.

Source: https://www.wrnsstudio.com/project/yocha-dehe-tribal-community-center-and-school/

Potawatomi Tribe - Crandon, WI



The Forest County Potawatomi Community Center provides a broad program of sport, recreation, and fitness activities for tribal youth, adults, and families. The goal is to enhance personal lifestyles and improve the quality of life on the Forest County Potawatomi Reservation.

Source: https://community.fcpotawatomi.com/Default.aspx?id=28

Colusa Indian Community - Colusa, CA

Paskenta Tribe - Corning, CA

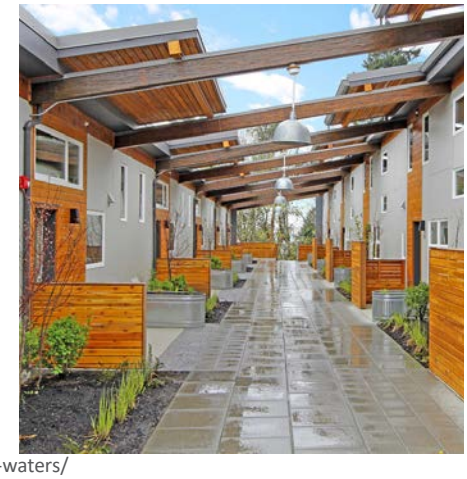
For both of these tribes, the architects worked closely with the Tribal Council to incorporate cultural significance and elements that reflect the tribe's history, core values and symbols in the design.

Sources: https://www.colusa-nsn.gov/ and https://travois.com/developments/paskenta-community-complex/

Tribal Center Housing Examples

The following are examples of tribal single and multifamily housing that incorporate green building and sustainability components.

Puyallup Tribe - Tacoma, Washington



Traditionally, Coast Salish tribes lived in longhouses with a shared central space and dwelling units off to the side. Architect Environmental Works used this living tradition as an inspiration and created a structure with ten town-homes that are separated from each other by a courtyard with an open, slanted shed roof. This example was designed to resemble a traditional shed roofed Coast Salish longhouse with a modern townhouse courtyard layout.

Source: https://ecotope.com/project/place-of-hidden-waters/

Santa Carlos Apache Tribe - Arizona

New homes were built on the San Carlos Apache Indian Reservation with funds from Indian Housing Block Grants (IHBG). By using Premier Structural Insulated Panels (SIPs), this project took advantage of cost effective SIPS designs resulting in almost zero waste material.

Source: https://www.premiersips.com/native-american-communities-on-a-sustainable-course/

Tagiugmiullu Nunamiullu Housing Authority - Alaska

Tagiugmiullu Nunamiullu Housing Authority (TNHA) and the village of Anaktuvuk Pass collaborated to design and construct an affordable, energy efficient, healthy home that incorporated indigenous qualities like earth-berming and a sod roof.

Source: http://cchrc.org/anaktuvuk-pass-prototype/

Penobscot Nation - Indian Island, Maine

The Penobscot Nation housing includes LEED Gold certified homes. LEED (Leadership in Energy and Environmental Design) is a green building rating system and provides a framework for healthy, highly efficient, and cost-saving green buildings.

Source: http://cchrc.org/anaktuvuk-pass-prototype/

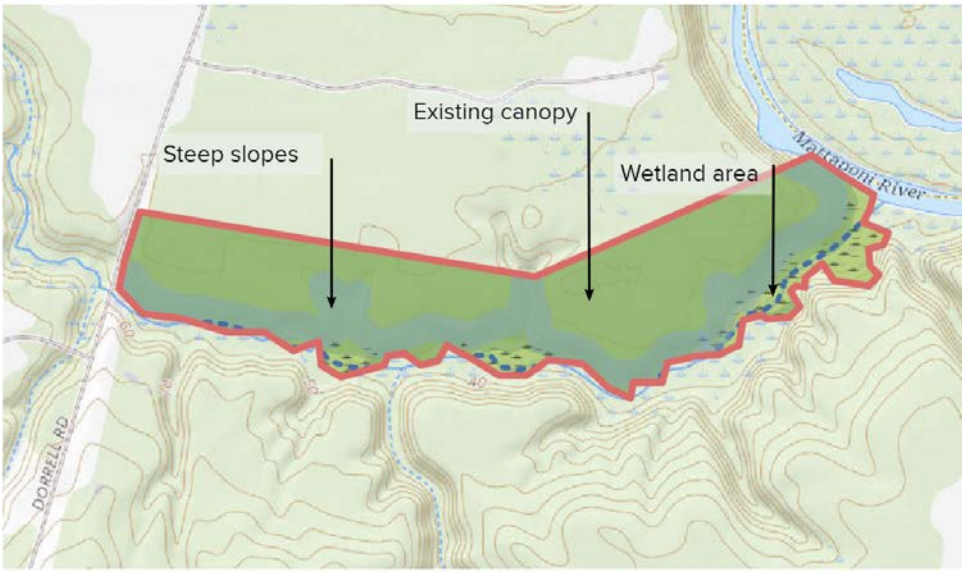
RIVERFRONT PROPERTY

Overview

The Upper Mattaponi Tribe acquired a 44-acre property located about 10 miles from the Adamstown property to gain waterfront access to the Mattaponi River, a significant part of the tribe's cultural heritage. The tribe plans to develop trails and vehicular access to the river to create opportunities for camping, kayaking, fishing, and hiking.

The site's location on the Mattaponi River is close to upstream and downstream non-motorized boat access areas, making it ideal as a destination or starting point for paddle trips in the area.

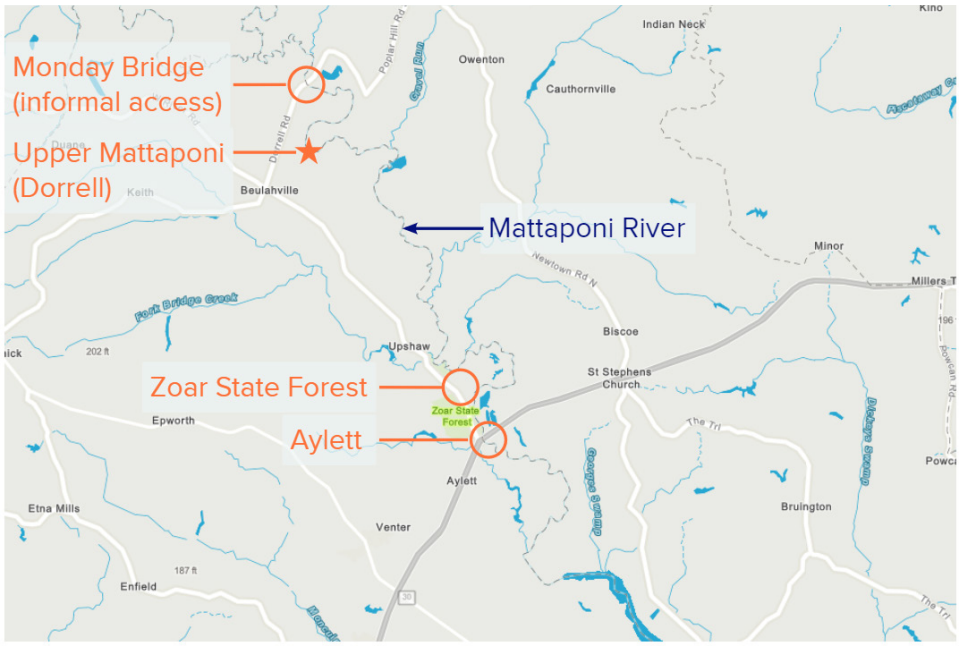
The site includes wooded and riparian areas with varied slope which create microclimates and a variety of natural areas. Steep slopes where runoff flows toward the tributary along the southern site boundary create challenges for crossing the site. An easement on the adjoining property can be used to reach the portion of the property east of a ravine that prohibits vehicular access to the river.



Existing conditions

Mattaponi River

Tributary along south site boundary

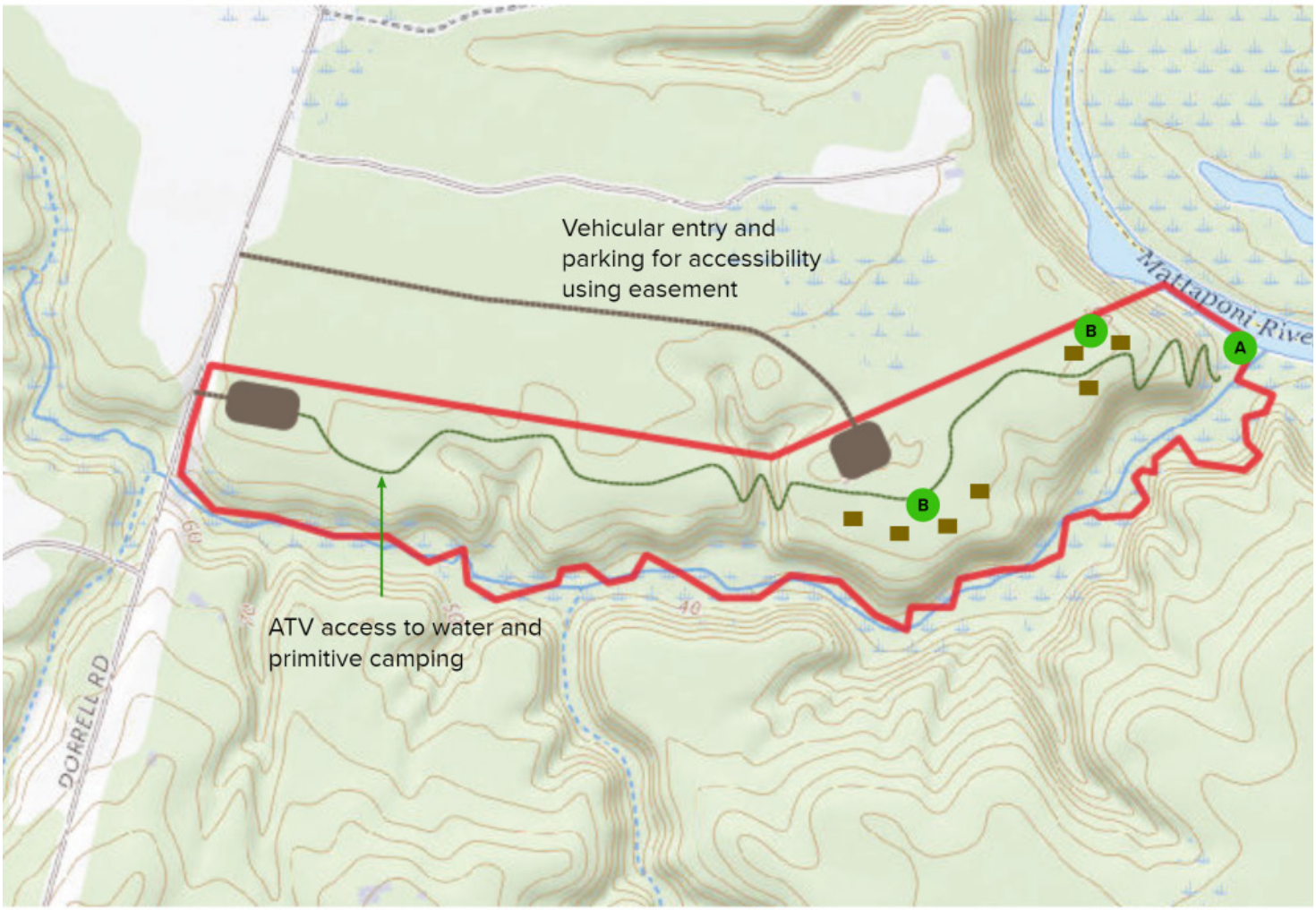


Nearby river access points

Steep grade area

Concept Plan

The Dorrell River Property concept plan includes features and amenities to meet the community's vision for gathering, river access, and passive and active recreation while enhancing the natural beauty, water quality and ecology of the site.



Dorrell Road property concept plan

A **Kayak Access / Tie Up Option**

- The steep river bank may limit adding a boat launch, but boat tie ups could be added to allow the property to accessible by boat.
- Stairs along steep slopes to provide access to the property from the river could provide access while limiting erosion.

B **Primitive Camping Options**

- Options could include tent platforms and primitive cabins.
- Compost toilets could also provide an environmentally friendly amenity.

RIVER ACCESS AND CAMPING PRECEDENTS

Ecotourism Examples

Primitive Camping Options






Compost Toilet Options


Gathering/Viewing Platform

Kayak Access/Tie Up Options


Moving Forward

These initial concepts are intended to be a springboard for a full community planning process and support grant applications for implementation. The Upper Mattaponi Steering Committee and community stakeholders underscored the importance of broader community engagement to refine the concept plans as the project moves forward. There are a range of ways to reach and engage tribal members.

The concept plans can also be used to support grant applications and serve as a catalyst to engage and spark community interest in transforming the Adamstown property and Dorrell Road River Property into a Tribal Center and Tribal ecotourism amenity. There are a range of state and federal funding opportunities that can support community engagement, design and construction. Key grants that might be able to support these efforts moving forward are listed below.

National Fish & Wildlife Foundation (NFWF) Chesapeake Bay Stewardship Fund

Small Watershed Grants Program includes awards each year through two distinct funding opportunities: SWG-Implementation (SWG-I) and SWG-Planning and Technical Assistance (SWG-PTA).

- SWG-I grants are awarded to projects within the Chesapeake Bay watershed that promote on-the-ground community-based efforts to protect and restore the diverse natural resources of the bay and its tributary rivers and streams. Projects result in measurable improvements to local stream health and habitat, and/or the water quality of the Chesapeake Bay. SWG-I grants range from $75,000 to $500,000.
- SWG-PTA grants are awarded to projects that enhance local capacity to more efficiently and effectively implement on-the-ground conservation efforts through assessment, planning and design, and other technical assistance-oriented activities. Potential SWG-PTA grants can be assisted or enhanced through the use of Technical Assistance Providers. SWG-PTA grants are a maximum of $75,000.

For more information: https://www.nfwf.org/programs/chesapeake-bay-stewardship-fund/small-watershed-grants

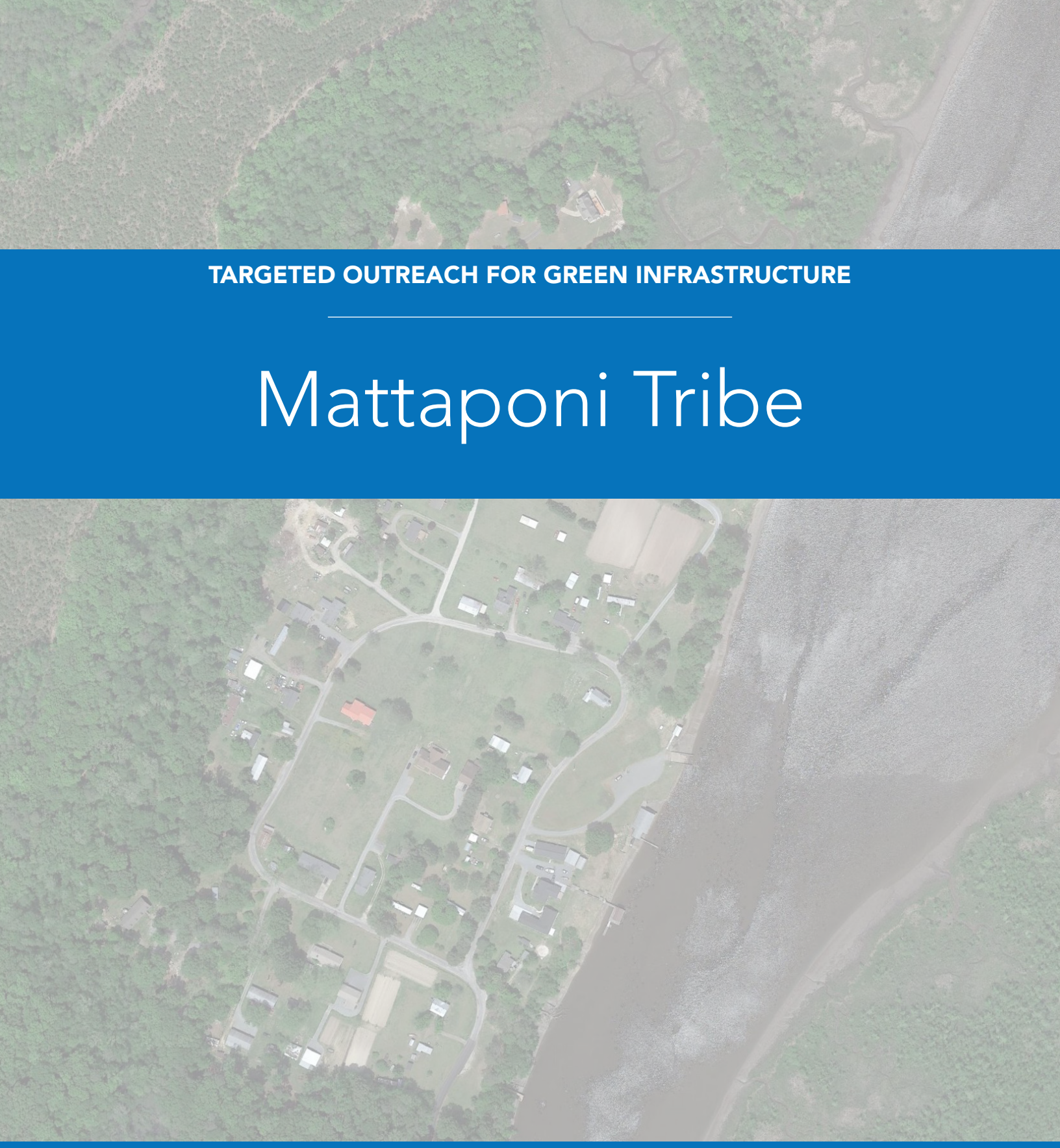
The Innovative Nutrient and Sediment Reduction Grants (INSR) is a program to accelerate the rate and scale of water quality improvements specifically through the coordinated and collaborative efforts of sustainable, regional-scale1 partnerships in implementing proven water quality improvement practices more cost-effectively. For more information: https://www.nfwf.org/programs/chesapeake-bay-stewardship-fund/innovative-nutrient-and-sediment-reduction-grants-2022-request-proposals

New America the Beautiful Challenge, is a streamlined grant funding opportunity for new conservation and restoration projects around the U.S. that consolidates funding from multiple federal agencies and the private sector to enable applicants to conceive and develop large-scale projects that address shared funder priorities and span public and private lands. For more information: https://www.nfwf.org/programs/america-beautiful-challenge

U.S. Fish and Wildlife Service

2023 Grant Opportunity - the Chesapeake WILD Act puts $15 million into helping local partners with on-the-ground work in the 64,000-square-mile watershed. Goals include improving stream health and fish habitat, restoring riparian forest buffers and wetlands, expanding black duck populations, protecting eastern brook trout, and removing barriers to fish migration in fresh water. For more information: https://www.chesapeakeconservation.org/wp-content/uploads/2021/03/Chesapeake-WILD-Program-Fact-Sheet.pdf

May 2022



TARGETED OUTREACH FOR GREEN INFRASTRUCTURE

Mattaponi Tribe

Chesapeake Bay Program
Science. Restoration. Partnership.

MATTAPONI INDIAN RESERVATION
1658

CONTENTS

Acknowledgments

The TOGI project team acknowledges the contributions of all those who participated in this planning effort.

TOGI Project Team

- Chris Guy, U.S. Fish and Wildlife Service & Chesapeake Bay Program
- Briana Yancy, U.S. Environmental Protection Agency
- Katlyn Fuentes, Chesapeake Research Consortium
- Alisa Wilson, Skeo Solutions
- Catherine Brown, Skeo Solutions
- Marissa Sperry, Skeo Solutions

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EPA United States Environmental Protection Agency

CBTRUST Chesapeake Bay Trust

Targeted Outreach for Green Infrastructure in Vulnerable Areas Project

Overview

Many communities are adopting green infrastructure as a strategy to manage stormwater, improve water quality, add habitat and provide community benefits such as open space, pedestrian safety, shade and beautification. The Targeted Outreach for Green Infrastructure in Vulnerable Areas (TOGI) is a pilot project being led by the Chesapeake Bay Program Habitat Goal Implementation Team. The goal of this pilot project is to work with communities in the Chesapeake Bay watershed to design green infrastructure projects that meet both community and habitat conservation goals.

The Mattaponi Tribe is located in King William, Virginia.

Areas within the City of Williamsport, Pennsylvania; Middle Peninsula, Virginia (includes Upper Mattaponi Tribe property and Mattaponi Tribe property); and Cambridge, Maryland were selected as areas susceptible to climate change within the Chesapeake Bay watershed that could benefit from green or nature-based Infrastructure projects. These communities also met criteria for diversity, equity, inclusion and justice based on income and demographic data.

For the Mattaponi Tribe, the process included a listening session to help identify local opportunities where climate change problems can be addressed through green infrastructure options, while also helping to meet community needs. Following the listening session, a design workshop was held to develop a preliminary design concept for a community-identified project. The outcome is a design concept for the selected project and assistance in identifying implementation funding.

Mattaponi Tribe

A Mattaponi Steering Committee was formed to guide the process and included Tribal leaders as well as local, state and federal government staff. The Steering Committee helped identify and engage local stakeholders and identify resources and opportunities to refine the design and construct the project.

The outcome is a green infrastructure design concept that can serve as a catalyst to help the Tribe move forward with broader community engagement and grant applications for implementation. The design concepts are anticipated to evolve as more information becomes available through the site design process and additional community input.

MATTAPONI STEERING COMMITTEE

- Mark Custalow - Chief of the Mattaponi Tribe
- Brandon Custalow - Mattaponi Council Member
- Lois Carter - Mattaponi Petition Office, Project Director
- Aaron Wendt, Virginia Department of Conservation and Recreation and Recreation Shoreline Erosion Advisory Service (VA DCR-SEAS)
- Elizabeth Andrews, William & Mary Law School Virginia Coastal Policy Center
- Katherine Filippino - Hampton Roads Planning District Commission
- Andrew Larkin, National Oceanic and Atmospheric Administration (NOAA)
- Julie Reichert-Nguyen, NOAA
- Lauren Taneyhill, NOAA
- Renee Thompson, United States Geological Survey (USGS) & Chesapeake Bay Program

PLANNING PROCESS

Listening Session and Workshop

A listening session held on Monday, February 28, 2022, included Mattaponi Tribal Council members and steering committee members for a discussion about community needs and priorities, challenges, opportunities, relevant community initiatives, potential areas and partners for collaboration. Participants identified the need for riverbank stabilization to address the instability of the bank and provide habitat, particularly to support species of importance to the Mattaponi Tribe, such as shad.

The listening session helped to establish goals and needs for river bank stabilization, including green infrastructure strategies to help alleviate erosion and provide habitat. The listening session was followed by a site visit on April 2, 2022 and a design workshop on May 6, 2022 to review the design concepts and discuss implementation opportunities.

Large trees are at risk of falling and destabilizing the river bank.

Next Steps

The initial design concepts are intended to be a springboard for a full community planning process and a means to organize partners to support efforts to secure funding for implementation, through grants and other resources. There are a range of federal and state funding opportunities that can support moving this project forward. The design concepts can be used to support grant applications and serve as a catalyst to engage and spark community interest in restoring the riverbank.

Erosion and wave action is destabilizing portions of the river bank.

INVITED STAKEHOLDERS

Tribal leaders and organizations shared input about the community's needs, priorities and resources to guide the project. The following people were invited to participate in the listening session and design workshop.

- Mark Custalow, Chief of the Mattaponi Tribe
- Leon Custalow, Assistant Chief of the Mattaponi Tribe
- Brandon Custalow, Mattaponi Council Member
- Lois Carter, Mattaponi Petition Office, Project Director
- Lee Custalow, Mattaponi Council Member
- Malcolm Custalow, Mattaponi Council Member
- Rick McAllen, Mattaponi Council Member
- Tony Waldrop, Mattaponi Council Member
- Jack Custalow - Mattaponi Council Member
- Aaron Wendt, DCR-SEAS
- Elizabeth Andrews, William and Mary
- Jake Reilly, National Fish and Wildlife Foundation
- Katherine Filippino, Hampton Roads Planning District Commission
- Andrew Larkin, NOAA
- Julie Reichert-Nguyen, NOAA
- Lauren Taneyhill, NOAA
- Mike Slattery, U.S. Fish and Wildlife Service
- Renee Thompson, USGS & Chesapeake Bay Program

Riverbank Stabilization

Existing Conditions

The Mattaponi Tribe Reservation is located on a bluff along the Mattaponi River. The riverbank conditions vary along the river corridor and are described in detail below and identified on the map to the right.

1 Riverfront Residential Property

- Failing wooden bulkhead
- Severe erosion and loss of riverbank
- Limited space to pull back riverbank to create a more gradual slope
- Grass slope

2 Riprap Bank and Forested River Bank (Cemetery)

- Large trees on riverbank at risk of falling and damaging riverbank
- Eroding slope from upland stormwater runoff and saturated soils (revealing buried trash in some areas)
- Natural springs / former gullies that outfall to the river
- Riprap revetment installed along toe of slope to help address shoreline erosion
- Cemetery at top of slope limits space to pull back riverbank to create a more gradual slope

3 Hatchery

- During storms, river will rise above boat launch bulk head
- Natural springs located in this area
- Stormwater inlets and drains may be undersized to handle rainfall amounts
- Area is mowed regularly

4 Forested Riverbank (Road)

- Large trees on riverbank at risk of falling and damaging bank
- Eroding slope and gullies from upland stormwater runoff
- Stairways and docks to river damaged or inaccessible due to riverbank erosion and storm damage
- Erosion is close to the main road. Virginia Department of Transportation (VDOT) maintains the road and could be a potential partner for implementation to address road stormwater runoff

Potential Opportunities

There are several riverbank stabilization strategies that can be utilized to address erosion and failing bank conditions while also protecting habitat and providing river access. The overall approach uses a combination of living shoreline and engineered strategies to achieve riverbank stabilization. A living shoreline uses natural materials such as plants, sand, or rock to protect and stabilize a shoreline. An engineered approach uses built structures or materials like bulkheads or riprap to stabilize a shoreline. These strategies proposed for the Mattaponi River are outlined on the map below and described in more detail on the following pages.

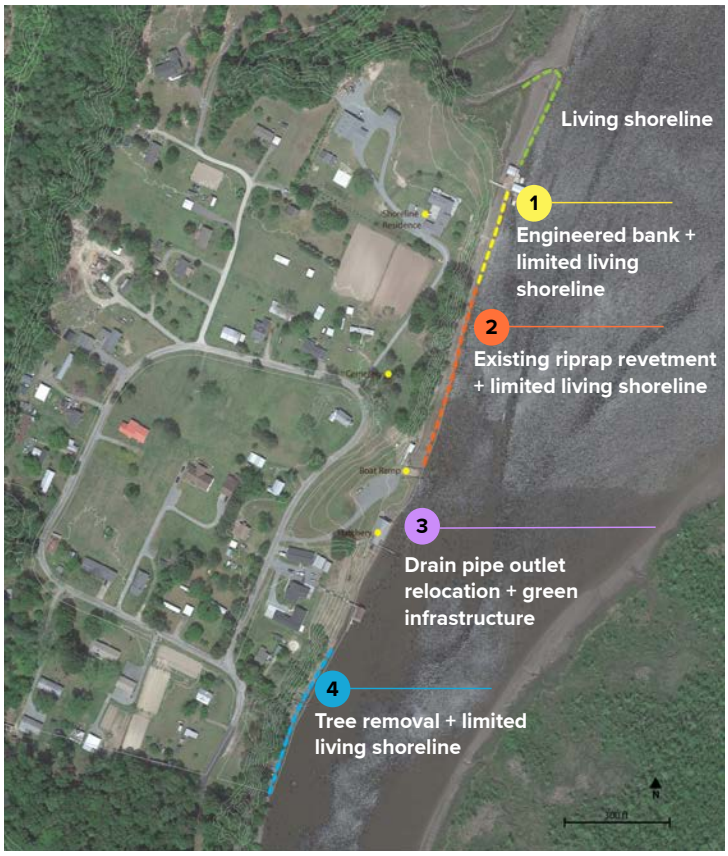


Diagram showing the proposed riverbank stabilization techniques along the Mattaponi River.

Green Infrastructure Strategies

Green Infrastructure uses vegetation, soils and other natural landscape features to manage precipitation, reduce and treat stormwater at its source and create sustainable and healthy communities. Strategies can include rain gardens, bioswales, urban tree canopies, permeable pavement as well as techniques to redirect and capture stormwater. The photos below are examples of green infrastructure elements that may be incorporated into the strategies identified in the concept plan.

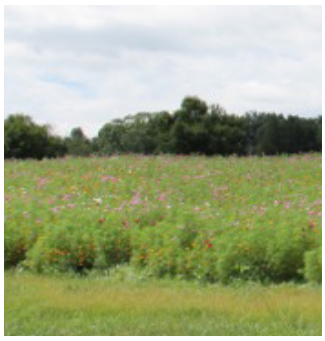
Stabilize bank and provide habitat

Living Shoreline


Reduce overland water flow

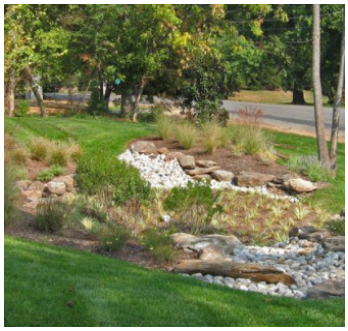
Native grass and low mow areas


Pollinator or wildflower meadow

Infiltrate stormwater runoff from roads and drains

Raingarden and bioretention

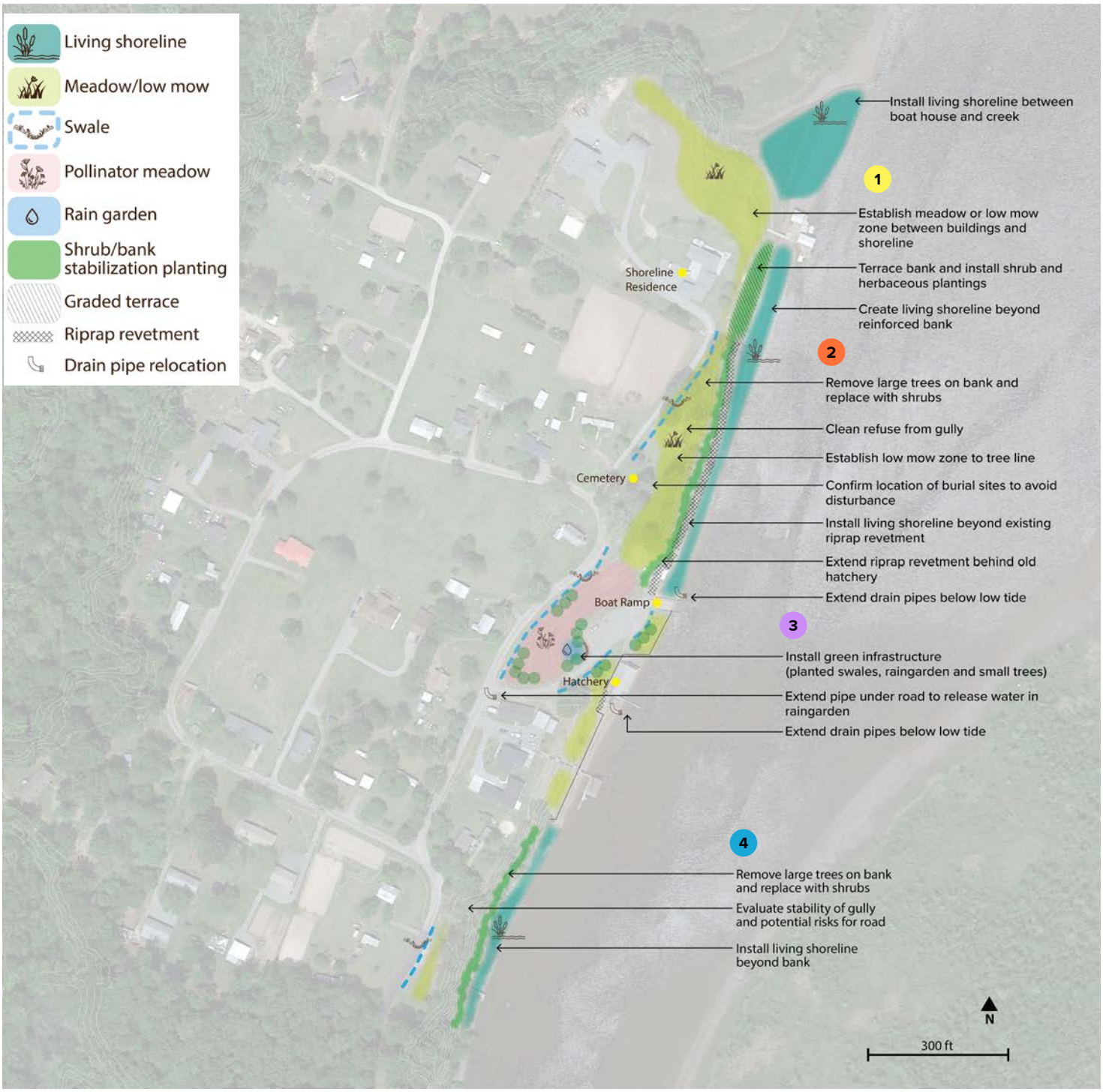



Grass swales and planted swales


Concept Plan

The concept plan focuses on restoring the shoreline and bolstering resilience to erosive forces such as surface stormwater runoff, storms, and wake.

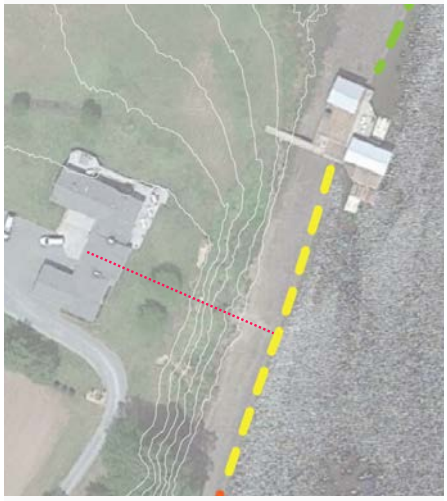
The plan proposes landscape features such as new tree, shrub and meadow plantings, as well as rain gardens and roadside swales, to reduce surface flow toward the riverbank. The plan also proposes shoreline restoration projects along the river that include regrading, extending and planting the banks to restore and stabilize the riverfront property.



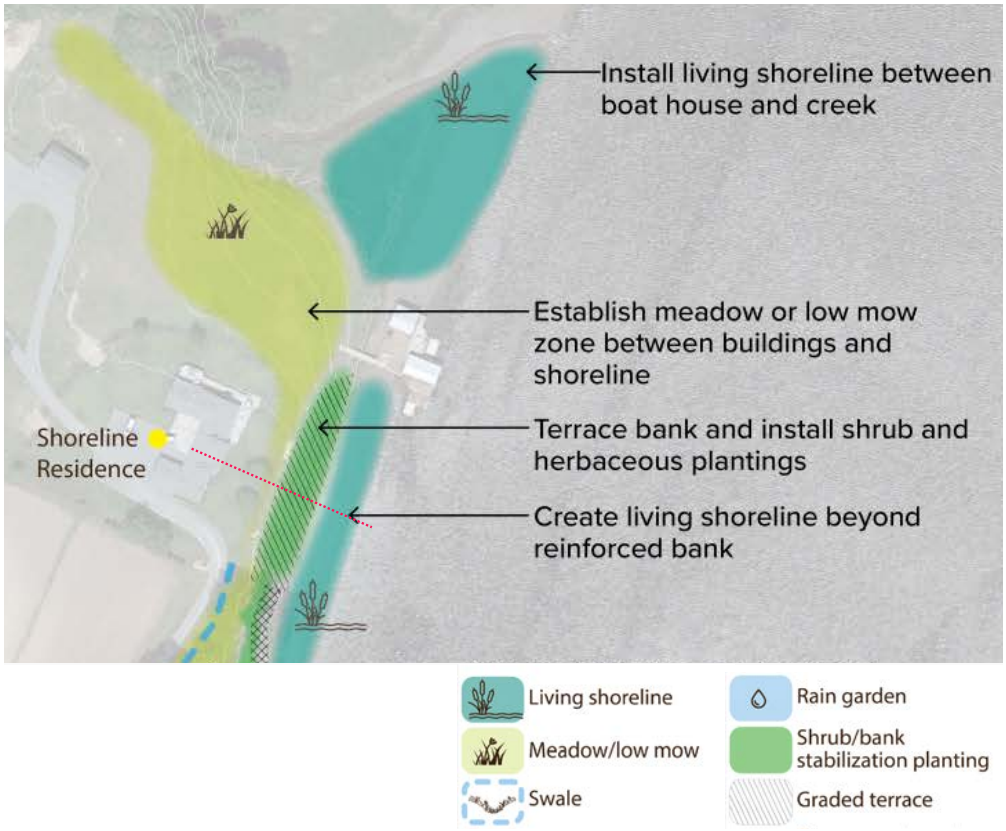
Concept Plan

1 Riverfront Residential

The concept for this section focuses on extending and stabilizing the shoreline to protect the existing residence.



Existing conditions (red line indicates location for sections shown below)

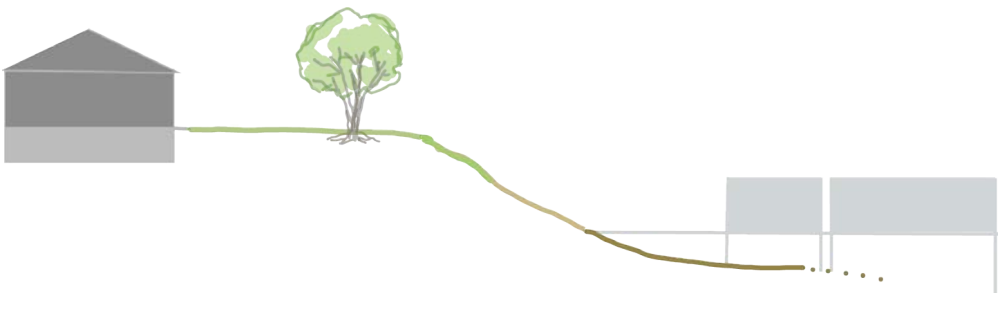


Examples

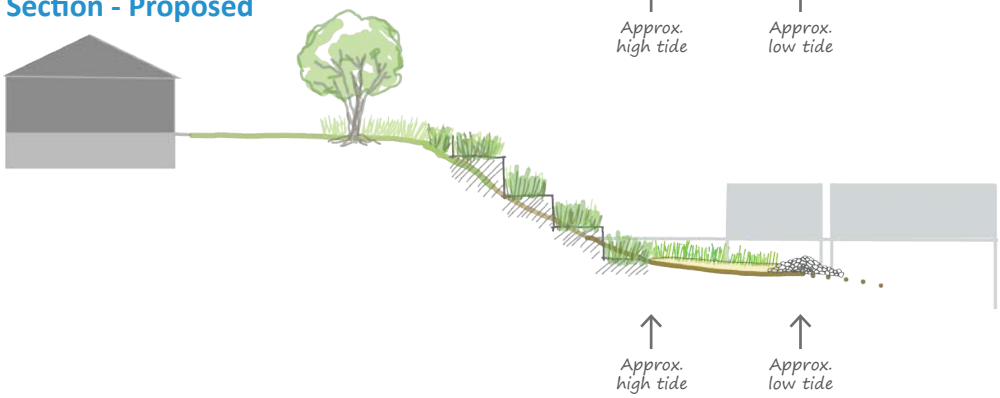
Living shoreline by residence

Native grass meadow/low mow area

Section - Existing



Section - Proposed

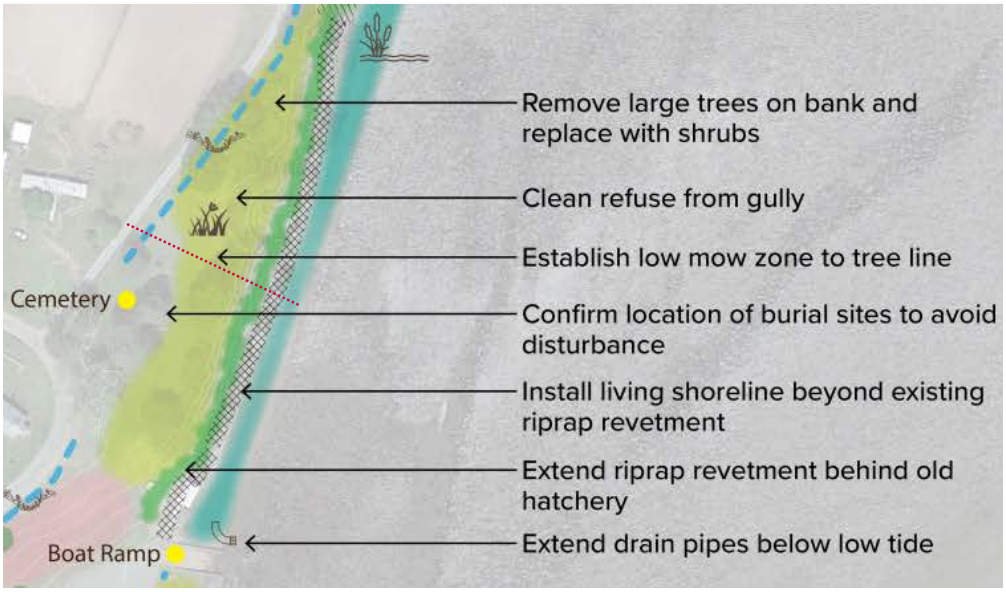


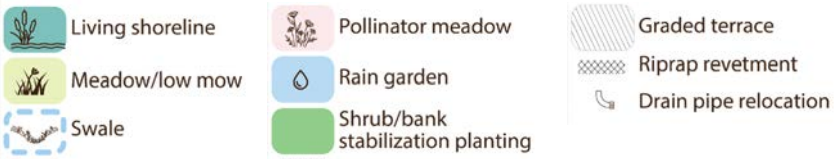
This section view illustrates the proposed living shoreline, grading and restoration landscape features. The location of the section is indicated with a red line in the concept plan.

2 Rip Rap Bank and Forested Riverbank Concept

The concept for this section focuses on extending and protecting the shoreline by bolstering the riprap revetment and reducing surface flow.

Existing conditions (red line indicates location for sections shown below)



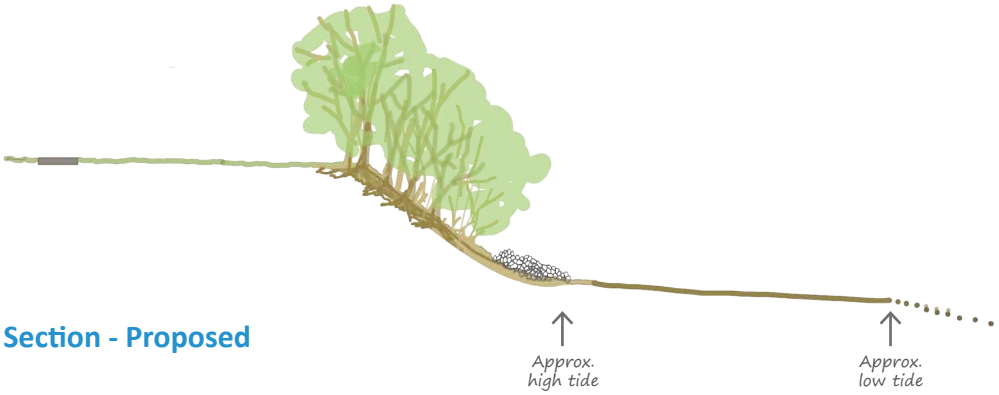


Examples

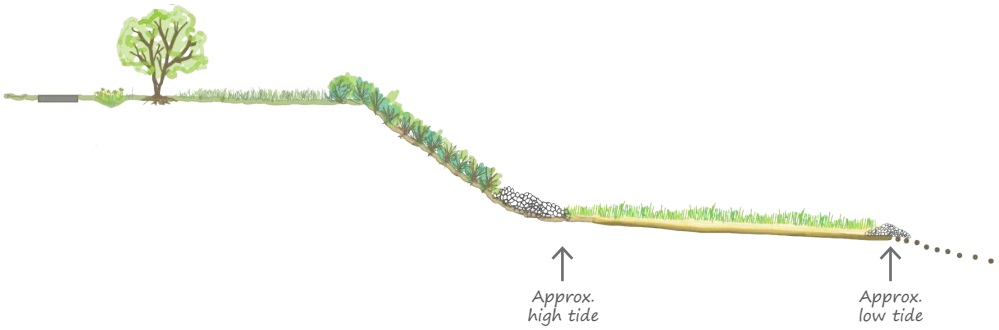
Living shoreline

Grass swales and planted swales

Section - Existing



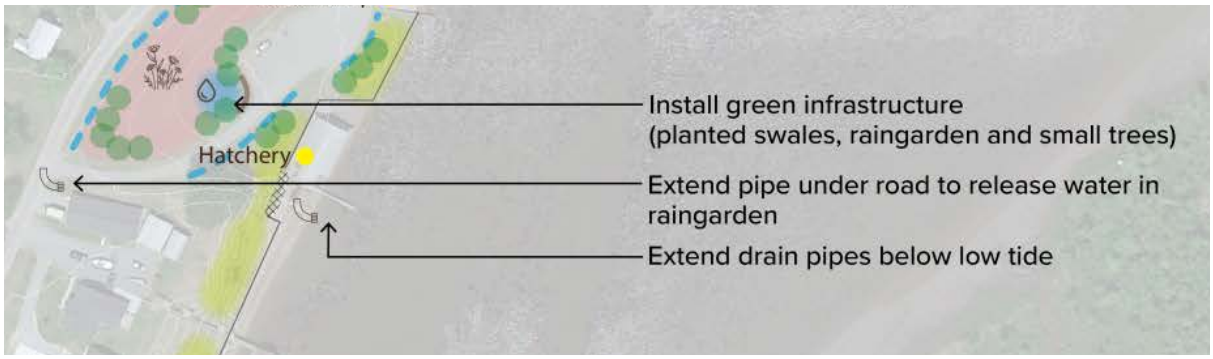
Section - Proposed



This section view illustrates the proposed living shoreline and restoration landscape features. The location of the section is indicated with a red line in the concept plan.

3 Hatchery and Boat Ramp Area

The concept design for the Hatchery and Boat Ramp area focuses on landscape features to direct water flow to planted retention areas and reduce surface runoff.



Existing conditions

Examples

Rain garden and bioretention

Pollinator wildflower meadow

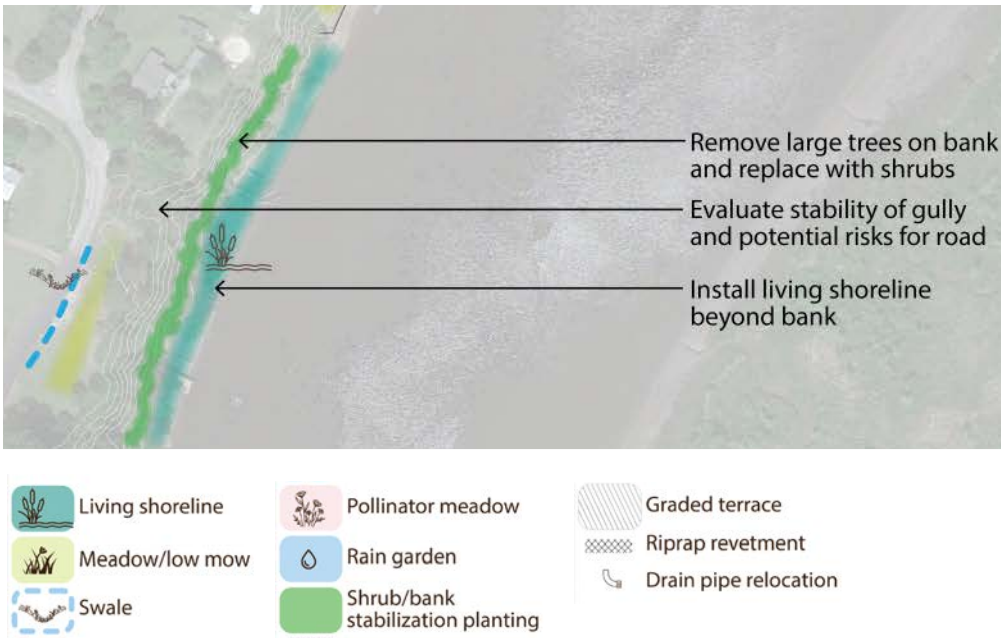
Tree and shrub plantings

Grass and planted swales

4 Forested Riverbank and Road Concept

The concept for this section focuses on extending the shoreline to prevent further erosion of the river bank by the entry road.

Existing conditions (red line indicates location for sections shown below)

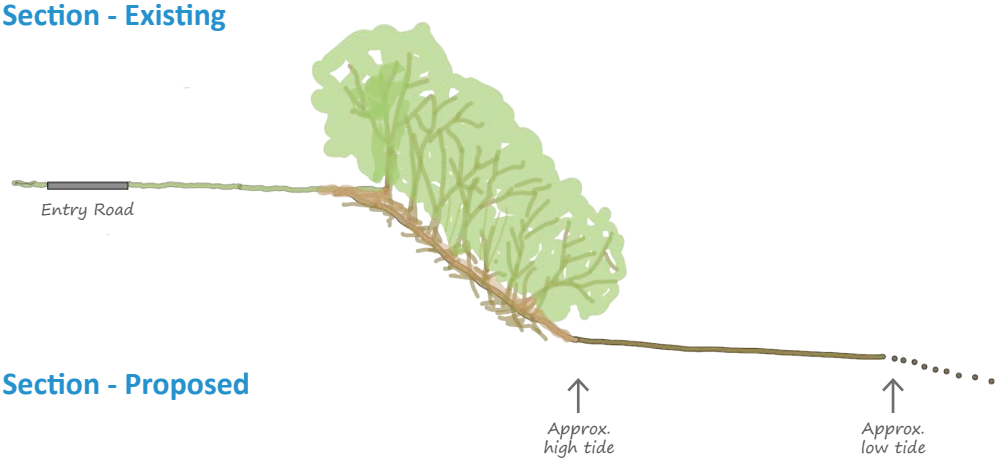


Examples

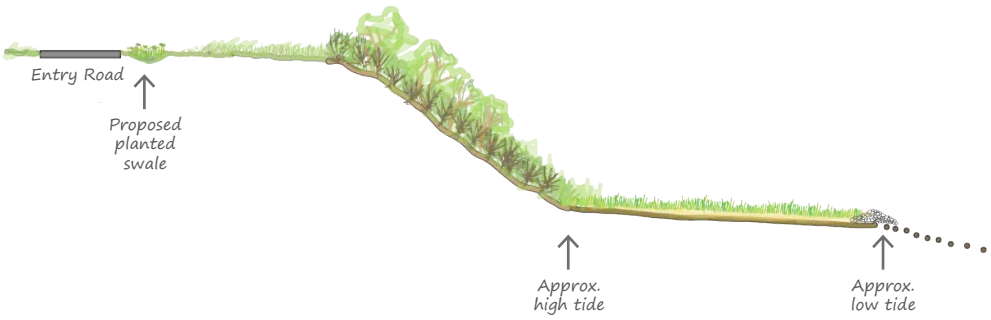
Living shoreline

Grass swales and planted swales

Section - Existing



Section - Proposed



This section view illustrates the proposed living shoreline and restoration landscape features. The location of the section is indicated with a red line in the concept plan.

May 2022

Funding Opportunity	Administered by	Website	Types of projects funded	TOGI Subgroup	Eligible Applicants	Application Due	Funding Cycle Info	Max $ amount	Match Requiremt	Other info	Contact for more info
Chesapeake WILD	U.S. Fish & Wildlife Service	https://www.chesapeakeconservation.org/wp-content/uploads/2021/03/Chesapeake-WILD-Program-Fact-Sheet.pdf	The Chesapeake WILD Act puts $15 million into helping local partners with on-the-ground work in the 64,000-square-mile watershed. Goals include improving stream health and fish habitat, restoring riparian forest buffers and wetlands, expanding black duck populations, protecting eastern brook trout, and removing barriers to fish migration in fresh water.	All	Information Not Available Yet (RFP anticipated to be released ~ 2023)						Mike Slattery 410/573 4571 - (O) 202/870 1072 - (C) michael_slattery@fws.gov
Innovative Nutrient and Sediment reduction grants	National Fish & Wildlife Foundation (NFWF)	https://www.nfwf.org/programs/chesapeake-bay-stewardship-fund/innovative-nutrient-and-sediment-reduction-grants	the focus of the INSR Program shifted to catalyze, strengthen and mature regional-scale partnerships based on evidence that collaboratives of this scale are effective mechanisms for achieving and sustaining water quality improvements by inspiring engagement, improving capacity and advancing impact over time.	All	Eligible applicants include non-profit 501(c) organizations, state government agencies, local governments, municipal governments, Tribal governments and organizations, and educational institutions.	November	Annually	$750,000 to $1million	1:1	ll eligible projects must occur wholly within the Chesapeake Bay watershed and projects located within NFWF's Targeted Rivers and Watersheds will be prioritized	Jake Reilly (jake.reilly@nfwf.org),
Small Watershed Grants	National Fish & Wildlife Foundation	https://www.nfwf.org/programs/chesapeake-bay-stewardship-fund/small-watershed-grants-2021-request-proposals	SWG Implementation (SWG-I) grants of $50,000-$500,000 will be awarded for projects that result in direct, on-the-ground actions to protect and restore water quality, species, and habitats in the Bay watershed; SWG Planning and Technical Assistance (SWG-PTA) grants up to $50,000 will be awarded for projects that enhance local capacity to more efficiently and effectively implement future on-the-ground actions through assessment, planning, design, and other technical assistance-oriented activities.	All	non-profit 501(c) organizations, state government agencies, local governments, municipal governments, Tribal governments and organizations, and educational institutions.	April	Annually	$50,000 to $500,000	Small Watershed Grants Implementation program will with a non-federal matching requirement equal to one-third of the grant request. SWG-Implementation grants with no non-federal matching requirement.		Jake Reilly (jake.reilly@nfwf.org),
Partners for Fish & Wildlife	U.S. Fish & Wildlife Service	https://www.fws.gov/northeast/ecologicalservices/partners.html	a voluntary, incentive-based program that provides direct technical assistance and financial assistance in the form of cooperative and grant agreements to private landowners to restore and conserve fish and wildlife habitat for the benefit of federal trust resources.	All	Forest landowners Farmers Ranchers Recreational landowners Corporations County governments Local governments Universities						varies by state https://www.fws.gov/northeast/ecologicalservices/partnerscontacts.html
Land & Water Conservation Fund	National Park Service, through state agencies: Maryland Department of Natural Resources, Pennsylvania Department of Conservation and Natural Resources, Virginia Department of Conservation and Recreation	https://www.nps.gov/subjects/lwcf/planningprojects.htm	The State Side of the LWCF provides matching grants to States and local governments for the acquisition and development of public outdoor recreation areas and facilities.	All						States must prepare and regularly update a statewide recreation plan (sometimes called a SCORP), which usually address the demand for and supply of recreation resources (local, state and federal) within a state, identify needs and new opportunities for recreation improvements and set forth an implementation program to meet goals set in the state. State funds through LWCF align with the SCORPs; local governments often have similar plans that take guidance from the state plans. States receive individual allocations (apportionments) of LWCF grant funds based on a national formula, and they initiate a statewide competition for the funds, through a state agency, and NPS formal approval and obligation of federal grant monies. Each State has its own priorities and selection criteria.	MD: see Program Open Space and Community Parks & Playgrounds, below; VA: Kristal McKelvey, Grants Administrator, DCR, kristal.mckelvey@dcr.virginia.gov, 804-786-4379; PA:

Funding Opportunity	Administered by	Website	Types of projects funded	TOGI Subgroup	Eligible Applicants	Application Due	Funding Cycle Info	Max $ amount	Match Requiremt	Other info	Contact for more info
Outdoor Recreation Legacy Partnership Program (ORLP) - part of Land & Water Conservation Fund	National Park Service	The NPS Notice of Funding Opportunity (PDF) or web link details the program requirements. https://www.dcr.virginia.gov/recreational-planning/document/NPS-ORLP-Notice-of-Funding-Opportunity.pdf OR https://www.grants.gov/web/grants/view-opportunity.html?oppId=333434	50%-50% matching reimbursement program established to provide new or significantly improve recreation opportunities for economically-disadvantaged communities in densely populated urban areas that are under-served in terms of parks and other outdoor recreation resources.	All	Each state has a designated lead agency and are the only entity eligible to submit applications for ORLP grants. The lead agency may submit on behalf of themselves or another eligible subrecipient (including state agencies, local units of government [state political subdivisions such as cities, counties, and special purpose districts such as park districts], and federally-recognized Indian Tribes].	September	Annually	Minimum award amount for the 2021 grant cycle is $300,000 and the maximum award amount is $5,000,000. An estimated $150 million in matching federal funds are available in the 2021 grant round.	50:50 match	ORLP is a national competition, unlike LWCF State and Local Assistance Program grants. **Sub-recipients must represent and the project must serve a jurisdiction of at least 50,000 people in a designated urbanized area.**	Varies by State
National Coastal Resilience Fund	National Fish & Wildlife Foundation	https://www.nfwf.org/programs/national-coastal-resilience-fund	The National Coastal Resilience Fund restores, increases and strengthens natural infrastructure to protect coastal communities while also enhancing habitats for fish and wildlife. Established in 2018, the National Coastal Resilience Fund invests in conservation projects that restore or expand natural features such as coastal marshes and wetlands, dune and beach systems, oyster and coral reefs, forests, coastal rivers and floodplains, and barrier islands that minimize the impacts of storms and other naturally occurring events on nearby communities.	All	Eligible applicants include non-profit 501(c) organizations, state and territorial government agencies, local governments, municipal governments, Tribal governments and organizations, educational institutions, or commercial (for-profit) organizations.	Spring	Annual	Most project awards will average between $250,000 and $5,000,000	Applicants who would have difficulty meeting 1:1 non-federal match, or who have questions regarding match beyond this guidance, may reach out to Kaity Goldsmith (kaitlin.goldsmith@nfwf.org).	Projects must be located within the coastal areas of U.S. coastal states, including the Great Lakes states, and U.S. territories and coastal tribal lands. https://www.nfwf.org/programs/national-coastal-resilience-fund/national-coastal-resilience-fund-2021-request-proposals	Michelle Pico Program Director, Marine Conservation pico@nfwf.org 262-567-0601
Building Resilient Infrastructure and Communities (BRIC)	FEMA	https://www.fema.gov/grants/mitigation/building-resilient-infrastructure-communities	FEMA's hazard mitigation assistance provides funding for eligible mitigation measures that reduce disaster losses. It also: Reduces vulnerability of communities to disasters and their effects. Promotes individual and community safety and their ability to adapt to changing conditions and withstand and rapidly recover from disruption due to emergencies (resilience). Promotes community vitality after a disaster. Lessens response and recovery resource requirements after a disaster. Results in safer communities that are less reliant on external financial assistance.	All	Eligible applicants include all 50 states, U.S. territories, federally recognized Tribal Governments, and District of Columbia. Eligible subapplicants include Local Governments, Tribal Governments, State Agencies, and Tribal Agencies. State or territory: Must have received a major disaster declaration under the Stafford Act in the seven years prior to the annual grant application period start date. Federally recognized tribe: Must have received a major disaster declaration under the Stafford Act in the seven years prior to the annual grant application period start date or be entirely or partially located in a state that received a major disaster declaration in the seven years prior to the annual grant application period start date. A Federally recognized tribe is eligible to apply for a grant either as an applicant	Fall	Annual	The funding caps (federal share) for the BRIC program are as follows: State/Territory Maximum Allocation and Activity Caps: $1 million Up to $500,000 may be used for mitigation planning and planning-related activities per applicant Tribal Set-Aside Activity Caps: The combined cost of the applicant's capability- and-capacity building activities under the Tribal Set-	Cost Share Required Generally, the cost share for this program is 75% federal/25% non-federal. Economically disadvantaged rural communities 1 are eligible for an increase in cost share up to 90% federal/10% non-federal.		For general questions about the BRIC program can be directed to the appropriate State Hazard Mitigation Officer (SHMO) or FEMA Regional Office on FEMA.gov. The HMA Helpline is available by telephone at (866) 222-3580.

Funding Opportunity	Administered by	Website	Types of projects funded	TOGI Subgroup	Eligible Applicants	Application Due	Funding Cycle Info	Max $ amount	Match Requiremt	Other info	Contact for more info
EJ4Climate	North American Commission for Environmental Cooperation (CEC)	http://www.cec.org/ej4climate/	**program could include addressing extreme weather impacts, transitioning to clean energy and/or transportation systems, or utilizing traditional ecological knowledge to address climate change impacts. Project types can include, but are not limited to, capacity building, pilot projects, transfer of innovative technologies, conducting outreach or education, sharing best practices, communication and preparedness/response process improvements, training environmental and community leaders, engaging youth on environmental activities, and reducing risks to the environment**	All	o Eligible applicants include nonprofit and nongovernmental organizations (NGOs), civil society groups, environmental groups, community-based associations, tribal nations, and Indigenous Peoples and communities. o Universities, and academic and public research institutions are eligible to apply by teaming up with community-based organizations. o Applicants must be located in Canada, Mexico or the United States. o If you are unsure whether your organization is eligible, please contact us.	Fall	Anual	up to C$200,000			
CBT G3	Chesapeake Bay Trust	https://cbtrust.org/wp-content/uploads/G3-one-pager.pdf	This program supports design projects, financing strategies, and/or implementation of green street projects. This program also supports white papers on innovative ideas for green infrastructure and charrettes to plan and vision a green street project with developers, citizens, planners, and other key stakeholders. Grant funding can be applied anywhere in the Chesapeake Bay watershed portion of EPA Region 3 (excludes New York). Use this kmz file in Google Earth to determine if your project location is eligible. Applicants applying for the implementation/construction and greening of vacant lots will be asked to use the G3 Implementation Project Calculator spreadsheet to show the breakdown of Green Infrastructure costs.	All	All communities in Maryland, and throughout the Chesapeake Bay watershed portions of Delaware, Pennsylvania, Washington D.C., West Virginia, and Virginia are eligible to apply for the Chesapeake Bay G3 Grant Program. This program is open to all taxexempt entities, such as local governments and non-profit organizations	March	Annual	Grant Requests can be submitted for: Up to $100,000 for implementation projects Up to $30,000 for design projects Up to $20,000 for white papers (or greater with prior approval)	Match is encouraged but not required		Jeffrey Popp jpopp@cbtrust.org 410-974-2941 x103
Watershed Assistance Grant	Chesapeake Bay Trust & MD Dept of Natural Resources (administered by CBT)	https://cbtrust.org/grants/watershed-assistance/	"Supports design assistance, watershed planning and programmatic development associated with protection and restoration programs and projects that lead to improved water quality in the Maryland portion of the Chesapeake Bay watershed"	All	Local governments, non-profit organizations, community and homeowner associations, faith-based organizations, and more. Please see the RFP for full list of organizations.	winter	Annual	$5,001 – $75,000	Match is encouraged but not required		Emily Stransky estransky@cbtrust.org 410-974-2941 x101

Funding Opportunity	Administered by	Website	Types of projects funded	TOGI Subgroup	Eligible Applicants	Application Due	Funding Cycle Info	Max $ amount	Match Requiremt	Other info	Contact for more info
MD Clean Water State Revolving Fund	Maryland Department of the Environment	https://gcc02.safelinks.protection.outlook.com/?url=https%3A%2F%2Fmde.maryland.gov%2Fprograms%2FWater%2FWQFA%2FPages%2Fwater_quality_fund.aspx&data=04%7C01%7CYancy.Briana%40epa.gov%7C7b59bb22dffc4771619f08d98458198b%7C88b378b367484867acf976aacbeca6a7%7C0%7C0%7C637686336182987522%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3	provides financial assistance for a wide variety of projects to protect or improve the quality of Maryland's rivers, streams, lakes, the Chesapeake Bay and other water resources. As part of our financial assistance package, MDE's Water Quality Financing Administration(WQFA) can provide financial advisory services that assist applicants in determining affordable user rate structures and model the fiscal impact the proposed loan will have on financial capacity.	Cambridge	Pointsource: Public Entities/Local Governments Only Non point source: Public and Private Entities	Annually Dec through Janu (open only 2 months)	Anually			project applications are ranked and funded in priority order until all available funds are identified to projects. https://mde.maryland.gov/programs/Water/WQFA/Documents/Prepare%20to%20apply.pdf	Michael Roberts michael.roberts@maryland.gov; 410-537-3119
Atlantic & Coastal Bays Trust Fund	Maryland Department of Natural Resources	https://dnr.maryland.gov/ccs/pages/funding/trust-fund.aspx	The Chesapeake and Atlantic Coastal Bays Trust Fund (Trust Fund) allows Maryland to accelerate Bay restoration by focusing limited financial resources on the most efficient, cost-effective non-point source pollution control projects. State agencies work with our local partners to administer the money in ways that leverage the funds to the greatest extent possible, target the funds geographically, engage the community at large, and hold everyone accountable.	Cambridge	State agencies and local partners	outcome 1-4 proposals will be due by 11:59 p.m. on December 15, 2021					
Program Open Space	Maryland Department of Natural Resources	https://dnr.maryland.gov/land/Pages/ProgramOpenSpace/Program-Open-Space-How-to-Apply.aspx	Program Open Space – Local provides financial and technical assistance to local subdivisions for the planning, acquisition, and/or development of recreation land or open space areas.	Cambridge	Local Governing Body		Anual	A local governing body may use up to $25,000 annually from its 100% (Acquisition) money to fund planning projects that update the Local Land Preservation and Recreation Plans.	Project costs will be matched project by project.	Program Open Space (home page)	Ashaki Binta, Administrative Officer ashaki.binta@maryland.gov 410-260-8451
Maryland's Community Parks & Playgrounds Program	Maryland Department of Natural Resources	New Parks & New Life for Old Parks!	Provides funding to allow the State to focus on restoring existing and creating new park and green space systems in Maryland's cities and towns. It provides flexible grants to local governments to respond to the unmet need for assistance to rehabilitate, expand or improve existing parks, create new parks, develop environmentally oriented parks and recreation projects, or purchase and install playground equipment in older neighborhoods and intensely developed areas throughout the state.	Cambridge	Municipal corporations of the state and Baltimore City; non-profit organizations are encouraged to partner with qualified applicants.	The FY2024 (7/1/2023-6/30/2024) grant opportunity opens in June 2022; applications due ~ Aug 2022, awards announced May/June 2023.	Source of funds is primarily State General Obligation Bonds, which may be authorized on an annual basis.	see website	see website	The Governor's Fiscal Year 2022 budget includes $5 million to fund 31 new parks and playgrounds projects. The projects will be presented to the Board of Public Works for final approval.	Carrie Lhotsky, MD DNR (for Baltimore, Caroline, Cecil, Dorchester, Harford, Kent, Queen Anne's, Somerset, Talbot, Wicomico, and Worcester Counties) Carrie.Lhotsky@maryland.gov 443-534-8255

Funding Opportunity	Administered by	Website	Types of projects funded	TOGI Subgroup	Eligible Applicants	Application Due	Funding Cycle Info	Max $ amount	Match Requiremt	Other info	Contact for more info
Chesapeake Bay Implementation Grants (CBIG), federal funding from EPA	Maryland Department of Natural Resources	See https://dnr.maryland.gov/ccs/Pages/funding/cbig.aspx **and** Chesapeake and Coastal Grants Gateway https://dnr.maryland.gov/ccs/Pages/funding/grantsgateway.aspx	Section 117(e)(1)(A) of the Clean Water Act authorizes the EPA to award Chesapeake Bay Implementation Grants (CBIG) to signatory jurisdictions (Bay watershed states + DC) of the 2014 Chesapeake Bay Watershed Agreement. The intent of the funding is to assist Maryland in achieving the goals of the Agreement by supporting the implementation of the Agreement's management strategies.	Cambridge	See Grants Gateway https://dnr.maryland.gov/ccs/Pages/funding/grantsgateway.aspx	Grants Gateway is a common application portal for CBIG and other coastal related grant sources through MD DNR. Deadlines may vary annually. Current deadline is 12/15/2021. Next cycle likely opens early fall 2022.	Annual	See Grants Gateway https://dnr.maryland.gov/ccs/Pages/funding/grantsgateway.aspx	See Grants Gateway https://dnr.maryland.gov/ccs/Pages/funding/grantsgateway.aspx		Megan Granato megan.granato@maryland.gov 410-260-8799
319 Nonpoint Source Program	Maryland Department of the Environment	https://www.epa.gov/nps/319-grant-program-states-and-territories	Provides financial assistance to local & state entities for the iimplementation of nonpoint source best management practices and program enhancements as a means of controlling the loads of pollutants entering the state's waterways	Cambridge	states, territories and tribes					§319(h) Grant funds can pay for planning, design, construction, monitoring and analysis. However, the majority of §319(h) Grant funding in Maryland is intended for implementation of projects that will: reduce or eliminate water quality impairments listed in the Maryland's List of Impaired Water (303(d) List), particularly in watersheds where Total Maximum Daily Loads (TMDLs) have been approved; and result in quantifiable or measurable improvements in water quality and habitat, including, pollutant load reductions for impairments addressed in TMDLs or identified in the 303(d) List. A prerequisite for §319(h) funding of implementation projects (any project involving in-the-ground construction) is EPA acceptance of a watershed plan	please contact your state NPS coordinator.
Maryland's Working Waterfronts Enhancement Grant	Maryland Department of Natural Resources	https://dnr.maryland.gov/ccs/Documents/wwf/WWF_RFP.pdf	The Maryland Department of Natural Resources' Working Waterfronts Program provides financial and technical assistance to local governments to promote and assist with the preservation of existing and historic working waterfronts in Maryland. The Working Waterfronts Program is soliciting proposals from local governments for a unique grant to support revitalization of working waterfront communities and economies throughout Maryland. Local governments are welcome to apply for financial assistance to complete one-year projects focused on planning or implementation.	Cambridge	Municipalities and counties in the coastal zone are eligible to apply for and receive funds on an annual basis. Maryland's coastal zone includes the following counties and the municipalities located within: Worcester, Somerset, Wicomico, Dorchester, Talbot, Caroline, Queen Anne's, Kent, Cecil, Harford, Baltimore, Baltimore City, Anne Arundel, Prince George's, Calvert, Charles and St. Mary's.	Summer		Total request may not exceed $60,000	no match required		Kelly Collins Maryland Department of Natural Resources Chesapeake & Coastal Service kelly.collins@maryland.gov 410.260.8912
CoastSmart Communities	Maryland Department of Natural Resources	https://dnr.maryland.gov/ccs/coastsmart/Pages/default.aspx	CoastSmart Communities is a program dedicated to assisting Maryland's coastal communities address short- and long-term coastal hazards, such as coastal flooding, storm surge, and sea level rise. CoastSmart connects local government staff and partners to essential information, tools, people, and trainings.	Cambridge	Eligible applicants include local and state agencies, schools and school systems, and nongovernmental organizations. Partners serving underrepresented communities are especially encouraged to apply. If working with a school or school system, an emphasis on planning for future curriculum integration should be considered.	September/December	Annually	up to $75,000	1:1 Design projects with identified local partnerships and matching funds will be prioritized	CoastSmart provides: Financial Assistance through Outcome 2 of Chesapeake & Coastal Grants Gateway Technical Assistance to local communities Training Opportunities for local practitioners Links to supportive information, federal and state resources, tools, visualizations, and networks	Sasha Land Chesapeake & Coastal Service Maryland Department of Natural Resources Tawes State Office Building E-2 580 Taylor Avenue Annapolis, Maryland 21401 Phone 410-260-8718 Fax 410-260-8739 Sasha.Land@maryland.gov

Funding Opportunity	Administered by	Website	Types of projects funded	TOGI Subgroup	Eligible Applicants	Application Due	Funding Cycle Info	Max $ amount	Match Requiremt	Other info	Contact for more info
Heritage Area Mini Grant	Dorchester County	https://visitdorchester.org/heritage-area-mini-grants/	Mini-Grants help fund projects that enrich heritage resources and/or events in the Heart of Chesapeake Country Heritage Area. Mini-Grants support the efforts of local museums, organizations, and municipalities that advance the mission and goals of the Heritage Area. Projects must be heritage-tourism related. Only non-capital projects are eligible for funding. include but not limited to: Research and Documentation Brochures/Marketing Interpretive Planning Interpretation and Education Preservation Planning Events Feasibility Studies Exhibits and Way Finding Natural Resource Projects Professional Development/Conferences	Cambridge		Jan 2022	Summer and Winter	Between $500 and $5,000 for projects or between $50 and $500 for professional developmen	Cash and/or in-match required (any combination) with proof that the match is equal to (or greater than) the grant request. No grant will be made for more than 50 percent of the total project cost. The match must be from a non-state source.		Amanda Fenstermaker at 410-228-1000 or amanda@visitdorchester.org

Targeted Outreach for Green Infrastructure (TOGI) in Vulnerable Areas

Summary Presentation

May 2022

Chesapeake Bay Program
Science. Restoration. Partnership.

Kristina Blokhin/Alamy Stock Photo

Think Green!

Green Infrastructure and Community Resilience

Kristina Blokhin/Alamy Stock Photo

Types of Green Infrastructure

Landscaping and Gardens

Photo Credit: Montgomery County. MD

Buildings

Photo Credit: EPA

Trees

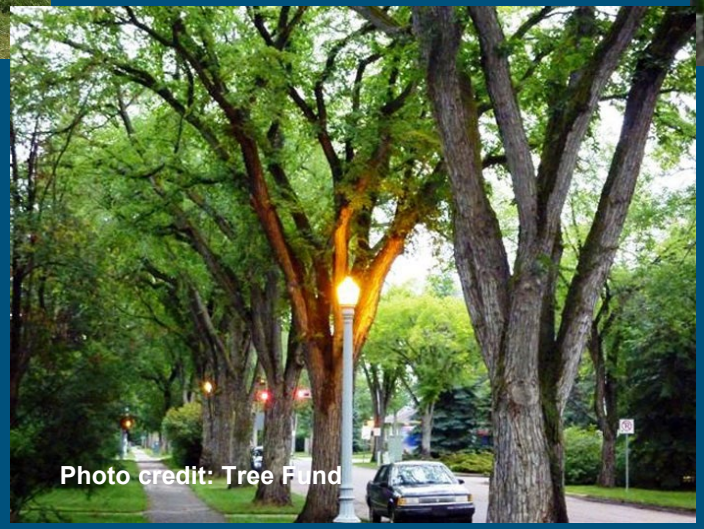


Photo credit: Tree Fund

Porus Pavers

Photo credit: Mutual Materials

Wetlands and Waterways

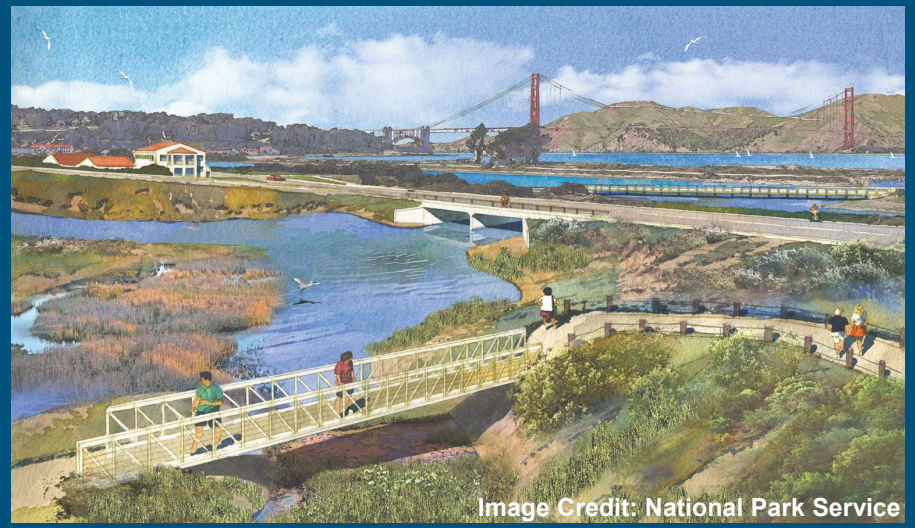


Image Credit: National Park Service

Types of Green Infrastructure

Living Shoreline

Photo Credit: NOAA

Forest Management Practices

Photo Credit: USDA

Habitat Conservation and Protection

Photo Credit: California Herps

Riparian Buffer

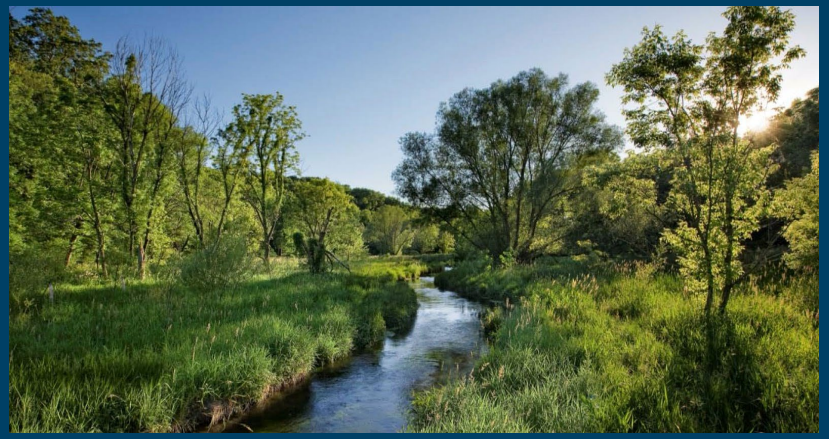


Photo Credit: PA Environment Daily

Sustainable Trail Design

Photo Credit: MASSACHUSETTS DEPARTMENT OF CONSERVATION AND RECRECATION

Agricultural Land Practices

Photo Credit: Nantucket Land Bank

Why Green Infrastructure?

Traditional infrastructure projects performs best on its first day and begins to deteriorate over time, Green infrastructure worst performance is on its first day and continues to improve over time. Wendi Weber US Fish and Wildlife Service

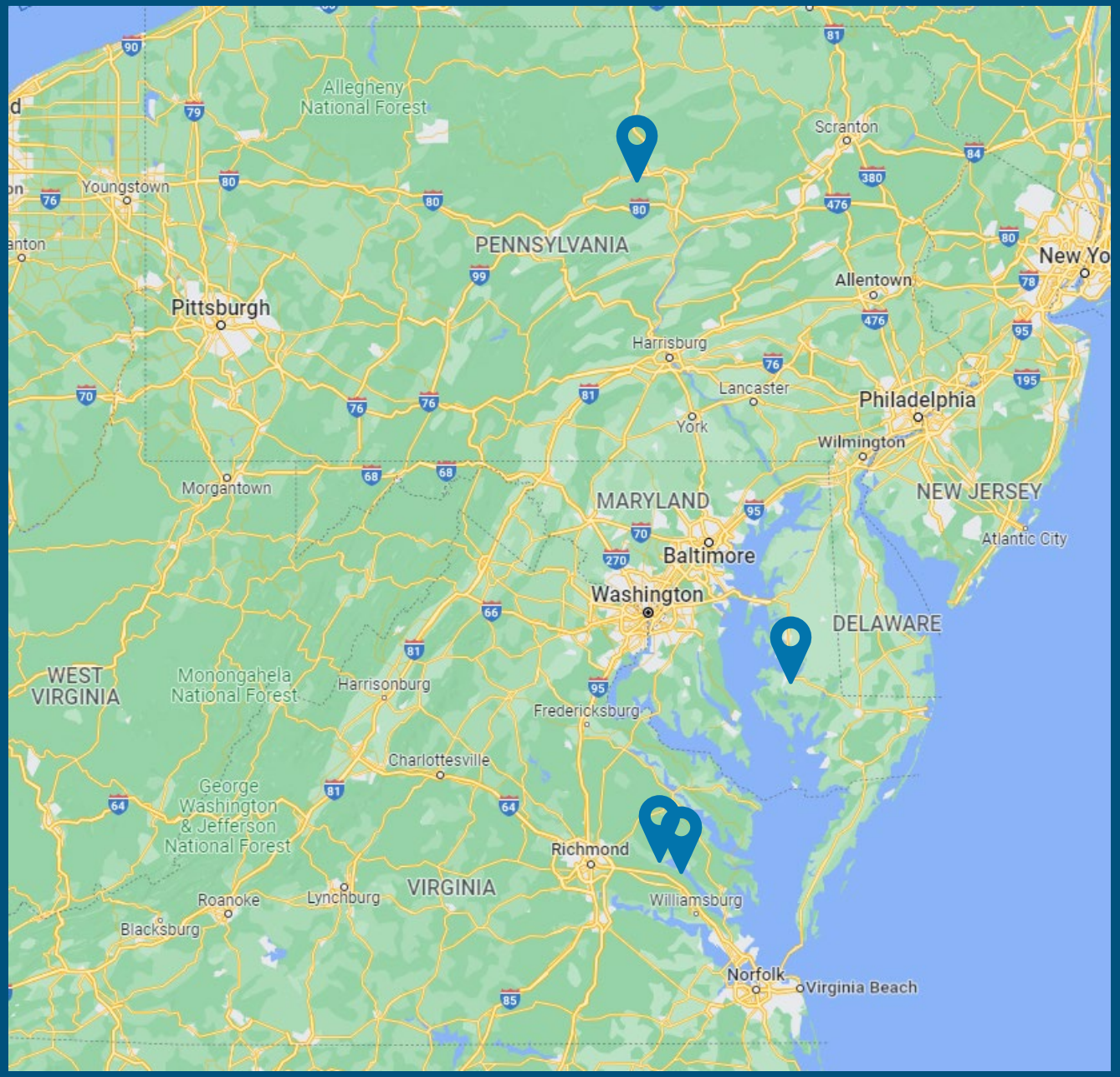
Targeted Outreach For Green Infrastructure - Overview

- Project funded by EPA through the Chesapeake Bay Program Habitat Goal Implementation Team. Emphasis is to provide green infrastructure that also benefits habitat priorties for the Bay Program.
- Focus on a range of diverse communities at risk from impacts of weather extremes and climate change affects, including communities that have faced environmental injustices.
- Develop green infrastructure concepts and help find funding sources for implementation.

Process

TOGI Communities

- Cambridge, MD
- Williamsport, PA
- Upper Mattaponi Tribe, VA
- Mattaponi Tribe, VA



Cambridge, Maryland

- Listening Sessions held on May 5, 2021 and August 17, 2021
- City-owned property on Leonards Lane selected as area of focus to create stormwater community park in an underserved area.
- Design Workshop held on November 3, 2021

Cambridge, Maryland – Concept Design

- Enhanced wetland garden in the drainage area that runs diagonally through the property to provide additional capacity to hold and clean water; plantings that provide habitat and aesthetic appeal; and environmental educational signage.
- Community garden space (such as raised planter boxes) conveniently located near parking with water access.
- Walking paths throughout the large site connecting the various amenities.
- Improved connection to surrounding area, including a walking path connecting to Greenwood Avenue and sidewalk along Leonards Lane to local convenience store.
- Children's playground area.
- Picnic shelter / pavilion for outdoor gatherings and events.
- Technical bike skills area that can include small ramps and obstacles for children of all ages.

Cambridge, Maryland – Concept Design

- Skate park skills area with rain garden to address stormwater runoff from paved surface.
- Full size basketball court with rain garden to address stormwater runoff from paved surface.
- Multi-use recreation field for pick up sports and games.
- Memorial space to honor community members who have passed away.
- Parking with best stormwater management features to address stormwater runoff.
- Plantings throughout to provide shade, habitat and stormwater management benefits.
- Educational signage and public art to celebrate local culture and ecology.
- Plantings throughout to provide shade, habitat and stormwater management benefits.
- Educational signage and public art to celebrate local culture and ecology.

Williamsport, PA

- Listening Session held on October 26, 2021
- Expanded community garden and park space on vacant lots and
- Little League Boulevard with improved connectivity to downtown selected as focus areas.
- Design Workshop held on January 19, 2022

Williamsport, PA – Concept Design

Green Infrastructure Strategies

- Conservation landscaping including native plantings, pollinator gardens and edible landscapes
- Lawn to meadow areas with low mow maintenance
- Urban tree canopy including street trees and urban forests
- Pervious pavement to replace existing parking and establish new parking
- Rainwater storage including rain barrels or cisterns
- Bioretention areas or rain gardens with planted swales along streets, buildings and parking

Williamsport, PA – Concept Design

Community Amenities

- Lawn Gathering Area
- Pollinator Habitat/Edible Landscapes
- Sensory/Healing Garden
- Community Garden
- Children’s Play Area
- Contemplative Garden

Williamsport, PA – Concept Design

The listening session helped to establish goals and needs for the Little League Boulevard corridor including:

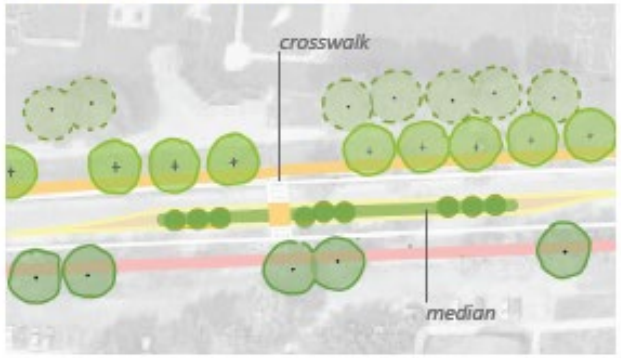
- traffic calming
- Crosswalks
- bike lanes
- greening with street trees
- green stormwater infrastructure to manage runoff
- safer and easier connection to community amenities (such as Hepburn Plaza and downtown).
- street enhancement and beautification, including replacing the fencing with natural barrier where appropriate

Williamsport, PA – Concept Design

The concept design for Little League Boulevard includes street trees north of the sidewalk, midblock crossings to slow traffic and manage stormwater, new sidewalks on south side of the street, bike lanes and fence removal alternatives.

Williamsport, PA – Concept Design

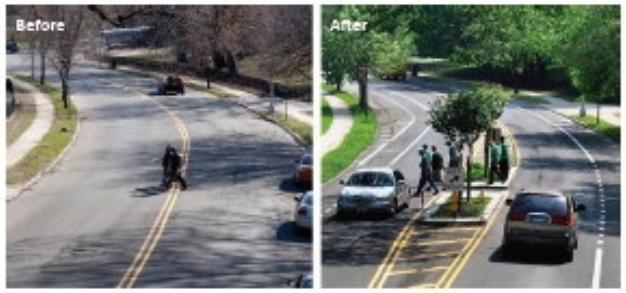
① Firetree Place Midblock Crossing



View of existing conditions near Firetree Place on Little League Boulevard

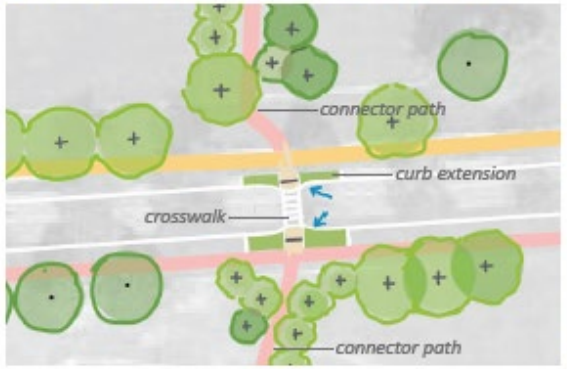
Proposed features:

- Planted median to slow traffic and provide safe space for pedestrians
- Median to capture and infiltrate stormwater
- Crosswalk and flashing lights to improve pedestrian safety
- Plant new trees to replace trees along sidewalk

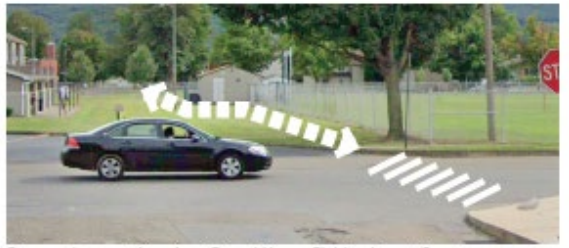


Example of proposed mid-block crossing

② Locust Street Midblock Crossing and Connector



View of existing conditions near Round House Field



Proposed connection along Round House Field to Locust Street

Proposed features:

- Curb extension (or bumpout) with integrated sidewalk connection and bioswale* at midblock
- New sidewalk along fence line with plantings
- Extended walking paths north and south of Little League Boulevard to connect to Locust Street
- Plant new trees for shade and wayfinding along new sidewalk and connecting path

*aligns with existing street storm drains for connection to existing drainage network

Example of curb extension with integrated sidewalk connection and bioswale

Williamsport, PA – Concept Design

③ Center Street Midblock Crossing and Connector

Proposed features:

- Add traffic calming curb extension (or bumpout) with crosswalk and sidewalk connection
- Consider integrating green infrastructure by including a curb cut inlet and bioswale in curb extension
- Extended sidewalk to connect Center Street to Lycoming Street
- Plant street trees and shrubs along new sidewalk

Example of proposed mid-block crossing

Proposed connection to Center Street and Lycoming Street

④ Hepburn Plaza Intersection

Proposed features:

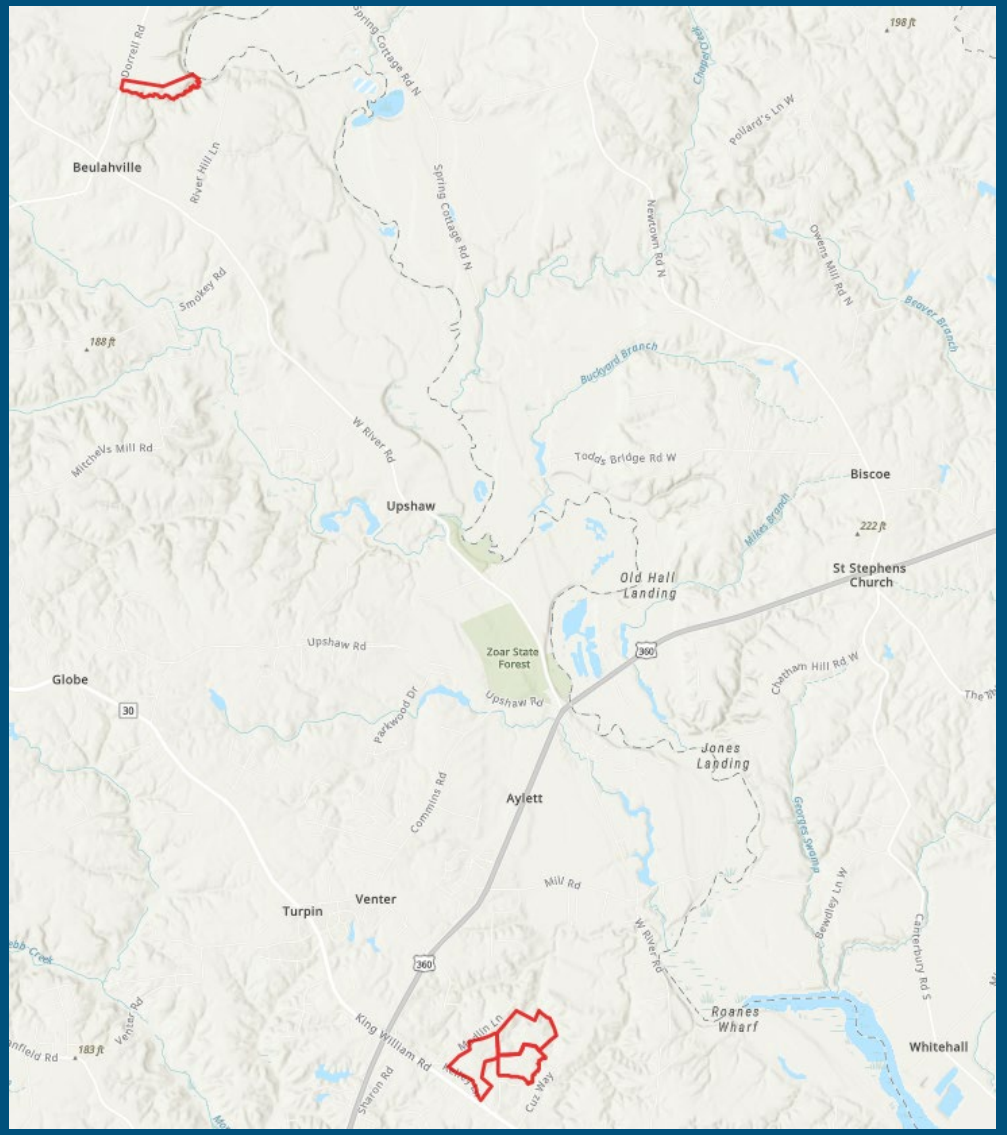
- Extend curb to create shorter crosswalk distance and improve pedestrian safety
- Plant street trees for shade and natural buffer between properties and sidewalk

View of existing conditions at intersection of Little League Boulevard and Hepburn Street

Proposed curb extension and sidewalk to shorten crosswalk

Upper Mattaponi Tribe, VA

- Listening Session held on December 9, 2021
- Stream restoration and tribal complex on Adamstown Property and trail and river access on Dorrell River property selected as areas of focus.
- Design Workshop held on April 1, 2022



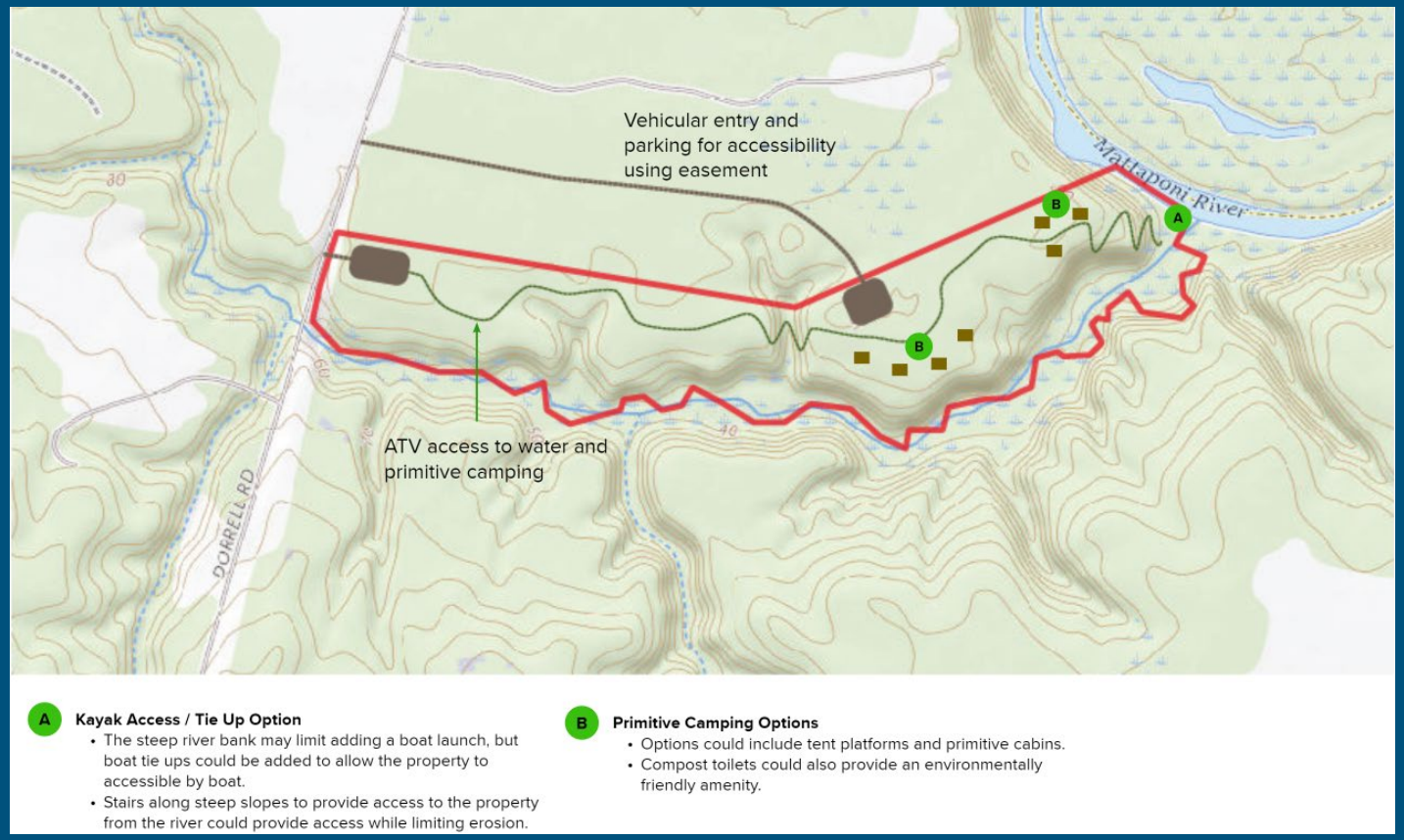
Upper Mattaponi Tribe, VA – Adamstown Property

The listening session helped to establish goals and needs for the Tribe including:

- Ecosystem Restoration of Tribal Land and Waters
- Sustainable Tribal Center and Residential Development
- Recreation and Access with Low Impact

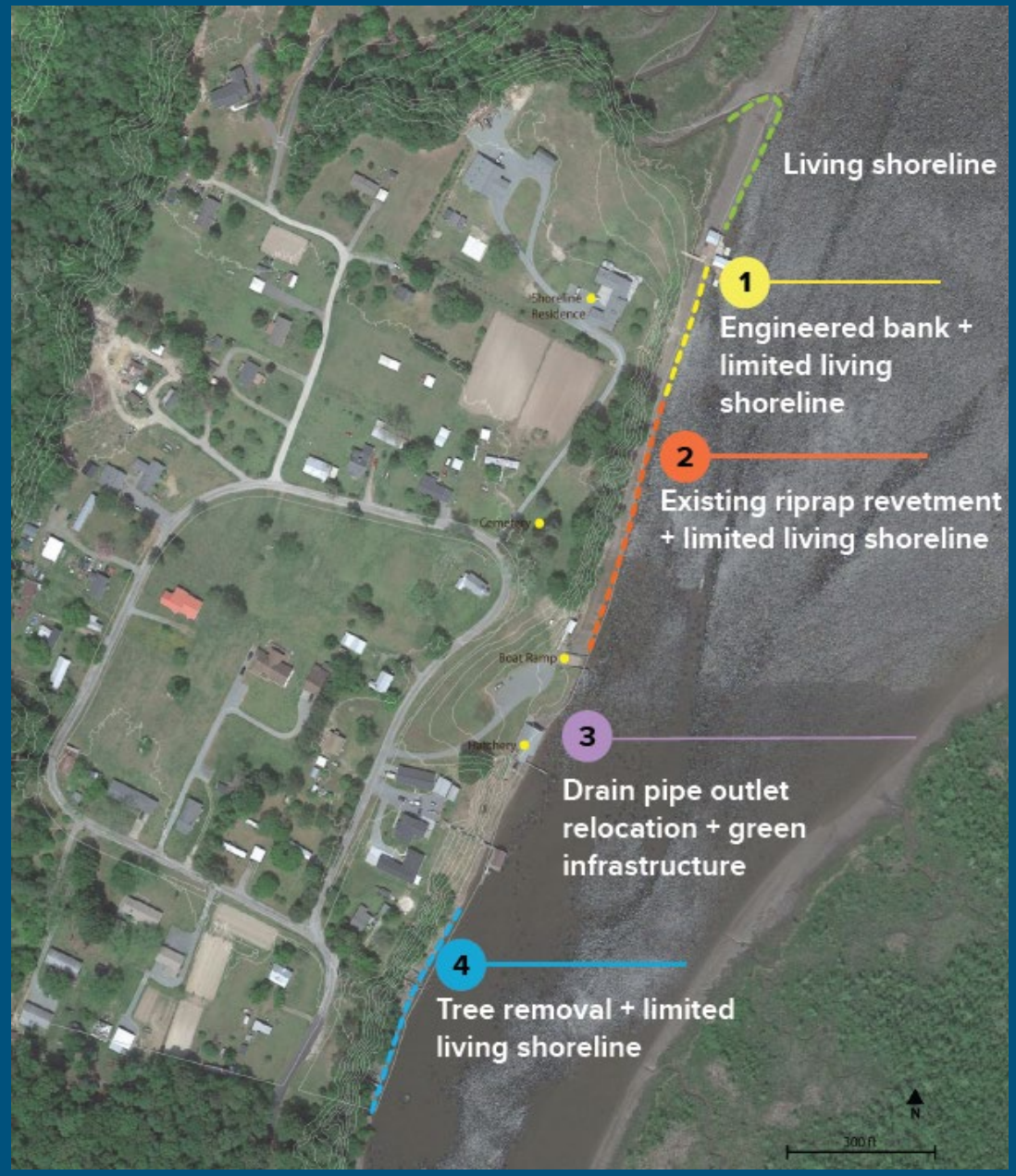
Upper Mattaponi Tribe, VA – Dorrell Road Property

The Dorrell Road riverfront property concept plan includes features and amenities to meet the community's vision for gathering, river access, and passive and active recreation while enhancing the natural beauty, water quality and ecology of the site.



Mattaponi Tribe, VA

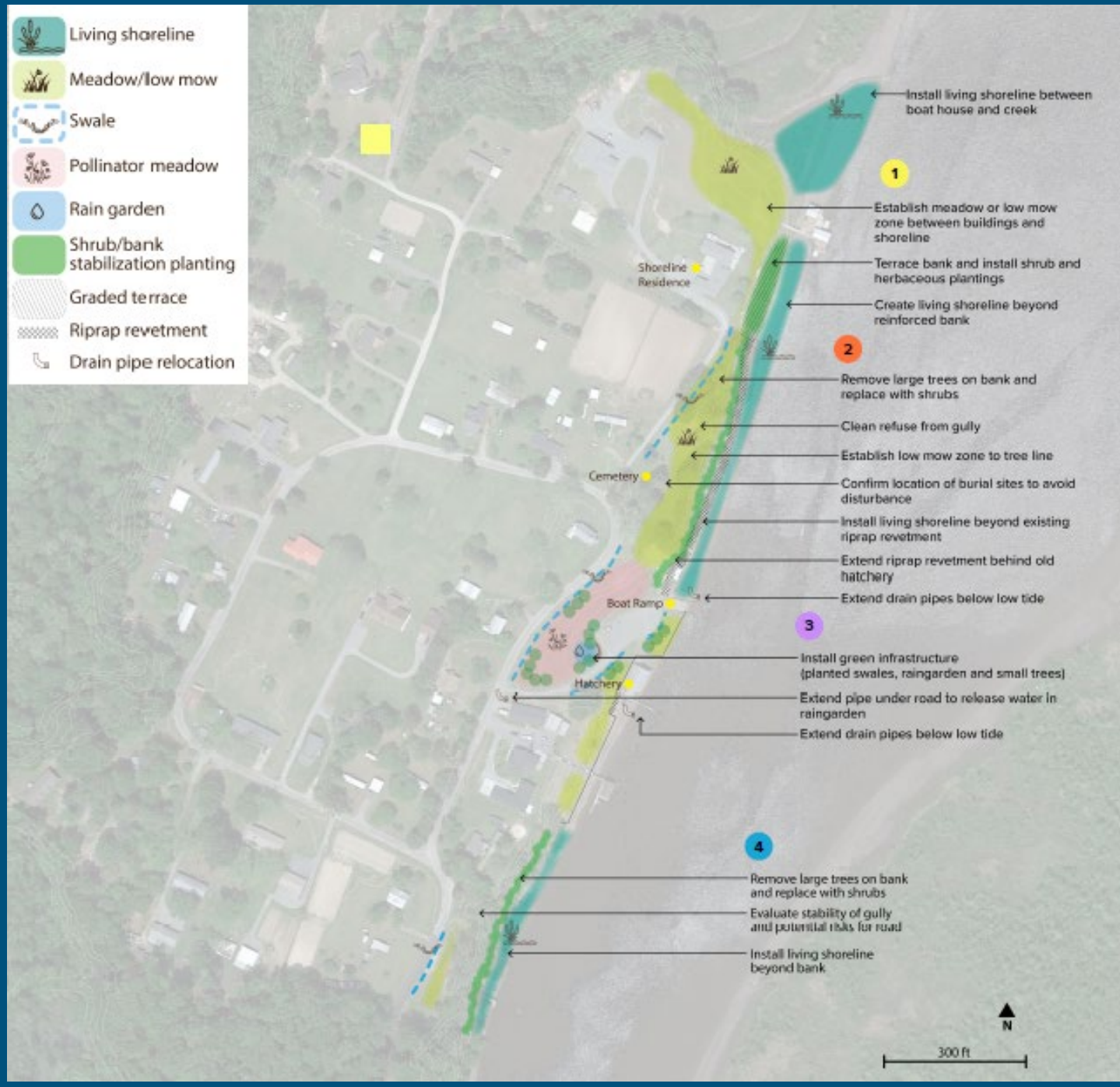
- Listening Session held on February 28, 2022
- Shoreline stabilization identified as a priority
- Design Workshop held on May 6, 2022.



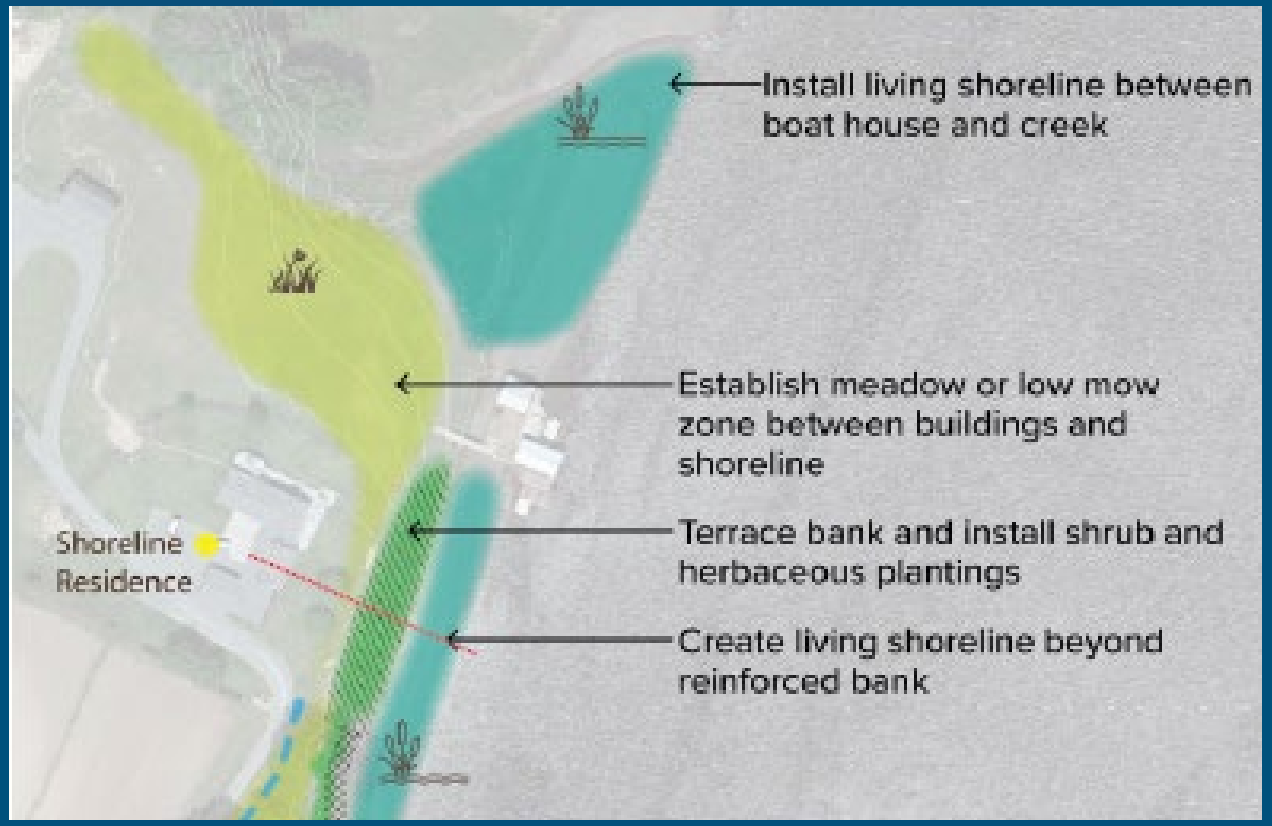
Mattaponi Tribe, VA – Riverbank Stabilization

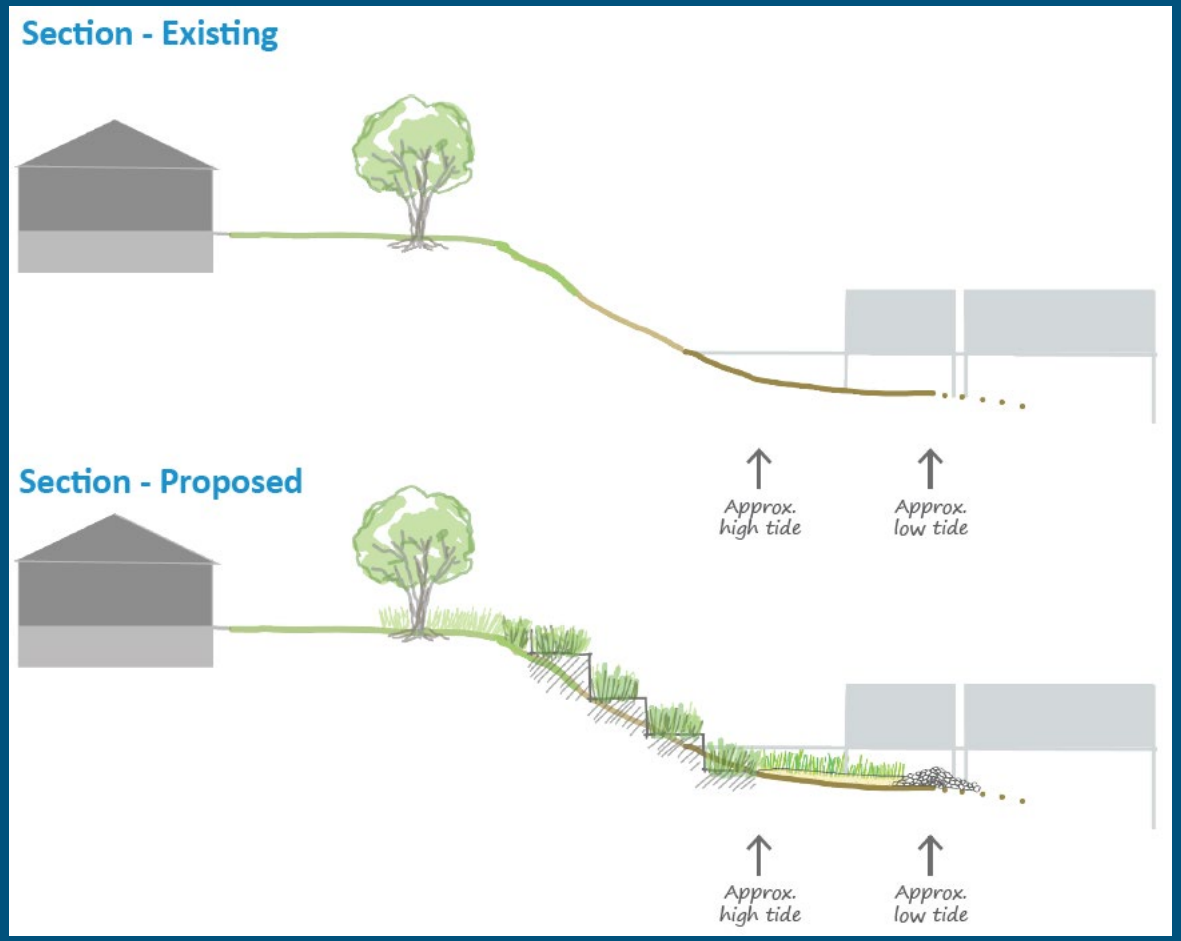
The concept plan focuses on restoring the shoreline and bolstering resilience to erosive forces such as surface stormwater runoff, storms, and wake.

- Landscape features such as new plantings, rain gardens and swales to reduce surface flow toward the riverbank
- Living shoreline restoration projects along the river

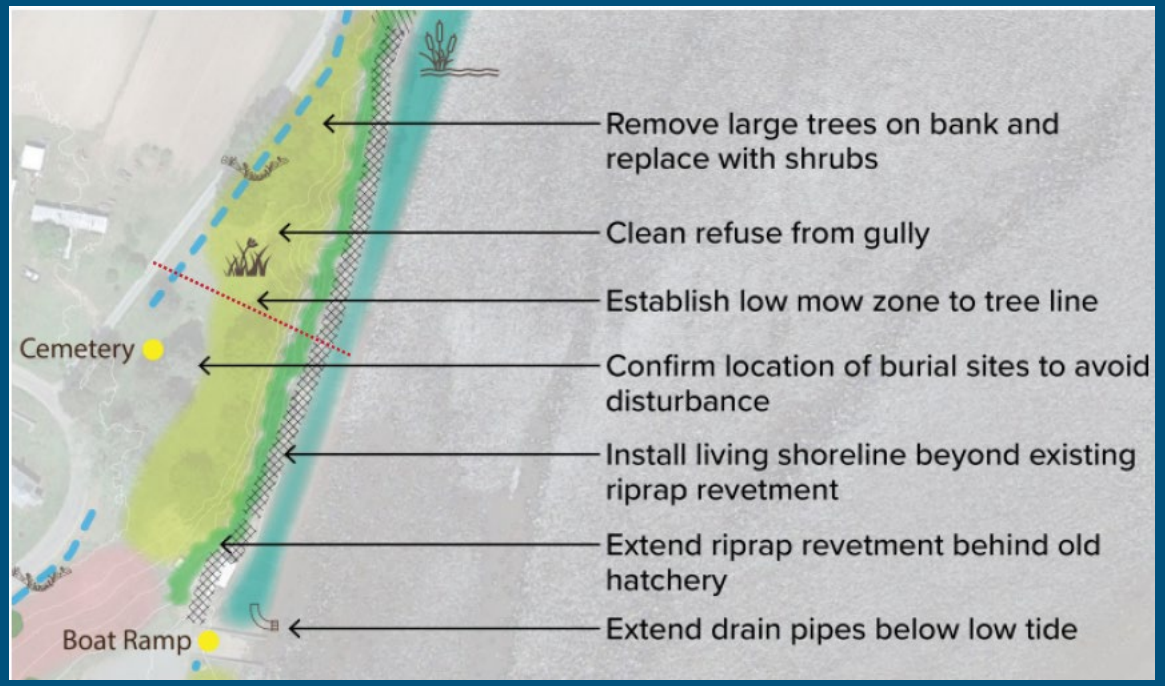


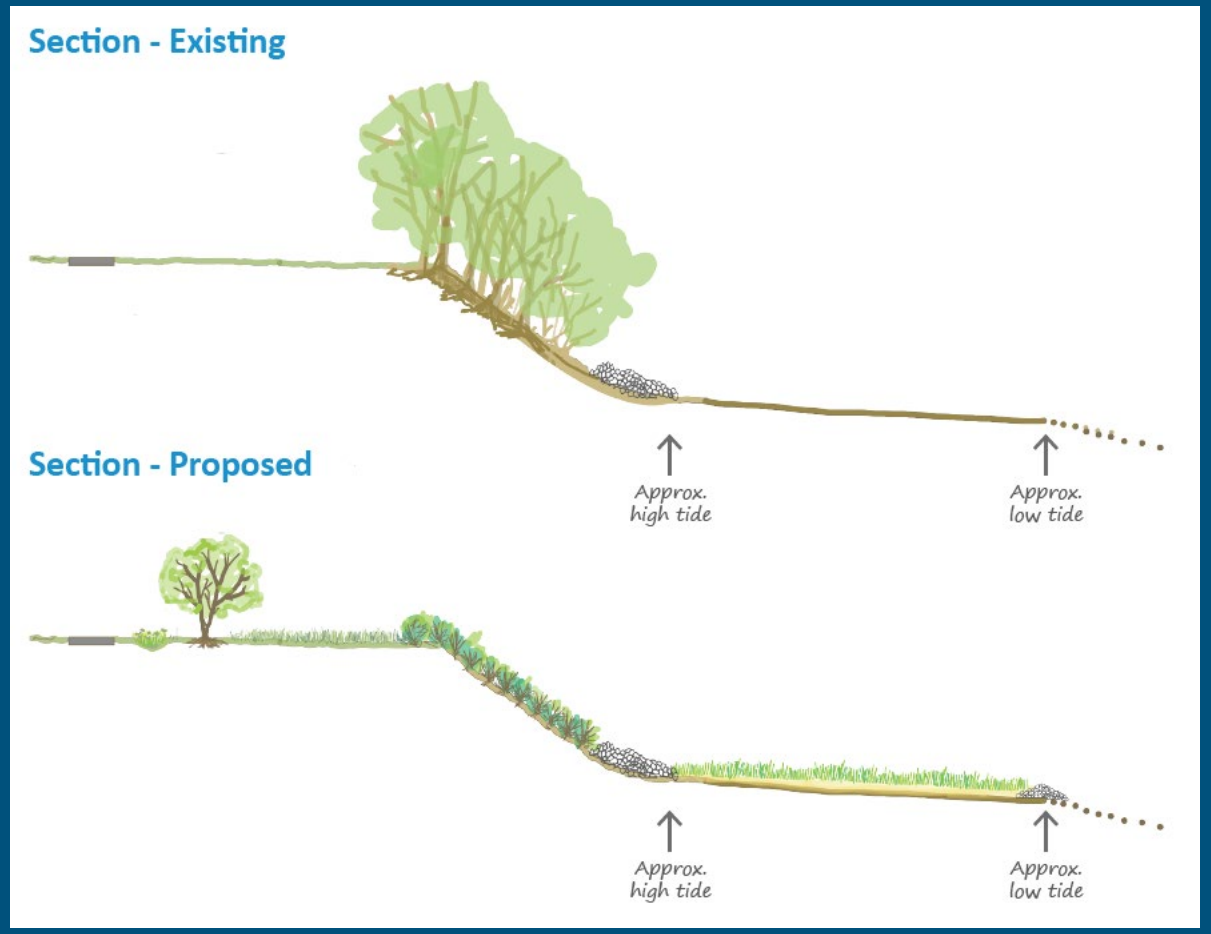
Mattaponi Tribe, VA – Riverbank Stabilization





Mattaponi Tribe, VA – Riverbank Stabilization





For More Information

Christopher P. Guy
Habitat Goal Implementation Team
Coordinator and Service liaison to the
Chesapeake Bay Program
Chesapeake Bay Field Office
177 Admiral Cochrane Drive
Annapolis, MD 21401
410-573-4529 (office)
443-758-8628 (cell)
chris_guy@fws.gov

Briana Yancy
Life Scientist & Diversity Workgroup
Coordinator
US EPA Mid-Atlantic Region
Chesapeake Bay Program Office
1750 Forest Dr. Annapolis, MD 21401
410-267-9827 (office)
yancy.briana@epa.gov

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