

GREATER DES MOINES
WATER TRAILS + GREENWAYS

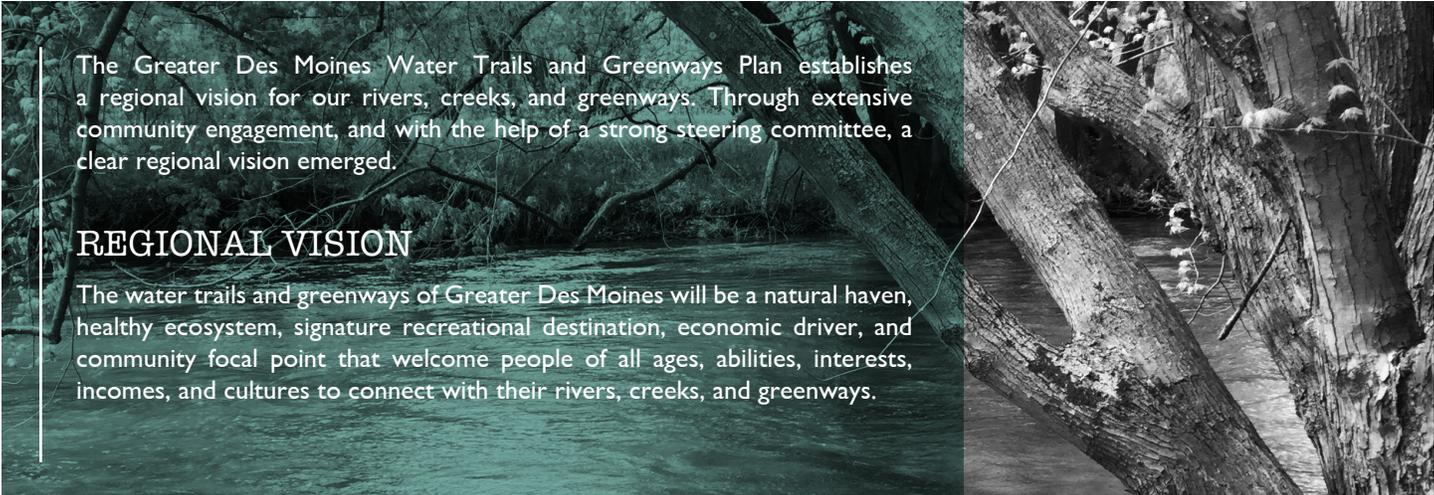
FOURMILE + MUD CREEK
PHASE I - REGIONAL ENGINEERING STUDY





ISG'S PURPOSE

This Phase I Regional Engineering Study builds upon the Des Moines Area Metropolitan Planning Organization's Water Trails and Greenways Plan, completed in 2016. Using the suggestions and recommendations included in the original Plan, ISG developed conceptual designs and cost estimates for the improvements along the region's creeks and rivers. This study will assist municipalities and organizations in prioritizing projects, informing budget considerations, and building community support for implementation.



The Greater Des Moines Water Trails and Greenways Plan establishes a regional vision for our rivers, creeks, and greenways. Through extensive community engagement, and with the help of a strong steering committee, a clear regional vision emerged.

REGIONAL VISION

The water trails and greenways of Greater Des Moines will be a natural haven, healthy ecosystem, signature recreational destination, economic driver, and community focal point that welcome people of all ages, abilities, interests, incomes, and cultures to connect with their rivers, creeks, and greenways.

INTRODUCTION

The Des Moines Metro has been blessed with an abundance of natural resources. Rivers and creeks flow through our backyards and the hearts of our cities and towns. Healthy riparian corridors supply safe drinking water, protect communities from flooding, provide habitat for fish and other wildlife, support family-friendly recreation, and serve as local economic drivers. However, this value is often not recognized. The Greater Des Moines Water Trails and Greenways Plan seeks to change that by highlighting the significant opportunities provided by our rivers and creeks.

The following Phase I - Regional Engineering Study represents the next step in realizing the Plan's vision. With the goal of providing communities an implementation strategy for the outlined improvements, ISG field-verified all of the identified amenities and developed site plans, conceptual renderings, preliminary opinion of probable cost and construction schedules, and potential permitting requirements for each recommendation.

This report provides community leaders with the information necessary to move forward with implementation and the process of reconnecting to this vital natural resource, our water.



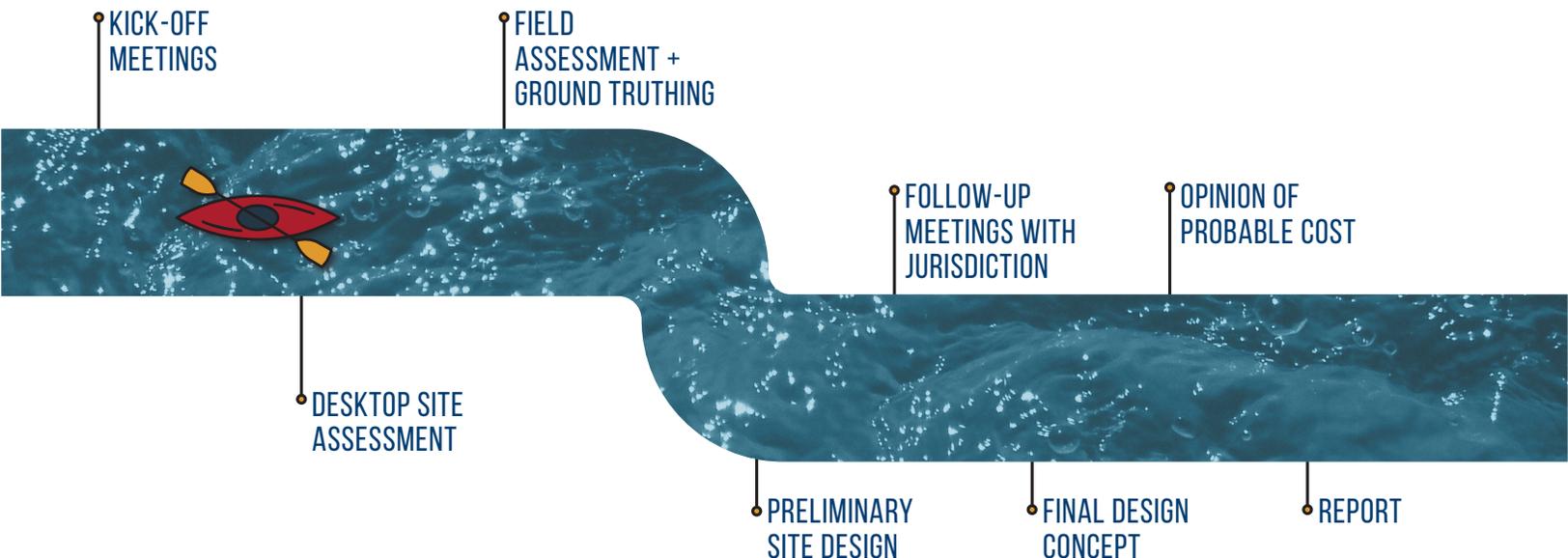
MUSSEL SURVEYS AND PERMITS

At sites where there is a disturbance to the streambank or stream channel, a mussel survey will be completed, with few exceptions. This will be done with staff from IDNR and local stakeholders on a site specific basis, immediately preceding the start of construction. Optimal conditions for surveys are when water temperatures are above 50°F and during times of low flow. For sites with state listed species, coordination with IDNR will be done through environmental review as part of the joint application process and a letter of environmental review will be requested from the Director.

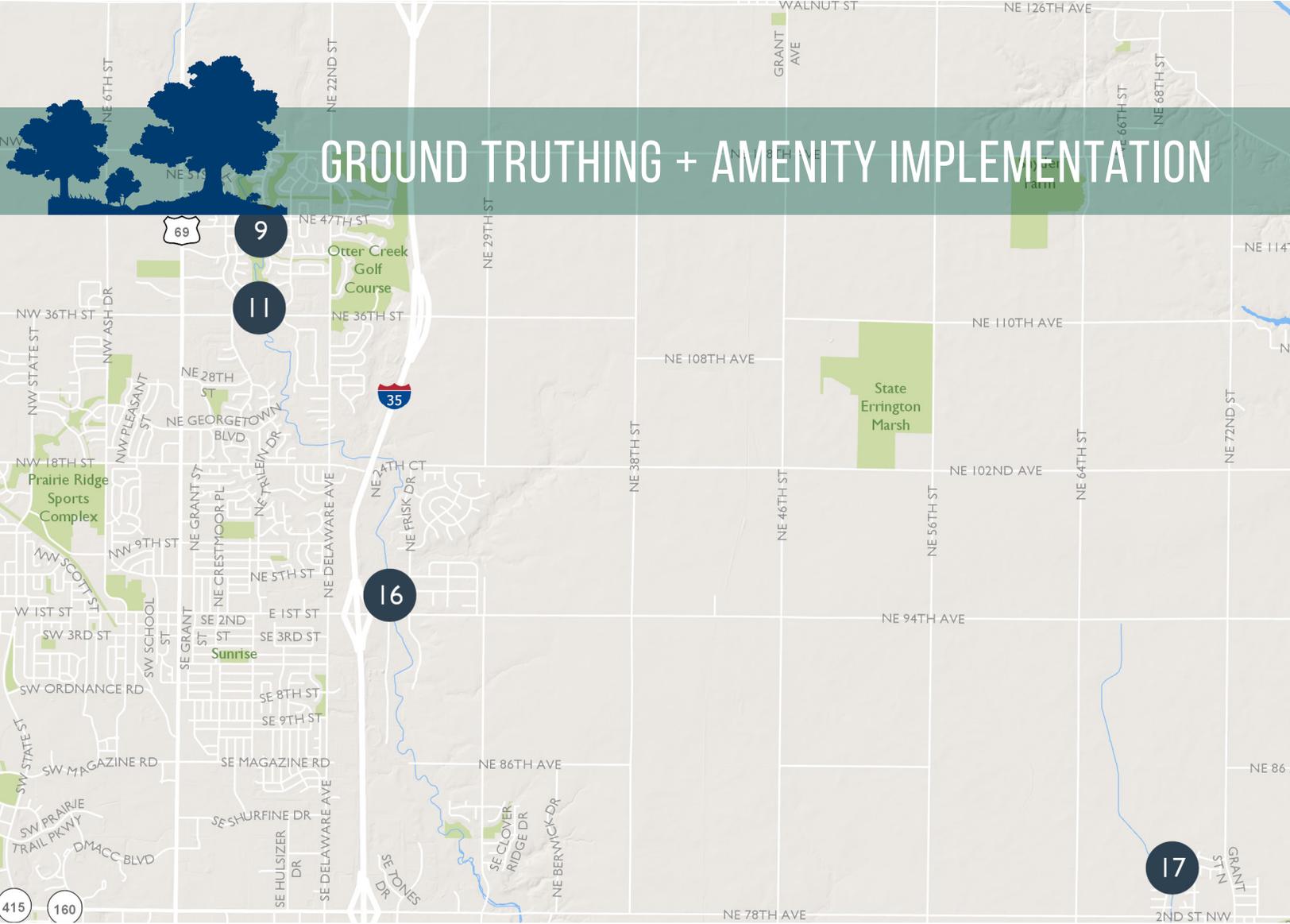
IOWA OUTDOOR RECREATION GENERATES

\$8.7 BILLION IN ANNUAL CONSUMER SPENDING | 83,000 DIRECT JOBS
\$2.7 BILLION WAGES + SALARIES | \$649 MILLION STATE + LOCAL TAX REVENUE

Source: https://outdoorindustry.org/wp-content/uploads/2017/07/OIA_RecEcoState_IA.pdf



GROUND TRUTHING + AMENITY IMPLEMENTATION



FOURMILE + MUD CREEK

SITE ID	IMPROVEMENT TYPE	JURISDICTION
9	Wading	City of Ankeny
11	Wading	City of Ankeny
16	Wading + Park Improvements	City of Ankeny
17	Soft Trails	City of Bondurant

GROUND TRUTHING + AMENITY IMPLEMENTATION



FOURMILE + MUD CREEK

SITE ID	IMPROVEMENT TYPE	JURISDICTION
28	Fishing, Respite, Wading	City of Altona
29	Fishing, Wading	Polk County
43	Wading	City of Des Moines
50	Fishing, Wading	City of Des Moines
54	Fishing, Wading	City of Pleasant Hill
75	Fishing	Polk County

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SITE 09: WADING

Permits Needed

- Iowa DNR Floodplain Permit
- City of Ankeny Floodplain Development Permit

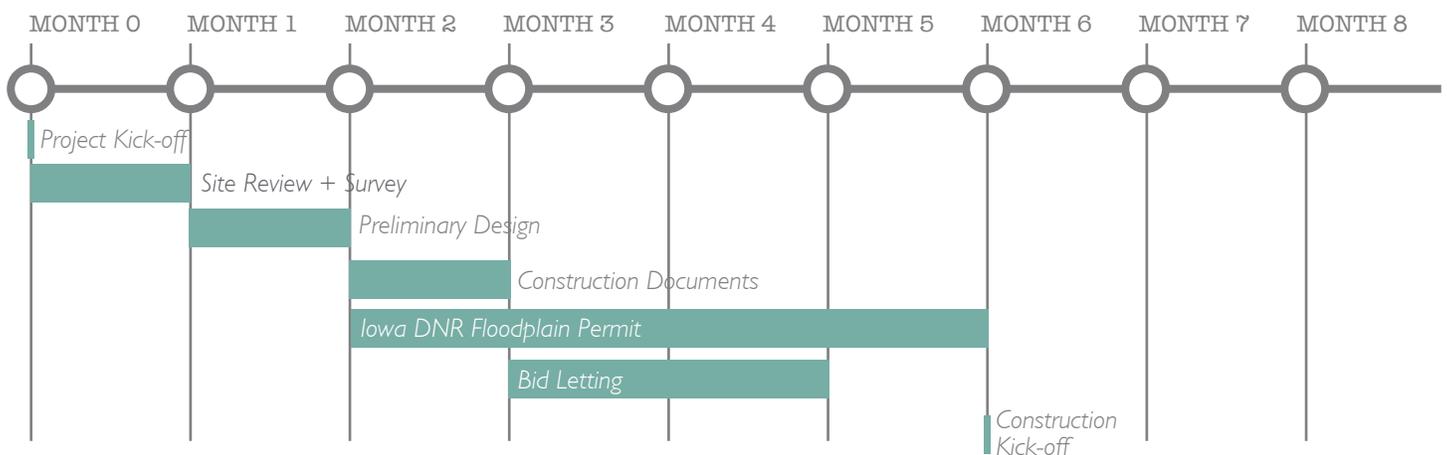
OVERVIEW

Fourmile Creek meanders through the City of Ankeny. The riparian corridor of the Woodland Reserve Greenway offers citizens a unique opportunity to interact with their backyard creek. Between NE 47th Street and NE 36th Street, ISG's conceptual plan builds off of the previously completed Woodland Reserve Greenway Master Plan. The proposed improvements provide a direct connection from the existing bike trail to the creek through the addition of a soft trail and limestone stair access. The proposed improvements benefit numerous user groups including bikers, walkers, birders, anglers, and waders.

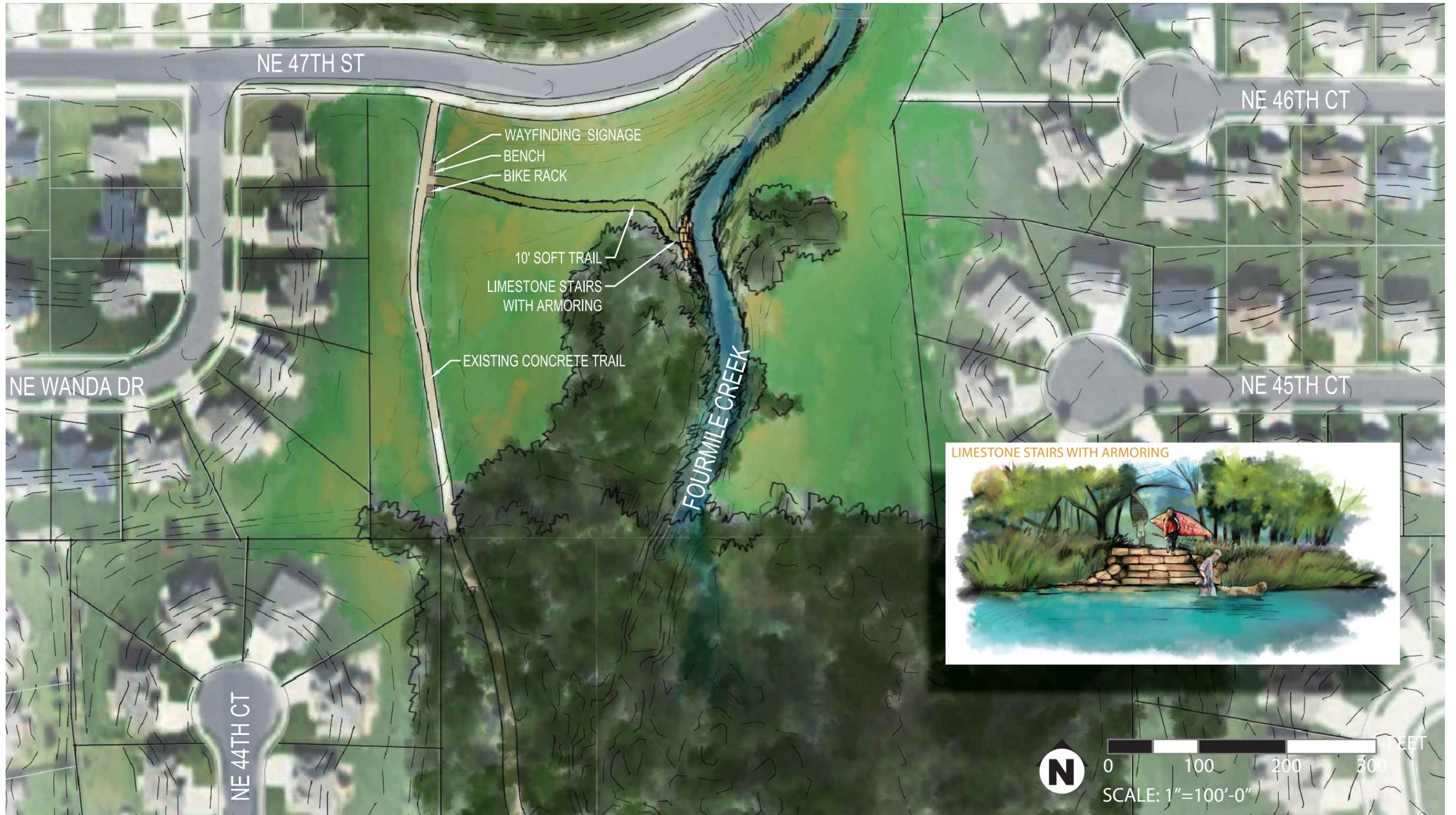
OPINION OF PROBABLE COST

COST ITEM	TOTAL AMOUNT
Carry Down Access - Limestone Stairs	\$12,666.00
Erosion + Sediment Control	\$725.00
General Construction	\$500.00
Respite	\$447.00
Signage	\$790.00
Additional Amenities	\$1,600.00
CONSTRUCTION COST	\$16,728.00
Mobilization (5% Construction Costs)	\$836.40
20% Contingency	\$3,345.60
Non-Construction Costs (15% Construction Costs)	\$2,509.20
TOTAL PROJECT COST	\$23,419.20

PROJECT SCHEDULE



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SITE 09 CONCEPT PLAN

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SITE 11: WADING

Permits Needed

- Iowa DNR Floodplain Permit
- City of Ankeny Floodplain Development Permit

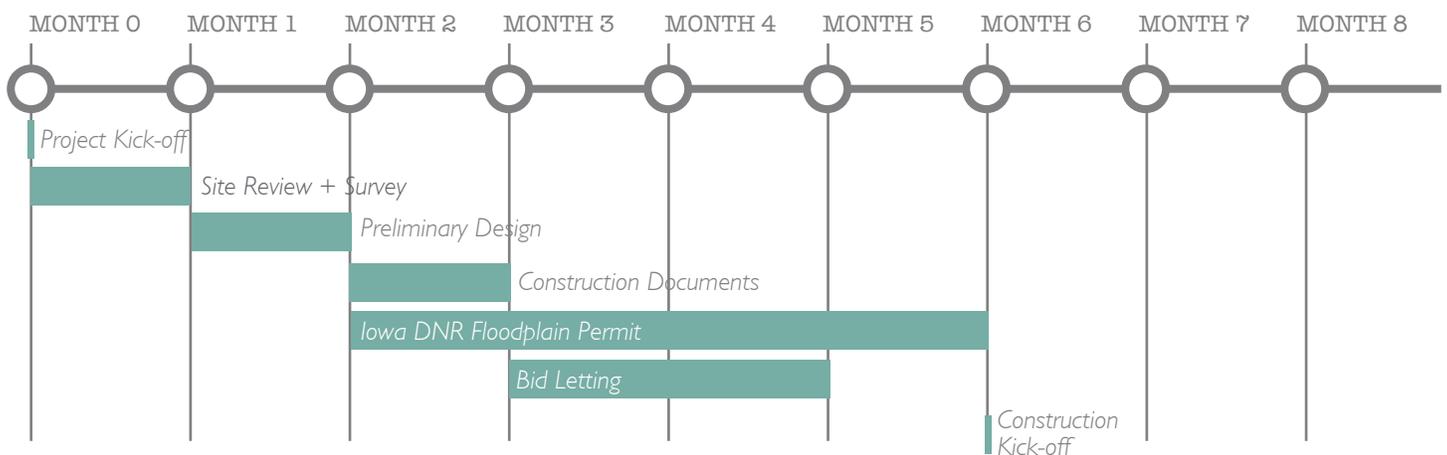
OVERVIEW

The Outdoor Education Center along Northeast 36th Street sits adjacent to Fourmile Creek on the east bank. This site is a natural fit for providing a direct connection to the creek, enhancing educational programming opportunities at the Center. The proposed improvements include a concrete walkway to the creek and a limestone stair access. The proposed improvements benefit numerous user groups including Education Center visitors, waders, walkers, and birders.

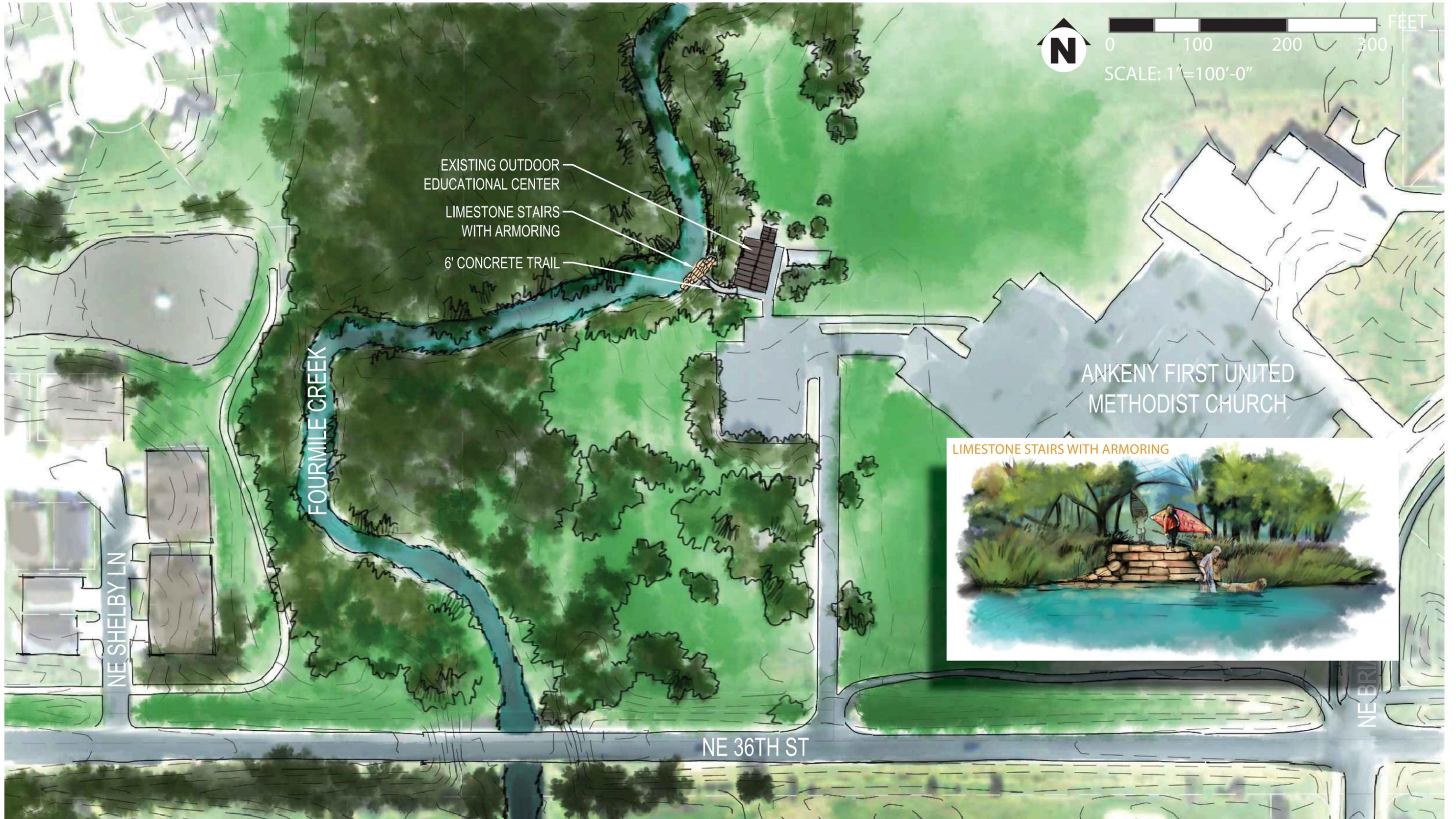
OPINION OF PROBABLE COST

COST ITEM	TOTAL AMOUNT
Carry Down Access - Limestone Stairs	\$12,666.00
Erosion + Sediment Control	\$950.00
Signage	\$790.00
Trail - Hard	\$4,524.00
CONSTRUCTION COST	\$18,930.00
Mobilization (5% Construction Costs)	\$946.50
20% Contingency	\$3,786.00
Non-Construction Costs (15% Construction Costs)	\$2,839.50
TOTAL PROJECT COST	\$26,502.00

PROJECT SCHEDULE



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SITE 16: WADING + PARK IMPROVEMENTS

Permits Needed

- Iowa DNR Floodplain Permit
- City of Ankeny Floodplain Development Permit

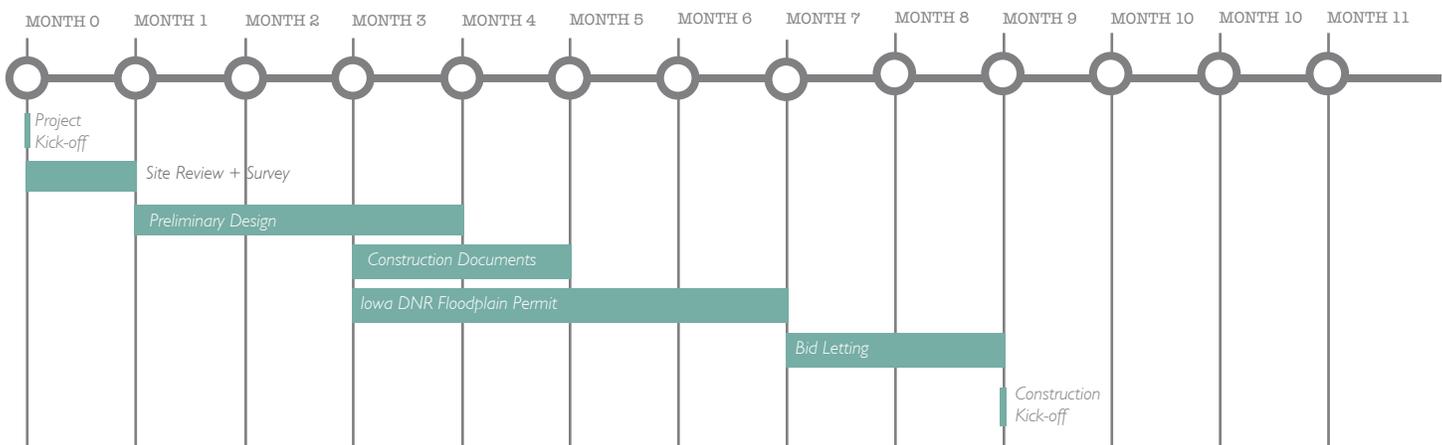
OVERVIEW

Heritage Park is located in an area of Ankeny that is experiencing tremendous growth in residential development, and thus offers opportunity to extend programming beyond its current, primary use of disc golf and picnicking. This includes making Fourmile Creek a focal point within the Park. Specific features include replacing the current low water crossing to improve accessibility for park users and adding soft trails, interpretive signage, and natural play features throughout the wooded areas along the creek and near the existing open air shelter. In addition, improvements to the current parking lot are recommended, including a concrete trail to the shelter, proposed natural playscape, and restrooms. The proposed improvements benefit numerous user groups including park users, birders, hikers, anglers, and waders.

OPINION OF PROBABLE COST

COST ITEM	TOTAL AMOUNT
Carry Down Access - Limestone Stairs	\$11,666.00
Erosion + Sediment Control	\$2,917.00
Natural Playscape	\$151,135.00
Restrooms - Primitive	\$41,510.00
Signage	\$9,110.00
Trail - Hard	\$8,085.00
Trail - Soft	\$15,030.00
Additional Amenities	\$84,000.00
Parking Lot	\$165,960.00
CONSTRUCTION COST	\$489,413.00
Mobilization (5% Construction Costs)	\$24,470.65
20% Contingency	\$97,882.60
Non-Construction Costs (15% Construction Costs)	\$73,441.95
TOTAL PROJECT COST	\$685,178.20

PROJECT SCHEDULE

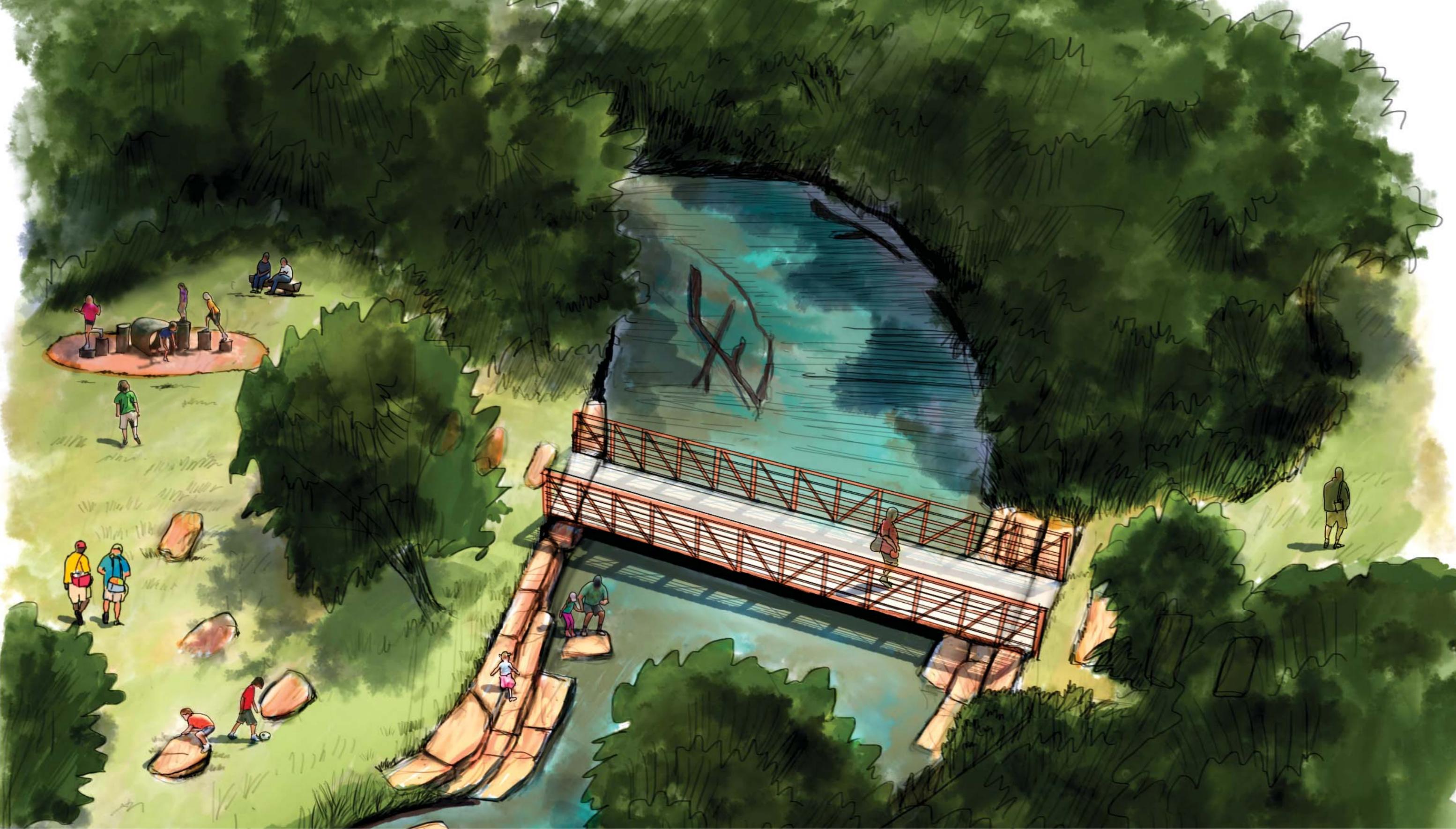


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SITE 16 CONCEPT PLAN

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SITE 16 CONCEPT SKETCH

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SITE 17: SOFT TRAILS

Permits Needed

- City of Bondurant Floodplain Development Permit

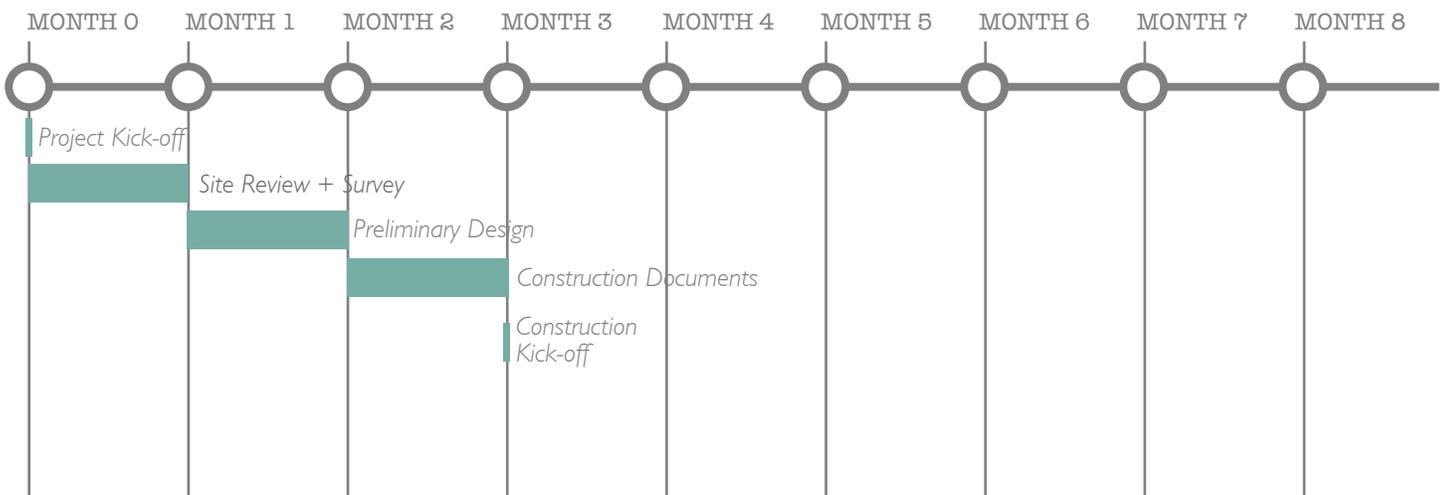
OVERVIEW

The proposed improvements for this location complement the City of Bondurant’s previously completed Eagle Park Plan, incorporating a trail connection and respite seating area near the creek. The proposed improvements benefit numerous user groups, including trail users and birders.

OPINION OF PROBABLE COST

COST ITEM	TOTAL AMOUNT
Respite	\$950.00
Signage	\$790.00
Additional Amenities	\$2,500.00
CONSTRUCTION COST	\$4,240.00
Mobilization (5% Construction Costs)	\$212.00
20% Contingency	\$848.00
Non-Construction Costs (15% Construction Costs)	\$636.00
TOTAL PROJECT COST	\$5,936.00

PROJECT SCHEDULE



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SITE 17 CONCEPT PLAN

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SITE 28: FISHING, RESPITE, WADING

Permits Needed

- Iowa DNR Floodplain Permit
- City of Altoona Floodplain Development Permit

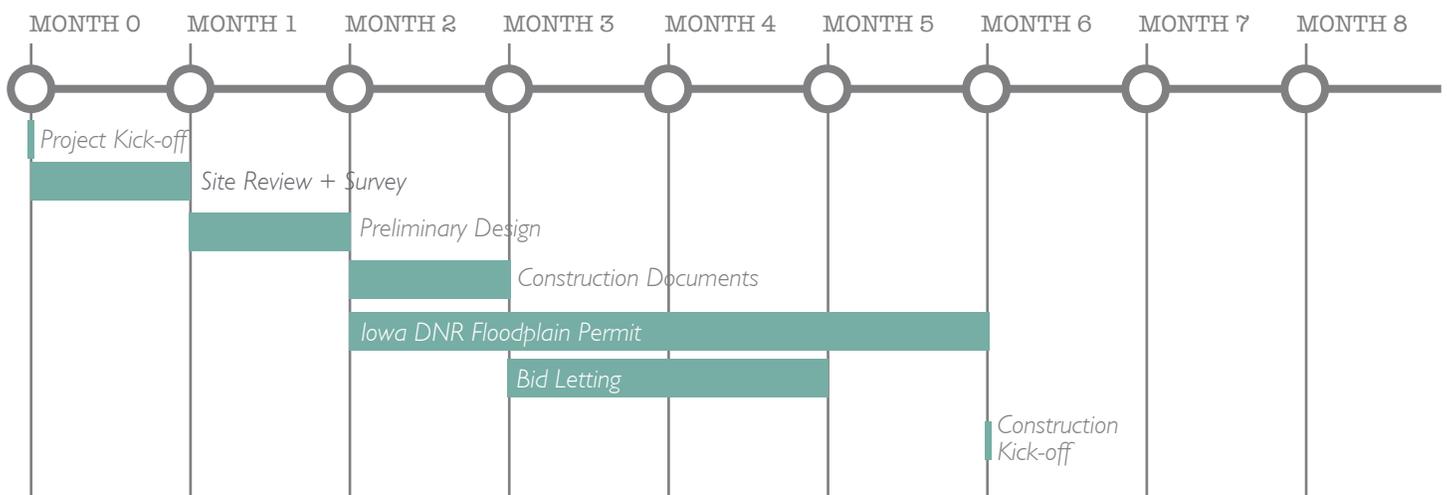
OVERVIEW

This site serves as a connection between users of the City of Altoona’s Greenway Trail and the creek, providing interpretive signage, respite seating, and a limestone stair access. The proposed improvements benefit numerous user groups, including trail users and birders.

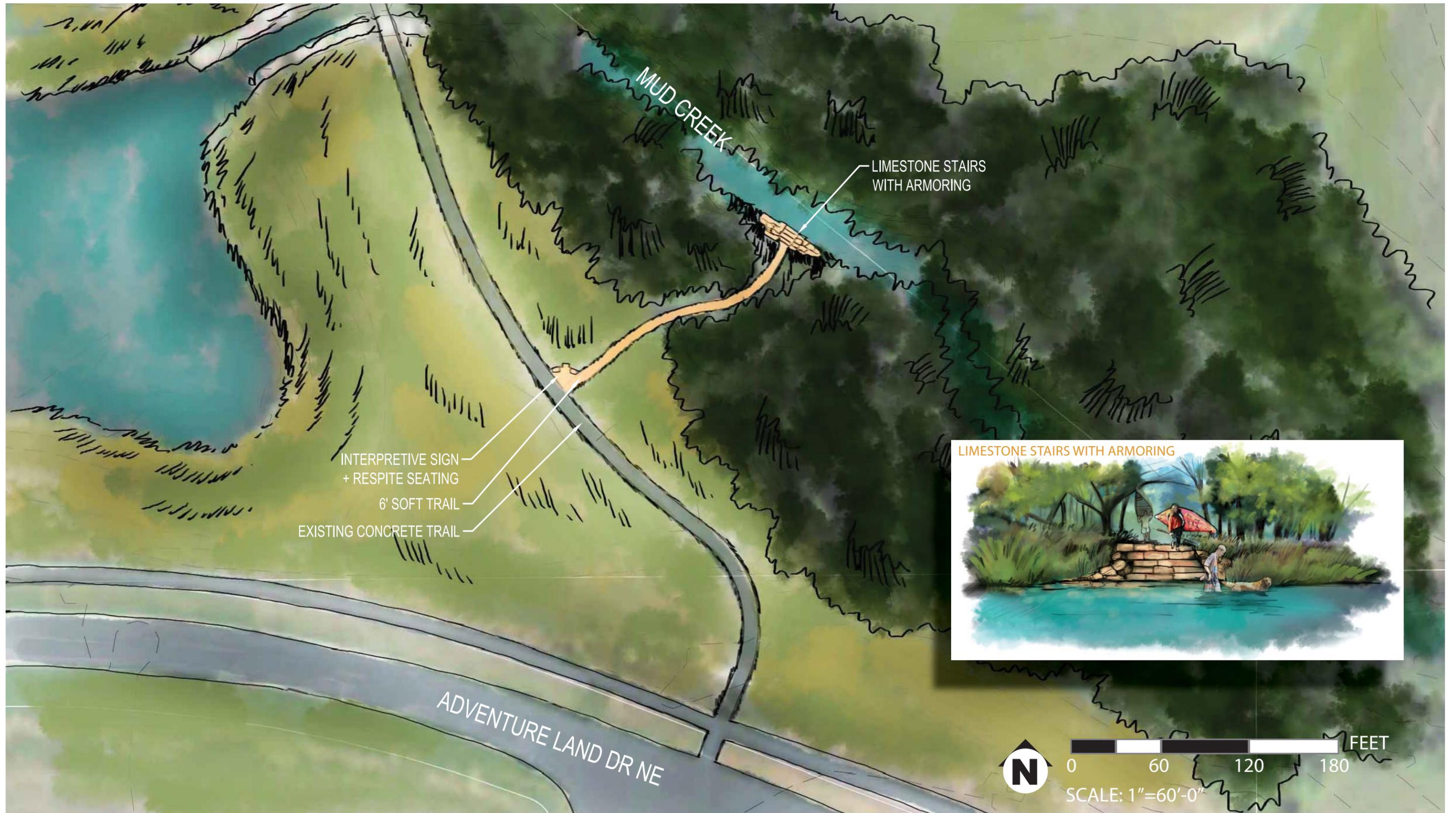
OPINION OF PROBABLE COST

COST ITEM	TOTAL AMOUNT
Carry Down Access - Limestone Stairs	\$12,770.00
Erosion + Sediment Control	\$725.00
Respite	\$1,492.00
Signage	\$790.00
Trail - Soft	\$2,000.00
Additional Amenities	\$2,400.00
CONSTRUCTION COST	\$20,177.00
Mobilization (5% Construction Costs)	\$1,008.85
20% Contingency	\$4,035.40
Non-Construction Costs (15% Construction Costs)	\$3,026.55
TOTAL PROJECT COST	\$28,247.80

PROJECT SCHEDULE



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SITE 29: FISHING, WADING

Permits Needed

- Iowa DNR Joint Application with USACE
- Polk County Floodplain Development Permit

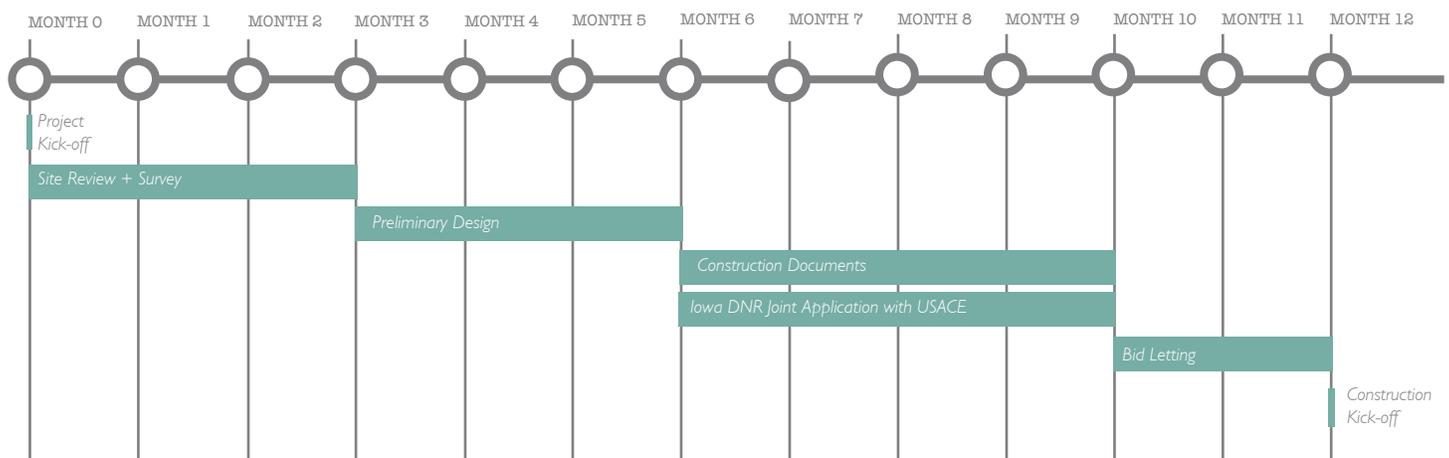
OVERVIEW

Mally's Weh-Weh-Neh-Kee Park is a natural gem located in the unincorporated community of Berwick. Adjacent to the Berwick Trail Bridge along the Chichaqua Valley Bike Trail, this Polk County Conservation park boasts of wooded soft trails, a picnic shelter, and a playground. Whether it is the tire swing swaying from the creosote soaked beams of the trail bridge or the foot-beaten banks of the creek, it is clear that people already find Fourmile Creek a draw for the park. However, the incised channel and eroding banks jeopardize the stability of the creek in this location. The improvements at Mally's include using natural channel design techniques to reestablish a stable waterway with a properly-sized channel that is reconnected to its floodplain, along with an appropriate meander pattern. Using predominantly woody debris for armoring, the improvements will enhance fish habitat and improve flood-flow conveyance as well as provide multiple water quality benefits. The proposed improvements benefit numerous user groups including park users, birders, walkers, bikers, anglers, and waders.

OPINION OF PROBABLE COST

COST ITEM	TOTAL AMOUNT
Carry Down Access - Limestone Stairs	\$16,322.00
Erosion + Sediment Control	\$8,492.00
Respite	\$55.00
Signage	\$2,160.00
Streambank Restoration/Stabilization	\$225,888.00
Trail - Hard	\$10,301.00
Trail - Soft	\$6,800.00
Additional Amenities	\$3,200.00
CONSTRUCTION COST	\$273,218.00
Mobilization (5% Construction Costs)	\$13,660.90
20% Contingency	\$54,643.60
Professional Services + Reference Reach Assessment (20% Construction Costs)	\$54,643.60
TOTAL PROJECT COST	\$396,166.10

PROJECT SCHEDULE



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SITE 29 CONCEPT PLAN

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SITE 29 CONCEPT SKETCH

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SITE 43: WADING

Permits Needed

- Iowa DNR Floodplain Permit
- City of Des Moines Floodplain Development Permit

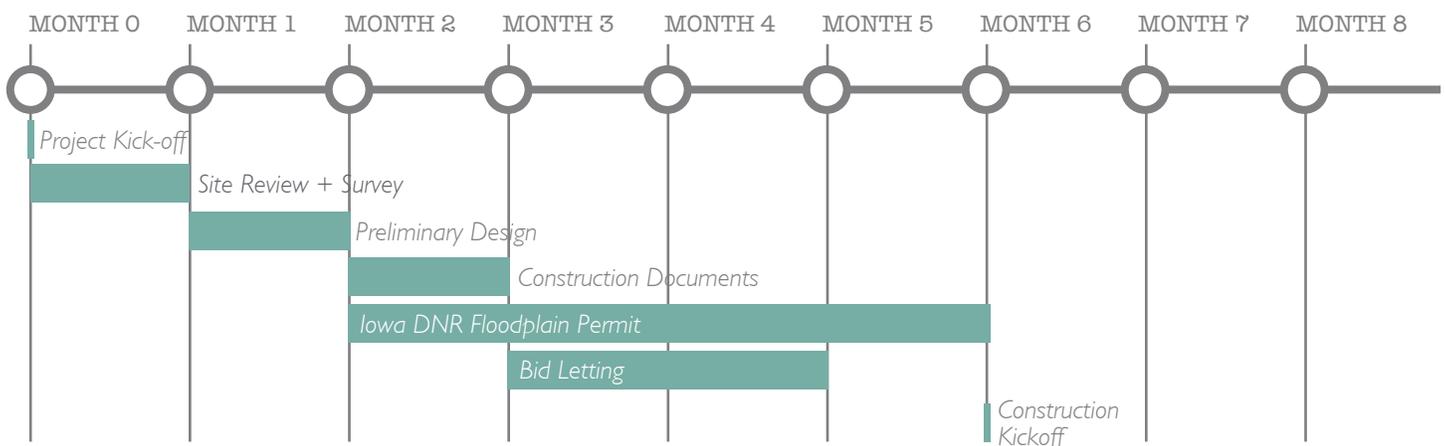
OVERVIEW

Sargent Park is located at the northwest corner of the intersection of Fourmile Creek and East Douglas Avenue. A limestone stair access point exists near the natural playscape features of the park. Extending from the existing access, the proposed improvements include placing stepping boulders across the creek and adding a limestone stair access on the opposite bank. Further upstream on the east bank of the creek, a second proposed limestone stair access will provide a platform for anglers along the creek. The proposed improvements benefit numerous user groups including park users, anglers, walkers, trail bikers, and birders.

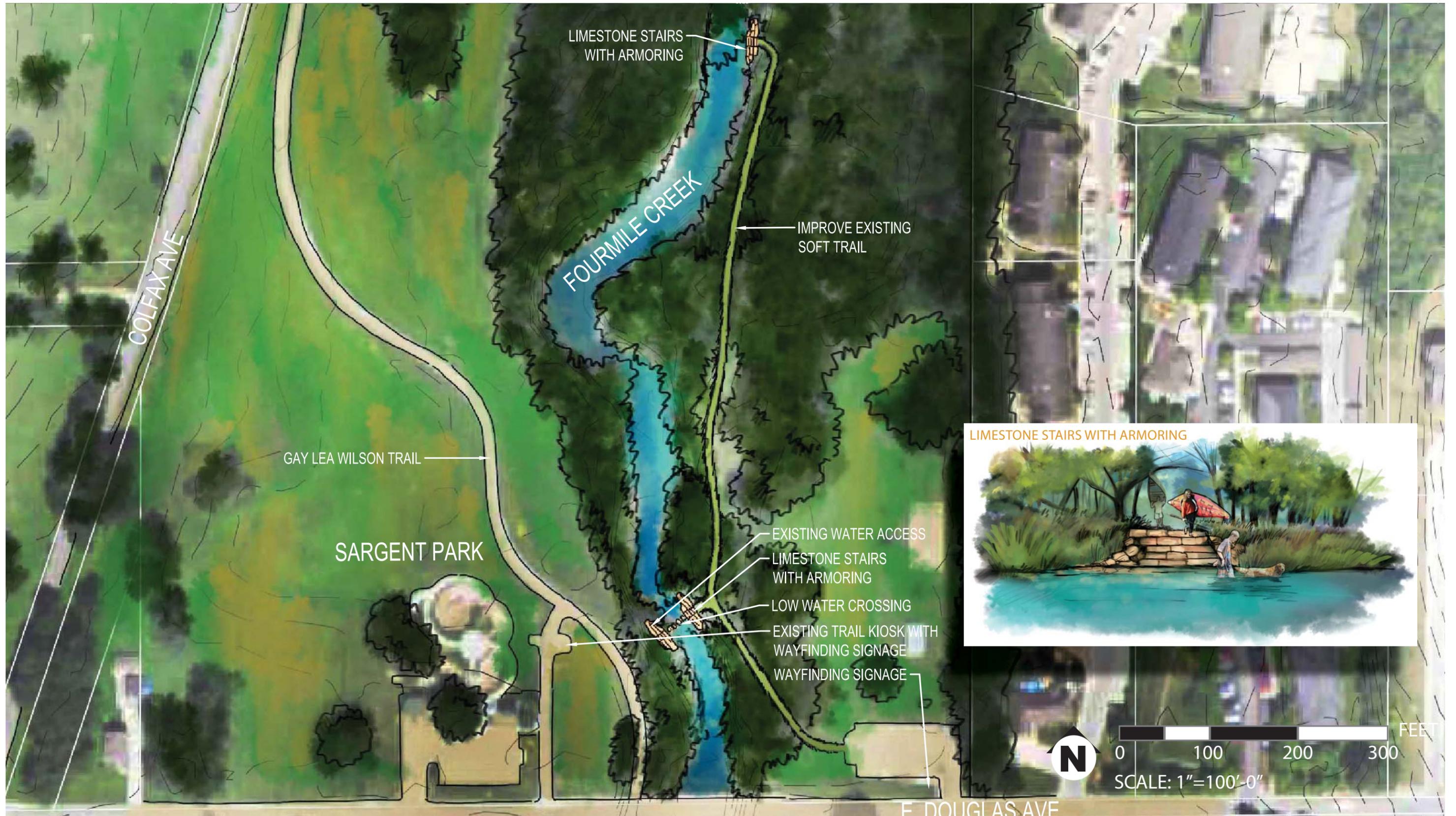
OPINION OF PROBABLE COST

COST ITEM	TOTAL AMOUNT
Carry Down Access - Limestone Stairs	\$25,398.00
Cross Stepping Stones	\$4,200.00
Erosion + Sediment Control	\$405.00
General Construction	\$-
Signage	\$1,440.00
Trail - Soft	\$-
CONSTRUCTION COST	\$31,443.00
Mobilization (5% Construction Costs)	\$1,572.15
20% Contingency	\$6,288.60
Non-Construction Costs (15% Construction Costs)	\$4,716.45
TOTAL PROJECT COST	\$44,020.20

PROJECT SCHEDULE



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SITE 43 CONCEPT PLAN

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SITE 50: FISHING, WADING

Permits Needed

- Iowa DNR Floodplain Permit
- City of Des Moines Floodplain Development Permit

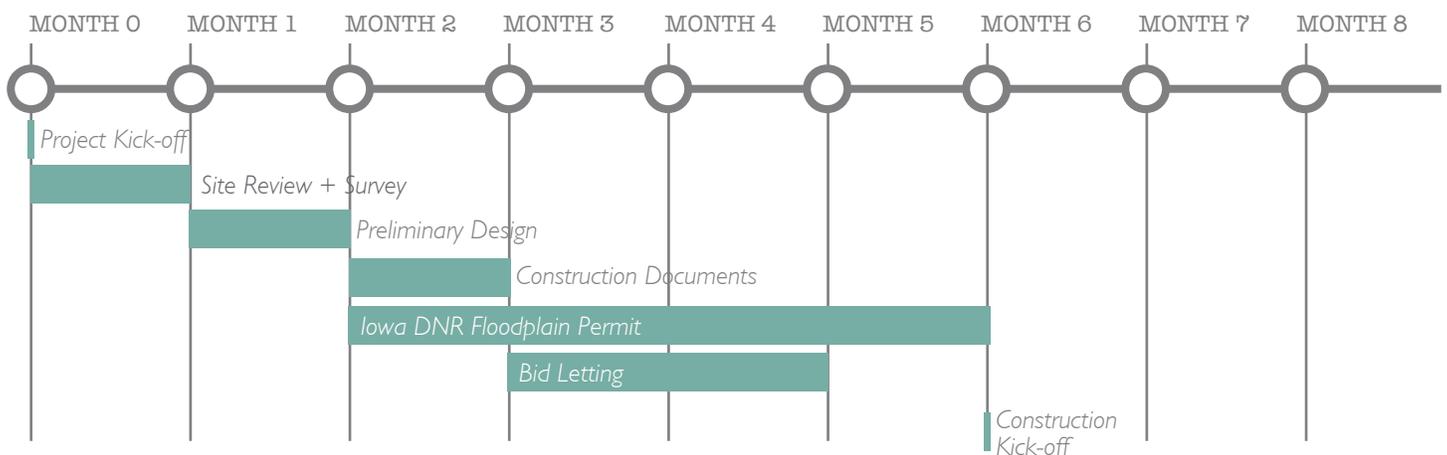
OVERVIEW

The stretch of Fourmile Creek near the Fourmile Creek Community Center along Easton Boulevard offers the opportunity for wading and fishing within a densely populated urban environment. The proposed improvements at this location include a limestone stair access and bank armoring using natural materials to enhance fish habitat, creek stability, and access. The proposed improvements benefit numerous user groups including anglers and waders.

OPINION OF PROBABLE COST

COST ITEM	TOTAL AMOUNT
Carry Down Access - Limestone Stairs	\$17,500.00
Erosion + Sediment Control	\$270.00
General Construction	\$500.00
Signage	\$790.00
Streambank Restoration / Stabilization	\$8,436.00
CONSTRUCTION COST	\$27,496.00
Mobilization (5% Construction Costs)	\$1,374.80
20% Contingency	\$5,499.20
Non-Construction Costs (15% Construction Costs)	\$4,124.40
TOTAL PROJECT COST	\$38,494.40

PROJECT SCHEDULE



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SITE 50 CONCEPT PLAN

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SITE 54: FISHING, WADING

Permits Needed

- Iowa DNR Floodplain Permit
- City of Pleasant Hill Floodplain Development Permit

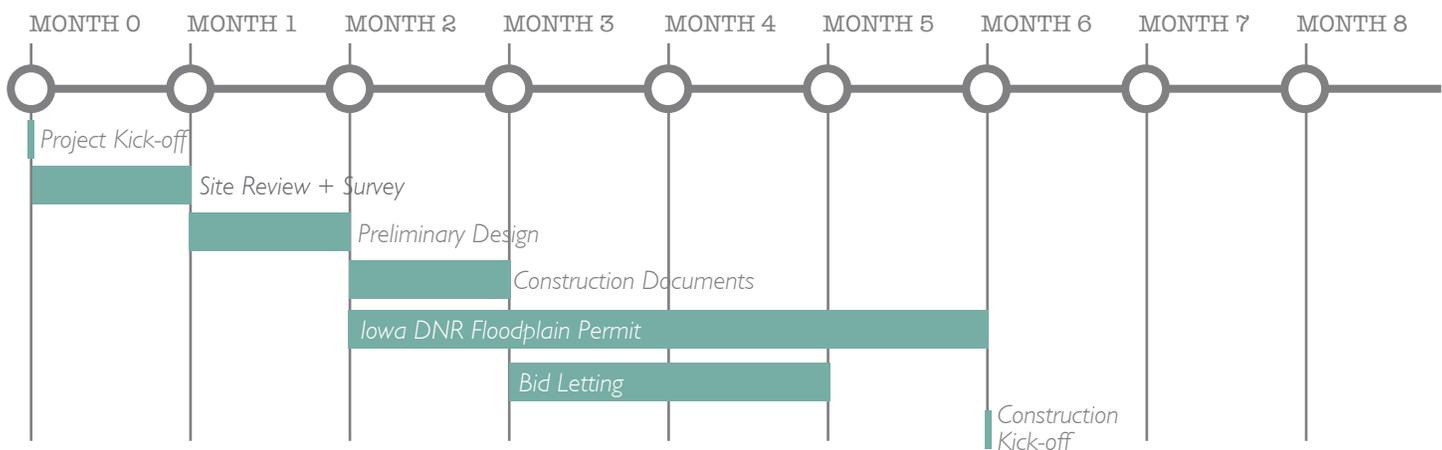
OVERVIEW

The amenities around Copper Creek Lake Park include boating access, fishing nodes, concrete trails, picnic shelters, restaurants, and a movie theater. Though there are existing soft trails through the woods adjacent to Fourmile Creek, there is limited opportunity for park visitors to interact with the creek. The proposed improvements connect the creek to the larger park by providing a soft trail from the concrete trail to the creek, constructing a limestone stair access, and including bank armoring using natural materials. These improvements will create a connection between the two resources and diversify the park experience. The proposed improvements benefit numerous user groups including park users, anglers, birders, hikers, walkers, and waders.

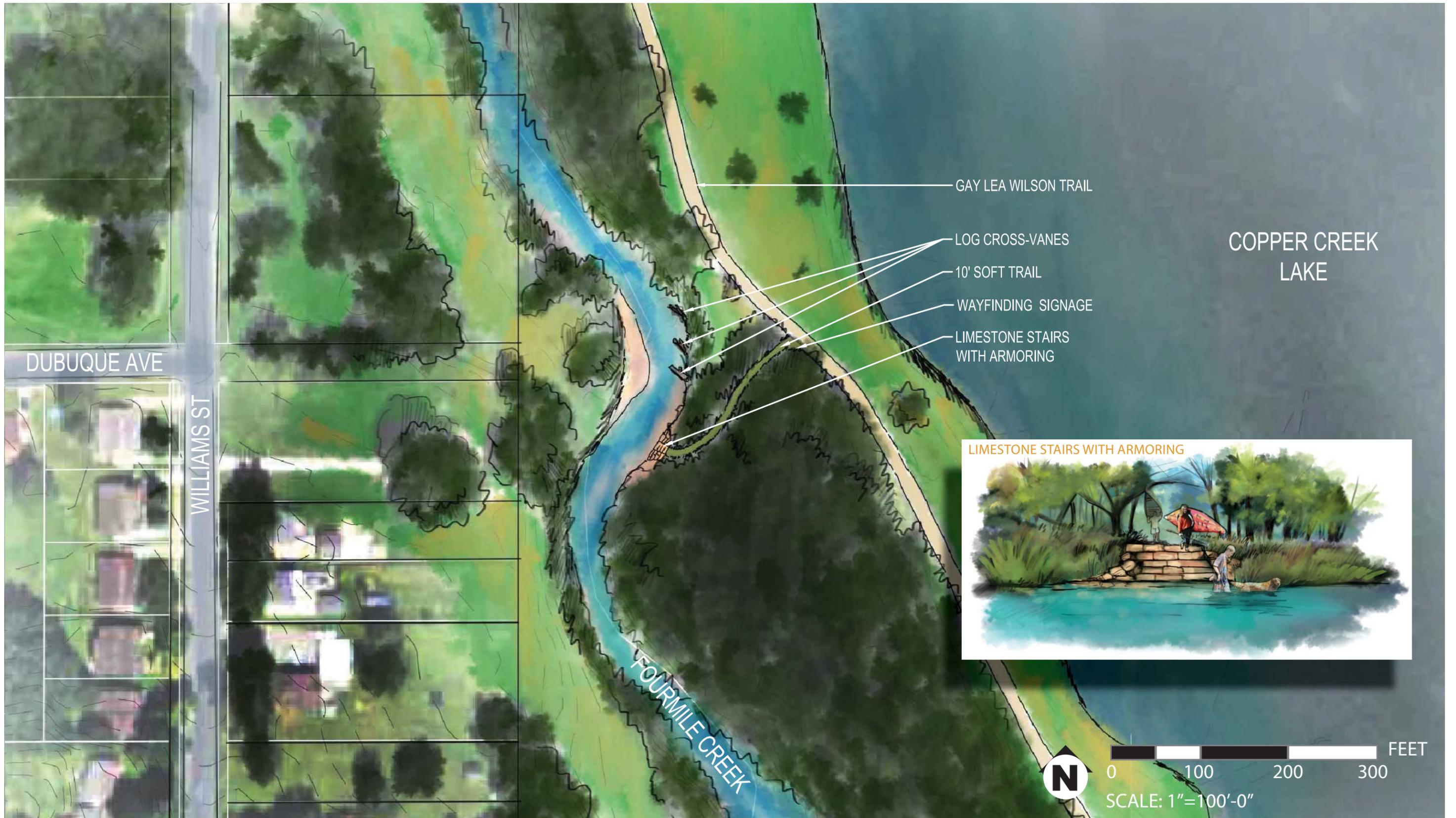
OPINION OF PROBABLE COST

COST ITEM	TOTAL AMOUNT
Carry Down Access - Limestone Stairs	\$19,000.00
Erosion + Sediment Control	\$270.00
Signage	\$2,490.00
Streambank Restoration / Stabilization	\$12,554.00
Trail - Soft	\$4,000.00
CONSTRUCTION COST	\$38,314.00
Mobilization (5% Construction Costs)	\$1,915.70
20% Contingency	\$7,662.80
Non-Construction Costs (15% Construction Costs)	\$5,747.10
TOTAL PROJECT COST	\$53,639.60

PROJECT SCHEDULE



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SITE 54 CONCEPT PLAN

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Permits Needed

- City of Pleasant Hill Floodplain Development Permit

SITE 75: FISHING

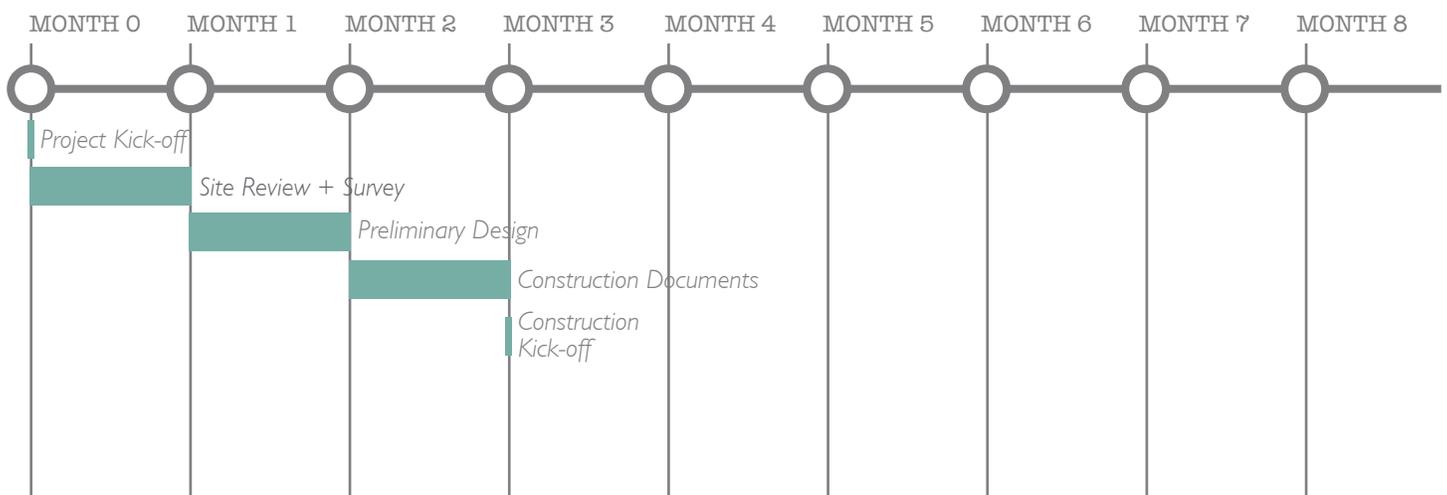
OVERVIEW

The point of confluence between Fourmile Creek and the Des Moines River is a preferred location for anglers. Proposed improvements will offer anglers with a more accessible path to the water and will provide natural seating options along the banks. Additionally, the improvements provide trail users and birders a means of accessing the confluence and a location where they can immerse themselves in the beauty of the two systems. The proposed improvements benefit numerous user groups including anglers, birders, and walkers.

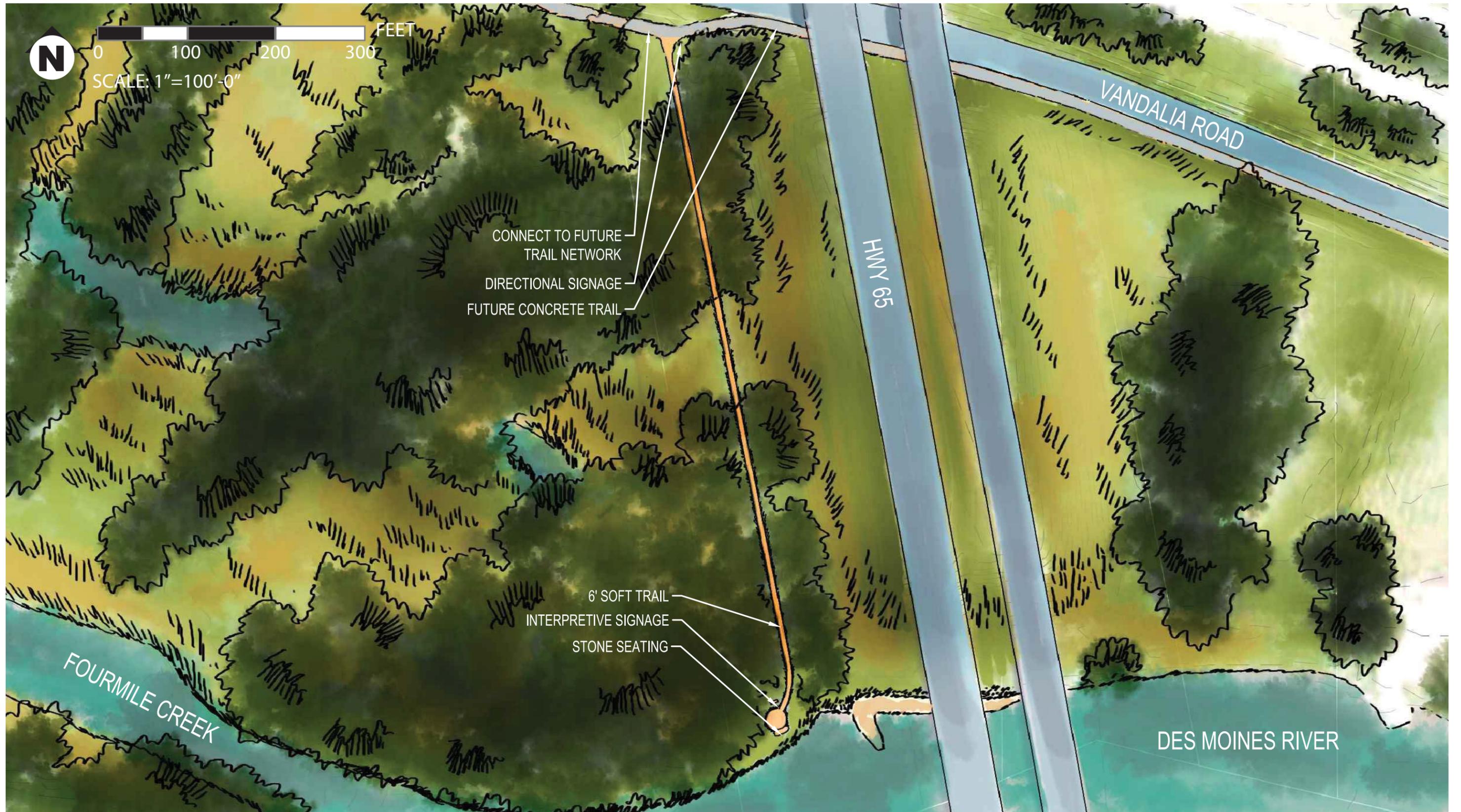
OPINION OF PROBABLE COST

COST ITEM	TOTAL AMOUNT
General Construction	\$500.00
Respite	\$1,110.00
Signage	\$820.00
Trail - Soft	\$1,000.00
Additional Amenities	\$3,000.00
CONSTRUCTION COST	\$6,430.00
Mobilization (5% Construction Costs)	\$321.50
20% Contingency	\$1,286.00
Non-Construction Costs (15% Construction Costs)	\$964.50
TOTAL PROJECT COST	\$9,002.00

PROJECT SCHEDULE



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SITE 75 CONCEPT PLAN

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COMMUNITY COST

OPINION OF PROBABLE COSTS

The following table shows the total opinion of probable cost to the impacted jurisdictions for the conceptual projects included in this Phase I Engineering Study for Fourmile Creek and Mud Creek.

AMENITY OR PROJECT	OPINION OF PROBABLE COST
CITY OF ANKENY	
Site 9: Wading	\$23,419.20
Site 11: Wading	\$26,502.60
Site 16: Wading	\$685,178.20
JURISDICTION TOTAL	\$735,100.00
CITY OF BONDURANT	
Site 17: Soft Trails	\$5,936.00
JURISDICTION TOTAL	\$5,936.00
POLK COUNTY	
Site 29: Fishing, Wading	\$396,166.10
JURISDICTION TOTAL	\$396,166.10

AMENITY OR PROJECT	OPINION OF PROBABLE COST
CITY OF ALTOONA	
Site 28: Fishing, Respite, Wading	\$28,247.80
JURISDICTION TOTAL	\$28,247.80
CITY OF DES MOINES	
Site 43: Wading	\$44,020.20
Site 50: Fishing, Wading	\$38,494.40
JURISDICTION TOTAL	\$82,514.60
CITY OF PLEASANT HILL	
Site 54: Fishing, Wading	\$53,639.60
Site 75: Fishing	\$9,002.00
JURISDICTION TOTAL	\$62,641.60

WATER QUALITY



CURRENT AND FUTURE WATER QUALITY

Iowa's water quality challenges have received much attention in recent years. From beach closings due to cyanobacteria to high nitrate levels in drinking water, addressing these challenges will take a collaborative approach amongst both urban and rural communities, a comprehensive long-term monitoring program, and dedicated funding. While progress is being made, the Greater Des Moines Water Trails and Greenways Plan proposes to increase recreation on our waterways, highlighting the need for more detailed study on the relationship between public health and water quality. Specific focus should be given to biological factors, such as bacteria, which are an issue of primary concern for urban rivers.

Currently in Polk County, there is a robust effort to monitor water quality conditions in regards to ecological, physical, and chemical properties, such as stream coverage, clarity, nitrate levels, and more. This is done through a network of 58 testing sites managed by Polk County Conservation's Water Quality Monitoring Program, with staff and volunteers collecting data throughout the year and publishing it in an annual report. While there are a number of takeaways from this effort that we can learn from and build upon in developing more efficient testing for biological indicators, there are components that make this more complicated, and potentially groundbreaking, including:

1. Results are delayed due to the need for lab testing of biological assays. Real-time data is key to understanding trends occurring in our waterways.
2. Testing is a tricky thing to get right. Small deviations, such as location, can skew the results. For example, if water tested is stagnant or located near wildlife this can lead to results that are not consistent with the rest of the waterbody. The dynamic, and ever-changing, nature of riverine systems makes accurate testing more difficult, especially when coupled with delays in reporting for biological pollutants.
3. Currently, streams and rivers in Iowa are not being regularly tested for biological harms.

To overcome these barriers and provide accurate information for water trail users, a system of real-time bacteria monitoring for rivers and streams should be considered, done in collaboration with diverse stakeholders and across varying areas of expertise. Once a clear strategy is outlined, significant consideration should also be given to the housing and dissemination of this information, with public health as the main focus.

NOTE: A group of local stakeholders and technical experts have begun to look at this issue more comprehensively, with conversations ongoing as an implementation and funding strategy for area water trails is formalized.



GET INVOLVED + SUPPORT

NEXT STEPS

As stated in the introduction, the Phase I Engineering Study further develops concepts introduced by the MPO Water Trails and Greenways Plan. The information contained in this document will assist municipalities in formulating implementation strategies, provide stakeholder groups with conceptual designs to further planning efforts, and allow communities to generate excitement and momentum around the multiple benefits inherent in a regional water trails plan.

Each site has been assessed and designed to maximize the Des Moines metro area's reconnection to the wondrous, yet often neglected, natural resources - our rivers and creeks. It is time we all "Rediscover our Rivers."

FOR MORE INFORMATION

For more information contact:

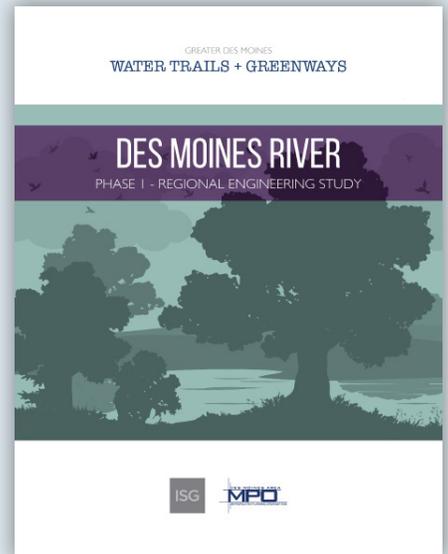
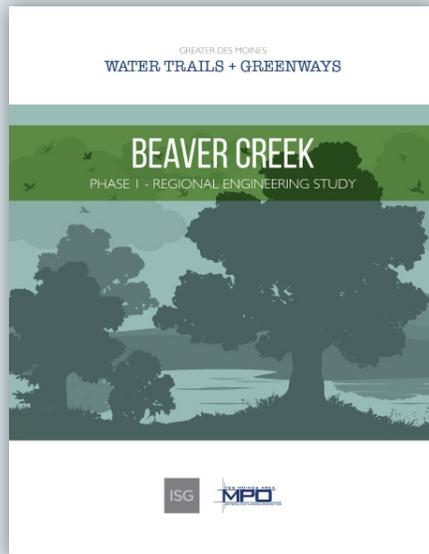
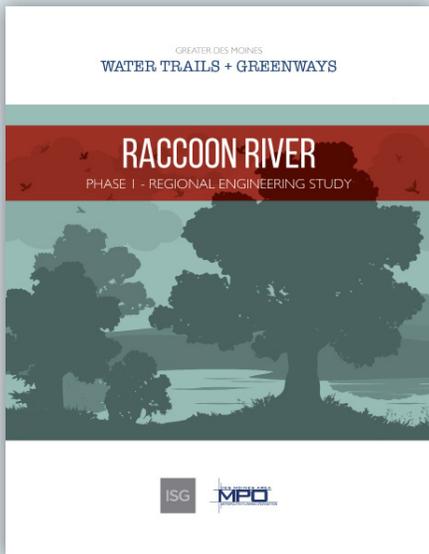
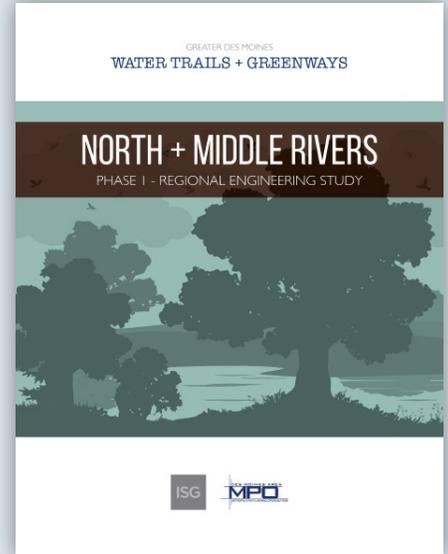
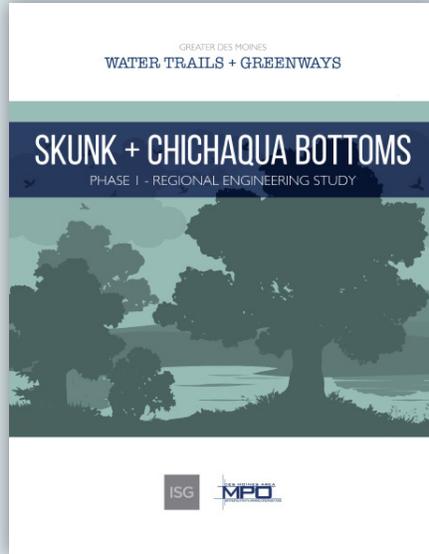
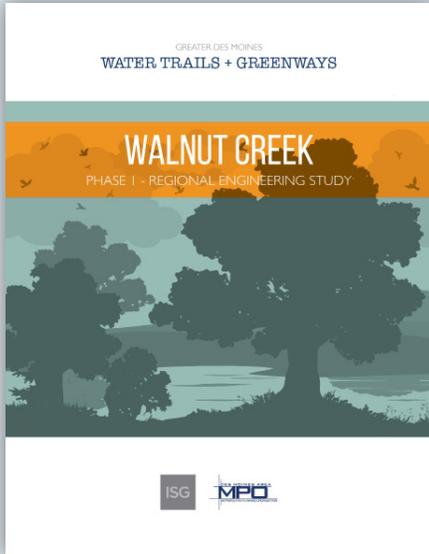
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OTHER REPORTS





GREATER DES MOINES

WATER TRAILS + GREENWAYS

FOURMILE + MUD CREEK