

GREATER DES MOINES  
WATER TRAILS + GREENWAYS

# BEAVER CREEK

PHASE I - REGIONAL ENGINEERING STUDY





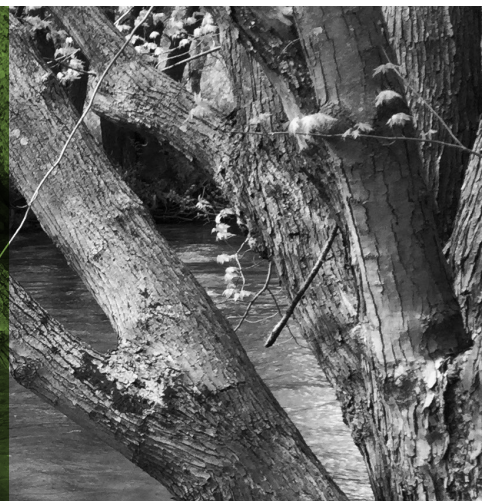
## ISG'S PURPOSE

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 opinion of probable cost 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.



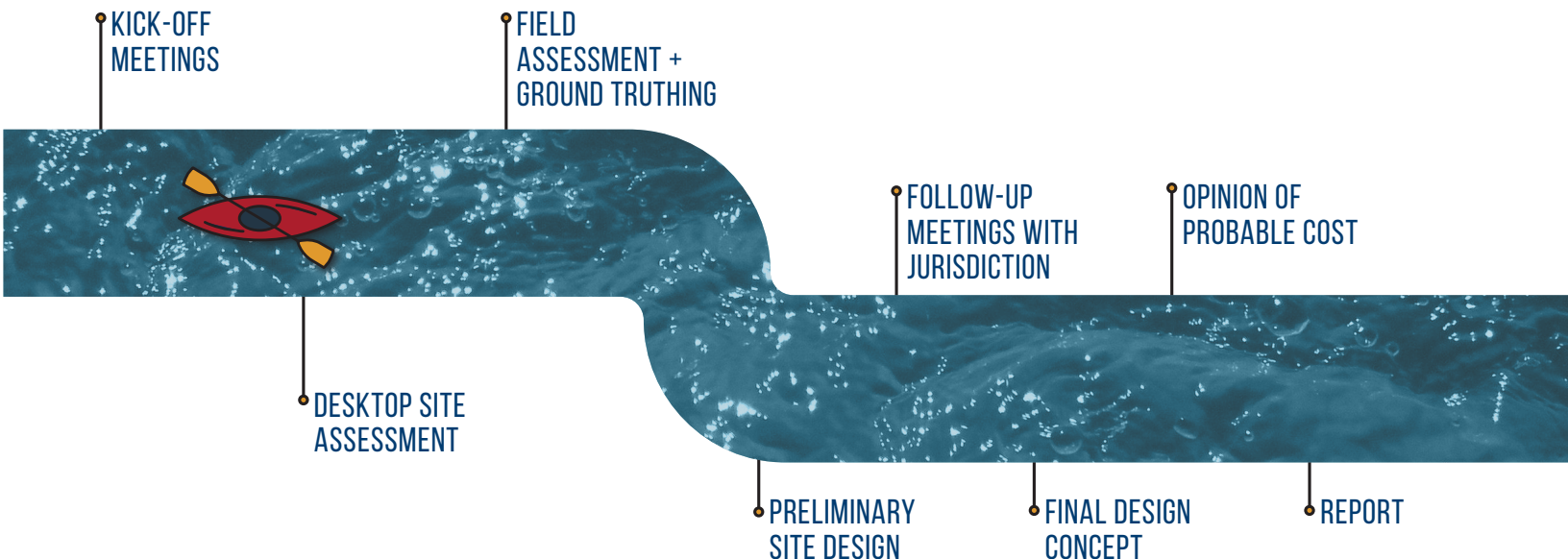
## MUSSEL SURVEYS AND PERMITS

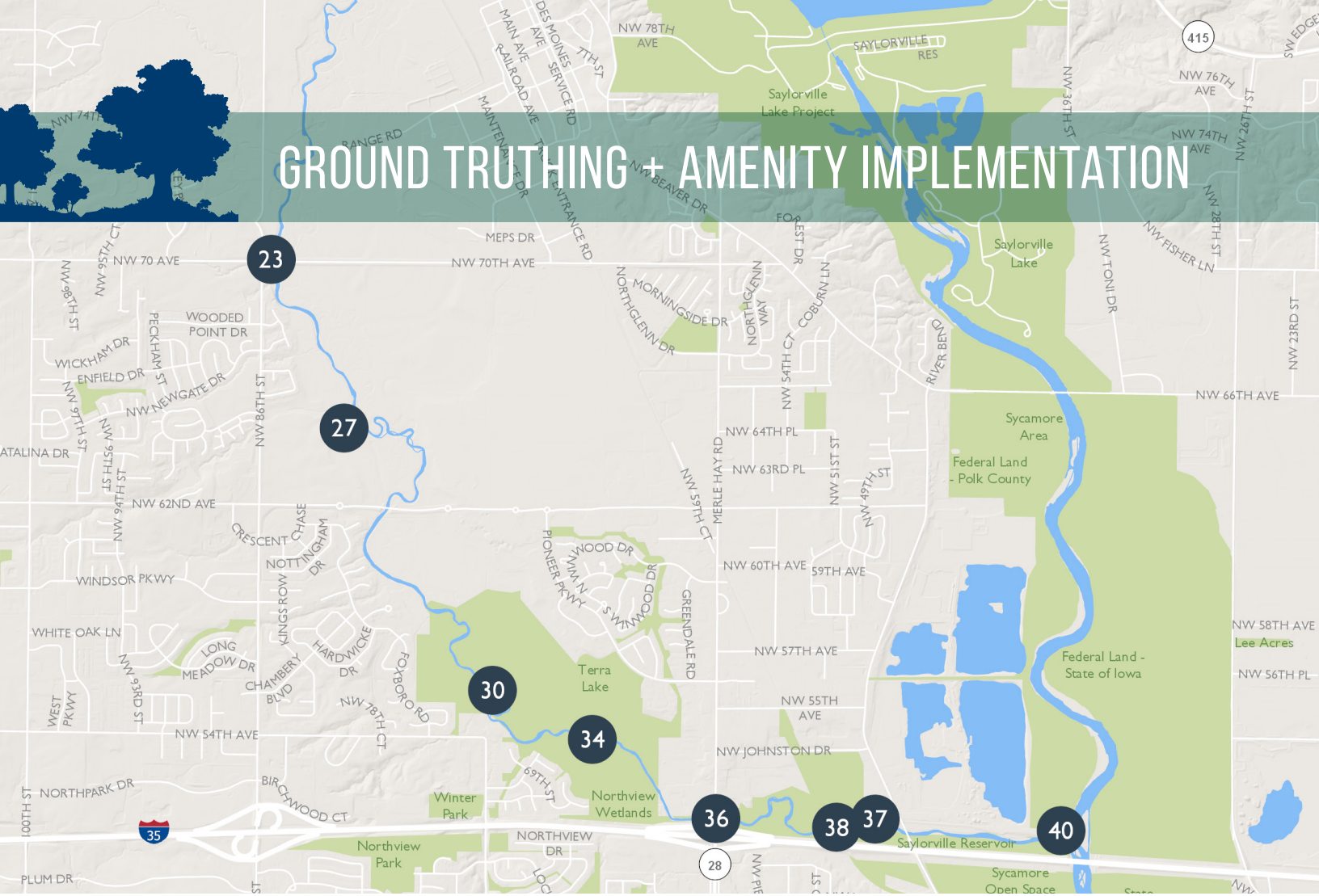
At sites where there is a disturbance to the streambank or stream channel, a mussel survey will be completed, with few exceptions. This will be done with staff from IDNR and local stakeholders on a site specific basis, immediately preceding the start of construction. Optimal conditions for surveys are 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](https://outdoorindustry.org/wp-content/uploads/2017/07/OIA_RecEcoState_IA.pdf)





ID	AMENITY	JURISDICTION
23	Carry Down Access	City of Johnston
27	Respite	City of Johnston
30	Wading	City of Johnston
34	Fishing, Wading, Portage	City of Johnston
36	Carry Down Access, Fishing, Wading, Livery	City of Johnston
37	Parking	City of Johnston
38	Fishing	City of Johnston
40	Fishing	City of Johnston



# SITE 23: CARRY DOWN ACCESS

## Permits Needed

- ✓ Iowa DNR Joint Application
- ✓ City of Johnston Floodplain Development Permit

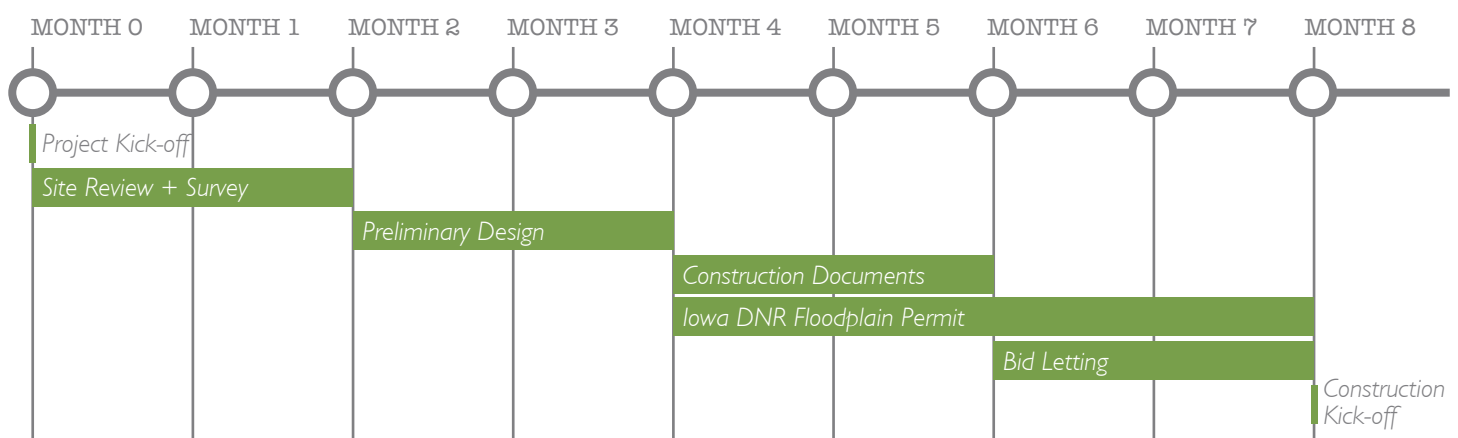
## OVERVIEW

Strategic access points are paramount for a water trails system to be successful. The upstream access point for Beaver Creek is located in the City of Johnston at the southeast corner of the 86th Street and 70th Avenue intersection, along the east side of the creek. Key site considerations include available open space, gradual terrain, and relatively stable banks along the creek. The improvements include a parking lot, hard trail, cast-in-place concrete ramp, adjacent boulder bank armoring, water quality improvements, and signage. The proposed improvements benefit numerous user groups including: paddlers, birders, anglers, and waders.

## OPINION OF PROBABLE COST

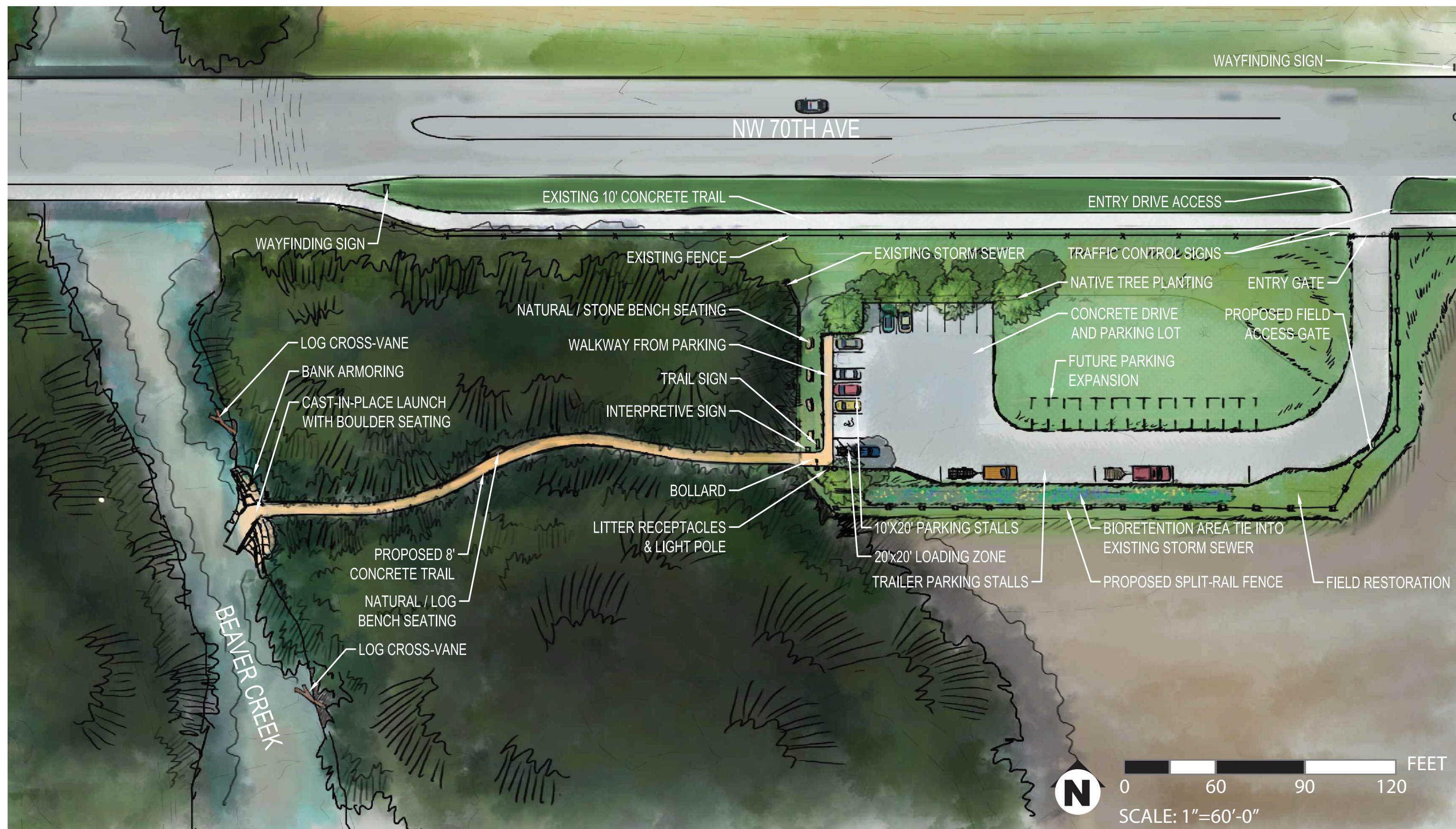
COST ITEM	TOTAL AMOUNT
Carry Down Access - Cast-in-place	\$46,583.50
Erosion and Sediment Control	\$11,017.00
General Construction	\$500.00
Parking Lot	\$189,220.00
Sidewalk	\$3,639.00
Signage	\$3,310.00
Trail - Hard	\$8,683.00
Water Quality Improvements - Bioretention Area	\$30,360.00
Additional Amenities	\$15,200.00
CONSTRUCTION COST	\$308,512.50
Mobilization (5% Construction Costs)	\$1,542.56
20% Contingency	\$61,702.50
Non-Construction Costs (15% Construction Costs)	\$46,276.88
TOTAL PROJECT COST	\$418,034.44

## PROJECT SCHEDULE



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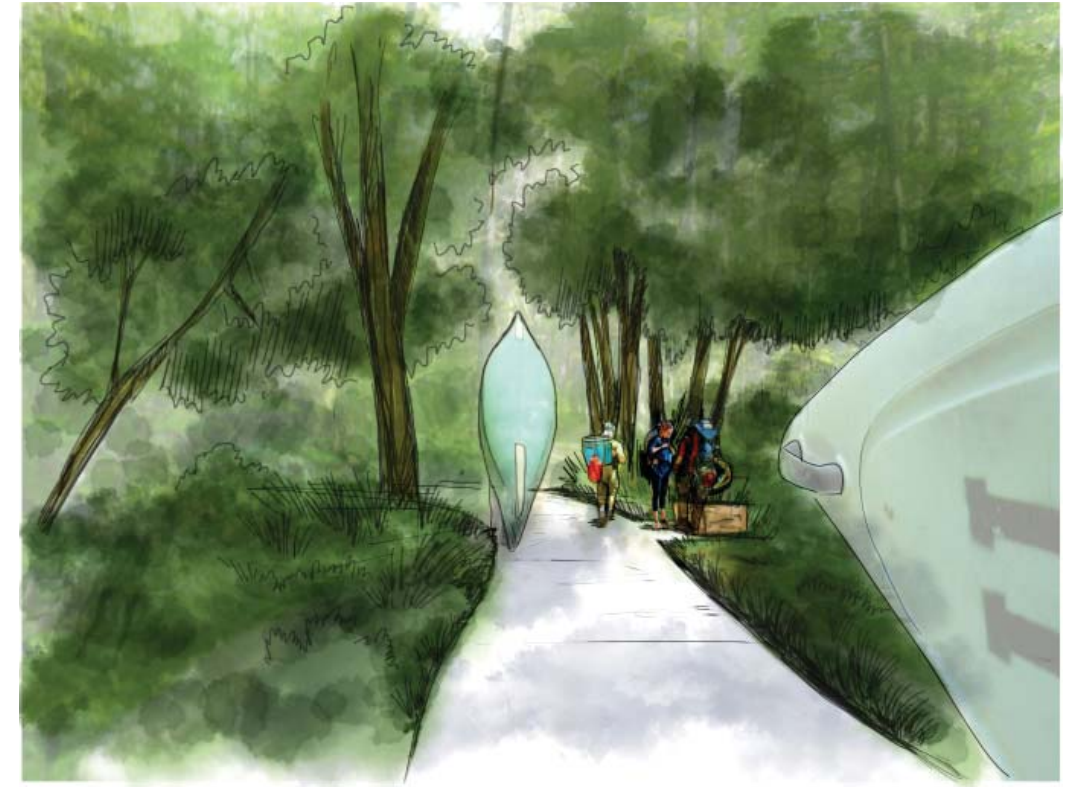
SITE 23 CONCEPT PLAN

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PARKING LOT



TRAIL ACCESS



CAST-IN-PLACE LAUNCH

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# SITE 27: RESPITE

## Permits Needed

- ☒ Iowa DNR Floodplain Permit
- ☒ City of Johnston Floodplain Development Permit

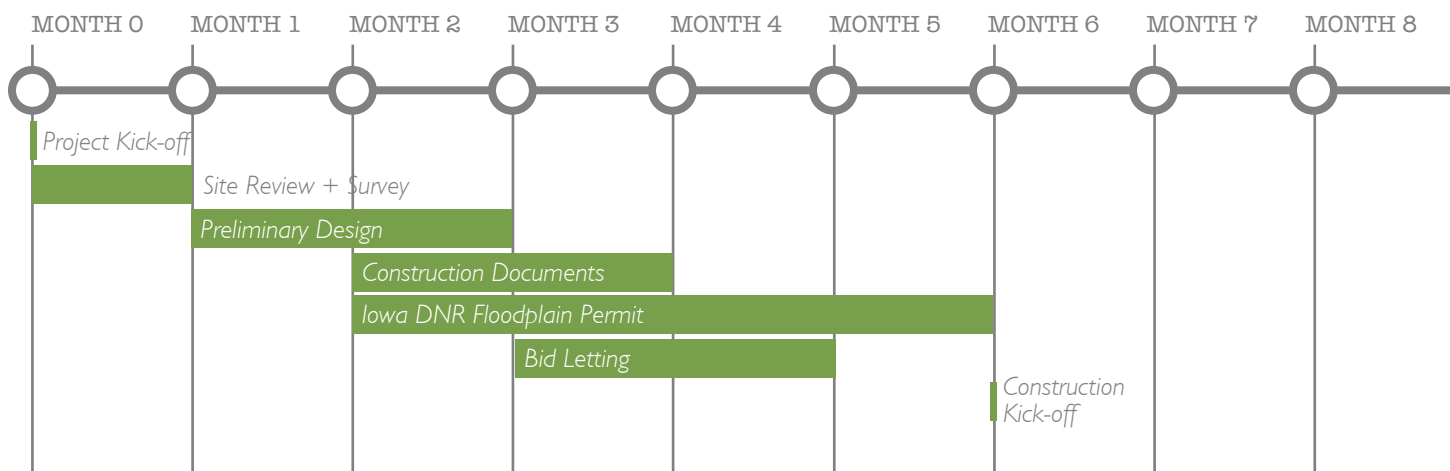
## OVERVIEW

The proposed respite area adjacent to the Pioneer Campus north of NW 62nd Avenue uses the creek as a backdrop to entice users to stop and rest at the rock benches or enjoy a picnic lunch to eat by the water. In addition to respite, the proposed improvements identify an oxbow for restoration. The oxbow restoration is a continuation of efforts spearheaded by the City of Johnston to limit streambank erosion and improve water quality. The proposed improvements benefit numerous user groups including: bikers, walkers, and birders.

## OPINION OF PROBABLE COST

COST ITEM	TOTAL AMOUNT
Erosion and Sediment Control	\$1,860.00
Signage	\$720.00
Respite	\$10,681.00
Water Quality Improvements and Oxbow Restoration	\$25,000.00
Additional Amenities	\$6,000.00
CONSTRUCTION COST	\$44,261.00
Mobilization (5% Construction Costs)	\$2,213.05
20% Contingency	\$8,852.20
Non-Construction Costs (15% Construction Costs)	\$6,639.15
TOTAL PROJECT COST	\$61,965.40

## PROJECT SCHEDULE



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SITE 27 CONCEPT PLAN



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SITE 27 CONCEPT SKETCH



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# SITE 30: WADING

## Permits Needed

- ☒ Iowa DNR Floodplain Permit
- ☒ City of Johnston Floodplain Development Permit

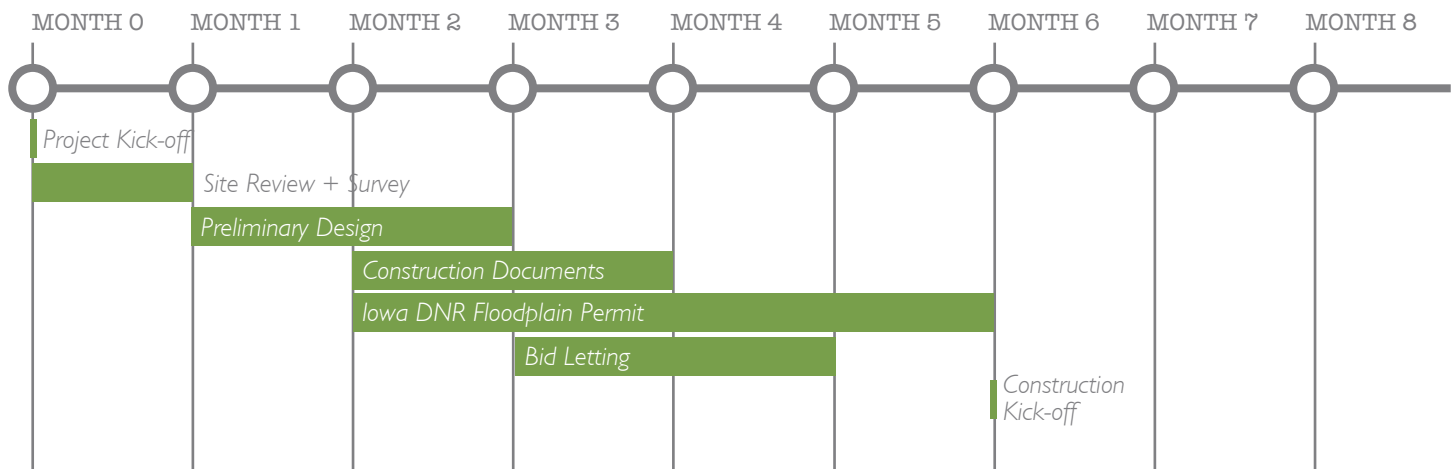
## OVERVIEW

The proposed soft trail and limestone stair access highlights an opportunity to diversify recreational options within Lew Clarkson Park, encourages an interface between the park amenities and river users, and provides connectivity to the creek for park users. The proposed improvements benefit numerous user groups including: paddlers, park attendees, anglers, and waders.

## OPINION OF PROBABLE COST

COST ITEM	TOTAL AMOUNT
Carry Down Access - Limestone Stairs	\$21,885.50
Erosion and Sediment Control	\$1,020.00
Signage	\$820.00
Trail - Soft	\$2,400.00
CONSTRUCTION COST	\$26,125.50
Mobilization (5% Construction Costs)	\$1,306.28
20% Contingency	\$5,225.10
Non-Construction Costs (15% Construction Costs)	\$3,918.83
TOTAL PROJECT COST	\$36,575.70

## PROJECT SCHEDULE



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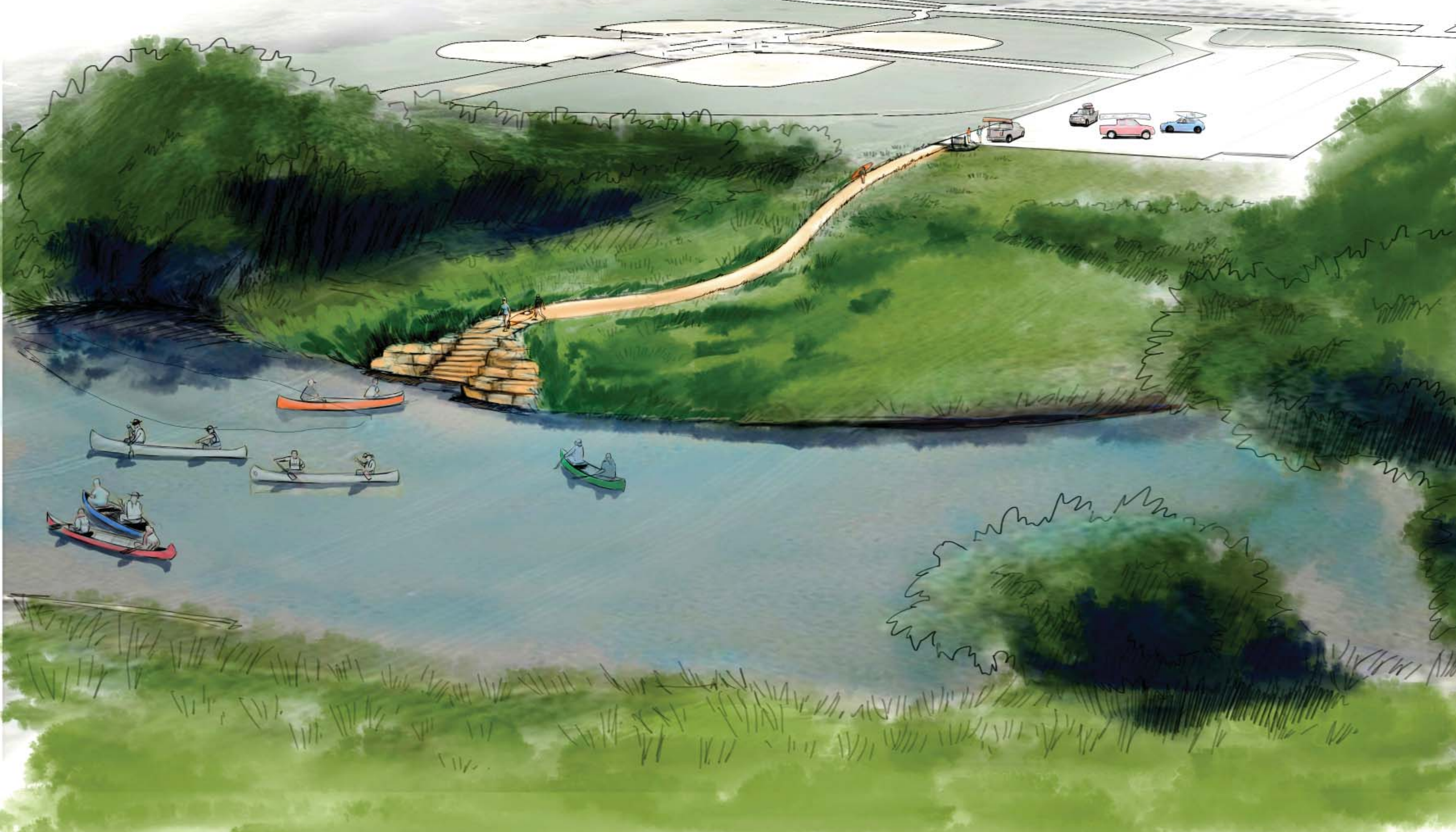


SITE 30 CONCEPT PLAN



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SITE 30 CONCEPT SKETCH



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# SITE 34: FISHING, WADING, PORTAGE

## Permits Needed

- ☒ Iowa DNR Joint Application
- ☒ City of Johnston Floodplain Development Permit

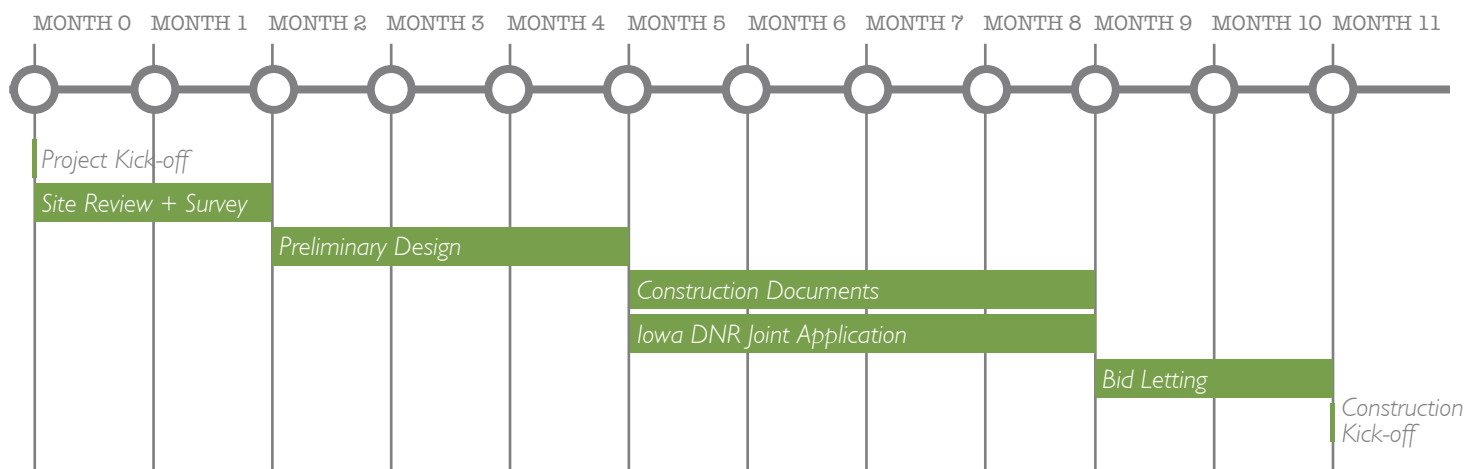
## OVERVIEW

This site provides a unique opportunity to extend programming within Terra Park for both park and water trail users. The proposed improvements include a series of soft trails that will connect amenities in the park and existing bike trails to Beaver Creek. Additionally, a limestone stair access will provide an interface between park and creek users and will allow a stable area for accessing the water. The proposed respite area adjacent to the access uses the creek as a backdrop to entice users to stop and relax at the rock benches and view wildlife. The proposed improvements benefit numerous user groups including: paddlers, birders, walkers, park visitors, anglers, and waders.

## OPINION OF PROBABLE COST

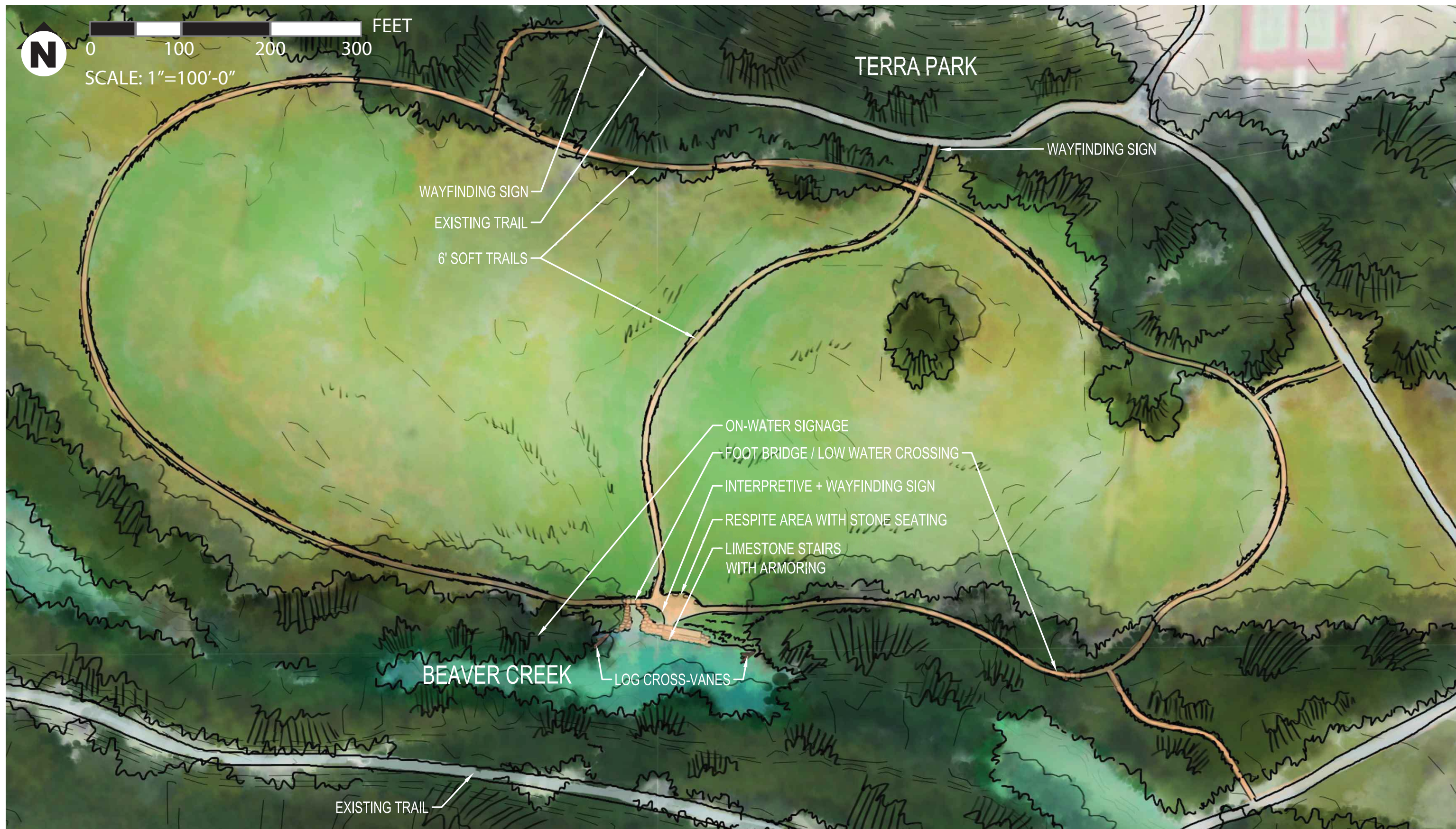
COST ITEM	TOTAL AMOUNT
Carry Down Access - Limestone Stairs	\$61,931.50
Erosion and Sediment Control	\$2,195.00
Respite	\$2,186.00
Signage	\$6,890.00
Additional Amenities	\$9,500.00
CONSTRUCTION COST	\$82,702.50
Mobilization (5% Construction Costs)	\$4,135.13
20% Contingency	\$16,540.50
Non-Construction Costs (15% Construction Costs)	\$12,405.38
TOTAL PROJECT COST	\$115,783.50

## PROJECT SCHEDULE



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SITE 34 CONCEPT PLAN



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SITE 34 CONCEPT SKETCH



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# SITE 36: CARRY DOWN ACCESS, FISHING, WADING, LIVERY

## Permits Needed

- ☒ Iowa DNR Joint Application
- ☒ City of Johnston Floodplain Development Permit

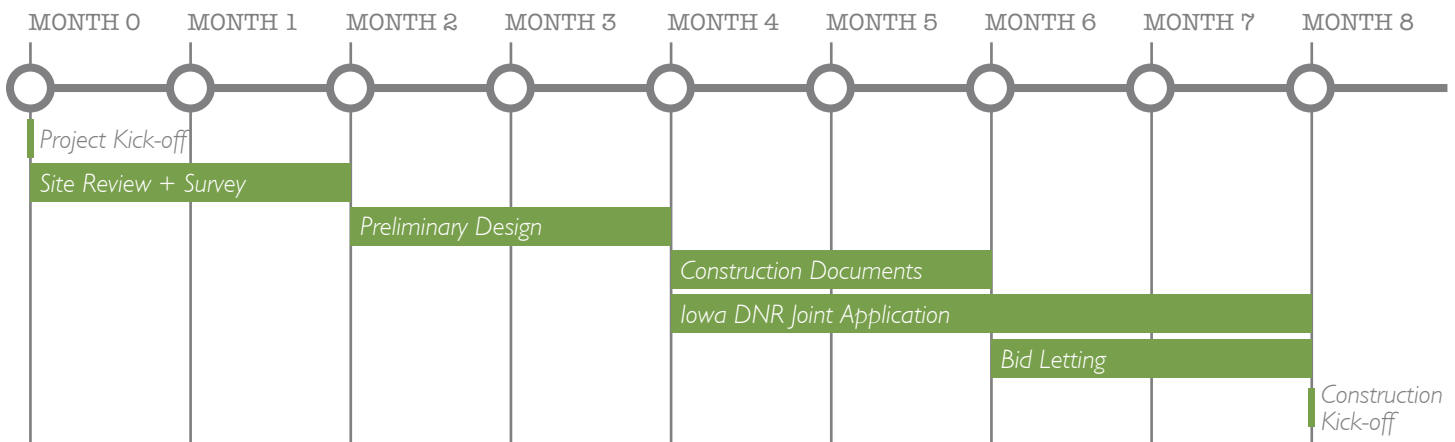
## OVERVIEW

The Merle Hay Gateway serves as the designated downstream Beaver Creek access point, a regional water trails network hub, an ecotourism destination, and a community focal point. Designs address user needs with a parking lot to accommodate vehicles with trailers, kayak/canoe storage so paddlers can enjoy the site's other amenities, a paved trail, a cast-in-place launch with adjacent boulder bank for stable creek access, and respite facilities. The design leads visitors to the water with lighting, public art, and respite areas. The proposed improvements benefit user groups including: paddlers, restaurant goers, bikers, walkers, and waders.

## OPINION OF PROBABLE COST

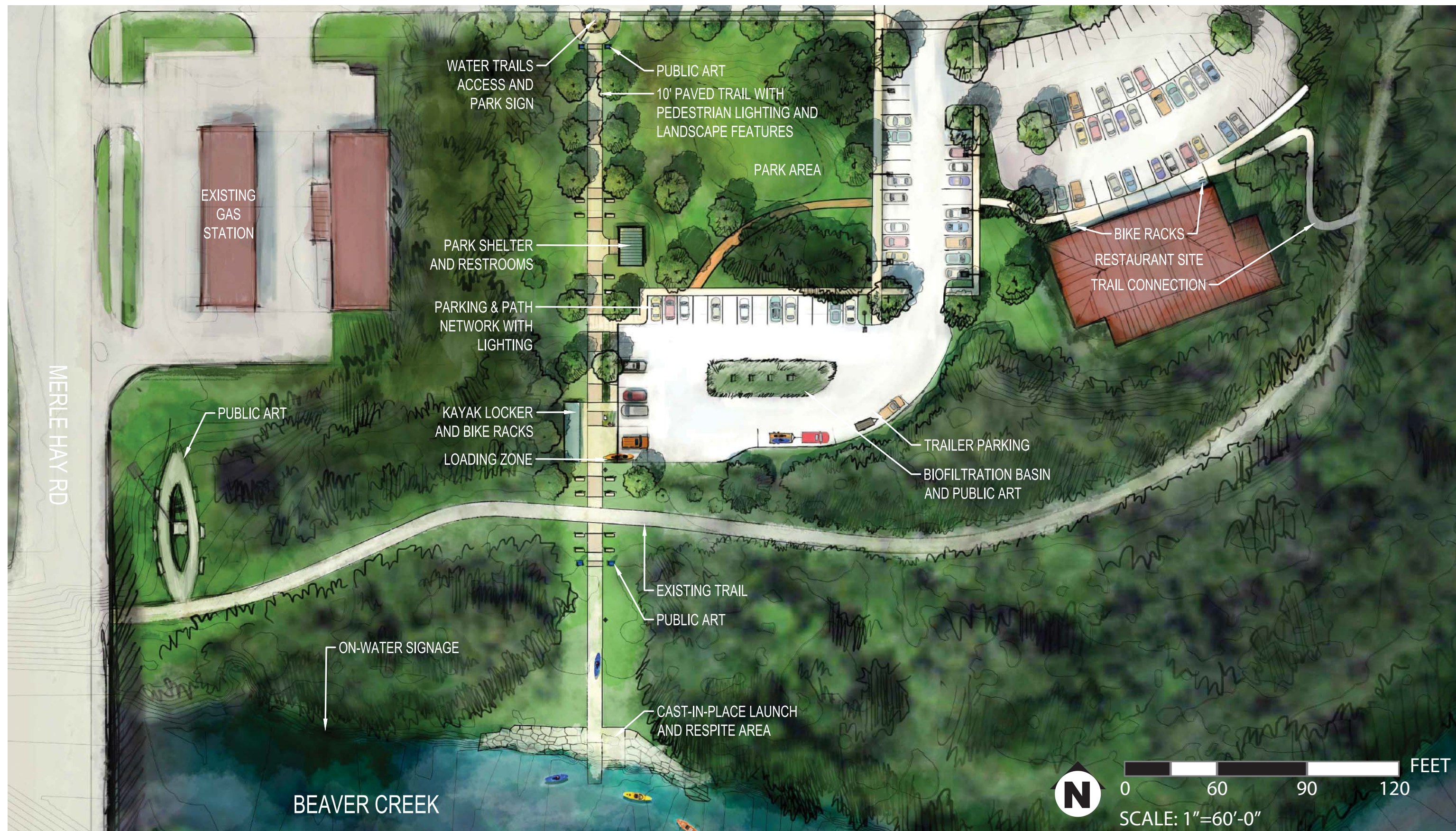
COST ITEM	TOTAL AMOUNT
Carry Down Access - Cast-in-place	\$79,384.50
Erosion and Sediment Control	\$9,912.00
General Construction	\$1,500.00
Parking Lot	\$369,701.00
Formal Restrooms	\$95,000.00
Sidewalk	\$21,436.00
Signage	\$9,480.000
Trail - Hard	\$116,367.00
Bioretention Area Water Quality Improvements	\$44,490.000
Additional Amenities	\$160,800.00
CONSTRUCTION COST	\$908,070.50
Mobilization (5% Construction Costs)	\$45,403.53
20% Contingency	\$181,614.10
Non-Construction Costs (15% Construction Costs)	\$136,210.58
TOTAL PROJECT COST	\$1,271,298.70

## PROJECT SCHEDULE



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SITE 36 CONCEPT PLAN



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BIRD'S-EYE VIEW



TRAIL HUB



CAST-IN-PLACE LAUNCH + RESPITE AREA



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# SITE 38: FISHING

## Permits Needed

- ☒ Iowa DNR Floodplain Development Permit
- ☒ City of Johnston Floodplain Development Permit

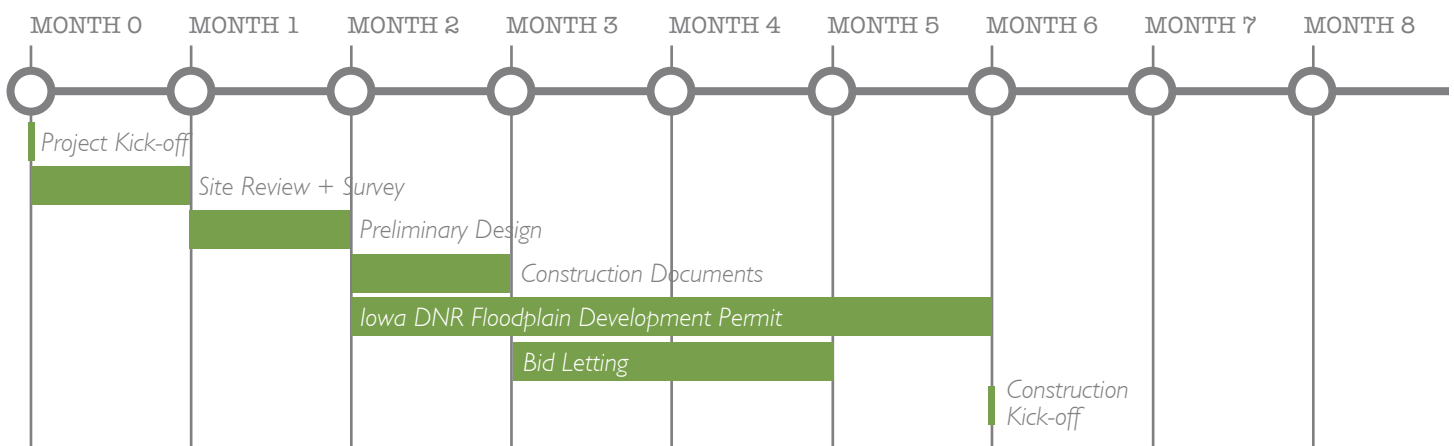
## OVERVIEW

The stretch of Beaver Creek from the overpass at Merle Hay Road to the confluence with the Des Moines River is a popular destination for anglers; however, there are currently no parking options or formal fishing locations. The proposed conceptual improvements for this stretch of Beaver Creek includes a parking lot south of NW Frost Way and east of the Beavertdale Little League site, a cleared soft trail to the creek, and a stabilized, limestone stair creek access for anglers. The parking lot will also connect to existing single track trails currently used by anglers, hikers, and mountain bikers. The proposed improvements benefit numerous user groups including: anglers, paddlers, birders, trail bikers, walkers, and waders.

## OPINION OF PROBABLE COST

COST ITEM	TOTAL AMOUNT
Carry Down Access - Limestone Stairs	\$13,414.50
Erosion and Sediment Control	\$2,840.00
General Construction	\$500.00
Parking Lot	\$164,425.00
Signage	\$1,510.00
Trail - Soft	\$2,000.00
Bioretention Area Water Quality Improvements	\$16,135.00
Additional Amenities	\$7,000.00
CONSTRUCTION COST	\$207,824.50
Mobilization (5% Construction Costs)	\$10,391.23
20% Contingency	\$41,564.90
Non-Construction Costs (15% Construction Costs)	\$31,173.68
TOTAL PROJECT COST	\$290,954.30

## PROJECT SCHEDULE





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SITE 38 CONCEPT PLAN



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SITE 38 CONCEPT SKETCH



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# SITE 40: FISHING

## Permits Needed

- ☒ Iowa DNR Floodplain Permit
- ☒ City of Johnston Floodplain Development Permit

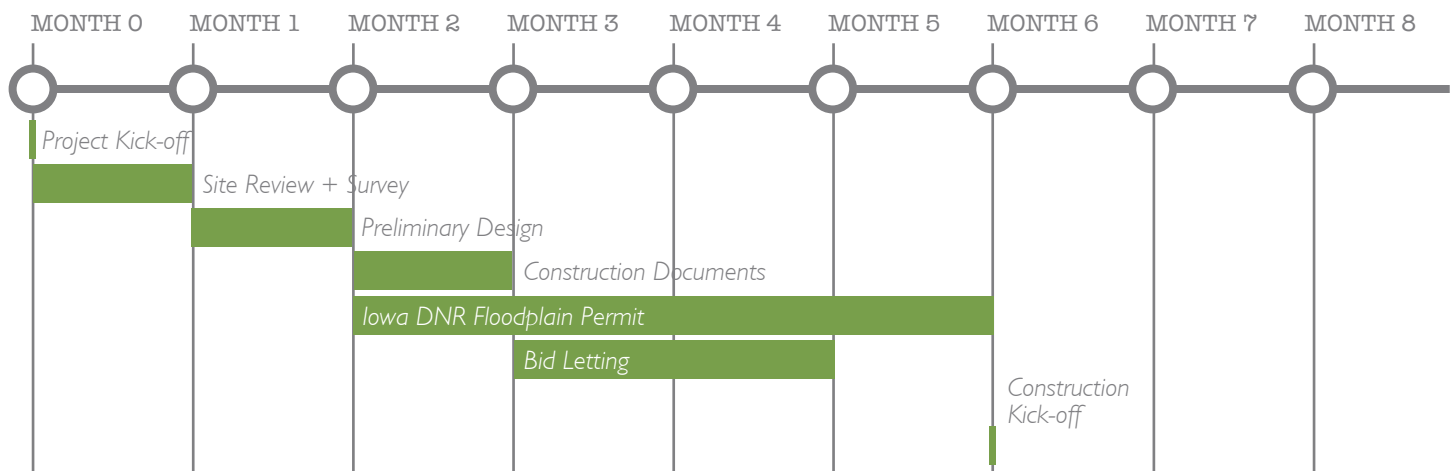
## OVERVIEW

The point of confluence between Beaver Creek and the Des Moines River is a preferred location for nature walkers, trail bikers, dog walkers, and anglers alike. Similar to Site 38, the conceptual improvements will provide anglers with an additional formal fishing location and improved fish habitat. This area has been designed using natural seating options to also provide an area of respite and reprieve for trail users who want to immerse themselves in the beauty of the two rivers. The proposed improvements benefit numerous user groups including: anglers, paddlers, birders, trail bikers, walkers, and waders.

## OPINION OF PROBABLE COST

COST ITEM	TOTAL AMOUNT
Carry Down Access - Limestone Stairs	\$18,196.00
Signage	\$720.00
Additional Amenities	\$2,500.00
CONSTRUCTION COST	\$21,416.00
Mobilization (5% Construction Costs)	\$1,070.80
20% Contingency	\$4,283.20
Non-Construction Costs (15% Construction Costs)	\$3,212.40
TOTAL PROJECT COST	\$29,982.40

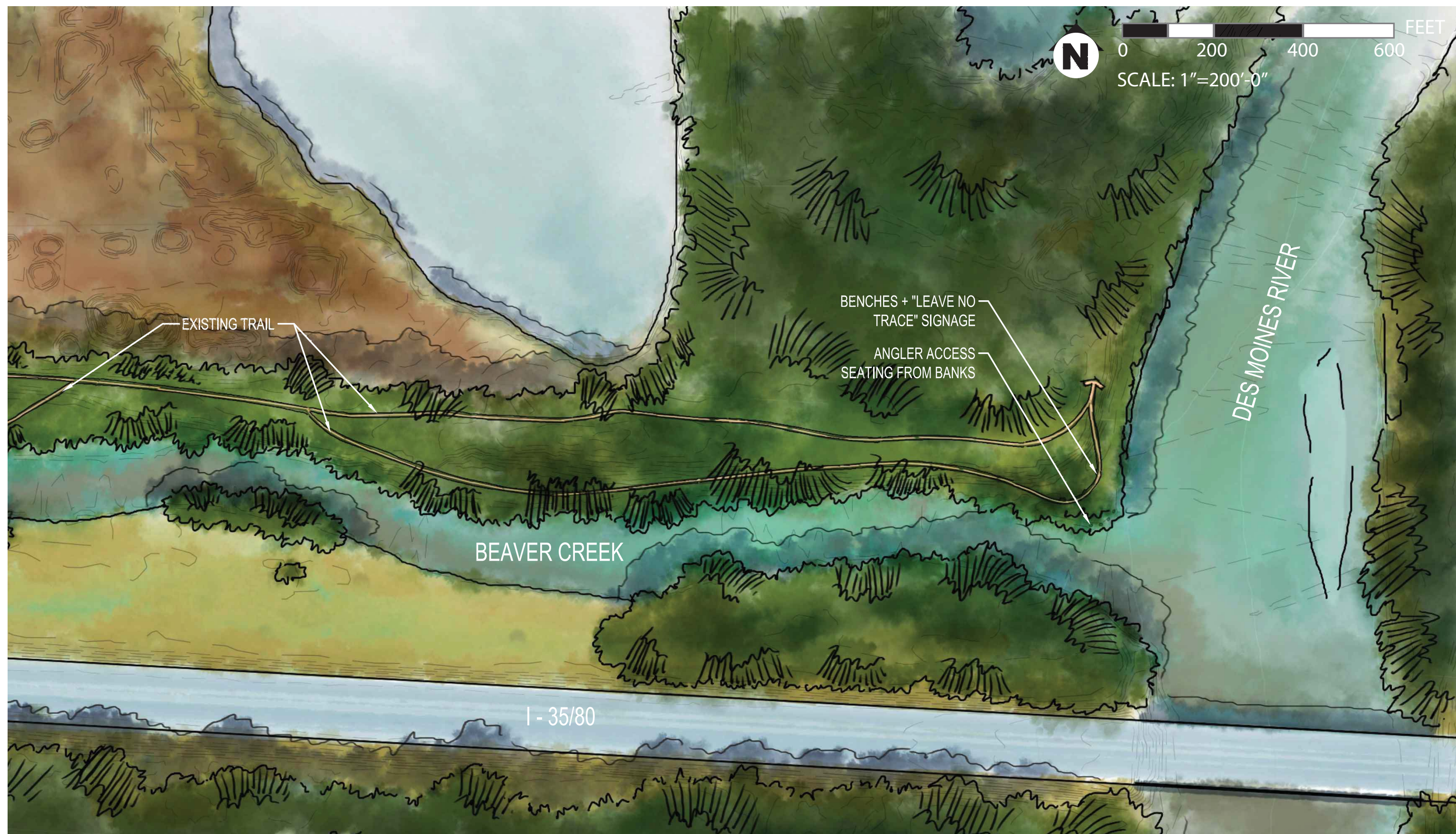
## PROJECT SCHEDULE





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SITE 40 CONCEPT PLAN



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SITE 40 CONCEPT SKETCH



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# COMMUNITY COST

## OPINION OF PROBABLE COSTS

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

AMENITY OR PROJECT	OPINION OF PROBABLE COST
CITY OF JOHNSTON	
Site 23: Carry Down Access	\$418,034.44
Site 27: Respite	\$61,965.40
Site 30: Wading	\$36,575.70
Site 34: Fishing, Wading, Portage	\$115,783.50
Site 36: Carry Down Access, Fishing, Wading, Livery	\$1,271,298.70
Site 38: Fishing	\$290,954.30
Site 40: Fishing	\$29,982.40
JURISDICTION TOTAL	\$2,224,594.44



# 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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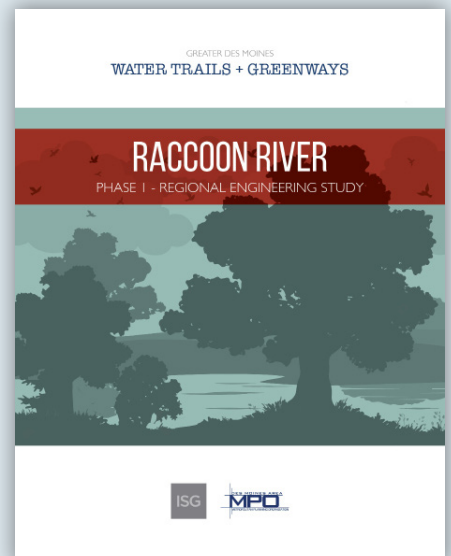
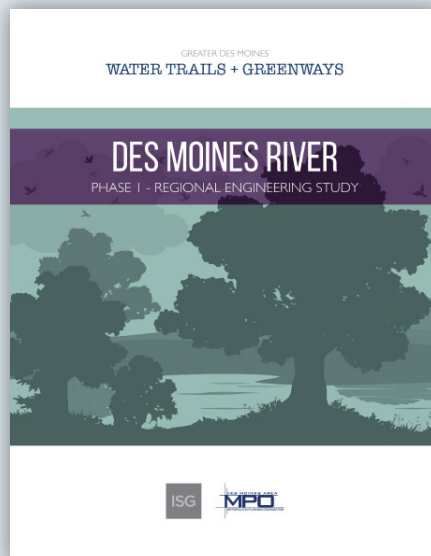
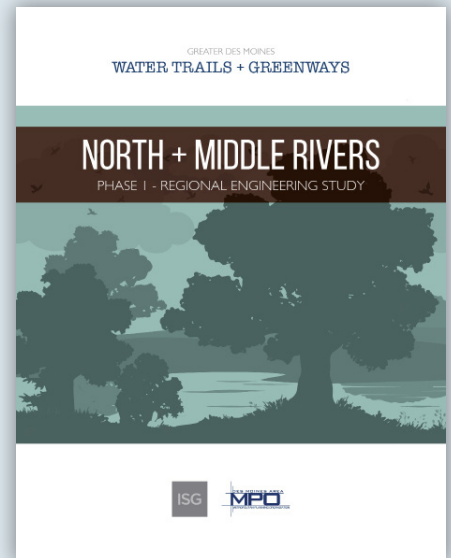
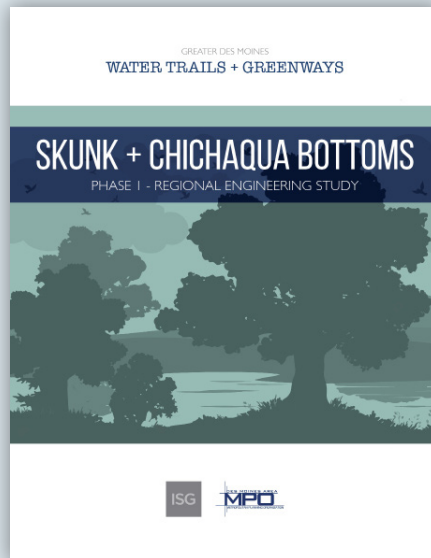
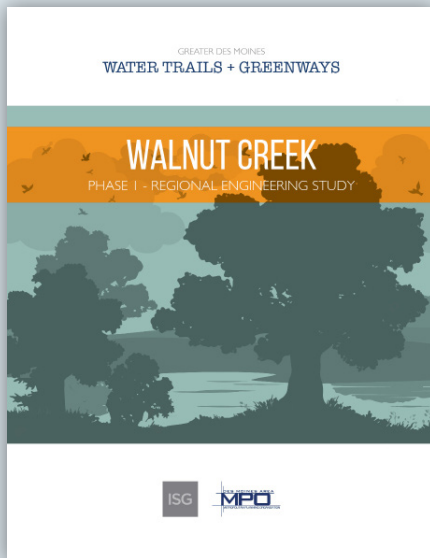
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# OTHER REPORTS









GREATER DES MOINES

# WATER TRAILS + GREENWAYS

BEAVER CREEK