

# FORD PARK:

CREATING NEW HYDROLOGICALLY SENSITIVE CONNECTIONS TO THE MISSISSIPPI  
RIVERFRONT SYSTEM

MARK MILLER | PRIMARY ADVISOR: JAY KOST | SECONDARY ADVISOR: YOUNG JAE KIM

# CHANGES IN CITIES RIVERFRONT

MARK MILLER | PRIMARY ADVISOR: JAY KOST | SECONDARY ADVISOR: YOUNG JAE KIM



1. MAJ. Wm. RUFFIN,
2. ARTIFICER'S YARD,
3. CHARLES VATTIER,
4. JAMES SMITH,
5. DAVID ZIEGLER,
6. GRIFFIN YEATMAN,
7. MARTIN BAUM,
8. COL. GIBSON,

## CINCINNATI IN 1802.

STROBRIDGE & CO. LITH. CINCINNATI.

9. JOEL WILLIAMS,
10. ISRAEL LUDLOW,
11. GREEN TREE HOTEL,
12. SAMUEL BEST,
13. PRESBYTERIANER CHURCH,
14. FORT WASHINGTON,
15. DR. ALLISON,

# FORD PARK

U.S. HISTORY ALONG RIVERFRONTS



CITY OF ST. PAUL,  
Capital of Minnesota

Published by THOMPSON BROTHERS

Based on the map of Minneapolis and St. Paul by H. H. Henshaw, 1877, and the map of the City of St. Paul by H. H. Henshaw, 1877.



FORD PARK

MINNEAPOLIS-SAINT PAUL DEVELOPMENT



# FORD PARK

EFFECTS OF INDUSTRIAL REVOLUTION



# FORD PARK

EFFECTS OF POST INDUSTRIALISM

# RESEARCH

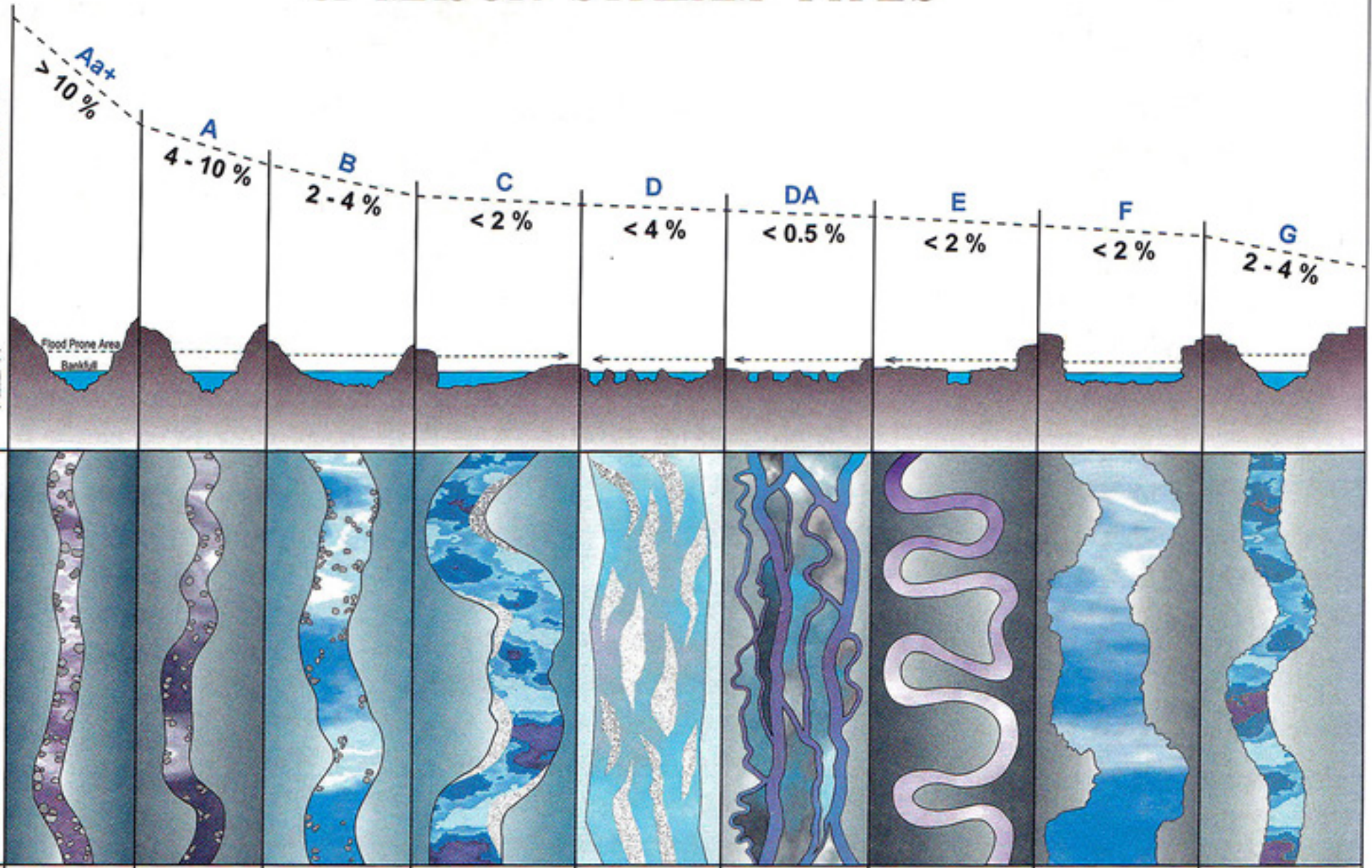
MARK MILLER | PRIMARY ADVISOR: JAY KOST | SECONDARY ADVISOR: YOUNG JAE KIM

# LONGITUDINAL, CROSS-SECTIONAL and PLAN VIEWS of MAJOR STREAM TYPES

DOMINANT SLOPE RANGE

CROSS SECTION VIEW

PLAN VIEW



**Aa+    A    B    C    D    DA    E    F    G**

FORD PARK

ROSGEN STREAM CLASSIFICATION

Image Created by: ESF University New York





## Mississippi Classification:

At the region near Saint Paul the river would be a B-Type stream with a lower slope and sinuosity.



## Sediment Removal:

Image showing the difference between sediment in Mississippi River ( Top) and the Minnesota River. ( bottom) This is caused by the fact that the Mississippi River is dammed and the Minnesota River is not.

FORD PARK

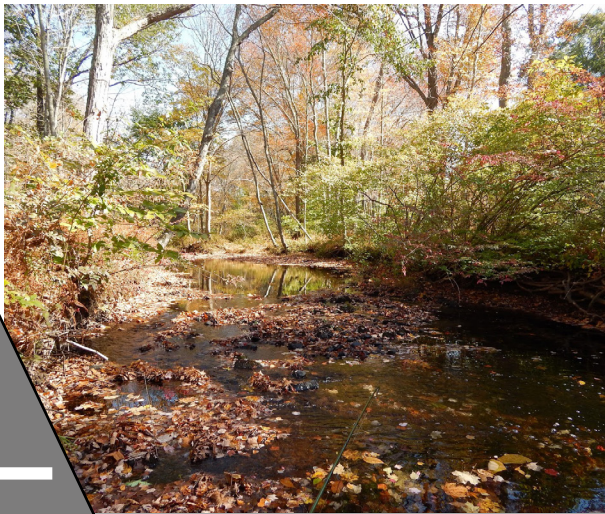
MISSISSIPPI RIVER NEAR SAINT PAUL

In research practice roughness is a coefficient that can help determine the health of a stream and predict erosion

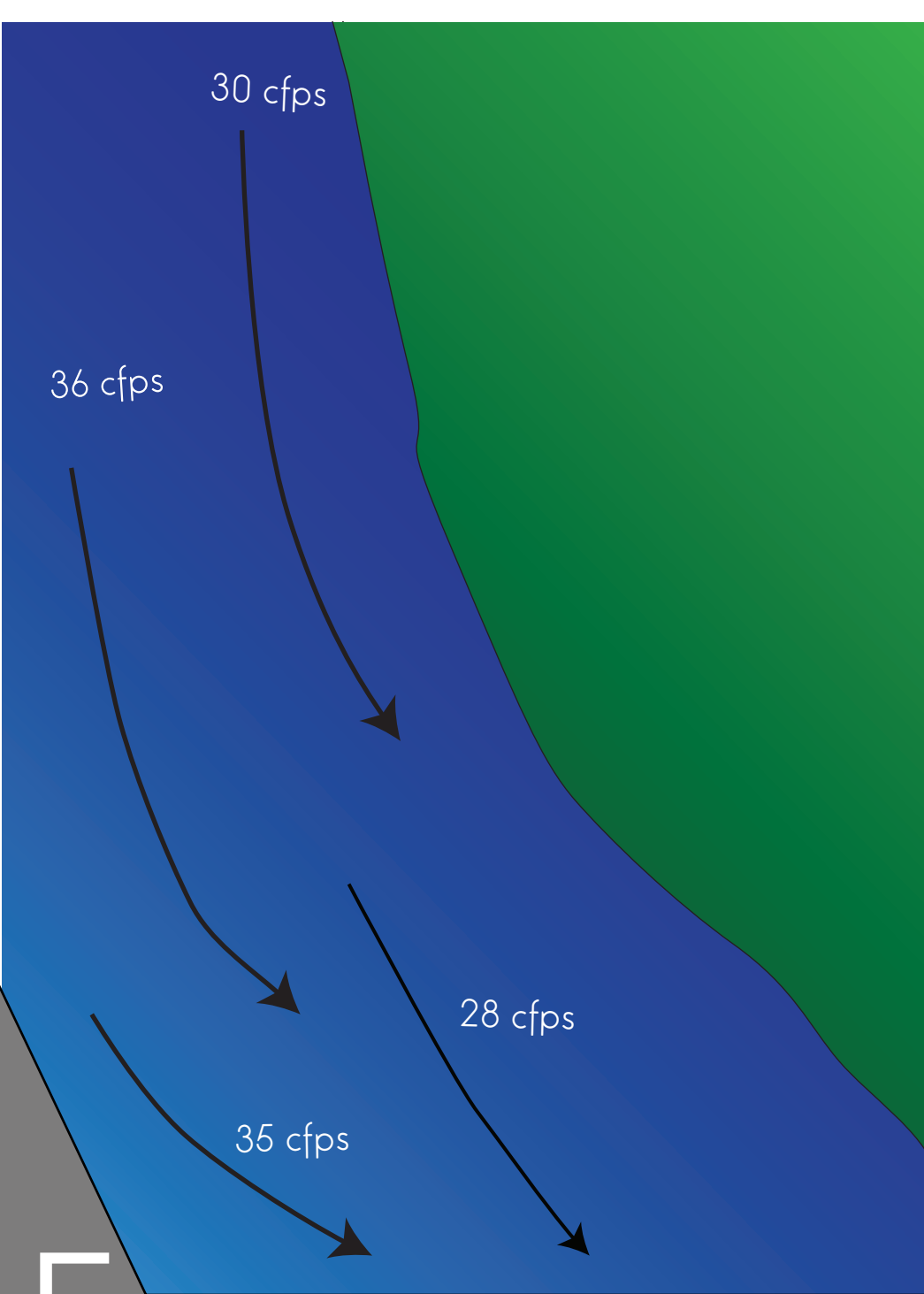
Tall native grasses are good to reduce erosion, but they are not as good at slowing down stream speeds in flooding events.



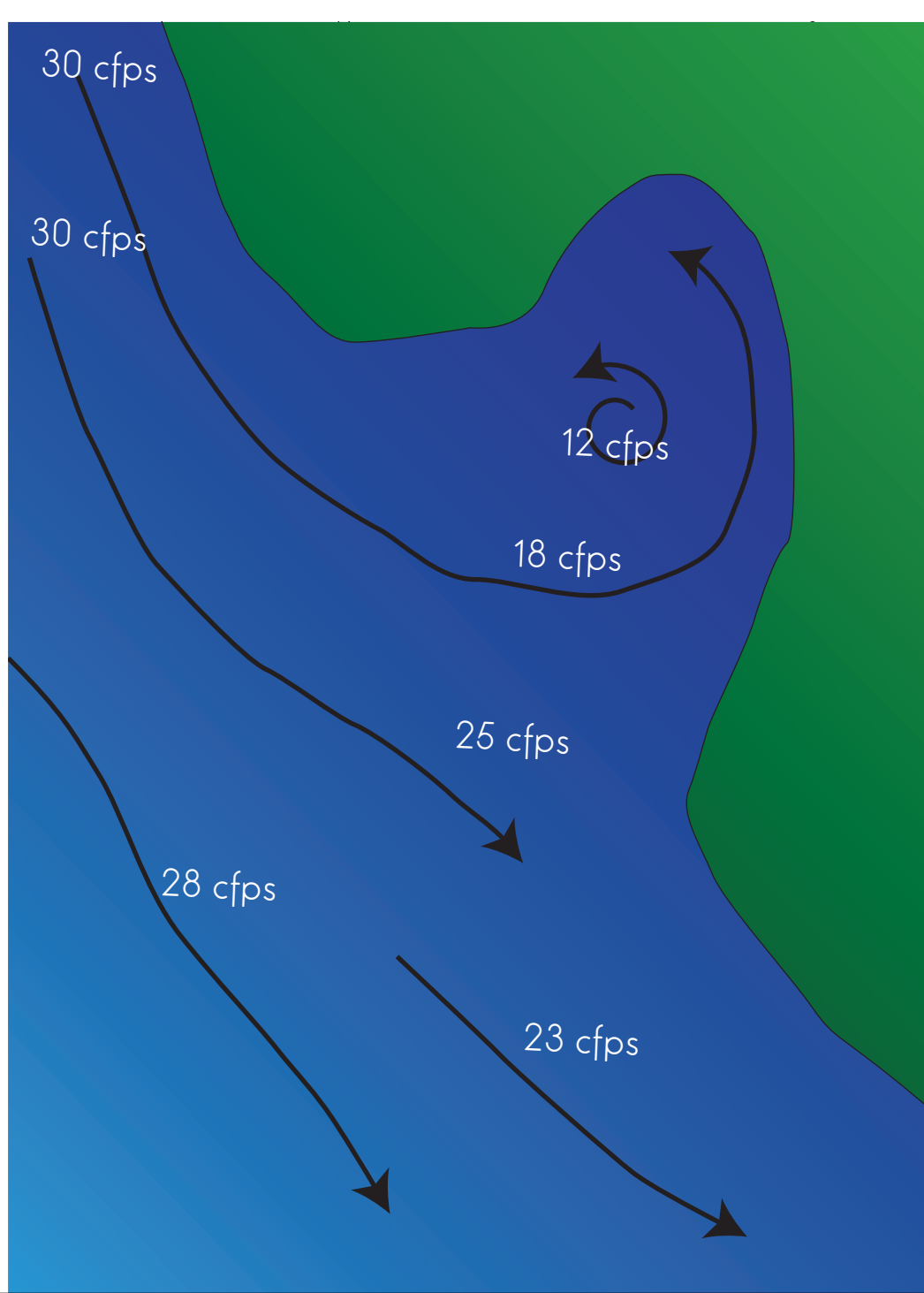
Roughness on mowed grass is very low which leads to faster moving waters and higher erosion.



Having woody debris and large trees on stream edges not only reduce the impact of erosion; they can also slow the flow speeds when a river is in a full flood event.



FORD PARK



EFFECT OF BACKWATER AREAS



# FORD PARK

CASE STUDY: CONFLUENCE PARK DENVER, COLORADO



# FORD PARK

CASE STUDY: ROBERT C. BEUTTER PARK MISHAWAKA, INDIANA



# FORD PARK

CASE STUDY: BALZAC PARK ANGIERS, FRANCE

# DESIGN PLAN

MARK MILLER | PRIMARY ADVISOR: JAY KOST | SECONDARY ADVISOR: YOUNG JAE KIM

# QUESTION: 1

How can we create and urban space that celebrates the riverfront at all times of the year, while also creating new viable flood protection?

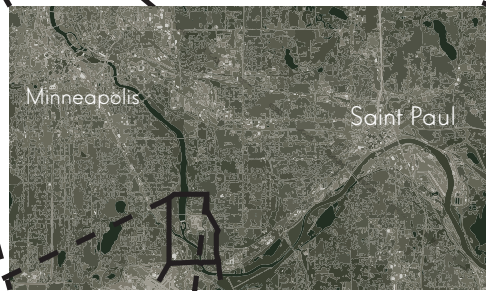
# QUESTION: 2

What methods of river flow change will allow for the most efficient and long lasting form of flood control?





Ford Plant: Opened 1912 Closed 2011



Demolition completed summer 2013

# FORD PARK

FORD PARK SITE LOCATION

ries



# FORD PARK

FUTURE PLANS FOR FORD SITE

# GOAL: 1

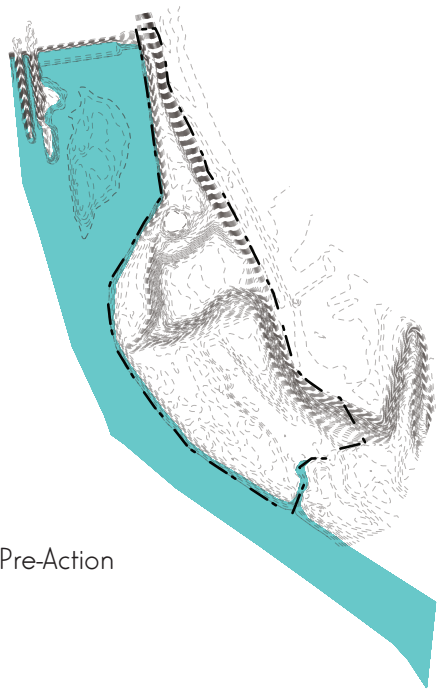
Create new connections to the river that change according to the different flood levels

# GOAL: 2

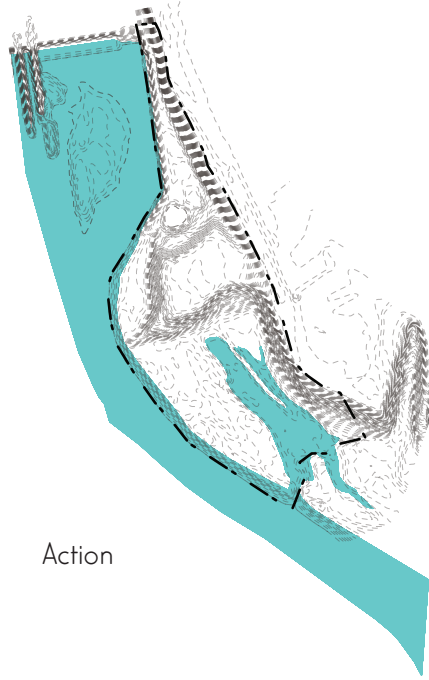
Reinforce old and generate new connections to the Saint Paul and Minneapolis riverfront park systems

# GOAL: 3

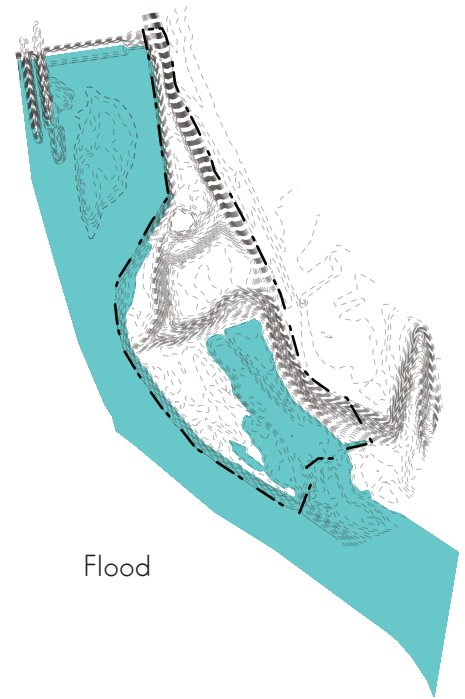
Develop program elements to fill needs of the region based on case studies and survey



Pre-Action



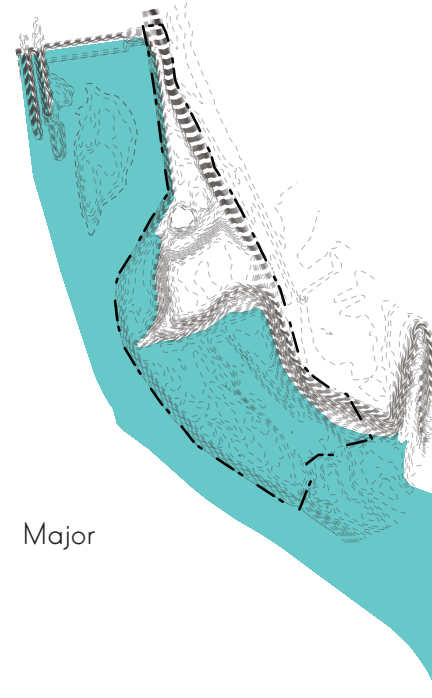
Action



Flood



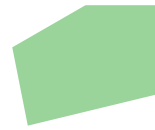
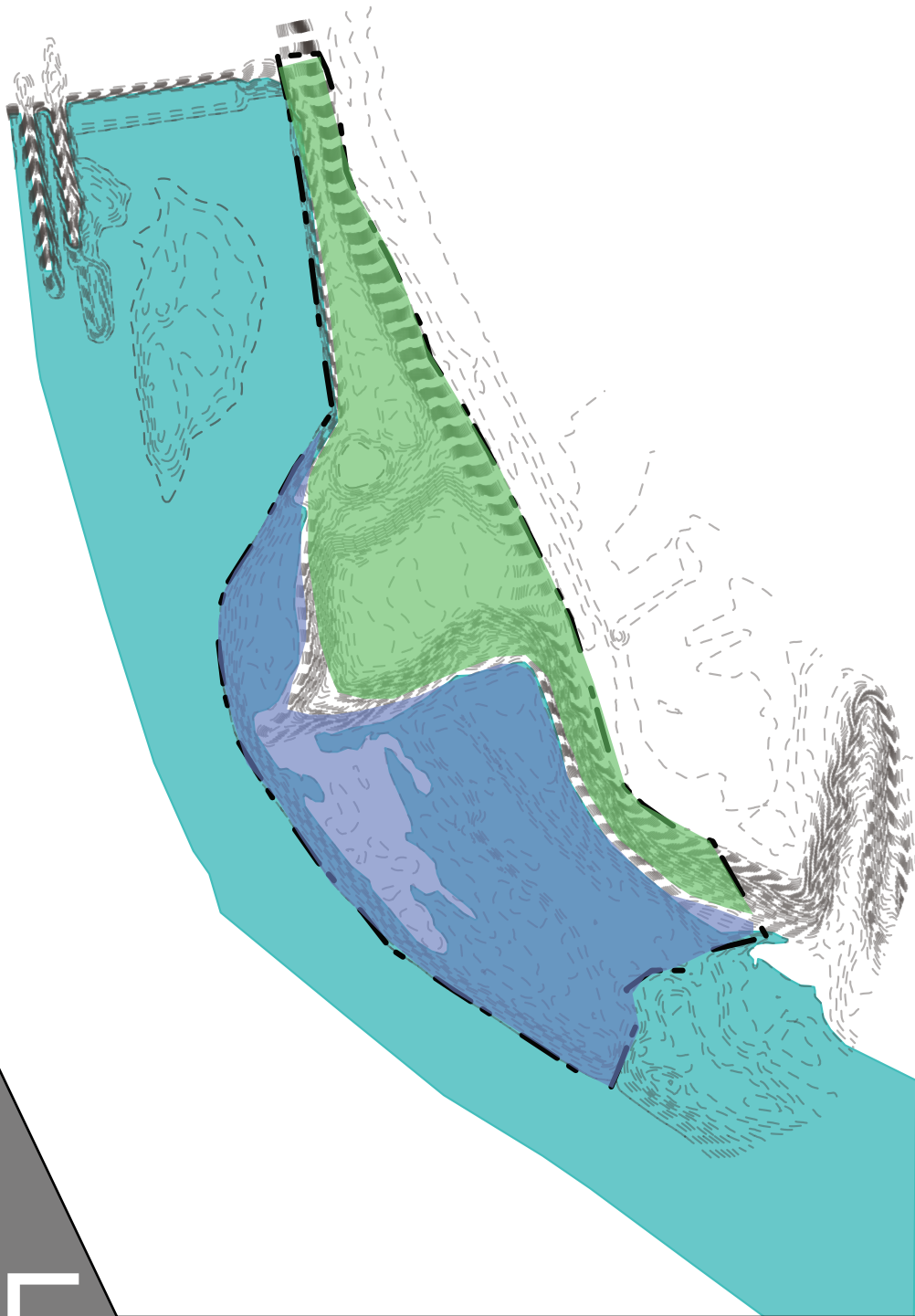
Moderate



Major

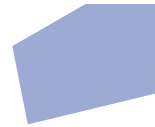
# FORD PARK

GOAL 1: ANALYSIS OF FLOOD PATTERNS



### Non-Flooding Zone:

This region is an opportunity to use more structures. The purpose of this area should be to connect the park to the feeling of the city environment of Saint Paul.



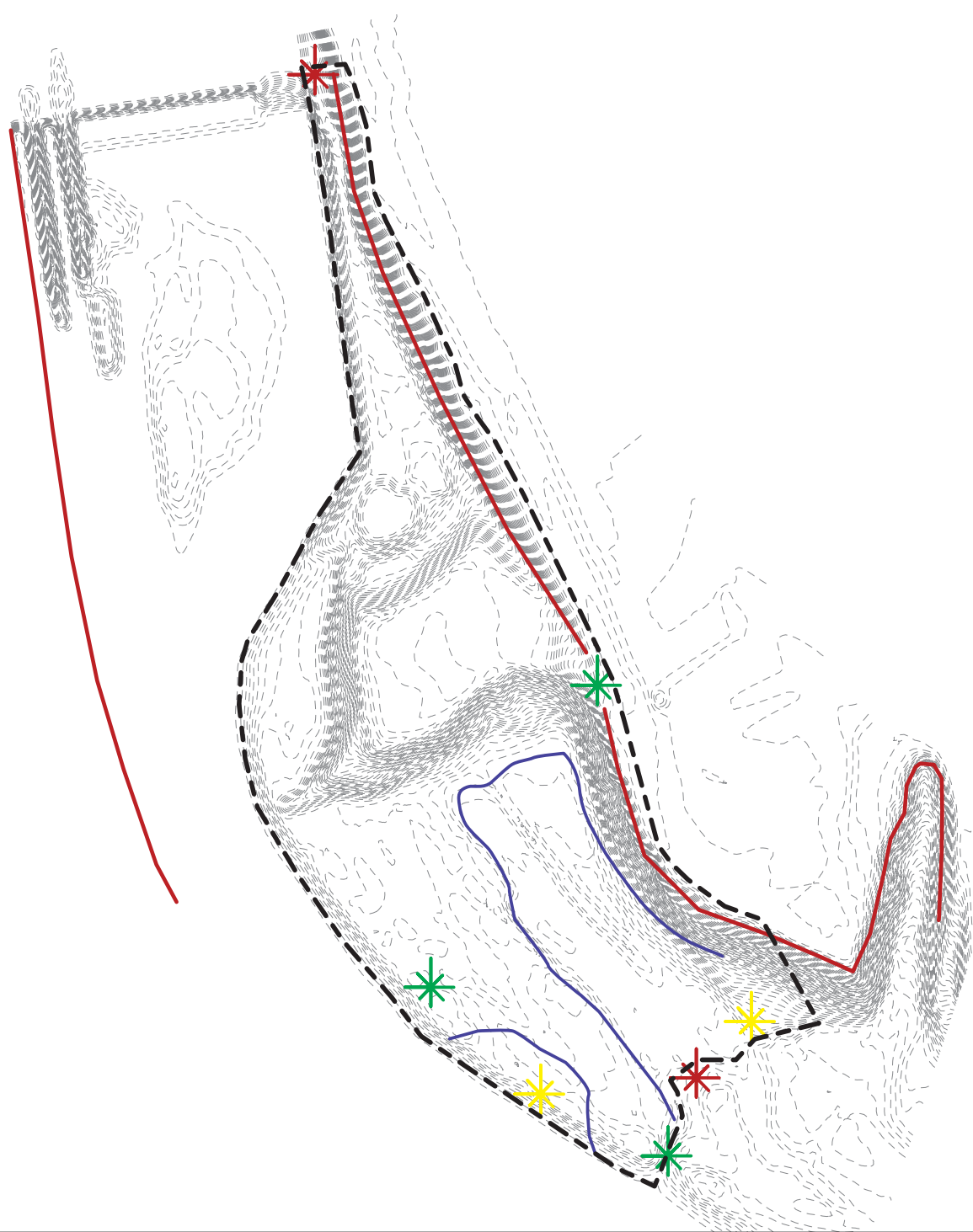
### Flooding Zone:

This region should not have any structures because of the risk of flooding. The purpose of this area should be to connect the park to the feeling of the rest of the park system.



# FORD PARK

GOAL 2: ANALYSIS OF CURRENT CIRCULATION



# FORD PARK

GOAL 2: ANALYSIS OF BARRIERS TO SITE ENTRY



# FORD PARK

GOAL 3: ANALYSIS OF REGIONAL PARKS SYSTEM



## HOW DOES IT INTERACT?

### DIRECT WATER INTERACTION

Concrete Channel ( Step Pools, Touch)  
Extending Edge of Flood Plain ( increase usable land during flood)  
Flood Festival ( Flood Art, Amphitheater Island)  
Fountain ( Touch, Play, Watch)  
Kayak Tour Connections ( Landing, Navigable Routes)  
Land Art ( Flood Islands, Divert Water Flow)  
Natural Stream ( Step Pools, Kayak, Swim, Fish)  
Pedestrian Bridge ( Fish, Views, Cross)  
Sculpture Art ( Touch, Watch)  
Swimming Area ( Swimming)  
Ice Skating ( Warming House, Trails, Hockey Rinks, Free Skating)

### INDIRECT WATER INTERACTION

Amphitheater ( Views Toward Water, Water Fluctuation Changes)  
Picnic Shelter ( Views Towards Water)  
Playground ( Water Forms, Stream Theme)  
Replanting Displaced Vegetation ( Increase wildlife, Intercept runoff)  
Sculpture Art ( Frames Water Views)  
Seating Areas Off Trails ( Views of Water)  
Steam Plant Re-Use ( Higher Elevation Water Views)  
Wildlife Viewing ( Water is essential to attract certain wildlife)

## DOES IT ALTER FLOOD WATER?

### MORE ROUGH (REDUCES SPEED)

Extending Edge of Flood Plain  
Fountain  
Land Art  
Natural Stream  
Pedestrian Bridge  
Replanting Displaced Vegetation  
Sculpture Art  
Seating Areas Off Trails

### LESS ROUGH (INCREASES SPEED)

Amphitheater ( can be little)  
Concrete Channel  
Mixed Use Field  
Mowed Turf Grass  
Trails

### NO CHANGE

Kayak Tour Connections  
Pedestrian Bridge  
Picnic Shelter  
Restrooms  
Steam Plant Re-Use  
Winter Warm House  
  
Wildlife Viewing

## WHERE DOES IT BELONG?

### NATURAL ENVIRONMENT

Cut Trails  
Flood Art  
Flood/Snow Festival  
Land Art  
Natural Stream

### BUILT ENVIRONMENT

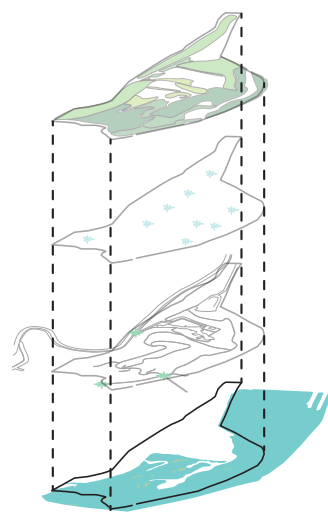
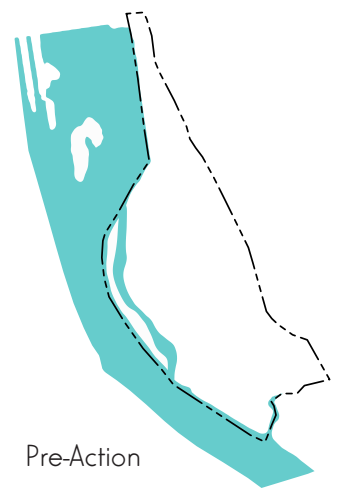
Concrete Channel  
Concrete Paths  
Mixed Use Field  
Picnic Shelter  
Playground  
Restrooms  
Steam Plant Re-Use

### NO CHANGE

Amphitheater  
Extended Flood Plain Edge  
Fountain  
Kayak Tour Connections  
Replanting Displaced Vegetation  
Sculpture Art  
Seating Areas Off Trails  
Swimming Area/Ice Skating  
Winter Warm House  
Wildlife Viewing

# MASTER PLAN

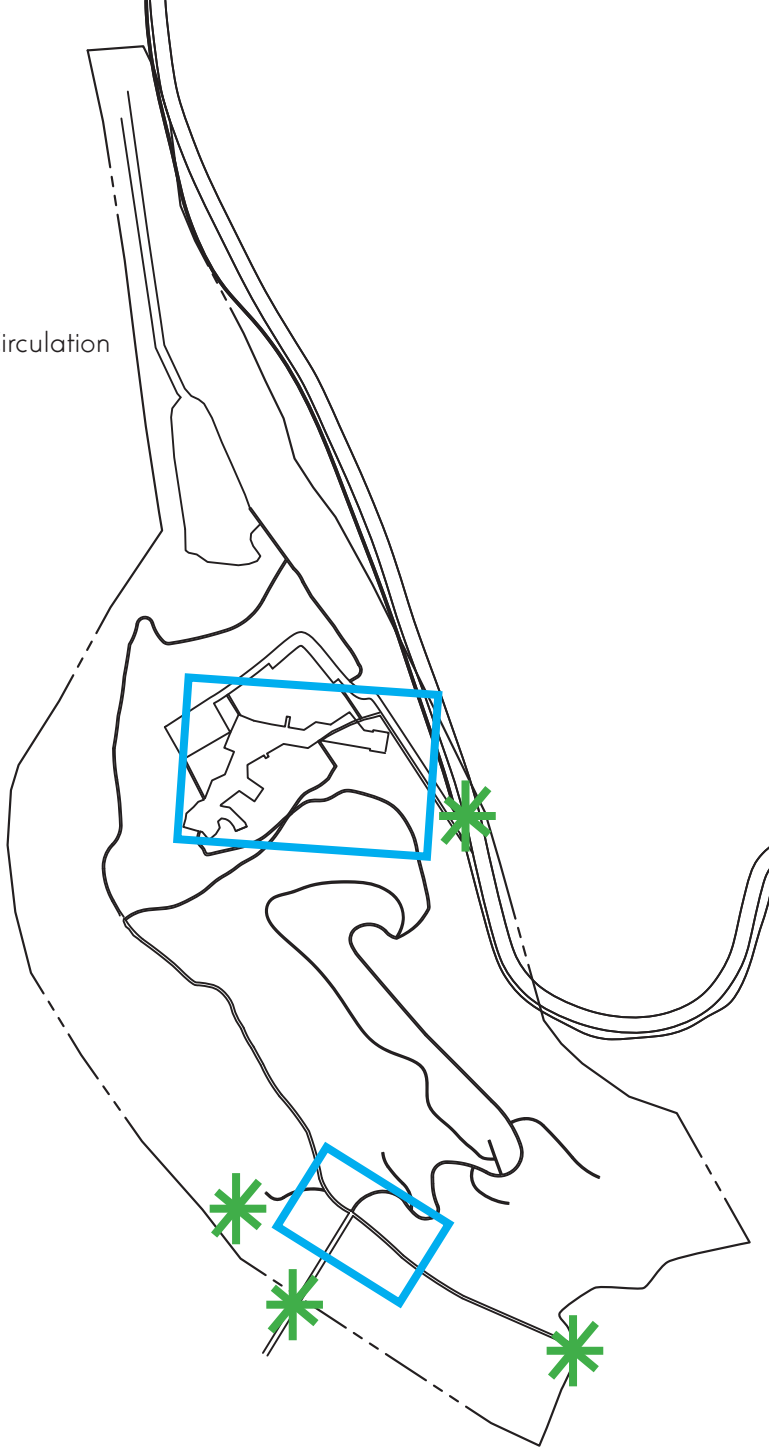
MARK MILLER | PRIMARY ADVISOR: JAY KOST | SECONDARY ADVISOR: YOUNG JAE KIM



# FORD PARK

## MASTER PLAN INTRODUCTION: FLOODING

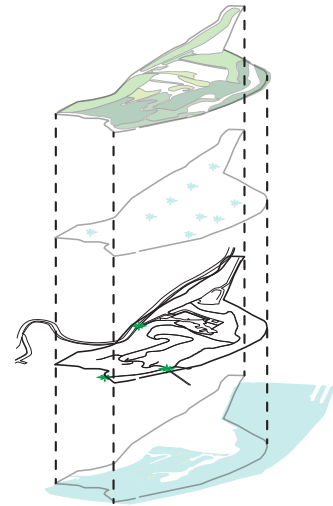
Full Path Circulation



Main Paths



Sub Paths



# FORD PARK

MASTER PLAN INTRODUCTION: CIRCULATION

Natural Area

On Bluff

Steam Plant Re-used as Photographic Destination

Mixed Use Open Field

Concrete Channel

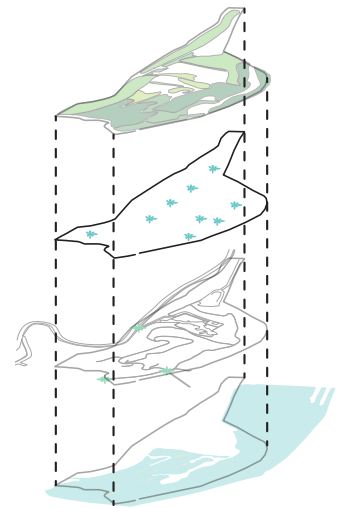
Natural Stream

Amphitheater

Swimming Beach

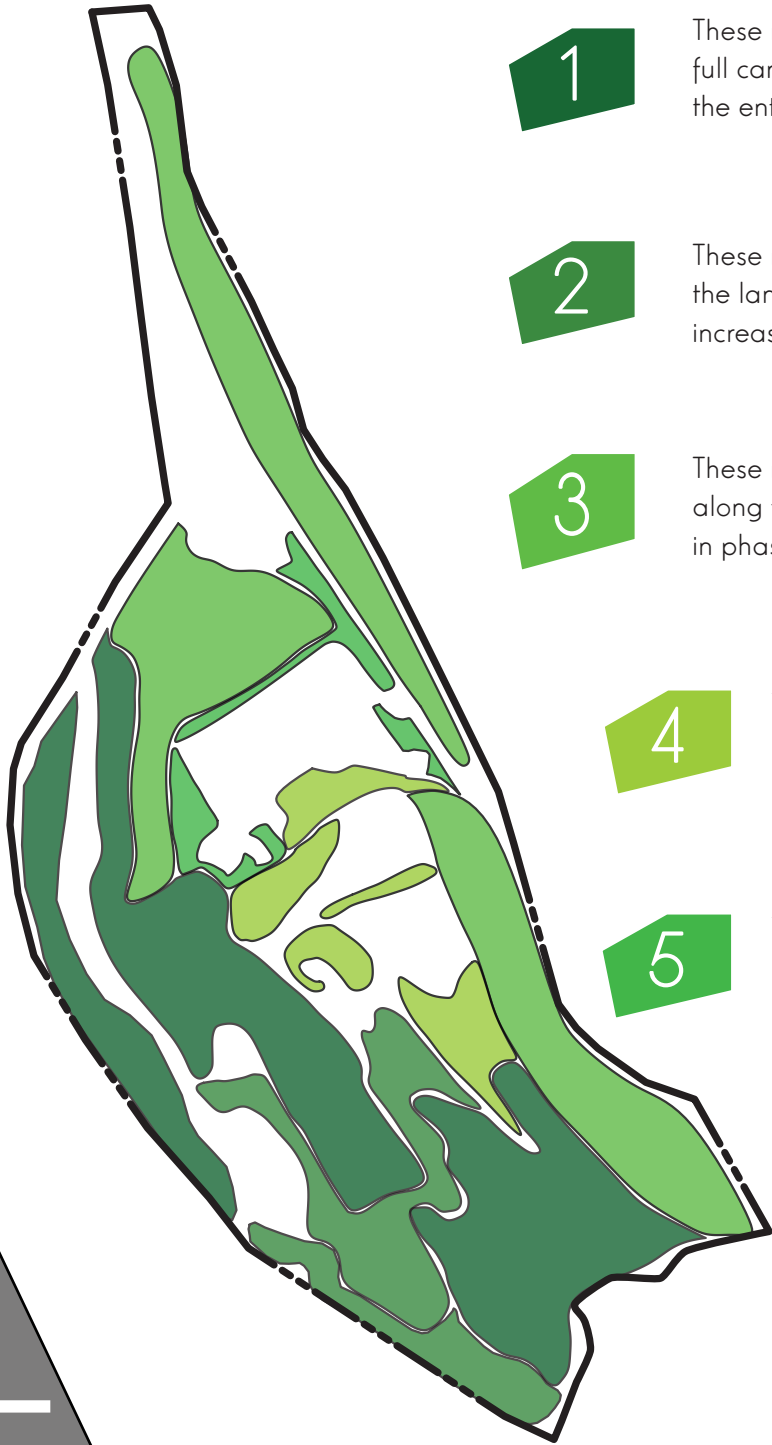
Land Art Area

Kayak Landing



# FORD PARK

MASTER PLAN INTRODUCTION: PROGRAMS



1

These regions are considered to be the most densely vegetated areas on the site with a full canopy and a dense understory. This vegetation region stays within the floodplain for the entire site and utilizes plant types that are native to the riparian areas of Minnesota.

2

These regions buffer the different flood zones in order to slow the water that is flowing in the land art areas. This allows for easier interactions with the water during flooding and increases the feeling of enclosure when in the land art mounds.

3

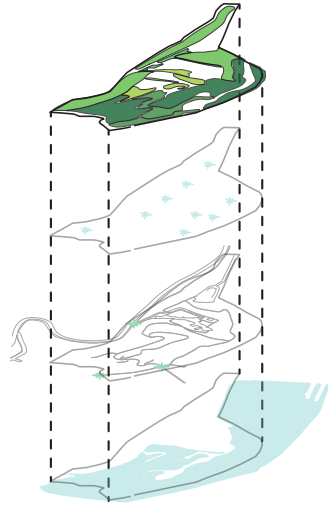
These regions are on steep slopes and are very important to reduce erosion especially along the southwest of the cliff side where regrading occurred. The planting will be done in phases to incorporate measures to cut back on the amount of erosion from construction.

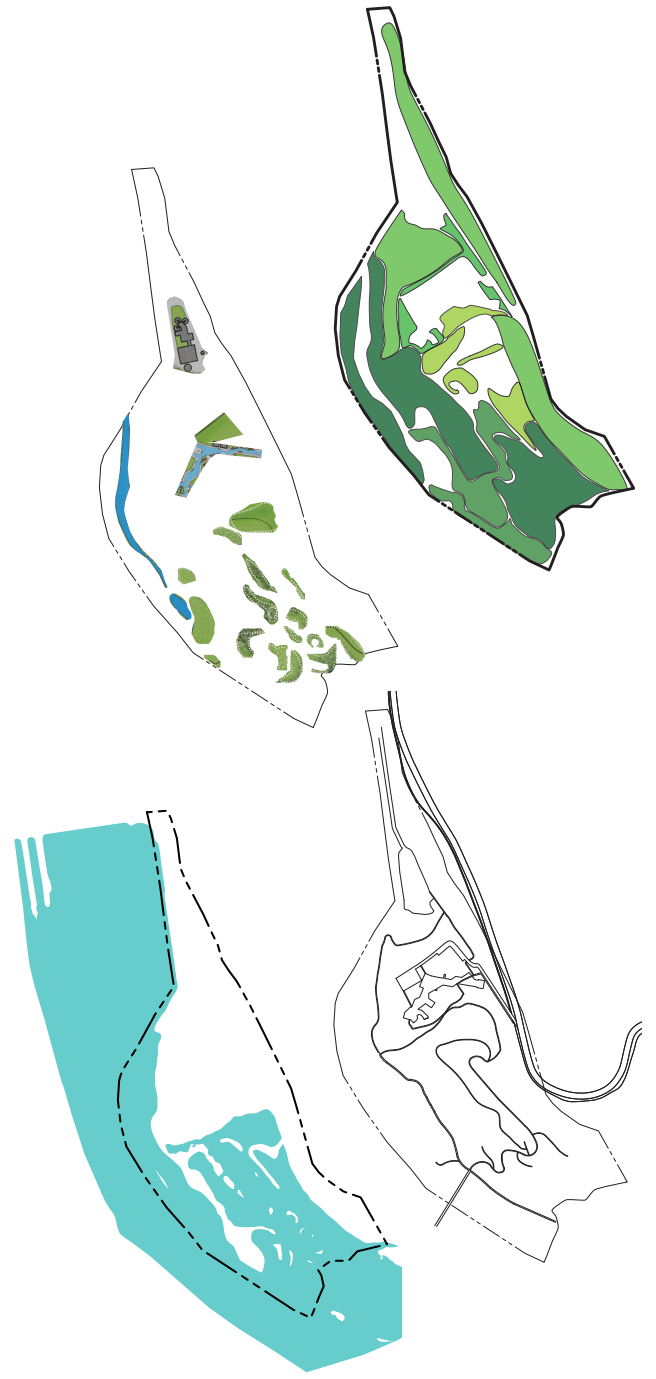
4

These regions are within the floodplain of the lower bluff and are planted with a canopy and some lower understory with the purpose of increasing the amount of edge roughness for the floodplain. The areas feel less full to increase view shed distance within the park.

5

These regions are surrounding the park area on top of the bluff. The plant types of these areas are not within the floodplain so the plants are selected from native prairie savannah plant types. It is an even mix of canopy and understory plants





FORD PARK

MASTER PLAN



Site furnishings as well as the buildings and rest areas of the site are designed as concrete with wood inlay-ed. The materials are to represent the natural and built environments working together to make an enjoyable experience for the users of the space. They are also intended to work well with both the natural areas as well as the traditional areas in order to help tie the entire site together.





# FORD PARK

INTRODUCTION TO SITE PLAN LOCATION

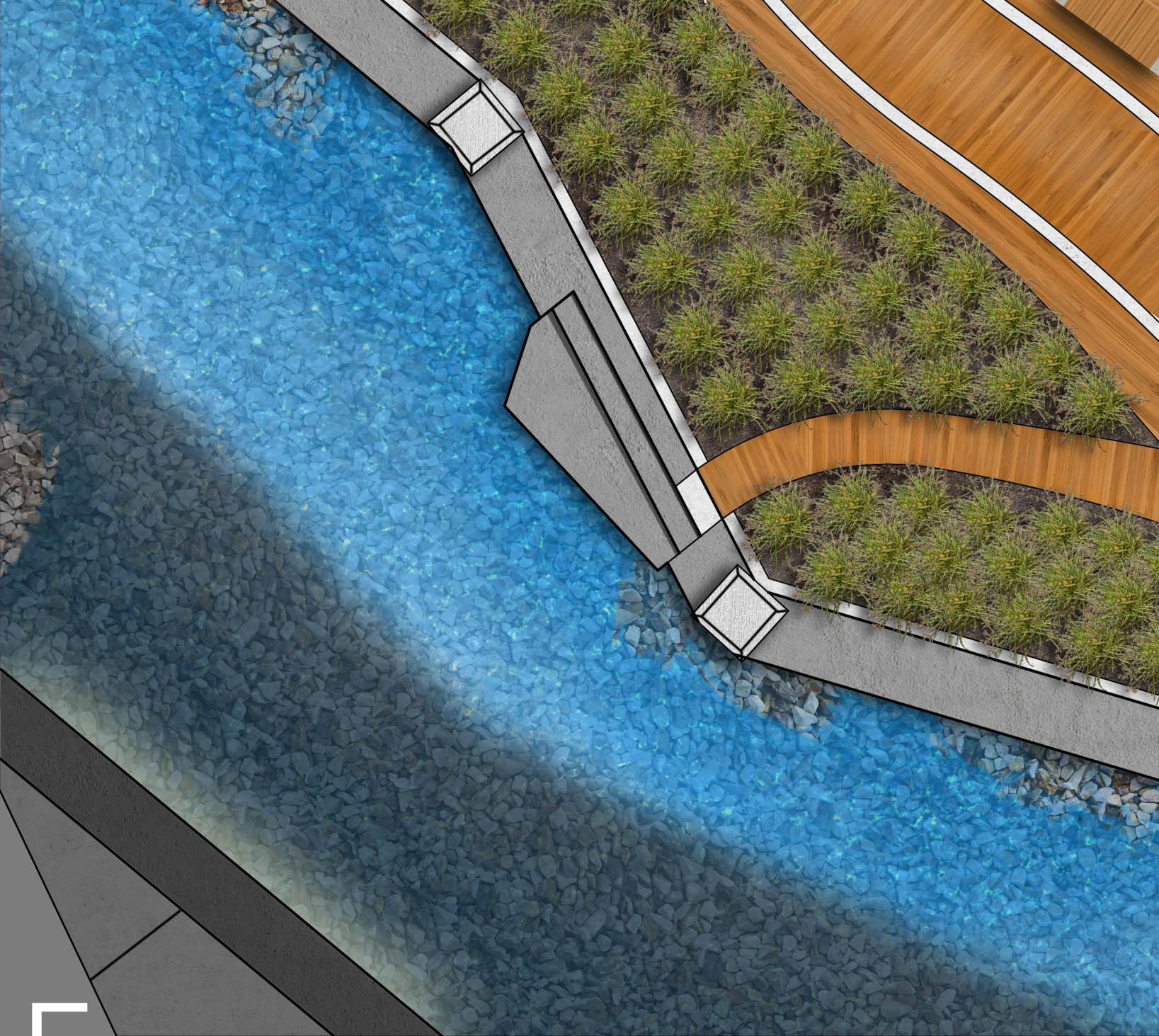
# SITE PLAN

MARK MILLER | PRIMARY ADVISOR: JAY KOST | SECONDARY ADVISOR: YOUNG JAE KIM



# FORD PARK

SITE PLAN

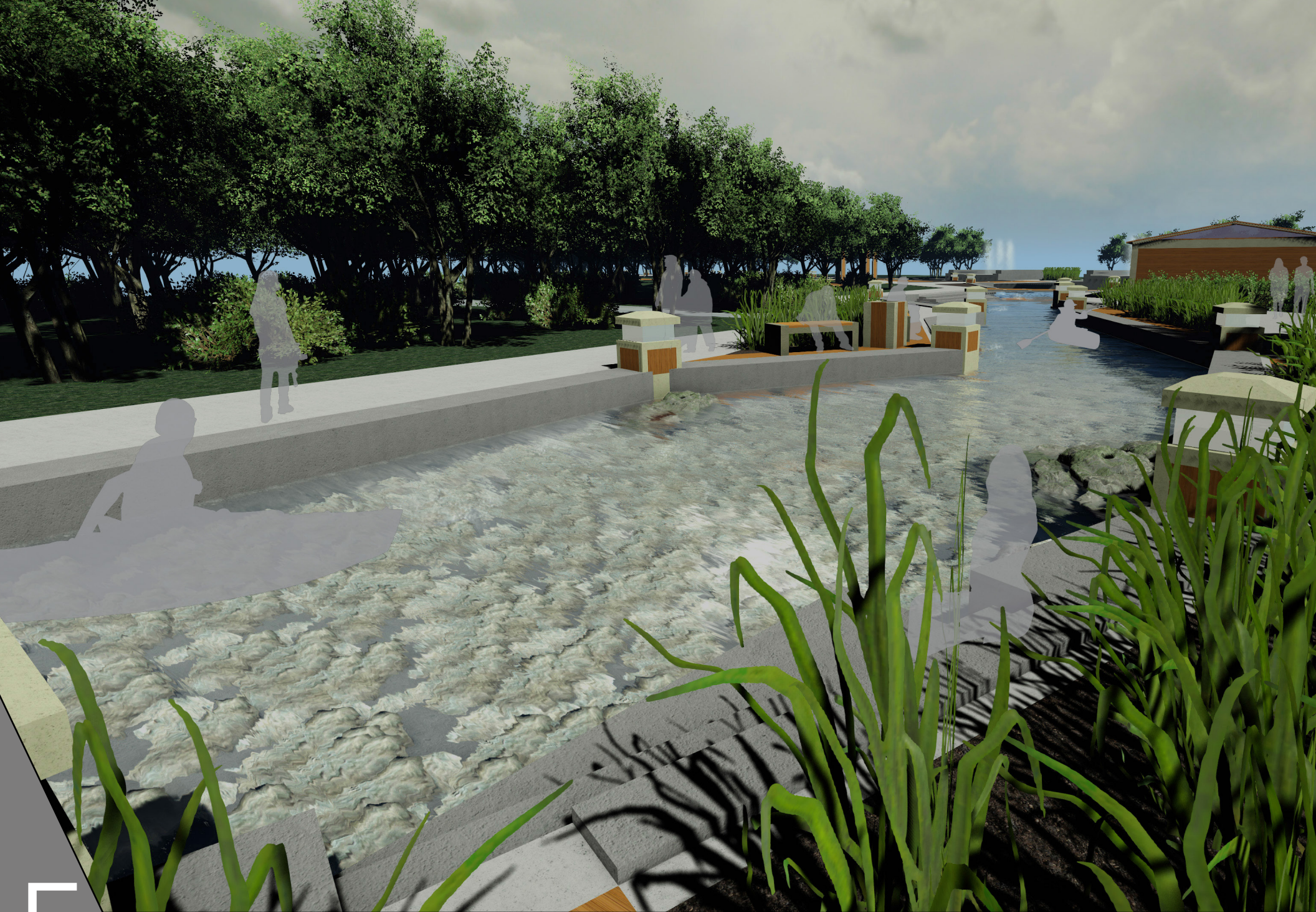


The beginning of the channel is filled with large sediment to represent the amount of sediment build-up that usually goes with headwater areas. The channel here represents an A-Type Stream. This means that the riparian area is not big enough to support large vegetation. This is why this area is mostly native grass species with breaks where people can make their way down to the water's edge.



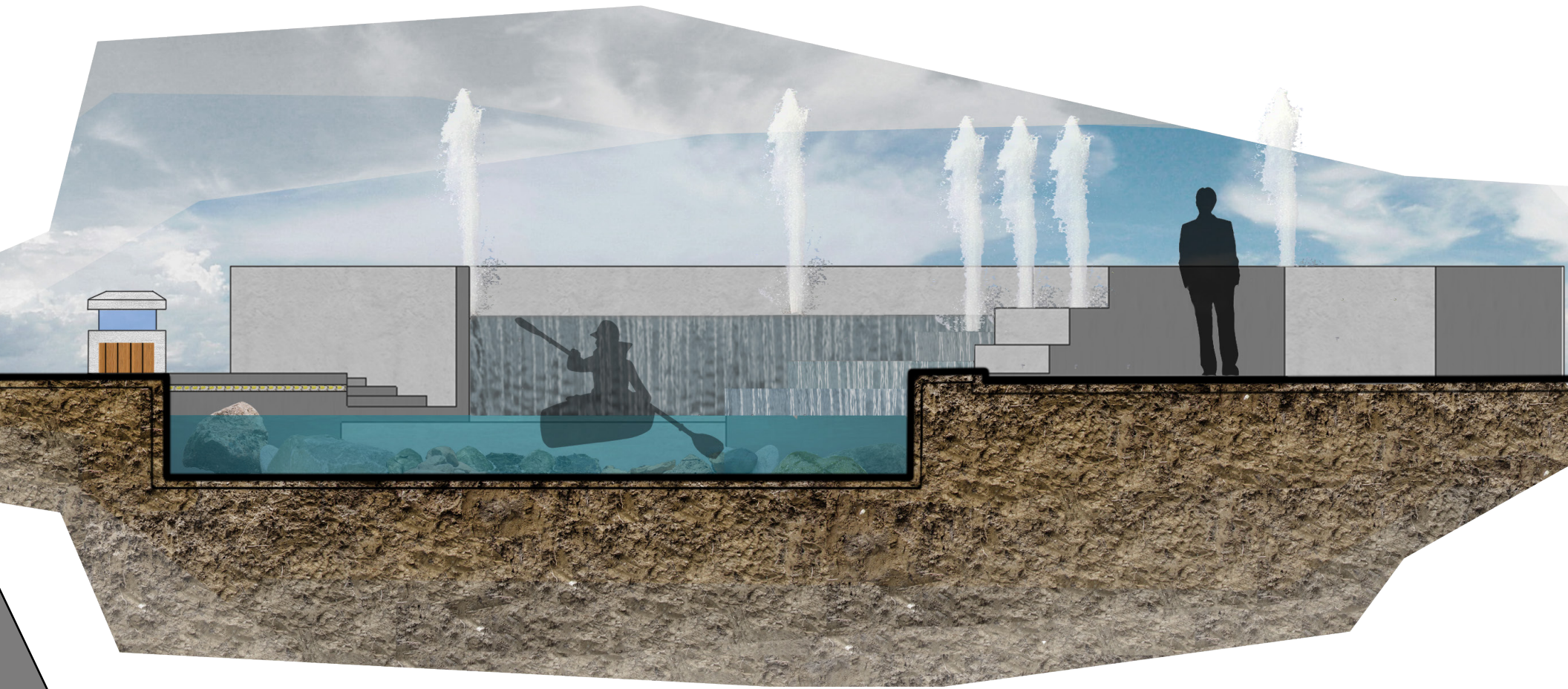
# FORD PARK

## PEDESTRIAN EDGE OF CHANNEL



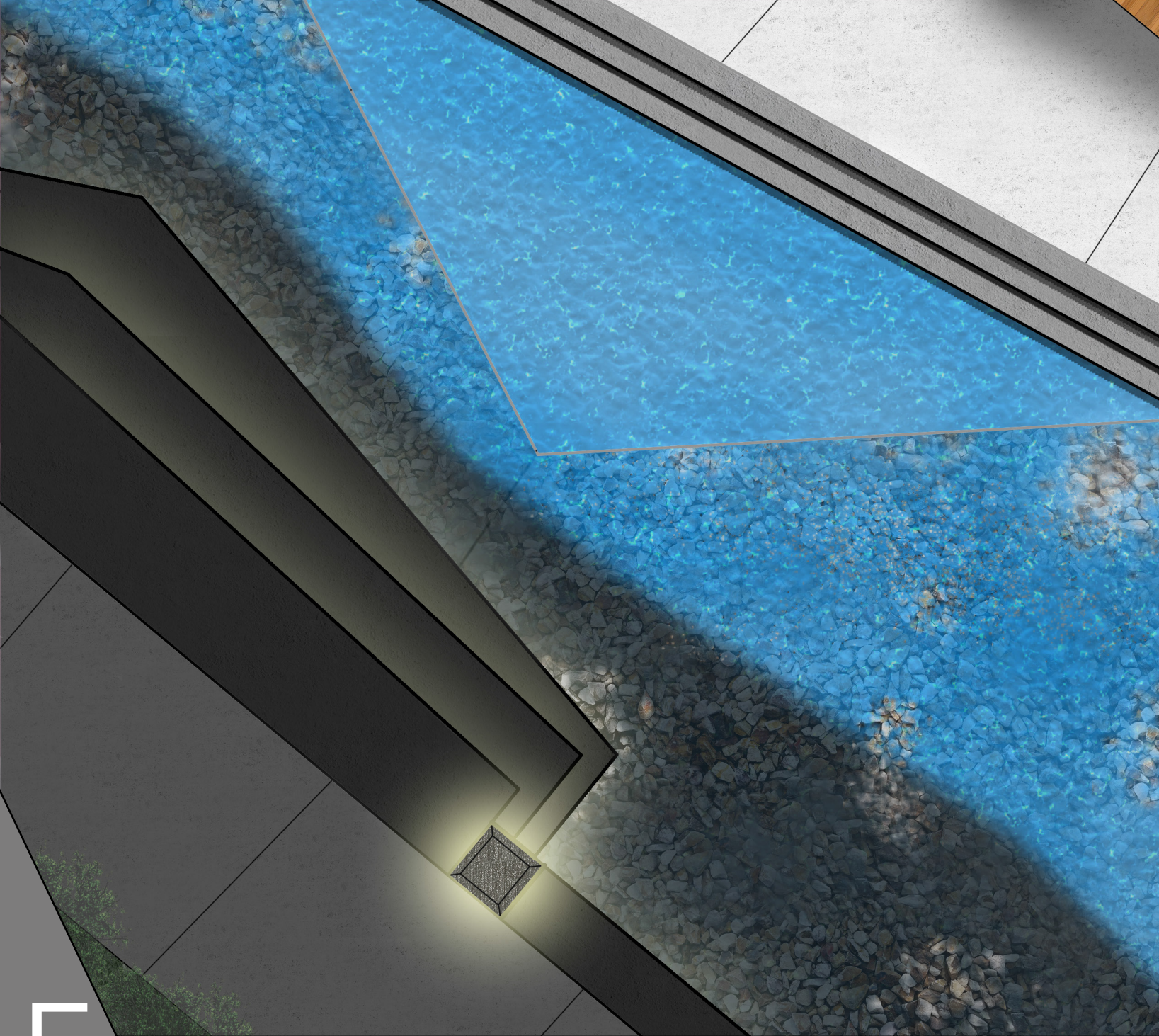
FORD PARK

EDGE SEATING AREAS



FORD PARK

START OF KAYAK RUN



The exit to the kayak run is also the point where the stream expands out and evolves into a B-Type stream. After the step pool there is a mock dam that causes a problem with the stream similar to the dams that are along the Mississippi river. This causes a drop out of all sediment and causes a deep incision in the channel. The landing is a raised lip that allows for the kayak to stop and the user to get out and get back to the pathway



# FORD PARK

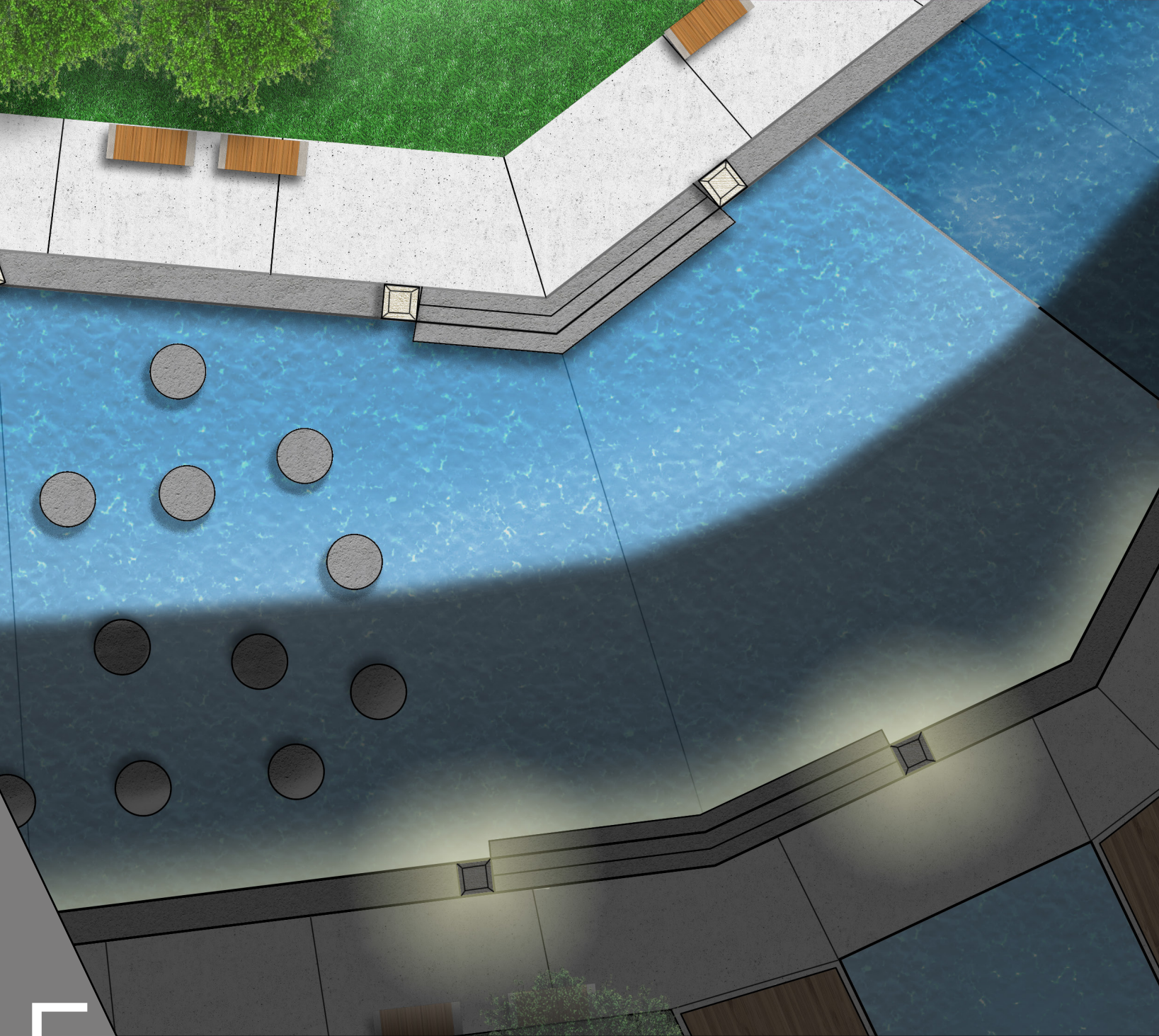
## KAYAK RUN EXIT



FORD PARK

STEP POOL DROPS



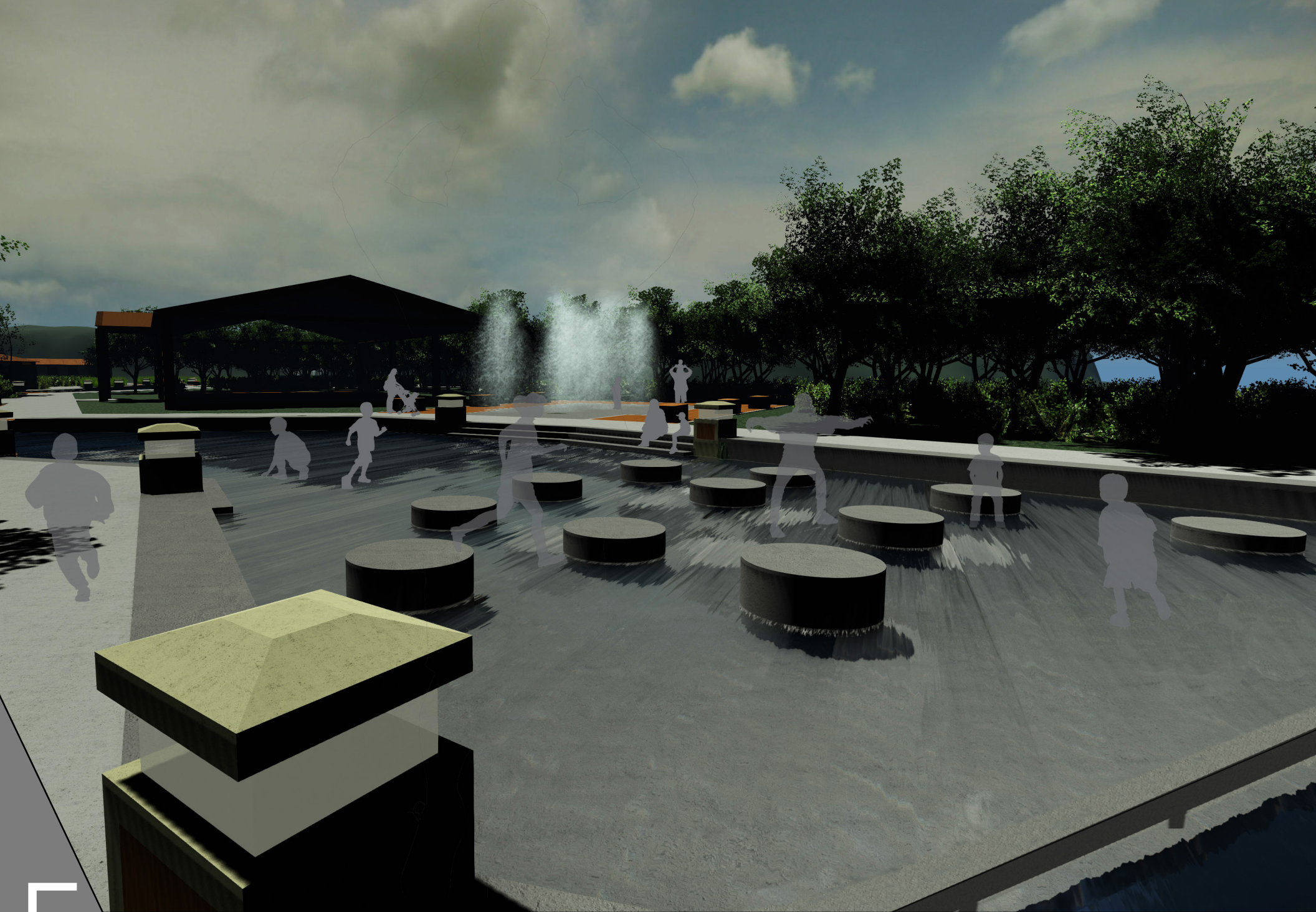


This region of the channel is to represent a stream's recovery from the dam where sediment has been brought back and the channel is no longer cutting downwards. This area represents a B-Type Stream, which can be seen in the Mississippi River at Saint Paul. The children's area is raised for a crossing with the rest of the water going underneath. The water in the crossing itself is two inches deep.



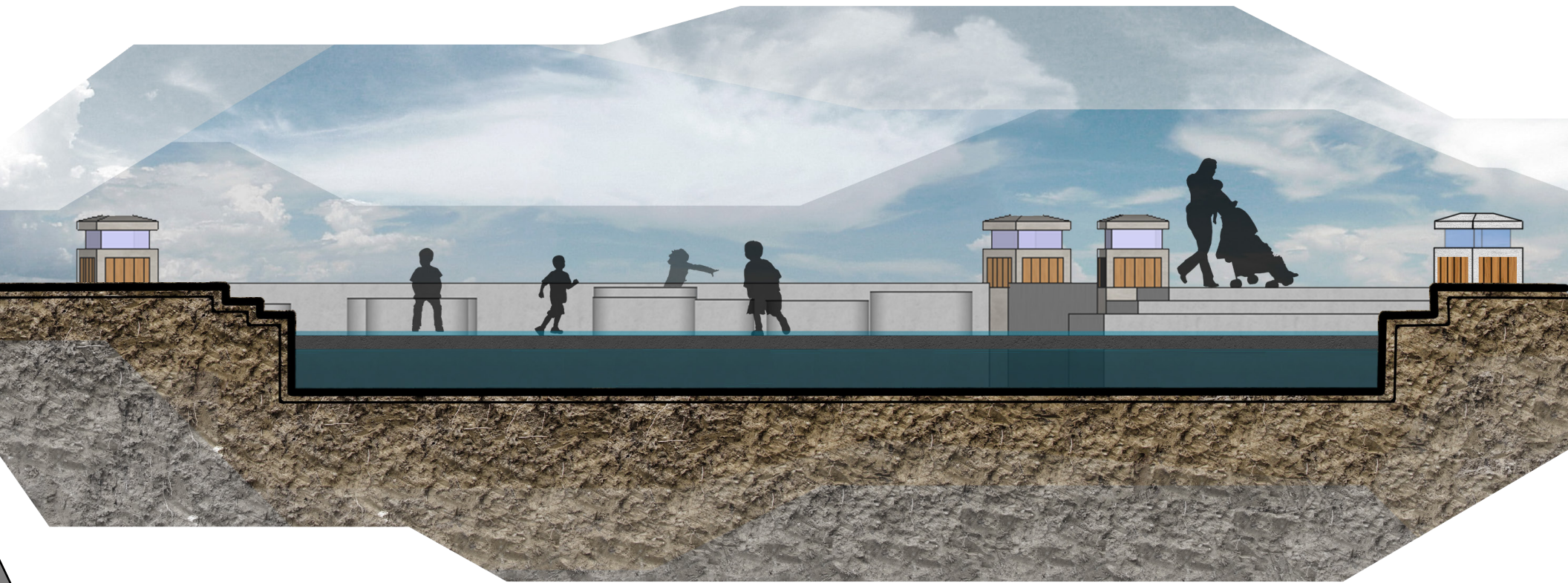
# FORD PARK

## CHILDREN'S PLAY CROSSING



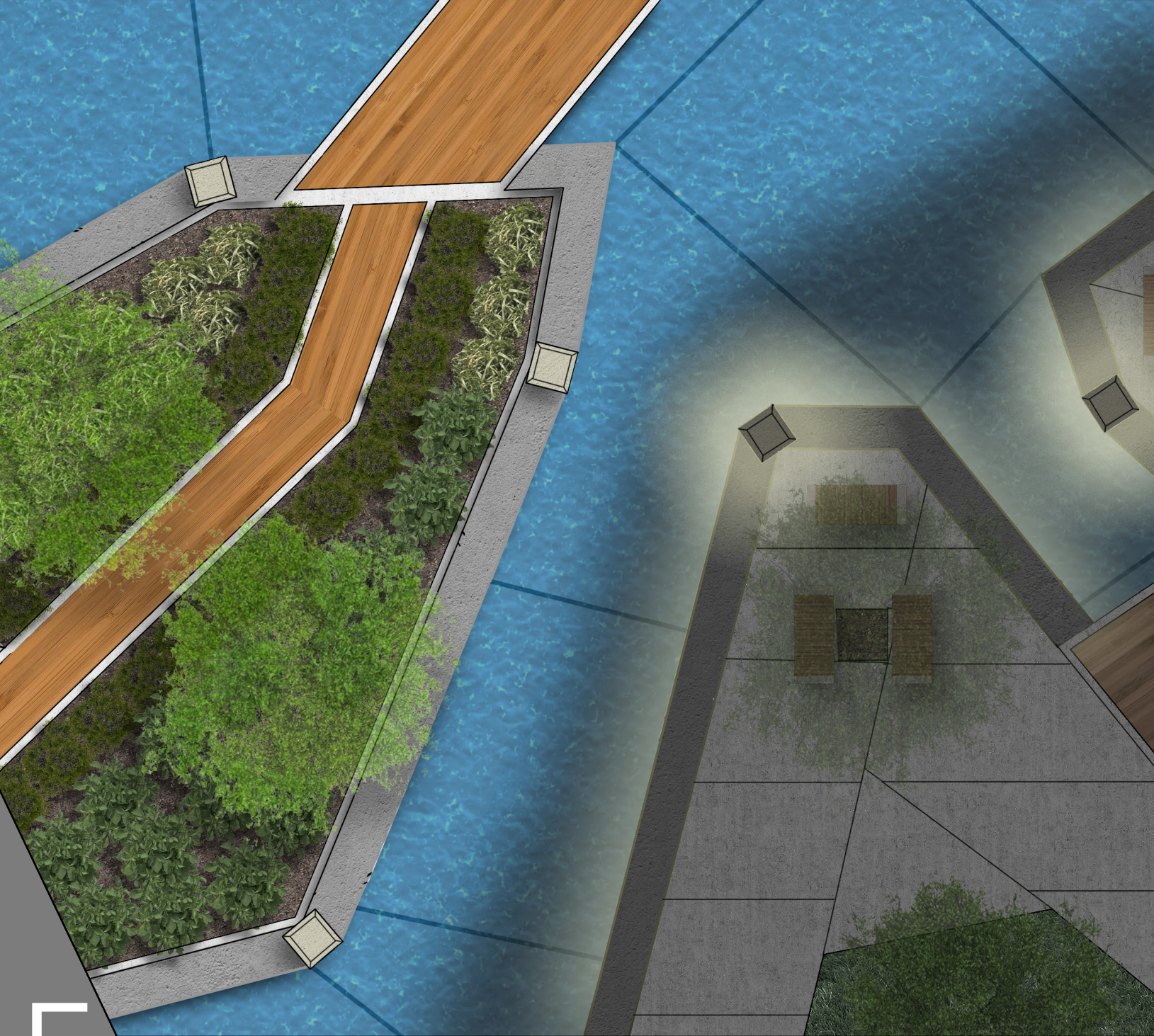
FORD PARK

WATER JUMP PADS



FORD PARK

BELOW THE PLAY AREA

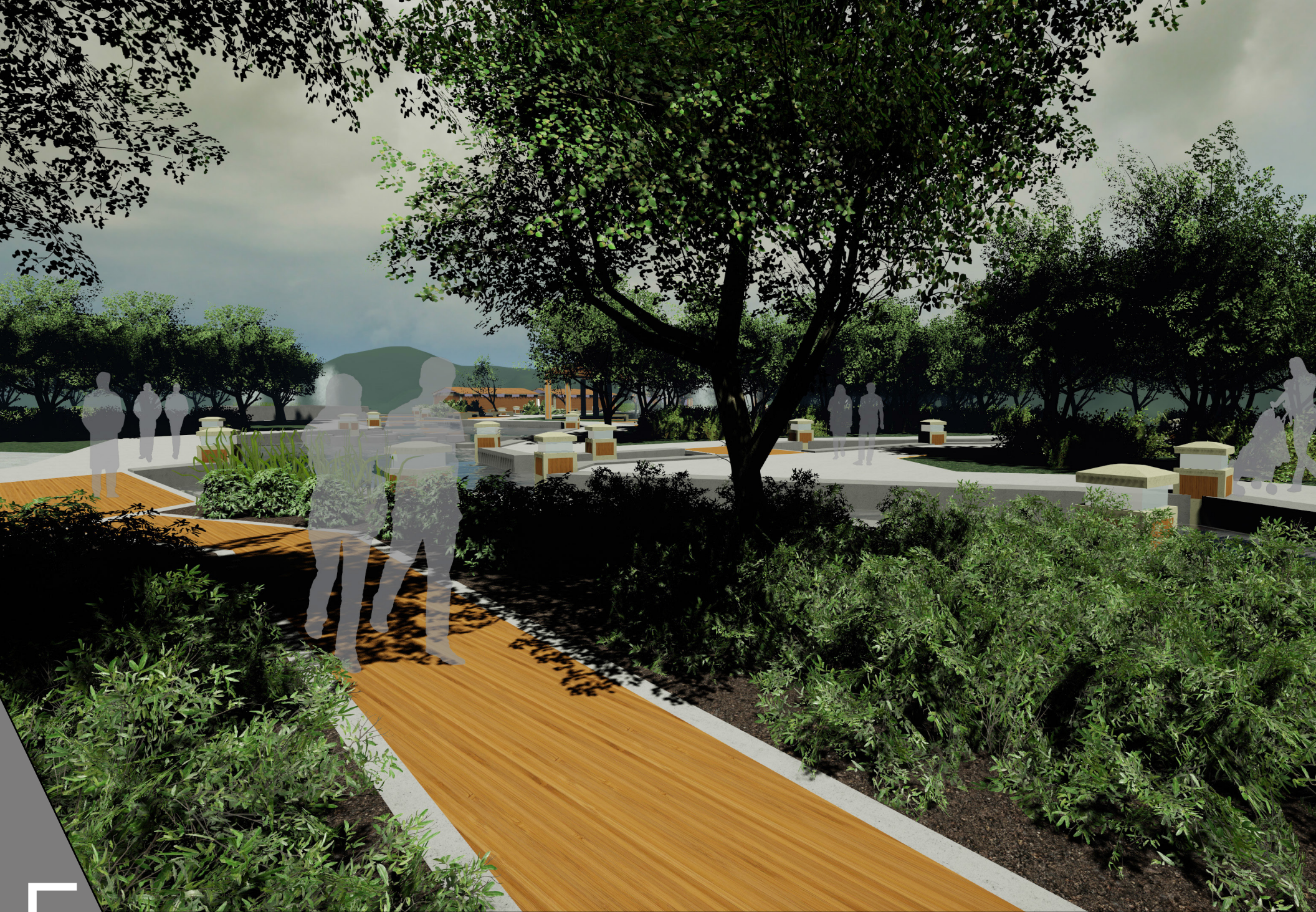


The end of the channel is to represent a D-Type Stream. This is characterized by multiple channels and is often within the largest riparian area of the stream. D-Type Streams are either found in mountain regions in a valley, or they are going to be found at a delta point. The design of this area is to replicate the large riparian area with dense vegetation that also works as a noise barrier to the nearby children's play area.



# FORD PARK

## CHANNEL SPLIT



# FORD PARK

HEAVILY VEGETATED WALK

THANK YOU  
ARE THERE ANY QUESTIONS?