

# Chickasaw Park Restoration Goals and Objectives

Community Meeting

\* Not currently under construction (cost prohibitive given shoreline instability. Shawnee Park ramp scheduled for construction in 2020)



## Goals

- 1 Create a safe place for the community (broadly defined) to enjoy Chickasaw Pond through multiple and varied recreation and education pursuits.
- 2 Resolve historic issue associated with pollution of Chickasaw Pond such that community concerns are met and that the pond can be removed from the Clean Water Act Section 303(d) list of impaired water bodies.
- 3 Create an amenity that supports expanded Metro Parks' programming activities, including those proposed to be based at the planned nearby Shawnee Outdoor Learning Center.
- 4 Install green infrastructure improvements to
  - disconnect pond overflow and storm water drainage from area around the pond, from the combined stormwater and sanitary sewer system and
  - treat this redirected stormwater as it flows to the to the Ohio River.
- 5 Reclaim the wooded southwestern corner of the park as a safe natural space that encourages passive recreation and nature play.
- 6 Create the next generation of environmental stewards who are inspired by frequent and sustained contact with nature at Chickasaw Park.

 not in grant/project scope



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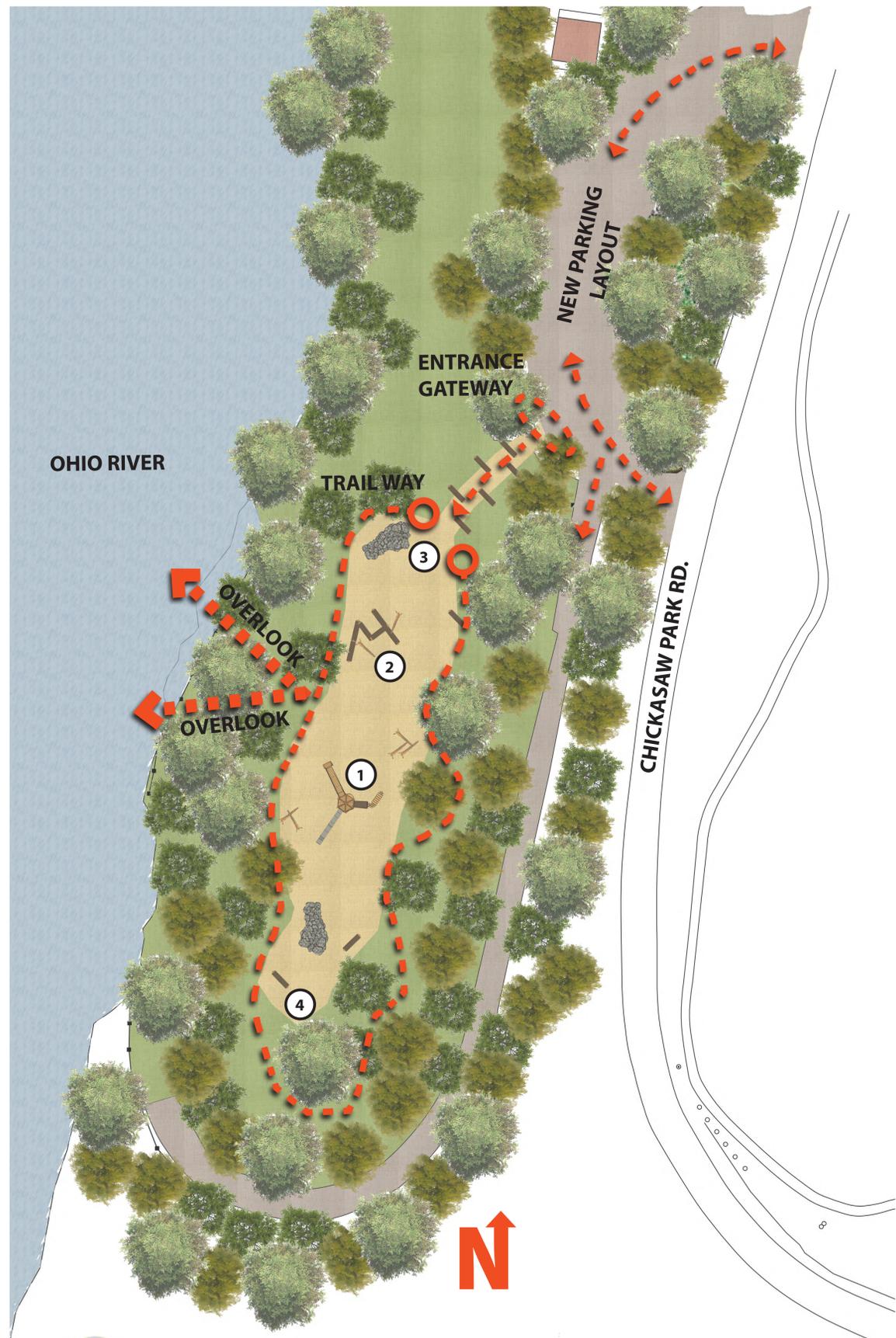
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# Nature Play - Design & Precedent Pictures

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## 1 LARGE CLIMBER



## 2 LOG CLIMBER



## 3 BOULDERS



## 4 STEPPERS



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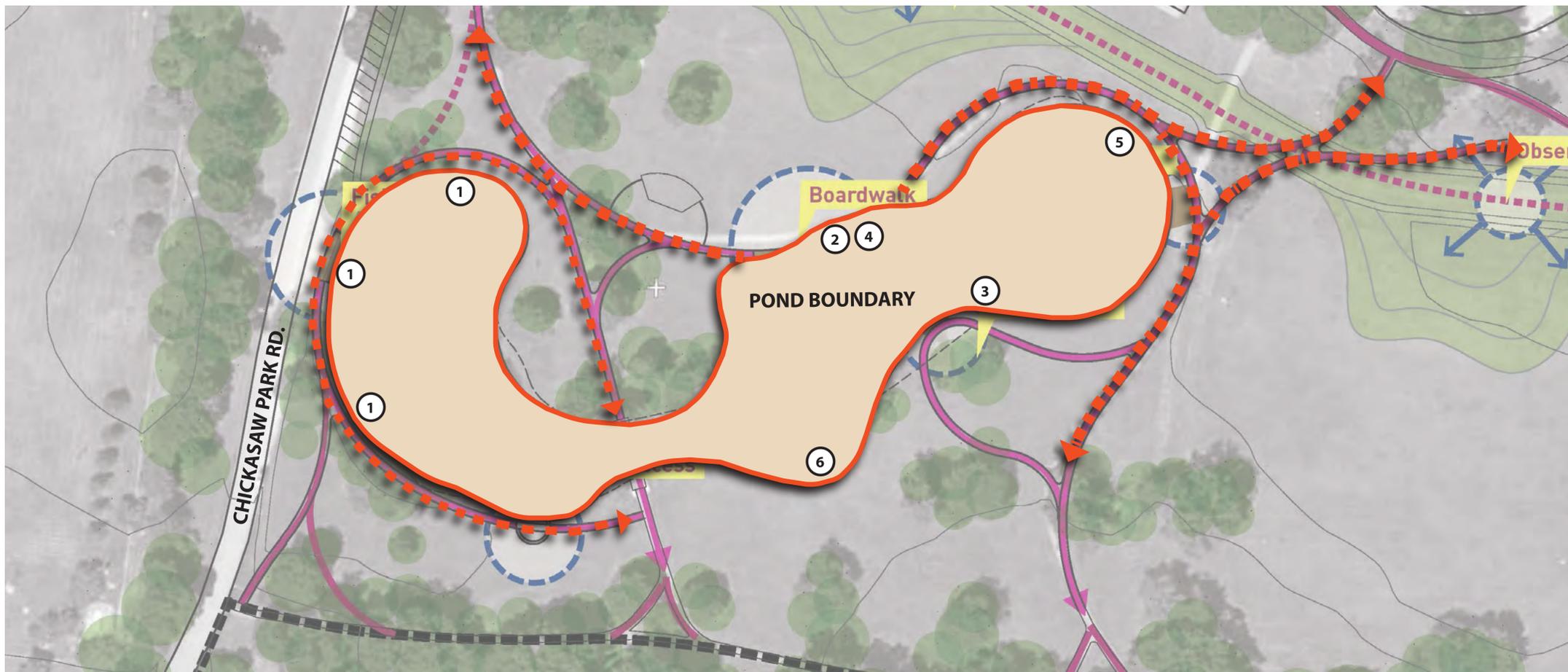
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# Pond Amenities - Design & Precedent Pictures

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## 4 CANOEING / KAYAKING



## 5 SWIMMING



## 1 FISHING



## 2 BOARDWALK/PIER



## 3 EDUCATION



## 6 PASSIVE RECREATION



# Chickasaw Pond History and Timeline

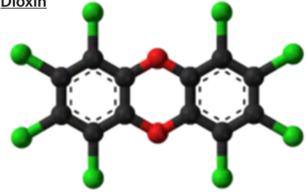
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## Dioxin Testing 1996

SAMPLE FROM	SAMPLING RESULTS
SEDIMENTS	20% ABOVE SAFE LIMIT
CARP (1995)	100 TIMES ACCEPTABLE RISK
CARP (1996)	80 TIMES ACCEPTABLE RISK
CRAPPIE (1996)	10 TIMES ACCEPTABLE RISK



Dioxin



Fish (crappie and carp) and sediments of lake collected and analyzed for dioxin



Kentucky Department of Environmental Protection issues a "No Further Action" letter stating that the soil and sediments are safe for use in the park

Kentucky Department of Fish and Wildlife accept the "No Further Action" letter and upon pond reconstruction will stock the pond as part of their "Fishing in Neighborhoods Program" (bass, bluegill/sunfish, catfish, and trout)

West Jefferson Community Task Force tests for metals

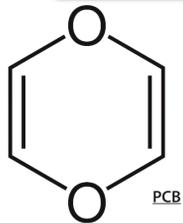
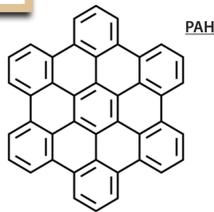
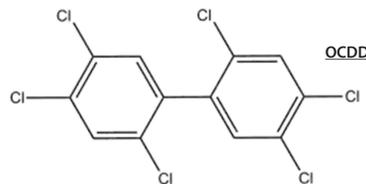
- Only arsenic was above residential and industrial limits

1988

Soils tested for PAHs and metals

- Found PAHs just above residential limits
- Lead, aluminum, and nickel were slightly elevated above background levels

1996



2005

Fish (channel catfish, largemouth bass, and bluegill) and sediments collected and tested for dioxins

- In sediments and fish tissue, it was found that dioxins were below background levels and not present at levels to be a concern for human health
- Based on testing, it was believed that contaminants from the sediment were not entering the food chain

2011

2018

Metro tests lake sediment and soil around pond for metals, PCBs, PAHs, VOCs, and dioxins

- Metals barium, chromium, and lead below residential limits
- Arsenic within background levels
- PAHs below residential limits
- VOCs were not detected in any samples
- PCBs not detected in any samples
- OCDD (a non-toxic dioxin) detected in two of five samples of sediment but EPA has not issued a limit for this compound

2019



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## What Happened to the Contaminants?

- PAHs can break down by reacting with sunlight and other chemicals in the air, over a period of days to weeks.
- Some PAH particles can readily evaporate into the air from soil or surface waters.
- Microorganisms (like bacteria) can break down PAHs in soil or water after a period of weeks to months.
- PCBs in the atmosphere react with ozone and water in sunlight and break down in a few months
- In shallow water, PCBs are broken down by sunlight.
- In soil, sediment and deeper water, PCBs are broken down by microorganisms (like bacteria).
- VOCs can be broken down by microorganisms (like bacteria).



## What are these words?

- VOC = volatile organic compound; a compound that contains carbon and interacts with sunlight to produce ozone
- PCB = polychlorinated biphenyl; a manmade group of chemicals used in electrical equipment
- PAH = polycyclic aromatic hydrocarbon; group of more than 100 chemicals released from burning coal, oil, gasoline, and tobacco
- Dioxin = a group of over 400 compounds, 30 of which are considered to be toxic and accumulates in fish tissue
- OCDD = octachlorodibenzo-p-dioxin; a type of dioxin about 3000 times weaker than other dioxins considered toxic and does not accumulate in fish tissue
- Dewatering = removal of water from solid material
- Residential limit = the highest level of a contaminant considered safe for building housing
- Industrial limit = the highest level of a contaminant considered safe for industrial uses (factories, processing plants, and similar sites where manufacturing or chemical processes take place)

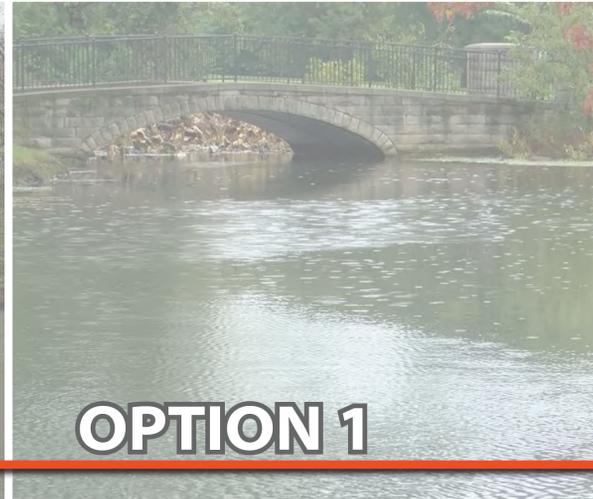


# Chickasaw Pond - Soil Placement Options

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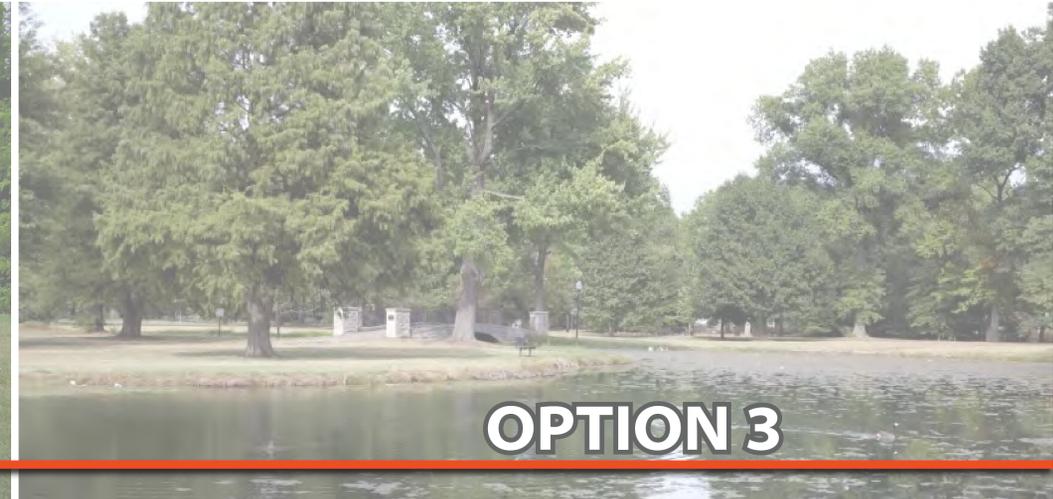
**PROCESS**



**OPTION 1**

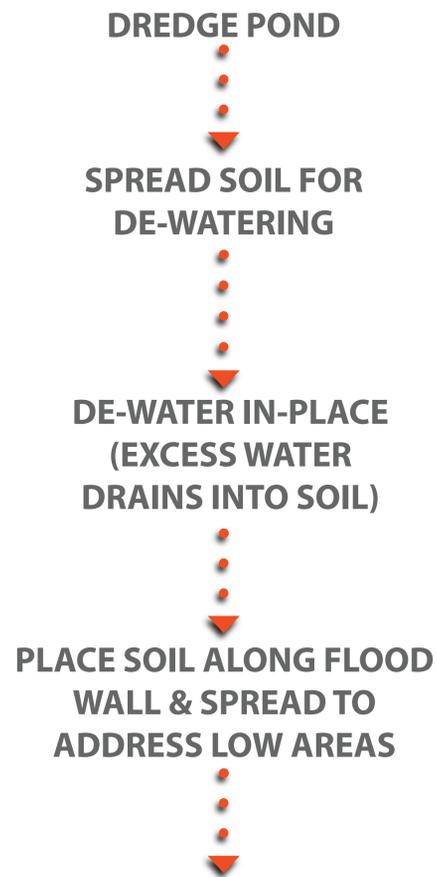


**OPTION 2**



**OPTION 3**

<b>COST</b>	\$
<b>TIME</b>	L
<b>DISRUPTION TO PARK</b>	X



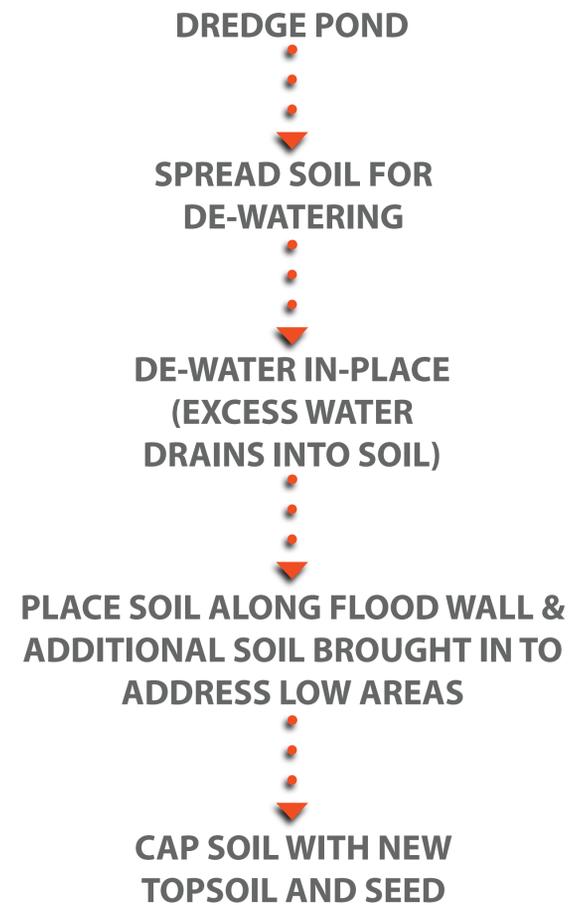
**CONCLUSION**

- Least soil movement
- Quickest to achieve
- Minimal impact to park use
- Least cost option

\$

L

X



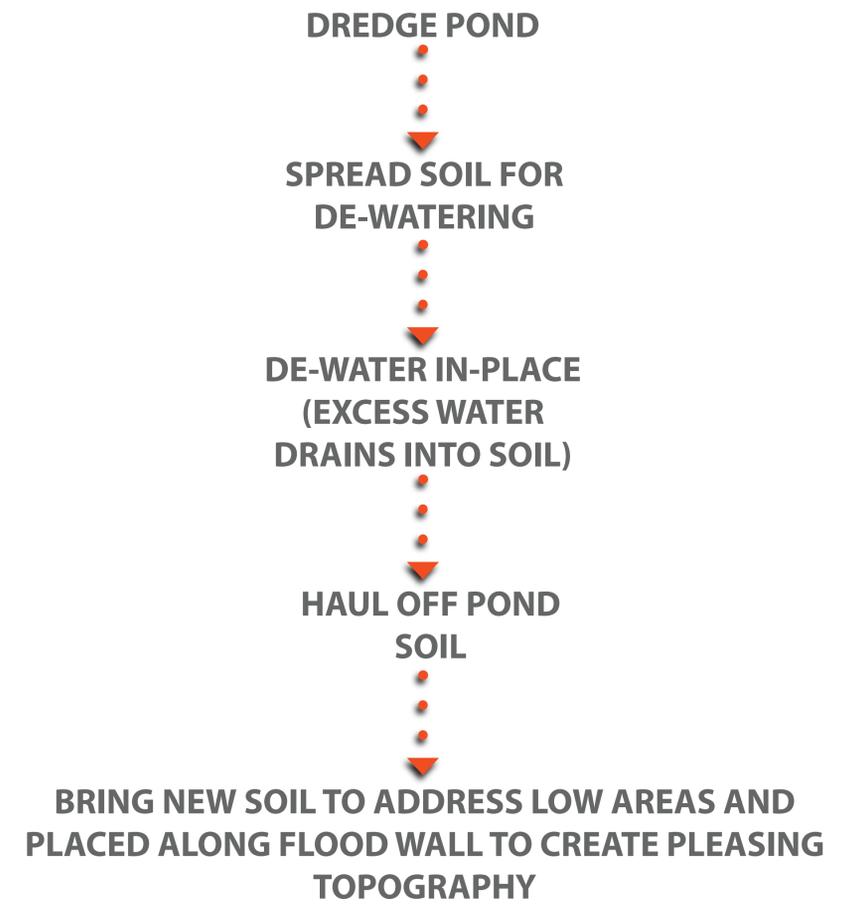
**CONCLUSION**

- Moderate soil movement
- Provides cap to soil at placement along flood wall
- Moderate impact to park use
- High cost option

\$ \$ \$

L

X



**CONCLUSION**

- Most soil movement
- Most time consuming
- Large impact to park use
- May not be feasible at current time
- Cost prohibitive

\$ \$ \$

\$ \$

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