

The Scenarios

Scenario Toolbox



**DIVERT
INFLOW**



**DIVERT TO NEW
STORM SEWER**



**DECOMMISSION
DAM(S)**



**RAISE
DAM WALL**



**WIDEN
CANAL**



**ROLLER COMPACTED
DAMS AND CANAL**

All Scenarios

Scenario 1

Modified Natural Flows



Scenario 2

Raise Dam Wall + Widen Canal + New Spillway



Scenario 3

Divert Storm Flows Through New Storm Sewers



Scenario 4

Franz Decommission (flow through city) + Echo Spillway



Scenario 5

Roller Compacted Concrete



Scenario 6

Deepen Franz + Widen Spillway



Scenario 1

Modified Natural Flows



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Scenario 1 - Details



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1. Decommission Echo Lake and Franz Pond
2. Remove all spillways
3. Lowering embankments along canal
4. Allow water to flow freely out to Great Miami River

Scenario 1 - Details



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Scenario 1 – Pros and Cons

PROS

1. Lake areas can be converted into a variety of landscape types
2. Trees will remain
3. Lowest cost scenario
4. No future ODNR Dam Safety Requirements or costs
5. Keeps bike path

CONS

1. Loss of lakes the community values
2. Loss of fishing and other recreation opportunities on the lakes
3. Worst outcome for those who desired and purchased lakefront property

Scenario 2

Raise Dam Wall + Widen Canal + New Spillway



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Scenario 2 - Details



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1. Echo Lake and Franz Pond may require normal pool lowering
2. Raise Echo Lake and Franz Pond dam embankments.
3. Construct new spillways just north of Echo Lake.
4. Widen canal between Echo Lake and Franz Pond and north of Echo Lake to the new spillway.

Scenario 2 - Details



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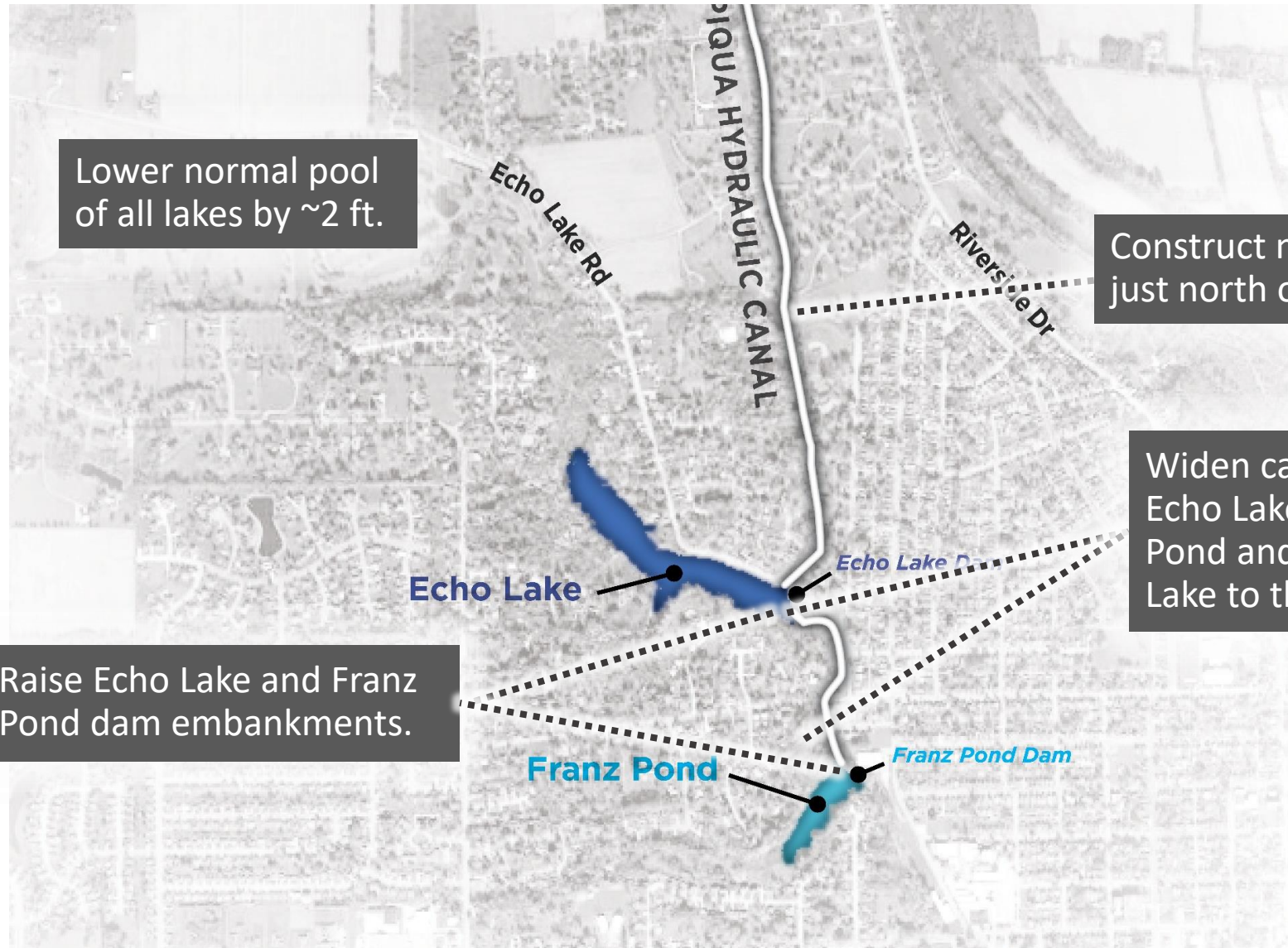
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Lower normal pool
of all lakes by ~2 ft.

Construct new spillway
just north of Echo Lake.

Widen canal between
Echo Lake and Franz
Pond and north of Echo
Lake to the new spillway.

Raise Echo Lake and Franz
Pond dam embankments.

Echo Lake

Echo Lake Dam

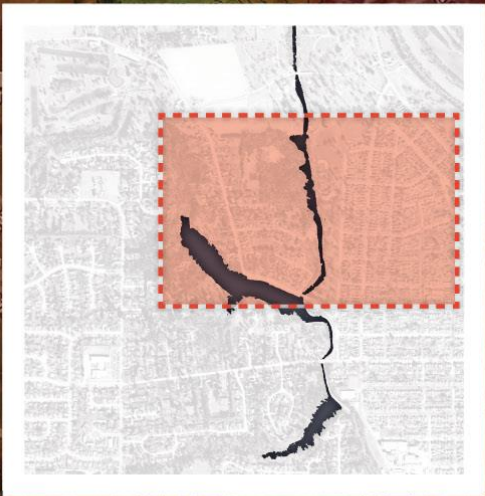
Franz Pond

Franz Pond Dam

AQUIA HYDRAULIC CANAL

Echo Lake Rd

Riverside Dr



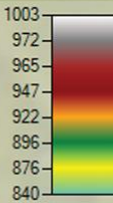
Echo Lake Drive will need to be replaced with a new bridge (minimal hydraulic restriction)

New 300 ft wide spillway to new discharge channel (see image below)

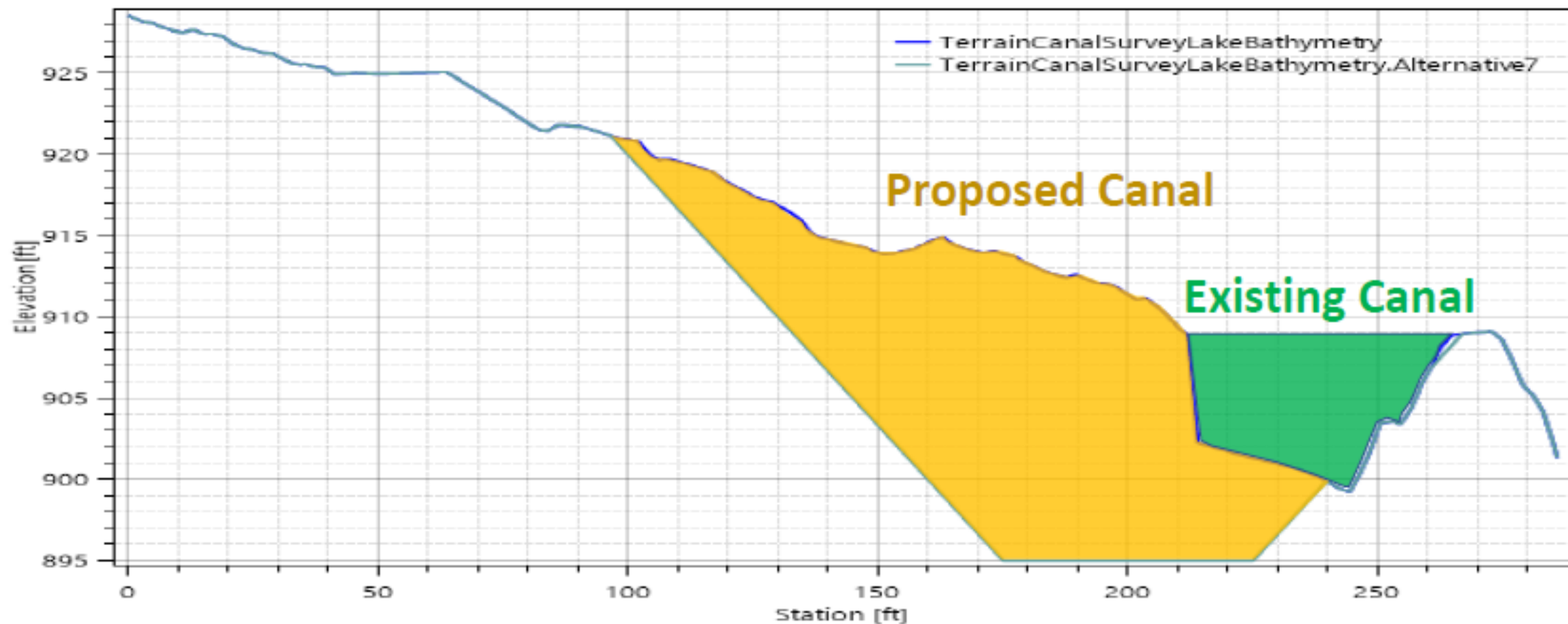
Widen / deepen canal downstream of Echo to new spillway location (currently showing 70 ft bottom width with 3:1 side slopes)

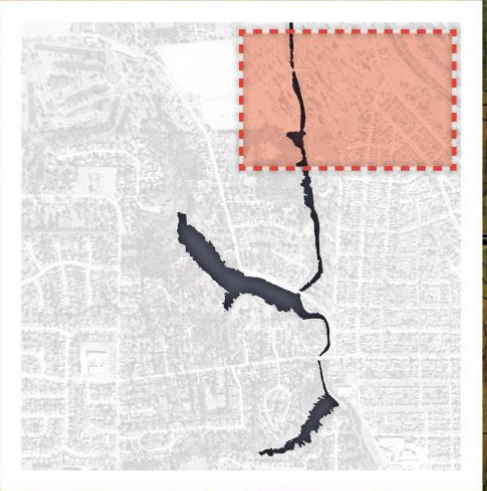
Raise dam crest (or add floodwall) ~3-4 ft to approximately elevation 913 ft

 **POTENTIAL PROPERTY IMPACTS**



Terrain Profile Plot





New 300 ft wide spillway to new discharge channel

New spillway channel to the Great Miami River, cutting through Fountain Park just south of the cemetery (shown as 60 ft bottom width with 3:1 side slopes and depth of approximately 15 ft)

 **POTENTIAL PROPERTY IMPACTS**



Scenario 2 – Pros and Cons

PROS

1. Water levels in lake remain similar
2. Bike path remains
3. Potential to keep select trees
4. Minimal impact to majority of Fountain Park

CONS

1. Residential property acquisition
2. Cost
3. Significant impact to Hardman Field portion of Fountain Park
4. Loss of Veterans Memorial Park
5. Property impacts
 - Fountain Blvd, Nicklin, Forest, Washington, Broadway

Scenario 3

Divert Storm Flows Through New Storm Sewers



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Scenario 3 - Details



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1. Divert stormwater into expanded stormwater system
 - Diversion prior to entering Franz (to be evaluated)
 - Diversion from Franz in high rain events (required)
2. Would require upgrading most of the downtown stormwater network
3. Upgrades would happen over time
4. May not be feasible
5. Disruption to businesses, residences, and existing service

Scenario 3 - Details



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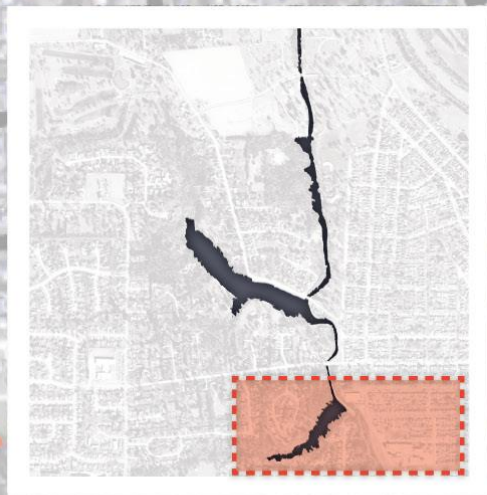
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FRANZ
POND

W North St

Park Ave

W Greene St

Broadway

N Main St

High St

W Water St

1 inch = 400 feet

Piqua Stormwater Lines

SW_GravityMain

— All Other Stormwater Lines

DIAMETER

— 54" Stormwater Lines

US-36

Miami St

Young St

S College St

Scenario 3 - Details



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Scenario 3 – Pros and Cons

PROS

1. Lake pool levels similar to existing
2. Parks have limited impacts
3. May require significantly less property acquisition

CONS

1. High cost
2. Significant disruption to downtown businesses and residents
3. Does not have capacity in existing system
4. May not be feasible due to elevations of river / water levels
5. Utility disruptions

Scenario 4

Franz Decommission (flow through city) +
Echo Spillway



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Scenario 4 - Details



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1. Franz Pond decommissioned and turned into wetland or park
2. Flows directed into storm system during rain events
3. Canal would need to be widened between Echo and Spillway 1
4. Bridge crossings would need upgraded
5. Widen Echo Lake bridge
6. Significant loss of trees

Scenario 4 - Details



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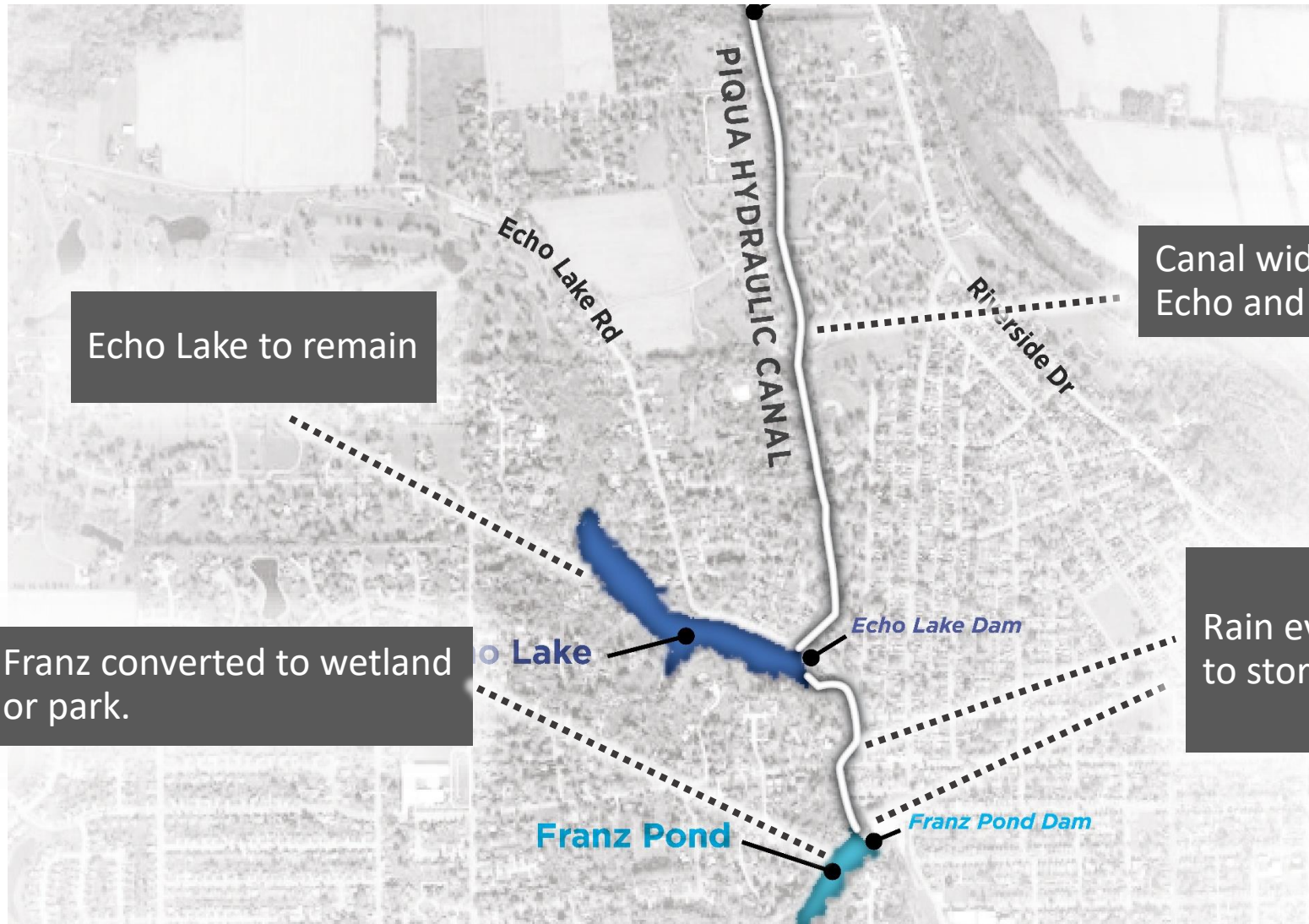
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Echo Lake to remain

Canal widened between
Echo and Spillway 1

Rain events rain diverted
to storm system.

Franz converted to wetland
or park.

o Lake

Echo Lake Dam

Franz Pond

Franz Pond Dam

Echo Lake Rd

Riverside Dr



Replace Ziegler Rd bridge

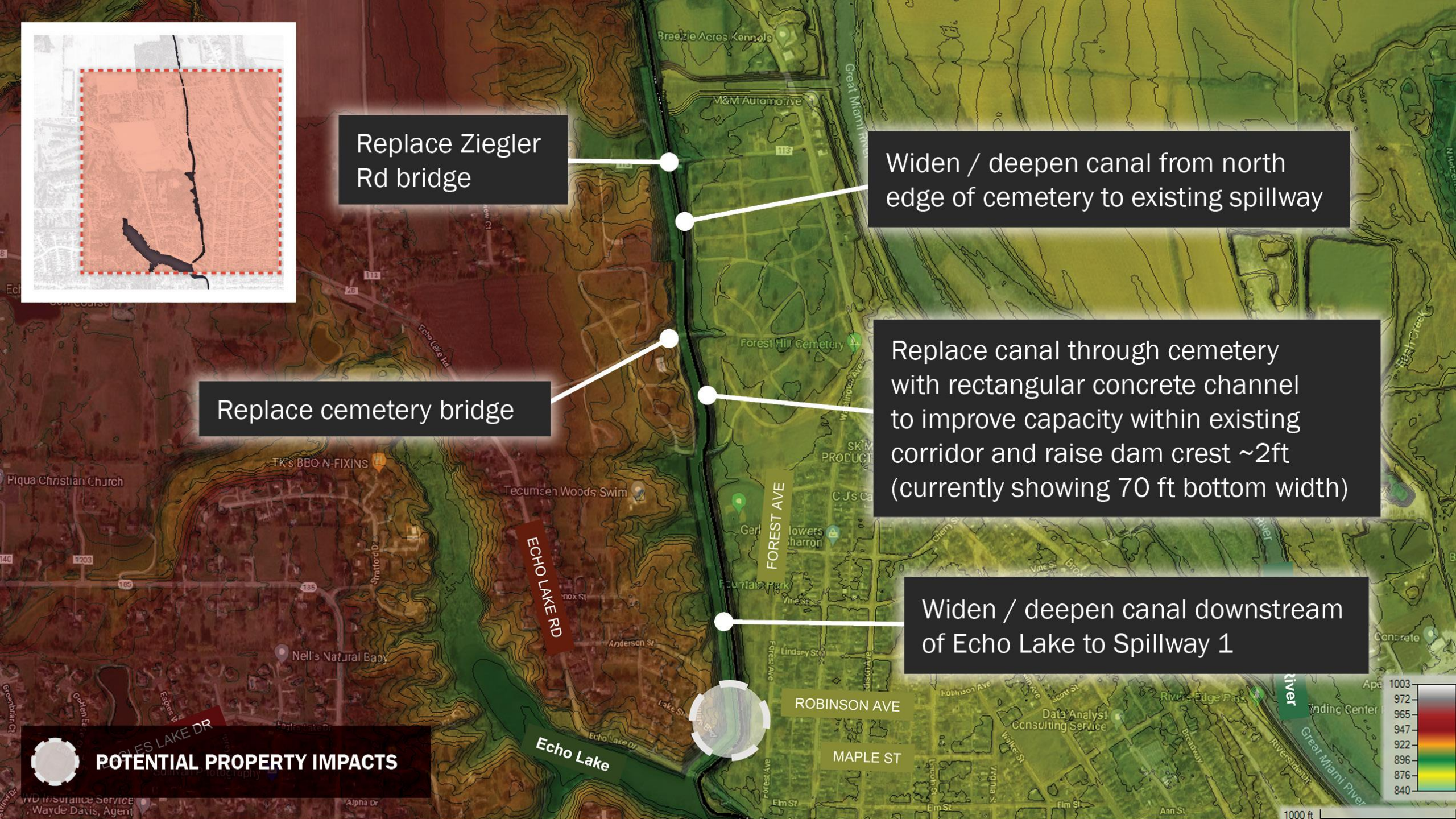
Widen / deepen canal from north edge of cemetery to existing spillway

Replace cemetery bridge

Replace canal through cemetery with rectangular concrete channel to improve capacity within existing corridor and raise dam crest ~2ft (currently showing 70 ft bottom width)

Widen / deepen canal downstream of Echo Lake to Spillway 1

POTENTIAL PROPERTY IMPACTS



Scenario 4 - Details



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Scenario 4 - Details



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Scenario 4 – Pros and Cons

PROS

1. Includes improvements to existing erosion
2. Creates natural amenity for public
3. Medium cost

CONS

1. Changes condition of Franz (wetland or park)
2. Some private property impacts to properties west of Fountain Park
3. Widens canal system north of Echo
4. Three bridge widenings
5. Trees along remaining dam would be removed.
6. Potential private property impacts east of canals (Fisher Dr.)

Scenario 5

Roller Compacted Concrete



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Scenario 5 - Details



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1. Reconstruct dams and canal system with new roller compacted concrete (covered with grass for aesthetics)
2. Increases strength and lowers failure probability
3. May still result in 'spill over' during high rain events, but minimizes potential for catastrophic failure

Scenario 5 - Details



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Scenario 5 – Pros and Cons

PROS

1. Lakes remain similar to existing
2. Minimized probability for catastrophic failure
3. System looks and feels similar to what is there once complete (no trees)
4. May be acceptable to ODNR Dam Safety with limited modifications

CONS

1. High cost / rebuilds entire canal and dam system
2. Still presents opportunities for overtopping/spill over
3. All trees removed from embankments/significant impacts to Fountain Park structures
4. Doesn't prevent flooding during high rain events
5. May not be accepted by ODNR (needs to be studied)
6. Private property impacts on Park Avenue / Forest (could be significant)
7. May require extensive property acquisition
8. May not be suitable on portions of dam/canal

Scenario 6

Deepen Franz + Widen Spillway



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Scenario 6 - Details



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1. Franz Pond retained, but deepened significantly to come under ODNR-regulated dam height
2. Franz Pond surface area decreased and deepened
3. Flows directed into storm system during rain events
4. Canal would need to be widened between Echo Lake and Spillway 1
5. Bridge crossings would need upgraded
6. Widen Echo Lake bridge
7. Trees retained on portions of dam not regulated by ODNR

Scenario 6 - Details



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Scenario 6 – Pros and Cons

PROS

1. Echo Lake and Franz Pond remain
2. Keep Franz Pond depth and lower elevation
3. Keep bike path

CONS

1. Lowers water level of Echo Lake by 1 ft -2 ft
2. Bike path has 4 ft wall on it for 2,250 ft
3. Higher cost
4. Property acquisitions and home/park removals
5. Traffic concerns on SR 66, Echo Lake Drive, Washington, and Nicklin during construction