

Yahara Riverfront Development Benefit-Cost Analysis

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City of Stoughton

Capital Area Regional Planning Commission

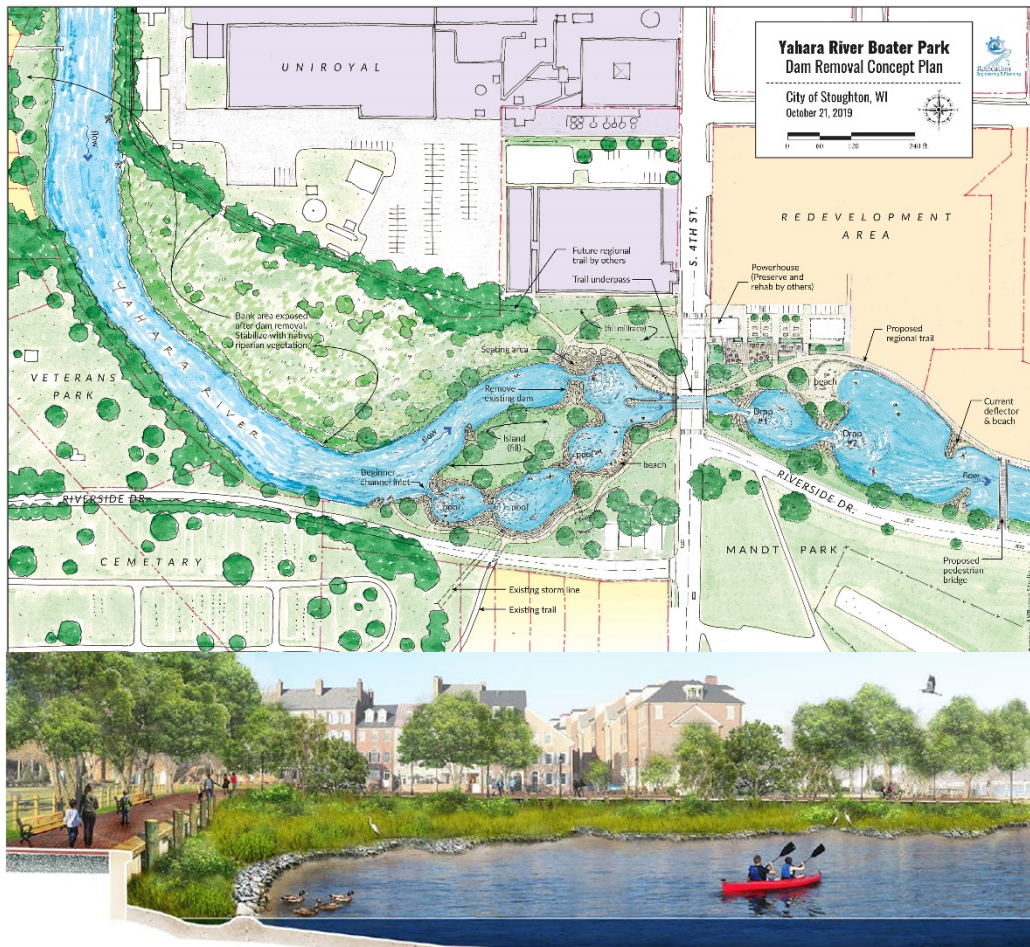


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Executive Summary

Benefit-Cost Analysis

Benefit-Cost Analysis (BCA) provides a method for monetizing the social value of a project, that is, its associated costs and benefits. A feature of BCA involves determining the incremental effect of the project which is its improvement with respect to a baseline level of performance (based on forecasts or a “business-as usual” level of investment). Incremental costs and benefits are tracked over the project planning horizon and discounted to reveal their respective present values so that they may be reasonably compared to the upfront investment. Results from BCAs include:

1. Net Present Value (NPV) defined as the difference between present value benefits and costs; and
2. Benefit Cost Ratio (BCR) and defined as the ratio of present value benefits to costs.

Projects for which NPV is greater than zero and BCR is greater than one indicated worthy projects. While projects with larger BCR and NPV indicate a relatively larger level of worthiness, they have different implications for total impact. BCR reflects the return on investment (as a percentage above the breakeven point); NPV determines the total value of a project to society.

This document outlines the costs and benefits for the Yahara Riverfront Development project to satisfy the requirements for the Better Utilizing Infrastructure to Leverage Development (BUILD) grant. The analysis considered the costs and benefits that would accumulate over a 30-year timeframe through the year 2050.

Background

The Yahara Riverfront Development Project activates the benefits of the Yahara River in Southern Wisconsin. The Project includes many improvements that provide a multitude of benefits. The centerpiece to the Yahara Riverfront Development project is a whitewater venue in downtown Stoughton, which can be created by the removal of the Stoughton Dam. The BUILD grant funding is being requested for the Yahara Riverfront Development Project, which includes:

- Redeveloping the riverfront in a property owned by the Stoughton Redevelopment Authority. This includes the creation of 1.5 acres of parkland, shoreline restoration, pedestrian trail and trail amenities, improved public access to the river, and a pedestrian bridge connecting the site to Mandt Park.
- Redeveloping the riverfront at Mandt Park. This includes the removal of Mandt Parkway that runs parallel to the river, shoreline restoration and naturalization, looped pedestrian trail system, one side of the pedestrian bridge that connects the park to the redevelopment site, and parking.
- The removal of the Stoughton dam and improvements to the area. These improvements include the creation of Wisconsin’s first in-stream whitewater park including a standing wave for river surfing, the filling of the headrace and tailrace areas to create pedestrian plazas and viewing areas, canoe and kayak launches, pedestrian trails, and pedestrian underpass at Fourth Street.

- Restoration and remediation of the Stoughton Millpond. The lowering of the waterway due to dam removal will cause a natural channelization of the Yahara River. 3.3 acres of land will be exposed and new parkland will be created. The soils will be remediated and native vegetation will be planted. A pedestrian trail will connect Water Street to the whitewater park area.

Recreational trails include “aquatic or water activities,” according to U.S. Code, Title 23. Highways, Chapter 2. OTHER HIGHWAYS, Section 206 Recreational trails program.

The Yahara Riverfront Development Project is a critical step to enhance the Rock River National Water Trail and the regional Lower Yahara River Trail. The creation of the recreational whitewater amenities will provide a highlight for both trail systems and create a regional destination for outdoor recreation.

Baseline and Alternative Scenarios

Baseline Scenario

The Baseline Scenario assumes that the Yahara Riverfront Development Project is not implemented. It assumes the Stoughton Dam in its current configuration is left in place.

Under this scenario, the dam continues to present a safety hazard because boaters and people who accidentally fall in the water may get drawn into water flow through the dam and risk drowning or injury. The dam will continue to restrict flow of water through the Yahara watershed chain of lakes, which has experienced major flooding twice in the last 12 years. The dam will continue to require ongoing average maintenance costs of \$61,400.

The millpond will continue to collect sediment, diminish fish habitat and spawning grounds, and cover land that could be converted to parkland.

Southern Wisconsin would also forgo the economic impact benefits, losing out on millions of dollars in spending that would otherwise be brought into the region. Southern Wisconsin falls behind in the “war for talent,” losing workforce to other cities that made investments in quality-of-life amenities. And existing residents of Southern Wisconsin would lose out on the quality of life amenities themselves, with fewer outdoor recreation opportunities, less exposure to nature, and poorer water quality.

Alternative Scenario

The Alternative Scenario assumes that the Yahara Riverfront Project is implemented. It assumes that the Stoughton Dam is removed and replaced with a whitewater park that includes a five drop crest features for novice paddlers and a standing wave for surfing, fish passage, canoe and kayak launches, a multi-use pedestrian trail linking the area to the regional Lower Yahara Trail. Dam removal will increase water flow and reduce the risk of flooding.

Under the alternative scenario the millpond will be replaced with a river connected to fish spawning grounds. Soil on the newly exposed riverbank will be remediated of contamination and native plantings

will be placed in the area creating 3.3 acres of parkland and an unsafe and aging pedestrian bridge will be replaced.

The alternative scenario includes creation of a 1.5-acre riverfront park in front of the downtown redevelopment site, enhancing property values and increasing appeal of the area to developers. In addition, Mandt Park, across the river from the redevelopment area, will be improved with shoreline restoration and naturalization, new parking areas, and a multi-use pedestrian trail loop that will connect, via a new pedestrian bridge over the river, to the downtown riverfront and regional trail system.

Baseline Costs

Operations and Maintenance

The baseline scenario of maintaining the existing dam and millpond, requires regular maintenance. Approximately every 10 years the dam requires an inspection and required reconstruction. Staffing of dam operations is required on an ongoing basis. Mandt Park maintenance requires filling cracks in paved areas. The pedestrian bridge requires inspection every two years.

These costs were projected over the 30-year project period assuming 2.0% annual inflation, then discounted at 7% to determine Net Present Value.

The Net Present Value of baseline O&M is \$1,018,694.

Project Costs

Construction Costs

This section outlines the costs to remove the dam and construct the whitewater improvements, restoration and remediation, park improvements, and a trail network including pedestrian bridges. Table 1 provides a breakdown of these costs:

Table 1: Construction Costs

Phase I Improvements	
Solar Trail Lighting	\$ 43,383
Trail Amenities	\$ 12,000
Trails	\$ 197,481
Pedestrian Bridge	\$ 546,368
Native Plantings	\$ 25,875
Riverbank Restoration	\$ 243,340
Subtotal	\$ 1,025,064
Phase II Improvements	
Restoration & Remediation	\$ 425,000
Dam Removal	\$ 562,021

Whitewater Improvements	\$ 1,397,978
Whitewater Trails, Underpass, Plazas, Water St Trail	<u>\$ 1,480,996</u>
Subtotal	\$ 3,865,995
Phase III Improvements	
Mandt Park Improvements	\$ 1,927,000
Jefferson St Pedestrian Bridge	<u>\$ 498,420</u>
Subtotal	\$ 2,425,420
Total	\$ 7,316,479

Operations and Maintenance

The project will require ongoing staffing and bridge inspection. These annual costs were projected over the 30-year project period assuming 2.0% annual inflation, then discounted at 7% to determine Net Present Value.

The Net Present Value of project O&M is \$174,893.

Project Benefits

Various benefits are expected from the Yahara Riverfront Development Project. Those benefits and methodology used to quantify the benefits of each category are detailed below. The benefits were quantified in accordance with the BUILD application guidelines to complete a formal Benefit-Cost Analysis (BCA). The projects benefits fall into several categories, including parkland increase, safety, economic competitiveness, quality of life, and property value increase. An Excel spreadsheet model was prepared to develop quantitative and monetized values for the benefits of the Yahara Riverfront Development Project.

Parkland Increase

The Yahara Riverfront Development will increase parkland available to residents of Stoughton and beyond by 4.8 acres. According to the 2020 City of Stoughton Park Impact Fee, Fee in Lieu of Land Dedication, and Public Facility Needs Assessment parkland value per acre is \$197,277. Full details of the study can be found as Attachment A.

Table 2: Parkland Value

	Year 1 - 2021	Year 2 - 2022	Year 3 – 2023
Parkland Acres Added	0.00	1.50	3.30
Parkland Value	\$0	\$295,916	\$651,014

Average Park Value per acre	\$197,277
NPV Avoided Safety Costs 7%	\$789,885

Source: City of Stoughton, Wisconsin Park Impact Fee, Fee in Lieu of Land Dedication and Public Facility Needs Assessment, Baker Tilly Virchow Krause, LLP, 2020.

Safety

The alternative scenario includes removing the Stoughton Dam. The Stoughton Dam was responsible for a near drowning in 2018, and the next dam downstream of the Stoughton Dam, the Dunkirk Dam, was responsible for a drowning in 1996. The Wisconsin Department of Natural Resources provided the City of Stoughton a directive letter in 2020 that the Stoughton Dam could be removed to improve public safety. Full details of dam incidents can be found as Attachment B.

Table 3: Stoughton Dam

Fatality Rate per year	0.05
Fatality Cost	\$9,400,000
NPV Avoided Safety Costs 7%	\$5,832,249

Economic Competitiveness

The Yahara Riverfront Development Project supports the economic competitiveness of Southern Wisconsin in two significant ways. It will fuel the growth of the regional and state economy by adding millions of dollars of visitor spending, and it helps address the region's need to attract and retain a workforce to grow its economy.

The economic benefits associated with the Yahara Riverfront Development project used data developed through the University of Wisconsin-Madison/Cooperative Extension Economic Impact Study (September 2018). This study focused on direct spending, estimating visitation and visitor spending from kayakers within 30, 60 and 120 minutes of Stoughton. Within three hours of Stoughton, there is a total population of nearly 6 million with estimates of this including nearly 434,000 kayakers and over 1 million canoeing enthusiast.

Based on recent studies that examined 10 other whitewater parks across the US, the study estimated an average of \$68 per day spent on expenses including food, lodging, automotive, recreational equipment, clothing and supplies. Using the 60-minute radius, and an assumption of 82,000 kayakers visiting the Stoughton whitewater park once per year, the study estimated an additional \$5.6 million spent annually. This NPV of the economic benefits of the project are estimated at \$85.3 million. Full details of the economic impact study can be found as Attachment C.

Table 4: Economic Benefits – 30 Years

NPV Economic Benefit 7%	\$85,349,225
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Source: University of Wisconsin-Madison/Cooperative Extension Economic Impact Study (September 2018)

Quality of Life

The health benefits of outdoor recreation and activities are well documented. Among the benefits are the “sunshine vitamin,” aka Vitamin D; more exercise, especially for children; happier people, notably when their exercise takes place near nature; and improved concentration, as noted in “Last Child in the Woods” by Richard Louv.

There are many quality-of-life benefits that are difficult to quantify. This analysis focused on health care costs savings related to increase physical activity generated by the project. A recent study by the America Heart Association estimates that getting the recommended dose of daily physical activity saves a person \$2,500 on health care costs annually. This means that each day of physical activity equates to \$6.85 in health care costs saving. Based on user projections generated through the University of Wisconsin-Madison/Cooperative Extension Economic Impact Study, it is estimated that 82,000 users engage in the active recreation options available in this project.

$$82,000 \text{ users/year} \div 365 \text{ day/year} = 224.66 \text{ users/day}$$

$$224.66 \text{ users/day} \times \$6.85 \text{ per/user/day} = \$1,538.92 \text{ in health care savings/day}$$

$$\$1,538.92 \text{ health care savings/day} \times 365 \text{ days/year} = \$561,644 \text{ health care savings/year.}$$

Based on these calculations it was determined that the NPV of the quality of life benefits is approximately \$7.0 million.

Property Value Increase

Properties adjacent to parks and greenspace typically have higher values because they provide ready access to outdoor amenities. The Impact of Parks on Property Values: A Review of the Empirical Evidence (2001) estimated that proximity to parks increased property values an average of 20%. Full details of this study can be found as Attachment D.

Stoughton's Tax Increment District #8 Plan (July 2018) estimates an added value of \$47,459,000 from buildout of the concept plan for the TID. The TID Plan did not factor parkland enhancements from the more recently prepared Yahara Waterfront Redevelopment plan (Alternative Scenario) in its estimates of additional assessed value. The Alternative Scenario would increase the TID estimated value by an estimated 20%, or \$9,492,000. Full details of the TIP Plan can be found as Attachment E.

Flood Control

The removal of the Stoughton Dam will cause the waterway to lower 2.6 feet in the millpond area. This will cause an additional 61,000 cubic yards of flood storage in the area. Additionally, the Stoughton Dam constricts flow in the Yahara River. The removal of the dam will create a freer flowing system with no constriction. In 2018, Dane County experienced record rainfalls which caused subsequent flooding. Dane County officials estimated the damage at \$154 million.

Environmental Benefits

The Yahara Riverfront Development will improve the health of the Yahara River. The shoreline naturalization will mitigate runoff into the river, the removal of the dam and whitewater improvements

will improve water quality. The whitewater amenities also provide for fish passage where fish can now reach new spawning grounds.

Overall Project Benefits

The Yahara Riverfront Development project has a wide range of benefits that encompass parkland increase, safety, economic competitiveness, quality of life, and increased property value benefits. This analysis endeavored to calculate the quantitative benefits the project will have on the region over the next thirty years. Below are the listed tabulated benefits and benefit cost ratios.

Table 5: Benefit Cost Ratio

NPV Avoided Safety Costs 7%	\$5,832,249
NPV Economic Benefits 7%	\$85,349,225
NPV Quality of Life Benefits 7%	\$6,969,461
NPV Parkland Added Value Benefits	\$789,885
NPV Alternative Scenario O&M Costs	\$179,843
NPV Flood Control Benefits	
NPV Environmental Benefits 7%	
Totals	
NPV at 7%	\$99,120,664
Initial Project Cost	\$7,316,479
NPV of O&M Costs @ 7%	\$179,843
Total Project Costs	\$7,496,322
Cost-Benefit Ratio @ 7%	13.22