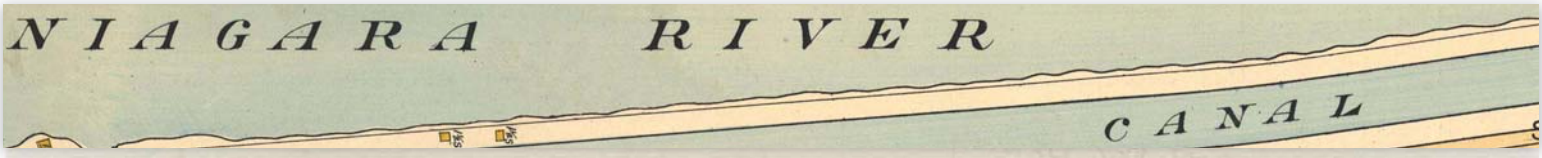


Appendices

Appendix 1

Consistency with Regional Plans

The Feasibility Analysis includes a review of relevant local and regional planning documents to ensure that the design of Black Rock Canal Park is consistent with the goals and recommendations of these plans. The following plans have been reviewed for consistency, which is summarized on the following pages:

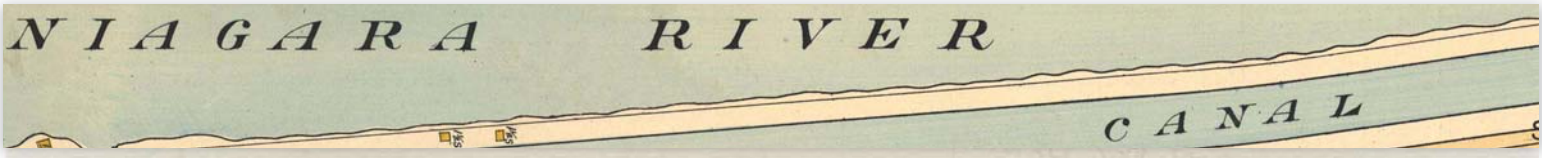
- *City of Buffalo Comprehensive Plan (2006)*
  - Documents incorporated into the Comprehensive Plan by reference:
  - *Queen City in the 21st Century: Buffalo LWRP (2007)*
  - *Queen City Waterfront: Buffalo Waterfront Corridor Initiative (2007)*
  - *The Olmsted City – The Buffalo Olmsted Park System: Plan for the 21st Century (2008)*
  - Good Neighbors' Planning Alliance Neighborhood Plans, Black Rock – Riverside Good Neighbors' Planning Alliance
    - *Building a Neighborhood of Choice: A Neighborhood Plan for the Riverside Planning Community (2007)*
    - *Historic Black Rock: War of 1812 Bicentennial Community Plan (2008)*
- *Erie County Parks System Master Plan (2002)*
- *Niagara River Greenway Plan and FEIS (2007)*
- *Erie Canalway National Heritage Corridor Preservation and Management Plan (2006)*

City of Buffalo Comprehensive Plan (2006)

The Buffalo Comprehensive Plan (2006) is a physical land use plan for the City of Buffalo. The Plan outlines four key principles and seven policies for guiding the City's development priorities and investments.

The Comprehensive Plan is driven by four key principles that help to identify future development priorities. The principles are: Sustainability; Smart Growth; and Fix the Basics, Build on Assets. The improvements to Black Rock Canal Park reinforce these principles. Elements of the park design contribute to the *sustainability* of the City through restoration the site's physical environment, reduction of stormwater runoff, promotion of energy conservation through green building design, development of waterfront resources, strengthening the Black Rock – Riverside neighborhood, and improvements to water quality. The Comprehensive Plan calls for the City to adopt ten basic principles of *Smart Growth*. The community-driven plan for Black Rock Canal Park contributes directly to the fifth Smart Growth principle: foster distinctive, attractive communities with a strong sense of place. The final two key principles of the Comprehensive Plan call on the City to fix the *basics and build on assets*. The Plan identifies the Cities assets as our Olmsted parks and parkways, our Joseph Ellicott city plan, our great waterfront, prodigious infrastructure, great public institutions of education, health care, art and culture, affordable housing and strong neighborhoods, and most of all the civic capital of active citizens and friendly neighbors. The plan for the Black Rock Canal Park builds upon the city's assets by providing improved connection between the Olmsted Parks, providing improved access to and amenities along the waterfront, strengthening the physical and social fabric of the neighborhood, and capitalizing on the energy, interest and input of the neighborhood's residents in the development of the park.

Seven policies were derived to meet the key principles of the Comprehensive Plan. The policies state that Buffalo must: (1) deliver quality public services, (2) maintain public infrastructure as fundamental to economic growth, environmental protection, and community development, (3) transform Buffalo's economy as a basis for revitalization, (4) reconstruct the schools, (5) rebuild neighborhoods, (6) restore Olmsted, Ellicott and the waterfront, (7) and protect and restore the urban fabric.



The Black Rock Canal Park reinforces these policies. The park is part of the city's municipal infrastructure; the proposed improvements provide opportunities to protect the environment and foster community development and economic growth. The park will improve the quality of living in Black Rock – Riverside, an important step in rebuilding Buffalo's neighborhoods. The park is also a key component in the city's connected system of parks and parkways, linking both to a greener and more accessible waterfront. Additionally, the proposed interpretative components of the park help to protect and restore the urban fabric by educating park visitors about the site's heritage and historical significance.

The Land Use Concept within the Comprehensive Plan identifies three Strategic Investment Corridors. Black Rock Canal Parks lies within the Waterfront/Tonawanda Corridor. The Plan emphasizes that a green setting and restored river and buffer zone, which the improvements to Black Rock Canal Park provide, will be beneficial to the new and existing enterprises that are targeted for these Corridors.

The Comprehensive Plan also emphasizes the importance of the Ellicott street plan and Olmsted park system. The location of Black Rock Canal Park along Niagara Street (one of Ellicott's radial streets), the Niagara River, and the Riverwalk (a pedestrian and bicycle path that connects the Olmsted parks and other parks along the Buffalo-Niagara waterfront) makes the park an important component of the physical structure and character of the city. The Plan states that repairs and improvements to this structure can help leverage other investments important to reversing Buffalo's decline. Specifically, the Plan calls for the redevelopment, from end to end, of each of the radial streets that emanate from Ellicott's original radial and grid plan, including Niagara Street. According to the Plan, appropriate improvements include paving, landscaping, trees, traffic calming, and redevelopment of properties along the radials. The plan for Black Rock Canal Park proposes such improvements to Niagara Street at the park's entrance.

The Comprehensive Plan incorporates by reference several other planning documents that are supported by the proposed improvements at Black Rock Canal Park. These include the City of Buffalo Local Waterfront Revitalization Plan (LWRP), the Buffalo Waterfront Corridor Initiative, the master plan for the Buffalo Olmsted Park System, and the community/neighborhood plans of the Good Neighbors Planning Alliance.

Queen City in the 21st Century: Local Waterfront Revitalization Program (LWRP) (2007)

The City of Buffalo's LWRP is a strategy to coordinate local, state and federal actions to achieve Buffalo's goals for its waterfront. The vision for the city is to reestablish the waterfront as a thriving and vital part of the community and a destination for tourism and economic activity. While the past focused on the waterfront as a center for industrial and maritime operations, the future use of this area is envisioned to include a mix of uses, with parks, recreation and tourism attractions blending with businesses, marine commercial uses and light manufacturing activities.[1]

The LWRP includes thirteen broad policies that stipulate local action to protect environmental, historic, and visual characteristics of the waterfront, promote appropriate economic uses, and expand public waterfront access. Many of these policies are directly applicable to Black Rock Canal Park. The following is a list of the LWRP policies.

Developed Waterfront Policies

- Foster a pattern of development in the waterfront area that enhances community character, preserves open space, makes efficient use of infrastructure, makes beneficial use of a waterfront location, and minimizes adverse effects of development (protecting the quality of life in Riverside and Black Rock is specifically mentioned in the details of this policy)
- Preserve historic resources in the waterfront area

1 City of Buffalo Local Waterfront Revitalization Program. IV-2 p.

- Enhance visual quality and protect outstanding scenic resources

Natural Waterfront Policies

- Minimize loss of life, structures and natural resources from flooding and erosion
- Protect and improve water resources
- Protect and restore ecological resources, including significant fish and wildlife habitats, wetlands and rare ecological communities
- Protect and improve air quality in the waterfront area
- Minimize environmental degradation from solid waste and hazardous substances and wastes

Public Waterfront Policies

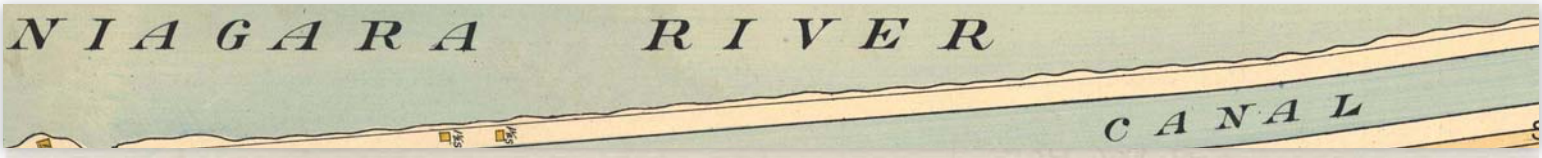
- Provide for public access to, and recreational use of, coastal waters, public lands and public resources in the waterfront area

Working Waterfront Policies

- Protect existing water-dependent uses, promote the siting of new water-dependent uses in suitable locations, and support efficient harbor operations
- Promote the sustainable use of living marine resources
- Protect existing agricultural lands
- Promote appropriate use and development of energy and mineral resources (including energy efficient design, green building principles and recycling)

General recommendations in the LWRP that apply to the city's entire waterfront include the provision of additional: water-dependent and water-enhanced facilities and amenities for public use, vehicular access and parking, boating access to local waterways, access for recreational fishing, access to public transportation opportunities, wayfinding to inform the public about waterfront attractions, wetland protection and habitat restoration, safety and accessibility, and convenient access on a year-round basis. The LWRP also acknowledges that water quality is another area of importance for maintaining a high quality waterfront area. Quality considerations include the management of both point and non-point source pollution. Water quality protection and improvement must be accomplished through a combination of managing new, and mitigating and/or remediating existing, sources of pollution. In certain areas with existing water quality impairments, aggressive remediation measures are needed.

The LWRP includes several recommended actions and projects specific to the area that includes Black Rock Canal Park. The LWRP recommends that interpretative signage is installed to recognize the historic Village of Black Rock, its efforts to be the western terminus of the Erie Canal (the Village of Black Rock lost this advantage to the Village of Buffalo), and the existing federal lock on the Black Rock Canal. The LWRP also acknowledges that the I-190 cuts this area off from the river and severely limits access; it recommends that efforts should be made to identify locations where access improvements and linkages can be created or improved. The LWRP also recommends additional signage to inform and direct people to the existing waterfront parklands. Of the recommended projects listed in the LWRP, two are relevant to the Black Rock Canal Park. These are (1) the implementation of the Buffalo Sewer Authority's Combined Sewer Outfall Long Term Abatement Plan, which identifies options for eliminating the 63 combined sewer outfalls in the City, and (2) further improvements at Ontario Street Boat Launch, including better landscaping, reinforcement of the park's entrance from the Seaway Trail, and more sensitive paving at the boat launch.



Queen City Waterfront: Buffalo Waterfront Corridor Initiative (2007)

The Waterfront Corridor Initiative (WCI) is a complimentary implementation guide for the policies and projects identified in the LWRP. The WCI provides additional detail on several long term projects in the Black Rock – Riverside neighborhood. These include: further development at Harbour Place (high-density residential, mixed-use and maritime uses); revitalization of Niagara Street north of Forest Ave.; development and support of the Seaway Trail (Niagara Street); mixed-use, public access and interpretative development at the Black Rock Canal locks; and further study into the relocation of the I-190 in Riverside.

The Olmsted City – The Buffalo Olmsted Park System: Plan for the 21st Century (2008)

The Buffalo Olmsted Park System includes six major parks, multiple parkways, circles, and small spaces. It is a tremendous resource for the people of the Buffalo-Niagara Region. The entire system, conceived of by America's most famous landscape architect, Frederick Law Olmsted, Sr., is recognized as a cultural landscape, specifically a historic designed landscape, on the National Register of Historic Places. It is also the backbone of Buffalo's park and open space system, representing nearly sixty percent of all the parkland in the city.[2] The System Plan for the Olmsted Parks includes an overview of the history and significance of the park system, recommendation for each park and the rest of the system, and an implementation plan.

In its modern day context, the Olmsted system exists within the boundaries of the Niagara River Greenway, a system of green spaces and pathways that line the Niagara River. One of the seven guiding principles for restoration and management of the Olmsted Park System calls for expansion of the system to connect to parks throughout the city and to connect to the Niagara River Greenway and other trail systems. One of the 12 projects recommended for Riverside Park is the extension of park connections to the Niagara River Greenway and Washington and Towpath Parks. The location of Black Rock Canal Park along the Niagara River Greenway between Washington and Towpath parks implies that Black Rock Canal Park would be part of this recommended project.

Black Rock – Riverside Good Neighbors' Planning Alliance

The Black Rock – Riverside Good Neighbors' Planning Alliance has prepared two neighborhood plans relevant to Black Rock Canal Park. These are Building a Neighborhood of Choice: A Neighborhood Plan for the Riverside Planning Community (2007) and Historic Black Rock: War of 1812 Bicentennial Community Plan (2008). These plans highlight the history of Black Rock and Riverside communities and identify goals/recommendations to preserve and strengthen the communities.

The Neighborhood Plan for the Riverside Community includes information on the history of the Black Rock and Riverside neighborhoods and an inventory of existing conditions. It also identifies community goals and provides an action plan for their implementation. Several of the goals relate directly to Black Rock Canal Park. These goals, along with the identified implementation strategies, are listed below:

Create and maintain clean, safe waterfront parks, with a special focus on Towpath Park, Cornelius Creek Park, the Ontario Boat Launch/Black Rock Canal Park (proposed), and access to same

Implementation strategies:

- The hiring of a full-time county employee to control boat launch usage
- Installing a playground and park benches
- Improving and increase lighting
- Adding jet ski docks
- Installing temporary speed bumps
- Improving signage for the park (on Niagara Street) and for rules of the park
- Painting the breakwall and rails more attractive colors (change from current yellow to green or other color which blends with the surroundings)
- Encouraging increased police presence/surveillance at the parks

Improve image, cleanliness of main business streets (including Niagara and Ontario Streets)

2 The Olmsted City – The Buffalo Olmsted Park System: Plan for the 21st Century. 5 p.

Implementation strategies:

- Install planters and trash cans
- Plow sidewalks

The Historic Black Rock Community Plan includes information on the history of and recent accomplishments in the Black Rock neighborhood. The plan also outlines recommendations and an implementation strategy. Recommendations of the plan that are reinforced by the recommended improvements at Black Rock Canal Park include:

Preserve and strengthen community identity

Implementation strategies:

- Develop interpretative program and materials for local and regional history
- Create a local history museum

Revitalize Niagara Street commercial area and develop and market the area's positive attributes

Implementation strategies:

- Promote maritime activities (boating, birding, fishing, etc.)
- Leverage direct bike path/multi-use trail connections to downtown, Tonawandas, and Scajaquada Pathway

Enhance community walkability while leveraging existing transportation advantages

Implementation strategies:

- Plan and implement streetscape improvements at key intersection, gateway, and commercial and cultural corridors in Historic Black Rock (e.g. Niagara and Ontario Streets)
- Plan and implement traffic calming measures, such as roundabouts, textures paving in crosswalks, etc.
- Add wayfinding signage to effectively inform travelers as to highway entrances, neighborhood gateways, park entrances, historic and cultural attractions, and other neighborhood amenities.

Realize the potential of existing recreational assets and seize opportunities for new ones within the neighborhood (parks, recreation, waterfront)

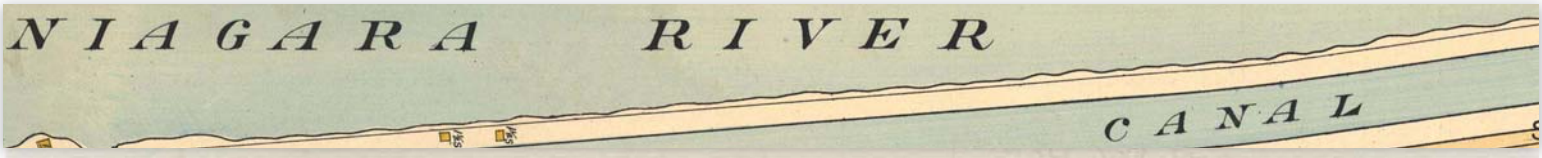
Implementation strategies:

- Support completion of planned improvements to Squaw Island Park, Tow Path Park, and the Ontario Street Boat Launch/Cornelius Creek Park.
- Support creation and maintenance of clean, safe parks, microparks, and greenway connections, and access to same.
- Add desirable community features into parks, microparks, scenic trails, etc., like lighting, seating furniture, wi-fi, game tables, skate spots, bubblers, water fountains, etc., without creating neighborhood nuisance behavior.
- Support new recreational trails/bike paths and greenway connections, and expansion and improvement of existing ones, like the Scajaquada Creek Bike Path, Seaway Trail, Riverwalk, to link parks/ recreational assets to themselves and to other neighborhoods.

Make Distinctive Gateways and Street Themes, Leverage Land Development, and Improve Urban Design

Implementation strategies:

- Add and customize, to the extent practicable, wayfinding signage, transit shelters, street furniture, bike racks, to leverage visual cues emanating from the neighborhood and its history.
- Expand park, garden and greenspace opportunities, taking advantage of emerging vacant lots.



Erie County Parks System Master Plan (2002)

The Erie County Parks System Master Plan is a framework for preservation and enhancement of the county parks over the next 15 to 20 years. It includes recommendations & management strategies for the parks, trails and waterfront. Recommendations & management strategies relevant to Black Rocks Canal Park include:

Niagara River Parks (Ontario St., Towpath, Isle View)

- Provide additional fishing accommodations with signage
- Strengthen connections with Riverwalk
- Provide better signage from Niagara Street

Waterfront Strategy

- Support the significant migratory bird corridor
- Ensure visibility and connectivity of waterfront parks
- Improve routing and landscaping of Riverwalk
- Add access points for fishing, canoe/kayak launches

Niagara River Greenway Plan and FEIS (2007)

The Niagara River Greenway Plan and FEIS establish a unified vision and principles for the Niagara River Greenway. The Greenway Plan sets priorities for near-term activities & discusses strategies for Greenway development. The stated vision of the Niagara River Greenway is:

> *The Niagara River Greenway is a world-class corridor of places, parks and landscapes that celebrates and interprets our unique natural, cultural, recreational, scenic and heritage resources and provides access to and connections between these important resources while giving rise to economic opportunities for the region.*

The Greenway Plan establishes 11 principles to guide greenway planning toward achieving the vision. These guiding principles include: Excellence (in projects), Sustainability, Accessibility, Ecological Integrity, Public Well-Being, Connectivity, Restoration, Authenticity (reflecting the culture/history of the location), Celebration (of history and culture), Partnerships, and Community Based (planning).

The vision for the Niagara River Greenway will become reality through hundreds of incremental steps and individual actions. Criteria for evaluating and forming projects and activities within the Greenway are established in the Greenway Plan. Projects approved for Greenway funding should help achieve the goals of the Greenway. Projects may be granted priority status if they meet the following priorities, based on the Plan's goals:

- Improved access to waterfront resources
- Development of an integrated trail and park system
- Restoration of the Niagara River ecosystem
- Interpretation and education about the region's cultural, natural and historic resources
- Revitalization of urban centers

Erie Canalway National Heritage Corridor Preservation and Management Plan (2006)

In December, 2000 the United States Congress established the Erie Canalway National Heritage Corridor. The legislation created the Erie Canalway National Heritage Corridor Commission and charged it with developing and implementing a Preservation and Management Plan for the Corridor. The Preservation and Management Plan outlines strategies for achieving six key goals:

- Protecting our heritage: the Corridor's historic and distinctive sense of place will be widely expressed and consistently protected.
- Conserving natural resources: the Corridor's natural resources will reflect the highest standards of environmental quality.
- Promoting recreation: the Corridor's recreation opportunities will achieve maximum scope and diversity, in harmony with the protection of heritage resources.
- Interpretation and orientation: the Corridor's current and future generations of residents and visitors will value and support preservation of its heritage.
- Economic revitalization: the Corridor's economic growth and heritage development will be balanced and self-sustaining.
- Tourism development: The Corridor will be a "must do" travel experience for regional, national, and international visitors.

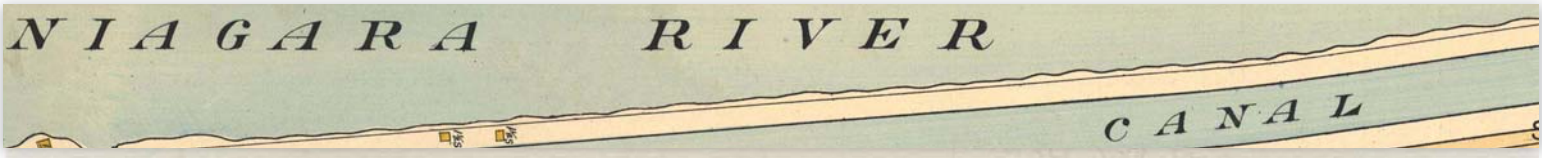
The Preservation and Management Plan addresses the kinds of historic and cultural resources in the Corridor, describes the threats to their survival, and proposes guidelines for new and ongoing heritage development efforts by public and private actors. It mentions that Buffalo, bypassed by the Barge Canal's new terminus at Tonawanda and North Tonawanda; filled in its canals and sealed them beneath streets and the elevated I-190 and that plans are currently underway to unearth and interpret Buffalo's original connection between the Erie Canal and Lake Erie.

The Preservation and Management Plan envisions that the Corridor's natural resources will reflect the highest standards of environmental quality. Two objectives have been identified as milestones toward this goal:

- Increase public awareness and support for conservation and enhancement of critical natural resources through education and interpretation.
- Encourage quality stewardship practices such as open space conservation, enhancement of water and air quality, and integrated regional management of natural resources including waterfronts.

With respect to promoting recreation, the Corridor's outreach and educational efforts, technical assistance, and targeted investments seek to: increase recreational and tour boating opportunities, develop side trails off the end-to-end Canalway Trail, and encourage open space conservation and the creation of a continuous greenway along the canal system. The Corridor will also support new recreational development designed to:

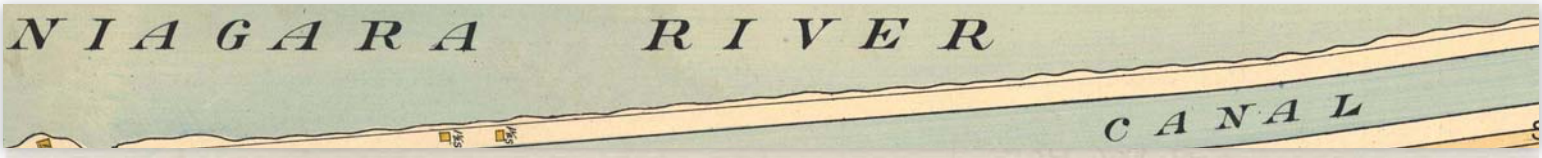
- Accommodate diverse uses, maximizing the utility of investments by serving multiple users, such as a marina that offers restrooms and bicycle rentals near a trailhead;
- Capitalize on existing infrastructure, facilitating linkages between existing recreational destinations and focusing on the canals and related resources;
- Enhance accessibility to recreational facilities for people with disabilities;
- Improve access to scenic areas, creating routes or views to natural features (e.g., waterfalls, cliffs) and historic structures (aqueducts, locks) that showcase the region's heritage;
- Protect natural resources, factoring the vulnerability of habitat and ecosystem function into planning for new or enhanced facilities;
- Uphold cultural significance, avoiding or mitigating impacts to archeological sites and character-defining features of the landscape; and
- Manage visitor use, providing adequate support infrastructure and services, and safety and orientation devices, to address the concerns of private property owners and others affected by new facilities.



The goal of Erie Canalway National Heritage Corridor's interpretation effort is to add a Corridor "overlay" to existing or planned interpretive and wayfinding developments, acknowledging their partnership with and inclusion in the Corridor. The Corridor will also seek ways to integrate its proposed interpretive and wayfinding frameworks and graphic identity into planned local and regional developments. Using consistent communication devices throughout the Corridor will reinforce its sense of place and help people grasp interpretive themes while meeting the needs of different audiences (e.g. local users versus Corridor travelers). Interpretive materials should be designed to humanizing the interpretative experience with specifics about real people and real communities. Major subjects that are well supported by Corridor resources and by the context of Black Rock Canal Park include engineering and technological invention and innovation; economic and labor history; commerce and industry; immigration, Euro-American settlement and community development; and cultural history.

The Corridor's economic revitalization strategy focuses on heritage development, an economic revitalization approach that respects the intrinsic value of the Corridor's assets and uses this to strengthen the Erie Canalway brand, expand upstate New York's economy, and help it compete in the market for place-based investments. Actions that strengthen an area's ability to compete for place-based investments include preservation, conservation, recreational and interpretive development, and regional partnership and community capacity-building; these actions should demonstrate respect for the people, the place, and the past. According to the Corridor Preservation and Management Plan, when communities blend a mix of heritage development and traditional economic development strategies — targeted tax incentives, infrastructure improvements, assembled and prepared commercial or industrial sites, and other techniques — they maximize their competitive advantages. Case studies in the Corridor Preservation and Management Plan revealed that while each community's experience is unique, all witnessed a similar pattern of initial public investments in quality of life infrastructure that, over time, resulted in additional private investment, a substantial increase in visitors and public activity along main streets and canals, and a stronger sense of community pride. The most successful efforts were founded on the ability to identify and coordinate community and economic development objectives, define land-use plans ahead of development, and leverage public finance to encourage private sector investments. Typically, local planning and economic development agencies, supported by citizen groups and elected officials, led the effort for public grants and financing to mitigate environmental conditions, restore waterfront access, and rebuild public infrastructure.

The Preservation and Management Plan also addresses tourism and marketing of the Corridor. The Plan seeks to balance resource protection with visitation and its economic contributions to local quality of life, recognizing that the best projects create amenities for both visitors and residents to enjoy. The Corridor's approach to marketing seeks to coordinate and focus local marketing efforts, recognizing that available activities and experiences can affect a traveler's destination decision.



Appendix 2

Structural Report

Above Water Inspection Report

Black Rock Canal Park Retaining Wall
City of Buffalo, Erie County

Fisher Associates, P.E., L.S., P.C. (Fisher Associates) performed a visual inspection of the Black Rock Canal Park Retaining Wall on December 8, 2009. Findings from this inspection are outlined in this report:

SCOPE OF WORK:

The Black Rock Canal Park retaining wall is a cantilever retaining wall located along the Niagara River waterfront north of the city of Buffalo, Erie County. The wall inspected was a Z-Style, 3/8" thick, interlocked steel sheet pile cantilevered retaining wall measuring approximately 2200 ft long. See the overall plan view for stationing of the wall. Record plans and the original date of construction are unknown for the structure. The wall includes openings for 3 small pipe culverts and a boat launch and has a return wall extension to protect a small fishing pier. (See photos 12, 13, 16, & 17)

The visual inspection included an above water inspection and water depth measurements along the wall. The above water inspection was performed with a boat and walking along the top of the wall. See Table 1 – Table of Wall Dimensions for depth of water and wall reveal.

SUMMARY OF CONDITIONS:

Overall the wall was in very good condition. From Station 0+00 to 17+15 the wall is near vertical and straight with tight interlocks. This portion of wall exhibits light surface rust and minor pitting from 1'-6" above the water surface to an unknown depth below the water. From Station 17+15 to 19+60 the wall swings from tipping toward to tipping away from the water and serpentines back and forth along its length. The interlocks are tight and one section of channel cap curves to fit the wall suggesting that tipping and curving are an as-built condition (See photo 10). There are some signs of wall deflection in the form of cracking and bulging of the asphalt pavement adjacent to the wall (See photo 8 & 10). The exact values of this deflection are unknown at this time but from the evidence appear to be minor. This portion of wall exhibits light surface rust and minor pitting from 2'-0" above the water surface to an unknown depth below the water. From Station 19+60 to 22+00 the wall is similar in condition to the first 1700 ft of wall length.

There are four locations where the wall is penetrated by a culvert buried in the backfill to an unknown extent. Three of the culverts are 18" diameter concrete pipe. (See photo 12) The concrete culverts most likely serve as drainage from I-190 or Niagara Street. These pipes are in good condition along with the penetrations through the sheet pile wall. The remaining culvert is a 12" diameter corrugated metal pipe, which serves as the storm drain for the parking lot. (See photo 13) This pipe appears to have impact damage along its exposed end, otherwise the pipe and wall penetration are in good condition.

Overall the channel cap along the top of the sheet piles is in good condition. From Station 0+00 to 15+75 the channel cap is comprised of a steel channel with a concrete overlay. The steel channel alone appears to be very good condition. The concrete overlay is in good condition with approximately 10 to 15 cracked locations and is spalled in at least 3 locations. See photo 9 for a typical view of the spalled concrete overlay. From Station 15+75 to 22+00 the channel cap is comprised of a steel channel. The steel channel appears to be in good condition except for the length between Stations 18+50 and 19+00 where the channel is missing. (See photo 10)

Overall the whaler connections are in good condition for the portions that can be seen. There are 5 to 10 locations were the 3/8" steel washer plate is missing for the connection bolt. (See photo 11) From Station 19+60

to 22+00 the whaler is located on the exposed side of the wall. All whaler connection items exhibit only minor corrosion.

Overall the pedestrian rail along the top of wall is in very good condition for the entire length of structure except for the length between Stations 18+00 and 19+40 where the rail is missing. (See photos 3, 8, & 10)

Water depth investigations revealed that the channel bottom adjacent to the wall had only one isolated location of silting or “soft bottom” with a maximum penetration of six inches. There were numerous locations of old timber piling just under the water surface adjacent to the wall providing evidence of previous structures in the vicinity. There are very small pockets of soil settlement behind the retaining wall. The maximum length of settlement parallel to the wall was one foot with a maximum length of nine inches perpendicular to the wall. There is evidence of repaving a “strip” adjacent to the concrete overlay on top of the wall. This evidence points more to soil settlement of the backfill placed behind the wall during the wall construction. Overall the soil adjacent to the wall does not exhibit any signs of overstress or settlement that would affect the wall integrity. (See photos 6, 7, 8, 10, 14, & 15)

CONCLUSIONS:

Overall this structure is in good to very good condition and does not show signs of major degradation. The missing steel channel cap and pedestrian railing should be repaired in the next year to provide the necessary safety measures along the top of the wall for pedestrian traffic. The spalls in the concrete overlay should be repaired in the next five years to prevent future degradation of the concrete overlay.

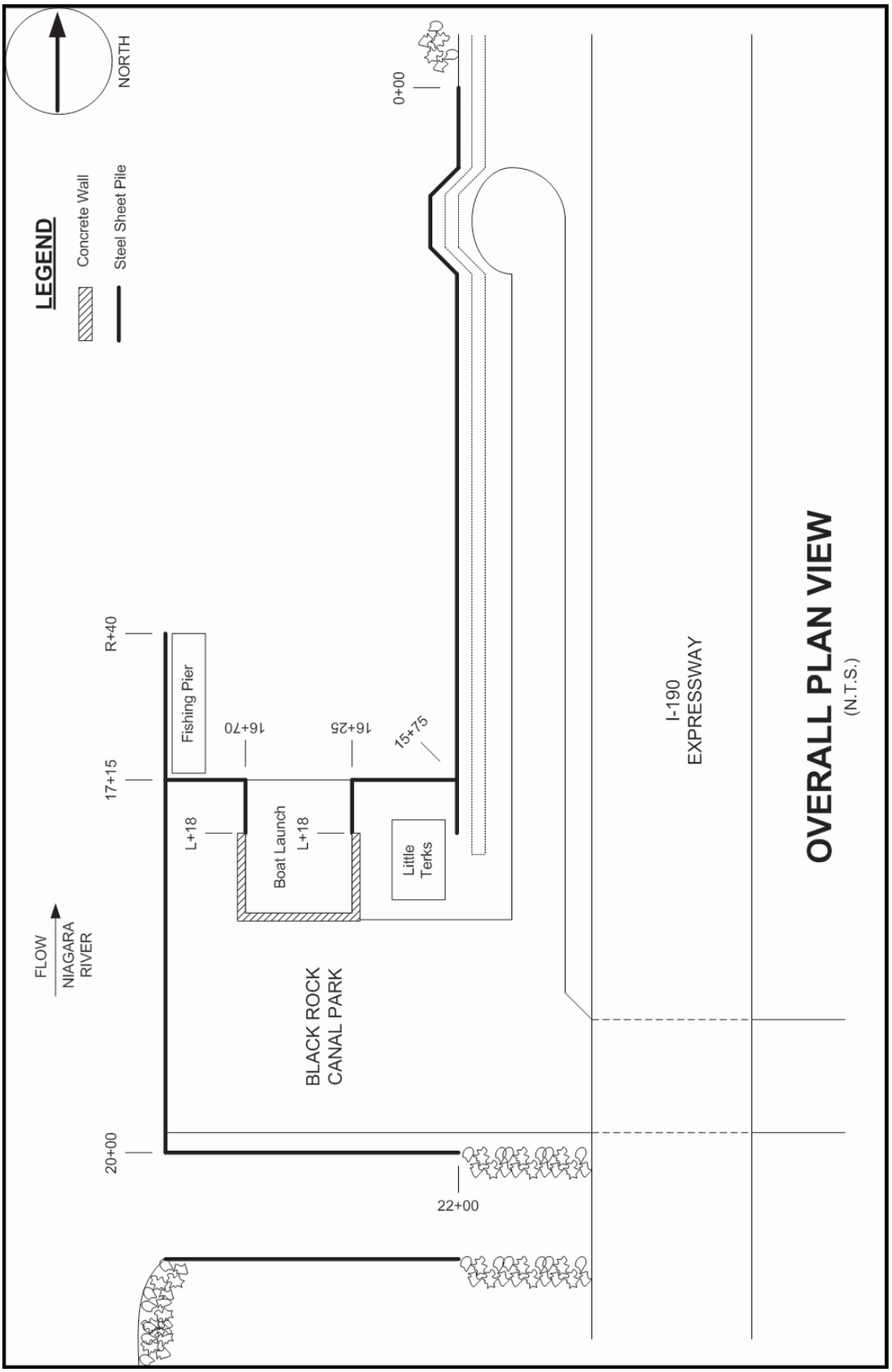

NORTH
LEGEND
Concrete Wall
Steel Sheet Pile
0+00
R+40
17+15
20+00
22+00
Fishing Pier
16+70
16+25
15+75
L+18
Boat Launch
L+18
Little Terks
FLOW
NIAGARA RIVER
BLACK ROCK CANAL PARK
I-190 EXPRESSWAY
OVERALL PLAN VIEW
(N.T.S.)

TABLE 1 – TABLE OF WALL DIMENSIONS				
Station	Depth of Water at face of wall	Reveal from water to top of wall	Depth of Silt at channel bottom	Comments
0+00	1.5 ft	8.1 ft	0.0 ft	
0+40	3.2 ft	8.6 ft	0.0 ft	
1+00	4.4 ft	8.6 ft	0.0 ft	
1+40	8.8 ft	8.8 ft	0.0 ft	
2+00	8.0 ft	8.6 ft	0.0 ft	
2+40	5.2 ft	8.8 ft	0.0 ft	
3+00	7.7 ft	8.5 ft	0.0 ft	
3+40	6.8 ft	8.5 ft	0.0 ft	Conc. Culvert (3+68)
4+00	2.3 ft	8.5 ft	0.0 ft	
4+40	6.4 ft	8.5 ft	0.0 ft	
5+00	4.8 ft	8.5 ft	0.0 ft	
5+40	3.5 ft	8.5 ft	0.0 ft	
6+00	6.1 ft	8.5 ft	0.0 ft	
6+40	5.9 ft	8.4 ft	0.0 ft	
7+00	6.5 ft	8.5 ft	0.0 ft	
7+40	6.8 ft	8.5 ft	0.0 ft	
8+00	4.1 ft	8.4 ft	0.0 ft	Conc. Culvert (8+00)
8+40	5.2 ft	8.5 ft	0.0 ft	
9+00	6.5 ft	8.6 ft	0.0 ft	
9+40	7.2 ft	8.5 ft	0.0 ft	
10+00	7.5 ft	8.4 ft	0.0 ft	Spall in Cap (10+20)
10+40	6.9 ft	8.5 ft	0.0 ft	
11+00	7.2 ft	8.5 ft	0.5 ft	Spall in Cap (11+10)
11+40	5.8 ft	8.6 ft	0.0 ft	
12+00	6.0 ft	8.6 ft	0.0 ft	Conc. Culvert (12+20)
12+40	5.4 ft	8.6 ft	0.0 ft	
13+00	5.0 ft	8.7 ft	0.0 ft	
13+40	5.1 ft	8.6 ft	0.0 ft	
14+00	4.2 ft	8.6 ft	0.0 ft	
14+40	4.5 ft	8.6 ft	0.0 ft	
15+00	3.0 ft	8.4 ft	0.0 ft	
15+40	2.5 ft	8.5 ft	0.0 ft	
16+00	1.0 ft	3.8 ft	0.0 ft	
16+25 R18	1.0 ft	3.6 ft	0.0 ft	Boat Launch
16+40	8.6 ft	3.6 ft	0.0 ft	
16+70 R18	1.0 ft	3.6 ft	0.0 ft	Boat Launch
17+00	Not Measured	Not Measured	Not Measured	
17+15 R40	16.8 ft	8.8 ft	0.0 ft	Fishing Pier Wall
17+40	4.7 ft	10.8 ft	0.0 ft	

TABLE 1 (CONT.) – TABLE OF WALL DIMENSIONS				
Station	**Depth of Water**	**Reveal from water to top of wall**	**Depth of Silt at channel bottom**	**Comments**
18+00	5.9 ft	10.6 ft	0.0 ft	CMP Culvert (18+00)
18+40	7.4 ft	10.6 ft	0.0 ft	
19+00	8.2 ft	10.8 ft	0.0 ft	
19+40	6.8 ft	10.7 ft	0.0 ft	
20+00	6.2 ft	10.7 ft	0.0 ft	
20+40	1.4 ft	8.2 ft	0.0 ft	Ped. Bridge (20+35)
21+00	0.0 ft	8.4 ft	0.0 ft	
21+40	1.0 ft	8.5 ft	0.0 ft	
22+00	0.0 ft	8.5 ft	0.0 ft	

PHOTOGRAPHS

Photo 1 – Overall view of begin of wall

Photo 2 – View of northern portion of wall looking North

Photo 3 – View of wall at parking lot looking North

Photo 4 – View of wall and pedestrian bridge over Cornelius Creek

Photo 5 – Overall view of end of wall

Photo 6 – View of top of wall at begin looking South

Photo 7 – View of top of northern portion of wall looking South

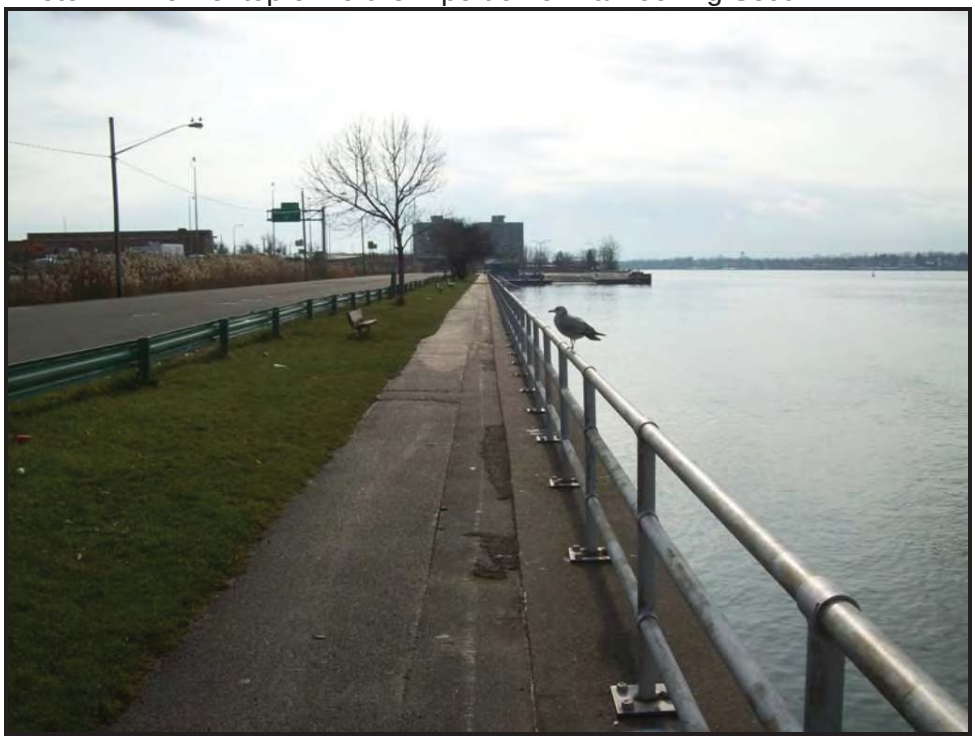


Photo 8 – View of top of parking lot portion of wall looking South

Photo 9 – Typical spall in concrete overlay on steel channel cap

Photo 10 – Missing channel cap along parking lot portion of wall

Photo 11 – Missing washer plates on whaler connection bolts

Photo 12 – Concrete culvert penetration thru wall (Stations 3+68, 8+00, & 12+20)

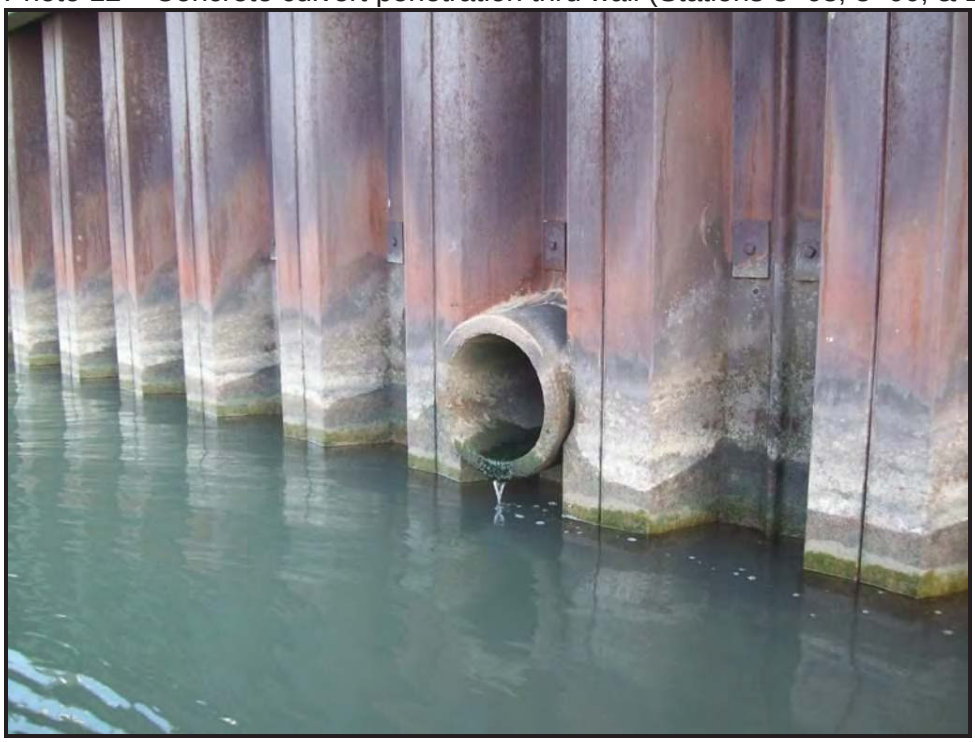


Photo 13 – Steel culvert penetration thru wall (Station 18+00)

Photo 14 – Settlement in wall backfill

Photo 15 – Typical view of backfill looking North

Photo 16 – View of boat launch

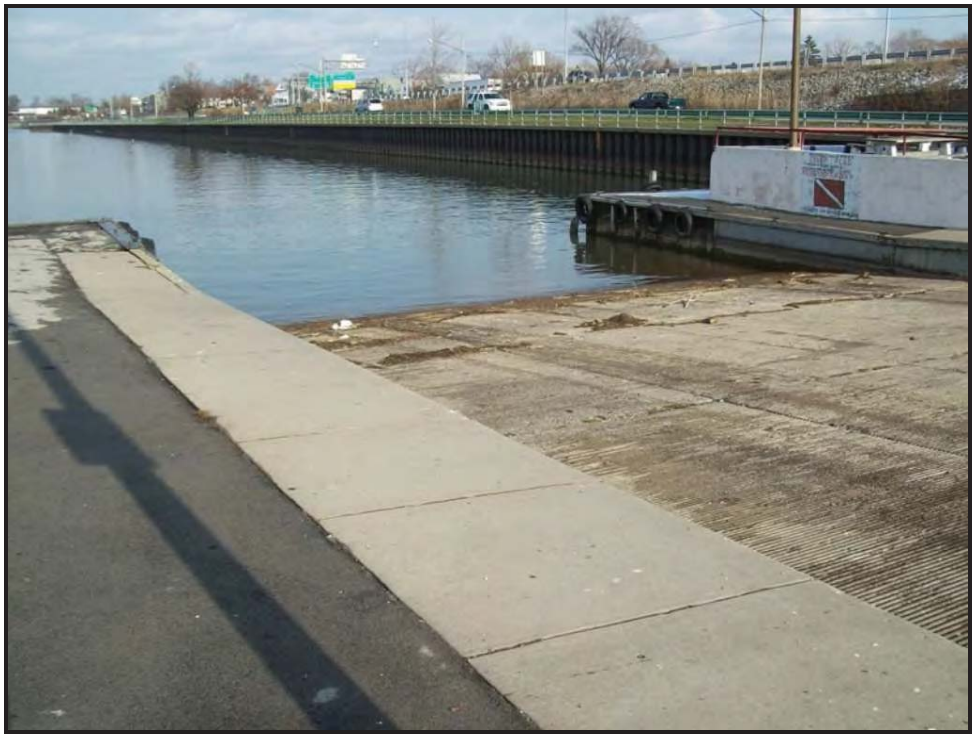
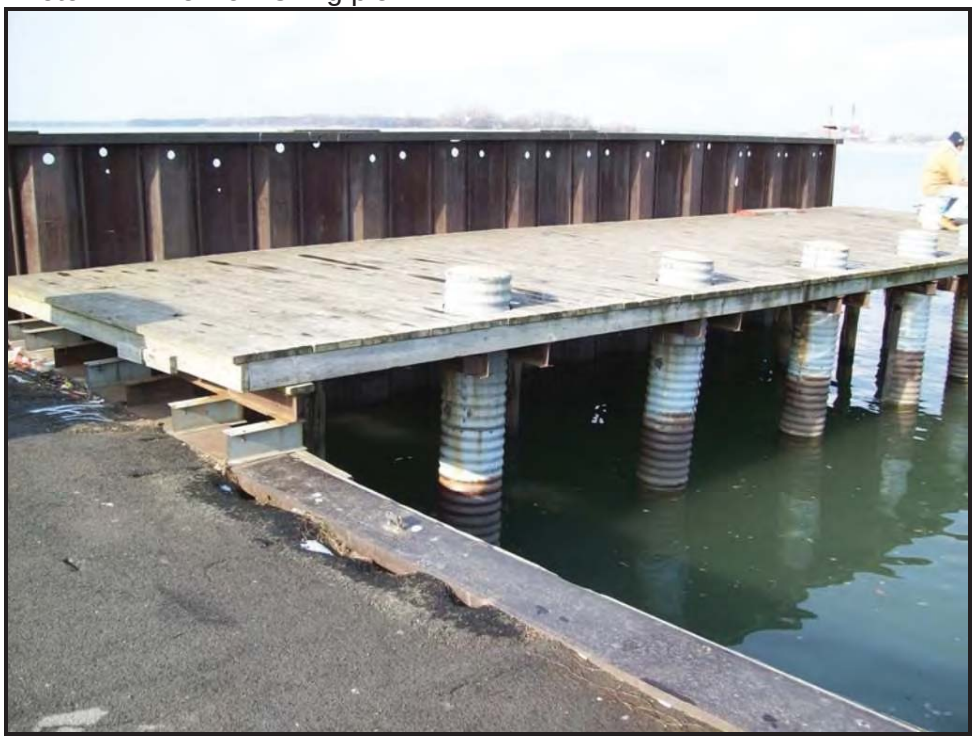
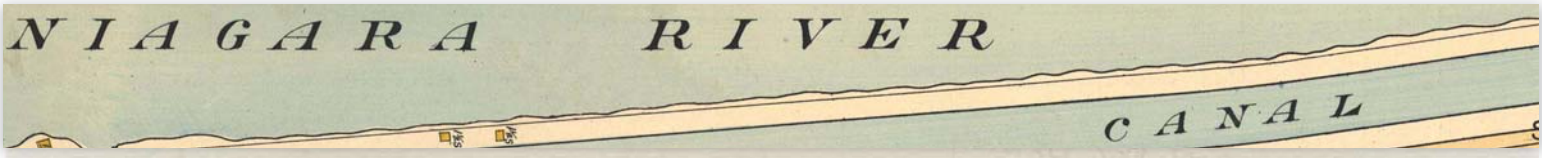


Photo 17 – View of fishing pier





Appendix 3

Appendix 3

Presenting the Concept

The Concept Plan for Black Rock Canal Park developed by the Blackrock - Riverside Good Neighbors Planning Alliance has been presented to a long list of groups, elected officials, and agencies, giving everyone a chance to provide their comments. The following is a list of those public forums and attendees:

2006

Members	Blackrock - Riverside Good Neighbors Planning Alliance
Maria Whyte	Erie County Legislator
Sam Hoyt	NYS Assembly

2007

Julie Barret-Oneill	Buffalo Niagara Riverkeeper
Gary Hall	Harbour Place Marine Sales
Bonnie Kane Lockwood	Office of Congressman Brian Higgins
Kofi Fynn Aikens and Raymond Li	US Fish & Wildlife Service
Eric Weinreber	New York State Police
Peter Smith	US Department of Homeland Security
Martin Broniz, Scott Patronik and Rick Lauricella	Erie County Sheriff's Office
Max Willig	Grant-Amherst Business Association
Timothy Wanamaker and Bill Parke	City of Buffalo Office of Strategic Planning
Todd Kufel	US Army Corps of Engineers
Richard Sterben	New York Corporate Realty
Albert Nihill	NYS Office of Parks, Recreation and Historic Preservation
Chris Hawley	Office of Senator Charles Schumer
Andy Sedita	Erie County Parks & Recreation Commissioner
Richard Tobe	City of Buffalo Commissioner of Economic Development, Permit and Inspection Services
Antoine Thompson	NYS Senate
Tom Brodfoerer	NY Walleye Association
Dave Faccini and Danny King	Niagara River Anglers Association
Dayton Lockwood	NY Walleye Association and Niagara Muskie
Joseph Golombek Jr	City of Buffalo, Councilman
Carol Ash	New York State Office of Parks, Recreation and Historic Preservation Commissioner
Committee	Erie County Energy and Environment
Committee	Riverside Business Association
Byron Brown	City of Buffalo, Mayor
Members	North District Boaters

2008

Chris Collins	Erie County Executive
James Hornung Sr.	Erie County Parks & Recreation Commissioner
Holly Sinnott	Erie County Environment & Planning Commissioner
Michael Balboni and Denise O'Donnell	New York State Homeland Security

2009

Laura Monk	Office of United States Senator Charles Schumer
Laura Krolczyk	Office of United States Senator Kirsten Gillibrand
Dennis Kozuch	Office of New York State Senator William Stachowski
Attendees	Buffalo Area Boat Show

2010

Members	North Tonawanda Power Squadron
Members	New York Walleye Association
Members	Antique and Classic Boat Association
Attendees	Buffalo Area Boat Show
Attendees	Great Upstate Boat Show

Project Steering Committee

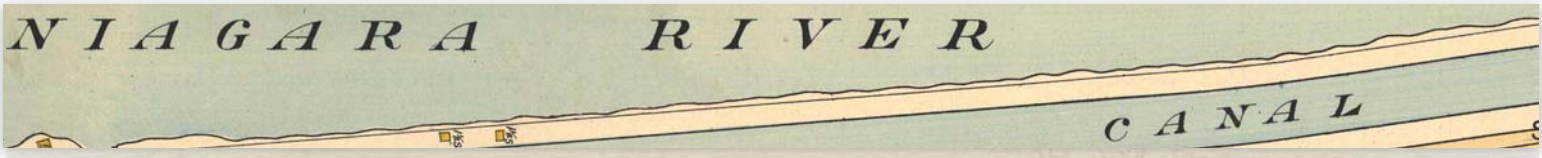
A committee was formed for this Feasibility Analysis to provide direction on contractual requirements, project scope, schedule, maintenance, funding, and other business-related issues. The committee was made up of individuals from agencies that have a direct stake in the project – they are either managing the project, funding it or will be maintaining it upon completion. The Project Steering Committee met three times during the Feasibility Analysis process. The committee was made of the following individuals:

Tom Dearing,	Erie County Dept. of Environment & Planning
Mark Rountree,	Erie County Dept. of Environment & Planning
Margaret Szczepaniec,	Black Rock Canal Park Steering Committee
Paul Leuchner,	Black Rock Canal Park Steering Committee
Maria Whyte,	Erie County Legislator
Jim Hornung Sr.,	Erie County Division of Parks & Recreation
Sharon Leighton,	New York State Canal Corporation
Thomas Sheehan,	New York State Canal Corporation
Bill Parke,	City of Buffalo Office of Strategic Planning
Joe MacMahon,	Office of New York State Assemblymember Sam Hoyt
Bill Nowak ,	Office of New York State Senator Antoine Thompson

Project Advisory Committee

A project Advisory Committee was formed to provide input on the park, its design components and project design. The committee is comprised of all project Steering Committee members (above), the following individuals from the previously-formed Black Rock Canal Park Steering Committee and other interested members of the community:

Gary Hall,	Harry's Harbour Place
Bryan Hinterberger,	US Army Corps of Engineers
Philip Berkeley,	US Army Corps of Engineers
Rob Belue,	Niagara Greenway Commission
Sharon Czajkowski,	Black Rock Canal Park Steering Committee
John Bauer,	Black Rock Canal Park Steering Committee
Robert Niemiec,	Black Rock Canal Park Steering Committee
Joanna Dickinson,	Black Rock Canal Park Steering Committee
Stevan Stipanovich,	Black Rock Canal Park Steering Committee
Margaret Faircloth,	Black Rock Canal Park Steering Committee
Lawrence Pernick Jr,	Black Rock Canal Park Steering Committee
Caleb Basilko,	Black Rock Canal Park Steering Committee
John McKee,	Black Rock Canal Park Steering Committee
Warren Glover,	Black Rock Canal Park Steering Committee
Julie O'Neill	Buffalo Niagara Riverkeeper
Robyn Drake,	Buffalo Niagara Riverkeeper
Councilmember Joe Golombek	City of Buffalo Common Council



Appendix 4

Construction Cost Worksheets

MODIFIED PLAN

TOTAL COST OF ALL PHASES: $16,040,563

	Element	Unit	Quant.	Unit Price	Amount
1. THE ENTRY PHASE	DEMOLISH EXISTING CURB	LF	600	$5	$3,000
	DEMOLISH LIGHTS	EA	2	$800	$1,600
	DEMOLISH CONCRETE SIDEWALK	CY	22	$150	$3,300
	1 1/2 " TOP COURSE 310 x 24	TON	69	$95	$6,555
	CONCRETE CURB	LF	600	$25	$15,000
	PATCH ROAD ALONG CURB	LF	600	$5	$3,000
	SIDEWALK 8'	LF	300	$50	$15,000
	PARKING LIGHTS - LED	EA	3	$6,000	$18,000
	INTERPRETIVE FEATURES	LUMP SUM	1	$10,000	$10,000
	SHADE TREE	EA	16	$400	$6,400
	SHRUB PLANTING	EA	30	$75	$2,250
	TRAFFIC SIGNAGE	LUMP SUM	1	$1,500	$1,500
	ENTRY SIGNAGE	LUMP SUM	1	$12,000	$12,000
				SUBTOTAL	*$97,605*
				20% CONTINGENCY	*$19,521*
				CONSTRUCTION TOTAL	*$117,126*
				BOUNDARY SURVEY	*$4,817*
				DESIGN AND CONSTRUCTION ADMIN. 12%	*$14,055*
				PHASE TOTAL	***$135,998***

MODIFIED PLAN

TOTAL COST OF ALL PHASES: $16,040,563

2. THE CENTRAL AREA PHASE

Element	Unit	Quant.	Unit Price	Amount
DEMOLISH LIGHTS	EA	6	$800	$4,800
DEMOLISH PLANTERS	EA	2	$600	$1,200
DEMOLISH ASPHALT	CY	990	$16	$15,840
EROSION CONTROL	LUMP SUM	1	$4,000	$4,000
CUT TOP OF SHEET PILE FLUSH	LF	375	$1	$375
CLEAN TRENCH DRAIN	EA	1	$2,000	$2,000
STORM PIPE 12"	LF	180	$28	$5,040
CATCH BASINS MEDIUM	EA	1	$3,500	$3,500
CATCH BASINS - LARGE	EA	1	$5,500	$5,500
SHEET PILE CAP - CONCRETE	LF	375	$125	$46,875
RAILING	LF	400	$150	$60,000
CANTILEVER OVERLOOK	EA	60	$2,700	$162,000
WATERFRONT LIGHTS	EA	4	$5,000	$20,000
WATERFRONT WALKWAY	LF	480	$125	$60,000
INTERPRETIVE SIGNAGE	EA	2	$4,000	$8,000
INTERPRETIVE FEATURE	LUMP SUM	1	$20,000	$20,000
ARMOR STONE SEAT WALLS	LF	300	$45	$13,500
BENCHES	EA	6	$1,200	$7,200
SOLAR TRASH COMPACTORS	EA	2	$3,500	$7,000
TOPSOIL	CY	250	$40	$10,000
LAWN SEED	SF	13750	$0	$5,500
SHADE TREE	EA	10	$400	$4,000
FLOWERING TREE	EA	8	$350	$2,800
PARKING LIGHTS - LED	EA	3	$7,000	$21,000
MISC GRADING	LUMP SUM	1	$4,000	$4,000
4" SUBBASE STONE	CY	33	$45	$1,485
4" BASE COURSE	TON	608	$85	$51,680
3" BINDER COURSE	TON	456	$90	$41,040
1 1/2 " TOP COURSE	TON	228	$95	$21,660
CONCRETE CURB AT PARKING	LF	1040	$22	$22,880
			SUBTOTAL	*$632,875*
			20% CONTINGENCY	*$126,575*
			CONSTRUCTION TOTAL	*$759,450*
			GEOTECHNICAL STUDY	*$15,000*
			DESIGN AND CONSTRUCTION ADMIN. 12%	*$91,134*
			PHASE TOTAL	***$865,584***

MODIFIED PLAN

TOTAL COST OF ALL PHASES: $16,040,563

	Element	Unit	Quant.	Unit Price	Amount
3. THE ROAD AND TURNAROUND PHASE	DEMOLISH LIGHTS	EA	8	$1,100	$8,800
	DEMOLISH ASPHALT 6" DEPTH - 29,350SF	CY	543	$19	$10,317
	SAWCUT EXISTING PAVING ON 2 SIDES	LF	2960	$2	$5,920
	REMOVE METAL GUARDRAIL	LF	1450	$8	$11,600
	EXCAVATION AND DISPOSAL	CY	800	$14	$11,200
	EMBANKMENT IN PLACE	CY	500	$10	$5,000
	DRAINAGE WORK	LUMP SUM	1	$20,000	$20,000
	EROSION CONTROL	LUMP SUM	1	$8,000	$8,000
	RETAINING WALL ON RIVER SIDE OF TURNAROUND	LF	200	$350	$70,000
	SUBBASE STONE AT TURNAROUND	CY	104	$65	$6,760
	ASPHALT BASE AT TURNAROUND 3"	TON	150	$90	$13,500
	GUARDRAIL AT TURNAROUND	LF	110	$110	$12,100
	ROADWAY STRIPPING	LF	1300	$1	$1,300
	PARKING BUMPERS	EA	35	$95	$3,325
	PARKING LIGHTS - LED	EA	15	$7,000	$105,000
	TOPSOIL	CY	600	$40	$24,000
	LAWN SEED	SF	40000	$0	$16,000
	SHADE TREE	EA	90	$400	$36,000
	FLOWERING TREE	EA	40	$350	$14,000
	NATURALIZING SHRUBS	EA	150	$75	$11,250
				SUBTOTAL	*$394,072*
				20% CONTINGENCY	*$78,814*
				CONSTRUCTION TOTAL	*$472,886*
				DESIGN AND CONSTRUCTION ADMIN. 12%	*$56,746*
				PHASE TOTAL	***$529,633***

MODIFIED PLAN

TOTAL COST OF ALL PHASES: $16,040,563

4. THE BOARDWALK PHASE	Element	Unit	Quant.	Unit Price	Amount
	REMOVE ASPHALT WALKWAY 4' X 1450	CY	75	$65	$4,875
	REMOVE RAILING	LF	1500	$10	$15,000
	18' CANTILEVERED FEATURE AREA	LF	140	$3,200	$448,000
	12 CANTILEVERED WALKWAY STRUCTURE	LF	680	$2,700	$1,836,000
	DECKING FOR WALKWAY	SF	10680	$15	$160,200
	WATERFRONT LIGHTS 100' O.C.- LED	EA	15	$6,000	$90,000
	8' ASPHALT BIKE PATH - ALL NEW	LF	730	$40	$29,200
	52" HIGH BICYCLE RAILING	LF	730	$45	$32,850
	ARMOR STONE SEAT WALL	LF	730	$65	$47,450
	12' WALKWAY FROM TURNAROUND NORTH	LF	560	$125	$70,000
	10' ASPHALT BIKE PATH - TURNAROUND NORTH	LF	570	$70	$39,900
	PICNIC SHELTERS	EA	1	$30,000	$30,000
	RAILING	LF	1500	$150	$225,000
	BENCHES	EA	10	$1,200	$12,000
	INTERPRETIVE SIGNAGE	EA	8	$6,000	$48,000
	TRASH CONTAINERS - SOLAR COMPACTORS	EA	3	$3,500	$10,500
				SUBTOTAL	*$3,098,975*
				20% CONTINGENCY	*$619,795*
				CONSTRUCTION TOTAL	*$3,718,770*
				GEOTECHNICAL ANALYSIS	*$15,000*
				DESIGN AND CONSTRUCTION ADMIN. 12%	*$446,252*
				PHASE TOTAL	***$4,180,022***

5. THE MIXED USE BUILDING PHASE	Element	Unit	Quant.	Unit Price	Amount
	DEMOLISH RESTROOM/CONCESSION	LUMP SUM	1	$7,000	$7,000
	MULTI-PURPOSE 3 STORY 3,200/FLOOR LEED	SF	9600	$300	$2,880,000
	SANITARY PUMP STATION	EA	1	$4,500	$4,500
	PATIO AROUND BLDG	SF	2100	$15	$31,500
	SUBTOTAL				*$2,923,000*
				20% CONTINGENCY	*$584,600*
				CONSTRUCTION TOTAL	*$3,507,600*
				GEOTECHNICAL STUDY	*$5,000*
				DESIGN AND CONSTRUCTION ADMIN. 12%	*$420,912*
				PHASE TOTAL	***$3,933,512***

MODIFIED PLAN

TOTAL COST OF ALL PHASES: $16,040,563

	Element	Unit	Quant.	Unit Price	Amount
6. THE BOAT LAUNCH AND PIER PHASE	REMOVE WOOD DOCK AND PILINGS	EA	1	$5,000	$5,000
	REINFORCE EXISTING SHEET PILE PIER	LF	50	$500	$25,000
	300' PIER EXTENSION SHEETING AND 6' WALK	LF	300	$3,500	$1,050,000
	PIER EXTENSION - RAILING	LF	300	$100	$30,000
	FINGER DOCKS (BOAT SLIPS - 3' WIDE FLOATING)	EA	20	$5,000	$100,000
	BOATERS PUMP STATION	EA	1	$10,000	$10,000
	FISHING HUT AND WEIGH STATION	EA	1	$30,000	$30,000
				SUBTOTAL	*$1,250,000*
				20% CONTINGENCY	*$250,000*
				CONSTRUCTION TOTAL	*$1,500,000*
				DESIGN AND CONSTRUCTION ADMIN. 12%	*$180,000*
				PHASE TOTAL	***$1,680,000***

MODIFIED PLAN

TOTAL COST OF ALL PHASES: $16,040,563

	Element	Unit	Quant.	Unit Price	Amount
7. THE SOUTH END PHASE	DEMOLISH LIGHTS	EA	5	$800	$4,000
	DEMOLISH CONCRETE PAVING 6250 SF	CY	76	$65	$4,940
	DEMOLISH BIKE PATH TO 6" - 440 LF X 12'	CY	97	$15	$1,455
	MISC CLEAR AND GRUB	LUMP SUM	1	$4,000	$4,000
	REMOVE RAILING	LF	260	$10	$2,600
	EROSION CONTROL	LUMP SUM	1	$4,000	$4,000
	REMOVE THRUWAY FENCE	LF	440	$5	$2,200
	WALKWAY 12' ASPHALT	LF	450	$75	$33,750
	RAILING	LF	270	$150	$40,500
	FENCE 6' VINYL COATED AT THRUWAY	LF	440	$20	$8,800
	PICNIC SHELTER	EA	1	$30,000	$30,000
	INTERPRETIVE SIGNAGE	EA	3	$6,000	$18,000
	WATERFRONT LIGHTS 100' O.C.- LED	EA	4	$5,000	$20,000
	CURVED OVERLOOK	LF	85	$200	$17,000
	BENCHES	EA	8	$1,200	$9,600
	TRASH CONTAINERS - SOLAR COMPACTORS	EA	3	$3,500	$10,500
	TOPSOIL 10,500 SF X 6"	CY	194	$40	$7,760
	LAWN SEED	SF	13750	$0	$5,500
	SHADE TREE	EA	35	$400	$14,000
	FLOWERING TREE	EA	15	$350	$5,250
	4' CHAINLINK FENCE VINYL COATED	LF	600	$18	$10,800
	SIGNAGE, BENCHES	LUMP SUM	1	$5,000	$5,000
	SHELTER	LUMP SUM	1	$15,000	$15,000
	SURFACE- STONE DUST .42 ACRE @ 4"	CY	224	$60	$13,440
				SUBTOTAL	*$288,095*
				20% CONTINGENCY	*$57,619*
				CONSTRUCTION TOTAL	*$345,714*
				DESIGN AND CONSTRUCTION ADMIN. 12%	*$41,486*
				PHASE TOTAL	***$387,200***

MODIFIED PLAN

TOTAL COST OF ALL PHASES: $16,040,563

	Element	Unit	Quant.	Unit Price	Amount
8. THE CREEK PHASE	CON/SPAN COVER	LF	225	$14,000	$3,150,000
	FILL OVER COVER	CY	765	$15	$11,475
	TOPSOIL OVER COVER	CY	250	$40	$10,000
	LAWN SEED	SF	13750	$0	$5,500
	CANAL-THEMED PLAY AREA	EA	1	$40,000	$40,000
				SUBTOTAL	*$3,216,975*
				20% CONTINGENCY	*$643,395*
				CONSTRUCTION TOTAL	*$3,860,370*
				GEOTECHNICAL STUDY	*$5,000*
				DESIGN AND CONSTRUCTION ADMIN. 12%	*$463,244*
				PHASE TOTAL	***$4,328,614***

ALTERNATE PLAN

TOTAL COST OF ALL PHASES: $4,947,375

	Element	Unit	Quant.	Unit Price	Amount
1. THE ENTRY PHASE	DEMO EXISTING CURB	LF	600	$5	$3,000
	DEMO LIGHTS	EA	2	$800	$1,600
	DEMO CONCRETE SIDEWALK	CY	22	$150	$3,300
	1 1/2 " TOP COURSE ASPHALT 310 x 24	TON	69	$95	$6,555
	CONCRETE CURB	LF	600	$25	$15,000
	PATCH ROAD ALONG CURB	LF	600	$5	$3,000
	SIDEWALK 8'	LF	300	$50	$15,000
	PARKING LIGHTS - LED	EA	3	$6,000	$18,000
	INTERPRETIVE FEATURES	LUMP SUM	1	$10,000	$10,000
	SHADE TREE	EA	16	$400	$6,400
	SHRUB PLANTINGS	EA	30	$75	$2,250
	TRAFFIC SIGNAGE	LUMP SUM	1	$1,500	$1,500
	ENTRY SIGNAGE	LUMP SUM	1	$12,000	$12,000
				SUBTOTAL	$97,605
				20% CONTINGENCY	$19,521
				CONSTRUCTION TOTAL	$117,126
				BOUNDARY SURVEY	$4,817
				DESIGN AND CONSTRUCTION ADMIN. 12%	$14,055
				PHASE TOTAL	**$135,998**

ALTERNATE PLAN

TOTAL COST OF ALL PHASES: $4,947,375

	Element	Unit	Quant.	Unit Price	Amount
2. THE CENTRAL AREA PHASE	DEMOLISH LIGHTS	EA	6	$800	$4,800
	DEMOLISH PLANTERS	EA	2	$600	$1,200
	DEMOLISH ASPHALT	CY	990	$16	$15,840
	EROSION CONTROL	LUMP SUM	1	$4,000	$4,000
	CUT TOP OF SHEET PILE FLUSH	LF	375	$1	$375
	CLEAN TRENCH DRAIN	EA	1	$2,000	$2,000
	STORM PIPE 12"	LF	180	$28	$5,040
	CATCH BASINS MEDIUM	EA	1	$3,500	$3,500
	CATCH BASINS - LARGE	EA	1	$5,500	$5,500
	SHEET PILE CAP - CONCRETE	LF	375	$125	$46,875
	RAILING	LF	400	$150	$60,000
	CANTILEVER OVERLOOK	EA	60	$2,700	$162,000
	WATERFRONT LIGHTS	EA	4	$5,000	$20,000
	WATERFRONT WALKWAY	LF	480	$125	$60,000
	INTERPRETIVE SIGNAGE	EA	2	$4,000	$8,000
	INTERPRETIVE FEATURE	LUMP SUM	1	$20,000	$20,000
	ARMOR STONE SEAT WALLS	LF	300	$45	$13,500
	BENCHES	EA	6	$1,200	$7,200
	SOLAR TRASH COMPACTORS	EA	2	$3,500	$7,000
	TOPSOIL	CY	250	$40	$10,000
	LAWN SEED	SF	13750	$0	$5,500
	SHADE TREE	EA	10	$400	$4,000
	FLOWERING TREE	EA	8	$350	$2,800
	PARKING LIGHTS - LED	EA	3	$7,000	$21,000
	MISC GRADING	LUMP SUM	1	$4,000	$4,000
	4" SUBBASE STONE	CY	33	$45	$1,485
	4" BASE COURSE	TON	608	$85	$51,680
	3" BINDER COURSE	TON	456	$90	$41,040
	1 1/2 " TOP COURSE	TON	228	$95	$21,660
	CONCRETE CURB AT PARKING	LF	1040	$22	$22,880
				SUBTOTAL	*$632,875*
				20% CONTINGENCY	*$126,575*
				CONSTRUCTION TOTAL	*$759,450*
				GEOTECHNICAL STUDY	*$15,000*
				DESIGN AND CONSTRUCTION ADMIN. 12%	*$91,134*
				PHASE TOTAL	***$865,584***

ALTERNATE PLAN

TOTAL COST OF ALL PHASES: $4,947,375

3. THE ROAD AND THE TURNAROUND PHASE

Element	Unit	Quant.	Unit Price	Amount
DEMO LIGHTS	EA	8	$1,100	$8,800
DEMO ASPHALT 6" DEPTH - 29,350SF	CY	543	$19	$10,317
SAWCUT EXISTING PAVING ON 2 SIDES	LF	2960	$2	$5,920
REMOVE METAL GUARDRAIL	LF	1450	$8	$11,600
EXCAVATION AND DISPOSAL	CY	800	$14	$11,200
EMBANKMENT IN PLACE	CY	650	$10	$6,500
DRAINAGE WORK	LUMP SUM	1	$10,000	$10,000
EROSION CONTROL	LUMP SUM	1	$8,000	$8,000
RETAINING WALL ON RIVER SIDE OF TURNAROUND	LF	200	$350	$70,000
SUBBASE STONE AT TURNAROUND	CY	104	$65	$6,760
ASPHALT BASE AT TURNAROUND 3"	TON	150	$90	$13,500
GUARDRAIL AT TURNAROUND	LF	110	$110	$12,100
ROADWAY & PARKING ASPHALT 1 1/2" TOP 23770SF	TON	220	$95	$20,900
ROADWAY STRIPPING	LF	1200	$1	$1,200
PARKING BUMPERS	EA	35	$95	$3,325
PARKING LIGHTS - LED	EA	15	$7,000	$105,000
TOPSOIL	CY	595	$40	$23,800
LAWN SEED	SF	45000	$0	$18,000
SHADE TREE	EA	50	$400	$20,000
FLOWERING TREE	EA	25	$350	$8,750
NATURALIZING SHRUBS	EA	150	$75	$11,250
			SUBTOTAL	*$386,922*
			20% CONTINGENCY	*$77,384*
			CONSTRUCTION TOTAL	*$464,306*
			DESIGN AND CONSTRUCTION ADMIN. 12%	*$55,717*
			PHASE TOTAL	***$520,023***

ALTERNATE PLAN

TOTAL COST OF ALL PHASES: $4,947,375

4. THE BOARDWALK PHASE	Element	Unit	Quant.	Unit Price	Amount
	REMOVE RAILING	LF	1500	$10	$15,000
	REMOVE ASPHALT WALKWAY 4' X 1450	CY	75	$65	$4,875
	8'CANTILEVERED BUMPOUTS 3 @ 50'	LF	150	$2,000	$300,000
	12' WALKWAY FROM TURNAROUND SOUTH	LF	750	$65	$48,750
	WATERFRONT LIGHTS 100' O.C.- LED	EA	15	$6,000	$90,000
	10' ASPHALT BIKE PATH - FROM TURNAROUND NORTH	LF	590	$70	$41,300
	12' WALKWAY FROM TURNAROUND NORTH	LF	1480	$125	$185,000
	ARMOR STONE SEAT WALL	LF	630	$65	$40,950
	PICNIC SHELTERS	EA	2	$30,000	$60,000
	RAILING	LF	1500	$150	$225,000
	BENCHES	EA	12	$1,200	$14,400
	INTERPRETIVE SIGNAGE	EA	8	$6,000	$48,000
	TRASH CONTAINERS	EA	6	$800	$4,800
				SUBTOTAL	$1,078,075
				20% CONTINGENCY	$215,615
				CONSTRUCTION TOTAL	$1,293,690
				GEOTECHNICAL ANALYSIS	$15,000
				DESIGN AND CONSTRUCTION ADMIN. 12%	$155,243
				PHASE TOTAL	***$1,463,933***

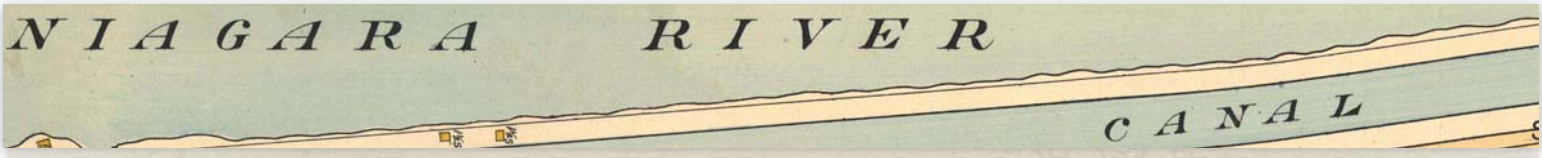
5. THE MIXED USE BUILDING PHASE	Element	Unit	Quant.	Unit Price	Amount
	DEMO BUILDING	LUMP SUM	1	$7,000	$7,000
	MULTI-PURPOSE BUILDING 1 STORY	SF	2000	$275	$550,000
	SANITARY PUMP STATION	EA	1	$2,500	$2,500
	PATIO AROUND BLDG	SF	3000	$15	$45,000
				SUBTOTAL	*$604,500*
				20% CONTINGENCY	*$120,900*
				CONSTRUCTION TOTAL	*$725,400*
				GEOTECHNICAL STUDY	*$5,000*
				DESIGN AND CONSTRUCTION ADMIN. 12%	*$87,048*
				PHASE TOTAL	***$817,448***

ALTERNATE PLAN

TOTAL COST OF ALL PHASES: $4,947,375

6. THE BOAT LAUNCH AND PIER PHASE

Element	Unit	Quant.	Unit Price	Amount
REMOVE WOOD DOCK AND PILINGS	EA	1	$5,000	$5,000
REINFORCE EXISTING SHEET PILE PIER	LF	50	$500	$25,000
PIER EXTENSION 70' SHEETING AND 6' WALK	EA	70	$3,500	$245,000
PIER EXTENSION - RAILING	LF	70	$100	$7,000
FINGER DOCKS (BOAT SLIPS - 3' WIDE FLOATING)	EA	9	$5,000	$45,000
FISHING HUT AND WEIGH STATION	EA	1	$30,000	$30,000
			SUBTOTAL	*$357,000*
			20% CONTINGENCY	*$71,400*
			CONSTRUCTION TOTAL	*$428,400*
			DESIGN AND CONSTRUCTION ADMIN. 12%	*$51,408*
			PHASE TOTAL	***$479,808***



ALTERNATE PLAN

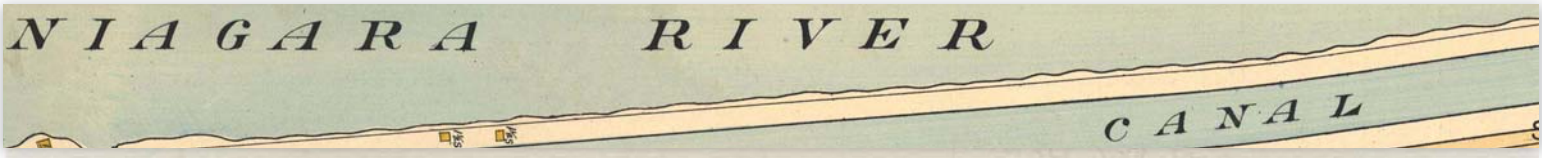
TOTAL COST OF ALL PHASES: $4,947,375

	Element	Unit	Quant.	Unit Price	Amount
7. THE SOUTH END PHASE	DEMO LIGHTS	EA	5	$800	$4,000
	DEMO CONCRETE PAVING 6250 SF	CY	76	$65	$4,940
	DEMO BIKE PATH TO 6" - 440 LF X 12'	CY	97	$15	$1,455
	MISC CLEAR AND GRUB	LUMP SUM	1	$4,000	$4,000
	REMOVE RAILING	LF	260	$10	$2,600
	EROSION CONTROL	LUMP SUM	1	$4,000	$4,000
	REMOVE THRUWAY FENCE	LF	440	$5	$2,200
	ARMOR STONE SEAT WALLS	LF	200	$45	$9,000
	WALKWAY 8' ASPHALT	LF	250	$40	$10,000
	WALKWAY 12' ASPHALT	LF	450	$75	$33,750
	RAILING	LF	270	$150	$40,500
	FENCE 6' VINYL COATED AT THRUWAY	LF	440	$20	$8,800
	PICNIC SHELTER	EA	1	$30,000	$30,000
	INTERPRETIVE SIGNAGE	EA	3	$6,000	$18,000
	WATERFRONT LIGHTS 100' O.C.- LED	EA	4	$5,000	$20,000
	BENCHES	EA	8	$1,200	$9,600
	TRASH CONTAINERS - SOLAR COMPACTOR	EA	3	$3,500	$10,500
	TOPSOIL 10,500 SF X 6"	CY	194	$40	$7,760
	LAWN SEED	SF	13750	$0	$5,500
	SHADE TREE	EA	35	$400	$14,000
	FLOWERING TREE	EA	15	$350	$5,250
	4' CHAINLINK FENCE VINYL COATED	LF	600	$18	$10,800
	SIGNAGE, BENCHES	LUMP SUM	1	$5,000	$5,000
	SHELTER	LUMP SUM	1	$15,000	$15,000
	SURFACE- STONE DUST .42 ACRE @ 4"	CY	224	$60	$13,440
				SUBTOTAL	$290,095
				20% CONTINGENCY	$58,019
				CONSTRUCTION TOTAL	$348,114
				DESIGN AND CONSTRUCTION ADMIN. 12%	$41,774
				PHASE TOTAL	***$389,888***

ALTERNATE PLAN

TOTAL COST OF ALL PHASES: $4,947,375

	Element	Unit	Quant.	Unit Price	Amount
8. THE CREEK PHASE	DEMO LOW SHEET PILE WALL	LUMP SUM	1	$5,000	$5,000
	MISC CLEAR AND GRUB	LUMP SUM	1	$4,000	$4,000
	GRADE SITE	LUMP SUM	1	$5,000	$5,000
	TOPSOIL 10,500 SF X 6"	CY	150	$40	$6,000
	NATURALIZING SHRUBS	EA	35	$75	$2,625
	PEDESTRIAN BRIDGE $100 SF - 70 X 12 PLUS FDN	EA	1	$180,000	$180,000
				SUBTOTAL	*$204,385*
				20% CONTINGENCY	*$40,877*
				CONSTRUCTION TOTAL	*$245,262*
				DESIGN AND CONSTRUCTION ADMIN. 12%	*$29,431*
				PHASE TOTAL	***$274,693***



Appendix 5

Meeting Summaries

design based PLANNING
peter j. smith & company, inc.

Urban Design
Landscape Architecture
Economic Development
Planning

Feasibility Analysis
Black Rock Canal Park
Public Meeting Summary

Meeting Date: August 24, 2010
Issue Date: August 30, 2010
Location: Northwest Buffalo Community Center
In Attendance: Margaret Szczepaniec – Black Rock Canal Park Steering Committee
Sharon Czajkowski - Black Rock Canal Park Steering Committee
Maggie Faircloth - Black Rock Canal Park Steering Committee
John Bauer - Black Rock Canal Park Steering Committee
Robert Niemiec - Black Rock Canal Park Steering Committee
Paul Leuchner - Black Rock Canal Park Steering Committee
Joanna Dickinson - Black Rock Canal Park Steering Committee
Evelyn Vossler – Black Rock–Riverside Good Neighbors Plng. Alliance, co-chair
Jim Vossler – resident
Lisa M. Czajkowski – resident
Yuri Hreshchyshyn - resident
Bryan Hinterberger – US Army Corps of Engineers
Tom Sheehan – NYS Canal Corporation
Melissa Cummings – representing Erie County Legislator Maria Whyte
Bill Nowak – representing NYS Senator Antoine Thompson
Bill Parke – City of Buffalo Office of Strategic Planning
Jim Hornung – Erie County Division of Parks and Recreation
Tom Dearing - Erie County Dept. of Environment & Planning
Mark Rountree – Erie County Dept. of Environment & Planning
Dan Sundell - peter j. smith & company, inc.
Molly Vendura - peter j. smith & company, inc.

Meeting Summary:

Tom Dearing introduced the purpose of the meeting: to review the draft Feasibility Study prepared by peter j. smith & company. He explained that the project Steering Committee has overseen the feasibility study process to date and will meet again to review comments regarding the draft report. The County would be taking comments that evening and would also accept comments by mail/e-mail/drop-off; the comment deadline is September 9, 2010. A summary of this public meeting and comments will be summarized into the final report.

Dan Sundell gave a presentation with information on the various phases, alternatives within each phase, and associated costs. He indicated that estimated costs contained in the draft included design and special study expenses, in addition to construction

Dan opened the meeting up for comments on the draft Feasibility Study:

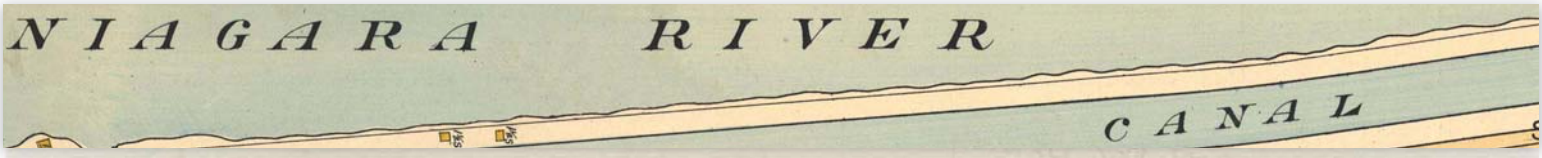
- Tom Dearing thanked Margaret Szczepaniec, the Black Rock Canal Park Steering Committee (BRCPSC) members, and Legislator Maria Whyte for their efforts in the project.
- Tom Dearing explained that the County is interested in the public's input regarding which phase(s) to construct first. He provided a summary of the existing available funding sources and amounts, and explained that the available money helps to determine what work can be done initially. He suggested that the entry road may be a logical first phase.
- There was discussion regarding details of green building/construction elements that the BRCPSC has been wanting in the project.
    - Are there grants available to help fund green building practices? Tom Dearing explained that there likely are grants that are applicable and this would be explored in the next phase of the project.
    - Are these green building/construction elements included in the costs that Dan Sundell presented (the stormwater cistern under the parking lot was cited as an example)? Dan replied that, in many cases these elements are included in the costs and that the cost summaries in the report's appendices provide more details than he presented on the slides this evening, but he would double check regarding the cistern. Tom Dearing explained that more details of the construction and costs, including green building/construction will be developed in the next phase of the project.
    - There was discussion regarding the hassle/ease of some green elements, such as solar-operated lights. Jim Hornung said that solar panels on individual park elements could create maintenance hassles and might not be feasible. Bill Nowak commented that the City Mission just completed the installation of solar panels and that the obstacles are not a great as might be perceived.
- Would more grant money be available if the separate bike path alternative was pursued vs. the shared bike path/road alternative?
- Would a shared bike path/road alternative be acceptable along the Riverwalk? Jim Hornung explained that there are existing areas of shared bike paths along the Riverwalk, so having a shared section through the park shouldn't be a problem. Melissa Cummings mentioned that Erie County passed the Complete Streets resolution [in November 2008], which may have implications on bike path design. Paul Leuchner explained the distinctions between Class I, II and II bike paths.
- An inquiry was made regarding the entry way and the idea regarding the incorporation of park elements to the I-190 abatements. Issues repairing vandalism, inclusion of element to entryway costs and land control were raised. Mr. Thomas Sheehan of the NYS Canal Corporation indicated that possibly pavers and markers could be incorporated into the design. Dan Sundell acknowledged that this was not part of the entryway costs but could possibly be added.

- There was discussion about the options available for security camera monitoring for the park. The County has a motion-activated security camera system that is monitored by staff, but Jim Hornung explained that the system is full and there are also staff limitations, so Black Rock Canal Park will not be able to be part of this system. Instead, he said that the cameras would record to a tape loop stored on the park site; the tapes would be reviewed on an as-needed basis. The security cameras would then function as a "crime deterrent". The cameras would not have trouble capturing images at night.
- Jim Hornung explained how a security gate (an arm that would raise and lower) at the entrance to the park would prevent entry after certain hours, but still allow exit.
- Does the cost estimate for the entrance road include any security items? Dan Sundell and Mark Rountree explained that it had already been decided that security costs would be added to the entry road estimate in the final version of the report.
- Confirmation was requested that all comments received regarding the draft report would be kept private and not published.
- An inquiry was made regarding any contact with the gas station owner on Niagara Street concerning property purchase. Mr. Sundell indicated that contact had not been made, but utilization of said area needs further development prior to such outreach.
- A question was raised regarding Mr. Sundell's statement that Cornelius Creek had its "good days." Sundell elaborated on his comment by noting that, periodically, fishermen can be seen on the creek banks.
- Further discussion occurred among participants relating to Cornelius Creek, including an inquiry regarding Mr. Sundell's statement that should the Creek be left open, it "could be moved up" in priority. Dan Sundell clarified by stating that this comment pertained to the cost difference of alternatives. Attendees of the meeting noted that it was not likely that the City would address the combined sewer overflow problems for many years.
- Regarding the roadway to the north, why is it shown as curved in both options rather than straight in one option? Dan Sundell explained that it was his understanding that the request for a straight road was made in order to maximize parking closest to the building; he explained that the road in one alternative (the Modified Plan) was made straighter near the building in order to accommodate a larger parking area adjacent to the building. The quantity of parking or a straighter road is something that can easily be worked out as the design progresses in the next phases of the project. A meeting participant noted that angled parking worked well at a recent public event held at the park.
- A request was made that the plan needs to include more environmental/sustainable elements such as materials used in parking lot, wind power and others.
- What are the next steps in the process? Tom Dearing explained that once the County approves moving forward with the project, his department will need to hire an engineering firm and start construction documents. Construction of the first phase would likely begin spring 2011. Margaret Szczepaniec pointed out that it will be important to keep the project moving to sustain interest.

The above is our understanding of the meeting discussion. If there are any corrections or additions needed please contact me at mvendura@pjscompany.com within two weeks of the issue date of this summary.

Respectfully Submitted,

Molly B. Vendura, RLA, LEED AP
peter j. smith & company, inc.



Appendix 6

Flood Levels

Flood Levels

One of the tasks undertaken during the Feasibility Analysis was to determine the maximum historical flood level at the site. Historical water level data was collected from several of the water level gauges along the Niagara River nearest the park. The water level gauges include one upstream gauge at the Black Rock Canal lock, one gauge directly across the river at Frenchman's Creek, and one downstream gauge at the Niagara Intake.

An analysis of the recorded data from these gauges, as well as conversations with local regulatory agencies familiar with flooding events on the river, revealed several dates with the highest recorded water levels. These dates are:

- November 10, 1975
- December 2, 1985
- November 4, 2001
- January 30, 2008
- October 7, 2009.

The daily maximum water levels at these gauges were compared to the water level at the park on two known occasions (September 15 and October 7, 2009), in order to calculate the typical water level difference between these gauges and the park. Since the water level difference between each gauge and the site was different for the two known days, the water level difference for the date of October 7 was used in the site flood level estimate. This decision was made because there was a seiche-induced flood on October 7, weather similar to the other dates of high water levels, whereas September 15 was an average, calm day.

Using the calculated water level difference between the gauges and the park, it was possible to estimate the water level at the park on the established dates of highest water levels. The resultant estimate of the flood elevation at the park ranged from 565.16' to 570.70'. Therefore, a worst case flood level of approximately 571' above sea level shall be used. At this level, the river would reach the top of the boat launch ramp and inundate a small area of asphalt between the ramp and the river, but the remainder of the site would not be flooded.

A seiche resulted in high water levels along the Niagara River on October 7, 2009. The water level at the Ontario Street Boat Launch, pictured at right, was approximately 568.4 feet above sea level on that date.

Estimate of Water Level for Niagara River at Black Rock Canal Park

gauge: Niagara Intake (National Oceanic & Atmospheric Administration) - downstream

date	gauge, daily max (IGLD85)	site actual (IGLD85)	difference	site estimate (IGLD85)	site estimate (NAVD88)
11/10/1975	565.15			570.40	569.94
12/2/1985	565.69			570.94	570.48
11/4/2001	565.91			571.16	570.70
1/30/2008	564.14			569.39	568.93
9/15/2009	562.20	566.46	4.26	567.45	566.99
10/7/2009	563.61	568.86	5.25	568.86	568.40

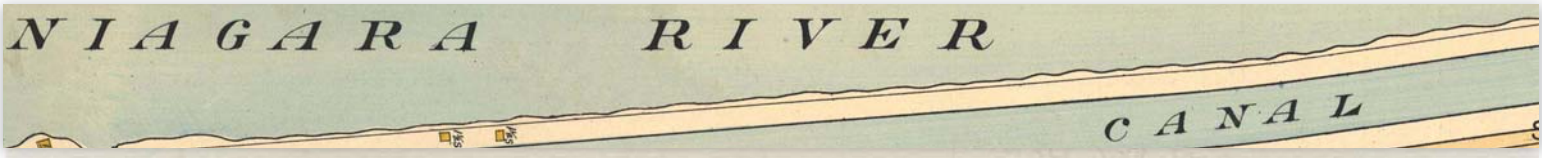
gauge: Frenchman's Creek (Ontario Power Generation) - across river to west

date	gauge, daily max (IGLD85)	site actual (IGLD85)	difference	site estimate (IGLD85)	site estimate (NAVD88)
11/10/1975	N/A				
12/2/1985	N/A				
11/4/2001	565.22			565.74	565.28
1/30/2008	569.68			570.21	569.75
9/15/2009	565.64	566.46	0.82	566.17	565.71
10/7/2009	568.33	568.86	0.53	568.86	568.40

gauge: Black Rock Canal lock at Hamilton St (US Geological Service) -upstream

date	gauge, daily max (IGLD85)	site actual (IGLD85)	difference	site estimate (IGLD85)	site estimate (NAVD88)	
11/10/1975	N/A					
12/2/1985	569.37	*		569.68	569.22	*
11/4/2001	565.31			565.62	565.16	
1/30/2008	569.88			570.19	569.73	
9/15/2009	565.79	566.46	0.67	566.10	565.64	
10/7/2009	568.55	568.86	0.31	568.86	568.40	

* the gauge value for 12/2/1985 is the MEAN daily value, not the max


NIAGARA RIVER
CANAL