

# ***BUFFALO HARBOR BRIDGE***

***(Outer Harbor Access  
S. Michigan Ave.  
Bridge Replacement)***

***P.I.N. 5758.17***

City of Buffalo  
Erie County  
March 2010

## **FINAL**

U.S. Department of Transportation Federal Highway Administration



NEW YORK STATE DEPARTMENT OF TRANSPORTATION  
DAVID A. PATERSON, Governor    STANLEY GEE, Acting Commissioner



**Erie Canal Harbor Development Corp.**

# PROJECT APPROVAL SHEET

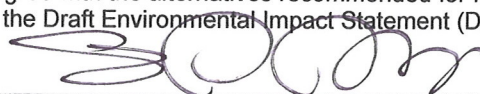
(Pursuant to SAFETEA-LU Matrix)

## A. IPP Approval:

The project was added to the Regional Capital Program for Scoping and Preliminary Design Phases only. The IPP was approved 10/23/2008.

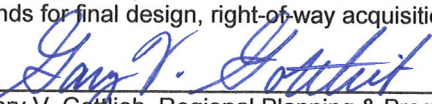
## B. Recommendation for Scope Approval:

I agree with the alternatives recommended for further development and evaluation in the Draft Environmental Impact Statement (DEIS).

  
\_\_\_\_\_  
Steven P. Ranalli, P.E., Senior Project Manager  
Erie Canal Harbor Development Corporation

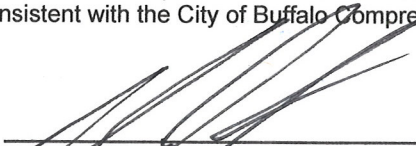
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Funding for phases beyond preliminary design has not been identified. Advancing the project beyond the Record of Decision (ROD) will depend upon securing funds for final design, right-of-way acquisition and construction.

  
\_\_\_\_\_  
Gary V. Gottlieb, Regional Planning & Program Manager  
New York State Department of Transportation

03/10/2010


The City of Buffalo agrees with the alternatives to be evaluated in the Draft Environmental Impact Statement. The alternatives being advanced in the DEIS are consistent with the City of Buffalo Comprehensive Plan.

  
\_\_\_\_\_  
Steven J. Stepniak, Commissioner  
City of Buffalo – Department of Public Works, Parks and Streets

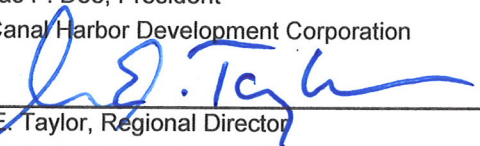
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## C. Scope Approval:

I concur with the project Purpose and Needs and the alternatives recommended for further development and evaluation in the Draft Environmental Impact Statement.

  
\_\_\_\_\_  
Thomas P. Dee, President  
Erie Canal Harbor Development Corporation

3/15/24

  
\_\_\_\_\_  
Alan E. Taylor, Regional Director  
New York State Department of Transportation

3-10-10

\_\_\_\_\_  
Division Administrator  
Federal Highway Administration



U.S. Department  
of Transportation  
**Federal Highway  
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**New York Division**

May 4, 2010

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Ms. Mary Ricard  
Design Quality Assurance Bureau, POD 23  
New York State Department of Transportation  
50 Wolf Road  
Albany, NY 12232


Subject: PIN 5758.17 – Final Project Scoping Report  
Buffalo Harbor Bridge Project  
City of Buffalo, Erie County

Dear Ms. Ricard:

We received your April 9, 2010 memorandum transmitting the Final Project Scoping Report dated March 2010. We are satisfied that the report indicates comments received from Cooperating and Participating Agencies were considered and revisions to the Purpose and Need Statement, Range of Alternatives, and methodology have been made. We are in agreement with the three (3) alternatives to be advanced for environmental studies under the Draft Environmental Impact Statement. We are approving the Final Project Scoping Report.

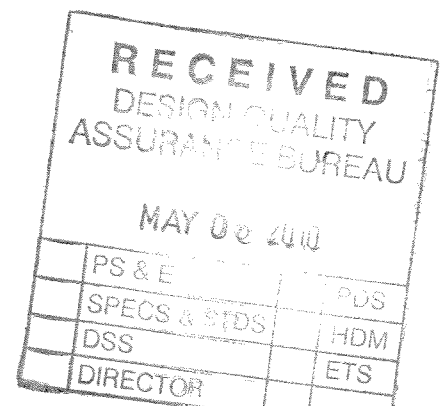
If you have any questions or concerns, please contact me at 518-431-4125, Extension 272.

Sincerely,

  
Christopher J. Millington  
Area Engineer

cc:

F. Hadad, Major Projects Office, 6<sup>th</sup> Floor  
D. Kaminski, Regional Design Engineer, Region 5  
T. Romano, Major Projects, Region 5  
M. Ruth, HPD-NY









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B.	Bridge Lift Analysis Report
C.	SAFETEA-LU 6002 Coordination Plan



## CHAPTER 1 - EXECUTIVE SUMMARY

### 1.1. Introduction

The Erie Canal Harbor Development Corporation (ECHDC), in partnership with the City of Buffalo and in cooperation with the New York State Department of Transportation (NYSDOT), has prepared the following Draft Scoping Report for the proposed Buffalo Harbor Bridge Project.

Erie Canal Harbor Development Corporation (ECHDC) is a subsidiary of Empire State Development (ESD) and was formed in 2005, by then-Governor George Pataki, to spearhead the city of Buffalo's waterfront redevelopment effort. As a result, ECHDC's mission is to revitalize Buffalo's inner and outer harbor areas and restore economic growth to Western New York, based on the region's legacy of pride, urban significance and natural beauty.

The Buffalo Harbor Bridge Project, officially designated as the "Outer Harbor Access; S. Michigan Avenue Bridge Replacement" under NYSDOT Project Identification Number (PIN) 5758.17, is a bridge replacement project located in the City of Buffalo, Erie County. ECHDC and NYSDOT are advancing this project through an Environmental Impact Statement (EIS) in accordance with the National Environmental Policy Act (NEPA) 23 CFR 771, Section 6002 of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A legacy for Users (SAFETEA-LU), the State Environmental Quality Review Act (SEQRA) under 6 NYCRR Part 617 and the NYSDOT Project Development Manual. The City of Buffalo is a cooperating agency for this project. This project is located within the City of Buffalo, as such, it is anticipated that the City will be taking over maintenance and operational responsibilities for the new crossing infrastructure once construction is completed.

### 1.2. Purpose and Need

#### 1.2.1. Where is the Project Located?

The proposed project is located in western New York State within the County of Erie and the City of Buffalo. See Figure 1-1 for a Project Location Map.

The project area is adjacent to the northeastern shore of Lake Erie and is comprised of an approximately 1.5 mile corridor extending from a northern terminus at the mouth of the Buffalo River in the vicinity of the Erie Basin Marina to a southern terminus near the southern navigation limit of the City Ship Canal west of the existing Ohio Street Bridge in the inner and outer harbor area of downtown Buffalo (containing various local streets that end short of the Buffalo River or the City Ship Canal). The Buffalo River and City Ship Canal cross the corridor and both contain federally-regulated shipping channels in this area.

See Figure 1-2 for a more detailed Project Study Area Map. This map includes the Study Area Limits, as well as highlighted boundaries of the New Downtown and Outer Harbor areas. The New Downtown is defined in the Queen City Hub: A Regional Action Plan for Downtown Buffalo ("The Queen City Hub Plan"); as five major investment areas to support new and existing economic functions downtown. One of these areas, the "Erie Canal Harbor & Waterfront District", includes most of the Buffalo Harbor Bridge Project corridor.



Figure 1-1 - Project Location Map



Figure 1-2 – Project Study Area Map





### 1.2.2. Why is the Project Needed?

In 1964, the former South Michigan Avenue Bridge was finally removed after being deemed inoperable following a mechanical failure. This bridge, which formerly passed over the City Ship Canal at the northern end of Kelly Island, allowed for a direct route between the now removed rail yards and warehouses at the edge of downtown, and the milling and feed complexes along the waterfront. From the mid-18<sup>th</sup> to mid-20<sup>th</sup> centuries, Buffalo served as a significant transshipment port for raw materials and agricultural goods between the Midwest and Northeast. With the loss of many of these businesses, the need to replace the bridge was determined to be unwarranted at the time and this connection was never replaced.

The existing Central Business District and New Downtown, have no direct connection with the Outer Harbor. In fact the Outer Harbor is connected to the "mainland" at only 3 locations along its 3.5 mile length (or 6,280 ft between "intersections"), including Tifft Street which is well south and outside the project study area. Currently, there are two indirect routes to access the outer harbor from the downtown area: the Skyway and a surface route consisting of Ohio Street to Fuhrmann Boulevard. The Skyway does not provide multimodal access in that bicycle and pedestrians are prohibited from using the facility since it is a high speed interstate connection. Furthermore, due to the high level nature of the Skyway required to provide 100' navigation clearance over the Buffalo River and City Ship Canal, the Skyway approaches are far removed from the local point-to-point connections needed to meet the purpose and need of this project as defined in Section 2.2.2.3. This makes this route circuitous and difficult to use from the standpoint of vehicular users wishing to gain simple access to the outer harbor from points on the inner harbor waterfront area. Similarly, the local surface route between the New Downtown and the Outer Harbor does not provide a direct and efficient connection, is circuitous and rather confusing. Specifically, what could be a 600 ft connection across the Buffalo River/City Ship Canal is currently a four-mile route along Ohio Street to Fuhrmann Boulevard on the Outer Harbor. These existing routes and extended routes leave Outer Harbor areas difficult to access from a local connect standpoint. The existing surface route is too lengthy and uninviting for pedestrian and bicycle use. In addition, the routes result in difficult access for emergency services (police, fire, and medical emergency) resulting in increased response times by emergency providers.

The use of existing local surface streets also requires users to cross one of two existing lift bridges to access the Outer Harbor from Ohio Street, both of which are not ADA compliant. When the Ohio Street Bridge is closed during operations or for repairs, traffic is diverted to Ganson Street, thus putting traffic in the heart of industrial operations of General Mills and other businesses where tractor-trailers maneuver to and from loading bays extending into Michigan Avenue roadway and trains frequently operate and park across the road blocking traffic. The mixing of plant operations' traffic with local through traffic has created a less than desirable situation.

There are numerous pedestrian and bicycle routes on both the inner and outer harbor separated by the Buffalo Harbor (Buffalo River and City Ship Canal) in the Project Area. On the inner harbor, pedestrians are presently accommodated along the roadways within the project limits by means of sidewalks, most of which have ramps for handicapped accessibility. Concrete sidewalks are currently provided on all roadways within the project limits with the exception of Perry Boulevard between Pearl Street/Commercial Street and Erie Street. Completed phases of the Erie Canal Harbor Project on the inner harbor have added routes/walkways and points of interest to the pedestrian network and have added to the already established walkways leading north from this site to the Erie Basin Marina, consisting of a combination of a waterfront path, private marina, public park and waterfront observation tower. Users can then proceed north on the Riverwalk link now providing public access to numerous parks and Niagara River amenities from downtown Buffalo to northern Erie County and providing connections over the Peace Bridge to the Canadian Niagara River Trail.

Pedestrian counts were taken on the multiuse path adjacent to Erie Street, west of the Erie Basin Marina on the Inner harbor. The counts were taken on three representative days including Tuesday July 14, 2009, Wednesday July 15, 2009 and Saturday, July 18, 2009 with an average over 1000 eastbound and 1000 westbound pedestrians counted.



The outer harbor area consists of a multitude of existing, under construction or planned pedestrian, bicyclist and nature areas as points of destination including: Outer Harbor Multi-Use Path; Fuhrmann Boulevard Urban Parkway Upgrades (under construction); Times Beach and Enhancements; Industrial Heritage Trail Along CSX Railroad (under construction); Tift Pier (under construction); Gallagher Beach and Tift Nature Preserve and Enhancements.

As described above, there are a multitude of destinations points, pedestrian and bicycle facilities on the inner harbor and outer harbor that are separated by the 300-600 foot wide physical barrier comprised of the Buffalo River and City Ship Canal. Currently there is no "direct" connection from these facilities to similar waterfront facilities on the inner harbor such as the Erie Basin Marina, and Erie Canal Naval Park. A defined gap exists.

This lack of vehicular connectivity also creates a higher probability of traffic congestion due to the inherent street hierarchy – and therefore, funneling of traffic. Existing and future vehicular traffic is funneled to the two current connections within the Study Area, while biking and walking are funneled to just one multi-modal connection along Ohio Street. The northern end of the Outer Harbor, which is part of the New Downtown, could be viewed by all users as a 1.5 mile long cul-de-sac.

The need for a reconnected downtown is now more important than ever. There is a need and desire, as documented in various City of Buffalo planning documents such as the City of Buffalo - Queen City Hub Plan documenting the City's desire to develop outward from the core, for expanding in a pattern of sustainable growth while connecting to a key resource – the waterfront. It is also in keeping with existing infrastructure (both the park and trail facilities mentioned above) and linking multi-modal opportunities. This type of expansion immediately adjacent to the core downtown area requires a local street level direct connection to the New Downtown and CBD and will comply with U.S. EPA Green Recommendations, specifically, by encouraging development in brownfield and infill sites and encouraging use of Smart Growth and transit oriented development principles by encouraging developments that are walkable and located near public transit.

All levels of government, as well as various community groups have focused their efforts to make Buffalo a true waterfront city. This project focuses on determining the best solution to reestablish a local connection between the New Downtown and the Outer Harbor.

### **1.2.3. What are the Objectives/Purposes of the Project?**

The purpose of this project is to directly and efficiently connect the New Downtown and the Outer Harbor area with a multi-modal (pedestrian, bicyclist, and motorized traffic) transportation facility over the Buffalo River and/or City Ship Canal in the City of Buffalo. This proposed transportation facility will be referred to as the Buffalo Harbor Bridge Project.

### **Need Statement**

The overall need for the Buffalo Harbor Bridge Project is to address the current transportation inadequacies and deficiencies associated with the lack of a local crossing between the New Downtown and the Outer Harbor. The following are specific project needs:

#### **System Linkage Needs**

Since the former South Michigan Avenue Bridge over the City Ship Canal was closed in the early-1960s, local access between the Inner and Outer harbor areas has been inefficient. In fact, the Outer Harbor is connected to the "mainland" at only 3 locations along its entire 3.5 mile length (or 6,280 feet between "intersections"). One of these connections is at Tift Street, which is well south of the Project Study Area. The confusing and circuitous routes that remain between the New Downtown and the Outer Harbor, via the Skyway and along a surface route via Ohio Street to Fuhrmann Boulevard, require a 4-mile trip compared to a ±600-ft river crossing. Due to decline of industrial transportation needs between Kelly Island and the Outer Harbor the bridge was never rebuilt.



The existing Michigan Avenue Bridge over the Buffalo River provides access to the Outer Harbor via Kelly Island and, given the industrial nature of the Island, Michigan Avenue/Ganson Street mainly function as truck access roadways for several large-scale, active manufacturing plants, mills and distribution centers.

### **Modal Interrelationships**

The present routes between downtown and the Outer Harbor do not provide for adequate multi-modal access. Recent and proposed development along the Inner Harbor area (Naval Park and Canal Side), as well as improvements along the Outer Harbor (Outer Harbor Parkway Project) where multiuse paths and trails are being constructed, have increased the demand for direct and efficient connection between the inner and outer harbor areas. NY Route 5, an elevated expressway commonly referred to as "the Skyway," prohibits pedestrians and bicyclists. Both Ohio Street (and the Ohio Street Lift Bridge) and Michigan Avenue/Ganson Street (and the Michigan Street Lift Bridge), are locally designated truck routes that impede pedestrian and bicyclist access with high truck traffic volumes, and the lack of appropriate streetscape and refuge areas to facilitate safe access. In addition, the lift bridges are not compliant with the current Americans with Disabilities Act.

While access to the waterfront by land has been wanting, commercial and recreational watercraft users enjoy the nearly unimpeded boating/shipping use of the Harbor, River and the City Ship Canal. A new bridge must maintain adequate waterway access to the harbor by commercial and recreational watercraft seeking refuge during storms and for docking and harbor facility use.

### **Transportation Demand**

Previously, two City of Buffalo reports, the Engineering Report for Gateway Bridge, February 1987 and the Expanded Project Proposal for a Proposed Bridge - Inner/Outer Harbor Link, February 1999, were completed to determine the feasibility and cost of constructing a bridge across the Buffalo River. While a bridge project was determined to be feasible, the inability to finance the project led to its demise each time.

The need to reconnect the City with a direct and efficient local connection to the waterfront has remained. The City of Buffalo's Draft Local Waterfront Revitalization Program (January 2007) specifically states as a policy standard (Standard 9.1(D)(7)):

*Improve public access from downtown Buffalo and the Inner Harbor area to the Outer Harbor for both pedestrian, bicycles and motorized vehicles.*

The Buffalo Harbor Bridge project (PIN 5758.17) is included in New York State's Long-Range Transportation Plan (Strategies for a New Age: New York State's Transportation Master Plan for 2030, approved 2006), the Region's Plan (Greater Buffalo Niagara Regional Transportation Council (GBNRTC) 2030 Long-Range Transportation Plan for the Erie and Niagara Counties Region, approved June 2007), the 2008-2012 Transportation Improvement Program (TIP) approved June 22, 2007 and the New York State Department of Transportation's Statewide Transportation Improvement Program (STIP) for Federal Fiscal Years 2008-2011, approved December 10, 2007.

The GBNRTC's Long-Range Plan states that the project is intended to improve access to the waterfront by constructing "Outer Harbor Bridge(s) over the Buffalo River." The plan does not specify any location(s) for the transportation facility; these locations will be addressed in the Environmental Impact Statement (EIS).

### **Social Demands and Economic Development**

A Buffalo Harbor Bridge will directly and efficiently connect local traffic between the New Downtown Area and the Outer Harbor, and enhance local and regional programs that promote economic development of the waterfront. Current and/or planned development projects in the





area include the Buffalo Lakeside Commerce Park, Queen City Landing, Greenway Nature Trail, Canal Side, Seneca Buffalo Creek Casino, Riverfest Park, Coast Guard Facilities Recapitalization and Site Consolidation project, proposed Wingate Hotel project as well as the cars on Main Street project. A map of these projects is included in Chapter 2, Figure 2-1.

In addition to promoting economic development, the connection of the New Downtown and the Outer Harbor will yield returns that extend beyond a monetary value. As stated in the City of Buffalo's The Buffalo Waterfront Corridor Initiative, An Inventory and Analysis of Buffalo's Waterfront Planning Legacy (August 2005):

*"Altogether, the community has a vision of a waterfront that is the beautiful, active, public edge of our City, continuously accessible from Riverside Park to Gallagher Beach and inland along the Buffalo River and Scajaquada Creek. It is a vision in which residents go down to enjoy the water as a part of daily life, and whose neighborhoods are better off for being there. It is a vision of a waterfront where visitors arrive and immediately see and understand what is so special about this place. It is a vision of a waterfront that is a safe and healthy place to visit. It is a vision of a waterfront that is an important part of our economy, providing an impetus for new development while we protect what is most valuable about it. It is a bundle of connections between our City and the world, but also between the City and the waterfront, braided carefully to accommodate the needs of transportation and safeguard the precious resources of the waterfront."*

The City has a long history of waterfront planning and development of harbor crossing studies. To realize the community's vision, a transportation solution that balances public access and economic, social and environmental competing values is required.

### 1.3. What Alternative(s) Are Being Considered?

Based on past planning efforts and transportation studies, as well as input gathered during the public scoping process, a wide range of alternatives were identified, including the No-Build Alternative. Several scoping meetings were held with elected officials, Cooperating and Participating Agencies, community groups, businesses and residents between June 16 and July 22, 2009. The past information and public suggestions were combined with recommendations from the Project Team's internal review to first, identify a "Range of Crossing Categories", and second to create a "List of Alternatives Considered".

The Range of Crossing Categories has been identified as the following:

- **No-Build.** Under federal and state regulations, an Environmental Impact Statement is required to include a "No Build" or "No Action" alternative. Under the No-Build Alternative, routine maintenance and repair efforts would continue by respective owners. It is assumed that local street improvements, approved under the NYSDOT Southtowns Connector Project Record of Decision (PIN 5044.01), would be completed by others.
- **Upgrade.** This alternative would improve the existing surface street route. No bridge would be constructed under this Category.
- **Replacement.** These crossing alternatives would replace the former South Michigan Avenue Bridge with a new bridge on the same horizontal alignment as the former structure. Given the bridge's location within a federally-regulated channel, the new bridge is assumed to be a moveable structure in order to provide the required 100 ft navigational clearance. The new bridge would be constructed on the same vertical alignment or higher, based on the final closed-bridge vertical navigational clearance requirements, right-of-way impacts and superstructure design.
- **New Moveable Bridge.** Under these crossing alternatives, the former South Michigan Avenue Bridge would be replaced by a new bridge on a new horizontal alignment outside the Michigan Avenue corridor. Since all the feasible new bridge locations are within a federally-regulated channel, any new moveable bridge would provide the required 100 ft navigational clearance.



- **New Fixed Bridge.** Under these crossing alternatives, the former South Michigan Avenue Bridge would be replaced by a new bridge on a new horizontal alignment outside the Michigan Avenue corridor. Since all the feasible new bridge locations are within a federally-regulated channel, any new fixed bridge would provide the required 100 ft navigational clearance.
- **Water Ferry.** These alternatives would replace the former South Michigan Avenue Bridge by means of a multi-modal water ferry. No bridge would be constructed under this Category.
- **Tunnel.** These alternatives would replace the former South Michigan Avenue Bridge by means of a tunnel on a new horizontal alignment outside the Michigan Avenue corridor. No bridge would be constructed under this Category.

Based on the above range of crossing categories, public comments, suggestions and ideas were combined with findings and recommendations of past and current planning efforts to create a list of reasonable alternatives. The following guidelines were considered by the Project Team in determining which alternatives would be developed for further review:

- Each alternative shall provide efficient multi-modal connectivity between the New Downtown and the Outer Harbor.
- Each alternative shall provide an improvement to the local street network while not negatively impacting the regional traffic network.
- Each alternative shall be financially feasible.

Based on the above information, the List of Alternatives Considered has been identified as the following:

**List of Alternatives Considered:**

No-Build Alternative (NB)

NB-1: No-Build

Upgrade Alternative (UP)

UP-1: Upgrade

Replacement Alternatives (RE)

RE-1: South Michigan Avenue Bridge (with upgraded Existing Michigan Avenue Bridge)

RE-2: South Michigan Avenue Bridge with Water Taxi (with upgraded Existing Michigan Avenue Bridge)

RE-3: South Michigan Avenue Bridge with Pedestrian/Bicycle Bridge

New Moveable Bridge Alternatives (BR)

BR-1: Erie Street Bridge with Existing Erie Street Approach

BR-2: Erie Street Bridge with Former Erie Street Approach

BR-3: Main Street Bridge

BR-4: Ganson Street Bridge (with upgraded Existing Michigan Avenue Bridge)

BR-5: Ganson Street Bridge with Water Taxi (with upgraded Existing Michigan Avenue Bridge)

BR-6: Ganson Street Bridge with Pedestrian/Bicycle Bridge

Water Ferry Alternative (WF)

WF-1: Water Ferry

Tunnel Alternative (TU)

TU-1: Erie Street Tunnel

As with any scoping process, some suggestions and ideas do not “make the list”. These alternatives as well as the alternatives listed above are discussed in detail in the Chapter 3.

A two step screening process was developed to determine which alternatives considered best meet the project purpose and need. This screening process is described in Chapter 3, Section 3.2. Based on the



evaluation of each alternative considered within the screening process, the following alternatives were determined to be feasible while best meeting the project purpose and need. They will be “retained” for further study in the DEIS. These “retained” alternatives are described in greater detail in Chapter 3.

**List of Retained Alternatives:**

- NB-1: No-Build
- BR-2: Erie Street Bridge with Former Erie Street Approach
- BR-3: Main Street Bridge

**1.4 How will the Alternative(s) Affect the Environment?**

This project is classified under the National Environmental Policy Act (NEPA) (23 CFR 771, Section 771.115) as a ‘Class I’ Action and will require an Environmental Impact Statement (EIS). As described in Section 1.1, this project is being advanced in accordance with Section 6002 of SAFETEA-LU, which establishes an environmental review process for highway and transit projects that involve preparation of an EIS, while achieving better, faster and more efficient environmental reviews. Additionally, this project is a SEQR Type I action under 6 NYCRR Part 617. ECHDC is the SEQR Lead Agency.

The retained alternatives will be studied further and the full range of environmental impacts will be evaluated in the Draft Environmental Impact Statement (DEIS). Chapter 4 of this report outlines the social, economic & environmental conditions and consequences that will be studied for each alternative in the DEIS.

NEPA regulations (23 CFR 771.111(d)) require those federal agencies, other than the lead agency, with jurisdiction by law (with permitting or land transfer authority) or special expertise with respect to any environmental impact involved in a proposed project or project alternative be invited to be cooperating agencies for an EIS. A State or local agency of similar qualifications or, when the effects are on lands of tribal interest, a Native American tribe may, by agreement with the lead agencies, also become a cooperating agency. As each alternative is developed further, the types of environmental studies required may change based on review and input from cooperating agencies. A full list of participating and cooperating agencies is included in the Project Coordination Plan in Appendix C.

**Anticipated Permits/Certifications/Coordination:**

Based on initial input by cooperating agencies the following permit requirements are anticipated for this project. Additional information regarding these permits and the responsible agencies can be found in the SAFETEA-LU 6002 Coordination Plan in Appendix C.

Participants	Actions
USFWS, EPA, US Army Corps of Engineers (USACE); National Marine Fisheries Service (NMFS); Natural Resources Conservation Service (NRCS) and lead agencies	<b>FHWA Executive Order 11990 Wetlands Finding.</b> Evaluate and mitigate impacts on wetlands.
FEMA and lead agencies	<b>Executive Order 11988:, Floodplain Management</b> To avoid the long- and short-term adverse impacts associated with the occupancy and modification of floodplains, and to restore and preserve the natural and beneficial values served by floodplains.
US Coast Guard (9 <sup>th</sup> District); and lead agencies	<b>Section 9 – Bridge Permit -</b> Rivers and Harbors Act of 1899: 33 U.S.C. 40. Must obtain approval of plans for bridge permits
US Army Corps of Engineers and lead agencies	<b>Section 10 Permit -</b> Rivers and Harbors Act of 1899:33 U.S.C. 401) Must obtain approval of plans for construction, dumping, and dredging permits.



Participants	Actions
US Army Corps of Engineers; NYSDEC and lead agencies	<b>Section 404 Permit</b> - Federal Water Pollution Control Act (1972), as amended by the Clean Water Act (1977 & 1987): 33 U.S.C. 1251-1376 Restore and maintain chemical, physical, and biological integrity of the Nation's waters through prevention, reduction, and elimination of pollution.
New York State Department of Environmental Conservation and lead agencies	<b>Section 401 Water Quality Certification.</b> Protection of Waters Permit
New York State Department of Environmental Conservation	<b>SPDES/NPDES Permit</b>
New York State Department of State and lead agencies	<b>Consistency Approval</b> Coastal Zone Management Act of 1972: 16 U.S.C. 145. Preserve, protect, develop, and (where possible) restore and enhance resources of the coastal zone.
New York State Department of Environmental Conservation and lead agencies	<b>Article 24 -Freshwater Wetlands Permit</b>
New York State Thruway Authority	<b>Highway Work Permit</b>

Table 1-1 – Permit Requirements

## 1.5. What Are The Costs & Schedules?

### Schedule:

The following schedule has been established for the project. Additional information and milestone dates can be found in the SAFETEA-LU 6002 Coordination Plan located in Appendix C.

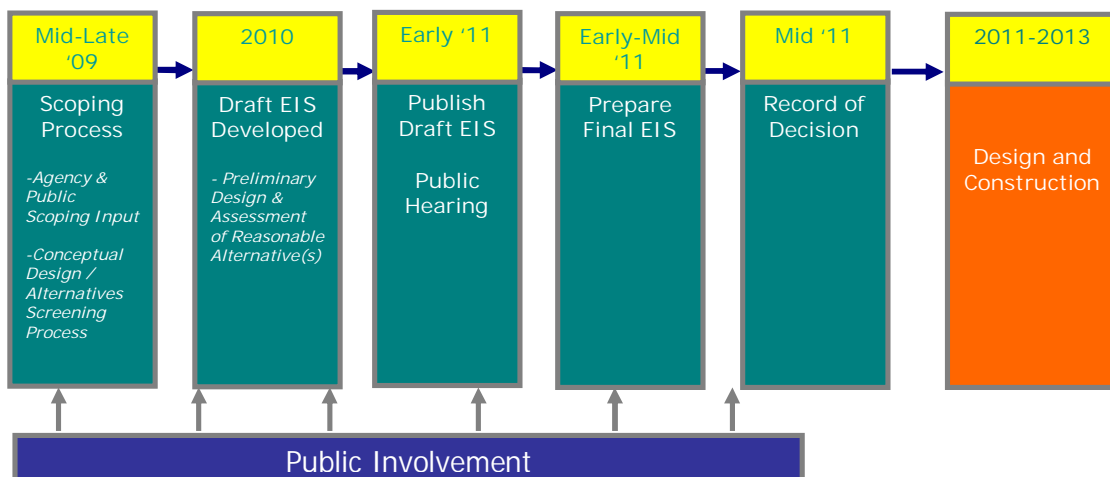


Figure 1-3 – Project Schedule

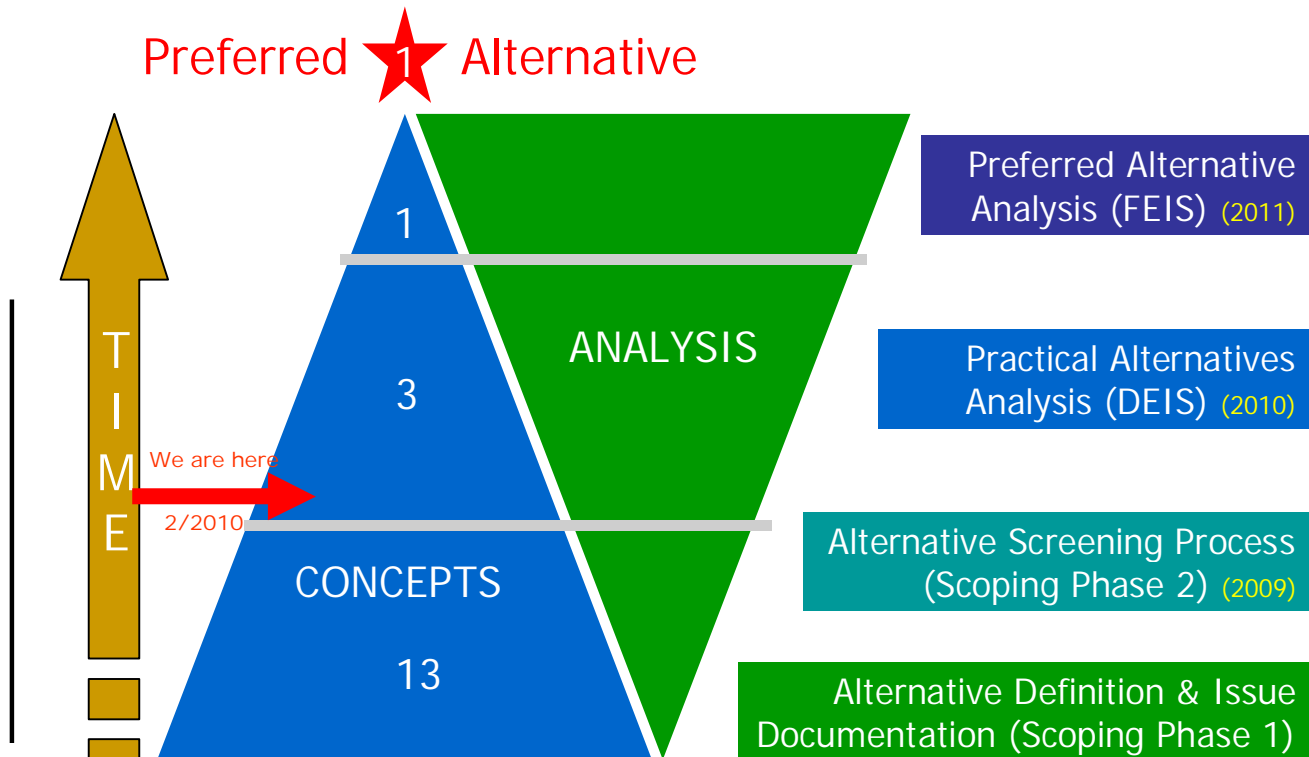
### Costs:

The cost of each feasible alternative has been estimated based on known factors and limited detail. Unknowns such as bridge type, environmental impact and associated mitigation, and permit requirements, to name a few, must be studied in further detail before an accurate cost for each can be determined. Given the level of detail known at this time, the construction cost for the feasible Build Alternatives (BR-2, and BR-3) is \$63M-\$87M (2009 Dollars).

The costs associated with each build alternative will be studied in more detail in the DEIS.

## 1.6. Which Alternative is Preferred?

At this time there is no preferred alternative. As illustrated below the alternative evaluation process involves a continual increase in detail and analysis effort on a decreasing number of alternatives until the best solution is found. A decision will be made after evaluation of engineering, social, economic and environmental considerations of the project alternatives and after analysis of comments on the Draft Environmental Impact Statement (DEIS), and at the public hearing.



## 1.7. Who Will Decide Which Alternative Will Be Selected And How Can I Be Involved In This Decision?

SAFETEA-LU requires the identification of lead, cooperating and participating agencies in the development of an EIS. The NEPA joint lead agencies for this project are:

**-Federal Highway Administration (FHWA)** The roles and responsibilities of FHWA are to: Manage the environmental review process; Prepare the EIS and Record of Decision document; Provide opportunity for public and participating/cooperating agency involvement; Arbitrate and resolve issues.

**-New York State Department of Transportation (NYSDOT)** The roles and responsibilities of the NYSDOT are to: Provide assistance with the environmental review process; Provide oversight of the NEPA process; Prepare EIS and decision document; Provide oversight of public participating/cooperating agency involvement; Arbitrate and resolve issues.

**-Erie Canal Harbor Development Corporation (ECHDC)** The roles and responsibilities of the ECHDC are to: Manage environmental review process; Prepare EIS and decision document; Provide opportunity for public and participating/cooperating agency involvement; Arbitrate and resolve issues. The ECHDC is also the lead agency for SEQRA.





The City of Buffalo is a cooperating agency under SAFETEA-LU. As a future potential owner and operator of the crossing facility, the City is considered a partner in the decision making process. The City has and will continue to be closely involved in the evolution of the project.

At the beginning of the scoping process, numerous meetings were held with elected officials, Cooperating and Participating Agencies, community groups, businesses and residents between June 16 and July 22, 2009. The following major meetings or conference calls have been held:

- COB Waterfront Committee Meeting September 18, 2008
- Buffalo Niagara Riverkeepers March 12 @ ECHDC
- USACE March 23 @ USACE Offices
- Elected Officials Meeting: June 16 @ ECHDC
- Agency Meeting #1: June 18 @ ECHDC
- US Coast Guard Meeting: June 22 @ PB
- Agency Meeting #2: June 23 @ ECHDC
- General Mills Meeting: June 25 @ General Mills
- RCR Yachts Meeting: June 26 @ RCR Yachts
- First Buffalo River Marina Meeting June 30 @ FBRM
- Project Stakeholder Meeting #1 July 6 @ ECHDC
- Project Stakeholder Meeting #2 July 7 @ ECHDC
- Project Stakeholder Meeting #3 July 9 @ ECHDC
- State Historic Preservation Office mtg. July 16 @ ECHDC
- Public Information Session: July 22 @ Common Council chambers
- City of Buffalo Scoping Progress Meeting: October 16 @ City Hall
- Public Scoping Meeting: December 16, 2009
- Agency Meeting #3: December 21, 2009
- Agency Meeting # 4: January 5, 2010
- US Coast Guard Meeting/USACE/NYSDEC: January 14 @ ECHDC
- USEPA Meeting: January 28 @ ECHDC

Copies of correspondence received to date relating to the project from the public, stakeholders and agencies and records of meetings and information presented is included in Appendix A.

There are a variety of ways you can provide your thoughts.

- There will be a Public Hearing for the Draft Environmental Impact Statement tentatively scheduled for the Fall of 2010 where you can talk to Project representatives, give comments to a stenographer or leave written comments.
- Additional public meetings and opportunities for public involvement will occur throughout the project development process including a Public Hearing following publication of the Draft Environmental Impact Statement. A public involvement plan has been developed and is included within the SAFETEA-LU 6002 Coordination Plan included in Appendix C.
- You can contact: the following Lead agency key personnel regarding the project:

Jeffery W. Kolb, P.E.  
Division Administrator  
Federal Highway Administration  
Leo W. O'Brien Federal Building  
1 Clinton Avenue  
Albany, New York 12207  
518-431-4125

Thomas Romano, P.E.  
Project Liaison  
NYSDOT - Region 5 (Buffalo)  
100 Seneca Street  
Buffalo, New York 14203  
716-855-7045  
tromano@dot.state.ny.us

Steven P. Ranalli, P.E.  
Senior Project Manager  
Erie Canal Harbor Development  
Corporation  
95 Perry Street, 5th Floor  
Buffalo, NY 14203  
716-846-8241  
sranalli@empire.state.ny.us



- A Project website has been established to disseminate project information and provided another means of input for the public and stakeholders. The website address is: [www.Buffaloharborbridge.com](http://www.Buffaloharborbridge.com)

The remainder of this report is a preliminary evaluation of the existing conditions, alternatives considered, determination of alternatives to be studied further in the DEIS, and other supporting information.



## CHAPTER 2 - PROJECT CONTEXT: HISTORY, TRANSPORTATION PLANS, CONDITIONS AND NEEDS

This chapter addresses the history and existing context of the project site, including the existing conditions, deficiencies, and needs of the Buffalo Harbor Bridge Project Area.

### 2.1. Project History

The former South Michigan Avenue Bridge over the City Ship Canal connected the Outer Harbor waterfront area of Buffalo to the City. In 1962 there was a mechanical failure while opening and the bridge shifted. Deemed unsafe, it was removed by the City of Buffalo in 1964.

The Project Area contains several existing and/or planned land and water uses including, but not limited to several private marinas, mature industrial facilities, the Erie Canal Harbor, the proposed Canal Side project, the proposed Waterfront Village project, and the proposed Seneca Buffalo Creek Casino Complex.

Two prior reports have been prepared by the City of Buffalo related to a new local bridge connection over the Buffalo River. In 1987, the City prepared an Engineering Report for a Gateway Bridge and in 1998; the City prepared an Expanded Project Proposal (EPP) for an Inner-Outer Harbor Link. Both of these prior efforts examined various alternatives for a local bridge connecting the Inner and Outer Harbor areas. In addition to replacement of the South Michigan Avenue Bridge on Michigan Avenue, these studies examined other potential crossing locations such as Erie, Pearl, Main and Ganson Streets, as well as various moveable bridge types (i.e., swing, vertical lift, and bascule). Both of these preliminary studies identified the viability of a local harbor crossing. It wasn't until recently that the funding became available for an environmental document to comply with NEPA and SEQRA to be prepared to study the impacts of a new local crossing. This process, currently underway herewith, is the last official step required to determine a preferred alternative and reach a Record of Decision prior to design and construction.

### 2.2. Transportation Plans and Land Use

#### 2.2.1. Local Plans within the Project Study Area

##### Metropolitan Planning Organization, 2030 Long-Range Transportation Plan

One of the primary responsibilities of our regional Metropolitan Planning Organization (MPO), the Greater Buffalo-Niagara Regional Transportation Council (GBNRTC), is the development of a Long-Range Transportation Plan (LRTP) for Erie and Niagara counties. This Plan, most recently updated in 2007, is a multimodal "blueprint" for transportation systems and services aimed at meeting the transportation demands of existing and future development in the two-county area. The 2030 LRTP also serves as a guide to the development of the Transportation Improvement Program (TIP), which consists of all federally-funded roadway, transit, and major transportation projects scheduled within the region over a five-year period.

In accordance with the Safe, Accountable, Flexible, Efficient, Transportation Equity Act: A Legacy for Users (SAFETEA-LU) legislation, the 2030 LRTP process included collaboration with Federal, State, and Tribal land management, wildlife, and regulatory agencies regarding potential environmental mitigation activities and potential areas to carry out these activities, including activities that may have the greatest potential to restore and maintain the environmental functions affected by the transportation plan. Also consulted were State and local agencies responsible for land use management, natural resources, environmental protection, conservation, and historic preservation concerning the development of transportation plans. This consultation included comparison of transportation plans with the plans, maps, inventories, and planning documents developed by other agencies.



The 2030 LRTP was developed with the input of numerous stakeholders including representatives of community-based organizations, public and private agencies, environmental and business groups, and private citizens. The stakeholder input combined with the confluence of major regional, state and binational planning initiatives has led to a stronger focus on projects and investment strategies to achieve mutually supported objectives.

Taking guidance from the Erie-Niagara Framework for Regional Growth (see Section 2.2.1.1), the GBNRTC's 2030 Long-Range Transportation Plan is consistent with the principals and policies of the two-county Framework for Regional Growth plan and is intended to support a) the conservation and stabilization of existing neighborhoods; b) new compact, pedestrian-oriented, mixed use development on vacant and underutilized sites; and c) higher density, employment intensive, mixed use development in regional centers and along designated growth corridors.

Of prime importance in the creation of a Long-Range Transportation Plan is the development of regional demographic forecasts, for use in systems level transportation planning. Demographic forecasts for the Year 2030 were developed by the GBNRTC utilizing the resources of an Economic/Demographic Review Team and were approved on April 1, 2006. The 2030 forecasts were based on an update of work performed for previous demographic forecasts and documented in two previous reports, "Employment, Population, and Household Forecasts for the Year 2020 for the NRTC" (Phase 1) and "Phase 2 Economic/Demographic Overview Study Final Report."

A significant development assumption, and one consistent with the policies stated above, is that the officially approved 2030 demographic forecasts assume most new households will locate in existing developed areas of the region with modest increases in developing and rural areas. The City of Buffalo Office of Strategic Planning reviewed household projections and recommended adjustments based on known development proposals and future expectations consistent with developmental plans of the agency, including adjustments to traffic analysis zones (TAZ) within the Project Study Area. More specifically, the base year (2007) and future year (2030) demographics for the Outer Harbor area (e.g., TAZ 43) were reviewed and approved by the City of Buffalo and GBNRTC Planning and Coordinating Committee in 2006.

The 2030 LRTP recognizes the completion of a Buffalo Harbor Bridge in the Year 2020. The assumed two-lane facility is included as an inter-modal link between Downtown (TAZ 20) and the Outer Harbor (TAZ 43).

#### **2.2.1.1. Local Public Plans**

Development of public infrastructure within the Buffalo Harbor Bridge Project Area should support locally adopted plans and policies for downtown Buffalo and the Buffalo waterfront. This section briefly describes adopted local plans and generally summarizes the goals and objectives of each.

##### **City of Buffalo Comprehensive Plan**

In 2006, the City adopted a comprehensive plan, named *The Queen City in the 21st Century* ("Comprehensive Plan"), establishing a shared community vision for the future of the City. Specifically, this plan is intended to guide the physical and land use development of the City through the year 2025. The primary goal of the Comprehensive Plan is to reverse Buffalo's long-term decline in population, employment and the quality of the physical environment through coordinated and strategic investments in economic development, neighborhood revitalization, and the infrastructure of the City, through the implementation of smart growth principles. However, the City has yet to prepare an ordinance (e.g., zoning) implementing plan policies (City of Buffalo, 2006).

The Comprehensive Plan identifies several development priorities and planning policies including:

- Implementing *The Queen City Hub: A Regional Action Plan for Downtown Buffalo* ("The Queen City Hub Plan"); an element of the Comprehensive Plan that identifies five major investment areas to support new and existing economic functions downtown. The "Erie Canal Harbor &



Waterfront District", one of the five study areas, includes most of the Buffalo Harbor Bridge Project Area.

- Reconnecting the City to its waterfront by: improving public access to the lake, river, and creeks; linking neighborhoods to the water's edge; leveraging waterfront assets for appropriate economic development; and improving water quality, waterfront lands and habitats.
- Implementing key transportation projects that would create an economically and environmentally healthier region, reverse current negative economic, land use, and social and demographic trends, foster growth in areas of existing infrastructure, and promote equitable services for all residents.

#### The Queen City Hub: A Regional Action Plan for Downtown Buffalo

Completed in 2003, The Queen City Hub Plan is the downtown element of the Comprehensive Plan. It is the product of concerted civic efforts to improve the City center. This document presents the vision and key priorities for implementation related to both strategic investment areas and priority neighborhood development sites. Also included is a detailed work plan intended to reinforce the implementation process with the needed tools (zoning, design guides, management practices), additional planning, and further analysis. The work plan establishes a flexible framework for the multi-party collaborations that would be required to realize the vision for the downtown area. Specific to the Project Area, The Queen City Hub Plan calls for programming events and activities to increase public enjoyment and access to the waterfront, expanding retail to increase shopping opportunities and convenience, converting Pearl Street from one-way to two-way traffic, improving the Metro Rail Events Only Station to enhance access to waterfront, and completing the Cars On Main Project to Scott Street/Marine Drive.

#### City of Buffalo Waterfront Corridor Initiative

Established in 2003, the Buffalo Waterfront Corridor Initiative is an action-oriented program with policy statements that are intended to collaborate efforts and to provide guidance toward improving the City of Buffalo's waterfront. Specific recommendations were established after the review of more than 20 years of waterfront planning and the compilation of a comprehensive inventory of existing waterfront sites and recently completed projects. Substantial public input during conferences in 2002 and 2003 helped to establish public priorities for waterfront projects. Key objectives of this initiative include making the City's waterfronts more accessible and environmentally healthy, reconnecting neighborhoods to the waterfronts, and getting best possible economic use from them. In addition, the initiative developed the *Erie Street Expanded Project Proposal* which would abut the Project Area.

#### Erie Canal Harbor Master Plan

The 2004 *Erie Canal Harbor Master Plan* ("ECHMP") builds on and refines the 1999 Buffalo Inner Harbor Project to specifically address the rich history and importance of Buffalo's Erie Canal era. Four overarching goals (Heritage Preservation and Interpretation, Activity and Land Use, Economic Development, and Public Access and Transportation) frame the overall vision for the master planning effort which is consistent with the vision expressed in Comprehensive Plan and The Queen City Hub Plan. In addition, a set of guiding principles were established to develop a strategy that would respect the history of the site and effectively relate it to the public.

The 2004 ECHMP outlines the overall planning process and highlights various design components developed through a public design process. An associated phased implementation approach and budget for the project is also included within the document. The design components were developed with consideration of the site's historic context and the need for a renewed focus on the vitality of the Buffalo Harbor and adjacent commercial areas. Various elements of the design components outlined in the 2004 ECHMP include circulation, buildings, the Harbor, open space, the Hamburg Drain, and site interpretation (Flynn, et.al. 2004).





#### Waterfront Redevelopment Project Urban Renewal Plan

The Project Area is within the designated urban renewal area for the *Waterfront Redevelopment Project Urban Renewal Plan*, which was originally adopted in 1963. The plan sets forth an overall land use plan, development design standards, an acquisition plan, and a disposition plan stating how acquired lands will be disposed for redevelopment. In addition, the plan includes procedures for implementing new development in the Project Area. These land controls supplement City zoning requirements referenced below.

Originally adopted over 45 years ago, the urban renewal plan has been amended several times. The last major amendment, referred to as the *Erie Canal Harbor Amendment*, was in 2004, when the preceding 1999 *Inner Harbor Area Amendment* was repealed (City of Buffalo, 2004). This action occurred in recognition of the 2004 ECHMP, which called for specific development regulations, design guidelines, streetscape guidelines and architectural standards. The 2004 amendment was specifically adopted to implement the land uses and design guidelines set forth in the 2004 ECHMP. Project Area lands west of Michigan Avenue and north of the Buffalo River are included within this urban renewal area.

#### City Zoning Code

Land uses within the Project Area are regulated by the *Zoning Ordinance of the City of Buffalo*. Several zoning classifications apply to Project Area lands. These are generally described below.

- West Side of City Ship Canal / Buffalo River  
These properties are zoned M3-Heavy Industrial District with the exception of the northernmost lands which are zoned M2-General Industrial District and M1-Light Industrial District.
- East Side of City Ship Canal  
Lands located along the east side of the City Ship Canal are zoned M2-General Industrial District.
- West Side of Buffalo River (Northern Extent of Kelly Island to Ohio Street Lift Bridge)  
Lands located along this stretch of the Buffalo River are zoned M2-General Industrial District.
- East Side of Buffalo River (Mouth of Buffalo River to Ohio Street Lift Bridge)  
Zoning classifications along this side of the Buffalo River include R5-Apartment Hotel District, CM-General Commercial District, I2-Institutional/Light Industry, M1-Light Industrial District and M2-General Industrial District.
- South of City Ship Canal  
These properties are zoned M3-Heavy Industrial District.

#### Niagara River Greenway Plan

The *Niagara River Greenway Plan* ("Greenway Plan") is a regional comprehensive plan focusing on the development of interconnected parks, river access points and waterfront trails along the eastern bank of the Niagara River between Lake Ontario to Lake Erie. Established in 2004 by then-New York State Governor George Pataki, the Greenway corridor is defined by the municipal boundaries of 13 towns, villages, and cities, including the City of Buffalo, which is the southern most municipality. Adopted in 2006, the Greenway Plan outlines a set of broad principles to guide projects within the corridor, and includes a number of action-oriented concepts articulated as goals for the Greenway (Niagara River Greenway Commission, 2007).

Eleven guiding principles have been established for the Greenway, including two with direct effects on this Project:

- Accessibility – providing and increasing physical and visual access to and from the waterfront and related resources for a full range of users (youth, seniors, persons with disabilities); and



- Connectivity – increasing connectivity and access, promoting continuity of open space and habitats, and providing for connections to related corridors and resources across the region.

State agencies contemplating actions within the Greenway are required to review their actions in relation to the consistency of such actions with the approved Greenway Plan.

#### Buffalo River Greenway Plan

The Buffalo River Greenway is a proposed corridor of open space ample enough to provide wildlife habitat areas and neighborhood parks as well as the Buffalo River segment of a waterfront greenway trail. New riverside land uses should be water-dependent or water-enhanced, adding to and taking advantage of the river's natural attractions. The goals expressed in the *Buffalo River Greenway Plan* are: 1. Improved land and water quality; 2. Improved fish and wildlife habitat; 3. Improved neighborhood ties to the river; 4. Improved public access to the river and waterfront. As a long-term improvement plan for the river, the Greenway Plan includes a vision of a continuous open space corridor that will require land use changes over time. The plan also ties together a number of current plans or projects on the Buffalo River including: the City of Buffalo's Waterfront Greenway System; Erie County's fish and wildlife habitat restoration projects; the State Department of Environmental Conservation's Buffalo River Canoe Trail; pollution prevention planning in conjunction with the *Buffalo River Remedial Action Plan*; the Industrial Heritage Trail; the Buffalo Friends of Olmsted Parks *Buffalo Greenways Master Plan*, and several community initiatives for enhanced recreational access to the Buffalo River.

#### Erie-Niagara Framework for Regional Growth

The *Framework for Regional Growth* is a document prepared and supported by Erie and Niagara Counties. It is to be utilized as a blueprint to support the actions of county and regional agencies relating to the area's physical development. It will also be used to inform state and local governments, private developers, and non-profit organizations about the process and actions County government could undertake when making decisions affecting the region's development. The Regional Framework will help the Erie and Niagara Counties region make decisions about its growth and development on a coordinated and consistent basis. It will establish a framework for development within the region, and describe policies, programs, and projects that will encourage and facilitate development that is consistent with such framework. The Plan will help local officials coordinate their decisions so they can anticipate how one decision may affect another. Several Principals relate directly to this Project:

- **Improved Mobility & Access.** The region's transportation infrastructure should be designed to promote reinvestment in developed areas, improve interstate and cross-border connectivity, strengthen alternative modes of transportation, and enhance the livability of neighborhoods. The Counties favor development that supports transit use, walking, ride-sharing, and more efficient commuting patterns.
- **Efficient Systems & Services.** The location, quality and capacity of the region's public infrastructure and facilities has a powerful influence on the pattern and pace of development. Erie and Niagara Counties support public investment to maximize the use of existing infrastructure and facilities, improve the competitive position of underutilized lands and buildings, promote the reuse of brownfield and grayfield sites, and encourage the preservation and adaptive reuse of historic sites and buildings.

#### 2.2.1.2. Local Private Development Plans

Three significant private development projects are proposed within the Project Area – two at the northern end of the area and one at the south end. The following provides a brief description of each development project.



## Canal Side Project

The proposed Canal Side Project is a \$315 million public/private investment would consist of 1,104,800 square feet of commercial (retail, lodging, office), cultural, and residential space that would be designed to emphasize downtown Buffalo's connection to the Lake Erie waterfront through the construction of a network of interpretive water elements evoking the character and vibrancy of historic canals that once crossed the area, including segments of the Erie Canal, the Commercial Slip and the Prime Slip. Anchored by a Bass Pro store, the project would provide various year-round offerings and experiences, including restaurants, entertainment venues, retail outlets, cultural attractions, vast public spaces, and increased access to the Buffalo River, appealing to a wide demographic of visitors and residents.

Parking in the area surrounding the project would be consolidated within several parking garages, with a few small surface lots and a limited number of on-street parking options also available. In total, approximately 2,500 parking spaces would be provided as part of the project.

The Commercial Slip Parking Garage, to be constructed on the current Marine Drive Apartments' surface lot, would be the largest of the proposed parking garages with six levels and approximately 1,200 spaces. Beneath the Bass Pro store, a three-level, 532-space garage would provide convenient parking. This parking garage would be accessed by two entries, one from Main Street and one from Lower Terrace Street. An approximately two-level, 100-space parking deck would be built on the north and east sides of the existing Donovan Building to provide on-site parking. This parking garage would be accessible from Washington Street. A four-level Webster Block parking garage, on the east side of the block, would provide approximately 400 spaces and would be accessible from Washington Street. Additionally, 35 spaces would be constructed within a hotel development adjacent to the "Central Wharf Green".

Finally, an important aspect of the project would be the ease of movement in and around the Project Area. Main Street would act as a tree-lined boulevard running through the heart of the Project Area where pedestrians could stroll past shops, cafes and apartment buildings. Marine Drive would offer access across the Commercial Slip and Prime Slip water elements. All portions of the project have easy access to the water.

The street pattern surrounding the project would remain largely unchanged. Where feasible, all streets would facilitate two-way vehicular traffic. Lower Terrace (between Pearl and Main Streets) would be abandoned by the City, and subsequently closed to traffic and incorporated into the "Under-Thruway Blocks".

The Canal Side Project would incorporate a phased, market-based build out. Assuming that appropriate funding would be available and that there would not be any unanticipated delays, the initial phase of the project would be largely completed by Memorial Day, 2011 (the Bass Pro store; portions of the Under-Thruway Blocks that would serve the Bass Pro store; the Winter Garden; Canal Side Hall, Canal Side Commons, and the West Canal; the Webster Block: a mixed-use development: the Commercial Slip Garage; the Donovan Block North; the Donovan Block South; the East Canal; the Bass Pro slips; and related infrastructure improvements). The remainder would be built out in accordance with a schedule to be agreed to by Erie Canal Harbor Development Corporation and its development partners and, in part, would be based on market demand and other economic factors.

The Canal Side Project Final Generic Environmental Impact Statement ("FGEIS") was issued on January 21, 2010, in accordance with 17 NYCRR, Part 15. The Canal Side Project has independent utility from the Buffalo Harbor Bridge Project and was reviewed separately.



### **Seneca Buffalo Creek Casino**

The proposed \$333 million Seneca Buffalo Creek Casino by the Seneca Gaming Corporation would establish a sizable gaming/hotel complex in place of an existing gaming-only facility, which was originally intended to be temporary. Located on the Seneca Nation of Indians' Buffalo Creek Territory and to the east of the temporary facility, the Seneca Buffalo Creek Casino would be comprised of:

- 90,000–square foot casino floor with 2,000 slot machines and 45 table games
- 22-story, all-suite hotel with 206 suites in all, ranging in size from 550 to 2,000 square feet.
- Full-service luxury spa and salon
- Four restaurants
- 3-acre public park to be located in northwest corner of site
- Attached parking for 2,500 vehicles

Construction work began in late 2007. Most of the steel shell of the building is complete, however, in 2008; the project was temporarily suspended due to economic and capital market conditions. Construction is expected to resume when a more favorable economic climate returns.

### **Queen City Landing**

The proposed \$200 million Queen City Landing project would transform the former Freezer Queen warehouse on Fuhrmann Boulevard into an upscale, mixed-use development. The complex sits on the edge of Lake Erie adjacent to the NFTA Boat Harbor. Redevelopment plans call for a \$63 million conversion of the warehouse into an upscale condominium project with 153 units in its first phase. The first phase would also include a marina and support retail and restaurants. The second phase would include the development of a brand name, upper-end hotel with approximately 337 rooms. The third phase would include the development of a second condominium tower with 140 units. The project's developer, Queen City Landing LLC, is currently seeking approvals from the City of Buffalo.

### **Wingate Hotel Project - Buffalo Waterfront**

Plans for the vacant area between Shanghai Red's restaurant the Waterfront Village include a multi-story hotel complex possibly housing office space and a connection to Shanghai Red's. This multi-story multimillion dollar project is still in the planning and approval stages.

#### **2.2.1.3. Other Projects**

##### **US Coast Guard Facilities Recapitalization and Site Consolidation Project**

Still in the study/planning phase, this project involves the rehabilitation and/or expansion of the US Coast Guard Buffalo Station on the northern tip of the outer harbor area. One alternative for this facility includes relocation of the facility and port area further south away from the Buffalo River providing public access to the stretch of land adjacent to the Buffalo River and the light house site.

##### **Cars on Main Street Project**

The City of Buffalo, NFTA, NYSDOT and Buffalo place have proposed to reopen a 1.2 mile portion of Main Street from Tupper Street to Scott Street/Marine Drive to vehicular traffic as part of a strategy to improve downtown access and to improve revitalization efforts for Buffalo Downtown core. An Environmental Assessment under NEPA was competed and a Finding of No Significant Impact (FONSI) was issued by the FTA in the fall of 2009. Similar changes to the stretch of Main Street south of Scott Street are also being considered.

##### **Riverfest Park**

This project involves the creation of a river front park at Ohio Street and Michigan Avenue. Spearheaded by the Valley Community Association, construction of what will be known as the Buffalo Riverfest Park will begin this year. The plans include a canoe launch, an outdoor stage, a lodge,



picnic pavilions, a boardwalk, and several gardens and trails. Construction of Riverfest Park is expected in 2010.

#### Outer Harbor Parkway Multi-use Trail and Nodal Improvements

Under the Outer Harbor Parkway improvement project multi-use trails and recreational improvements are being made on the Outer Harbor area adjacent to Route 5. These improvements include: relocating and widening the Service Road "C" bridge; multi-use path and fishing boardwalk at Lake Kristy; Service Road "D" replacement structure for pedestrians under Route 5; fishing boardwalk at the terminus of Tifft Street; Gallagher Beach pavilion and picnic area; multi-use path connection under Route 5 at numerous points; and reconfiguration of Fuhrmann Blvd. to include parking lanes. These improvements are under construction with an anticipated completion in 2010.

#### Ice Boom Park

This project involves the creation of a river front park at Hamburg and Katherine Street what will be known as the Ice Boom Park. The new park will include a recreational boathouse facility and a canoe/kayak launch and provide permanent warm-weather storage site for the Lake Erie-Niagara River ice boom. Other features will include picnic tables, numerous benches and a boardwalk promenade along the river's edge, with 1900's style lighting, in consideration of the Old First Ward's heritage and culture. Construction of Ice Boom Park is expected to be completed by 2011.

#### Brownfield Opportunity Assessments

The City of Buffalo, in conjunction with the Buffalo Niagara Riverkeeper and Erie Canal Harbor Development Corporation, will complete a two Brownfield Opportunity Assessments (BOA) for approximately 2,000 acres of property located adjacent to the Buffalo River and on the Inner and Outer Harbors. The area has a long history of heavy industry, dating back to the early 1800's, and is now home to a number of large brownfield sites. Redevelopment of these areas will be advanced due to their strategic regional location, access to major highways and bi-national bridge, an environmentally rich setting, and proximity to railways, Lake Erie and the Buffalo River.

Considered together, these attributes allow for land redevelopment and habitat enhancement. The primary community revitalization objectives to be achieved by these projects include: sustainable development, improved public waterfront access, increased tax base, and addressing environmental justice issues. The studies will include an in-depth analysis and description of current conditions, a market and economic trends analysis to assist in determining potential reuse opportunities and determination of strategic parcels for redevelopment and revitalization. The studies will provide an in-depth and thorough description and analysis of existing conditions, opportunities, and reuse potential for properties located in the proposed Brownfield Opportunity Area with an emphasis on the identification and reuse potential of strategic sites that are catalysts for revitalization.

It is expected that both BOAs (Step 2 Nominations) will begin in 2010 and be completed in 2012 or 2013.



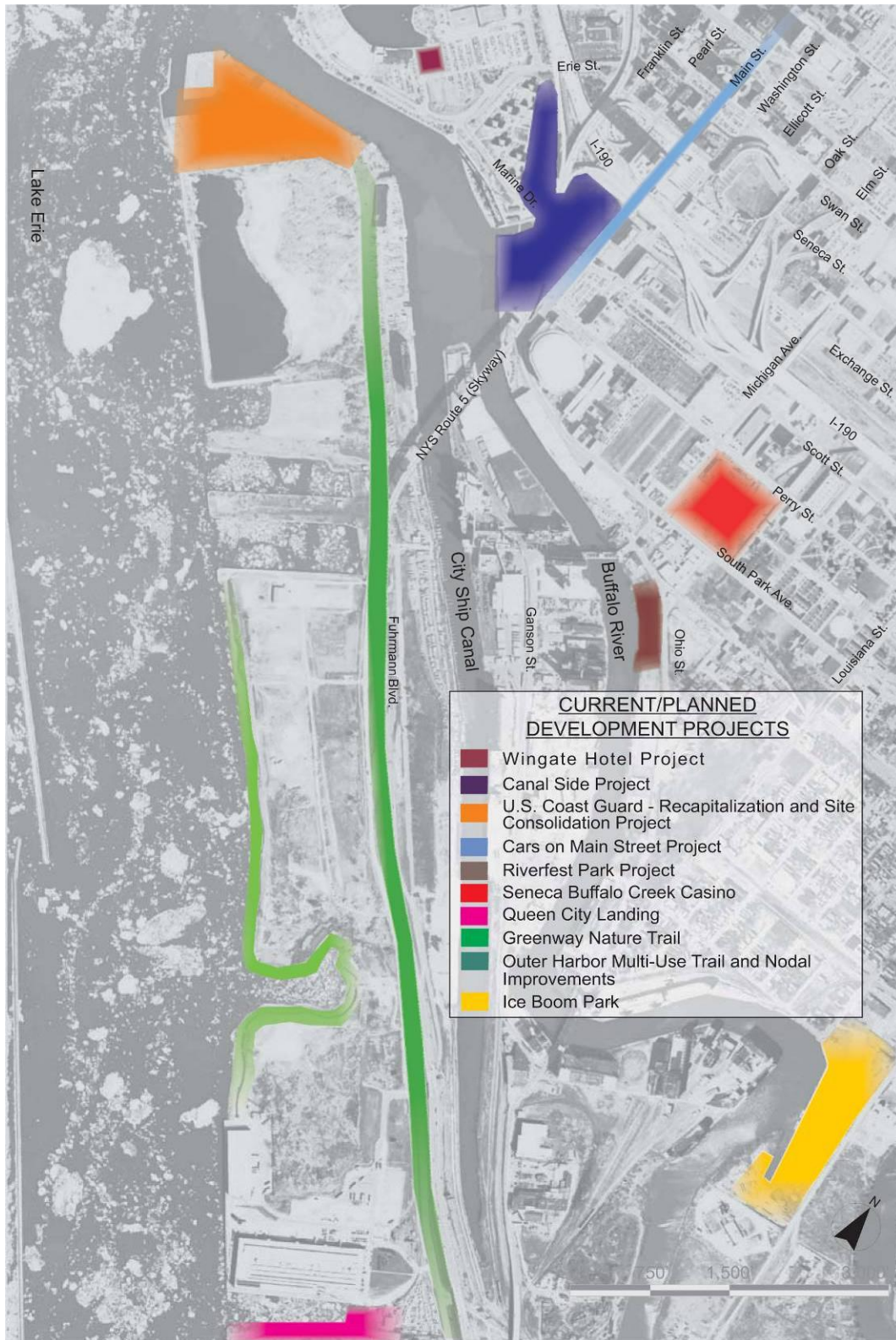


Figure 2-1 – Current and Planned Development Projects



## 2.2.2. Transportation Corridor

### 2.2.2.1. Importance of the Project Route Segment

The existing CBD, and New Downtown, have no direct connection with the Outer Harbor. In fact the Outer Harbor is connected to the "mainland" at only 3 locations along its 3.5 mile length (or 6,280 feet between "intersections"), including Tifft Street which is well south and outside the project study area. Currently there are two indirect routes to access the outer harbor from the downtown area: the Skyway and a surface route consisting of Ohio Street to Fuhrmann Boulevard. The Skyway does not provide multimodal access in that bicycle and pedestrians are prohibited from using the facility since it is a high speed interstate connection. Furthermore, due to the high level nature of the Skyway required to provide 100 ft navigation clearance over the Buffalo River and City Ship Canal, the Skyway approaches are far removed from the local point to point connections needed to meet the purpose and need of this project as defined in section 2.2.2.3. This makes this route circuitous and difficult to use from the standpoint of vehicular users wishing to gain simple access to the outer harbor from points on the inner harbor waterfront area. Similarly, the local surface route between the New Downtown and the Outer Harbor does not provide a direct and efficient connection, is circuitous and rather confusing. Specifically, what could be a 600 foot connection across the Buffalo River/City Ship Canal is currently a four-mile route along Ohio Street to Fuhrmann Boulevard on the Outer Harbor. These existing routes and extended routes leaves Outer Harbor areas difficult to access from a local connect standpoint. The existing surface route is too lengthy and/or uninviting for pedestrian and bicycle use. In addition, the routes result in difficult access for emergency services (police, fire, and medical emergency) resulting in increased response times by emergency providers.

The use of existing local surface streets also requires users to cross one of two existing lift bridges to access the Outer Harbor from Ohio Street, neither of which is ADA compliant. When the Ohio Street Bridge is closed during operations or for repairs, traffic is diverted to Ganson Street, thus putting traffic in the heart of industrial operations of General Mills and other businesses where tractor-trailers maneuver to and from loading bays extending into Michigan Avenue roadway and trains frequently operate and park across the road blocking traffic. The mixing of plant operations' traffic with local through traffic has created a less desirable situation.

There are numerous pedestrian and bicycle routes on both the inner and outer harbor separated by the Buffalo Harbor (Buffalo River and City Ship Canal) in the Project Area. On the inner harbor, pedestrians are presently accommodated along the roadways within the project limits by means of sidewalks, most of which have ramps for handicapped accessibility. Concrete sidewalks are currently provided on all roadways within the project limits with the exception of Perry Boulevard between Pearl Street/Commercial Street and Erie Street. Completed phases of the Erie Canal Harbor Project on the inner harbor have added routes/walkways and points of interest to the pedestrian network and have added to the already established walkways leading north from this site to the Erie Basin Marina, consisting of a combination of a waterfront path, private marina, public park and waterfront observation tower. Users can then proceed north on the Riverwalk link now providing public access to numerous parks and Niagara River amenities from downtown Buffalo to northern Erie County and providing connections over the Peace Bridge to the Canadian Niagara River Trail.

Pedestrian counts were taken on the multiuse path adjacent to Erie Street, west of the Erie Basin Marina on the Inner harbor. The counts were taken on three representative days including Tuesday July 14, 2009, Wednesday July 15, 2009 and Saturday, July 18, 2009 with an average over 1000 eastbound and 1000 westbound pedestrians counted.

The outer harbor area consists of a multitude of existing, under construction or planned pedestrian, bicyclist and nature areas as points of destination including the following:



- **Outer Harbor Multi-Use Path (under construction):**  
A continuous multi-use path will tie the project together from beginning to end along this three-mile stretch. The path will be a perfect place for a family bicycle outing, for walkers, joggers, roller-bladers or anyone who chooses to spend time along this scenic waterfront.
- **Fuhrmann Boulevard Urban Parkway Upgrades (under construction):**  
A central planted median, decorative lighting and a pedestrian refuge area accentuates this new, gently curving parkway. Fuhrmann Boulevard will feature one travel lane in each direction and an on-street parking lane. Traffic calming will be included to improve safety along this pedestrian-friendly roadway bordered in green.
- **Times Beach Enhancements:**  
Once a recreational beach, Times Beach is a prime stopping point for migratory birds. To make this area more pleasing while also protecting an important ecosystem, a boardwalk will provide a peaceful place to stroll and observe nature. The design of the decorative fence planned here will feature silhouetted images of the area's native flora and fauna.
- **Industrial Heritage Trail Along CSX Railroad (under construction):**  
Travel through Buffalo's waterfront history by foot or by bike and the story of Buffalo's working waterfront will unfold around you. The industrial heritage of this area will be referenced in interpretive elements that identify historic and contemporary industries and in materials utilized from our industrial past such as recycled Belgian Blocks.
- **Tifft Pier (under construction):**  
A new fishing pier, a boardwalk area, park space, seating and provisions for public art will make this a destination for residents, tourists and families.
- **Gallagher Beach:**  
Gallagher Beach will be the site of a multi-functional gathering place. Improvements include a new pavilion, boardwalk, picnic tables and chess game tables, providing opportunities for visitors to have lunch by the water or simply enjoy the view.
- **Tifft Nature Preserve Enhancements:**  
A prime destination along the Outer Harbor dedicated to conservation and environmental education, Tifft Nature Preserve will benefit from more convenient and direct access to the shores of Lake Erie. A new pier and nature walk will provide enhanced educational and recreational opportunities. Tifft Nature Preserve is an important stop for naturalists, bird watchers, area residents, school groups, hikers and wildlife enthusiasts.

As described above, there are a multitude of destinations points, pedestrian and bicycle facilities on the inner harbor and outer harbor that are separated by the 300-600 foot wide physical barrier comprised of the Buffalo River and City Ship Canal. Currently there is no "direct" connection from these facilities to similar waterfront facilities on the inner harbor such as the Erie Basin Marina, and Erie Canal Naval Park. A defined gap exists.

This lack of vehicular connectivity also creates a higher probability of traffic congestion due to the inherent street hierarchy – and therefore, funneling of traffic. Existing and future vehicular traffic is funneled to the two current connections within the Study Area, while biking and walking are funneled to just one multi-modal connection along Ohio Street. The northern end of the Outer Harbor, which is part of the New Downtown, could be viewed by all users as a 1.5 mile long cul-de-sac.



There is a need and desire, as documented in various City of Buffalo planning documents such as the City of Buffalo - Queen City Hub Plan documenting the City's desire to develop outward from the core, for expanding in a pattern of sustainable growth while connecting to a key resource – the waterfront. It is also in keeping with existing infrastructure (both the park and trail facilities mentioned above) and linking multi-modal opportunities. This type of expansion immediately adjacent to the core downtown area requires a local street level direct connection to the New Downtown and CBD and will comply with U.S. EPA Green Recommendations, specifically, by encouraging development in brownfield and infill sites and encouraging use of Smart Growth and transit oriented development principles by encouraging developments that are walkable and located near public transit.

Given the diversity of alternatives, as well as the range of locations, common points (or logical termini) were set on both sides of the Buffalo River in order to evaluate and compare the alternatives. The Downtown/Inner Harbor logical terminus, Point A, was set at the approximate hub of current Inner Harbor development and recreational activity including the Naval Park Museum, Erie Canal Harbor, HSBC Arena and planned Canal Side Project.

The Outer Harbor logical terminus, Point B, was set at the northern end of the Outer Harbor near existing, public and private recreational destinations.

The placement of Logical Terminus B relates directly to the New Downtown, and the City's delineation of the Erie Canal Harbor and Waterfront District as a key strategic investment area. Logical Terminus B is located within the New Downtown, and more specifically at the southern entrance to the Times Beach Nature Preserve along the new Outer Harbor Parkway multi-use trail.

The location is in keeping with the City's desire to develop outward from the core, expanding in a pattern of sustainable growth while connecting to a key resource – the waterfront. It is also in keeping with existing infrastructure (both the park and trail facilities) and linking multi-modal opportunities.

Several comments were received that expressed an opinion that Terminus B should be located farther south along the Outer Harbor. While recognizing that there are proposed developments for the central and southern end of the Outer Harbor, this project must recognize the long-term visioning and planning efforts that have been made – and specifically the community's desire for smart growth.

Locating Point B at various locations further south (as far south as Freezer Queen facility) on the outer harbor was investigated and is discussed further in Chapter 3 -Section 3.3.1 of this document. While the travel distance and travel times change slightly under these scenarios, the relocation of Point B does not affect the outcome of the alternative screening process documented in subsequent sections of this report.

The logical terminus points are shown in Figure 2-2.





Figure 2-2 – Project Area



### 2.2.2.2. Alternate Routes

Traffic patterns were modified when the original Michigan Street Bridge over the City Ship Canal was deemed inoperable in 1962. The existing routes including: the Skyway (NY Route 5); Michigan Avenue/Ohio Street/Fuhrmann Boulevard; or Michigan Avenue/Ganson Street/Ohio Street/Fuhrmann Boulevard continue to be the routes connecting to the Outer Harbor. See Figure 3-1.

### 2.2.2.3. Corridor Deficiencies and Needs

The overall need for the Buffalo Harbor Bridge Project is to address the current transportation inadequacies and deficiencies associated with the lack of an efficient local crossing between the New Downtown and the Outer Harbor. The following is the Purpose and Need for the project:

#### Purpose

The purpose of this project is to directly and efficiently connect the New Downtown and the Outer Harbor area with a multi-modal (pedestrian, bicyclist, and motorized traffic) transportation facility over the Buffalo River and/or City Ship Canal between the Ohio Street Lift Bridge and the Erie Basin Marina in the City of Buffalo.

#### System Linkage Needs

Since the former South Michigan Avenue Bridge over the City Ship Canal was closed in the early-1960s, local access between the Inner and Outer Harbor areas has been inefficient. In fact, the Outer Harbor is connected to the "mainland" at only 3 locations along its entire 3.5 mile length (or 6,280 feet between "intersections"). One of these connections is at Tifft Street, which is well south of the Project Study Area. The confusing and circuitous routes that remain between the New Downtown and the Outer Harbor, via the Skyway and along a surface route via Ohio Street to Fuhrmann Boulevard, require a 4-mile trip compared to a  $\pm 600$  ft river crossing. Due to decline of industrial transportation needs between Kelly Island and the Outer Harbor the bridge was never rebuilt.

The existing Michigan Avenue Bridge over the Buffalo River provides access to the Outer Harbor via Kelly Island and, given the industrial nature of the Island, Michigan Avenue/Ganson Street mainly function as truck access roadways for several large-scale, active manufacturing plants, mills and distribution centers.

#### Modal Interrelationships

The present routes between the New Downtown and the Outer Harbor do not provide for adequate multi-modal access. Recent and proposed development along the inner harbor area (Naval Park and Canal Side), as well as improvements along the Outer Harbor (Outer Harbor Parkway Project) where multiuse paths and trails are being constructed, have increased the demand for direct and efficient connection between the inner and outer harbor areas. NY Route 5, an elevated expressway commonly referred to as "the Skyway," prohibits pedestrians and bicyclists. Both Ohio Street (and the Ohio Street Lift Bridge) and Michigan Avenue/Ganson Street (and the Michigan Avenue Lift Bridge), are locally designated truck routes that impede pedestrian and bicyclist access with high truck traffic volumes, and the lack of appropriate streetscape and refuge areas to facilitate safe access. In addition, the lift bridges are not compliant with the current Americans with Disabilities Act.

While access to the waterfront by land has been wanting, commercial and recreational watercraft users enjoy the nearly unimpeded boating/shipping use of the Harbor, River and the City Ship Canal. A new bridge must maintain adequate waterway access to the harbor by commercial and recreational watercraft seeking refuge during storms and for docking and harbor facility use.



**Transportation Demand**

Previously, two City of Buffalo reports, the Engineering Report for Gateway Bridge, February 1987 and the Expanded Project Proposal for a Proposed Bridge - Inner/Outer Harbor Link, February 1999, were completed to determine the feasibility and cost of constructing a bridge across the Buffalo River. While a bridge project was determined to be feasible, the inability to finance the project led to its demise each time.

The need to reconnect the City with a direct and efficient local connection to the waterfront has remained. The City of Buffalo's Draft Local Waterfront Revitalization Program (January 2007) specifically states as a policy standard (Standard 9.1(D) (7)):

*Improve public access from downtown Buffalo and the Inner Harbor area to the Outer Harbor for both pedestrian, bicycles and motorized vehicles.*

The Buffalo Harbor Bridge project (PIN 5758.17) is included in New York State's Long-Range Transportation Plan (Strategies for a New Age: New York State's Transportation Master Plan for 2030, approved 2006), the Region's Plan (Greater Buffalo Niagara Regional Transportation Council (GBNRTC) 2030 Long-Range Transportation Plan for the Erie and Niagara Counties Region, approved June 2007), the 2008-2012 Transportation Improvement Program (TIP) approved June 22, 2007 and the New York State Department of Transportation's Statewide Transportation Improvement Program (STIP) for Federal Fiscal Years 2008-2011, approved December 10, 2007.

The GBNRTC's Long-Range Plan states that the project is intended to improve access to the waterfront by constructing "Outer Harbor Bridge(s) over the Buffalo River." The plan does not specify any location(s) for the transportation facility; these locations will be addressed in the Environmental Impact Statement (EIS).

**Social Demands and Economic Development**

A Buffalo Harbor Bridge will directly and efficiently connect local traffic between the New Downtown Area and the Outer Harbor, and enhance local and regional programs that promote economic development of the waterfront. Current and/or planned development projects in the area include the Buffalo Lakeside Commerce Park, Queen City Landing, Greenway Nature Trail, as well as the Buffalo Harbor Brownfield Opportunity Area (BOA) study.

In addition to promoting economic development, the connection of the New Downtown and the Outer Harbor will yield returns that extend beyond a monetary value. As stated in the City of Buffalo's The Buffalo Waterfront Corridor Initiative, An Inventory and Analysis of Buffalo's Waterfront Planning Legacy (August 2005):

*"Altogether, the community has a vision of a waterfront that is the beautiful, active, public edge of our City, continuously accessible from Riverside Park to Gallagher Beach and inland along the Buffalo River and Scajaquada Creek. It is a vision in which residents go down to enjoy the water as a part of daily life, and whose neighborhoods are better off for being there. It is a vision of a waterfront where visitors arrive and immediately see and understand what is so special about this place. It is a vision of a waterfront that is a safe and healthy place to visit. It is a vision of a waterfront that is an important part of our economy, providing an impetus for new development while we protect what is most valuable about it. It is a bundle of connections between our City and the world, but also between the City and the waterfront, braided carefully to accommodate the needs of transportation and safeguard the precious resources of the waterfront."*



The City has a long history of waterfront planning and development of harbor crossing studies. To realize the community's vision, a transportation solution that balances public access and economic, social and environmental competing values is required.

#### **2.2.2.4. Transportation Plans**

The Buffalo Harbor Bridge Project, also known as the Outer Harbor Access; is identified in the *Greater Buffalo-Niagara Regional Transportation Council's Transportation Improvement Plan 2008-2012* as the Outer Harbor Access; South Michigan Avenue Bridge Replacement. The Project's PIN is 5758.17. The Buffalo Harbor Bridge would provide a much needed local, multi-modal transportation connection between the New Downtown and the Outer Harbor.

The Gateway Tunnel Feasibility Study, (May 1994) examined the viability of a tunnel crossing the Buffalo River and connecting the downtown core to the Outer Harbor as a replacement for the Skyway. This report recommended that a 4 lane tunnel would serve well as a connector to the Outer Harbor but a 6 lane tunnel would be required as a replacement for the skyway based on future traffic demands. All tunnels were vehicular only and did not support multimodal travel. Recommendations of this report were never acted upon most likely due to cost considerations for a tunnel of this magnitude.

The Buffalo Waterfront Water Taxi Feasibility Study, (August 1997) investigated the feasibility of operating a water taxi to service the inner and outer harbor. It recommended that service be provided from Erie Street, Lighthouse Point Park and the foot of Main Street from Memorial Day through Labor Day, with scheduled service routing to accommodate 20 to 30 minute intervals between departures. It concluded that it would be feasible for a water taxi to service the Buffalo Harbor Region to provide access to existing and proposed waterfront attractions. Although feasible, this service would exist primarily as a tourist attraction and not intended as a year round service. These services were never implemented.

#### **2.2.2.5. Roadways Connecting to or Potentially Affected by Proposed Alternatives**

Local roadways in the Project Area provide connections from the center of downtown and the regional expressways to the Project Area. These at-grade streets are part of the City of Buffalo street system and are posted at the city-wide speed limit of 30 mph with the exception of Erie Street as it enters into the Erie Basin Marina which is posted at 15 mph and NY Route 5 (Skyway) where it is a state highway with a posted speed of 55 mph. These local roadways are owned and maintained by the City of Buffalo. The primary local roadways serving the Project Area are identified in Table 2-1, and include the following.

- Michigan Avenue between Scott Street and South Park Avenue is 43 ft wide with a 66 ft right-of-way. West of the intersection with Perry Street the roadway consists of one 11 ft wide travel lane in each direction, an 11 ft two-way center turn lane, and a 5 ft bicycle lane in each direction. East of the Perry Street intersection the roadway consists of two travel lanes in each direction. The westbound right hand travel lane on Michigan Avenue approaching Perry Street is an exclusive right turn lane. Sidewalks are provided on both sides of the roadway. Signalized intersections are located at Perry Street and South Park Avenue. The intersection of Michigan Avenue with Scott Street is currently unsignalized. No on-street parking is permitted along Michigan Avenue in the study area. The roadway has concrete or granite curbs, concrete sidewalks on both sides and no medians. Michigan Avenue is signed as a designated bicycle route providing bike lanes to north of the Lift Bridge where the Bicycle Route ends. There are signalized intersections at Perry Blvd. and South Park Avenue. Intersections with Scott Street, Fulton Street, Ohio Street and Ganson Street are stop sign controlled. One horizontal curve exists. It has a normal crown and no superelevation. Vertical grades range from 0.3% to +4.5%.
- Michigan Avenue crosses over the Buffalo River and currently terminates at the City Ship Canal. This section of Michigan Avenue is 38 ft wide with 50 ft right-of-way. The section from Ganson Street west bisects General Mills Plant activities and currently serves as an access road to the plant.



- South Michigan Avenue currently terminates at the City Ship Canal. Recently reconstructed between Fuhrmann Boulevard and the Canal, South Michigan Avenue is 28 ft wide with a 50 ft right-of-way. This section of roadway partially bisects RCR Yachts activities and currently serves as an access roadway to the marina.
- Erie Street has a right-of-way width of 99 ft. The pavement section is 72 ft wide with one 26 ft travel lane provided in each direction. The pavement width increases an additional 12 ft at various locations for exclusive turning lanes. The roadway has concrete or granite curbs, concrete sidewalks, and a typical median width of 20 ft. There are no designated bikeways, bus turnouts or transit/pedestrian shelters on Erie Street. There are no signalized intersections and the Bingham Street/Perry Blvd., Lakefront Blvd. and Marine Dr. intersections are controlled with stop signs. There are three horizontal curves with radii ranging from 168 ft to 1554 ft within the Project Area. The existing vertical grades range from approximately -5% to +5%.
- Washington Street has a right-of-way width of 66 ft. The pavement section is 42 ft wide with two, 10.5 ft wide travel lanes provided in both directions. Sidewalks are provided on both sides of the roadway with tree pits along the east side of the roadway. Signalized intersections are located at Exchange Street to the north and Scott Street to the south of the Buffalo News Building. A channelized left-turn lane is provided on the southbound travel lanes to access the Thruway. A three-way stop is located at the southern terminus of Washington Street where it meets Perry Street. Two-hour, metered parking is permitted on the east side Washington Street between Scott and Perry streets.
- Perry Street provides a connection between Washington Street and Main Street to the west and is bounded by two, unsignalized, three-way stop intersections. Perry Street is a minor arterial with two, 11 ft wide traffic lanes in each direction. Sidewalks are provided along Washington and Perry streets. Restricted parking is permitted on the north side of Perry Street between Washington and Main streets.
- Perry Boulevard is, a two-lane street that starts at Pearl Street/Commercial Street and terminates at Erie Street and lies underneath the elevated Thruway and Skyway structures. It has a roadway width of 50 ft that includes two, 15 ft wide travel lanes and 10 ft parking lanes. Unrestricted, on-street parking is permitted on both sides of the street; sidewalks are not present.
- Main Street / Seymour H. Knox III Plaza provides a north to south connection from Exchange Street to South Park Avenue within a 99 ft wide right-of-way. The portion of Main Street south of Scott Street has been officially designated as Seymour H. Knox III Plaza and consists of one travel lane in each direction along with two light rail tracks. The pavement width varies between approximately 22 ft to 26 ft. There are no exclusive turning lanes at intersections. The roadway has granite curbs and a multi-use path to the west of the light rail tracks. There are two stop sign controlled intersections (Perry Boulevard and South Park Avenue) and one signal controlled intersection (Scott Street) on Main Street. No horizontal curves exist. Vertical grades are slight and are estimated from field inspection to be less than 1%. The NFTA Metro Rail system operates at grade along the entire length of Main Street in the Project Area from 5:30 am to 1:00 am daily. Sidewalks are located along both sides of Main Street to the north of Scott Street/Marine Drive and along the east side of the street to the south of Scott Street/Marine Drive. Automobile and bicycle traffic are prohibited on Main Street between Exchange Street and Scott Street/Marine Drive in the Project Area, however the City and NFTA plan to restore Main Street to accommodate both automobile traffic and Metro Rail service through their Multi-Modal Access and Revitalization Project. The Erie Canal Harbor Transit Plaza, located adjacent to the intersection of Main Street and Scott Street/Marine Drive, was completed in 2008 and contains bicycle racks and bench seating for transit riders and others. On-street parking is prohibited on Main Street throughout the Project Area.



- Pearl Street/Commercial Street (west of Main Street) - Connects Upper Terrace Street to the north to Perry Boulevard. South of Perry Boulevard, Pearl Street becomes Commercial Street and connects with Marine Drive and the Erie Canal Harbor Project. Pearl Street has a right-of-way width of 66 ft. The street accommodates 2-way traffic south of Upper Terrace with a 40 ft wide roadway and provides 10 ft travel lanes and 10 ft wide parking lane on each side. Four foot wide sidewalks are located along both east and west sides of the roadway. Parking is prohibited on Pearl Street between Upper Terrace and Scott Street.
- Marine Drive accommodates two-way traffic northwest toward Erie Street. Marine Drive encircles the Marine Drive Apartments and reconnects back to Scott Street at Main Street. Sidewalks are not provided along the outside edge of the Marine Drive loop road. On-street parking is permitted on portions of Marine Drive.
- Scott Street provides an east/west connection between Main and Washington Streets. An existing right-of-way width of 60 ft contains a 32 ft wide roadway with two, 13 ft wide travel lanes and 3 foot-wide dedicated bicycle lanes delineated in each direction throughout the length of the Project Area. Sidewalks are also provided along both sides of the street. Two signalized intersections are located on this section at Main and Washington Streets.
- Ohio Street provides an east/west connection between Michigan Street on the east side of the Buffalo River and Fuhrmann Boulevard on the west side of the Buffalo River. The roadway width varies between 38 ft to 45 ft with two non-delineated travel lanes. Sidewalks are also provided along portions of the street.
- Ganson Street connects Michigan Avenue at the General Mills plant to Ohio Street just west of the Ohio Street Bridge over the Buffalo River. The roadway width varies between 32 ft to 36 ft with two non-delineated travel lanes.
- Fuhrmann Boulevard runs parallel to NY Route 5 is a local two lane roadway. Fuhrmann Boulevard is the only roadway that provides access to the Outer Harbor properties north of NY Route 5 and the Skyway. The existing Fuhrmann Boulevard is currently being reconstructed as two 14 ft travel lanes and an 8 ft parking lane along the west side between the Coast Guard Base and Michigan Avenue. New granite curbs, concrete sidewalks, and a multi-use path are being constructed in conjunction with the ongoing construction project and are projected to be completed in 2010. Between Michigan Avenue and Ohio Street, the reconstructed Fuhrmann Blvd will consist of two 13 ft travel lanes with parking lanes divided by a 9 ft median. New granite curbs, concrete sidewalk and a multi-use path are being constructed.

## 2.3. Transportation Conditions, Deficiencies and Engineering Considerations

### 2.3.1. Operations (Traffic and Safety) & Maintenance

#### 2.3.1.1. Functional Classification and National Highway System (NHS)

Several significant interstate and regional expressway facilities pass through or near the Project Area. Each facility has ramp connections to the downtown roadway network which provide access to the Project Area. These facilities include:

- I-190 (Interstate) – A four to six lane expressway which has access ramps at Niagara Street, Court Street, Washington Street (SB only) and Seneca/Elm Street and runs through the area elevated above portions of Lower Terrace Street.
- NY Route 5/Skyway complex (NHS) – A limited access facility which carries traffic between downtown Buffalo and Lackawanna and southtown communities, crosses directly over the Project Area and has access connections at the Church Street with Delaware Avenue intersection, a



direct connection interchange to the I-190 Thruway, and ramp connections to Fuhrmann Boulevard near the Ohio Street intersection.

- NY Route 33/Kensington Expressway (NHS) – A limited access expressway east of the downtown area which provides access to the waterfront via the Elm/Oak Arterials and intersecting local streets.
- Local roadways in the Project Area provide connections from the center of downtown and the regional expressways to the Project Area. These at-grade streets within the Project Area are part of the City of Buffalo street system and are posted at the city-wide speed limit of 30 mph. These local roadways are owned and maintained by the City of Buffalo. The primary local roadways serving the Project Area are identified in Table-2-1.

Table 2-1 Classification Data												
Route(s)	Erie St.	Marine Dr.	Pearl St.	Main St.	Washington St.	Michigan Ave.	Scott St.	Perry St.	South Park Ave.	Ohio St.	Ganson St.	Fuhrmann Blvd.
Functional Classification	Collector	Collector	Collector	Minor Arterial	Collector	Minor Arterial	Collector	Minor Arterial	Minor Arterial	Minor Arterial	Collector	Collector
National Highway System (NHS)	No	No	No	No	No	No	No	No	No	No	No	No
Designated Truck Access Route	No	No	No	No	No	No	No	No	No	No	No	No
Qualifying Highway	No	No	No	No	No	No	No	No	No	No	No	No
Within 1 mile of a Qualifying Highway	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Within the 16 ft vertical clearance network	No	No	No	No	No	No	No	No	No	No	No	No

### 2.3.1.2. Control of Access

The I-190 Thruway and the NY Route 5/Skyway complex are the only two controlled-access highways located within the Project Area. These roadways, supported by elevated structures through the study area, are only accessible at the ramp/interchange locations listed in Section 2.3.1.1 near the Project Area.

### 2.3.1.3. Traffic Control Devices

Intersections within the Project Area are generally unsignalized. A list of the type of traffic control



operations at intersections within the Project Area is included in Section 2.3.1.7.

#### 2.3.1.4. Intelligent Transportation Systems (ITS)

NITTEC variable message signing is located along the controlled access routes through the Project Area including warning/closure signs at the approach to Skyway. Currently, additional ITS improvements along the I-190 through the City of Buffalo are underway. No other components or systems are in operation or planned for the Project Area.

#### 2.3.1.5. Speeds and Delay

The posted speed limit on all the city streets within the Project Area is 30 miles per hour (mph) with the exception of Erie Street within the vicinity of the Erie Basin Marina, where the speed limit is reduced to 15 mph. A travel speed study will be conducted to confirm the 85<sup>th</sup> percentile speed in the DEIS. The posted speed limit on the I-190 through the Project Area is 55 mph.

A travel time study was conducted by the GBNRTC to identify existing vehicular travel times from the Outer Harbor area (Coast Guard facility and FBRM marina) to various locations within the Inner Harbor area and a location closer to downtown Buffalo. Four trip pairs and the resultant travel times were identified with the results illustrated in Figure 2-3. As indicated, travel distances between the inner and out harbor area are in the three (3) mile range. The travel trip route utilizes the NY Route 5/Skyway crossing of the Buffalo River. Vehicular travel times along the identified routes range from 5.4 minutes to 4.2 minutes.

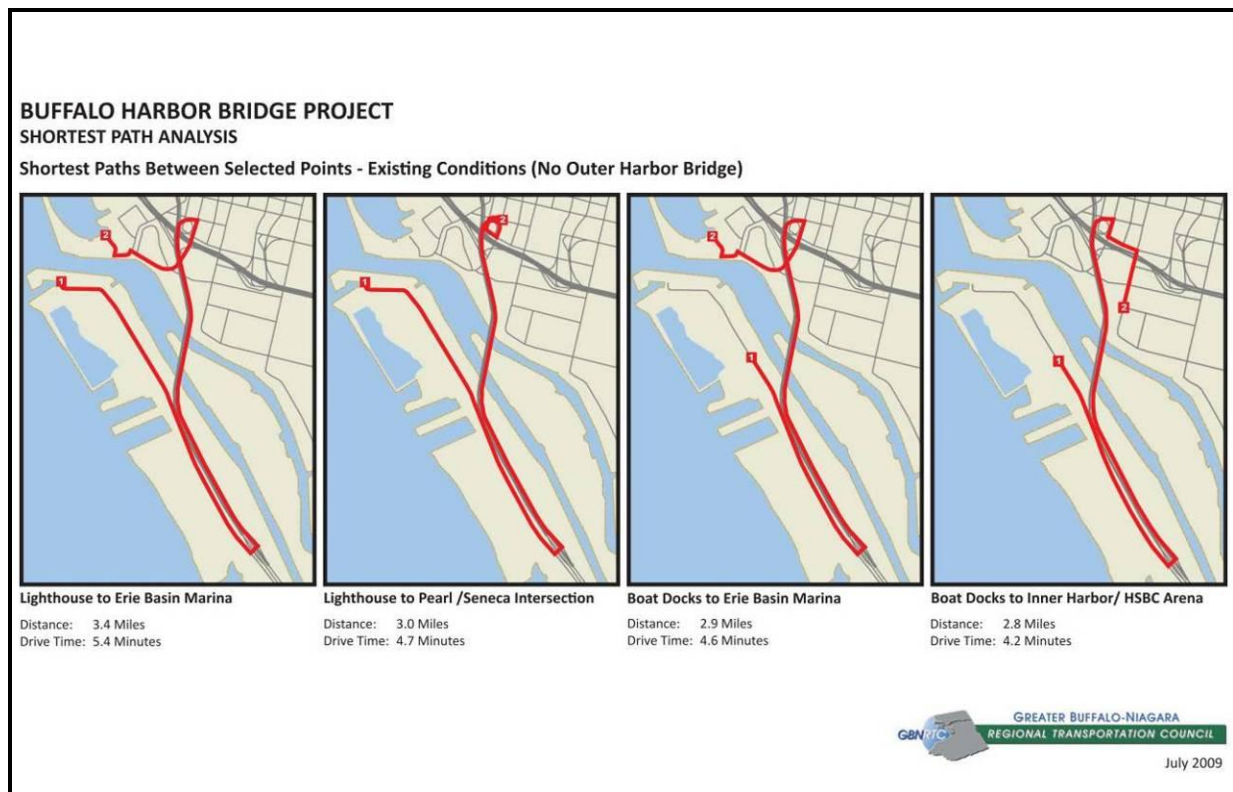


Figure 2-3

#### 2.3.1.6. Traffic Volumes

**2.3.1.6. (1) Existing traffic volumes**

Average Annual Daily Traffic (AADT) volumes information was obtained for a number of roadways in the Project Area. Regional AADT count data is maintained by the GBNRTC and the NYSDOT. Average daily traffic volumes range from 700 vehicles on Perry Street to over 90,000 on the I-190. In general, AADT along the local street network is in the 2,000 to 5,000 vehicle range. The most recent AADT traffic data for selected roadway segments in the Project Area are listed below in Table 2-2.

Table 2-2  
Existing Annual Average Daily Traffic (AADT) Counts

Road	Segment	AADT	Count Year
Elm/Oak Street	Swan St. to Division St.	30,200	2005
Erie Street	Erie Basin Marina to Perry Street	2,200	2005
Erie Street	Perry Street to Lower Terrace	5,700	2005
Exchange Street	Pearl St. to Main St.	3,200	2005
Lower Terrace	Pearl St. to Church St.	1,800	2007
Marine Drive	Erie St. to Pearl St. Extension	2,600	2005
Pearl St. Extension	Marine Dr. to Exchange St.	2,250	2007
Perry Street	Main St. to Washington St.	700	2005
Scott Street	Main St. to Washington St.	2,400	2006
Main Street	South Park Ave. to Scott St.	1,000	2005
Michigan Avenue	Ohio St. to South Park Ave.	5,500	2004
Ohio Street	Fuhrmann Blvd. to Louisiana St.	8,400	2005
Ganson Street	Michigan Ave. to Ohio St.	2,200	2005
Washington Street	Scott St. to Seneca St.	8,100	2004
Fuhrmann Boulevard	Ohio St. to Coast Guard Station	1,320	2006
NY Route 5/Skyway	Fuhrmann Blvd. to Thruway	40,100	2006
I-190 Thruway	Rt. 5 Skyway to Church St.	90,800	2004

Source: GBNRTC, NYSDOT

**2.3.1.6. (2) Future no-build design year traffic volume forecasts**

Forecast Project Area population information from the GBNRTC indicates a growth rate of approximately 8% from the year 2000 to the year 2025. Using this rate as a basis, traffic volumes along the Project Area roadways are assumed to increase 0.5% per year from the period 2009 through the estimated time of completion (ETC) of the initial build out-year 2014, and ETC+30, which is the year 2044. Utilizing this forecasted traffic growth rate, projected No-Build AADTs were identified for the future year conditions among the roads in the Study Area. A summary of the forecasted AADT volumes are presented in Table 2-3.



Table 2-3  
No-Build Annual Average Daily Traffic (AADT) Counts

Road	Segment	Existing AADT (2004-2007)	Forecast AADT ETC (2014)	Forecast AADT ETC+30 (2044)
Church Street	Delaware Ave. to Franklin St.	10,000	10,250	11,900
Erie Street	Erie Basin Marina to Perry Street	2,200	2,255	2,620
Erie Street	Perry Street to Lower Terrace	5,700	5,840	6,790
Elm/Oak Street	Swan St. to Division St.	30,200	30,960	35,960
Exchange Street	Pearl St. to Main St.	3,200	3,280	3,810
Lower Terrace	Pearl St. to Church St.	1,800	1,845	2,140
Marine Drive	Erie St. to Pearl St. Extension	2,600	2,670	3,100
Pearl St. Extension	Marine Dr. to Exchange St.	2,250	2,300	2,680
Perry Street	Main St. to Washington St.	700	720	835
Scott Street	Main St. to Washington St.	2,400	2,460	2,860
Main Street	South Park Ave. to Scott St.	1,000	1,025	1,190
Michigan Avenue	Ohio St. to South Park Ave.	5,500	5,640	6,550
Ohio Street	Fuhrmann Blvd. to Louisiana St.	8,400	8,600	10,000
Ganson Street	Michigan Ave. to Ohio St.	2,200	2,260	2,600
Washington Street	Scott St. to Seneca St.	8,100	8,300	9,650
Fuhrmann Boulevard	Ohio St. to Coast Guard Station	1,320	1,350	1,570
NY Route 5/Skyway	Fuhrmann Blvd. to Thruway	40,100	41,110	47,750
I-190 Thruway	Rt. 5 Skyway to Church St.	90,800	93,100	108,120

Source: GBNRTC, NYSDOT, PB

### 2.3.1.7. Level of Service and Mobility

#### 2.3.1.7. (1) Existing level of service and capacity analysis

An existing conditions intersection Level of Service (LOS) analysis was conducted for the Project Area intersections. A total of 29 intersections in the Project Area were analyzed as part of the intersection analysis. The intersection LOS is related to the average delay experienced by motorists traversing an intersection. LOS may range from A to F, with A being the best quality of service and F being the poorest. LOS E is the worst level of service that can occur before intersection volumes exceed capacity. When LOS F occurs, there are substantial queues on intersection approaches, and multiple changes of a signal are required to traverse an intersection. A summary of the average control delay along with qualitative descriptions of traffic flow associated with each LOS are listed Table 2-4. This description of delay is based on definitions established in the Highway Capacity Manual, 2000 Edition (Transportation Research Board, 2000).



Table 2-4  
Level of Service Criteria for Intersections

Level of Service	Average Control Delay (seconds/vehicle)	Traffic Flow Description
A	<10	Represents free flow conditions. Individual users are virtually unaffected by the presence of others in the traffic stream. Freedom to select desired speeds and to maneuver within the traffic stream is extremely high.
B	>10 and <20	In the range of stable flow, but the presence of other users in the traffic stream begins to be noticeable. Freedom to select desired speeds is relatively unaffected, but there is a slight decline in the freedom to maneuver within the traffic stream from LOS A.
C	>20 and <35	In the range of stable flow, but it marks the beginning of the range of flow in which the operation of individual users become significantly affected by interactions with others in the traffic stream.
D	>35 and <55	Represents high density, but stable flow. Speed and freedom to maneuver are severely restricted, and the driver experiences a generally poor level of comfort and convenience.
E	>55 and <80	Represents operating conditions at or near the capacity level. Freedom to maneuver within the traffic stream is extremely difficult. Comfort and convenience levels are extremely poor, and driver frustration is generally high.
F	>80	Describes forced or break-down flow. This condition exists when the amount of traffic approaching a point exceeds that which can traverse the point.

Source: *Highway Capacity Manual, 2000 Edition.*

The existing conditions LOS analysis was conducted for two analysis scenarios. The analysis scenarios include the following:

- Weekday AM Peak
- Weekday PM Peak

Traffic volume data was collected for the analysis scenarios from a number of sources. The information included recent traffic count information provided by the GBNRTC, recent traffic count information from the Seneca Buffalo Creek Casino Traffic Impact Study, and included manual turning movement counts.

Existing LOS during the AM and PM peak hour periods for intersections in the Project Area are identified in Table 2-5.



Table 2-5  
Existing Non-Event Conditions

Intersection	AM Peak	PM Peak	Control Type
Church Street & Bingham Street	**	A/11.8	Unsignalized
NB		D	
Church St. & Elmwood Ave.	B/19.8	B/19.4	Signal
EB	C	C	
WB	B	C	
SB	B	B	
Erie St. & L. Terrace	**	**	Unsignalized
Erie St. & Bingham St.	A/3.5	A/4.2	Unsignalized
Erie St. & Perry Blvd.	A/4.0	A/1.3	Unsignalized
Erie St. & Marine Drive	A/7.0	A/7.5	Unsignalized
Erie St. & Lakefront Blvd.	A/7.7	B/12.7	Unsignalized
Marine Dr. & Pearl St. Ext.	A/7.5	A/8.0	Unsignalized
Pearl St. Ext. & Perry Blvd.	A/1.8	A/6.7	Unsignalized
Pearl St. Ext. & L. Terrace	**	**	Unsignalized
Pearl St. & U. Terrace/ Exchange St.	A/7.5	A/8.3	Unsignalized
Seneca St. & L. Terrace	**	**	Unsignalized
Seneca St. & Franklin St.	A/7.1	A/7.3	Unsignalized
Main St./Knox Plaza & Scott St.	A/7.1	A/7.6	Signal w/LRT
EB	A	A	
WB	A	A	
NB	A	B	
Main St./Knox Plaza & Perry St.	A/7.2	A/7.4	Unsignalized
Main St. & Exchange St.	A/1.9	A/1.9	Signal w/LRT
EB	A	A	
WB	A	A	
Washington St. & Exchange Street	B/18.9	B/15.1	Signal
EB	A	A	
WB	A	A	
NB	B	B	
SB	C	C	
Washington St. & Thruway Ramp	A/0.9	A/6.5	Unsignalized
SB	A	B	
Washington St. & Scott St.	A/8.6	B/17.0	Signal
EB	A	A	
WB	A	A	
NB	A	C	
SB	A	B	
Washington St. & Perry St.	A/7.2	A/8.2	Unsignalized
Michigan Ave. & South Park Avenue	A/9.2	A/9.9	Signal
EB	B	B	
WB	B	B	
NB	A	A	
SB	A	B	





**Table 2-5 (cont.)  
Existing Non-Event Conditions**

Intersection	AM Peak	PM Peak	Control Type
Michigan Ave. & Perry St.	A/6.9	A/9.5	Signal
EB	B	B	
WB	B	B	
NB	A	A	
SB	A	A	
Michigan Ave. & Scott St.	A/1.2	A/6.3	Unsignalized
Michigan Ave. & Ohio St.	A/7.5	B/10.8	Unsignalized
Michigan Ave. & Ganson St.	**	**	Unsignalized
Ohio St. & Ganson St.	A/1.7	A/1.1	Unsignalized
Ohio St. & Fuhrmann Blvd.	A/0.5	A/0.7	Unsignalized

Source: PB, 2009, GBNRTC, 2005-2008, FRA, Seneca Buffalo Creek Casino 2005

\*\* - Volume Data Currently Unavailable

Overall intersection LOS are all found in the acceptable range from A to B during both the weekday AM and PM peak hour periods. In addition, all approaches to signalized intersections within the Project Area were found to also operate at acceptable levels of service of A to D. No intersections or their approaches were found to operate in an over-capacity condition, LOS F. Of the unsignalized intersections, only the northbound movement at Bingham Street approaching Church Street was found to operate at an LOS D during the weekday PM peak hour. No intersection approaches were found to operate at unacceptable levels of service during the Saturday afternoon peak hour.

#### Event Conditions Roadway Network

During special events at the HSBC Arena and to a lesser extent Coca-Cola Field, transportation operational patterns can vary based on vehicle demand and special event roadway closures. Special event intersection operations generally occur during the evening hours after the PM peak traffic period. Special events intersection operations would not impact the traditional AM peak or PM peak hour traffic periods.

During special events, the intersections of Michigan Avenue at Perry Street, Michigan Avenue at South Park Avenue, Michigan Avenue at Scott Street and Washington Street at Scott Street, and Washington Street at Perry Street are observed by City of Buffalo Police personnel during the peak hours generally one to two hours before and after an event. When traffic conditions warrant, the police override the controller operation at signalized intersections and the stop control condition at unsignalized intersections and give right-of-way through the intersection for the associated heavy movements. The block of Perry Street between Main Street and Washington Street is reserved for limousine traffic only and no general vehicular traffic is allowed through this section during event operations. Vehicular access to Seymour H. Knox III Plaza is typically shut down to allow the pedestrian movements to/from the Events Only Metro Rail Station. As a result, traffic flow and operating conditions vary. The inclusion of Arena event traffic on the adjacent roadway network, while producing traffic operations at over capacity conditions, is acknowledged to be of relatively limited duration before and immediately after the events and anticipated by many of the attendees to these events, and, as noted above, all key intersections are police controlled.

#### 2.3.1.7. (2) Future no-action design year level of service

The year 2044 No-Build analysis includes programmed background project improvements to the roadway network along with any planned development projects. The proposed No-Build activities associated with the Canal Side project; including the clearing of the Auditorium Block, the mothballing of the Donovan Building site and the restoration of the historical roadway network in the Inner Harbor area would be



anticipated to be completed and included in the roadway network and impact the traffic operations through the Project Area. For the 2044 No-Build analysis, additional projects were identified and included in the roadway analysis network. These include the Seneca Buffalo Creek Casino, the conversion of Pearl Street to two-way traffic and the NYSDOT signal installation project at the Church Street and Bingham Street intersection. In addition, the Cars on Main Street Project is assumed to be completed (Phases 1, 1B and 2). No additional specific roadway improvements were assumed to be completed by the year 2044 for inclusion into the 2044 No-Build analysis.

No development projects that would generate significant additional traffic other than the Seneca Buffalo Creek Casino, Canal Side and outer harbor development are planned within the Project Area through to the year 2044. Other small development projects would be anticipated to occur within the Project Area. The traffic increases associated with these projects are assumed to be included in the yearly background traffic growth assumptions. Background traffic growth of 0.5% per year was assumed in the Project Area. This yearly increase equates to an approximate 19% increase in traffic volumes from existing conditions to the year 2044.

A summary of the assumed roadway and development projects in the Project Area included in the 2044 No-Build Alternative are listed as follows:

- Canal Side (Proposed/Medium Density)
- Cars On Main - Entire Corridor
- Conversion of Pearl Street to two-way traffic
- Traffic Signal Installation at Church Street and Bingham Street intersection
- Seneca Buffalo Creek Casino
- Outer Harbor development

An ETC+30, year 2044 No-Build intersection LOS analysis was conducted for the Project Area intersections. The 2044 No-Build LOS analysis was conducted for the two analysis scenarios; Weekday AM and Weekday PM Peak periods.

Year 2044 No-Build Levels of Service (LOS) during the AM and PM peak hour non-event conditions for intersections in the Project Area are identified in Table 2-6. As indicated, overall intersection LOSs are all found in the acceptable range from A to C during both the weekday PM peak hour and Saturday afternoon peak hour non-event analysis periods in the year 2044.

Table 2-6 Year 2044 No-Build Non-Event Conditions			
Intersection	AM Peak	PM Peak	Control Type
Church Street & Bingham Street	**	E/72.0	Signal
NB		E	
Church St. & Elmwood Ave.	C/20.7	C/21.9	Signal
EB	C/20.7	C	
WB	B	C	
SB	B	B	
Erie St. & L. Terrace	**	**	Unsignalized
Erie St. & Bingham St.	A/3.7	F/~	Unsignalized
Erie St. & Perry Blvd.	A/4.2	F/164.9	Unsignalized
Erie St. & Marine Drive	A/7.1	A/8.6	Unsignalized



Table 2-6 (cont.) Year 2044 No-Build Non-Event Conditions			
Intersection	AM Peak	PM Peak	Control Type
Erie St. & Lakefront Blvd.	A/8.2	C/19.2	Unsignalized
Marine Dr. & Pearl St. Ext.	A/7.7	D/25.7	Unsignalized
Pearl St. Ext. & Perry Blvd.	A/1.8	F/3118.6	Unsignalized
Pearl St. Ext. & L. Terrace	**	**	Unsignalized
Pearl St. & U. Terrace/ Exchange St.	A/7.8	C/~	Unsignalized
Seneca St. & L. Terrace	**	**	Unsignalized
Seneca St. & Franklin St.	A/7.2	A/6.5	Unsignalized
Main St./Knox Plaza & Scott St.	A/7.2	D/36.5	Signal w/LRT
EB	A	D	
WB	A	B	
NB	A	C	
Main St./Knox Plaza & Perry St.	A/7.3	A/8.6	Unsignalized
Main St. & Exchange St.	A/6.3	A/7.6	Signal w/LRT
EB	A	A	
WB	A	A	
Washington St. & Exchange Street	B/11.1	B/11.5	Signal
EB	A	A	
WB	A	B	
NB	A	A	
SB	B	B	
Washington St. & Thruway Ramp	A/0.9	D/77.6	Unsignalized
SB	A	F	
Washington St. & Scott St.	A/8.8	E/76.8	Signal
EB	A	F	
WB	A	B	
NB	A	F	
SB	A	B	
Washington St. & Perry St.	A/7.3	C/18.1	Unsignalized
Michigan Ave. & South Park Avenue	A/9.4	B/11.6	Signal
EB	B	B	
WB	B	B	
NB	A	A	
SB	A	B	
Michigan Ave. & Perry St.	A/7.1	C/26.8	Signal
EB	B	C	
WB	B	C	
NB	A	C	
SB	A	C	
Michigan Ave. & Scott St.	A/1.4	D/~	Unsignalized
Michigan Ave. & Ohio St.	A/7.7	B/12.9	Unsignalized
Michigan Ave. & Ganson St.	**	**	Unsignalized
Ohio St. & Ganson St.	A/1.9	A/1.1	Unsignalized
Ohio St. & Fuhrmann Blvd.	A/0.5	A/0.7	Unsignalized

Source: PB, 2009, GBNRTC, 2005-2008, FRA, Seneca Buffalo Creek Casino 2005

\*\* - Volume Data Currently Unavailable



During the year 2044 AM peak period, no signalized intersections or their approaches in the Project Area would operate in an at-capacity or over-capacity condition, LOS E or F. No unsignalized intersection approaches would operate at unacceptable levels of service during the weekday AM peak hour analysis periods.

During the year 2044 weekday PM peak hour, overall LOS at most Project Area intersections would operate in an acceptable range from A to D. The intersection of Washington Street/Scott Street would be anticipated to operate at a LOS E. This poor operating condition would be due to heavy turning movement traffic forecast on the eastbound and northbound Washington Street/Scott Street intersection approaches. At the Church Street/Bingham Street intersection, the heavy Bingham Street approach would operate at a LOS E during the weekday PM peak hour. At the Washington Street intersection with the Thruway entrance ramp, the heavy traffic northbound along Washington Street would reduce the number of gaps for southbound traffic desiring to turn onto the ramp. The southbound movement at this intersection would operate at a LOS F during the evening peak with an overall intersection operation of D. The unsignalized Michigan Avenue intersection with Scott Street would be anticipated to operate at a LOS D. At the unsignalized intersections of Erie Street with Bingham Street and Erie Street with Perry Boulevard, LOSs of E and F would occur under in a non-event condition under the PM peak hour conditions. The unsignalized intersection of Pearl Street with Perry Boulevard also would operate at over-capacity conditions during the weekday PM peak period.

#### **2.3.1.8. Safety Considerations, Accident History and Analysis**

A review of the accident records for the roadways in the study area was conducted. Accident records for the intersections along the Project Area roadways were provided by the City of Buffalo Department of Public Works, Parks and Streets for a three-year period (January 1, 2006 to December 31, 2008). The following sections summarize the results of the data collection for the noted roadways.

- Church Street at Bingham Street  
Seventeen accidents were recorded in the vicinity of and at this intersection during the accident investigation period. Of the seventeen accidents, seven of them were angle type accidents and five were rear end collisions. Three accidents occurring at this intersection resulted in minor injuries and two of these three originated from a single vehicle colliding with a fixed object (Thruway pier). The third injury accident was an angle type collision. A traffic signal installation is planned at the Church Street with Bingham Street intersection by NYSDOT in the year 2010. The operation of the intersection under signalized control would help to reduce accident occurrences at this intersection.
- Pearl Street/Commercial Street – Marine Drive to Church Street  
Thirteen accidents were recorded along Pearl Street/Commercial Street during the accident investigation period. Four of the accidents occurred at the entrance of a parking lot, which were all angle type accidents while four of the accidents were sideswipes in the same direction. There was one pedestrian accident which caused the only injury (minor) during the course of this accident investigation period.
- Erie Street - Franklin Street to Marine Drive  
Six accidents were recorded along Erie Street during the accident investigation period. One injury accident (minor) occurred during this investigation period, which resulted from a pedestrian accident. Five of the six accidents occurred between the hours of 1:00 pm and 4:00 pm. Accident types were very spread out during this investigation period which included a rear end collision, two sideswipes, a left turn (wrong way) on a one-way street and one head on collision.
- Marine Drive - Erie Street to Main Street  
Eight accidents were recorded along Marine Drive during the accident investigation period. One injury accident (minor) occurred during this investigation period which resulted from a pedestrian accident. Three of the collisions were of the angle type; while two of the collisions were sideswipes. All of the accidents occurred on Marine Drive and were not at any intersections.



- Perry Street – Main Street to Michigan Avenue  
Four accidents were recorded along Perry Street during the accident investigation period. Two collisions were with fixed objects with one of them causing injury. The operator of the motor vehicle, who was injured, ran a stop sign on Main and Perry subsequently colliding with HSBC Arena. Three of the four of the collisions occurred between the hours of 9:00 pm and 11:00 pm.
- Perry Boulevard - Pearl Street to Erie Street  
Eight accidents were recorded along Perry Boulevard during the accident investigation period. Four of the collisions were rear end collisions with parked vehicles. A single head on collision caused three of the four injuries during this investigation period. The other injury occurred when a passenger jumped out of a moving vehicle. The other two accidents were sideswipes; one in the same direction and one in opposite directions.
- Main Street/Seymour H. Knox III Plaza - South Park Avenue to Scott Street  
Seven accidents were recorded along this section of Main Street during the accident investigation period. Three injuries during this investigation period were caused by a truck explosion. The explosion was not caused by a collision. Two of the collisions were rollovers due to loss of operator control which resulted in no injuries. Only one collision occurred at an intersection (Seymour H. Knox III Plaza and Scott Street) where the operator collided with a fixed object.
- Scott Street - Main Street to Michigan Avenue  
Six accidents were recorded along Scott Street during the accident investigation period. One collision resulted in injury, which was a pedestrian accident in a parking lot. Three of the collisions were of the angle type and the other two sideswipes. One of the angle type and one of the sideswipe collisions involved limousines. Both of these collisions were at the Washington Street and Scott Street intersection.
- Exchange Street - Michigan Avenue to Pearl Street  
Eighteen accidents were recorded along Exchange Street during the accident investigation period. Fifty percent of the collisions involved injuries, most of them resulting from pedestrian accidents. Seven pedestrian accidents occurred when the pedestrian was crossing the street. Only one pedestrian accident did not result in injuries. Eight of the nine pedestrian collisions occurred at Exchange Street and Washington Street intersection. No identifiable pattern was derived from a review of the pedestrian accidents occurring at the Exchange Street with Washington Street intersection. Due to the high frequency of these accidents and the proximity of this intersection to the project study area, pedestrian impacts to this intersection resulting from the project impact will need to be further investigated.
- Bingham Street - Erie Street to Church Street  
Three accidents were recorded along Bingham Street during the accident investigation period. No injury accidents were reported. Two of the three accidents were of the angled type and one consisted of a vehicle backing into another.
- Washington Street – Perry Street to Swan Street  
Eleven accidents were recorded along Washington Street during the accident investigation period. Two separate injury accidents were reported. One of which was a pedestrian accident and the other in which the passenger exited a moving vehicle. A wide array of collision types occurred during this investigation period which included two angled type, one head on (parking lot), two sideswipes, two rear end collisions, and two collisions with fixed objects.
- Michigan from Perry to Fuhrmann  
Thirteen accidents were recorded in this corridor during the accident investigation period. Nine of the accidents occurred at the Michigan / Perry intersection. Of those nine accidents, five of them were left turns. Elsewhere, three vehicles hit fixed objects, two sideswipe accidents occurred and there was one rear end incident. One accident involved a pedestrian crossing the street. In all, four





accidents involved injuries, totaling 5 injuries for this corridor. There was only one accident involving a freight truck.

- Ohio St. from Miami to Fuhrmann  
Twenty-two accidents were recorded in this corridor during the accident investigation period. Each accident was spread out evenly over the six intersections analyzed. Of the twenty-two accidents, four involved tractor trailers, three were parking lot incidents, five vehicles struck fixed objects, five were right turns, one was due to slippery roads and another due to a deer crossing. There were three injury accidents resulting in four total injuries. There are no common accident locations in this corridor.
- Ganson Street  
Four accidents were recorded in this corridor during the accident investigation period. Of the four, three vehicles hit fixed objects. One avoided a deer, another was a tractor trailer who knocked down overhead utility lines and another was a drunk driver. The other accident was a rear end collision when a car was stopped to fix a flat tire. In all, two accidents involved injuries. There is no common accident location in this corridor and all of the accidents were due to driver error rather than poor design / signage or striping.

There are no high accident locations with in the study area.

#### **2.3.1.9. Existing Police, Fire Protection and Ambulance Access**

Existing police and fire protection is provided by the City of Buffalo. No police stations are located directly in the project area. The portion of the project site located on the north side of the Buffalo River is located in the Police Department's B District headquartered at 695 Main Street. The portion of the project site located on the south side of the Buffalo River is located in the Police Department's A District headquartered at 1857 South Park Avenue. Fire Stations are located on Ohio (Engine No.20) and Ganson St. (Engine No. 10). Engine Number 20 is the Edward M. Cotter. It is docked at the Engine 20 facility immediately north of the Michigan Street Lift Bridge. The Edward M. Cotter is approximately 100 feet long and is used to fight fires and break ice along navigable waterways of Buffalo and beyond. Engine No. 10 is an active facility housing reserve and hazard materials response equipment. Two fire stations are located immediately adjacent to the Project Area. The main Fire Department offices and station is located at 195 Court Street. A second station housing one engine and two ladder vehicles is located at 132 Ellicott Street. Ambulance service is provided from nearby hospitals and EMS support companies.

Emergency response services would utilize the main access roadway to the Project Area as outlined in Section 2.3.1.1.

#### **2.3.1.10. Parking Regulations and Parking Related Conditions**

Existing available parking within the Project Area includes metered and restricted on-street and off-street surface parking/ramp parking. The existing surface parking lots identified within the Project Area are:

- Marine Drive Apartment Lot
- Donovan Lots
- NYSDOT Lot
- NYSTA Lot

Parking on Interstate highways (I-190) is restricted by law within the project limits. No parking is allowed on the NY Route 5/Skyway complex.

A complete inventory of existing on-street and off-street parking spaces was conducted for the 1999 Inner Harbor FEIS. The inventory examined four designated parking districts within the area: then-named Marine Midland Arena District; Office District, Erie Basin Marina District and portions of the Waterfront District and Elm-Oak Corridor. A radius of 1,500 feet was identified as a comfortable walking distance,



and 2,000 feet as a maximum walking distance for event and activity-type parking. A total of 306 on-street /11,009 off-street and 226 on-street/954 off-street available parking spaces were identified within the two distances, respectively, from the Inner Harbor site. (Parsons Brinckerhoff Quade & Douglas, 1999).

More recently, the City of Buffalo completed the Comprehensive Parking Assessment Downtown Buffalo New York in December 2008 ("Parking Assessment"), which evaluated current and future parking supply and deficit conditions within the downtown area. The Parking Assessment study area is bounded by Goodell Street to the north, Michigan Avenue to the east, Elmwood Avenue to the west, and the Thruway and Inner Harbor to the south. As a subsection of the core study area, the HSBC Arena Parking District is defined as the area bounded by the Route 5 Skyway to the west, Inner Harbor to the south, Exchange Street to the north, and properties to the east of Michigan Avenue. The HSBC Arena Parking District contains a large portion of the Project Area, with the exception of land to the west of the Skyway. The Parking Assessment reports that this district, which also includes the HSBC Arena structured parking ramp and all of the surface lots to the east of the Arena and the HSBC Atrium, currently has an existing supply of 4,890 private and public off-street parking spaces and 162 on-street parking spaces.

#### **2.3.1.11. Lighting**

Local roadways in the Project Area are part of the City of Buffalo street system and there is street lighting within the highway limits.

#### **2.3.1.12. Ownership and Maintenance Jurisdiction**

All the local roadways in the Project Area are part of the City of Buffalo street system; they are owned and maintained by the City of Buffalo. NY Route 5 "the Skyway" is owned and maintained by the NY State Department of Transportation.

### **2.3.2. Multimodal**

#### **2.3.2.1. Pedestrians**

Pedestrian routes in the Project Area are shown in Figure 2-3. Pedestrians are presently accommodated along the roadways within the Project limits by means of sidewalks, most of which have ramps for handicapped accessibility. There are intermittent sections of sidewalk along Ganson Street and sections of Michigan Street west of the existing Michigan Street Lift Bridge narrow down to 3 ft wide with obstacles along the sidewalk. Concrete sidewalks are currently provided on all roadways within the Project Limits with the exception of Perry Boulevard between Pearl Street/Commercial Street and Erie Street. Completed phases of the Erie Canal Harbor Project have added routes/walkways and points of interest to the pedestrian network and have added to the already established walkways leading north from this site to the Erie Basin Marina, consisting of a combination of a waterfront path, private marina, public park and waterfront observation tower. Users can then proceed north on the Riverwalk link now providing public access to numerous parks and Niagara River amenities from downtown Buffalo to northern Erie County and providing connections over the Peace Bridge to the Canadian Niagara River Trail.

On representative days eastbound and westbound pedestrian counts were taken on the multiuse path adjacent to Erie Street west of the Erie Basin Marina. The counts were taken on three representative days and summarized below:

- Tuesday July 14, 2009 - EB 1188 / WB 1193
- Wednesday July 15, 2009 – EB 1261 / WB 1339
- Saturday, July 18, 2009 – EB 726 / WB 838

Pedestrian counts were not obtained on the Outer Harbor due to construction activities along Fuhrmann Boulevard.



### 2.3.2.2. Bicyclists

Bicycle access is provided along various routes in the vicinity of the Project Area (see Figure 2-4). These include on-street lanes such as along Michigan Avenue where the bicycle lane ends just east of the existing lift bridge, Marine Drive, Scott Street and South Park Avenue, as well as off-street lanes such as the Riverwalk and along Main Street. There are no significant bicycle storage facilities in the Project Area. The outer harbor area consists of a multitude of existing, under construction or planned pedestrian, bicyclist and nature areas as points of destination. See section 2.2.2.1 for a list of projects.

There are a multitude of destinations points, pedestrian and bicycle facilities on the inner harbor and outer harbor that are separated by the 300-600 foot wide physical barrier comprised of the Buffalo River and City Ship Canal. Currently there is no "direct" connection from these facilities to similar waterfront facilities on the inner harbor such as the Erie Basin Marina, and Erie Canal Naval Park. A defined gap exists. There is a need and desire as documented in various City of Buffalo planning documents such as the City of Buffalo - Queen City Hub Plan documenting the City's desire to develop outward from the core, expanding in a pattern of sustainable growth while connecting to a key resource – the waterfront. It is also in keeping with existing infrastructure (both the park and trail facilities mentioned above) and linking multi-modal opportunities. This type of expansion immediately adjacent to the core downtown area requires a local street level direct connection to the New Downtown and CBD and will comply with U.S. EPA Green Recommendations, specifically, by encouraging development in brownfield and infill sites and encouraging use of Smart Growth and transit oriented development principles by encouraging developments that are walkable and located near public transit.

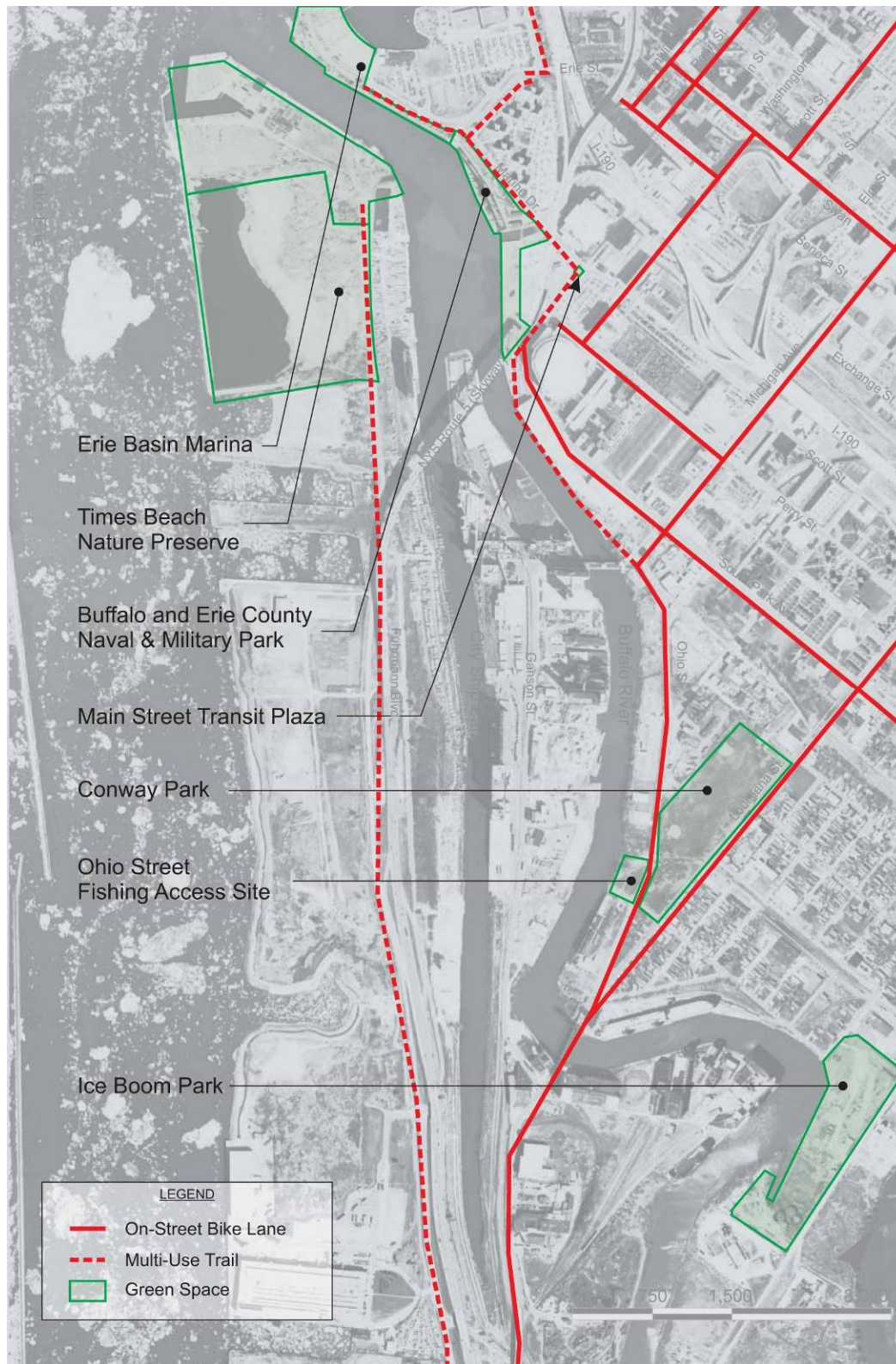


Figure 2-4 – Bicycle Lanes / Multi-Use Trails



**2.3.2.3. Transit**

Figure 2-5 depicts existing transportation-related systems in and around the Project Area.

**Metro Bus**

Local bus service is provided within the Project Area via six Metro Bus routes (6, 8, 14, 16, 36, and 74). New bus shelters were erected along Marine Drive as part of the Veterans Memorial Park improvements during Phase I of the Erie Canal Harbor Project.

**Metro Rail (LRRT)**

The Metro Rail (LRRT) runs between the University at Buffalo's South Campus Station and the NFTA maintenance facilities at the DL&W terminal to the south of the HSBC Arena. The alignment runs at-grade in downtown Buffalo (i.e., south of Tupper Street in the Theater District) along a one-mile transit/pedestrian mall on Main Street. A portion of the Main Street pedestrian mall between South Park Avenue and Perry Street (Seymour H. Knox III Plaza) shares the roadway with vehicular traffic.

Two Metro Rail stations are located within the Project Area. The Erie Canal Harbor Station (Auditorium Station) is located immediately north of Scott Street and serves as the system's southern terminus during normal daily and weekend service periods; and the Events Only Station (added to the system in 1997) is located south of Scott Street near Perry Street, and operates when events are held at the HSBC Arena.

**2.3.2.4. Watercraft / Vessel**

The Buffalo River is a tributary to Lake Erie. The City Ship Canal connects to the Buffalo River. Both the Buffalo River and City Ship Canal are Federal navigable waterways. Commercial and recreational watercrafts utilize these waters. During the summer months local sailing clubs host various regattas on Lake Erie, typically these weekly events occur on Tuesday and Wednesday evenings between 6:00 PM – 9:00 PM) and on Saturdays (9:00 AM -5:00 PM). On representative days navigational traffic was taken on the Buffalo River adjacent to Erie Street west of the Erie Basin Marina. Counts were taken on three representative days and summarized in Table 2-7.

**Table 2-7  
Navigation Traffic**

Day	Recreational				Commercial	
	Power Boats		Sail Boats			
	EB	WB	EB	WB		
Tuesday July 14, 2009	49	44	51	50	7	9
Wednesday, July 15, 2009	63	71	33	59	7	10
Saturday, July 18, 2009	47	37	27	31	4	5

A Moveable Bridge Lift Analysis Report is included in Appendix B to assess the effect of closed position vertical clearance would have on marine traffic. The project team is working with the US Coast Guard to determine an acceptable minimal closed position bridge clearance over the mean low water datum.

**2.3.2.5. Airports, Railroad Stations, and Ports**

There are no airports within the project study area.

The Buffalo River and City Ship Canal located within the Project Area are considered Federal navigable waterways and with the Project Area, they comprise the Buffalo Harbor. The Buffalo Harbor and navigable waterways, further described in Section 2.3.3.6.(7), within the Project Area accommodate a wide variety of commercial as well as recreational watercraft. Vessel sizes range from small watercraft and sailboats to larger lake freighters and naval ships upwards of 600' in length. These waterways are maintained by the US Army Corps of Engineers and regulated by the US Coast Guard. The US Army





Corps of Engineers and US Coast Guard are cooperating agencies with regards to this project. The "Moveable Bridge Lift Analysis Report" in Appendix B contains additional information regarding navigation traffic within the Buffalo Harbor.

An AMTRAK passenger rail line runs along the northern boundary of the Project Area as a subsurface line beneath Lower Terrace between Erie Street and Main Street, and continues at grade along Exchange Street. The AMTRAK Exchange Street passenger station is a scheduled stop on the Empire and Maple Leaf routes, and is located immediately adjacent to the northeast corner of the Project Area.

#### **2.3.2.6. Access to Recreation Areas (Parks, Trails, Waterways, State Lands)**

Several open spaces located within the Project Area that provide residents and visitors with a wide variety of recreational resources within an urban, highly developed environment, including hiking, biking, boating, fishing and educational resources. The Buffalo River in the vicinity of the Project Area hosts several recreational waterfront uses, including the Outer Harbor Pathway and marinas on the outer shore extending up the City Ship Canal.

One of the highlights of the Inner Harbor and the initial phase of Erie Canal Harbor Project is the Central Wharf Green and Commercial Slip. The Central Wharf Green is a public area along the Buffalo River with an expansive boardwalk, benches, lampposts, lawns and landscaping providing a welcoming area to enjoy the waterfront. The Central Wharf Green hosts concerts and public events including a limited summer concert series. The Commercial Slip was recreated in its historic location during the initial phase of Erie Canal Harbor Project and is crossed by the Whipple Truss Bridge connecting the Central Wharf Green to Naval Park. Along the banks of the Commercial Slip are interpretive features such as building ruins from the peak of development at the Erie Canal.

The Erie Canal Harbor is also home to the Naval Park within the 6.5-acre Veterans Memorial Park. This facility includes a museum devoted to Western New York's contributions to America's seapower, and a 1,300 feet stretch of waterfront that provides dockage for the USS The Sullivans, which is a national historic landmark, the USS Little Rock, and the USS Croaker (submarine). The upland portion of the Naval Park also displays naval jet fighters, a minesweeper and other military artifacts.

A small, triangular open space ("Transit Plaza") located at the intersection of Marine Drive and Main Street features bicycle racks as well as sandstone bench seating for visitors utilizing the nearby Metro rail and bus stops. In addition, interpretive signage at the Transit Plaza conveys the historical significance and geographic layout of the harbor.

The Erie Basin Marina first opened in 1974 providing access to the Buffalo River and look-out over Lake Erie, is located at the northern terminus of Erie Street which includes a combination of a waterfront path, private marina, public park, waterfront observation tower.

The Central Wharf Green and the Naval Park are connected to trail systems, such as the Riverwalk and Industrial Heritage Trail, which are part of the Niagara River Greenway ("Greenway"). The Greenway is a developing network of interconnected parks, trails, and river access points along the Niagara River to provide linkages between communities and public access to green spaces and the waterfront. The boundary of the Greenway follows municipal lines and encompasses the shoreline municipalities stretching from Lake Ontario to Lake Erie. The Greenway is connected to other systems, including the Seaway Trail, the Niagara Wine Trail and the Erie Canalway. These systems traverse upstate New York, with the Erie Canalway, for example, consisting of 524 miles of navigable waterways. As a component of the Greenway, the Riverwalk follows the shoreline of the Niagara River from northern Erie County southward and turns inland behind the Waterfront Village, where it then follows the shoreline of the Buffalo River across the Central Wharf Green and continues along the shoreline at the Erie Basin Marina. The Riverwalk can be accessed at various point, including Busti Avenue, Porter Avenue, and at Erie Street at Waterfront Village.

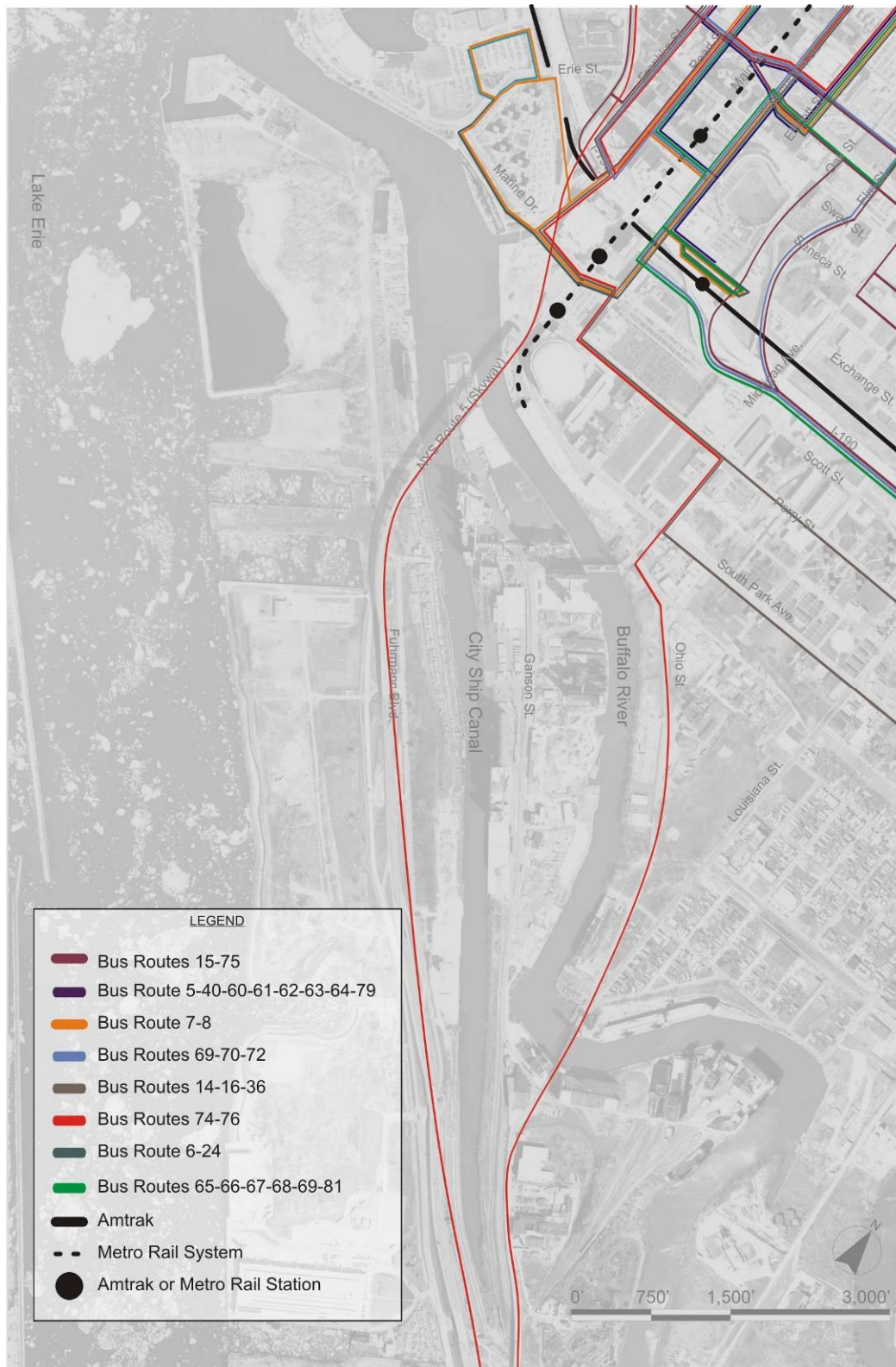


Figure 2-5 – Transportation Routes



Located at the NFTA's DL&W terminal (behind HSBC Arena) on the Buffalo River, Working for Downtown (a volunteer community organization committed to support and revitalize Buffalo's Downtown), has sponsored Bricks for Buffalo which includes a Women's Walkway and a plaza walkway. Both walkways contain engraved bricks and other items purchased by current and former WNY residents to commemorate family and friends.

The Industrial Heritage Path also connects to the Project Area and continues through the industrial development on Kelly Island.

Along the Outer Harbor the existing trail system is being upgraded and expanded to include trails to Times Beach Nature Preserve, connections to the Greenway Trail and continuing south to Gallagher Beach, Tifft Nature Preserve and Union Ship Canal.

Times Beach is 50 acres in size and was constructed to accommodate sediments dredged from Lake Erie. Since disposal operations ceased, significant varieties of wildlife, vegetation and aquatic habitats have occupied the site. In 1991, the City of Buffalo formally designated the site as a nature preserve.

Times Beach is a strategic location for migrating birds because of its proximity to the Niagara River, Lake Erie, and Canadian/American shorelines. More than 220 species of birds have been observed on the site. There are four distinct habitat zones here: a silt flat, marsh, woodlands, and uplands.

Soon to be designated as the first New York State Park in Buffalo, Gallagher Beach is not yet officially open to the public. It includes a boardwalk, a protruding fishing pier, a separate parking and launching area for wind surfers and jet skiers, and wooden docks.

Tifft Nature Preserve is a 264-acre urban nature preserve just three miles from downtown Buffalo with five miles of hiking trails, a Visitor's Center with hands-on exhibits, 75-acre cattail marsh, man-made lakes and interesting industrial heritage.

### 2.3.3. Infrastructure

#### 2.3.3.1. Existing Highway Section

Existing highway sections throughout the project are vary and are considered to be abutting highway sections as described in Section 2.2.2.5.

#### 2.3.3.2. Geometric Design Elements Not Meeting 2R/3R or Bridge Rehabilitation Standards

Modification of limited components of the existing Michigan Avenue Bridge to improve ADA accessibility requirements is the only bridge element under consideration for rehabilitation. The rehabilitation of the existing Michigan Avenue bridge, if the alternative location and project needs warrant, will be investigated further in the DEIS.

#### 2.3.3.2. (1) Critical Design Elements

The horizontal and vertical curvature of the existing roadways within the Project Area were evaluated to determine whether appropriate geometric standards (NYSDOT Highway Design Manual Chapters 2 & 7 – 2R/3R Projects) were met. The city-wide posted speed limit of 30 mph was utilized as the 85<sup>th</sup> percentile speed for this preliminary evaluation (the actual design speed will be determined in the DEIS after a travel speed study has been performed). There are existing nonstandard elements based on the current NYSDOT 2R/3R and Bridge Rehabilitation Standards. These elements are located at Erie Street east of Lakefront Boulevard (vertical curve / stopping sight distance) and Michigan Street at the east approach to the existing bridge (horizontal curve) has been identified. A more detailed evaluation will be performed in the DEIS using the 85<sup>th</sup> percentile speed determined from the travel speed study.

**2.3.3.2. (2) Other Controlling Parameters**

There are no existing bridges or crossing features being rehabilitated and there are no nonconforming features based on the current NYSDOT 2R/3R and Bridge Rehabilitation Standards.

**2.3.3.3. Pavement and Shoulder**

The scope of the pavement evaluation, its preliminary findings and recommendations are summarized below. The pavement evaluation consisted of the tasks shown in Table 2-8.

<b>Table 2-8 Methods of Pavement Evaluation</b>	
<b>Type of Evaluation</b>	<b>General Purpose of the Evaluation</b>
<b>Research of the Historical Data</b>	<ul style="list-style-type: none"> <li>- to determine the age and type of the original pavement construction</li> <li>- to ascertain the maintenance history of the pavement</li> <li>- to understand the subsurface conditions, including drainage</li> </ul>
<b>Pavement Surface Condition Survey</b>	<ul style="list-style-type: none"> <li>- to visually identify the type and extent of distress in the existing pavement</li> </ul>

Each harbor bridge alternate route was broken up into street segments (by blocks) and evaluated. In general, the findings of the pavement evaluation were widely varied. The street segments surveyed range in surface quality from “very good” to “poor”. Some streets are in need of rehabilitation while others appear to have been recently reconstructed or maintained with an asphalt concrete overlay. Table 2-9 in Section 2.3.3.3. (2.) documents the surface condition of these street segments.

**2.3.3.3. (1.) Research of the Historical Data**

A review of the available record plans revealed that the majority of the connector roads have been reconstructed within the last fourteen years. Many of the subject roads were rebuilt as part of the construction of HSBC Arena in 1996.

Street drainage is typically provided for by underdrain placed at the curblin. A closed drainage system handles surface runoff from the street. The composition of the existing street segments is presented Table 2-9.

<b>Table 2-9 EXISTING STREET COMPOSITION</b>	
<b>Street</b>	<b>Construction Date and Street Composition</b>
<b>Erie Street (Erie Basin Marina Entrance to Templeton Terrace)</b>	Constructed in 1974. 2" HMA Top, 1-1/2" HMA Binder, 8" Concrete Base and 8" Stone Subbase
<b>Erie Street (Templeton Terrace to Marine Drive)</b>	Constructed in 1974. 2" HMA Top, 1-1/2" HMA Binder, 8" Concrete Base and 8" Stone Subbase
<b>Erie Street (Marine Drive to Wilkeson Way)</b>	Constructed in 1974. 2" HMA Top, 1-1/2" HMA Binder, 8" Concrete Base and 8" Stone Subbase
<b>Erie Street (Wilkeson Way to Lakefront Boulevard)</b>	Constructed in 1974. 2" HMA Top, 1-1/2" HMA Binder, 8" Concrete Base and 8" Stone Subbase
<b>Erie Street (Lakefront Boulevard to Bingham Street)</b>	Constructed in 1974. 2" HMA Top, 1-1/2" HMA Binder, 8" Concrete Base and 8" Stone Subbase
<b>Fuhrmann Boulevard (Ohio Street to Coast Guard Station Road)</b>	Constructed in 2010. 1-1/2" HMA Top, 2-1/2" HMA Binder, 4" HMA Base and 12" Stone Subbase
<b>Ganson Street (Ohio Street to Michigan Avenue)</b>	Constructed in 1984. 2" HMA Top, 3" HMA Binder, 8" Concrete Base and 8" Stone Subbase





**Table 2-9 (cont.)  
EXISTING STREET COMPOSITION**

<b>Street</b>	<b>Construction Date and Street Composition</b>
<b>Main Street (South Park Avenue to Perry Street)</b>	Constructed in 1996. 1-1/2" HMA Top, 2" HMA Binder, 7" HMA Base and 12" Stone Subbase
<b>Main Street (Perry Street to Scott Street)</b>	Constructed in 1996. 1-1/2" HMA Top, 2" HMA Binder, 7" HMA Base and 12" Stone Subbase
<b>Marine Drive (Erie Street to Pearl Street)</b>	Constructed in 2000. 1-1/2" HMA Top, 2" HMA Binder, 7" HMA Base and 12" Stone Subbase
<b>Marine Drive (Pearl Street to Main Street)</b>	Constructed in 2000. 1-1/2" HMA Top, 2" HMA Binder, 7" HMA Base and 12" Stone Subbase
<b>Michigan Avenue (City Ship Canal to Ganson Street)</b>	Constructed in 1984. 2" HMA Top, 3" HMA Binder, 8" Concrete Base and 8" Stone Subbase
<b>Michigan Avenue (Ganson Street to Ohio Street)</b>	Constructed in 1984. 2" HMA Top, 3" HMA Binder, 8" Concrete Base and 8" Stone Subbase
<b>Michigan Avenue (Ohio Street to South Park Avenue)</b>	Constructed in 1999. 1-1/2" HMA Top, 2" HMA Binder, 7" HMA Base and 12" Stone Subbase
<b>Michigan Avenue (South Park Avenue to Perry Street)</b>	Constructed in 1999. 1-1/2" HMA Top, 2" HMA Binder, 7" HMA Base and 12" Stone Subbase
<b>Michigan Avenue (Perry Street to Scott Street)</b>	Constructed in 1999. 1-1/2" HMA Top, 2" HMA Binder, 7" HMA Base and 12" Stone Subbase
<b>Ohio Street (Fuhrmann Boulevard to Ganson Street)</b>	Constructed in 1960. 2" HMA Top, 1-1/2" HMA Binder, 8" Concrete Base and 8" Stone Subbase. Recent overlay. (Limited record information – original const. may be newer)
<b>Ohio Street (Ganson Street to Louisiana Street)</b>	Constructed in 1960. 2" HMA Top, 1-1/2" HMA Binder, 8" Concrete Base and 8" Stone Subbase. Recent overlay. (Limited record information – original const. may be newer)
<b>Ohio Street (Louisiana Street to South Street)</b>	Constructed in 1960. 2" HMA Top, 1-1/2" HMA Binder, 8" Concrete Base and 8" Stone Subbase. Recent overlay. (Limited record information – original const. may be newer)
<b>Ohio Street (South Street to Chicago Street)</b>	Constructed in 1960. 2" HMA Top, 1-1/2" HMA Binder, 8" Concrete Base and 8" Stone Subbase. Recent overlay. (Limited record information – original const. may be newer)
<b>Ohio Street (Chicago Street to Miami/Moore Street)</b>	Constructed in 1960. 2" HMA Top, 1-1/2" HMA Binder, 8" Concrete Base and 8" Stone Subbase. Recent overlay. (Limited record information – original const. may be newer)
<b>Ohio Street (Miami/Moore Street to Michigan Avenue)</b>	Constructed in 1960. 2" HMA Top, 1-1/2" HMA Binder, 8" Concrete Base and 8" Stone Subbase. Recent overlay. (Limited record information – original const. may be newer)
<b>Perry Street (Main Street to Washington Street)</b>	Constructed in 1996. 1-1/2" HMA Top, 2" HMA Binder, 7" HMA Base and 12" Stone Subbase
<b>Perry Street (Washington Street to Illinois Street)</b>	Constructed in 1996. 1-1/2" HMA Top, 2" HMA Binder, 7" HMA Base and 12" Stone Subbase
<b>Perry Street (Illinois Street to Mississippi Street)</b>	Constructed in 1996. 1-1/2" HMA Top, 2" HMA Binder, 7" HMA Base and 12" Stone Subbase





Table 2-9 (cont.) EXISTING STREET COMPOSITION	
Street	Construction Date and Street Composition
Perry Street (Mississippi Street to Baltimore Street)	Constructed in 1996. 1-1/2" HMA Top, 2" HMA Binder, 7" HMA Base and 12" Stone Subbase
Perry Street (Baltimore Street to Columbia Street)	Constructed in 1996. 1-1/2" HMA Top, 2" HMA Binder, 7" HMA Base and 12" Stone Subbase
Perry Street (Columbia Street to Michigan Avenue)	Constructed in 1996. 1-1/2" HMA Top, 2" HMA Binder, 7" HMA Base and 12" Stone Subbase
Scott Street (Main Street to Washington Street)	Constructed in 1996. 1-1/2" HMA Top, 2" HMA Binder, 8" HMA Base and 12" Stone Subbase
Scott Street (Washington Street to Michigan Avenue)	Constructed in 1996. 1-1/2" HMA Top, 2" HMA Binder, 8" HMA Base and 12" Stone Subbase (There is also a portion that consists of 9" of reinforced concrete over 12" Stone Subbase at the Buffalo News loading docks)
South Park Avenue (Main Street to Illinois Street)	Constructed in 1996. 1-1/2" HMA Top, 2" HMA Binder, 7" HMA Base and 12" Stone Subbase
South Park Avenue (Illinois Street to Mississippi Street)	Constructed in 1998. 1-1/2" HMA Top, 2" HMA Binder, 7" HMA Base and 12" Stone Subbase
South Park Avenue (Mississippi Street to Baltimore Street)	Constructed in 1998. 1-1/2" HMA Top, 2" HMA Binder, 7" HMA Base and 12" Stone Subbase
South Park Avenue (Baltimore Street to Columbia Street)	Constructed in 1998. 1-1/2" HMA Top, 2" HMA Binder, 7" HMA Base and 12" Stone Subbase
South Park Avenue (Columbia Street to Michigan Avenue)	Constructed in 1998. 1-1/2" HMA Top, 2" HMA Binder, 7" HMA Base and 12" Stone Subbase
Washington Street (Perry Street to Scott Street)	Constructed in 1999. 1-1/2" HMA Top, 2" HMA Binder, 7" HMA Base and 12" Stone Subbase

#### 2.3.3.3. (2.) Pavement Surface Condition Survey (Field Distress Survey)

A visual survey of the pavement was conducted. The severity of the observed distresses for the street segments was categorized and is presented in the Table 2-10.

The majority of the pavement distress occurs in the form of cracking. Cracking (wheel path, transverse, longitudinal, and edge) was observed in several locations. Longitudinal cracking typically occurs between the travel lanes at the street centerline or at original longitudinal pavement joints. Localized edge cracking also occurs in some locations.

Table 2-10 EXISTING SURFACE CONDITION	
Street	Limits and Surface Condition Description
Erie Street (Erie Basin Marina Entrance to Templeton Terrace)	Good surface condition. Good ride quality. Some minor longitudinal cracks at travel lane/parking lane interface (sealed). Intermittent minor transverse cracks (sealed).
Erie Street (Templeton Terrace to Marine Drive)	Good surface condition. Good ride quality. Some minor longitudinal cracks at travel lane/parking lane interface (sealed). Intermittent minor transverse cracks (sealed). Minor cracks along curb line (sealed).
Erie Street (Marine Drive to Wilkeson Way)	Good surface condition. Good ride quality. Some minor longitudinal cracks at travel lane/parking lane interface (sealed). Intermittent minor transverse cracks (sealed). Minor cracks along curb line (sealed).



<b>Table 2-10 (cont.)</b> <b>EXISTING SURFACE CONDITION</b>	
<b>Street</b>	<b>Limits and Surface Condition Description</b>
<b>Erie Street (Wilkeson Way to Lakefront Boulevard)</b>	Good surface condition. Good ride quality. Some minor longitudinal cracks at travel lane/parking lane interface (sealed). Intermittent minor transverse cracks (sealed). Minor cracks along curb line (sealed).
<b>Erie Street (Lakefront Boulevard to Bingham Street)</b>	Good surface condition. Good ride quality. Some minor longitudinal cracks at travel lane/parking lane interface (sealed). Intermittent minor transverse cracks (sealed).
<b>Fuhrmann Boulevard (Ohio Street to Coast Guard Station Road)</b>	Fuhrmann Boulevard is currently being reconstructed. It is assumed that by the time the Buffalo Harbor Bridge is being constructed that this pavement will be in very good condition.
<b>Ganson Street (Ohio Street to Michigan Avenue)</b>	Good to fair surface condition. Some utility repairs, sunken manholes, transverse cracks (heaved) and railroad crossings result in poor ride quality. (Heavy truck traffic present in this segment.)
<b>Main Street (South Park Avenue to Perry Street)</b>	Good surface condition. Good ride quality. Some minor wheel path cracking (sealed) in south bound lane. Some surface repairs have occurred at the intersection of Perry Street.
<b>Main Street (Perry Street to Scott Street)</b>	Good surface condition. Good ride quality. Some minor wheel path cracking (sealed) in south bound lane. Some surface repairs have occurred at the intersection of Perry Street.
<b>Marine Drive (Erie Street to Pearl Street)</b>	Good surface condition. Good ride quality. Some minor longitudinal cracks at the centerline (sealed).
<b>Marine Drive (Pearl Street to main Street)</b>	Good surface condition. Good ride quality. Some minor longitudinal cracks at the centerline (sealed). A few utility cut/repairs are also present.
<b>Michigan Avenue (City Ship Canal to Ganson Street)</b>	Poor surface condition. Poor ride quality. A recent longitudinal waterline replacement has not been restored properly. The longitudinal cuts have been brought to grade with stone rather than asphalt.
<b>Michigan Avenue (Ganson Street to Ohio Street)</b>	Good surface condition. Good ride quality. Minor longitudinal cracking at centerline (unsealed). (Heavy truck traffic present in this segment.)
<b>Michigan Avenue (Ohio Street to South Park Avenue)</b>	Good surface condition. Good ride quality. Minor longitudinal cracking at centerline (unsealed). (Heavy truck traffic present in this segment.)
<b>Michigan Avenue (South Park Avenue to Perry Street)</b>	Good surface condition. Minor longitudinal cracking at centerline (unsealed). Four utility cuts/repairs are present and affect the ride quality.
<b>Michigan Avenue (Perry Street to Scott Street)</b>	Very good surface condition. Good ride quality. No issues.
<b>Ohio Street (Fuhrmann Boulevard to Ganson Street)</b>	Fair to poor surface condition. Large centerline cracking, transverse cracking and wheel path cracking (all unsealed) Utility repairs and cracking result in poor ride quality. (Heavy truck traffic present in this segment.)
<b>Ohio Street (Ganson Street to Louisiana Street)</b>	Good surface condition. Good ride quality. No issues.
<b>Ohio Street (Louisiana Street to South Street)</b>	Good surface condition. Good ride quality. No issues.



<b>Table 2-10 (cont.)</b> <b>EXISTING SURFACE CONDITION</b>	
<b>Street</b>	<b>Limits and Surface Condition Description</b>
<b>Ohio Street (South Street to Chicago Street)</b>	Good surface condition. Good ride quality. A railroad crossing is present and is in poor condition.
<b>Ohio Street (Chicago Street to Miami/Moore Street)</b>	Good surface condition. Good ride quality. No issues.
<b>Ohio Street (Miami/Moore Street to Michigan Avenue)</b>	Good surface condition. Good ride quality. No issues.
<b>Perry Street (Main Street to Washington Street)</b>	Good to fair surface condition. Fair ride quality. Some utility repairs, transverse cracks (sealed) and longitudinal cracks (sealed) are present.
<b>Perry Street (Washington Street to Illinois Street)</b>	Good to fair surface condition. Fair ride quality. Some utility repairs, transverse cracks (sealed) and longitudinal cracks (sealed) are present. Alligator cracking at the curb line and repaired potholes are also present.
<b>Perry Street (Illinois Street to Mississippi Street)</b>	Good to fair surface condition. Fair ride quality. Some utility repairs, transverse cracks (unsealed) and longitudinal cracks (unsealed) are present.
<b>Perry Street (Mississippi Street to Baltimore Street)</b>	Good to fair surface condition. Fair ride quality. Some utility repairs, transverse cracks (unsealed) and longitudinal cracks (unsealed) are present.
<b>Perry Street (Baltimore Street to Columbia Street)</b>	Good to fair surface condition. Fair ride quality. Some transverse cracks (unsealed) and longitudinal cracks (unsealed) are present. Pot hole repairs.
<b>Perry Street (Columbia Street to Michigan Avenue)</b>	Good to fair surface condition. Fair ride quality. Some transverse cracks (unsealed) and longitudinal cracks (unsealed) are present. Pot hole repairs.
<b>Scott Street (Main Street to Washington Street)</b>	Good to fair surface condition. Fair ride quality. Some transverse cracks (unsealed) and longitudinal cracks (unsealed) are present. Raveling of the pavement surface is present at the intersection of Washington Street.
<b>Scott Street (Washington Street to Michigan Avenue)</b>	Good to fair surface condition. Good ride quality. Both asphalt and concrete pavement are present in this segment. Large longitudinal cracks (unsealed) are present at the center of both travel lanes. (Heavy truck traffic present in this segment.)
<b>South Park Avenue (Main Street to Illinois Street)</b>	Good surface condition. Good ride quality. Some minor wheel path cracking (sealed) and centerline cracking (sealed) is present.
<b>South Park Avenue (Illinois Street to Mississippi Street)</b>	Good surface condition. Good ride quality. Some minor wheel path cracking (sealed) and centerline cracking (sealed) is present.
<b>South Park Avenue (Mississippi Street to Baltimore Street)</b>	Very good surface condition. Good ride quality. No issues.
<b>South Park Avenue (Baltimore Street to Columbia Street)</b>	Good surface condition. Good ride quality. No issues.
<b>South Park Avenue (Columbia Street to Michigan Avenue)</b>	Good surface condition. Good ride quality. No issues.



Table 2-10 (cont.) EXISTING SURFACE CONDITON	
Street	Limits and Surface Condition Description
Washington Street (Perry Street to Scott Street)	Good surface condition. Good ride quality. A sunken manhole at the intersection of Scott Street is in need of repair.

#### 2.3.3.3. (3.) Recommendations

Based on this inspection, a review of the record plans and the proposed alternatives, the majority of the Inner Harbor streets would require little or no upgrades.

A “mill and overlay” is recommended for Perry Street and Scott Street if the Michigan Avenue crossing or Ganson Street crossing were chosen. Also if the Michigan Avenue or Ganson Street crossing were chosen, a full-depth reconstruction of Michigan Avenue, south of the Buffalo River crossing would be required as well as a full-depth reconstruction of Ganson Street from Michigan Avenue to Ohio Street.

#### 2.3.3.4. Drainage Systems

Local roadways in the Project Area are part of the City of Buffalo street system and have curbed roadway section which includes a closed drainage system within the highway limits.

#### 2.3.3.5. Geotechnical

The typical subsurface conditions within the Project Area consist of miscellaneous fill followed by interbedded clay and sand deposits (marsh deposits) followed by glacial till overlying limestone bedrock. A description of each stratum listed above is provided in the following paragraphs:

- **Miscellaneous Fill**

The fill layer primarily consists of silty sand with varying amounts of clay and gravel. Other foreign materials such as brick and wood fragments were also encountered within this layer. The average thickness of this layer is approximately 10 ft.

- **Interbedded Silty Clay and Silty Sand (Marsh Deposits)**

An interbedded layer of clayey silt and silty sand was encountered beneath the fill layer. This layer also contained organic soil including peat. The division between the clayey and sandy soils within this layer was indistinguishable. The total thickness of this layer varied between 10 to 18 ft; however, the interbedded sandy material was absent at several locations where the entire layer consisted of soft silty clay deposits.

- **Glacial Till**

Glacial till deposits consisting of dense to very dense silty sand and clayey silt with varying amounts of gravels were encountered overlying limestone bedrock. The average thickness of this layer was approximately 7 ft.

- **Bedrock**

Limestone bedrock was typically encountered at a depth of 30 to 34 ft with corresponding approximate elevation (El.) 550.

- **Groundwater**

The groundwater table is reported at an average El. 573, which is at or a few feet above the marsh deposits and about 8-ft to 11-ft below the site grades. The groundwater flow across the site is towards Buffalo River. Variation in the groundwater elevations are expected with the fluctuations in the adjacent Buffalo River.

There are no special geotechnical concerns with the soils or rock slopes within the Project Area.



### 2.3.3.6. Structure

Listed below are numerous bridges located with the study area:

- I-190 viaduct Structure
- Ten ramps to and from the I-190
- Route 5 – Skyway over Buffalo River and City Ship Canal
- Michigan Avenue over Buffalo River
- Ohio Street over Buffalo River
- Ohio Street over CSX Railroad
- Route 5 over Ohio Street
- Route 5 over CSX Railroad
- Route 5 over Pedestrian Path
- Route 5 over Outer Harbor Parkway

Only three of these structures provide access on established routes from the New Downtown / Inner Harbor area to the Outer Harbor area across the waterways defined in Section 2.3.3.3 (7). These three structures are discussed further below.

#### 2.3.3.6. (1) Description:

##### (a) Michigan Avenue Bridge over the Buffalo River

- BIN - 2260450
- Feature carried and crossed: Michigan Avenue over Buffalo River
- Type of bridge – Vertical Lift; Length of largest span: 235.9 ft; Total length: 245.7 ft
- Width of travel lanes: Non-delineated open grate deck; Deck width: 37.7 ft
- Sidewalks: Both sides
- Utilities carried: N/A

##### (b) Ohio Street Bridge over the Buffalo River

- BIN - 2260430
- Feature carried and crossed: Ohio Street over Buffalo River
- Type of bridge – Vertical Lift; Length of largest span: 280 ft
- Width of travel lanes: Non-delineated open grate deck.
- Sidewalks: Both sides
- Utilities carried: N/A

##### (c) Route 5 - Skyway over the Buffalo River

- BIN - 1001579
- Feature carried and crossed: Route 5 over Ohio Street over Buffalo River and City Ship Canal
- Type of bridge – Fixed span steel girder; Total spans: 53; Total length: 5800 ft
- Width of travel lanes: 4 - 12 ft lanes.
- Sidewalks: none
- Utilities carried: N/A

#### 2.3.3.6. (2) Clearances (Horizontal/Vertical)

##### (a) Michigan Avenue Bridge over the Buffalo River

- Horizontal Clearance: +/- 162 ft (perpendicular to navigation channel)
- Vertical Clearance above deck: 14.0 ft
- Navigation Clearance in closed position over Low Water Datum: 20 ft
- Navigation Clearance in open position over Low Water Datum: 101 ft

##### (b) Ohio Street Bridge over the Buffalo River

- Horizontal Clearance: unknown
- Vertical Clearance above deck: 14.0 ft
- Navigation Clearance in closed position over Low Water Datum: 18 ft
- Navigation Clearance in open position over Low Water Datum: 105 ft



**(c) Route 5 - Skyway over the Buffalo River**

-Vertical Clearance above deck: N/A.

-Navigation Clearance over MLW: 100 ft

**2.3.3.6. (3) History & Deficiencies****(a) South Michigan Avenue Bridge over the City Ship Canal**

In 1962, the South Michigan Avenue Bridge had mechanical failure while opening. The bridge shifted and was deemed unsafe. The cost to replace the structure was estimated at \$3 million in 1964, and the City subsequently removed the structure. This structure was never replaced and severed the closest local access from the downtown business district of Buffalo to the Outer Harbor Area.

**(b) Michigan Avenue Bridge over the Buffalo River**

The first recorded Michigan Avenue Bridge over the Buffalo River was a swing bridge built in 1873. The swing bridge was replaced by a vertical lift bridge in 1930. The bridge was hit by a freighter in 1959 and replaced in 1962. The current structure, eligible for the National Register of Historic Places, was rehabilitated in 1996.

**(c) Ohio Street Bridge**

The first public Ohio St. Bridge was constructed in 1866 and was a swing bridge. With vessels getting larger, the City of Buffalo replaced the swing bridge in 1904 with the worlds first "Brown" design bascule bridge. After 58 years of use the bascule was replaced with the current vertical lift span completed in 1962. The current lift bridge is "tower driven." The machinery to move the cables attached to the counterweights is located at the top of towers at either end, shrouded in a metal covering.

**(c) Route 5 - Skyway over the Buffalo River**

The Skyway is a grade separated structure that carries traffic on Route 5 over the Buffalo River and Buffalo Ship Canal and is approximately 5800 ft long and consists of 48 piers and 53 spans. Construction of the Skyway and associated on and off ramps began in 1950 and was completed in 1956 at a cost of approximately \$9.6 million. (\$129 million in 2006 dollars). The Skyway is elevated to provide 100 feet of vertical clearance above the low water elevation of the Buffalo River and Buffalo Ship Canal. The horizontal clearances for shipping under the Skyway are 215 ft for the Buffalo River and 193 ft for the Buffalo Ship Canal. A number of Great Lakes freight ships pass under the Skyway each year. In 1990, the concrete substructures underwent an extensive \$9.3M rehabilitation. In 1994, a separate contract was let to replace the deteriorated steel catwalk system that runs under the deck. Other deteriorated steel components, including floor beams and stringers, were also repaired or replaced at that time. From 1999 to 2005 lead-based asbestos-containing paint was removed and the steel was repainted.

**2.3.3.6. (4) Inspection**

The Federal sufficiency ratings and State condition ratings along with the findings of the biennial bridge inspection and condition report and in depth inspection Summary Reports are included in Table 2-11.



**Table 2-11**  
**Bridge Inspection Summary**

<b>Bridge Location / BIN</b>	<b>Federal Sufficiency Rating</b>	<b>State Condition Rating</b>	<b>Summary of Condition and Inspection Report</b>
Michigan Ave. BIN: 2260450	75.4	5.000	December 2008 inspection findings rate the deck and wearing surface good, superstructure good and substructures fair.
Ohio Street BIN: 2260430	54.6	4.299	December 2008 inspection findings rate the substructures good; deck generally good with a poor rating for the wearing surface; superstructure rating generally good.
NY Rte 5 (Skyway) BIN: 1001579	85.5	4.69	Primary and secondary steel members are generally in good condition with some areas of minor deterioration. These areas are localized primarily to web stiffeners, lower web plates, connection plates and cover plates and do not affect the structural integrity of the bridge. The concrete deck of the Skyway is generally in fair condition.

#### **2.3.3.6. (5) Restrictions**

Currently all bridges within the study area are open to traffic. There is no load posting on any structure with the study area. Restrictions to clearances for navigation are discussed in Section 2.3.3.6(2).

#### **2.3.3.6. (6) Future Conditions**

Routine maintenance is expected to continue for all bridges within the study area. No significant structural concerns for any bridges within the study area are expected in foreseeable future.

#### **2.3.3.6. (7) Waterway**

The Buffalo River and the City Ship Canal are the two major waterways within the project study area which separate the New Downtown / Inner Harbor area from the Outer Harbor area. Kelly Island separates the Buffalo River from the City Ship Canal through the southern portion of the project study area. North of Kelly Island, the City Ship Canal and Buffalo River join together to form the Buffalo Harbor before entering Lake Erie. With the exception of the extreme southern portion of the City Ship Canal all portions of the Buffalo River, City Ship Canal and Buffalo Harbor within the Project Area are navigable and have federal navigable waterways defined therein. The US Army Corps of Engineers (USACE) and US Coast Guard (USCG) have maintenance and regulatory jurisdiction over the City Ship Canal, Buffalo River and Buffalo Harbor within the study area. The USCG and USACE are both cooperating agencies under this project and both are involved in determining the requirement for and issuance of permits for various aspects of this project. It has been determined that a Section 9 permit issued by the USCG will be required prior to the construction of any alternative involving a new or replacement bridge.

#### **2.3.3.7. Hydraulics of Bridges and Culverts**

During development of the DEIS flood plains, hydraulic adequacy, failure vulnerability, flooding potential, and scour susceptibility will be investigated for new or replacement bridge alternatives crossing waterways defined in Section 2.3.3.6 (7).

#### **2.3.3.8. Guide Railing, Median Barriers and Impact Attenuators**

Local roadways in the Project Area are part of the City of Buffalo street system with curbed roadway sections. There is no guide rail, median barrier or impact attenuators located on the local streets within



the Project Area. NY Route 5 “the Skyway” has concrete barrier and concrete median barrier with impact attenuators located at ramp entrances and exits.

#### **2.3.3.9. Utilities**

The Project Area is served by or has access to all major utility facilities, including water, sewer, electric, and natural gas. While the provision of water and sewer is administered by public authorities, other utility service is provided by private companies. Typical to many of the city streets, utilities within the right-of-way include underground storm and sanitary sewer line, water, telephone, electric and gas. The locations and condition will be investigated and included as the project evolves in the design process.

<b>Table 2-12 Existing Utilities</b>	
<b>Owner</b>	<b>Type</b>
<b>City of Buffalo</b>	<b>Sanitary Sewer Line</b>
<b>City of Buffalo</b>	<b>Storm Sewer Line</b>
<b>City of Buffalo</b>	<b>Water</b>
<b>Verizon</b>	<b>Telephone</b>
<b>National Grid</b>	<b>OH Power Line</b>
<b>National Fuel</b>	<b>Gas Main</b>
	<b>Fiber Optic</b>

Sanitary sewer facilities within the Project Area include combined 10-inch sewer lines on Marine Drive and Main Street. The Kelly Island main, a 30-inch sanitary force main inside of a 7’ concrete tunnel passes through the Project Area parallel to the Skyway under the Buffalo River. Relocated in 1999 to the public right-of-way, the main runs under Main Street, west along Marine Drive and continues north along Pearl Street through the Marine Drive Apartments parking lot. Also, a pump station and vent for this main is located within the Project Area. The Hamburg Drain, a 16 by 13-foot combined sewer overflow following the former Hamburg Canal right-of-way, and outfalls to the Buffalo River via the Commercial Slip.

#### **2.3.3.10. Railroad Facilities**

Active CSX railroad lines cross Michigan Avenue at Ganson Street and multiple tracks parallel Ganson Street for its entire length throughout the Project Area and include additional spurs and sidings. These lines provide rail access for General Mills, Archer Daniels Midland and other businesses on Kelly Island.

There are railroads within the project limits and at-grade crossings along Ganson St. that could impact traffic conditions. Additionally, Metro Rail (LRRT) runs along Main Street and the future Cars on Main Street Project would allow a shared trackbed along Main Street.

### **2.3.4. Landscape and Environmental Enhancement Opportunities**

#### **2.3.4.1. Landscape**

Landscape opportunities throughout the study area vary greatly depending on alternative locations considered. These opportunities will be investigated further in the DEIS if applicable.

##### **2.3.4.1. (1) Terrain**

The topography of the Project Area can be classified as level terrain where highway sight distances, as governed by both horizontal and vertical restrictions, are generally long or could be made to be so without construction difficulty or major expenses.

**2.3.4.1. (2) Unusual Weather Conditions**

The Project Area is located on the eastern terminus of Lake Erie and susceptible to lake effect snow and periods of high winds throughout the winter months.

**2.3.4.1. (3) Visual Resource Inventory**

The general visual environment of the Project Area consisting of connecting street network is characterized by a diversity of land uses, building types, materials, scales and densities of development. Views of the waterfront, the lighthouse, historic grain elevators, billboards, overhead utility wires, the elevated Skyway, watercraft and large industrial buildings all function as strong visual features in the environment. The roadways, edge conditions and setbacks vary considerably along the connecting corridors and in general, there is a lack of unity and visual cohesiveness.

Land use along both Erie Street and Marine Drive in this location is predominately residential with associated parking and public access to the waterfront. The streets are tree lined with sidewalks and light poles and there is a fairly high degree of visual cohesion along the streets. The Naval Park with nautical displays and recently constructed Inner Harbor improvements are located along Marine Drive and provide a pleasing visual environment. The Skyway and the waterway are strong visual elements in this location.

Main Street land use in this area of downtown Buffalo consists of commercial and industrial uses, parking lots, the HSBC Arena, the LRRT tracks and overhead wires and the Skyway. The Skyway parallels this section of Main Street, and due to its proximity, dominates the visual environment. Decorative street lights and sidewalks provide some visual continuity at the street level. At Kelly Island, views of the water, the Skyway, and industrial land uses dominate the visual environment.

Scott Street and Michigan Avenue pass through mixed land uses, including commercial and industrial development, large open parking lots, and vacant lots. The HSBC Arena is visible. Sidewalks, street trees, and light poles line much of the street edge and provide some visual continuity. However, the large number of parking lots and vacant properties contributes to a lack of cohesion. The existing Michigan Street Bridge over the Buffalo River is a significant visual element and the rise in elevation, as one approaches the bridge, contributes to its prominence. Views of the grain elevators, the General Mills complex, the river, and downtown Buffalo are visible from the existing bridge. West of the City Ship Canal, the Skyway dominates the view along Michigan Avenue. The reconstructed Fuhrman Boulevard will include landscape plantings and decorative lighting that will create an enhanced visual environment on this segment of the connecting street network.

Land use and the visual environment along Ganson Street is overwhelmingly industrial. An active railroad with railroad cars is located parallel to one side of the street while utility poles with overhead wires are located consistently along the opposite side of the street. Grain elevators, industrial buildings, industrial storage yards with chain link fencing and parking lots, and overhead utilities dominate the visual environment. There are views of the Skyway, the existing Michigan Street Bridge, and the City Ship Canal.

**2.3.4.2. Opportunities for Environmental Improvements**

During more detailed development of feasible alternatives in the draft Environmental Impact Statement (DEIS) and Final Environmental Impact Statement (FEIS), opportunities will be explored to improve the environment. Opportunities may include, but are not limited to, enhancements to or access to park and recreation areas and possible coordination with environmental remediation efforts underway within the Buffalo River Remedial Action Plan.

**2.3.5. Miscellaneous**

Not Applicable



## CHAPTER 3 – ALTERNATIVES

The National Environmental Policy Act of 1969 (NEPA) requires that a range of reasonable alternatives be considered in the environmental review and analysis. As a result, ECHDC created an *Alternatives Development Process* designed to consider a wide range of alternatives and to narrow that list down to those considered reasonable for detailed study in the forthcoming Draft Environmental Impact Statement. The purpose of the Alternatives Development Process was to identify those alternatives that are consistent with the Project's Purpose and Needs and other considerations identified in Chapter 1 of this report.

This Chapter describes the process by which ECHDC developed the crossing alternatives considered and, based on information known to date, evaluated these alternatives for the Buffalo Harbor Bridge Project.

### 3.1. Alternatives Development Process

Based on past planning efforts and transportation studies, as well as input gathered during the public scoping process, a wide range of alternatives were identified, including the No-Build Alternative. Several scoping meetings were held with elected officials, Cooperating and Participating Agencies, community groups, businesses and residents between June 16 and July 22, 2009. The past information and public suggestions were combined with recommendations from the Project Team's internal review to first, identify a "Range of Crossing Categories", and second to create a "List of Alternatives Considered".

The Range of Crossing Categories has been identified as the following:

- **No-Build.** Under federal and state regulations, an Environmental Impact Statement is required to include a "No Build" or "No Action" alternative. Under the No-Build Alternative, routine maintenance and repair efforts would continue by respective owners. It is assumed that local street improvements, approved under the NYSDOT Southtowns Connector Project Record of Decision (PIN 5044.01), would be completed by others.
- **Upgrade.** This alternative would improve the existing local surface route. No bridge would be constructed under this Category.
- **Replacement.** These crossing alternatives would replace the former South Michigan Avenue Bridge with a new bridge on the same horizontal alignment as the former structure. Given the bridge's location within a federally-regulated channel, the new bridge is assumed to be a moveable structure in order to provide the required 100 ft navigational clearance in the open position. The new bridge would be constructed on the same vertical alignment or higher, based on the final closed-bridge vertical navigational clearance requirements, right-of-way impacts and superstructure design.
- **New Moveable Bridge.** Under these crossing alternatives, the former South Michigan Avenue Bridge would be replaced by a new bridge on a new horizontal alignment outside the Michigan Avenue corridor. Since all the feasible new bridge locations are within a federally-regulated channel, any new moveable bridge would provide the required 100 ft navigational clearance in the open position.
- **New Fixed Bridge.** Under these crossing alternatives, the former South Michigan Avenue Bridge would be replaced by a new bridge on a new horizontal alignment outside the Michigan Avenue corridor. Since all the feasible new bridge locations are within a federally-regulated channel, any new fixed bridge would provide the required 100 ft navigational clearance.





- **Water Ferry.** These alternatives would replace the former South Michigan Avenue Bridge by means of a multi-modal water ferry. No bridge would be constructed under this Category.
- **Tunnel.** These alternatives would replace the former South Michigan Avenue Bridge by means of a tunnel. No bridge would be constructed under this Category.

Based on the above range of crossing categories, public comments, suggestions and ideas were combined with findings and recommendations of past and current planning efforts to create a list of reasonable alternatives. The following guidelines were considered by the Project Team in determining which alternatives would be developed for further review:

- Each alternative shall increase the multi-modal connectivity between Downtown and the Outer Harbor.
- Each alternative shall provide an improvement to the local street network while not negatively impacting the regional traffic network.
- Each alternative shall be financially feasible.

Based on the above information, the List of Alternatives Considered has been identified as the following:

### **List of Alternatives**

#### **Alternatives Considered**

##### No-Build Alternative (NB)

NB-1: No-Build

##### Upgrade Alternative (UP)

UP-1: Upgrade existing route

##### Replacement Alternatives (RE)

RE-1: South Michigan Avenue Bridge (with upgraded Existing Michigan Avenue Bridge)

RE-2: South Michigan Avenue Bridge with Water Taxi (with upgraded Existing Michigan Avenue Bridge)

RE-3: South Michigan Avenue Bridge with Pedestrian/Bicycle Bridge

##### New Moveable Bridge Alternatives (BR)

BR-1: Erie Street Bridge with Existing Erie Street Approach

BR-2: Erie Street Bridge with Former Erie Street Approach

BR-3: Main Street Bridge

BR-4: Ganson Street Bridge (with upgraded Existing Michigan Avenue Bridge)

BR-5: Ganson Street Bridge with Water Taxi (with upgraded Existing Michigan Avenue Bridge)

BR-6: Ganson Street Bridge with Pedestrian/Bicycle Bridge

##### Water Ferry Alternative (WF)

WF-1: Water Ferry

##### Tunnel Alternative (TU)

TU-1: Erie Street Tunnel

#### **Other Alternatives Eliminated**

As with any scoping process, some suggestions and ideas were not considered within the range of reasonable alternatives based on the Project's guidelines and/or do not meet the scope of this project. The suggested alternatives, and the reasons for their exclusion, are briefly discussed below.

##### New Fixed Bridge

The required navigation clearance over both the Buffalo River and City Ship Canal is 100 ft above mean low water (MLW) elevation. Consequently, the height of a fixed structure over these navigable waterways would be similar to that of the Buffalo Skyway. At approximately 120 feet high, the roadway elevation over these waterways would require approach lengths in the range of 1,800 feet to 2,600 feet on each side of the crossing relating to a total bridge length including approaches of 0.8 to 1.1 miles depending on



approach grade and feasible locations to tie into the existing roadway network. Access points for the bridge approaches would be a great distance from the points of interest, require large right-of-way considerations and be an undesirable trip for pedestrians and bicyclists especially in inclement weather. Opponents of the Skyway have argued that it serves as visual and physical barrier to the waterfront and inhibits development of Buffalo's waterfront. Another fixed bridge over the Buffalo Harbor or vicinity would have similar issues, would not be a local waterfront connection, and therefore is not considered for this project.

#### Skyway Removal

For this project, several Skyway-related alternatives were suggested by elected officials, stakeholders and the general public for inclusion. The Skyway Removal is not within the scope of this project. The recommendation that the Skyway be studied as part of the Buffalo Harbor Bridge project did not go unnoticed. However, the Buffalo Harbor Bridge project – whose purpose it is to directly and efficiently connect Downtown and the Outer Harbor – can not be “linked” to the future of the Skyway since it does not impact (nor is impacted by) the Skyway. The Skyway “debate” is, in fact, much larger than the scope of the Buffalo Harbor Bridge project. Removal of the Skyway, which is currently one of two existing routes between Downtown and the Outer Harbor, would decrease the connectivity between these two locations – which directly opposes the purpose of the Buffalo Harbor Bridge project. It is also certain that removal of the Skyway would have significant impacts to the regional highway network and travel patterns that are beyond the scope and intent of this study. It should be noted however, that the content and outcome of this project would not preclude the study of the removal of the Skyway under future project(s).

#### Skyway Replacement

By its definition, the Buffalo Harbor Bridge is not intended to replace the capacity or connectivity of the Skyway. The Buffalo Harbor Bridge will be a local roadway, owned and operated by the City of Buffalo, while the Skyway is an expressway link of State Route 5 connecting the southern suburbs of Erie County with the northern suburbs of Erie County, Interstate 190 and the Business District of the City of Buffalo, and is owned and operated by the New York State Department of Transportation. As noted in the NYSDOT Skyway Management Study (2008), this roadway currently handles 43,000 commuter vehicles daily, including 6.5% heavy vehicles, and explicitly prohibits pedestrian and bicyclist traffic.

As noted under the Skyway Removal alternative, the replacement of the Skyway would certainly have significant impacts to the regional highway network and travel patterns that are beyond the scope and intent of this study. It should be noted however, that the content and outcome of this project would not preclude the study of the replacement of the Skyway under future project(s).

#### Skyway Replacement, 1<sup>st</sup> Step

Some have suggested that the Buffalo Harbor Bridge should be planned and designed as part of the Skyway's eventual removal – or a “1<sup>st</sup> Step”. As noted under the Skyway Replacement alternative, the replacement of the Skyway would certainly have significant impacts to the regional highway network and travel patterns that are beyond the scope and intent of this study. Any Skyway Replacement Study will require a thorough analysis of *all* feasible alternatives under the National Environmental Policy Act (NEPA) and the State Environmental Quality Review Act (SEQR). It should be noted however, that the content and outcome of this project would not preclude the study of the replacement of the Skyway under future project(s).

#### Aerial Tramway

One suggestion described an aerial tramway attached to the underside of the Skyway superstructure. An aerial tramway is a type of aerial lift in which a cabin or other conveyance is suspended from a fixed cable and is pulled by another cable, and is currently in use in New York City and Portland, Oregon. A tramway would only provide for the movement of pedestrians and bicyclists, and would not provide for vehicular traffic – thereby not meeting the purpose to provide a multi-modal connection between Downtown and the Outer Harbor. There are concerns that suspending cabin(s) from the Skyway could not be achieved structurally without a significant investment in the Skyway, as well as questions of the impacts to the required 100 ft navigational clearance over the Buffalo River and City Ship Canal.



### 3.1.1. Alternatives Considered and Retained for Preliminary Evaluation

The List of Alternatives Considered has been developed only to the extent necessary for preliminary evaluation and screening, with no detailed drawings completed. Since neither side of the Buffalo River has experienced much development during the past decade, much of the information found in the earlier transportation studies was used to evaluate the alternatives again. This section provides a brief description of each alternative with an accompanying map which highlights the alternative over aerial photography.

Given the diversity of alternatives, as well as the range of locations, common points A and B (or logical termini) were set on both sides of the Buffalo River in order to evaluate and compare the alternatives. The logical terminus points are shown on each Figure (3-1 through 3-12). The Downtown/Inner Harbor logical terminus, Point A, was set at the approximate hub of current Inner Harbor development and recreational activity including the Naval Park Museum, Erie Canal Harbor, HSBC Arena and planned Canal Side Project.

The placement of Logical Terminus B relates directly to the New Downtown, and the City's delineation of the Erie Canal Harbor and Waterfront District as a key strategic investment area. Logical Terminus B is located within the New Downtown, and more specifically at the southern entrance to the Times Beach Nature Preserve along the new Outer Harbor Parkway multi-use trail.

The location is in keeping with the City's desire to develop outward from the core, expanding in a pattern of sustainable growth while connecting to a key resource – the waterfront. It is also in keeping with existing infrastructure (both the park and trail facilities) and linking multi-modal opportunities.

Several comments were received that expressed an opinion that Terminus B should be located farther south along the Outer Harbor. While recognizing that there are proposed developments for the southern end of the Outer Harbor, this project must recognize the long-term visioning and planning efforts that have been made – and specifically the community's desire for smart growth.

Locating Point B at various locations further south (as far south as Freezer Queen Facility) on the outer harbor was investigated. Travel distance and travel time differences between northern and southern alternative crossing locations change only slightly when moving the outer harbor logical terminus point (Point B) further south. Northern alternatives crossings, providing a more direct and less circuitous route, provide the most efficient connection to all points on the outer harbor regardless of the ultimate destination point. The location of Point B does not affect the outcome of the alternative screening process documented in subsequent sections of this chapter report.

#### **NB-1: No-Build**

The No-Build Alternative consists of two existing routes as shown in Figure 3-1:

- 1) The Skyway, from Marine Drive to Erie Street to Bingham Street to Church Street Skyway entrance to Fuhrmann Boulevard; and the "local route";
- 2) Marine Drive to Scott Street to Michigan Avenue to Ohio Street to Fuhrmann Boulevard. Under the No-Build Alternative, routine, maintenance of these routes would occur as scheduled by the NYSDOT and City of Buffalo.

With the exception of improvements already planned for Ohio Street under the Southtowns Connector Project, the No-Build would result in no new construction, new connections or operational improvements. Under the Southtowns Connector Project (not yet under construction but included in that project's Record of Decision), Ohio Street would be reconstructed with three lanes (two travel lanes, center turn lane) and designated bicycle lanes, primarily within the existing right-of-way width of the roadway (see "yellow" route in Figure 3-1). As part of the reconstruction, streetscape improvements would be implemented to provide traffic calming and safer access for pedestrians, bicyclists, and transit. Intersection improvements would be implemented and the three-way intersection at Ohio/Louisiana/St. Clair Streets would be reconfigured to access Louisiana Street via South Street.



The Skyway route is approximately 3.3 miles long with an estimated vehicular travel time of 4.9 minutes. Pedestrians and bicyclists are prohibited from using the Skyway. The "local route" (2) is approximately 4.0 miles long with an estimated vehicular travel time of 7.0 minutes and estimated pedestrian and bicyclist travel times of over 80 and 19 minutes, respectively. The "local route" includes either the Michigan Avenue Bridge or the Ohio Street Lift Bridge, neither of which is compliant with the Americans with Disabilities Act (ADA) Standards for Accessible Design.





Figure 3-1 Alternative NB-1: No-Build



### UP-1: Upgrade

The Upgrade Alternative consists of improving existing surface route of the No-build alternative as shown in Figure 3-2, Marine Drive to Scott Street to Michigan Avenue to Ohio Street to Fuhrmann Boulevard.

Ohio Street would be reconstructed with three lanes (two travel lanes, center turn lane) and designated bicycle lanes, primarily within the existing right-of-way width of the roadway (see "yellow" route in Figure 3-2). As part of the reconstruction, streetscape improvements would be implemented to provide traffic calming and safer access for pedestrians, bicyclists, and transit. Intersection improvements would be implemented and the three-way intersection at Ohio/Louisiana/St. Clair Streets would be reconfigured to access Louisiana Street via South Street.

The Upgrade route is approximately 4.0 miles long with an estimated vehicular travel time of 7.0 minutes and estimated pedestrian and bicyclist travel times of over 80 and 19 minutes, respectively. The upgrade alternative would require modifications to the Ohio Street Lift Bridge which is not compliant with the Americans with Disabilities Act (ADA) Standards for Accessible Design.



Figure 3-2 Alternative UP-1: Upgrade

### RE-1: South Michigan Avenue Bridge (with upgraded Existing Michigan Avenue Bridge)

The South Michigan Avenue Bridge over the City Ship Canal was deemed unsafe and removed in 1964, after a mechanical failure caused the bridge to shift. It was never replaced. Replacement Alternative RE-1 would connect Point A to Point B via Marine Drive to Scott Street to Michigan Avenue (crossing the existing Michigan Avenue bridge over the Buffalo River), across the proposed replacement structure over the City Ship Canal (at the location of the former bridge) to Fuhrmann Boulevard. The proposed bridge would meet the City of Buffalo's Complete Streets Ordinance and consist of standard 11 ft wide travel lanes, 6 ft wide shared shoulders and 7 ft wide sidewalks.

Due to the limited right-of-way and active industrial facilities along Michigan Avenue on Kelly Island, the horizontal alignment of the South Michigan Avenue replacement bridge would be coincident with the horizontal alignment of Michigan Avenue on the east side of the City Ship Canal. Similarly, only small changes to the vertical alignment would be feasible to avoid right-of-way and business impacts.

The existing Michigan Avenue Bridge and approaches would require retrofits to meet current ADA standards. Michigan Avenue, between the existing bridge and proposed replacement structure, would require upgrades to meet the City's Complete Streets Ordinance and ADA standards. The Michigan Avenue/Ganson Street intersection would require improvements, including enhanced traffic controls, crosswalks, and signage. Crossing improvements would also be required for the CSX railroad tracks which cross Michigan Avenue west of Ganson Street.

The Alternative RE-1 route is approximately 1.5 miles long with an estimated vehicular travel time of 2.4 minutes, along with estimated pedestrian and bicyclist travel times of 30 and 7 minutes, respectively.

The closed bridge vertical-navigation clearance would be dictated by structure type but is estimated between 18-20 feet above low water. As with all moveable bridge alternatives, the provided vertical navigation clearance of the bridge in the open position would be 100 ft minimum.



**Figure 3-3 Alternative RE-1: South Michigan Avenue Bridge (with upgraded Existing Michigan Avenue Bridge)**



## RE-2: South Michigan Avenue Bridge with Water Taxi (with upgraded Existing Michigan Avenue Bridge)

Replacement Alternative RE-2 would include construction of a new, replacement bridge at South Michigan Avenue as described under Alternative RE-1, with the addition of water taxi operations. Given the existing facilities, the water taxi docks could be located at/near the Commercial Slip on the Inner Harbor side of the Buffalo River. A new docking facility would need to be constructed along the Outer Harbor side of the Buffalo River. Given the assumed logical terminus Point B, it is assumed that the new docking facility would be located near the Connecting Terminal grain elevator.

Seasonal in nature, the water taxi would provide pedestrians and bicyclists with a more direct, and potentially safer, route across the Buffalo River. The limit of the operational season would vary from year to year, but would be no longer than “ice-out” to “ice-in.”

Since the water taxi operation would be seasonal, the existing Michigan Avenue Bridge would still require retrofits to meet current ADA standards. The additional improvements along Michigan Avenue and at the Ganson Street intersection, as described in Alternative RE-1, would also be required.

The Alternative RE-2 vehicular route is approximately 1.5 miles long with an estimated vehicular travel time of 2.4 minutes. The water taxi route across the River is approximately 750 feet with an assumed 30-minute boarding schedule during peak periods. The estimated travel time across the River is 10 minutes (including boarding/disembarking).



**Figure 3-4 Alternative RE-2: South Michigan Avenue Bridge with Water Taxi (w/ upgraded Existing Michigan Avenue Bridge)**

### RE-3: South Michigan Avenue Bridge with Pedestrian/Bicycle Bridge

Replacement Alternative RE-3 would include construction of a new, replacement bridge at South Michigan Avenue as described under Alternative RE-1, with the addition of a new pedestrian/bicycle bridge located at either Main Street (similar to the alignment of BR-3 crossing) or Erie Street (similar to the alignment of the BR-1 crossing). The location of the pedestrian bridge will be studied further in the DEIS. The pedestrian/bicycle bridge would be approximately 16 feet wide and would also be a moveable structure.

The closed, pedestrian/bicycle bridge vertical-navigation clearance would be dictated by structure type but is estimated between 18 and 30 feet above low water. As with all moveable bridge alternatives, the provided vertical navigation clearance of the bridge in the open position would be 100 ft minimum.

Since a new, pedestrian/bicycle bridge would be a year-round option, the existing Michigan Avenue Bridge would not be retrofitted to meet current ADA standards. However, many of the additional improvements along Michigan Avenue and at the Ganson Street intersection, as described in Alternative RE-1, would be required.

The Alternative RE-3 vehicular route is approximately 1.5 miles long with an estimated vehicular travel time of 2.4 minutes. The non-vehicular route is approximately 0.5 miles long with estimated pedestrian and bicyclist travel times of 10 and 3 minutes, respectively for a pedestrian bridge located at Main Street.



**Figure 3-5 Alternative RE-3: South Michigan Avenue Bridge with Pedestrian/Bicycle Bridge (Note: Main Street Pedestrian/Bicycle bridge shown)**



### BR-1: Erie Street Bridge with Existing Erie Street Approach

New Bridge Alternative BR-1 would connect Point A to Point B via Marine Drive to Erie Street across the proposed new structure over the Buffalo River to the foot of Fuhrmann Boulevard, near the entrance to the U.S. Coast Guard station. The proposed bridge would meet the City of Buffalo's Complete Streets Ordinance and consist of standard 11 ft wide travel lanes, 6 ft wide shared shoulder and 7 ft wide sidewalks.

The closed bridge vertical-navigation clearance would be dictated by U.S. Coast Guard requirements and structure type but is estimated between 18 and 20 feet above low water. As with all moveable bridge alternatives, the provided vertical navigation clearance of the bridge in the open position would be 100 ft minimum.

While the final elevation is not yet known, the vertical alignment of the Erie Street and Fuhrmann Boulevard approaches will need to be raised between 14 and 25 feet to meet the new bridge. It is assumed that impacts on Erie Street could reach as far to the east as the Marine Drive intersection and slightly west of the Erie Basin Marina entrance. It is assumed that the impacts on Fuhrmann Boulevard could reach as far as 700 feet south of the Buffalo River. Given the parkland/multi-use trail along the Erie Basin Marina, as well as the multi-use trail and wetlands along the western edge of Fuhrmann Boulevard, it is expected that retaining walls will be required to minimize the right-of-way, cultural and environmental impacts of this alternative.

The Alternative BR-1 route is approximately 0.6 miles long with an estimated vehicular travel time of 1.3 minutes. Estimated pedestrian and bicycle travel times of 12 and 3 minutes, respectively, would be anticipated.

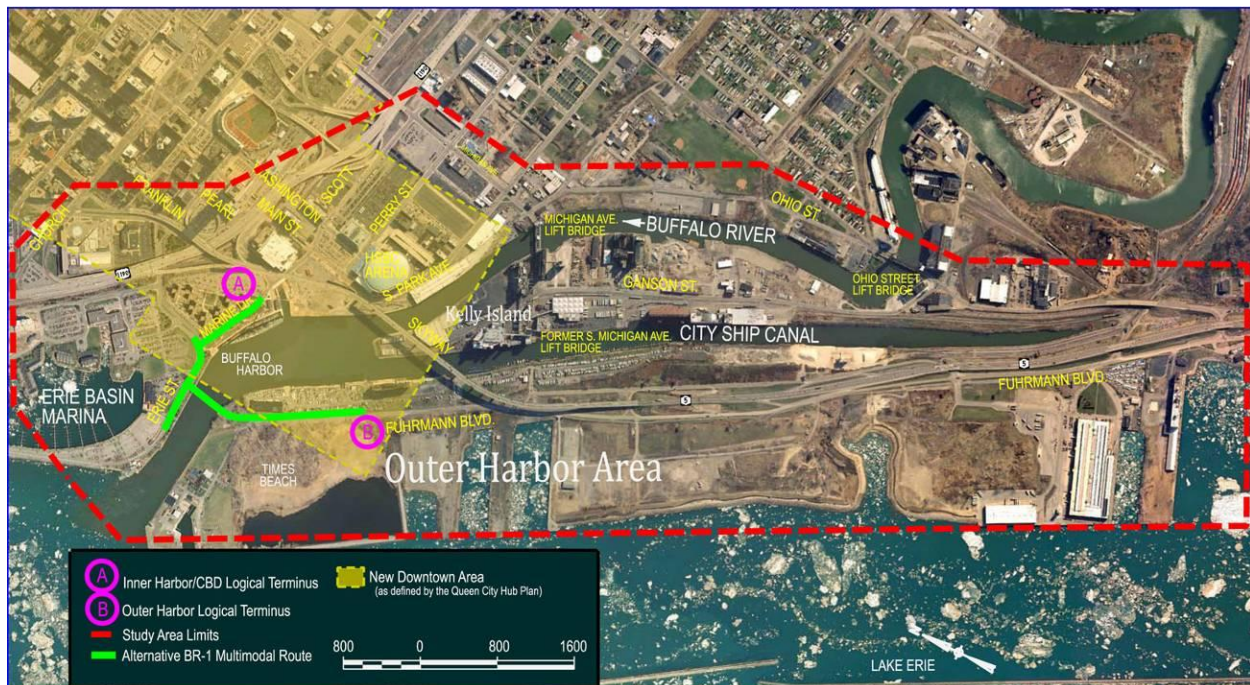


Figure 3-6 Alternative BR-1: Erie Street Bridge with Existing Erie Street Approach



## BR-2: Erie Street Bridge with Former Erie Street Approach

Alternative BR-2, is similar to Alternative BR-1 except the horizontal alignment of Erie Street approach would be reconstructed to match the former alignment of Erie Street (i.e., through the existing parking areas of the Waterfront Village office complex) or a straightened Erie Street alignment. In addition to the re-aligned Erie Street approach, the western half of Marine Drive would be extended with a new intersection at Erie Street. A section of Erie Street, west of the new bridge would also require reconstruction.

The closed bridge vertical-navigation clearance would be dictated by U.S. Coast Guard requirements and structure type but is estimated between 18 and 20 feet above low water. As with all moveable bridge alternatives, the provided vertical navigation clearance of the bridge in the open position would be 100 ft minimum.

While the final elevation is not yet known, the vertical alignment of the Erie Street and Fuhrmann Boulevard approaches will need to be raised between 14 and 25 feet to meet the new bridge. It is assumed that impacts on Erie Street could extend slightly west of the Erie Basin Marina entrance. It is assumed that the impacts on Fuhrmann Boulevard could reach as far as 700 feet south of the Buffalo River. Given the parkland/multi-use trail along the Erie Basin Marina, as well as the multi-use trail and wetlands along the western edge of Fuhrmann Boulevard, it is expected that retaining walls will be required to minimize the right-of-way, cultural and environmental impacts of this alternative. Alternative BR-2 may also require that the extended section of Marine Drive be elevated as well.

The Alternative BR-2 route is approximately 0.6 miles long with an estimated vehicular travel time of 1.3 minutes. Estimated pedestrian and bicycle travel times of 12 and 3 minutes respectively are anticipated.

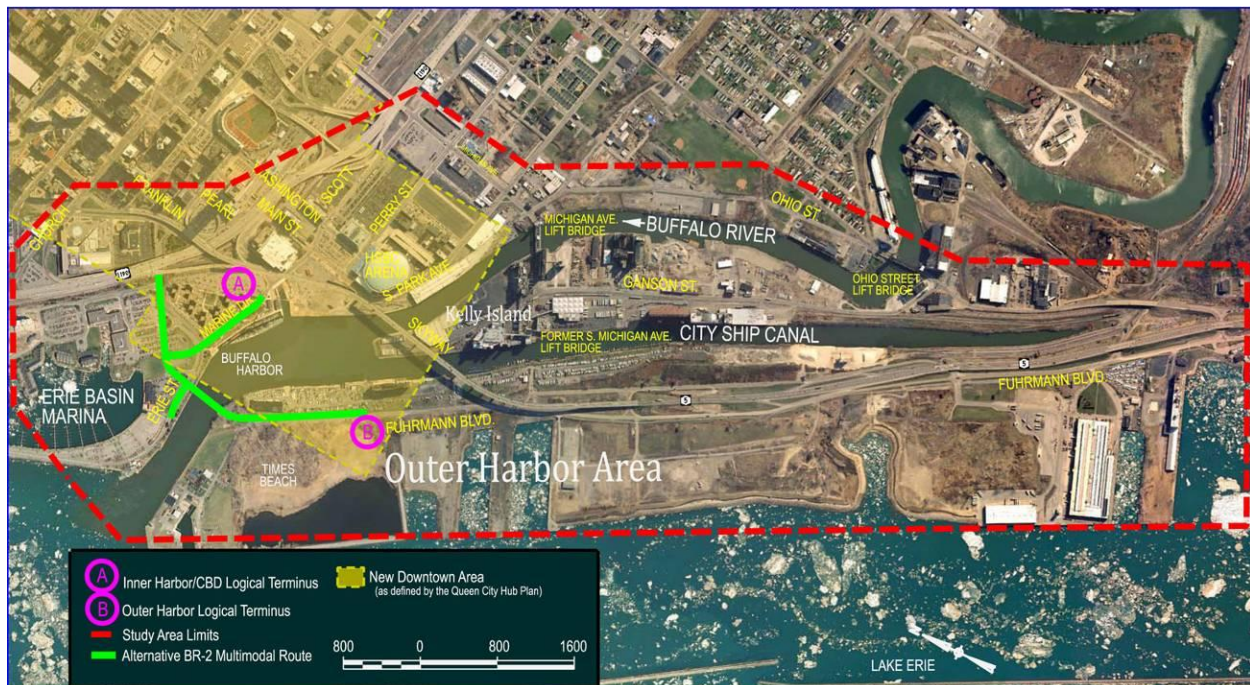


Figure 3-7 Alternative BR-2: Erie Street Bridge with Former Erie Street Approach

### BR-3: Main Street Bridge

Alternative BR-3 would connect Point A to Point B via Marine Drive to Scott Street to Main Street (i.e. Seymour H Knox III Way) across two new bridges over the Buffalo River and City Ship Canal to a new westerly Main Street approach connecting with Fuhrmann Boulevard. The proposed bridge would meet the City of Buffalo's Complete Streets Ordinance and consist of standard 11 ft wide travel lanes, 6 ft wide shared shoulders and 7 ft wide sidewalks.

Several existing physical constraints would influence the horizontal and vertical alignment for this alternative, including: the proximity to the Light Rail Rapid Transit (LRRT) trackbed, location and orientation of the Skyway piers, overhead location of the Skyway superstructure, location of the Kelly Island sewer trunk line, location of Kelly Island, and location of the Connecting Terminal grain elevator. In addition to the existing physical constraints, the U.S. Coast Guard navigation requirements and structure types are expected to influence the final design of the two bridges.

The closed bridge vertical-navigation clearance would be dictated by the constraints listed above, but is estimated between 18 and 20 feet above low water. As with all moveable bridge alternatives, the provided vertical navigation clearance of the bridge in the open position would be 100 ft minimum.

Alternative BR-3 may require realignment of the LRRT tracks between Scott Street and South Park Avenue in order to provide room to connect the bridge approach to existing Main Street near Perry St. Modifications to the Perry Street and South Park Avenue intersections at Main Street will also be required. In addition, the feasibility of accommodating future LRRT to the Outer Harbor over the Alternative BR-3 proposed bridges will be investigate in the DEIS.

While the final elevation is not yet known, the vertical alignment of portions of existing Main Street adjacent to HSBC arena will need to be raised by an average of 6-10 feet and the extension of Main Street at the bridge approach will approximately 20-25 feet above existing to meet the new bridge. It is assumed that impacts could reach as far to the northeast as the Scott Street intersection and to Fuhrmann Boulevard on the east. It is expected that retaining walls will be required to minimize the right-of-way impacts of this alternative.

The Alternative BR-3 route is approximately 0.5 miles long with an estimated vehicular travel time of 1.2 minutes long with estimated pedestrian and bicyclist travel times of 10 and 3 minutes, respectively.



Figure 3-8 Alternative BR-3: Main Street Bridge



#### BR-4: Ganson Street Bridge (with upgraded Existing Michigan Avenue Bridge)

Alternative BR-4 would connect Point A to Point B via Marine Drive to Scott Street to Michigan Avenue (crossing the existing Michigan Avenue Bridge over the Buffalo River) to Ganson Street across the proposed new structure over the City Ship Canal to a Ganson Street extension under N.Y. Route 5 to Fuhrmann Boulevard. The proposed bridge would be located over ½ mile south of Michigan Avenue in order to align with the Outer Harbor Parkway roundabout currently under construction. This location is still within the federally-regulated navigational channel.

Active rail lines, located between Ganson Street and the City Ship Canal, would influence the vertical alignment of the Ganson Street approach. In order to span the railroad and meet the closed bridge vertical-navigation clearance requirements, a 1500 foot long section of Ganson Street would need to be elevated. As a result, significant embankment would be required along Ganson Street in the vicinity of the bridge. Retaining walls would be required to avoid impacts to the rail lines on the west side. Right-of-way takings and impacts to businesses could be minimized with retaining walls on the east side as well.

Similar to Alternative RE-1, the existing Michigan Avenue Bridge would require retrofits to meet current ADA standards. Michigan Avenue, between the existing bridge and proposed replacement structure, would require upgrades to meet the City of Buffalo's Complete Streets Ordinance and ADA standards. The Michigan Avenue/Ganson Street intersection would require improvements, including enhanced traffic controls, crosswalks, and signage.

The closed bridge vertical-navigation clearance would be dictated by the constraints listed above, but is estimated to be approximately 30 feet above low water. This clearance is based on the required railroad clearance adjacent to the City Ship Canal rather than navigation clearance requirements alone. As with all moveable bridge alternatives, the provided vertical navigation clearance of the bridge in the open position would be 100 ft minimum.

The Alternative BR-4 route is approximately 2.6 miles long with an estimated vehicular travel time of 4.0 minutes long with estimated pedestrian and bicyclist travel times of 52 and 12 minutes, respectively.



**Figure 3-9 Alternative BR-4: Ganson Street Bridge (with upgraded Existing Michigan Avenue Bridge)**



### BR-5: Ganson Street Bridge with Water Taxi (with upgraded Existing Michigan Avenue Bridge)

Alternative BR-5 would include construction of a new, replacement bridge at Ganson Street as described under Alternative BR-4, with the addition of water taxi operations. Given the existing facilities, the water taxi docks could be located at/near the Commercial Slip on the Inner Harbor side of the Buffalo River. A new docking facility would need to be constructed along the Outer Harbor side of the Buffalo River. Given the assumed logical terminus Point B, it is assumed that the new docking facility would be located near the Connecting Terminal grain elevator.

Seasonal in nature, the water taxi would provide pedestrians and bicyclists with a more direct, and potentially safer, route across the Buffalo River during its limited operations. The limit of the operational season would vary from year to year, but would be no longer than “ice-out” to “ice-in.”

Since the water taxi operation would be seasonal, the existing Michigan Avenue Bridge would still require retrofits to meet current ADA standards since it is included in the route to the new Ganson Street Bridge crossing. The additional improvements along Michigan Avenue and at the Ganson Street intersection, as described in Alternative RE-1, would also be required.

The Alternative BR-5 vehicular route is approximately 2.6 miles long with an estimated vehicular travel time of 4.0 minutes. The water taxi route across the Buffalo River is approximately 750 feet with an assumed 30-minute boarding schedule during peak periods. The estimated travel time across the Buffalo River is 10 minutes (including boarding/disembarking).

The closed bridge vertical-navigation clearance would be dictated by the constraints listed above, but is estimated to be approximately 25-30 feet above low water. This clearance is based on the required railroad clearance adjacent to the City Ship Canal rather than navigation clearance requirements alone. As with all moveable bridge alternatives, the provided vertical navigation clearance of the bridge in the open position would be 100 ft minimum.



**Figure 3-10 Alternative BR-5: Ganson Street Bridge with Water Taxi (with upgraded Michigan Avenue Bridge)**

### BR-6: Ganson Street Bridge with Main Street Pedestrian/Bicycle Bridge

Alternative BR-6 would include construction of a new, replacement bridge at Ganson Street as described under Alternative BR-4, with the addition of a new pedestrian/bicycle bridge located at Main Street (similar to the alignment of BR-3 crossing) or Erie Street (similar to the alignment of the BR-1 crossing). The pedestrian/bicycle bridge would be approximately 16 feet wide and would also be a moveable structure.

The closed, pedestrian/bicycle bridge vertical-navigation clearance would be dictated by structure type but is estimated between 18 and 30 feet above low water. As with all moveable bridge alternatives, the provided vertical navigation clearance of the bridge in the open position would be 100 ft minimum.

Since a new, pedestrian/bicycle bridge would be a year-round option, the existing Michigan Avenue Bridge would not be retrofitted to meet current ADA standards. However, many of the additional improvements along Michigan Avenue and at the Ganson Street intersection, as described in Alternative BR-4, would be required.

The Alternative BR-6 vehicular route is approximately 2.6 miles long with an estimated vehicular travel time of 4.0 minutes. The non-vehicular route is approximately 0.5 miles long with estimated pedestrian and bicyclist travel times of 10 and 3 minutes, respectively.



Figure 3-11 Alternative BR-6: Ganson Street Bridge with Main Street Pedestrian/Bicycle Bridge



### WF-1: Water Ferry

Alternative WF-1 would use ferryboats to transport vehicles, pedestrians and bicyclists between the Downtown and Outer Harbor areas. The length of the route, passenger and vehicle capacity, speed requirements and the Buffalo River water conditions make a double-ended ferry, having interchangeable bows and sterns which allows them to shuttle back and forth between two terminals without having to turn around, a suitable boat type for the Buffalo Harbor.

New, specialized docking facilities would need to be constructed on both sides of the harbor, including new access roads, ramps, and short-term parking areas to facilitate staging, loading and unloading of vehicles.

Seasonal in nature, a water ferry would provide multi-modal transport across the Buffalo River during its limited operations. The limit of the operational season would vary from year to year, but would be no longer than "ice-out" to "ice-in."

The water ferry route across the River is approximately 750 feet with an assumed 30-minute boarding schedule during peak periods. The estimated travel time across the River is 25 minutes (including boarding/disembarking).

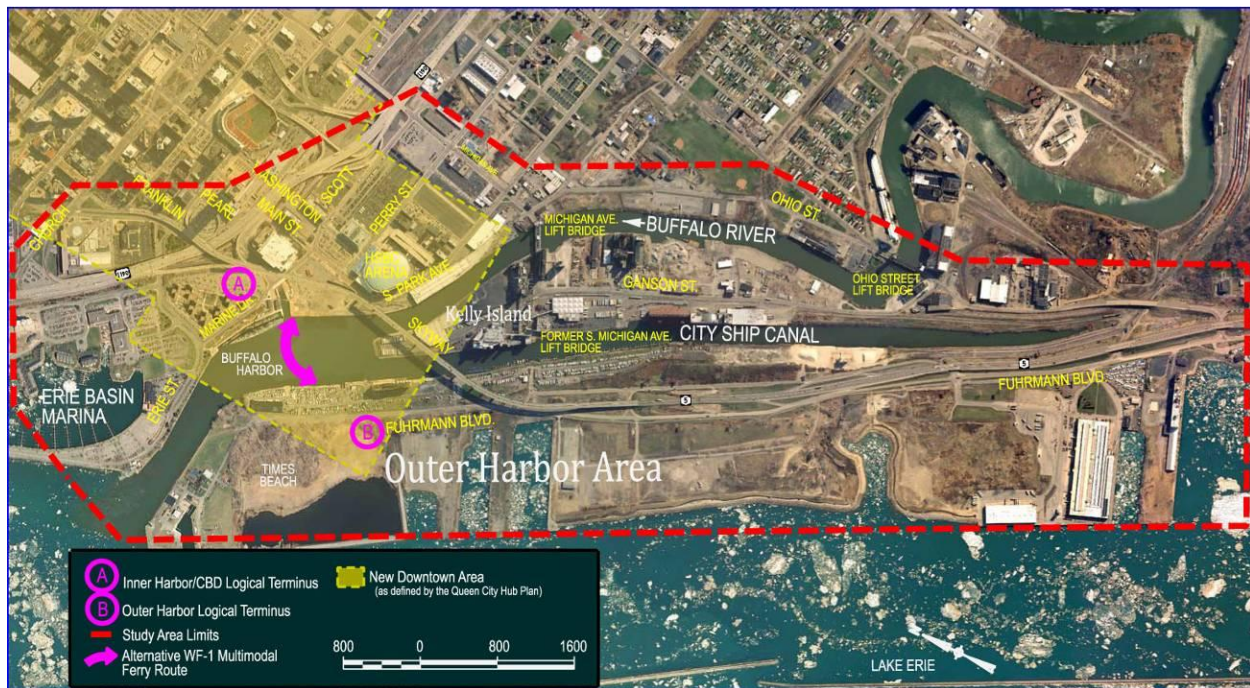


Figure 3-12 Alternative WF-1: Water Ferry

### TU-1: Erie Street Tunnel

Alternative TU-1 would connect Point A to Point B via Perry Boulevard to Erie Street through a tunnel under the Buffalo River to Fuhrmann Boulevard. The proposed tunnel would meet the City of Buffalo's Complete Streets Ordinance and consist of standard 11 ft wide travel lanes, 6 ft wide shared shoulders and 7 ft wide sidewalks.

Several factors would influence the alignment and geometry of a tunnel under the Buffalo River, including water elevation, depth of the navigable channel, and geotechnical issues associated with soil and rock strata below the bottom of the River. With these factors considered it would be necessary for the roadway surface of the tunnel under the Buffalo River to be approximately 65-75 ft below the surface elevation of the ground on either side of the Buffalo River channel. This depth, along with reasonable slopes for pedestrians and bicyclists, in turn requires significant lengths for approach roadways. The approach roadway length on each side of the channel would be at least 1500 feet depending on the final tunnel bore size, surface and sub-surface constraints, as well as cultural and environmental factors. The long underground distance may provide an uncomfortable situation for some pedestrians and bicyclists and special ventilation requirements would be required to evacuate vehicular exhaust fumes. Based on preliminary investigation for a two lane tunnel with multimodal accommodations, the northern tunnel entrance would be east of the I-190.

This alternative would also require modification of the Erie Street alignment at the intersection with Lakefront Boulevard and Perry Boulevard. Modifications would be necessary to separate tunnel-bound and Erie Basin Marina-bound traffic. The Alternative TU-1 route would be a minimum of 0.7 miles long. The travel time for a tunnel alternative will vary greatly depending on endpoint locations, however, at a minimum, a travel time of 1.3 minutes for vehicles and 13 and 3 minutes for pedestrian and bicycles, respectively, would be anticipated.



Figure 3-13: Alternative TU-1: Erie Street Tunnel





## 3.2. Determination of Feasible Alternatives

### 3.2.1. Screening Process, Screening Criteria and Alternative Analysis

#### 3.2.1.1. Screening Process

The alternatives considered were evaluated through a two step screening process; Primary and Secondary. The goal of the screening process is to determine which alternatives do not meet the purpose and need of the project, eliminating them from further consideration so that resources and efforts can be efficiently focused on evaluating the alternatives which best meet the Purpose and Need of the project. The project Purpose and Need statement is included in Chapter 1.

During the alternative screening process, only limited information was developed with regards to the layout of each alternative. Basic geometry such as horizontal alignment and grades were considered to determine the extent of approaches required and the feasibility of alternative locations. Cross section considerations and design criteria including width of lanes, bike paths and sidewalks were developed. Other information considered included but not limited to: type and nature of existing facilities serving as abutting highway segments; travel distance; existing land use plans, master plans, transportation plans and past studies; information gathered from commercial and recreation businesses and users of the Buffalo Harbor, City Ship Canal and Buffalo River; information gathered from participating and cooperating agencies; and preliminary costs. Environmental considerations included potential impact to: wetlands; parklands; historic structures; and potential for archeological impacts.

For bridge alternatives, structure types were not considered at this time since the screening process is intended to focus on the crossing location and overall route to be considered. Bridge types and aesthetic considerations will be addressed in future phases of the Environmental Impact Statement.

The alternatives were evaluated against the primary and secondary screening criteria outlined in Section 3.2.1.2 and 3.2.1.4. A simple rating system was used to score alternatives on each criterion. The ratings were assigned as follows:

- B* Good = The alternative is projected to meet the criteria to a meaningful degree.
- Z* Fair = The alternative is projected to meet the criteria but to a smaller degree.
- b* Poor = The alternative would not likely meet the criteria or would do so to a very limited extent.

#### 3.2.1.2. Primary Screening Criteria

The first step in the alternative screening process is to qualitatively measure all reasonable alternatives against a set of Primary Screening Criteria. The purpose of this step is not to identify the best alternative; rather, the goal is to eliminate alternatives that clearly do not meet project Purpose and Need. Eight criteria were deemed critical in contrast to others. These criteria are considered primary. If the alternative rates "poor" for any of the eight primary criteria, the alternative will be dropped from further consideration. Alternatives retained will be evaluated further in step two and evaluated against the secondary screening criteria.

Discussion on the relative effectiveness that each reasonable alternative meets the Primary Screening Criteria is included in Section 3.2.1.3 and summarized in Table 3-1. The primary criteria are outlined and defined below:

- **Provides a more direct and easily navigable connection between the Outer Harbor and the New Downtown**
  - A major purpose of the project is directly connecting the businesses and social activities in the New Downtown Area to the Outer Harbor. Furthermore the connection must be short, easily navigated, and oriented to accommodate multimodal traffic such as pedestrians and bicyclists as defined below. If this condition is not met, the benefits of



the project are greatly reduced and the alternative would rate poor in this regard and would be dropped from further consideration.

- **Provides an efficient connection to the Outer Harbor Area**
  - A goal of the project is to provide a local connection from the New Downtown Area as defined in the Queen City Hub plan to the Outer Harbor which is efficient. Long circuitous routes or alternatives requiring long wait times or delays for vehicular or multimodal traffic will have a lower benefit and would consequently rate poor and would be dropped from further consideration.
- **Multi-modal capability of alternative and compliance with City of Buffalo's "Complete Streets Ordinance"**
  - A major focus of the project is to provide efficient and safe multimodal connections to the Outer Harbor for pedestrians, bicyclists and transit in addition to vehicular traffic. Alternatives that do not provide multimodal capabilities would rate poor and would be dropped from further consideration.
- **Provides for year-round multi-modal capabilities**
  - The alternative must provide year round multimodal capability. Alternatives which only support the ability to pass multimodal traffic during the summer months do not fully achieve this criterion. Alternatives that do not provide year round multimodal capabilities would rate poor and would be dropped from further consideration.
- **Alternative restricts commercial shipping and/or affects the federal navigational channel**
  - The Buffalo River and City Ship Canal are federal navigable channels throughout the project corridor. Furthermore, these navigable waterways are important for commerce and trade. Numerous existing and planned businesses as well as recreational boaters rely on these waterways on a daily basis. Alternatives that do not provide for means of navigation (i.e. a moveable bridge or other configuration providing ability to allow all commercial and recreations vessel to pass) would receive a poor rating and would be dropped from further consideration.
- **Alternative is consistent with ECHDC mission and vision, as well as goals and objectives**
  - The Erie Canal Harbor Development Corporation's (ECHDC) mission is to revitalize Western New York's waterfront and restore economic growth to Buffalo based on the region's legacy of pride, urban significance and natural beauty. A direct and efficient multimodal connection in the vicinity of the Inner Harbor development is necessary to revitalize the entire length of the City's waterfront. Alternatives that do not provide for a direct and efficient multimodal connection in the vicinity of the Inner Harbor development would receive a poor rating and would be dropped from further consideration.
- **Project is financially feasible**
  - Transportation improvement projects should not consider cost as a sole differentiator. The cheapest solution is not always the best solution. However, the project must be financially achievable. Alternatives with costs outside the realm of possible funding sources or alternatives many times higher in cost than alternatives with similar impacts and benefits would receive a poor rating and would be dropped from further consideration.
- **Constructability of project**
  - Hand in hand with financial feasibility, the project must be constructible. Projects which push beyond the industry accepted practices, such as span lengths well in excess of general industry practices would rate poorly and would be dropped from further consideration.



### 3.2.1.3. Feasible Alternatives Based on Primary Screening Criteria

The first step in the alternative screening process is to evaluate all alternatives considered based on the primary screening criteria discussed above. Discussion of each alternative and how it rates against the primary screening criteria is discussed below.

#### **NB-1: No-Build Alternative**

This alternative would not provide a more direct and easily navigable connection between the Outer Harbor and the New Downtown as defined in the Queen City Hub Plan and it is not consistent with ECHDC mission and vision as well as goals and objectives. It would not meet the project purpose and need as it would not provide for an efficient connection to the outer harbor area nor would it provide for year round multi-modal capability and compliance with City of Buffalo's "Complete Streets Ordinance". The No-Build Alternative would have no additional restrictions on commercial shipping and would have no impact to the federal navigational channel since no new construction or operations would take place. The alternative would not be consistent with ECHDC goals and objectives as it would not provide a new local waterfront connection or facilitate development of the Outer Harbor as a logical extension of the inner harbor development currently underway. Consideration of the constructability of the alternative is not applicable as no new construction would occur. The No-Build alternative would not meet project purpose and needs but will be carried into the DEIS for further evaluation as a basis of comparison. Qualitative ratings for this alternative are summarized in Table 3-1.

#### **UP-1: Upgrade Alternative**

The Alternative UP-1 route between logical termini would utilize Scott Street, Michigan Avenue, Ohio Street and Fuhrmann Blvd. At 4.0 miles long this route would be the longest of any alternative route. It would be nearly 2.5 miles longer than Alternative RE-1 (Michigan) and over 750% longer than Alternative BR-3 (Main). Consequently, this alternative rates "poor" with regard to providing a more direct and easily navigable connection between the Outer Harbor and the New Downtown. It rates "poor" and would not meet ECHDC mission and vision as well as goals and objectives of providing a connection to support future outer harbor development immediately across the Buffalo Harbor as a logical extension of the inner harbor development areas now in progress.

With improvements to Scott Street, Michigan Avenue and Ohio Street the alternative would meet the requirements of the City of Buffalo's "Complete Streets Ordinance." However, the 4.0 mile route would be excessively long for most pedestrians. As such, this alternative could provide for year round multimodal capabilities but these capabilities would be rated "fair" based on issues mentioned above.

From a navigation standpoint, this alternative rates "good" as would have no additional restrictions on commercial shipping and would have no impact to the federal navigational channel navigation. This alternative would be considered financially feasible and rates "good." There are no major engineering issues with this alternative known at this time and the alternative is considered constructible.

Based on this evaluation, Alternative UP-1 does not meet the project Purpose and Need and will not be considered or evaluated further since it does not provide a more direct and easily navigable connection between the Outer Harbor and the New Downtown, does not provide an efficient connection to the Outer Harbor and is not consistent with ECHDC mission and vision as well as goals and objectives. Qualitative ratings for this alternative are summarized in Table 3-1.

#### **RE-1: South Michigan Avenue Bridge (with upgraded Existing Michigan Avenue Bridge)**

Alternative RE-1 would not provide a more direct and easily navigable connection between the Outer Harbor and the New Downtown, since navigating outside the downtown area reduces the likelihood for use. The travel route, through an active industrial section of the City, also has the potential to disorient the user. Efficiency of the connection is compromised since it would require traversing through an operating plant – General Mills which has been operating on both sides of South Michigan Avenue since 1928. Significant increases in traffic volume would be expected through the corridor with the replacement of the South Michigan Avenue Bridge. This additional traffic would negatively affect the operations of General Mills and other businesses in the corridor.





While the approaches to the existing Michigan Avenue bridge would be upgraded for ADA compliance, the industrial nature and plant operations of the area (including tractor trailer maneuvering, loading and unloading operations, as well as railroad operations across the alternative route) call into question the safety of the corridor for vehicles, pedestrians and bicyclists. This alternative would meet the City of Buffalo's Complete Streets Ordinance and provide for year-round travel.

This alternative would affect commercial shipping as it would create a new bridge over the City Ship Canal requiring lifts to gain access to the Canal to points south. It rates only "fair" in meeting ECHDC mission and vision, as well as goals and objectives as it would not provide a direct connection from the hub of inner harbor development to points directly across the harbor. From a financial feasibility standpoint this alternative rates "good" since it would likely be the lowest cost alternative depending on the requirements and improvements required to bring the entire alternative route up to ADA standards and an acceptable level of multimodal throughput. There are no foreseen constructability issues with this alternative.

Based on this evaluation, Alternative RE-1 will be considered and evaluated further based on the secondary screening criteria. Qualitative ratings for this alternative are summarized in Table 3-1.

#### **RE-2: South Michigan Avenue Bridge with Water Taxi (with upgraded Existing Michigan Avenue Bridge)**

Alternative RE-2 would marginally provide a more direct and easily navigable connection between the Outer Harbor and the New Downtown, since navigating outside the downtown area reduces the likelihood for use. The travel route, through an active industrial section of the City, also has the potential to disorient the user. Efficiency of the connection is compromised since it would require traversing through an operating plant – General Mills which has been operating on both sides of South Michigan Avenue since 1928. Significant increases in traffic volume would be expected through the corridor with the replacement of the South Michigan Avenue Bridge. This additional traffic would negatively affect the operations of General Mills and other businesses in the corridor.

This alternative would affect commercial shipping as it would create a new bridge over the City Ship Canal requiring lifts to gain access to the Canal to points south. It rates only "fair" in meeting ECHDC mission and vision, as well as goals and objectives as it would not provide a direct connection from the hub of inner harbor development to points directly across the harbor. There are no foreseen constructability issues with this alternative.

Water taxi operations would enhance seasonal pedestrian and bicycle travel from the inner harbor hub of development to areas directly across the harbor to the Outer Harbor. This would improve the directness of the connection for pedestrians and bicyclist but only marginally improve the efficiency, since water taxi operations, whether on-demand or by schedule, would require wait times. Water taxi operations introduce other aspects which need to be investigated further including determination of private or agency operators and projected financial feasibility of the operation. Although this alternative provides marginal improvements for pedestrians and bicyclists, the ratings for Alternative RE-2 remain consistent with RE-1.

Based on this evaluation, Alternative RE-2 will be considered and evaluated further based on the secondary screening criteria. Qualitative ratings for this alternative are summarized in Table 3-1.

#### **RE-3: South Michigan Avenue Bridge with Pedestrian/Bicycle Bridge**

Alternative RE-3 would marginally provide a more direct and easily navigable connection between the Outer Harbor and the New Downtown, since navigating outside the downtown area reduces the likelihood for use. The travel route, through an active industrial section of the City, also has the potential to disorient the user. Efficiency of the connection is compromised since it would require traversing through an operating plant – General Mills which has been operating on both sides of South Michigan Avenue since 1928. Significant increases in traffic volume would be expected through the corridor with the replacement of the South Michigan Avenue Bridge. This additional traffic would negatively affect the operations of General Mills and other businesses in the corridor.



The addition of a new moveable pedestrian/bicycle bridge on an alignment similar to BR-1 (Erie Street) or BR-3 (Main Street) would provide year-round multimodal capabilities, significantly improving the direct and efficient connection for pedestrians and bicyclists. However, an additional moveable pedestrian bridge (or bridges at Main Street) increases the construction cost and therefore lowers the financial feasibility of this Alternative.

This alternative would affect commercial shipping as it would create a new bridge over the City Ship Canal requiring lifts to gain access to the Canal to points south. It rates only "fair" in meeting ECHDC mission and vision, as well as goals and objectives as it would not provide a direct connection from the hub of inner harbor development to points directly across the harbor. There are no foreseen constructability issues with this alternative.

Based on this evaluation, Alternative RE-3 will be considered and evaluated further based on the secondary screening criteria. Qualitative ratings for this alternative are summarized in Table 3-1.

#### **BR-1: Erie Street Bridge with Existing Erie Street Approach**

Alternative BR-1 would provide a more direct and easily navigable connection from the New Downtown and rates "good" in this category. It rates "good" in providing an efficient connection immediately adjacent to the hub of inner harbor development currently underway including the new Naval Park and the Canal Side project. The alternative rates "good" from the aspect of providing for year-round multimodal capabilities and would be in compliance with City of Buffalo's "Complete Streets Ordinance."

The location of this crossing is furthest north and closer to the mouth of the lake than the other alternatives. Consequently, it would affect the most waterborne traffic - virtually all commercial vessels and recreational sailboats using the Buffalo River and/or City Ship Canal will be impacted. However, the crossing would provide for the needs of navigation as defined by the US Coast Guard and consequently rates "fair."

Preliminary estimates indicate the project would be financially feasible. However, due to the long length required to span the navigable channel, and avoid impacts to the River at this location, the constructability of this bridge may be limited to certain bridge types.

Based on this evaluation, Alternative BR-1 will be considered and evaluated further based on the secondary screening criteria. Qualitative ratings for this alternative are summarized in Table 3-1.

#### **BR-2: Erie Street Bridge with Former Erie Street Approach**

Alternative BR-2 would provide a more direct and easily navigable connection from the New Downtown and rates "good" in this category. It rates "good" in providing an efficient connection immediately adjacent to the hub of inner harbor development currently underway including the new Naval Park and the Canal Side project. The alternative rates "good" from the aspect of providing for year-round multimodal capabilities and would be in compliance with City of Buffalo's "Complete Streets Ordinance." The alignment of Erie Street would follow the former alignment providing a more perpendicular approach to the north of the bridge and modified secondary roads connecting to the realigned approach.

The location of this crossing is furthest north and closer to the mouth of the lake than the other alternatives. Consequently, it would affect the most waterborne traffic - virtually all commercial vessels and recreational sailboats using the Buffalo River and/or City Ship Canal will be impacted. However, the crossing would provide for the needs of navigation as defined by the US Coast Guard and consequently rates "fair."

Preliminary estimates indicate the project would be financially feasible. However, due to the long length required to span the navigable channel, and avoid impacts to the River at this location, the constructability of this bridge may be limited to certain bridge types.

Based on the primary screening criteria, Alternative 2 will also be considered and evaluated further based on the secondary screening criteria. Qualitative ratings for this alternative are summarized in Table 3-1.

**BR-3: Main Street Bridge**

With a connection at the foot of Main Street near the HSBC Arena, Alternative BR-3 would provide a more direct and easily navigable connection between the Outer Harbor and the New Downtown and rates "good" with respect to this category. Being immediately adjacent to the hub of current inner harbor development, this alternative rates "good" from the aspect of providing an efficient connection to the Outer Harbor Area; and meeting ECHDC mission and vision as well as goals and objectives. The alternative would provide year-round accommodations for vehicles, pedestrians, and bicyclists, and would be in compliance with City of Buffalo's "Complete Streets Ordinance", thus rating "good" from the "multi-modal capabilities" standpoint. This alternative would also be located adjacent to a transit station, further enhancing its multimodal capabilities.

While providing for the needs of navigation as defined by the U.S. Coast Guard, the location of this crossing, between Alternatives RE-1, RE-2 and RE-3 (Michigan) and Alternatives BR-1 and BR-2 (Erie), would affect vessels such as sailboats and commercial vessels based south of, or requiring access to, points south of the bridge crossing. This crossing rates "fair" from this aspect. It is anticipated that both bridges required at this location would not impose on the existing horizontal limits of the navigation channel. Numerous constraints including the proximity of the LRRT tracks, limited ROW between the HSBC Arena and the Skyway, position of the Skyway piers, Skyway elevation, location of the Kelly Island sewer trunk, location of a grain elevator, U.S. Coast Guard navigation requirements, and closed bridge navigation clearance combine to make this a difficult but feasible alternative from a project constructability standpoint. Consequently it rates "fair" in this category. Two separate moveable spans are required at this location. Due to anticipated span lengths and measures necessary to overcome the aforementioned constraints, the cost of Alternative RE-3 is the highest among the moveable bridge alternatives but considered feasible.

Based on this evaluation, Alternative RE-3 will be considered and evaluated further based on the secondary screening criteria. Qualitative ratings for this alternative are summarized in Table 3-1.

**BR-4: Ganson Street Bridge (with upgraded Existing Michigan Avenue Bridge)**

The Alternative BR-4 route between logical termini would utilize Scott Street, Michigan Avenue, the existing Michigan Avenue Bridge, Ganson Street and Fuhrmann Blvd. At 2.6 miles long this route would be the longest of any alternative route with the exception of the No-Build and the Upgrade Alternatives. It would be nearly 40% or 1 mile longer than Alternative RE-1 (Michigan) and over 500% longer than Alternative BR-3 (Main). Consequently, this alternative rates "poor" with regard to providing a more direct and easily navigable connection between the Outer Harbor and the New Downtown. It rates "poor" and would not meet ECHDC mission and vision as well as goals and objectives of providing a connection to support future outer harbor development immediately across the Buffalo Harbor as a logical extension of the inner harbor development areas now in progress. Significant increases in traffic volume would be expected through the South Michigan and Ganson Street corridor under this alternative. This additional traffic would negatively affect the operations of the industrial businesses along the Ganson Street corridor including direct impacts to ADM and Sand Products Corporation. There are approximately 100 -140 tractor trailers arriving and departing from the General Mills facility daily which would be affected by traffic increases through the corridor.

With upgrades to the existing Michigan Avenue Bridge and portions of Ganson Street the alternative would meet the requirements of the City of Buffalo's "Complete Streets Ordinance." However, the 2.6 mile route would be excessively long for most pedestrians and the industrial nature and industrial operations of the area including tractor trailer maneuvering, loading and unloading operations as well as railroad operations across the alternative route call into question the safety of the corridor for pedestrians and bicyclists. As such, this alternative could provide for year round multimodal capabilities but these capabilities would be rated "fair" based on issues mentioned above.

From a navigation standpoint, this alternative rates "good" as it would affect navigation the least since it would be located further south along the City Ship Canal than any other alternative and currently, recreational or commercial operations do not exist on the City Ship Canal south of this crossing. This alternative would be considered financially feasible and rates "good." However, the required modifications



for safe multimodal access, railroad involvement and length of the alternative could drive up project costs. There are no major engineering issues with this alternative known at this time and the alternative is considered constructible.

Based on this evaluation, Alternative BR-4 does not meet the project Purpose and Need and will not be considered or evaluated further since it does not provide a more direct and easily navigable connection between the Outer Harbor and the New Downtown, does not provide an efficient connection to the Outer Harbor and is not consistent with ECHDC mission and vision as well as goals and objectives. Qualitative ratings for this alternative are summarized in Table 3-1.

**BR-5: Ganson Street Bridge with Water Taxi (with upgraded Existing Michigan Avenue Bridge)**

The evaluation of Alternative BR-5, Ganson Street crossing over City Ship Canal with water taxi operations would utilize Scott Street, Michigan Avenue, the existing Michigan Avenue bridge, Ganson Street and Fuhrmann Blvd. At 2.6 miles long this route would be the longest of any alternative route with respect to vehicles with the exception of the No-Build and the Upgrade Alternatives. It would be nearly 40% or 1 mile longer than Alternative RE-1 (Michigan) and over 500% longer than Alternative BR-3 (Main). Consequently, this alternative rates "poor" with regard to providing a more direct and easily navigable connection between the Outer Harbor and the New Downtown. It rates "poor" and would not meet ECHDC mission and vision as well as goals and objectives of providing a connection to support future outer harbor development immediately across the Buffalo Harbor as a logical extension of the inner harbor development areas now in progress. Significant increases in traffic volume would be expected through the South Michigan and Ganson Street corridor under this alternative. This additional traffic would negatively affect the operations of the industrial businesses along the Ganson Street corridor including direct impacts to ADM and Sand Products Corporation. There are approximately 100-140 tractor trailers arriving and departing from the General Mills facility daily which would be affected by traffic increases through the corridor.

With upgrades to the existing Michigan Avenue Bridge and portions of Ganson Street the alternative would meet the requirements of the City of Buffalo's "Complete Streets Ordinance." However, the 2.6 mile route would be excessively long for most pedestrians and the industrial nature and industrial operations of the area including tractor trailer maneuvering, loading and unloading operations as well as railroad operations across the alternative route call into question the safety of the corridor for pedestrians and bicyclists. As such, this alternative could provide for year round multimodal capabilities but these capabilities would be rated "fair" based on issues mentioned above.

Since water taxi operations are included under this alternative, an improved more direct and easily navigable connection between the Outer Harbor and the New Downtown would be provided for pedestrian and bicycle only travel. While addition of water taxi operations would improve Alternative BR-4's "poor" rating for this category to "fair," the efficiency of the connection would remain "poor" since water taxi operations, whether on-demand or by schedule, would require wait times and the travel distance for vehicles under this alternative is the longest of all bridge alternatives.

Inclusion of water taxi operations would improve direct connectivity between the inner and outer harbor for pedestrians and bicyclist, but the improved connectivity would be limited to "ice" free months and the service may not be efficient depending on frequency of operations. The alternative would not provide a direct and efficient year round multimodal connection to the New Downtown and would not be consistent with ECHDC mission and vision as well as goals and objectives. Water taxi operations introduce other aspects which need to be investigated further including determination of private or agency operators and projected financial feasibility of the operation.

From a navigation standpoint, this alternative rates "good" as it would affect navigation the least since it would be located further south along the City Ship Canal than any other alternative and currently, recreational or commercial operations do not exist on the City Ship Canal south of this crossing. This alternative would be considered financially feasible and rates "good." However, the required modifications for safe multimodal access, railroad involvement and length of the alternative could drive up project costs.



There are no major engineering issues with this alternative known at this time and the alternative is considered constructible.

Based on this evaluation, Alternative BR-5 does not meet the project Purpose and Need and will not be considered or evaluated further. Qualitative ratings for this alternative are summarized in Table 3-1.

#### **BR-6: Ganson Street Bridge with Main Street Pedestrian/Bicycle Bridge**

The evaluation of Alternative BR-6 with Main Street Pedestrian/ Bicycle Bridge route between logical termini would utilize Scott Street, Michigan Avenue, the existing Michigan Avenue bridge, Ganson Street and Fuhrmann Blvd. At 2.6 miles long this route would be the longest of any alternative route with respect to vehicles with the exception of the No-Build and the Upgrade Alternatives. It would be nearly 40% or 1 mile longer than Alternative RE-1 (Michigan) and over 500% longer than Alternative BR-3 (Main). Consequently, this alternative rates "poor" with regard to providing a more direct and easily navigable connection between the Outer Harbor and the New Downtown. It rates "poor" and would not meet ECHDC mission and vision as well as goals and objectives of providing a connection to support future outer harbor development immediately across the Buffalo Harbor as a logical extension of the inner harbor development areas now in progress. Significant increases in traffic volume would be expected through the South Michigan and Ganson Street corridor under this alternative. This additional traffic would negatively affect the operations of the industrial businesses along the Ganson Street corridor including direct impacts to ADM and Sand Products Corporation. There are approximately 100-140 tractor trailers arriving and departing from the General Mills facility daily which would be affected by traffic increases through the corridor.

From a navigation standpoint, this alternative rates "good" as it would affect navigation the least since it would be located further south along the City Ship Canal than any other alternative and currently, recreational or commercial operations do not exist on the City Ship Canal south of this crossing. This alternative would be considered financially feasible and rates "good." However, the required modifications for safe multimodal access, railroad involvement and length of the alternative could drive up project costs. There are no major engineering issues with this alternative known at this time and the alternative is considered constructible.

The addition of a new moveable pedestrian/bicycle bridge on an alignment similar to BR-1 (Erie Street) or BR-3 (Main Street) would provide year round multimodal capabilities thus improving the rating under this criteria to "good." In addition, improved more direct and easily navigable connection between the Outer Harbor and the New Downtown for pedestrians and bicyclist improves the rating for this criterion to "fair." However, the additional pedestrian bridge on the Erie Street or Main Street alignment would require additional bridges over the Buffalo River and possible over the City Ship Canal. Both bridges would be moveable types and the combined construction cost of the pedestrian bridge and new Ganson Street vehicular bridge would lower the financial feasibility rating to "fair".

There are only minor improvements for this alternative when compared to BR-4 and the financial feasibility of the alternative is reduced. BR-6 receives "poor" ratings for providing an efficient connection to the Outer Harbor and consistency with ECHDC mission and vision as well as goals and objectives. Numerous other alternatives meet the project purpose and need better than Alternative BR-6.

Based on this evaluation, Alternative BR-6 does not meet the project Purpose and Need and will not be considered or evaluated further. Qualitative ratings for this alternative are summarized in Table 3-1.

#### **WF-1: Water Ferry**

Alternative WF-1 would provide ferry vessel(s) to transport vehicles, pedestrians and bicycles between the outer and inner harbor areas. This alternative would require the construction of multimodal docking facilities on the inner and outer harbor, new access roads, parking areas and vehicular staging areas on both the inner and outer harbor to facilitate loading, staging and unloading of vehicles. Based on data collected from other ferry crossing operations, the wait time due to staging, loading and unloading of vehicles, pedestrians and bicycles would be approximately 10-15 minutes per trip. The short travel time across the Buffalo Harbor would be less than 5 minutes equating to an approximate total cycle time of 25-





35 minutes. This wait time would be far in excess of the travel times utilizing the No-build alternative routes and would likely be intolerable to pedestrians and bicycles needing to traverse only 600 feet across the Buffalo Harbor. Consequently, this alternative rates "poor" with respect to providing a more direct and easily navigable connection between the Outer Harbor and the New Downtown. Additionally, the alternative rates "poor" for the criterion of year-round multi-modal capability and "fair" from the standpoint of consistency with ECHDC mission and vision as well as goals and objectives since the ferry operations would be seasonal in nature or unreliable in the winter months. It is assumed that the ferry operations would be flexible enough not to impede other navigation traffic on the Buffalo Harbor. Ferry operations introduce other aspects which need to be investigated further including determination of a private or agency operators and projected financial feasibility of the operation. It is unlikely that these operations could be financially self supporting due to the low rider-ship expected as a result of alternate routes of travel.

The implementation of ferry operations would not be without landside impacts. The constructability of project components such as vehicle and passenger staging areas, connecting roads to these facilities and docking facilities would need to be investigated further.

In summary, this alternative rates "poor" from an efficiency and multimodal standpoint. Any improved connectivity would be limited to "ice" free months.

Based on this evaluation, Alternative WF-1 does not meet the project Purpose and Need and will not be considered or evaluated further. Qualitative ratings for this alternative are summarized in Table 3-1.

#### **TU-1: Erie Street Tunnel**

Alternative TU-1 would involve construction of a two lane tunnel under the Buffalo Harbor as a local connection between the inner harbor and the outer harbor area. There are many factors to be considered in determining the required depth of a tunnel under the Buffalo Harbor including water elevation, depth of the navigable channel, and geotechnical issues associated with soil and rock strata below the bottom of the Buffalo Harbor. With these factors considered it would be necessary for the roadway surface of the tunnel under the Buffalo Harbor to be approximately 65-75 ft below the surface elevation of the ground on either side of the channel. This required depth in turn would require significant lengths for approach roadways. The approach roadway length on each side of the tunnel would be approximately 1500 feet. Once constructed, this alternative would have no additional affect on commercial shipping or the federal navigational channel rating "good" from this aspect. This alternative would provide improvements over the no-build by providing improvements to the efficiency of the connection to the New Downtown, however, due to the length of the alternative and long approaches the benefits would be marginal and the alternative rates "poor" for this criterion.

Due to the geometry requirements of tunnels, the multimodal capabilities of the alternative would be poor due to the distance required to gain access to the tunnel approach roads. Adding bicycle lanes and sidewalks to the tunnel would involve additional considerations such as tunnel bore size. Tunnel bore size for a two lane roadway alone could be as much as 25-30 feet, however, adding a single bike lane and sidewalk could increase the diameter of the tunnel to a minimum of 35-40 ft in turn requiring a lower tunnel elevation, longer approaches and significant increase in cost. In addition, ADA requirements require that the grade of the approach roadway with adjacent sidewalks be less than 1:20 or 5%. This requirement would lengthen even more the required approach roadway length. As a result of these considerations the tunnel alternative would not provide a more direct and easily navigable connection between the Outer Harbor and the New Downtown and multimodal capabilities would be difficult to achieve. This alternative rates "poor" for both these criteria. Consequently, the alternative would not be consistent with ECHDC mission and vision as well as goals and objectives.

Based on the length and depth of the alternative, including significant portions bored through rock, the cost of the alternative would be the highest of those considered. The Major Investment Study (MIS) for the Southtowns Connector project estimated that the construction costs of a new tunnel to replace the Skyway (with the same level of connectivity between the Outer Harbor and I-190) would range from \$200M - \$250M in 1995 dollars, (\$325M-\$400M in 2009) dollars with annual maintenance costs totaling



roughly \$3 Million. While this local two lane tunnel alternative would be significantly less costly, its' cost would still be many times higher than comparable alternatives and therefore rates "poor" from a financial feasibility standpoint. Finally, construction of tunnels are difficult endeavors and are usually relegated to situations where rock boring is not required or where other alternatives are not an option. This alternative rates "fair" from a constructability standpoint.

Alternative TU-1 rates poor under five of eight primary screening criteria. Numerous other alternatives meet the project purpose and need better than Alternative TU-1.

Based on this evaluation, Alternative TU-1 does not meet the project Purpose and Need and will not be considered or evaluated further. Qualitative ratings for this alternative are summarized in Table 3-1.

**Primary Screening Summary**

Based on evaluation of all alternatives considered against the primary screening criteria, seven alternatives (No-Build, RE-1, RE-2, RE-3, BR-1, BR-2 and BR-3) will be considered and evaluated further based on the secondary screening criteria. Qualitative ratings for this alternative are summarized below in Table 3-1.



	Alternatives												
	No-Build	Upgrade Alternative (UP)	Replacement Alternatives (RE)			New Moveable Bridge Alternatives (BR)						Water Ferry Alternative (WF)	Tunnel Alternative (TU)
	NB-1	UP-1	RE-1	RE-2	RE-3	BR-1	BR-2	BR-3	BR-4	BR-5	BR-6	WF-1	TU-1
	No Build <sup>1</sup>	Upgrade	South Michigan Ave. Bridge Repl. with upgraded existing Michigan Avenue Bridge	South Michigan Ave. Bridge Repl. with Water Taxi and upgraded existing Michigan Avenue Bridge	South Michigan Ave. Bridge Repl. with Pedestrian/ Bicycle Bridge	Erie Street bridge using existing Erie Street Approach	Erie Street Bridge using re-aligned Former Erie Street Approach	Main Street Bridge (i.e., Seymour H. Knox III Way)	Ganson Street Bridge with upgraded existing Michigan Avenue Bridge	Ganson Street Bridge with Water Taxi and upgraded existing Michigan Avenue Bridge	Ganson Street Bridge with Pedestrian/ Bicycle Bridge	Multi-Modal Ferry Service	Erie Street Tunnel
PRIMARY SCREENING CRITERIA													
Provides a more direct and easily navigable connection between the Outer Harbor and New Downtown	●	●	◐	◐	◐	○	○	○	●	◐	◐	◐	◐
Provides an efficient connection to the Outer Harbor	●	●	◐	◐	◐	○	○	○	●	●	●	●	●
Multi-modal capability of alternative and compliance with City's "Complete Streets Ordinance"	●	○	◐	◐	◐	○	○	○	◐	◐	◐	◐	●
Provides for year-round multi-modal capabilities	●	○	◐	◐	○	○	○	○	◐	◐	○	●	●
Alternative restricts commercial shipping	○	◐	◐	◐	◐	◐	◐	◐	○	○	○	○	○
Alternative is consistent with ECHDC mission and vision, as well as goals and objectives	●	●	◐	◐	◐	○	○	○	●	●	●	◐	●
Financial feasibility of Project	○	◐	○	○	◐	○	○	◐	○	○	◐	◐	●
Constructability of Project	N/A	◐	○	○	○	◐	◐	◐	○	○	○	○	◐
Alternative to be carried forward into Secondary Screening Criteria?	Yes <sup>1</sup>	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No
1) No-Build Alternative must be carried into DEIS as base case													
Legend: Good - ○ Fair - ◐ Poor - ●													

Table 3-1 – Primary Screening Summary



### 3.2.1.4. Secondary Screening Criteria

Alternatives passing the primary screening criteria will be assessed further with secondary screening criteria. Similar to the primary screening criteria the secondary screening criteria measures the level that a given alternative meets the project purpose and needs as well as a comparison to how well it meets the purpose and need compared to other alternatives. Secondary screening criteria include the primary screening criteria so that a full understanding of the effectiveness of an alternative can be summarized.

Note that the No-Build alternative will be evaluated under the Secondary screening criteria and analyzed in the DEIS as a basis of comparison with other alternatives. The secondary screening criteria, grouped by major categories, are listed below.

- **Direct and Efficient Connection**
  - Provides a more direct and easily navigable connection between the Outer Harbor and the New Downtown
  - Provides an efficient connection to the Outer Harbor
  - Travel length of route between existing and proposed
  - Alternative connection considered a current or future "gateway to the waterfront" as defined by City plans
  - Energy savings/cost savings/time savings based on shorter route per GBNRTC
- **Multi-Modal Capability of Alternative**
  - Multi-modal capability of alternative and compliance with City of Buffalo's "Complete Streets Ordinance"
  - Provides for year-round multi-modal capabilities
  - Supports pedestrian and/or bicycle master plans
  - Completes a missing connection in an existing or planned trail or route
- **Navigation**
  - Alternative restricts commercial shipping and/or affects the federal navigational channel
  - Alternative restricts recreational watercraft opportunities
- **Transportation Demand**
  - Alternative is consistent with earlier studies/findings
  - Alternative compatibility with existing land use and future multimodal demand
  - Safety aspects of the proposed corridor
  - Alternative supports existing and/or planned transportation improvements
- **Social Demands and Economic Development**
  - Alternative is consistent with current City of Buffalo planning documents (i.e., City of Buffalo's Comprehensive Plan, Draft LWRP, Queen City Hub Plan and Waterfront Corridor Initiative).
  - Enhances existing economic development within the Study Area
  - Enhances planned economic development within the Study Area
  - Alternative is consistent with ECHDC mission and vision, as well as goals and objectives
- **Benefit Cost Ratio**
  - Qualitative benefit to cost ratio
- **Environmental Constraints**
  - Potential impacts to wetlands
  - Potential impacts to 4(f) parkland
  - Potential impacts to 6(f) recreational land
  - Potential impacts to 4(f) historic sites
  - Right-of-way and alternative footprint impacts





Each alternative considered was evaluated against the secondary screening criteria outlined above and a rating of “Poor”, “Fair”, and “Good” was established for each. The summary of these ratings is included in Table 3-2. Discussion of each is included in Section 3.2.1.5 below.

### 3.2.1.5. Feasible Alternatives Based on Secondary Screening Criteria

The following seven alternatives were retained based on the results of the primary screening:

- NB-1: No-Build
- RE-1: South Michigan Avenue Bridge (with upgraded Existing Michigan Avenue Bridge)
- RE-2: South Michigan Avenue Bridge with Water Taxi (with upgraded Existing Michigan Avenue Bridge)
- RE-3: South Michigan Avenue Bridge with Pedestrian/Bicycle Bridge
- BR-1: Erie Street Bridge with Existing Erie Street Approach
- BR-2: Erie Street Bridge with Former Erie Street Approach
- BR-3: Main Street Bridge

Similar to the primary screening criteria, the secondary screening criteria measures the level that a given alternative meets the project purpose and needs as well as a comparison to how well it meets the purpose and need compared to other alternatives. Secondary screening criteria include the primary screening criteria so that a full understanding of the effectiveness of an alternative can be summarized.

Note that the No-Build alternative will not be evaluated under the secondary screening criteria but will be analyzed in the DEIS as a basis of comparison with other alternatives.

#### RE-1: South Michigan Avenue Bridge (with upgraded Existing Michigan Avenue Bridge)

##### Direct and Efficient Connection

The Alternative RE-1 route is not straight forward requiring driving, walking or bicycling east, then south, then west through an industrial area that may not be easily navigable by motorists or pedestrians unfamiliar with the area. Consequently, it rates “fair” from the standpoint of providing a more direct and easily navigable connection between the Outer Harbor and the New Downtown.

The route has a relatively long travel length of 1.5 miles with a vehicular travel time of 2.4 minutes and estimated pedestrian and bicyclist travel times of 30 and 7 minutes, respectively. Significant increases in traffic volume would be expected through the corridor with the replacement of the South Michigan Avenue Bridge. This additional traffic would negatively affect the operations of General Mills and other businesses in the corridor. Current operations of the plant include delivery of product via rail (“pull”) twice a day between the hours of 8:00 AM to 10:00 AM and again between 2:00 PM to 4:00 PM. Each pull requires multiple crossings of rail cars across Michigan Avenue for a duration of 1–1 ½ hours to disperse and reclaim rail cars on the north side and can block traffic on Michigan for up to 10 minutes at a time. Additionally, there are approximately 100-140 tractor trailers arriving and departing from the facility daily. These tractor trailers frequently maneuver in and out of loading docks on the southwest and northeast quadrant of the Michigan/Ganson intersection for General Mills, ADM and other businesses. The relatively long travel times cited above will be exasperated by delays from these operations/conditions and the alternative therefore rates “poor” from the standpoint of providing an “efficient connection to the Outer Harbor”, “poor” for the criterion of “travel length of the route between existing and proposed”, and only “fair” with regards to energy savings/cost savings. There are also 125-150 1<sup>st</sup> shift employees, and 60-70 2<sup>nd</sup> and 3<sup>rd</sup> shift employees crossing S. Michigan to parking areas located along the south side of the plant 7 days per week.

The alternative, crossing through an industrial area, is not considered the best current or future “gateway to the waterfront” as defined by City plans rating once again “poor” in this criterion.



### Multi-Modal Capability of Alternative

This alternative rates "poor" for most criteria under this category. While it would provide for multi-modal capability and compliance with City of Buffalo's "Complete Streets Ordinance," its long route through the industrial area of Kelly Island does not support pedestrian or bicycle master plans and would not complete a missing connection on existing or planned trails or routes. While RE-1 would provide for a year round multimodal facility, it is a long route for pedestrians and has other safety issues discussed under Transportation Demand and Social Demands and Economic Development. It consequently rates "fair" from the standpoint of Year Round Multimodal Capability.

### Navigation

Under this category, Alternative RE-1 rates "fair" under these criteria since it is located over the City Ship Canal and affects navigation traffic based on needing access to points south of this crossing. Based on the location of this alternative and roadway network already in place for the bridge approaches little affect on navigation is expected. Sailing vessels docked south of Michigan Avenue at RCR Yachts would require a bridge lift when leaving and returning to their slips. Potential landside impacts to the RCR Yachts are discussed below. Currently, freighters unload raw materials at General Mills dock within the City Ship Canal immediately north of the proposed crossing. Construction of a bridge across the City Ship Canal at this location would reduce the flexibility of freighter unloading operations by prohibiting docking vessels across the proposed alignment.

### Transportation Demand

Under this category, Alternative RE-1 rates "fair" to "poor" for all criteria. As discussed above under the Direct and Efficient Connection and Navigation categories, two sets of rail tracks cross South Michigan Avenue and are used by CSX trains to deliver and/or pick up freight to General Mills numerous times each day. The trains normally stop across South Michigan Avenue during these operations. In addition, tractor trailers maneuvering through the area on Ganson and Michigan frequent the area maneuvering in and out of loading docks in the area. Freighters also unload raw materials at General Mills dock within the City Ship Canal immediately north of the proposed crossing. While the approaches to the existing Michigan Avenue Bridge would be upgraded for ADA compliance, the industrial operations of the area discussed above call into question the safety of the corridor for pedestrians and bicyclists. In addition, the additional through traffic creates other safety issues for General Mills employees and the Alternative rates "poor" for these reasons with regards to "safety aspects of the proposed corridor" and from the standpoint of "compatibility with existing land use and future multimodal demand". The alternative is not "consistent with earlier studies or findings" and consequently rates "fair" in this regard.

### Social Demands and Economic Development

Alternative RE-1 rates "poor" and is not consistent with current City of Buffalo planning documents (i.e., City of Buffalo's Comprehensive Plan, Draft LWRP, Queen City Hub Plan and Waterfront Corridor Initiative) as these documents call for a more direct local access crossing further north.

As discussed above under the Direct and Efficient Connection and Navigation categories, two sets of rail tracks cross South Michigan Avenue and are used by CSX trains to deliver and/or pick up freight to General Mills numerous times each day. The trains normally stop across South Michigan Avenue during these operations. In addition, tractor trailers maneuvering through the area on Ganson and South Michigan frequent the area maneuvering in and out of loading docks. Freighters, while unloading raw materials at General Mills, dock within the City Ship Canal immediately north of the proposed crossing. General Mills, Archer Daniels Midland, Lafarge, and St. Mary Cement use the S. Michigan Avenue/Ganson Street Corridor; some for over 75 years. Uninterrupted use of rail, truck and freighters are the mainstay of these businesses. Amidst these operations, this alternative would introduce an estimated 9000 vehicles per day creating potential safety issues (i.e. conflicts between tractor trailers and/or trains and automobiles) and logistical problems which would have a large affect on the viable businesses in this corridor. A new crossing at this location would also require a grade separated approach higher than the existing area on the west side of the City Ship Canal and would have a negative effect on an established business - RCR Yachts. RCR Yachts provides dockage, maintenance and storage for approximately 150 sail and power boats. This grade separation would impact the landside operations of RCR yachts by severing the property and inhibiting the use of specialized gantry cranes



from transporting vessels to and from dry dock areas and to and from maintenance facilities. Transportation of vessels by crane gantry across the new approach would be made difficult and would introduce operational and safety concerns. Considering all potential business disruptions mentioned above, this alternative rates "poor" with regards to enhancing existing economic development within the study area.

This alternative rates only "fair" with respect to enhancing planned economic development within the study area for the reasons mentioned above including its relatively long travel length and travel time. Due to its location and indirect connection between the project logical termini, Point "A" and Point "B," the alternative rates "poor" with respect to consistency with ECHDC mission and vision, as well as, goals and objectives as it would not provide a direct efficient connection between the inner harbor area of current development and the outer harbor area directly across the Buffalo Harbor,

#### Benefit Cost Ratio

While the cost of the Alternative RE-1 is projected to be the lowest of all retained build alternatives, it also has the lowest benefit of all retained alternatives thus the anticipated qualitative benefit to cost ratio is expected to be only "fair" when compared to other alternatives.

#### Environmental Constraints

While the impact of each retained alternative on the environment will be studied further in detail in the DEIS some qualitative discussion can be included based on known information. Alternative RE-1 is rated "good" under all criteria for this category. The alternative is not anticipated to impact wetlands. The replacement of the Michigan Avenue Bridge under this alternative would be located on the same alignment as the 1960 bridge with new substructures located in the current location of the now abandoned substructures. Potential direct impacts to parkland, recreational land and historic structures are not anticipated with this alternative. Right-of-way and alternative footprint impacts would be minimal.

#### Summary

In summary Alternative RE-1 rates "poor" for the criterion of: providing a more direct and easily navigable connection between the Outer Harbor and the New Downtown; providing an efficient connection to the Outer Harbor; travel length of route between existing and proposed; alternative connection considered a current or future "gateway to the waterfront" as defined by City plans; multi-modal capability of alternative and compliance with City of Buffalo's "Complete Streets Ordinance"; supporting pedestrian and/or bicycle master plans; completing a missing connection in an existing or planned trail or route; compatibility with existing land use and future multimodal demand; consistency with current City of Buffalo planning documents; enhancing existing economic development within the Study Area; and consistency with ECHDC mission and vision, as well as goals and objectives.

Delays to projected traffic through this corridor and the affect of this traffic on the businesses throughout the corridor would be difficult to mitigate. The tight highway right-of-way and presence of industrial structures immediately adjacent to the right-of-way make it impossible to realign S. Michigan Avenue away from businesses, rail operations and trucking operations located within the corridor.

A vertical realignment of S. Michigan Avenue between the existing Michigan Avenue Bridge and the City Ship Canal with the goal of spanning the aforementioned railroad and trucking operations, avoiding traffic delays and negative affects of the increased traffic on businesses throughout the corridor is not feasible. Vertical realignment of S. Michigan would sever the connection between S. Michigan Avenue and Ganson Street, conflict with General Mills' utility and material transport bridges over S. Michigan Avenue and would create further landside impacts on the Outer Harbor to the marina located between the City Ship Canal and Fuhrmann Blvd requiring additional impacts which would be difficult to mitigate. Even if vertically re-aligned, the alignment would remain through the industrial area on an elevated viaduct type structure and would not significantly change the secondary screening ratings mentioned above and would not serve as a future "gateway" to the waterfront.



Based on this evaluation, Alternative RE-1 does not meet the project Purpose and Need and will not be considered or evaluated further. A summary of qualitative ratings for this alternative against all secondary criteria is included in Table 3-2.

## **RE-2: South Michigan Avenue Bridge with Water Taxi (with upgraded Existing Michigan Avenue Bridge)**

### Direct and Efficient Connection

The Alternative RE-2 route is not straight forward requiring driving, walking or bicycling east, then south, then west through an industrial area that may not be easily navigable by motorists unfamiliar with the area. Introduction of water taxi operations would provide seasonal pedestrian and bicycle transport accommodations from the inner harbor hub of development to areas directly across the harbor to the Outer Harbor. Pedestrians would no longer need to traverse a difficult industrial route; however, this advantage for pedestrians and bicyclists would only be seasonal as water taxis would be limited to "ice out" operations. Consequently, Alternative RE-2 rates "fair" from the standpoint of providing a more direct and easily navigable connection between the Outer Harbor and the New Downtown.

The Alternative RE-2 route has a relatively long travel length of 1.5 miles with a vehicular travel time of 2.4 minutes and estimated pedestrian and bicyclist travel times of 30 and 7 minutes, respectively. The relatively long travel times for pedestrians and bicyclists would be improved by the introduction of water taxi operations but the efficiency of the connection for pedestrians and bicyclist would improve only marginally since water taxi operations, whether on-demand or by schedule, would require wait times. Additionally, the seasonality of water taxi operations would prevent year round multimodal capabilities requiring pedestrians and bicyclists to use the South Michigan Avenue corridor during winter months.

Significant increases in traffic volume would be expected through the corridor with the replacement of the South Michigan Avenue Bridge. This additional traffic would negatively affect the operations of General Mills and other businesses in the corridor. Current operations of the plant include delivery of product via rail ("pull") twice a day between the hours of 8:00 AM to 10:00 AM and again between 2:00 PM to 4:00 PM. Each pull requires multiple crossings of rail cars across Michigan Avenue for a duration of 1–1 ½ hours to disperse and reclaim rail cars on the north side and can block traffic on Michigan for up to 10 minutes at a time. Additionally, there are approximately 100-140 tractor trailers arriving and departing from the facility daily.

These tractor trailers frequently maneuver in and out of loading docks on the southwest and northeast quadrant of the Michigan/Ganson intersection for General Mills, ADM and other businesses. The relatively long travel times cited above will be exasperated by delays from these operations/conditions and the alternative therefore rates "poor" from the standpoint of providing an "efficient connection to the Outer Harbor", "poor" for the criterion of "travel length of the route between existing and proposed", and only "fair" with regards to energy savings/cost savings. There are also 125-150 1<sup>st</sup> shift employees, and 60-70 2<sup>nd</sup> and 3<sup>rd</sup> shift employees crossing S. Michigan to parking areas located on the south side of the plant 7 days per week.

While water taxi operations would marginally and seasonally mitigate the throughput and safety concerns regarding the industrial operations of the corridor for pedestrians and bicyclists, similar concerns for vehicular traffic remain. Other aspects of water taxi operations would need to be investigated further including determination of private or agency operators and projected financial feasibility of the operations. Consequently, Alternative RE-2 rates "fair" from the standpoint of providing an efficient connection to the Outer Harbor, "poor" for the criterion of travel length of the route, and only "fair" for the criterion of energy savings/cost savings. The alternative, crossing through an industrial area, is not considered the best current or future "gateway to the waterfront" as defined by City plans rating once again "poor" in this criterion.

### Multi-Modal Capability of Alternative

This alternative rates "poor" for most criteria under this category. While it would provide for multi-modal capability and compliance with City of Buffalo's "Complete Streets Ordinance," its long route through the





industrial area of Kelly Island does not support pedestrian or bicycle master plans and would not complete a missing connection on existing or planned trails or routes. The introduction of water taxi operations would mitigate these issues, but not year round, raising safety concerns for pedestrians and bicyclists during winter and early spring months as discussed under "Direct and Efficient Connection" above. Therefore, it is deemed an incomplete solution. It consequently rates "fair" from the standpoint of Year Round Multimodal Capability. This alternative rates "poor" under the criterion of "Compliance with City of Buffalo's "Complete Streets Ordinance," "Supporting pedestrian and/or bicycle master plans" and "Completing a missing connection on existing or planned trails or routes" since pedestrians and bicyclists would rely on the S. Michigan Avenue corridor for large periods of the year when water tax operations are not possible.

#### Navigation

Under this category, Alternative RE-2 rates "fair" under these criteria since it is located over the City Ship Canal and affects navigation traffic based on needing access to points south of this crossing. Based on the location of this alternative and roadway network already in place for the bridge approaches little affect on navigation is expected. Sailing vessels docked south of Michigan Avenue at RCR Yachts would require a bridge lift when leaving and returning to their slips. Potential landside impacts to the RCR Yachts are discussed below. Currently, freighters unload raw materials at General Mills dock within the City Ship Canal immediately north of the proposed crossing. Construction of a bridge across the City Ship Canal at this location would reduce the flexibility of freighter unloading operations by prohibiting docking vessels across the proposed alignment.

#### Transportation Demand

Under this category, Alternative RE-2 rates "fair" to "poor" for all criteria. As discussed above under the Direct and Efficient Connection and Navigation categories, two sets of rail tracks cross South Michigan Avenue and are used by CSX trains to deliver and/or pick up freight to General Mills numerous times each day. The trains normally stop across South Michigan Avenue during these operations. In addition, tractor trailers maneuvering through the area on Ganson and Michigan frequent the area maneuvering in and out of loading docks in the area. Freighters also unload raw materials at General Mills dock within the City Ship Canal immediately north of the proposed crossing. Introduction of water taxi operations would potentially remove a portion of the pedestrians and bicyclist from this corridor during seasonal periods of water taxi operations. However, the approaches to the existing Michigan Avenue Bridge would be upgraded for ADA compliance to accommodate off-season pedestrian and bicycle travel and the industrial operations of the area discussed above call into question the safety of the corridor for pedestrians and bicyclists. The additional through traffic creates other safety issues for General Mills employees as well and the alternative rated "poor" with regards to "safety aspects of the proposed corridor." Since pedestrians and bicyclist would need to use the South Michigan Avenue corridor for large periods of the year the alternative rates "poor" from the standpoint of "compatibility with existing land use and future multimodal demand". The alternative is not consistent with earlier studies or findings and consequently rates "fair" in this regard.

#### Social Demands and Economic Development

Alternative RE-2 rates "poor" and is not consistent with current City of Buffalo planning documents (i.e., City of Buffalo's Comprehensive Plan, Draft LWRP, Queen City Hub Plan and Waterfront Corridor Initiative) as these documents call for a more direct local access crossing further north.

As discussed above under the Direct and Efficient Connection and Navigation categories, two sets of rail tracks cross Michigan Avenue and are used by CSX trains to deliver and/or pick up freight to General Mills numerous times each day. The trains normally stop across Michigan Avenue during these operations. In addition, tractor trailers maneuvering through the area on Ganson and South Michigan frequent the area maneuvering in and out of loading docks. Freighters, while unloading raw materials at General Mills, dock within the City Ship Canal immediately north of the proposed crossing. General Mills and other businesses in the vicinity have used the South Michigan Avenue corridor for over 75 years. Uninterrupted use of rail, truck and freighters are the mainstay of these businesses. Amidst these operations, this alternative would introduce an estimated 9000 vehicles per day creating potential safety issues and logistical problems which would potentially have a large affect on the viable businesses in this



corridor. A new crossing at this location would also require a grade separated approach higher than the existing area on the west side of the City Ship Canal and would have a negative effect on an established business - RCR Yachts. RCR Yachts provides dockage, maintenance and storage for approximately 150 sail and power boats. This grade separation would impact the landside operations of RCR yachts by severing the property and inhibiting the use of specialized gantry cranes from transporting vessels to and from dry dock areas and to and from maintenance facilities. Transportation of vessels by crane gantry across the new approach would be made difficult and would introduce operational and safety concerns. Considering all potential business disruptions mentioned above, this alternative rates "poor" with regards to enhancing existing economic development within the study area. Introduction of water taxi operations would only marginally mitigate the concerns discussed above as it would not effect vehicular operations through the corridor and would only marginally improve the concerns regarding pedestrians and bicycles since it is not a year round solution.

This alternative rates only "fair" with respect to enhancing planned economic development within the study area for the reasons mentioned above including its relatively long travel length and travel time. Due to its location and indirect connection between the project logical termini, Point "A" and Point "B," the alternative rates "poor" with respect to consistency with ECHDC mission and vision, as well as goals and objectives as it would not provide a direct efficient connection between the inner harbor area of current development and the outer harbor area directly across the Buffalo Harbor. While the water taxi operation would provide this direct connection, it is for pedestrians and bicyclists only and is not year round.

#### Benefit Cost Ratio

The cost of the Alternative RE-2 would be expected to be slightly higher than RE-1 since infrastructure such as docks and waiting facilities would need to be constructed on the inner and outer harbors. Operational costs of the water taxi operations would also negatively affect the cost benefit ratio. While the overall cost would still be low compared to other retained build alternatives, the additional benefit would be marginal due to the expected inefficiently and seasonal nature of the operations. Thus the anticipated qualitative benefit to cost ratio is expected to be only "fair."

#### Environmental Constraints

While the impact of each retained alternative on the environment will be studied further in detail in the DEIS some qualitative discussion can be included based on known information Alternative RE-2 is rated "good" under all criteria for this category. The alternative is not anticipated to impact wetlands. The replacement of the Michigan Avenue Bridge under this alternative would be located on the same alignment as the 1960 bridge with new substructures located in the current location of the now abandoned substructures. Potential direct impacts to parkland, recreational land and historic structures are not anticipated with this alternative. Right-of-way and alternative footprint impacts would be minimal. The introduction of water taxi operations should have little additional environmental impacts. Site location considerations for the docks and public waiting areas would include avoiding impacts to parks and recreational and historic areas. Opportunities for improvements to these areas would be evaluated.

#### Summary

In summary Alternative RE-2 rates "poor" for the criterion of: providing a more direct and easily navigable connection between the Outer Harbor and the New Downtown; providing an efficient connection to the Outer Harbor; travel length of route between existing and proposed; alternative connection considered a current or future "gateway to the waterfront" as defined by City plans; multi-modal capability of alternative and compliance with City of Buffalo's "Complete Streets Ordinance"; supporting pedestrian and/or bicycle master plans; completing a missing connection in an existing or planned trail or route; compatibility with existing land use and future multimodal demand; consistency with current City of Buffalo planning documents; enhancing existing economic development within the Study Area; and consistency with ECHDC mission and vision, as well as goals and objectives.

Delays to projected traffic through this corridor and the affect of this traffic on the businesses throughout the corridor would be difficult to mitigate. The tight highway right-of-way and presence of industrial structures immediately adjacent to the right-of-way make it impossible to realign S. Michigan Avenue away from businesses, rail operations and trucking operations located within the corridor.



A vertical realignment of S. Michigan Avenue between the existing Michigan Avenue Bridge and the City Ship Canal with the goal of spanning the aforementioned railroad and trucking operations, avoiding traffic delays and negative affects of the increased traffic on businesses throughout the corridor is not feasible. Vertical realignment of S. Michigan would sever the connection between S. Michigan Avenue and Ganson Street, conflict with General Mills' utility and material transport bridges over S. Michigan Avenue and would create further landside impacts on the Outer Harbor to the marina located between the City Ship Canal and Fuhrmann Blvd requiring additional impacts which would be difficult to mitigate. Even if vertically re-aligned, the alignment would remain through the industrial area on an elevated viaduct type structure and would not significantly change the secondary screening ratings mentioned above and would not serve as a future "gateway" to the waterfront.

Based on this evaluation, Alternative RE-2 does not meet the project Purpose and Need and will not be considered or evaluated further. A summary of qualitative ratings for this alternative against all secondary criteria is included in Table 3-2.

### **RE-3: South Michigan Avenue Bridge with Pedestrian/Bicycle Bridge**

#### Direct and Efficient Connection

Alternative RE-3 rates "fair" or "poor" for all criteria under the category of "Direct and Efficient Connection". The alternative route is not straight forward requiring driving, walking or bicycling east, then south, then west through an industrial area that may not be easily navigable by motorists unfamiliar with the area.

The addition of a new moveable pedestrian/bicycle bridge located at Main or Erie Street would provide improved direct connections from the inner harbor hub of development to areas directly across the harbor to the Outer Harbor. But these improvements are realized only for pedestrians and bicyclists. Vehicles would still need to traverse a difficult industrial route. Consequently, Alternative RE-3 rates "fair" from the standpoint of providing a more direct and easily navigable connection between the Outer Harbor and the New Downtown.

Pedestrian and bicycle travel times would be greatly improved with the addition of a dedicated pedestrian/bicycle bridge. Vehicular travel time through the South Michigan Avenue corridor would be relatively long at 1.5 miles with a vehicular travel time of 2.4 minutes. Significant increases in traffic volume would be expected through the corridor with the replacement of the South Michigan Avenue Bridge. This additional traffic would negatively affect the operations of General Mills and other businesses in the corridor. Current operations of the plant include delivery of product via rail ("pull") twice a day between the hours of 8:00 AM to 10:00 AM and again between 2:00 PM to 4:00 PM. Each pull requires multiple crossings of rail cars across Michigan Avenue for a duration of 1–1 ½ hours to disperse and reclaim rail cars on the north side and can block traffic on Michigan for up to 10 minutes at a time. Additionally, there are approximately 100-140 tractor trailers arriving and departing from the facility daily. These tractor trailers frequently maneuver in and out of loading docks on the southwest and northeast quadrant of the Michigan/Ganson intersection for General Mills, ADM and other businesses. The relatively long travel times cited above will be exasperated by delays from these operations/conditions and the alternative therefore rates "poor" from the standpoint of providing an "efficient connection to the Outer Harbor", "poor" for the criterion of "travel length of the route between existing and proposed", and only "fair" with regards to energy savings/cost savings. There are also 125-150 1<sup>st</sup> shift employees, and 60-70 2<sup>nd</sup> and 3<sup>rd</sup> shift employees crossing S. Michigan to parking areas located along the south side of the plant 7 days per week.

While a dedicated pedestrian Bridge at Main Street or Erie Street would fully mitigate the throughput and safety concerns regarding the industrial operations of the corridor for pedestrians and bicyclists, similar concerns for vehicular traffic remain. Consequently, Alternative RE-3 rates "fair" from the standpoint of providing an efficient connection to the Outer Harbor, "fair" for the criterion of travel length of the route, and only "fair" for the criterion of energy savings/cost savings. The alternative, crossing through an industrial area, is not considered the best current or future "gateway to the waterfront" as defined by City plans rating once again "poor" in this criterion.



### Multi-Modal Capability of Alternative

This alternative would provide for multi-modal capability and compliance with City of Buffalo's "Complete Streets Ordinance." While the long route through the industrial area of Kelly Island would remain for vehicular travel the introduction of a new moveable pedestrian/bicycle bridge would improve the on-demand multimodal capabilities, improve compliance with City of Buffalo's "Complete Streets Ordinance," definitively improve the support of pedestrian and/or bicycle master plans and completing a missing connection on existing or planned trails or routes. The ratings of all criteria under this category are "good" under this alternative.

### Navigation

Under this alternative either two or three new moveable bridge spans would be constructed depending on the location of the pedestrian/bicycle bridge. If the pedestrian/bicycle bridge is located at Main Street one new pedestrian/bicycle span across the Buffalo River at Main Street to Kelly Island; a second movable pedestrian/bicycle span over the City Ship Canal between Kelly Island and the Outer Harbor; and a third vehicular moveable bridge as a replacement for the south Michigan Avenue bridge over the City Ship Canal would be constructed. If the pedestrian/bicycle bridge is built connecting to Erie Street, then one new pedestrian/bicycle span across the Buffalo River on an alignment similar to BR-1 and a second vehicular moveable bridge as a replacement for the South Michigan Avenue Bridge over the City Ship Canal would be constructed. These bridges would be required to meet the needs of navigation as prescribed by the US Coast Guard. It is anticipated that these structures would have additional affect on commercial traffic and would rate "fair" in this respect. However, the addition of two new spans across the City Ship Canal, approximately 1500 feet apart with a Main Street pedestrian bridge and significantly more with an Erie Street pedestrian bridge, could create large delays for recreational watercraft stationed in this area. Sailing vessels docked south of Michigan Avenue at RCR Yachts would require a bridge lift when leaving and returning to their slips. Potential landside impacts to the RCR Yachts. Currently, freighters unload raw materials at General Mills dock within the City Ship Canal immediately north of the proposed crossing. Construction of a bridge across the City Ship Canal at this location would reduce the flexibility of freighter unloading operations by prohibiting docking vessels across the proposed alignment. Consequently this alternative receives a "poor" rating with respect to recreational sailing opportunities.

### Transportation Demand

Under this category, Alternative RE-3 rates "fair" to "poor" for all criteria. General Mills operations involving frequent crossings and stoppages of trains and tractor trailer operations across Michigan Avenue would adversely affect vehicular traffic flow and safety throughout the corridor. As discussed above under the "Direct and Efficient Connection" and "Navigation" categories, two sets of rail tracks cross South Michigan Avenue and are used by CSX trains to deliver and/or pick up freight to General Mills numerous times each day. The trains normally stop across South Michigan Avenue during these operations. In addition, tractor trailers maneuvering through the area on Ganson and Michigan frequent the area maneuvering in and out of loading docks in the area. While pedestrian and bicycle traffic through the corridor would be reduced with the introduction of a dedicated pedestrian/bicycle bridge the safety concerns for vehicles traversing these industrial operation remains. The additional through traffic creates other safety issues for General Mills employees as well. As a result, Alternative RE-3 rates "poor" regarding "safety aspects of the proposed corridor." Freighters also unload raw materials at General Mills dock within the City Ship Canal immediately north of the proposed crossing. Introduction of a pedestrian/bicycle bridge at Main Street or Erie Street would remove pedestrians and bicyclists from the industrialized Michigan Avenue corridor on Kelly Island improving the compatibility with existing land use and future multimodal demand for pedestrians and bicyclists thereby receiving a rating of "fair" for this criterion. The Alternative rates "poor" from the standpoint of "compatibility with existing land use and the alternative is not consistent with earlier studies or findings and consequently rates "fair" in this regard.

### Social Demands and Economic Development

Alternative RE-3 rates "poor" and is not consistent with current City of Buffalo planning documents (i.e., City of Buffalo's Comprehensive Plan, Draft LWRP, Queen City Hub Plan and Waterfront Corridor Initiative) as these documents call for a more direct local access crossing further north. As discussed above under the "Direct and Efficient Connection" and "Navigation" categories, two sets of rail tracks cross Michigan Avenue and are used by CSX trains to deliver and/or pick up freight to General Mills





numerous times each day. The trains normally stop across South Michigan Avenue during these operations. In addition, tractor trailers maneuvering through the area on Ganson and South Michigan frequent the area maneuvering in and out of loading docks. Freighters, while unloading raw materials at General Mills, dock within the City Ship Canal immediately north of the proposed crossing. General Mills and other businesses in the vicinity have used the South Michigan Avenue corridor for over 75 years. Uninterrupted use of rail, truck and freighters are the mainstay of these businesses. Amidst these operations, this alternative would introduce an estimated 9000 vehicles per day creating potential safety issues (i.e. conflicts between tractor trailers and/or trains and automobiles) and logistical problems which would have a large affect on the viable businesses in this corridor. A new crossing at this location would also require a grade separated approach higher than the existing area on the west side of the City Ship Canal and would have a negative effect on an established business - RCR Yachts. RCR Yachts provides dockage, maintenance and storage for approximately 150 sail and power boats. This grade separation would impact the landside operations of RCR yachts by severing the property and inhibiting the use of specialized gantry cranes from transporting vessels to and from dry dock areas and to and from maintenance facilities. Transportation of vessels by crane gantry across the new approach would be made difficult and would introduce operational and safety concerns. Considering all potential business disruptions mentioned above, this alternative rates "poor" with regards to enhancing existing economic development within the Study Area.

This alternative rates only "fair" with respect to enhancing planned economic development within the study area for the reasons mentioned above including its relatively long travel length and travel time. Due to its location and indirect connection between the project logical termini, Point "A" and Point "B," the alternative rates "poor" with respect to consistency with ECHDC mission and vision, as well as goals and objectives as it would not provide a direct efficient connection between the inner harbor area of current development and the outer harbor area directly across the Buffalo Harbor.

#### Benefit Cost Ratio

Based on preliminary estimates, the cost of the Alternative RE-3 is expected to be almost double that of Alternative RE-1 due the substantial investment required to construct a moveable pedestrian bridge. This would be approximately equal to the median cost of all bridge alternatives but is expected to a lesser benefit than most. Consequently, the anticipated qualitative benefit to cost ratio is expected to be only "fair."

#### Environmental Constraints

While the impact of each retained alternative on the environment will be studied further in detail in the DEIS some qualitative discussion can be included based on known information. Alternative RE-3 rates "good" under all criteria for this category with the exception of minimization of 4(f) impacts to historic structures since the introduction of the pedestrian/bicycle bridge may have potential direct or indirect impacts to a potential eligible historic grain elevator and/or parkland and recreational land depending on location. Other right-of-way and alternative footprint impacts are expected to be minimal. The alternative is not anticipated to impact wetlands. The replacement of the Michigan Avenue Bridge under this alternative would be located on the same alignment as the 1960 bridge with new substructures located in the current location of the now abandoned substructures. Opportunities for improvements or adaptive reuse of parkland and or historic structures will be evaluated further in the DEIS.

#### Summary

In summary Alternative RE-3 rates "fair" for the criterion of: providing a more direct and easily navigable connection between the Outer Harbor and the New Downtown; providing an efficient connection to the Outer Harbor; and travel length of route between existing and proposed. The alternative is not considered a current or future "gateway to the waterfront" as defined by City plans and therefore rates "poor" in this regard. It rates "poor" from the standpoint of inhibiting recreational sailing opportunities; safety aspects of the proposed corridor; compatibility with existing land use and future multi-modal demand; consistency with current City of Buffalo planning documents; enhancing existing economic development within the Study Area; and consistency with ECHDC mission and vision, as well as goals and objectives.



Delays to projected traffic through this corridor and the affect of this traffic on the businesses throughout the corridor would be difficult to mitigate. The tight highway right-of-way and presence of industrial structures immediately adjacent to the right-of-way make it impossible to realign S. Michigan Avenue away from businesses, rail operations and trucking operations located within the corridor.

A vertical realignment of S. Michigan Avenue between the existing Michigan Avenue Bridge and the City Ship Canal with the goal of spanning the aforementioned railroad and trucking operations, avoiding traffic delays and negative affects of the increased traffic on businesses throughout the corridor is not feasible. Vertical realignment of S. Michigan would sever the connection between S. Michigan Avenue and Ganson Street, conflict with General Mills' utility and material transport bridges over S. Michigan Avenue and would create further landside impacts on the Outer Harbor to the marina located between the City Ship Canal and Fuhrmann Blvd requiring additional impacts which would be difficult to mitigate. Even if vertically re-aligned, the alignment would remain through the industrial area on an elevated viaduct type structure and would not significantly change the secondary screening ratings mentioned above and would not serve as a future "gateway" to the waterfront.

Based on this evaluation, Alternative RE-3 does not meet the project Purpose and Need and will not be considered or evaluated further. A summary of qualitative ratings for this alternative against all secondary criteria is included in Table 3-2.

### **BR-1: Erie Street Bridge with Existing Erie Street Approach**

#### Direct and Efficient Connection

Alternative BR-1 rates "good" for all criteria under the category of "Direct and Efficient Connection." At 0.62 miles in length and 1.2 minutes travel time between logical termini, this alternative route is among the shortest of all bridge alternatives, second only to Alternative BR-3. Alternative BR-1 rates "good" in providing a more direct and easily navigable connection between the Outer Harbor and the New Downtown and in providing an efficient connection to the Outer Harbor. The alternative location is considered a current or future "gateway to the waterfront" as defined by City plans. Its short route and travel time translate into possible energy savings/cost savings/time per the GBNRTC.

#### Multi-Modal Capability of Alternative

Alternative BR-1 also rates "good" for all criteria under this category except supporting pedestrian and bicyclist master plans due to potential impacts to the promenade located between Erie Street and the Buffalo River between the Naval Museum and the Erie Basin Marina. With shared shoulders, sidewalks and travel lanes, Alternative BR-1 provides for year round multi-modal capability and compliance with City of Buffalo's "Complete Streets Ordinance." The location of this alternative would complete a missing connection on existing or planned trails or routes.

#### Navigation

Under this alternative a new moveable bridge would be constructed across Buffalo Harbor (Buffalo River) as a northerly extension of Fuhrmann Blvd. This bridge would provide an open bridge clearance of at least 100 feet and would be required to meet the needs of navigation as prescribed by the US Coast Guard. It is anticipated that a new crossing at this location would have additional affect on commercial traffic and would rate "fair" in this respect. However, the addition of a moveable bridge under 40-50 feet high (in the closed position), likely at this location, could create large delays for recreational watercraft stationed in this area. Project stakeholders have pointed out that the entrance area of the Buffalo Harbor immediately northwest of this crossing would not provide a safe haven from quick forming storms. These stakeholders have cited that any delay in opening the bridge during such conditions would create safety concerns since the closed bridge would prevent passage to calmer waters beyond. At the proposed closed bridge clearance of approximately 20 ft, this bridge would be required to open for the majority of the 300 sailing vessels moored upstream of this crossing. Consequently, Alternative BR-1 receives a "poor" rating with respect to recreational sailing opportunities.



### Transportation Demand

Under this category, Alternative BR-1 rates “good” for all criteria. A new crossing at this location has been included in numerous past studies and findings, transportation plans and future transportation planning models. Recent development of the Inner Harbor, redevelopment of the Buffalo Naval Museum, location of the Erie Basin Marina and future plans for the Canal Side project will continue to transform the location of Alternative BR-1 into a hub of retail and entertainment. However, while providing for multimodal connectivity it has the potential to adversely affect the existing promenade along the Buffalo River between the Naval Park and Erie Basin Marina as it would require an elevated roadway along the promenades length and therefore rates “fair.” It rates well regarding “safety aspects of the proposed corridor.”

### Social Demands and Economic Development

Alternative BR-1 rates “good” for all criteria under this category. As discussed above under “Transportation Demand”, recent development of the Inner Harbor, redevelopment of the Buffalo Naval Museum, location of the Erie Basin Marina and future plans for the Canal Side project will continue to transform the location of Alternative BR-1 into a hub of retail and entertainment. Alternative BR-1 will provide the next logical step in extension of development to the Outer Harbor and subsequently rates “good” in enhancing existing and planned economic development within the Study Area as well as being consistent with ECHDC mission and vision, as well as goals and objectives.

### Benefit Cost Ratio

The cost of the Alternative BR-1 is high compared to other bridge alternatives. However, from a qualitative benefit of this alternative ranks among the highest as indicated by the ratings received for aforementioned categories. Thus the anticipated qualitative benefit to cost ratio is expected to be “good” when compared to other alternatives.

### Environmental Constraints

While the impact of each retained alternative on the environment will be studied further in detail in the DEIS some qualitative discussion can be included based on known information. Alternative BR-1 is rated “fair” with respect to potential wetlands impacts. The realignment of Fuhrmann Blvd. will be in close proximity to New York State designated wetland (Times Beach) west of Fuhrmann Blvd. Direct impacts are likely to be avoided; however, indirect impacts are possible. This alternative rates “poor” with regard to potential impacts to 4(f) parkland and potential impacts to 6(f) recreational land as the northern edge of the Buffalo River in the vicinity of the alternative is designated as a park area purchased with Land and Water Conservation Funds (LWCF). Impacts to the promenade located between Erie Street and the Buffalo River between the Naval Museum and the Erie Basin Marina have been and will continue to be a consideration throughout the DEIS. This promenade area is considered to be within the highway boundary, however, the determination of 4(f) or 6(f) eligibility is still being investigated. It is acknowledged that this stretch of property is used for recreational purposes.

Based on preliminary geometric considerations, the approaches to the bridge under this alternative will be higher than the existing surrounding areas. The height differential will depend on many factors including bridge height over the water and bridge type. This height difference may in effect create a physical and visual barrier to the waterfront and Buffalo River. This stretch of property located between Erie Street and the Buffalo River between the Naval Museum and the Erie Basin Marina and points north are used for recreational purposes and visual impediments which preclude the view of the waterfront from these points should be minimized. While the height of the bridge in the closed position over mean low water datum and bridge type are not yet determined (to be determined in the DEIS) these factors will play a role in the visual impacts to view-sheds looking southwest. Alternative BR-1 and associated vertical realignment of Erie Street would require a large footprint and may have direct or indirect impacts to these areas. Potential impacts to 4(f) historic sites are not anticipated with this alternative and this alternative rates “good” in this respect. Right-of-way and alternative footprint impacts are anticipated to be large with this alternative with a consequential rating of “poor.”



### Summary

In summary, Alternative BR-1 rates “good” with respect most criteria except under the “Multi-Modal Capability of Alternative” as it adversely effects current multimodal resources along the Buffalo River and for the categories of “navigation” and “environmental constraints”. The environmental constraints may be “fatal” flaws unless mitigation is possible and/or there is no other prudent and feasible alternative. Based on this evaluation, Alternative BR-1 will not be considered or evaluated further. A summary of qualitative ratings for this alternative against all secondary criteria is included in Table 3-2.

## **BR-2: Erie Street Bridge with Former Erie Street Approach**

### Direct and Efficient Connection

Very Similar to Alternative BR-1, Alternative BR-2 rates “good” for all criteria under the category of “Direct and Efficient Connection.” At 0.62 miles in length and 1.2 minutes travel time between logical termini, this alternative route is among the shortest of all bridge alternatives, second only to Alternative BR-3. Alternative BR-2 rates “good” in providing a more direct and easily navigable connection between the Outer Harbor and the New Downtown and in providing an efficient connection to the Outer Harbor. The alternative location is considered a current or future “gateway to the waterfront” as defined by City plans. Its short route and travel time translate into possible energy savings/cost savings/time per the GBNRTC.

### Multi-Modal Capability of Alternative

Alternative BR-2 rates “good” for all criteria under this category. With shared shoulders, sidewalks and travel lanes, Alternative BR-2 provides for year round multi-modal capability and compliance with City of Buffalo’s “Complete Streets Ordinance.” The location of this alternative supports pedestrian and bicycle master plans and would complete a missing connection on existing or planned trails or routes.

### Navigation

Under this alternative a new moveable bridge would be constructed across Buffalo Harbor (Buffalo River) as a northerly extension of Fuhrmann Blvd. This bridge would provide an open bridge clearance of at least 100 feet and would be required to meet the needs of navigation as prescribed by the US Coast Guard. It is anticipated that a new crossing at this location would have additional affect on commercial traffic and would rate “fair” in this respect. However, the addition of a moveable bridge under 40-50 feet high (in the closed position), likely at this location, could create large delays for recreational watercraft stationed in this area. Project stakeholders have pointed out that the entrance area of the Buffalo Harbor immediately northwest of this crossing would not provide a safe haven from quick forming storms. These stakeholders have cited that any delay in opening the bridge during such conditions would create safety concerns since the closed bridge would prevent passage to calmer waters beyond. At the proposed closed bridge clearance of approximately 20 ft, this bridge would be required to open for the majority of the 300 sailing vessels moored upstream of this crossing. Consequently, Alternative BR-1 receives a “poor” rating with respect to recreational sailing opportunities.

### Transportation Demand

Alternative BR-2 rates “good” for all criteria. A new crossing at this location has been included in numerous past studies and findings, transportation plans and future transportation planning models. Recent development of the Inner Harbor, redevelopment of the Buffalo Naval Museum, location of the Erie Basin Marina and future plans for the Canal Side project will continue to transform the location of Alternative BR-2 into a hub of retail and entertainment. Consequently, this multimodal alternative is compatible with existing land use and future multimodal demands and it rates well regarding “safety aspects of the proposed corridor.”

### Social Demands and Economic Development

Alternative BR-2 again rates “good” for all criteria under this category except that it rates only “fair” for the criteria of enhancing existing economic development. This alternative, with a horizontally realigned Erie Street alignment through the Waterfront Village parking lot may have adverse effect on this existing economic generator due to loss of parking. As discussed above under “Transportation Demand”, recent development of the Inner Harbor, redevelopment of the Buffalo Naval Museum, location of the Erie Basin Marina and future plans for the Canal Side project would continue to transform the location of Alternative





BR-2 into a hub of retail and entertainment. Alternative BR-2 would provide the next logical step in extension of development to the Outer Harbor and subsequently rates “good” in enhancing existing and planned economic development within the Study Area as well as being consistent with ECHDC mission and vision, as well as goals and objectives.

#### Benefit Cost Ratio

The cost of the Alternative BR-2 would be similar to Alternative BR-1 and the qualitative benefit would be equivalent. Therefore, the anticipated qualitative benefit to cost ratio is expected to be “good” when compared to other alternatives.

#### Environmental Constraints

While the impact of each retained alternative on the environment will be studied further in detail in the DEIS some qualitative discussion can be included based on known information. The realignment of Fuhrmann Blvd. will be in close proximity to New York State designated wetland west of Fuhrmann Blvd. Direct impacts are likely to be avoided; however, indirect impacts are possible. Consequently, Alternative BR-2 is rated “fair” with respect to potential wetlands impacts.

Under this alternative existing Erie Street is realigned further north through the existing parking area of the Waterfront Village prior to curving south across a park area and pathway on the northern edge of the Buffalo River and across the new bridge. While realigned away from a portion of the park, this alternative alignment crosses perpendicular over and/or through the park area creating a potential 4(f) parkland and 6(f) recreational land impact. Impacts to the promenade located between Erie Street and the Buffalo River between the Naval Museum and the Erie Basin Marina have been and will continue to be a consideration throughout the DEIS. This promenade area is considered to be within the highway boundary, however, the determination of 4(f) or 6(f) eligibility is still being investigated. It is acknowledged that this stretch of property is used for recreational purposes. As a result, the ratings for these criteria are “fair.” Right-of-Way and alternative footprint impacts are anticipated to be large with this alternative. Potential impacts to 4(f) historic sites are not anticipated with this alternative. Based on preliminary geometric considerations, the approaches to the bridge under this alternative will be higher than the existing surrounding areas. The height differential will depend on many factors including bridge height over the water and bridge type. This height difference may in effect create a physical and visual barrier to the waterfront and Buffalo River. This stretch of property located between Erie Street and the Buffalo River between the Naval Museum and the Erie Basin Marina and points north are used for recreational purposes and visual impediments which preclude the view of the waterfront from these points should be minimized. While the height of the bridge in the closed position over mean low water datum and bridge type are not yet determined (to be determined in the DEIS) these factors will play a role in the visual impacts to view-sheds looking southwest.

#### Summary

In summary, Alternative BR-2 rates “good” with respect most criteria except under the categories of “navigation” and “environmental constraints”. Based on this evaluation, Alternative BR-2 will be retained and evaluated further in the DEIS. A summary of qualitative ratings for this alternative against all secondary criteria is included in Table 3-2.

### **BR-3: Main Street Bridge**

#### Direct and Efficient Connection

Alternative BR-3 rates “good” for all criteria under the category of “Direct and Efficient Connection.” At 0.53 miles in length and 1.2 minutes travel time between logical termini, this alternative route is the shortest of all bridge alternatives. Alternative BR-3 rates “good” in providing a more direct and easily navigable connection between the Outer Harbor and the New Downtown and in providing an efficient connection to the Outer Harbor. The alternative location is considered a current or future “gateway to the waterfront” as defined by City plans. Its short route and travel time translate into possible energy savings/cost savings/time per the GBNRTC.



#### Multi-Modal Capability of Alternative

Alternative BR-3 also rates "good" for all criteria under this category. With shared shoulders, sidewalks and travel lanes, Alternative BR-3 provides for year round multi-modal capability and compliance with City of Buffalo's "Complete Streets Ordinance". The location of this alternative supports pedestrian and bicycle master plans and would complete a missing connection on existing or planned trails or routes.

#### Navigation

Under this alternative two new moveable bridge spans would be constructed. The first span would cross the Buffalo River connecting the foot of Main Street to Kelly Island. The second span would cross the City Ship Canal connecting to Fuhrmann Blvd. Both bridges would provide an open bridge clearance of at least 100 feet and would be required to meet the needs of navigation as prescribed by the US Coast Guard. It is anticipated that a new crossing at this location would affect commercial and recreational traffic and would rate "fair" in this respect.

#### Transportation Demand

Recent development of the Inner Harbor, redevelopment of the Buffalo Naval Museum, location of the Erie Basin Marina and future plans for the Canal Side project will continue to transform the location of Alternative BR-3 into a hub of retail and entertainment. Consequently, this multimodal alternative rates "good" with respect to compatibility with existing land use and future multimodal demands. Current plans are being progressed to return vehicular travel to Main Street ("Cars on Main Street project") by sharing the track-bed with the NFTA LRRT system in the vicinity of the HSBC Arena. It is anticipated that Alternative BR-3 would require modifications to the LRRT tracks in this area due to unavoidable geometric constraints on the east approach. Consequently, this alternative rates only "fair" with regards to consistency with and supporting existing transportation plans but rates "good" regarding "safety aspects of the proposed corridor."

#### Social Demands and Economic Development

As discussed under "Transportation Demand," recent development of the Inner Harbor, redevelopment of the Buffalo Naval Museum, location of the Erie Basin Marina and future plans for the "Canal Side" project will continue to transform the location of Alternative BR-3 into a hub of retail and entertainment. Alternative BR-3 will provide the next logical step in extension of development to the Outer Harbor and subsequently rates "good" in enhancing existing economic development within the study area as well as being consistent with ECHDC mission and vision, as well as goals and objectives. However, a new vehicular connection at the foot of Main Street may have adverse effect on the planned economic development of area and cause traffic issues associated with the Canal Side and Cars on Main Street projects. Additionally, depending on future design considerations, South Park Avenue may need to be "dead ended" at Main Street due to conflicting geometry considerations between the bridge approach, HSBC Arena access points and LRRT operations. Consequently, the alternative rates only "fair" with regards to being consistent with current City of Buffalo planning documents and enhancing planned economic development within the Study Area.

#### Benefit Cost Ratio

The cost of the Alternative BR-3 is projected to be the highest of all retained bridge alternatives. However, from a qualitative benefit standpoint this, alternative ranks among the highest as indicated by the ratings received for aforementioned categories. Thus the anticipated qualitative benefit to cost ratio is expected to be only "fair" when compared to other alternatives.

#### Environmental Constraints

While the impact of each retained alternative on the environment will be studied further in detail in the DEIS some qualitative discussion can be included based on known information. Alternative BR-3 is rated "good" for all criteria under this category with the following exceptions. Alternative BR-3 would have potential direct or indirect impacts to an eligible historic grain elevator on the Outer Harbor. The potential impact to this 4(f) historic eligible site may be mitigated by alignment considerations or adaptive reuse of the structure. The New York State Office of Parks and Historic Preservation (NYSOPHP) has been consulted and will be involved with this and other issues through more detailed studies during the development of the environmental impact statement. Alternative BR-3 would have relatively large right-of-



way and footprint impacts on the east approach in the vicinity of the LRRT track and HSBC Arena and subsequently rates "fair" with regard to this criteria.

#### Summary

In summary, Alternative BR-3 rates "good" with respect most criteria. Based on this evaluation, Alternative BR-3 will be retained and evaluated further in the DEIS. A summary of qualitative ratings for this alternative against all secondary criteria is included in Table 3-2.

#### **3.2.1.6. Summary of Retained Alternatives Based on Secondary Screening Criteria**

Based on the evaluation of retained alternatives against the secondary screening criteria, the following three (3) alternatives will be carried forward into the Draft Environmental Impact Statement:

- NB-1: No-Build
- BR-2: Erie Street Bridge with Former Erie Street Approach
- BR-3: Main Street Bridge

A summary of the evaluation of each retained alternative based on secondary screening criteria is included in Table 3-2 on the next page.



	Alternatives						
	No-Build	Replacement Alternatives (RE)			New Moveable Bridge Alternatives (BR)		
	NB-1	RE-1	RE-2	RE-3	BR-1	BR-2	BR-3
	No Build <sup>1</sup>	South Michigan Ave. Bridge Repl. with upgraded existing Michigan Avenue Bridge	South Michigan Ave. Bridge Repl. with Waterfront Park and upgraded existing Michigan Avenue Bridge	South Michigan Ave. Bridge Repl. with Pedestrian/Bicycle Bridge	Erie Street bridge using existing Erie Street Approach	Erie Street Bridge using re-aligned former Erie Street Approach	Main Street Bridge (i.e., Seymour H. Knox III Way)
<b>SECONDARY SCREENING CRITERIA</b>							
<b>Direct and Efficient Connection</b>							
Provides a more direct and easily navigable connection between the Outer Harbor the New Downtown	●	●	●	●	○	○	○
Provides an efficient connection to the Outer Harbor	●	●	●	●	○	○	○
Travel length of route between existing and proposed	●	●	●	●	○	○	○
Alternative connection considered a current or future "gateway to the waterfront" as defined by City plans?	●	●	●	●	●	○	○
Energy savings/cost savings/time savings based on shorter route per GBNRTC	●	●	●	●	○	○	○
<b>Multi-Modal Capability of Alternative</b>							
Multi-modal capability of alternative and compliance with City's "Complete Streets Ordinance"	●	●	●	○	○	○	○
Provides for year-round multi-modal capabilities	●	●	●	○	○	○	○
Supports pedestrian and/or bicycle master plans	●	●	●	○	●	○	○
Completes a missing connection in an existing or planned trail or route	●	●	●	○	○	○	○
<b>Navigation</b>							
Alternative restricts commercial shipping and/or the impacts the federal navigational channel	○	●	●	●	●	●	●
Alternative inhibits recreational sailing opportunities	○	●	●	●	●	●	●
<b>Transportation Demand</b>							
Alternative is consistent with earlier studies/findings	●	●	●	●	○	○	●
Alternative compatibility with existing land use and future multimodal demand	●	●	●	●	●	○	○
Safety Aspects of the proposed corridor	●	●	●	●	○	○	○
Does the alternative support existing and/or planned transportation improvements	N/A	●	●	●	○	○	●
<b>Social Demands and Economic Development</b>							
Alternative is consistent with current City of Buffalo planning documents (i.e., City's Comprehensive Plan, Draft LWRP, Queen City Hub Plan and Waterfront Corridor Initiative)	●	●	●	●	●	○	●
Enhances existing economic development within the Study Area	●	●	●	●	○	●	○
Enhances planned economic development within the Study Area	●	●	●	●	○	○	●
Alternative is consistent with ECHDC mission and vision, as well as goals and objectives	●	●	●	●	○	○	○
<b>Benefit Cost Ratio</b>							
Qualitative benefit to cost ratio	N/A	●	●	●	○	○	●
<b>Environmental Constraints</b>							
Minimize Potential impacts to wetlands	○	○	○	○	●	●	○
Minimizes Potential impacts to 4(f) parkland	○	○	○	○	●	●	○
Minimizes Potential impacts to 6(f) recreational land	○	○	○	○	●	●	○
Minimizes Potential impacts to 4(f) Historic sites	○	○	○	○	○	○	●
ROW and alternative footprint impacts	N/A	○	○	○	●	●	●
Alternative to be carried forward into DRAFT EIS?	Yes <sup>1</sup>	No	No	No	No	Yes	Yes
<sup>1</sup> No-Build Alternative must be carried into DEIS as base case							
Legend: Good - ○ Fair - ● Poor - ●							

Table 3.2 – Secondary Screening Summary



**3.2.1.7. Costs**

The cost of each feasible alternative has been estimated based on known factors and limited detail. Each build alternative will be studied in much more detail in the DEIS. Unknowns such as bridge type, environmental impact and associated mitigation, and permit requirements, to name a few, must be studied in further detail before an accurate cost for each can be determined. Given the level of detail know at this time, the construction cost for the range for feasible build Alternatives BR-2, and BR-3 is \$63M-\$87M (2009 Dollars).

**3.2.2 Preferred Alternative**

The feasible alternatives are under consideration and will be studied further in the Draft Environmental Impact Statement (DEIS). A preferred alternative will be selected after evaluation of the retained alternatives in the DEIS and after public and agency comments on the DEIS are received and evaluated.

**3.2.3. Design Criteria for Feasible Alternative(s)****3.2.3.1. Design Standards**

NYSDOT [Highway Design Manual](#) (HDM) Chapter 2, NYSDOT [Project Development Manual](#) (PDM), NYSDOT [Bridge Manual](#) (BM), City of Buffalo Standards and [City of Buffalo Complete Streets Ordinance](#).

**3.2.3.2. Critical Design Elements**

The following design criteria will be used in evaluation of the retained alternatives. These design criteria are considered as standards and each component of the retained alternatives will be evaluated against these standards in the DEIS. Depending on the alternative carried forward such as those with several highway types, there may be several sets of design criteria that apply to different segments of the project.

Component:		Table 3-3 Design Criteria Buffalo Harbor Bridge and Approaches			
PIN:	5758.17	NHS (Y/N):	No		
Route No. & Name:	Buffalo Harbor Bridge over Buffalo River/Buffalo Ship Canal	Functional Class:	Urban Collector		
Project Type:	New	Design Class:	Urban Collector		
% Trucks:	5	Terrain:	Level		
ADT:	12,000	Truck Access/Qualifying Hwy	Neither		
Element		Standard Criteria		Existing Conditions	Proposed Condition
1	Design Speed	35 mph <sup>1</sup>		-	-
2	Lane Width	10 ft Min; 12 ft Desirable; Turning Lane: 11 ft Min.; 12 ft Desirable HDM Section 2.7.3.2 B, Exhibit 2-6		-	-
3	Shoulder Width	Right: 6 ft Min.; 10 ft Desirable HDM Section 2.7.3.2 C, Exhibit 2-6		-	-
4	Bridge Roadway Width	Equal to Approach Roadway Width HDM Section 2.7.3.2 D & BM Section 2.3.1, Table 2-1		-	-
5	Maximum Grade	9% HDM Section 2.7.3.2 E, Exhibit 2-6		-	-
6	Horizontal Curvature	371 ft @ e = 4.0% HDM Section 2.7.3.2 F, Exhibit 2-6		-	-
7	Superelevation	4% HDM Section 2.7.3.2 G		-	-



8	Stopping Sight Dist.	250 ft HDM Section 2.7.3.2 H, Exhibit 2-6	-	-
9	Horizontal Clearance	(from face of curb) 0.0 ft with barrier, 1 ft-6 in without, 3 ft at intersections HDM Section 2.7.3.2 i	-	-
10	Vertical Clearance	14 ft Min.; 14 ft-6 in Desirable HDM Section 2.7.3.2 J & BM Section 2.4, Table 2-2	-	-
11	Pavement Cross Slope	1.5% to 2% HDM Section 2.7.3.2 K	-	-
12	Rollover	4% between lanes; 8% at EOT HDM Section 2.7.3.2 L	-	-
13	Structural Capacity	AASHTO HL-93 live load and NYSDOT Design Permit Vehicle. HDM Section 2.7.3.2 M & BM Section 2.6.1	-	-
14	Pedestrian Accommodations	Comply w/ADAAG and HDM Chapter 18 Sidewalk width 5 ft min.	-	-

<sup>1</sup> Actual Design Speed to be determined in the DEIS under consultation with the NYSDOT Regional Traffic Engineer

### 3.2.3.3. Other Design Parameters

Table 3-4 Other Design Parameters			
Highway or Feature			
Element		Standard Criteria	Proposed Condition
1	Level of Service (for Bridge Link)	D/E	
2	Level of Service (Intersections)	D/E	
3	Bridge Height over Mean Low Water (MLW)	U.S. Coast Guard Regulations Navigational Channel Vertical Clearance – 100 ft Vertical Clearance for Bridge in Open Position; Vertical Clearance in Closed Position to be determined based on landside impacts and other considerations in the DEIS	
4	Navigational Channel – Horizontal Clearance	U.S. Coast Guard Regulations – Accommodate full Navigational Channel Width	
5	Design Storm	10-year frequency for drainage system; 50-year frequency for cross culverts	
6	Design Vehicle	WB-50	

## 3.3. Engineering Considerations

### 3.3.1. Operations (Traffic and Safety) & Maintenance

#### 3.3.1.1. Functional Classification and National Highway System

This project will not change the functional classification of any existing roadway in the Project Area roadway network. The proposed river crossing would be classified as a local roadway.



### **3.3.1.2. Control of Access**

The proposed river crossing will not be classified as a limited access facility. Due to the geometry of the bridge structure and the proximity of intersections with existing roadways to either end of the structure, there will be limited opportunities for driveway or street intersection access to the structure's approach roadway.

### **3.3.1.3. Traffic Control Devices**

#### **3.3.1.3. (1) Traffic Signals**

Existing intersection control is anticipated to be maintained throughout the Project Area roadway network with the proposed river crossing under the all alternatives. Intersection control will be reviewed for the new intersections at the junctures of the alternative approach roadway to the existing roadway network. A new intersection along Fuhrmann Boulevard will be created under BR-3 alternatives. This new intersection will be analyzed to determine optimal intersection control. New intersections will also be created on the inner harbor side of the proposed crossing alternatives. The specific intersection location will vary base on the alternative and design details associated with the river crossing structure. New intersections created by the proposed river crossing will be analyzed in detail to determine optimal intersection control; signalized intersections will be interconnected where appropriate.

#### **3.3.1.3. (2) Signs**

Under all proposed alternatives, new signing will be added to the roadway network to support the new river crossing roadway. Any existing signs impacted by construction would be replaced. Any existing signs that provide conflicting information in regards to the new river crossing roadway would be removed. Curve warning and speed advisory signs will be added to any non-standard curvature or roadway design features.

### **3.3.1.4. Intelligent Transportation Systems (ITS)**

Intelligent Transportation System (ITS) improvements may be incorporated into the river crossing roadway to support bridge opening and closing operations. Potential reversible travel lane options across the river crossing alternatives if progressed would be candidates for ITS features if traffic analysis warrant. Detailed ITS measures will be identified and investigated during the alternatives analysis during development of the Draft Environmental Impact Statement.

### **3.3.1.5. Speeds and Delay**

#### **3.3.1.5. (1) Proposed Speed Limit**

Posted speed limits on the roadways within the Project Area will remain the same as existing at 30 miles per hour. The proposed river crossing roadway connection, as part of the City of Buffalo street network, would be anticipated to have a posted speed limit of 30 miles per hour.

#### **3.3.1.5. (2) Travel Time Estimates**

Travel times were identified by the GBNRTC from the Outer Harbor area logical termini location to an Inner Harbor area logical termini location with proposed river crossing alternatives. Existing travel times were also identified for comparative purposes to a no build condition. As part of the no build alternative analysis, one logical termini trip pair with two alternative travel routes was identified. One alternative route includes Marine Drive to Erie Street to Church Street to the Skyway to Fuhrmann Boulevard. The second alternative route utilizes Scott Street to Michigan Avenue to Ohio Street to Fuhrmann Boulevard. A summary of the no build alternative routes is illustrated in Figure 3-1. Based on these two alternative routes, existing travel distances between the inner and out harbor areas are in the three (3) to four (4) mile range with travel times along existing roadways ranging from 7.00 minutes to 4.93 minutes.

An Erie Street crossing location would reduce the total trip distance between the Outer Harbor logical termini area to the Inner Harbor logical termini area to 0.62 miles. Total trip travel time utilizing an Erie Street crossing would reduce to 1.26 minutes. In summary, an Erie Street crossing would reduce trip distances between outer harbor and inner harbor locations by 1.63 miles to 3.33 miles and reduce travel



times for these trips by 5.74 minutes to 3.67 minutes. An illustration of the Erie Street crossing trip route is shown in Figure 3-6.

A Main Street crossing location would result in a total trip distance between the Outer Harbor logical termini area to the Inner Harbor logical termini area to 0.53 miles. Total trip travel time utilizing a Main Street crossing would reduce to 1.16 minutes. As compared to existing travel times, a Main Street crossing would reduce trip distances between the identified outer harbor and inner harbor logical termini locations by 2.72 miles to 3.42 miles and reduce travel times for these trips by 5.84 minutes to 3.77 minutes. An illustration of the Main Street crossing trip route is shown in Figure 3-8.

#### **3.3.1.6. Traffic Volumes**

Forecast Average Daily Traffic (ADT) volume information was determined by the GBNRTC for the alternative river crossing locations and for a no action condition under future year conditions. Results of the ADT volume analysis is summarized in Figure 3-14. As indicated, a proposed Buffalo River crossing to the Outer Harbor would be anticipated to carry between 9,300 and 12,350 vehicles daily depending on the alternative location. The highest forecast ADT on the river crossing was found under the Main Street location alternative. The lowest forecast ADT on the river crossing was found under the Erie Street location alternative. Forecast peak period volumes were found to be greatest in the PM peak period under all alternative locations. These PM peak period volumes ranged from 2,800 at the Erie Street location to 3,500 at the Main Street location.

The Buffalo River crossing would not be a replacement for, or designed to the same design criteria as the limited access NYS Route 5/Skyway complex, however, since it would run parallel across the Buffalo River it would be anticipated to divert some daily traffic from the structure. According to preliminary GBNRTC forecasts, some traffic volume may be diverted from the NYS Route 5/Skyway complex to the Buffalo River crossing depending on location and destinations. Reductions in ADT along the NYS Route 5/Skyway complex would be greatest under the Main Street crossing alternative and lowest under the Erie Street crossing alternative location.

More detailed traffic analysis will be performed in the DEIS utilizing the GBNRTC's regional micro simulation model. This regional analysis model accounts for recent and planned development projects. No development projects that would generate significant additional traffic other than the Seneca Buffalo Creek Casino, Canal Side and outer harbor development are planned within the Project Area through the year 2044. Other small development projects would be anticipated to occur within the Project Area. The traffic increases associated with these projects are assumed to be included in the yearly background traffic growth assumptions. Background traffic growth of 0.5% per year was assumed in the Project Area. This yearly increase equates to an approximate 19% increase in traffic volumes from existing conditions to the year 2044.

A summary of the assumed roadway and development projects in the Project Area included in the 2044 No-Build Alternative are listed as follows:

- Canal Side (Proposed/Medium Density)
- Cars On Main - Entire Corridor
- Conversion of Pearl Street to two-way traffic
- Traffic Signal Installation at Church Street and Bingham Street intersection
- Seneca Buffalo Creek Casino
- Outer Harbor development



### Buffalo Outer Harbor Bridge Study

AM Peak, PM Peak & ADT for OHB Alternatives and Skyway Bridge



Erie St Crossing Alternative		
OHB	AM Peak Period	1,986
	PM Peak Period	2,791
	ADT	9,277
Skyway	AM Peak Period NB	5,023
	AM Peak Period SB	3,591
	PM Peak Period NB	4,778
	PM Peak Period SB	9,815
	ADT NB	20,604
	ADT SB	29,199

Main St Crossing Alternative		
OHB	AM Peak Period	2,530
	PM Peak Period	3,525
	ADT	12,354
Skyway	AM Peak Period NB	4,731
	AM Peak Period SB	3,408
	PM Peak Period NB	4,482
	PM Peak Period SB	9,613
	ADT NB	18,847
	ADT SB	28,404

Michigan Ave Crossing Alternative		
OHB	AM Peak Period	2,313
	PM Peak Period	3,299
	ADT	11,972
Skyway	AM Peak Period NB	5,122
	AM Peak Period SB	3,497
	PM Peak Period NB	4,696
	PM Peak Period SB	9,796
	ADT NB	19,929
	ADT SB	29,065

No Outer Harbor Bridge Crossing Alt.		
Skyway	AM Peak Period NB	6,428
	AM Peak Period SB	4,051
	PM Peak Period NB	5,595
	PM Peak Period SB	11,218
	ADT NB	24,501
	ADT SB	33,424

Figure 3-14: ADT Volume Analysis

### 3.3.1.7. Level of Service and Mobility

#### 3.3.1.7 (1) At Project Completion & Design Year

A design year level of service and capacity analysis will be conducted for the AM and PM peak hours for the Project Area intersections for each of the proposed river crossing alternatives. The new intersections created by the river crossing roadway will be included in the detailed analysis. Volumes identified in Section 3.3.1.6 will be used as the basis for identifying detailed turning movement information for the Project Area intersections and the new river crossing roadway intersections with the existing roadway network. Based on the preliminary ADT volumes forecast for the river crossing roadway, it is not anticipated that significant impacts to the future year 2044 no-build levels of service for the Project Area roadway network intersections would be anticipated.

#### 3.3.1.7 (2) – Work Zone Safety & Mobility

##### A. Work Zone Traffic Control Plan

Two-way traffic will be maintained at all times via lane shifts onto the existing paved shoulder. No off site detours will be required. Routes for emergency vehicles will be maintained and open during construction. The details for the work zone traffic control will be prepared and evaluated during final design.

##### B. Special Provisions

No Special Provisions are foreseen at this time. During the development of the DEIS, the option of Special Provisions will be re-evaluated.

##### C. Significant Projects (per 23 CFR 630.1010)

A Transportation Management Plan (TMP) will be prepared for the project consistent with 23 CFR 630.1012. The TMP will consist of a Temporary Traffic Control (TTC) plan. Transportation Operations (TO) and Public Information (PI) components of a TMP will be considered during final design. The TMP will incorporate Cars on Main Street and Canal Side projects.

**3.3.1.8. Safety Considerations, Accident History and Analysis**

There are no high accident locations within the project area. Minimum clear zone(s) signing and other safety considerations will be evaluated and documented in the DEIS and development of the final plans.

**3.3.1.9. Impacts on Police, Fire Protection and Ambulance Access**

All alternatives incorporate a new bridge crossing, thus no detour will be required. As stated in Section 3.3.1.7(2) Routes for emergency vehicles will be maintained and open during construction. The details for the work zone traffic control will be prepared and evaluated during final design.

**3.3.1.10. Parking Regulations and Parking Related Issues**

No changes are proposed for all alternatives except Alternative BR-2 Erie Street on Former Alignment which will bisect the parking lot for Waterfront Village. Analysis of the impacted parking areas will be analyzed and recommended replacement options will be explored in the DEIS.

**3.3.1.11. Lighting**

All the proposed Alternatives will include street lighting to be consistent with the City of Buffalo Complete Street Ordinance.

**3.3.1.12. Ownership and Maintenance Jurisdiction**

The City of Buffalo will continue ownership and maintenance responsibilities for the highway and bridge. The limits and responsibilities will be refined and documented in the development of final plans.

**3.3.1.13. Constructability Review**

The project alternatives will be further evaluated development of the DEIS for constructability.

**3.3.2. Multimodal**

The Primary Objective of the Buffalo Harbor Bridge Project is to provide a multi-modal (pedestrian, bicyclist, and motorized traffic) transportation facility over the Buffalo River and/or City Ship Canal between the Ohio Street Lift Bridge and the Erie Basin Marina in the City of Buffalo with a direct connection from the New Downtown to the Outer Harbor area.

**3.3.2.1. Pedestrians**

All design alternatives will include accommodations for pedestrians (including persons with disabilities) and include 7 foot sidewalks. A Pedestrian Generator Checklist will be completed and included in the DEIS.

**3.3.2.2. Bicyclists**

All design alternatives will include provisions for bicyclists by providing 6 foot wide shared shoulders to accommodate bicyclists.

**3.3.2.3. Transit**

Transit facilities will remain unchanged in all alternatives except Alternative BR-3, which may require the realignment of the Light Rail Tracks along Main Street. Additionally, Alternative BR-3 will be studied in the DEIS to determine the feasibility of accommodating future LRRT. This alternative will be refined and detailed studies will analyze potential modifications in the DEIS.

**3.3.2.4. Watercraft/Vessel**

All design alternatives will include provisions for throughput of vessels and watercraft and will be coordinated with the US Coast Guard having jurisdiction over the Federal navigable waterways throughout the project area. A Moveable Bridge Lift Analysis Report is included in Appendix B. This report assesses the effect of the closed position vertical clearance on marine traffic. The US Coast Guard is a cooperating agency on this project and will determine the acceptable minimal closed position bridge clearance over the mean low water datum. The accommodations for watercraft and vessels will be investigated further in the DEIS.

### 3.3.2.5. Airports, Railroad Stations, and Ports

No changes are proposed.

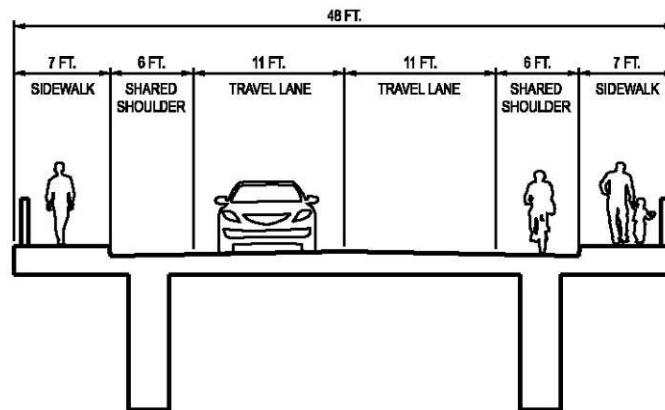
### 3.3.2.6. Access to Recreation Areas (Parks, Trails, Waterways, and State Lands)

Depending on the vertical height required over the mean low water and structural depth, all alternatives have a potential to affect trails along the Buffalo River. The extent of these impacts will be evaluated in the DEIS.

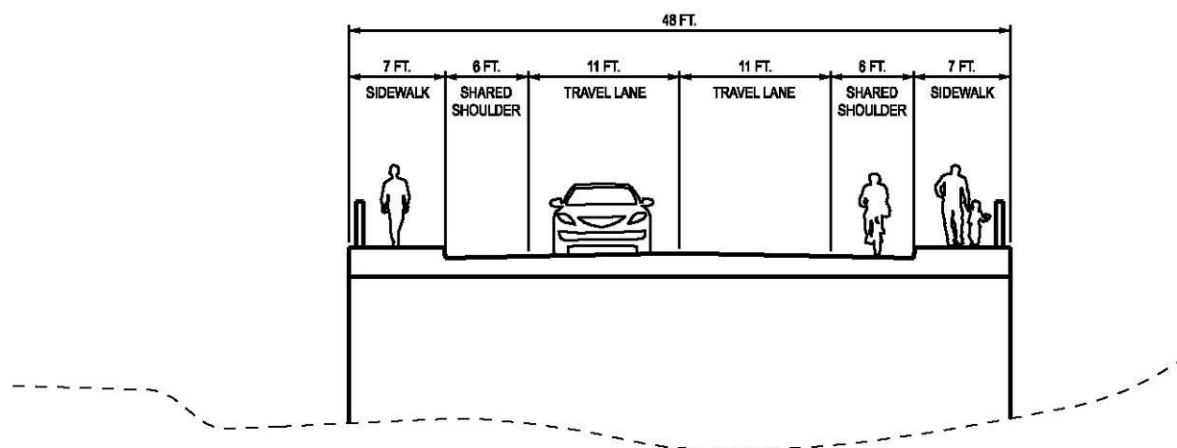
## 3.3.3. Infrastructure

### 3.3.3.1. Proposed Highway Section

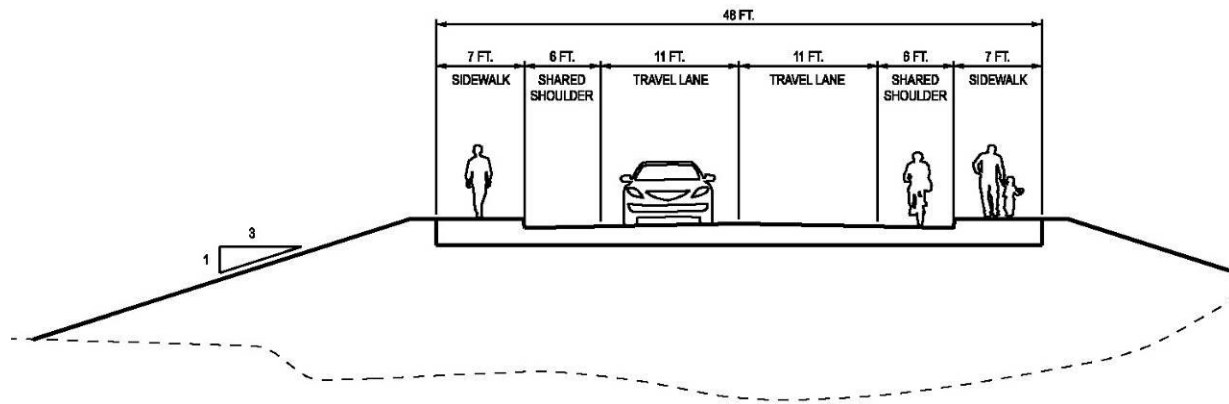
The proposed roadway section will include two 11 foot lanes, two 6 foot shared shoulders and two 7 foot sidewalks. See Figures 3-15, 3-16, 3-17 for a typical sections.



**Figure 3-15: Bridge Typical Section** – Note: Structure depth and structure configuration to be determined in the DEIS.



**Figure 3-16: Bridge Approach Typical Section with Retaining Walls**



**Figure 3-17: Bridge Approach Typical Section**

#### 3.3.3.1. (1) Right-of-Way

The proposed alternatives will require right-of-way takings. The amount and extent of each acquisition will be refined and evaluated as the project evolves into the DEIS.

#### 3.3.3.1. (2) Curb

The proposed roadway and bridge section will maintain vertical faced curbs within the project limits.

#### 3.3.3.1. (3) Grades

The proposed maximum grade will be 9%.

#### 3.3.3.1. (4) Intersection Geometry and Conditions

The existing intersection geometry will be retained.

#### 3.3.3.1. (5) Roadside Elements

- Each alternative will provide 7 ft sidewalks and 6 ft shared shoulders. Bus stops will be provided based on current NFTA Routes and will be incorporated in the final plans.
- Driveways along any of the proposed alternative routes will be modified to comply with current NYSDOT "Policy and Standards for Design of Entrances to State Highways."
- The clear zone will be approximately 1.5 ft wide and will be refined during final design to adjust for slopes, roadway curvature, etc.

#### 3.3.3.2. Special Geometric Design Elements

##### 3.3.3.2. (1) Non-Standard Features

All feasible alternatives will be evaluated in the DEIS to comply with the geometric features and cross sectional elements in the design criteria accordance to the NYSDOT Highway Design Manual. Elements that do not meet these criteria will be documented and justified in the DEIS. Non-standard features justification will be included for each non-standard feature proposed for each alternative analyzed in the DEIS.

##### 3.3.3.2. (2) Non-Conforming Features

Non-conforming features will be analyzed and documented in the DEIS. The feasible alternatives will be evaluated to verify transitions to horizontal curves, skewed intersections, compound or broken back curves, inadequate intersection corner radii for the design vehicle, no curb offset, less than recommended width for bicyclists, etc. This section will also describe and provide values and support for features that do not comply with normally accepted engineering policy or practice.



**3.3.3.3. Pavement and Shoulder**

A Pavement Evaluation and Treatment Selection Report will be developed in the DEIS as required by E1 01-017, "Project- Level Pavement Selection Process" and the NYSDOT Materials Bureau's manual titled Pavement Rehabilitation Manual - Volume II: Treatment Selection.

**3.3.3.4. Drainage Systems**

Existing drainage structures will be cleaned as part of all feasible alternatives. Other work will consist of new separate storm sewer system along new roadways.

**3.3.3.5. Geotechnical**

No special techniques or considerations are needed.

**3.3.3.6. Structures**

The existing structures within the project area are described in Section 2.3.3.6. The bridge type and location will be determined in the DEIS. The type of movable bridge span will be analyzed in the DEIS.

The intent of all retained alternatives is to provide a moveable bridge which will accommodate the full navigation channel width and required height (100 ft above mean low water in open position). The structure type and spans will be evaluated further in the DEIS. There is no intent to place piers abutments, or fender systems within the navigable channel of the Buffalo Harbor, Buffalo River, or City Ship Canal. The published navigable channels are well within the horizontal limits of the waterway. In some locations the navigable channel is 50-75 feet less than the waterway width and the full channel depth is not maintained outside the channel limits. Consequently, the difference in clear span over the navigable channel versus spanning the waterway is significant from an engineering and cost perspective. These factors will be studied closely in the DEIS to balance environmental, landside impacts, navigation impacts and cost. The structure type, number of spans, vertical and horizontal clearances will be determined in the DEIS. A Coast Guard Permit will be required.

Movable spans are required in bridges crossing navigable waterways to permit passage of vessels that would otherwise be blocked by insufficient vertical clearance of the structure in the closed position. There are several types of movable spans that are in frequent use today, and a variety of other types that are no longer constructed or constructed on an occasional basis. While serving the same overall purpose, each type has positive and negative attributes. A variety of factors must be weighed against these attributes in determining what the proper type of bridge is for a particular location.

**Vertical Lift Bridges**

Vertical lift bridges are trademarked by a span that rises vertically and remains parallel with the deck. In the closed position, the span is suspended by wire ropes from high towers and counterbalanced. The span is raised and lowered using supporting end cables attached to drums in the towers on each side of the bridge. Hydraulics can also be used to raise and lower the span. The major disadvantage of a vertical lift bridge is the limited clearance that it provides. Vertical clearance is limited by the height of the towers, which could possibly prevent some vessels from passing below. Under these circumstances, the maximum vertical clearance of a lifted span could be no less than that already achieved by the Buffalo Skyway, which is around 100 feet. Vertical lift bridges provide the ability to be twinned, meaning that an identical bridge can be placed directly next to the existing one in order to provide greater capacity.

**Bascule Bridges**

The movable span of a bascule bridge essentially pivots around a fixed axis with the span balanced by a counterweight. Comprised of either one leaf or two, when open, their main advantage is their ability to provide unlimited vertical clearance without necessitating additional room to operate (like a swing bridge does). The counterweights provide a significant mechanical advantage and therefore require a reduced amount of energy to lift the span. There are generally two types of bascule bridges, the trunnion type and the rolling lift type. In the trunnion type, the center of rotation remains fixed and is at or close to the center of gravity of the rotating part. In the rolling lift type the center of rotation continually changes and the center of gravity of the rotating



part moves in a horizontal line, which results in shifting the application of load on the pier. When the bridge is in the open position, it must also be designed to resist the wind load which may also require larger machinery than is required to merely operate the span. Also, if a counterweight pit is required, this could result in additional cost and maintenance. A bascule bridge also provides the ability to be twinned, similar to the vertical lift bridge.

#### Swing Bridges

The swing span is supported by a rim bearing or a center bearing at or near the span's center, and the span pivots horizontally to open. A major advantage to this type of movable is the unlimited clearance it provides, however, a major disadvantage is that more space is required in order for the bridge to operate due to the space needed for the span to rotate open. Another advantage is that no counterweight is required, which greatly reduces the total weight of the bridge. The center pier divides the channel into two parts, decreasing the potential for vessel collision. However, the center pier provides a hazard for vessel collision and must be fortified to prevent damage to the pier and therefore the structure. The center pier also decreases the width of the channel. Also, when the span is open, the ends are no longer supported and the span must support itself, operating as a balanced double cantilever. This may cause additional members to be added to the design in order to increase stiffness. Unlike the vertical lift and bascule bridges, the swing bridge cannot be twinned to provide greater capacity.

### **3.3.3.7. Hydraulics of Bridges and Culverts**

The bridge and bridge substructure locations will be clearly identified in the DEIS. At that time, a determination of the requirement for a hydraulic analysis will be finalized. Current available data regarding the Buffalo River is available and stated for reference below.

#### Water Level

Datum and Gage Location - All of the water elevations indicated in this document are in International Great Lakes Datum 1985 (IGLD 85). This differs from the datum being used for the project, North American Vertical Datum 1988 (NAVD 88), by approximately 0.07 feet. In order to convert from IGLD 85 datum, add 0.07 feet. The data used in the development of this document are from the National Oceanic and Atmospheric Administration (NOAA). The associated gage for the data is located near the outer end of the Buffalo River South Pier, which is near the lighthouse and Coast Guard station at the mouth of the Buffalo River. The gage has a station identification number of 9063020. Several different data sets were used to identify water level trends and ranges. Below is a synopsis of the evaluation of these data sets.

#### Average Water Level and Extreme Water Levels

The average water level for Lake Erie at Buffalo based on January through December is 571.37 ft. This average was determined based on monthly mean water levels from 1888 to 1999. The monthly mean water level can range between approximately elevation 568 and elevation 574. The highest recorded water level for Lake Erie at Buffalo is 581.34 ft, which occurred on December 2, 1985. The lowest recorded water level for Lake Erie at Buffalo is 564.83 ft, which occurred on March 10, 1964.

#### May – October Water Levels

The data were also specifically evaluated for the months of May through October, the time period when navigation and shoreline activity will be most prevalent. The results of this evaluation should provide guidelines for the establishment of the elevations of shoreline features and functional components.

The average water level for Lake Erie at Buffalo based on the months of May through October is 571.65 ft. This average was determined from monthly mean water levels for May through October from 1888 to 1999.



For the evaluation of minimum and maximum trends, the period of record used was November 1, 1900 to December 31, 1999. Monthly minimums and maximums are provided in the data set based on readings taken every minute for the period of record. Probabilities for the water level reaching a certain elevation in any particular year were determined for May through October. Probabilities were simply determined based on the number of years that the water level reached a specific elevation divided by the total number of years in the period of record. Below are the results for high and low water conditions.

<b>Table 3-5</b> Probabilities for High Water Conditions (May to October)	
Probability of WL reaching certain high elevation at least once in a particular year	
<b>Height (ft)</b>	<b>Probability (%)</b>
579	0.00
578	0.50
577	1.00
576	5.00
575	13.33
574	35.67

The average yearly maximum water level for May through October is 573.65 ft. The highest recorded water level for May through October is 578.97 ft.

<b>Table 3-6</b> Probabilities for Low Water Conditions (May to October)	
Probability of WL dropping to certain low elevation at least once in a particular year	
<b>Height (ft)</b>	<b>Probability (%)</b>
570	33.6667
569	10.8333
568	2.8333
567	0.1667
566	0.1667
565	0.0000

The average yearly minimum water level for May through October is 570.51 ft. The lowest recorded water level for May through October is 565.88 ft.

### **Current**

Water flow in the Buffalo River stems from three creeks. These creeks are Buffalo Creek, Cayuga Creek, and Cazenovia Creek. A USGS gage station exists on each of the three creeks and therefore flow data are available. The flow data do not take into account flow contributions downstream of the gage sites. The flows were given as monthly averages for the years 1939-2001, daily mean flow for these 63 years of record, and annual mean flow for these same 63 years of record. The total flow in the Buffalo River was calculated as the sum of these three separate creek flows. The highest monthly average flow for the summer months of May through October was 2377 cfs, whereas the highest monthly average flow for the entire year was 2790 cfs. Based on a river cross-section of approximately 600 feet wide by 26 feet deep, the resulting current velocities would be 0.1 mph (0.1 knot) and 0.12 mph (0.11 knot), respectively. The project site is at a turning basin on the Buffalo



River and where the City Ship Canal joins the Buffalo River. The current velocity upstream of the west end of Kelly Island would be about three times higher.

The Buffalo River Remedial Action Plan indicates flow rates based on gage information from the three creeks. Below are resulting flow rates and current in the Buffalo River.

<b>Table 3-7 Buffalo River Flow Rates</b>				
<b>Stream</b>	<b>Peak*</b>	<b>Avg. Annual</b>	<b>Avg. Summer</b>	<b>Min. 7-Day</b>
Buffalo River flow (cfs)	N/A	565	76	9.3
Buffalo River current upstream of the end of Kelly Island (mph)	N/A	0.07	0.01	0.002
Buffalo River current downstream of the end of Kelly Island (mph)	N/A	0.03	0.003	0.0006

Peak flows in the Buffalo River cannot be determined based on the stream gages because the peaks may be based on highly localized conditions and likely do not occur at the same time. However, Buffalo River flow was studied by Meredith and Rumer (1987). They determined the 10-year flow to be approximately 18,000 cfs and the 50-year flow to be approximately 25,000 cfs. The 10-year flow results in a current of approximately 2.34 mph (2.03 knots) upstream of the end of Kelly Island and approximately 0.78 mph (0.68 knot) downstream of the end of Kelly Island. The 50-year flow results in a current of approximately 3.28 mph (2.85 knots) upstream of the end of Kelly Island and approximately 1.09 mph (0.95 knot) downstream of the end of Kelly Island.

Because it is connected to Lake Erie, Buffalo River flow rates are affected not only by upstream inputs of flow from creeks and CSO discharges, but also by lake level. Due to its relatively shallow depth, Lake Erie experiences significant water level variation, particularly when sustained winds are aligned with the long orientation of the lake, which would mean either a southwest or northeast direction. A sustained southwest wind would increase the water level in Buffalo while decreasing the water level at the opposite end of Lake Erie. Vice versa, a sustained northeast wind would decrease the water level in Buffalo while increasing the water level at the opposite end of Lake Erie. A wind induced water level variation is referred to as seiche.

A seiche that causes rising water level in Lake Erie at Buffalo will cause reverse flow in the Buffalo River. As the seiche subsides, the water in the river will flow back into the lake. Similarly, a lake seiche that causes a lowering of water level in Lake Erie at Buffalo will increase the flow in the Buffalo River due to the increase in hydraulic gradient between the upstream portion of the Buffalo River and Lake Erie. The effect on flow rate resulting from lake level changes is difficult to estimate. However, based on Corps of Engineers Publication NDC: 90-P-2 (The Ports of Buffalo), due to rapid changes in lake level, the velocity in the Buffalo River near its mouth is believed to reach 3 - 5 mph at times.

### **Ice**

The Buffalo River freezes in the winter. However, the City of Buffalo's fireboat, Cotter, is used to regularly break up ice in the river. A discussion was held with a full-time crew member of the Cotter. The purpose of this ice breaking is to allow ice to flow freely, thereby reducing the potential for upstream ice jams and flooding. Ice breaking operations are undertaken when the ice reaches a thickness of approximately one foot. Therefore, ice in the lower reaches of the Buffalo River is generally limited to a thickness of one foot. However, upstream where the creeks connect with the river, the ice thickness can reach about 2 to 3 feet. Spring thaws bring flowing ice down the river.

During the DEIS, the potential for ice flows and ice jam formations will be investigated at the new bridge crossings. Mitigating measures such as tapering upstream and downstream abutment ends





will reduce likelihood that ice masses will be caught and held in place at these locations. It will be determined whether a future bridge will require more ice-breaking operations because the bridge would act as a focal point for the formation of normal frozen ice cover on the river.

Both lateral and vertical ice forces need to be considered in the design of structures, particularly those that extend out from the shoreline. Lateral forces would be applied by both moving ice and expansion of the ice sheet. Due to its position in the South Basin, the pier would be fairly well protected from moving ice in the Buffalo River. However, moving ice may have to be considered in the design of the end of the South Basin pier. Depending on the type of construction, vertical forces from static ice may also need to be considered. Ice breaking operations on the river and unbalanced expansion of the ice also have the potential of applying lateral forces to structures in the water, in this case the fixed pier.

### **Waves**

The first step in determining wave heights at the site was to evaluate a Corps of Engineers study titled "Proposed Relocation of North Entrance Channel Buffalo Harbor", dated February 1960. The purpose of that study was to evaluate proposed breakwater modifications that would allow a northern entrance to Buffalo Harbor while maintaining the same level of protection to the harbor entrance. The study included not only analytical modeling, but also physical modeling at the Corps of Engineers Waterways Experimentation Station.

The Corps identified south 67.5 degrees west as the critical wind direction. Under the alternative that was eventually constructed, they estimated the wave heights up the Buffalo River in the project area to be less than 1 foot. However, the Corps study was specific to the harbor entrance rather than our project area. Based on our review of the Corps report and wind data, it was believed that a due west wind, directly aligned with the Buffalo River, could possibly produce higher waves at the project area.

### **3.3.3.8. Guide Railing, Median Barriers and Impact Attenuators**

All guiderail within the project limits including bridge railing will be evaluated during final design for conformance to design standards and replaced or repaired, if necessary.

### **3.3.3.9. Utilities**

Alternative BR-3 Main Street Bridge has the potential to affect the Kelly Island main, a 30-inch sanitary force main leading to the Squaw Island Treatment Plant, passes through the Project Area from a tunnel under the Buffalo River. Relocated in 1999 to the public right-of-way, the main runs under Main Street, west along Marine Drive and continues north along Pearl Street through the Marine Drive Apartments parking lot. Also, a pump station and vent for this main is located within the Project Area. The Hamburg Drain, a 16- by 13-foot combined sewer overflow following the former Hamburg Canal right-of-way, and outfalls to the Buffalo River via the Commercial Slip.

### **3.3.3.10. Railroad Facilities**

The Design Alternatives being carried forward will not have an affect on any railroad facility. Alternative BR-3 (Main Street) which may require the realignment of the Light Rail Tracks along Main Street as discussed in Section 3.3.2.3. The extent of these affects will be evaluated and analyzed in the DEIS.

### **3.3.4. Landscape and Environmental Enhancements**

See Chapter 4 for complete discussion. A Visual Impact Assessment of feasible alternatives will be produced as part of the DEIS.

#### **3.3.4.1. Landscape Development and Other Aesthetics Improvements**

The following is a preliminary discussion of alternatives retained and associated potential impacts and mitigations. This is only a preliminary discussion. The DEIS will include a more thorough examination of the issues.

**Information Needs.** The DEIS will identify visual impacts resulting from changes to the existing site. Visual assessments will be necessary to assess aesthetic impacts on publicly accessible areas.



Conceptual level bridge characteristics, including required retaining walls and grade changes, LRRT rail realignment, lighting, landscape, and pedestrian enhancements will all be described for each alternative.

**Mitigation.** Construction phase activities can be mitigated by limiting the area of disturbance. Bridge placement, design, color, materials, and landscaping may help to mitigate long-term impacts. Site restoration activities within disturbed areas will be described.

#### **BR-2 – Erie Street Crossing using Former Erie Street Approach**

Construction of a new moveable bridge across the Buffalo Harbor will have an impact on views from surrounding public rights of way, public space, historic sites, Erie Basin Marina and Coast Guard. Construction over the Buffalo Harbor will require a substantial vertical elevation change, possibly including retaining walls. This will introduce a new structure across the harbor where none currently exists. This structure will be visible from public access sites such as the Inner Harbor and Naval Park and the USS Sullivans Naval Ship, a National Historic Landmark. The structure will be visible from surrounding waterways including the Buffalo River, City Ship Canal, Lake Erie, and Buffalo Harbor.

#### **BR-3 – Main Street Crossing (Seymour H, Knox III Way)**

Construction of two new bridges over the Buffalo River and the City Ship Canal at Main Street will have an impact on views from surrounding public rights of way, the HSBC Arena, the Inner Harbor and Naval Park including the USS Sullivans, a National Historic Landmark, the Cobblestone Historic Preservation District, and surrounding waterways. Raising the elevation of Main Street to meet the new bridges could impact street trees and other elements of the streetscape that would result in a visual impact. Reconstructing the street could result in additional enhancements that could potentially be positive visual impacts. Intersection modifications at Perry Street/Main Street and South Park Avenue/Main Street will result in changes to the visual environment. Relocating the LRRT would have visual impacts as well.

The Department will provide replace landscaping as a part of the overall enhancement and aesthetic improvement efforts for this project. Refer to Chapter 4 for a more detailed discussion.

#### **3.3.4.2. Environmental Enhancements**

During more detailed development of feasible alternatives in the draft Environmental Impact Statement (DEIS) and Final Environmental Impact Statement (FEIS), opportunities will be explored to improve the environment. Opportunities may include, but are not limited to, enhancements to or access to park and recreation areas and possible coordination with environmental remediation efforts underway by other agencies and/or organizations (i.e., Buffalo River Remedial Action Plan, Buffalo River Greenway Implementation Plan, and Industrial Heritage Trail).

#### **3.3.5. Miscellaneous**

Not applicable.



## **CHAPTER 4 - SOCIAL, ECONOMIC & ENVIRONMENTAL CONDITIONS and CONSEQUENCES**

### **4.1. INTRODUCTION**

The Buffalo Harbor Bridge Project is classified under the National Environmental Policy Act (NEPA) (23 CFR 771, Section 771.115) as a 'Class I' Action and an Environmental Impact Statement (EIS) is required. The project has received federal funding for environmental studies and will be following the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) guidance. Within SAFETEA-LU, Section 6002 guidance prescribes changes to existing procedures for implementing NEPA making the environmental review process more efficient and timely. Additionally, the project is following the New York's State Environmental Quality Review Act.

#### **4.1.1 Environmental Classification and Lead Agencies**

This project is classified as a NEPA Class I action in accordance with 23 CFR 771.115. Federal Highway Administration (FHWA), New York State Department of Transportation (NYSDOT) and Erie Canal Harbor Development Corporation (ECHDC) are co-lead agencies. NEPA Class I projects require the preparation of an Environmental Impact Statement to determine the likely impact the proposed project alternatives will have on the environment.

This project is a SEQR Type I action under 6 NYCRR Part 617. ECHDC is the SEQR Lead Agency.

#### **4.1.2 Cooperating, Participating, and Involved Agencies**

##### **NEPA Cooperating Agencies**

The following agencies have been identified as cooperating agencies in accordance with 23 CFR 771. Further information on these agencies and their roles can be found in Appendix C.

- US Coast Guard (9th District);
- US Army Corps of Engineers;
- US Environmental Protection Agency;
- US Fish and Wildlife Service;
- New York State Department of Environmental Conservation;
- New York State Department of State;
- New York State Office of Parks, Recreation and Historic Preservation: State Historic Preservation Office;
- City of Buffalo;
- Buffalo Urban Renewal Agency.

##### **NEPA Participating Agencies**

The following agencies have been identified as participating agencies:

- Greater Buffalo Niagara Regional Transportation Council;
- Niagara Frontier Transportation Authority;
- Erie County;
- Buffalo Sewer Authority;
- Federal Emergency Management Agency;
- New York State Thruway Authority;
- Federal Transit Authority.



## **4.2 SOCIAL**

The purpose of this section is to discuss the social environment of the Project Area. This project involves the reestablishment of a local connection over the Buffalo River/City Ship Canal to provide a direct and efficient connection from the New Downtown to the Outer Harbor.

### **4.2.1 Land Use**

The Draft Environmental Impact Statement (DEIS) will describe and map existing land uses in the Study Area, and provide a general description of land use patterns using existing published sources of information and field reconnaissance. The DEIS also will assess the feasible alternatives effects on existing land uses in or around the Study Area, and will assess the Project's consistency with established land use policies and plans as well as reasonably foreseeable future land uses. This will include an assessment of the components of the Project with the overall policies of documents including, but not limited to the following:

- The City of Buffalo Main Street Multi-Modal Access and Revitalization Project;
- The City of Buffalo Queen City Hub Plan, Volumes 1 and 2;
- The City of Buffalo Comprehensive Plan;
- The City of Buffalo Waterfront Corridor Initiative;
- The Niagara River Greenway Plan;
- The Buffalo River Greenway Implementation Plan;
- Draft Buffalo Olmsted Park and Parkway 20 Year Management and Restoration Plan;
- The Master Plan for the Erie Canal Harbor Project, 2004;
- The City of Buffalo 1963 Urban Renewal Plan for the Waterfront Development Project, as amended through 2005;
- The City of Buffalo Zoning Ordinance;
- The South Buffalo Brownfield Opportunity Area;
- The Times Beach Redevelopment Plan;
- The GBNRTC's 2025 Transportation Systems Plan;
- The FGEIS for Canal Side, 2009; and
- The Industrial Heritage Trail Plan.

Although the components and time frames of these other plans are independent from this project, their cumulative effects when added to this project will be discussed in the DEIS, provided that sufficient details of each project exist to complete such an assessment. In addition to the above plans, certain governmental policies must be considered and incorporated including those specified under U.S. Coast Guard navigation policies, New York State's implementation of the U.S. Coastal Zone Management Act, and the water quality objectives of the Buffalo River Remedial Action Plan.

### **4.2.2 Neighborhoods and Community Cohesion**

The Project has the potential to fill a role that is lacking in the community: to improve access between the Inner and Outer Harbors. Such improved access would help draw more people to key downtown destinations including Erie Basin Marina, Erie Canal Harbor, Cobblestone District, HSBC Arena, and Coca-Cola Field. It would provide an alternate commuting route for workers at area businesses such as HSBC Bank and The Buffalo News. Consequently, the DEIS will analyze the beneficial impacts on community character, such as improving walkability, facilitating livable neighborhoods, and spurring year-round activities and amenities, likely to result from the Project's establishment of a key link in the transportation network and assess the Project's impact on the neighborhood and community cohesion within the Study Area.

### **4.2.3 Social Groups Benefited or Harmed**

In compliance with Federal Executive Order 12898, the DEIS will include an environmental justice evaluation assessing any disproportionately high human health or environmental effects on minority and/or low-income populations. Demographic information from the socioeconomic impact analysis will be





used to determine whether any disproportionately high impacts would occur to these populations. Appropriate mitigation measures, if required, will be formulated and discussed in the DEIS. The DEIS will evaluate accommodations for handicapped and elderly, due to the lack of existing sidewalks and crosswalks, and the mobility and needs of pedestrians and bicyclists including a Pedestrian Generator Checklist.

#### **4.2.4 School Districts, Recreational Areas, Places of Worship**

The project is not expected to have any significant adverse impacts school districts, recreational areas, and places of worship because the Project would involve the construction of a bridge that would not directly introduce any new residents to the area. Still, the Project may have the indirect result of prompting new residential development within the Study Area that would introduce new residents to the area. For this reason, the DEIS will examine how the Project may impact proximate school districts, recreational areas, and places of worship. Public lands might qualify for protection under Section 4(f) regulations as parks, recreation areas and waterfowl and wildlife refuges.

### **4.3 ECONOMIC**

#### **4.3.1 Regional and Local Economies**

The DEIS will provide a demographic/socio-economic characterization of the region, including trends in population and households, as well as employment and income data. Expenditure of funds for planning and construction of the Project would have two types of effects on the economy: direct effects and indirect effects. Direct effects would include the jobs created by the construction efforts, the earnings of the contractors that are hired to do the work or supply the materials to be used, and the earnings of their employees. Indirect effects, also known as multiplier effects for their wider impacts, occur as construction workers, managers, and owners make purchases with their new income, and as the materials suppliers purchase more raw materials and perhaps hire additional workers, and so on. Many of these new purchases would be made locally, others would occur outside the region.

#### **4.3.2 Business Districts**

The DEIS will examine potential Project-related impacts to established business districts. In particular, the Main Street Alternative (BR-3) includes area of Buffalo Place, an established not-for-profit organization dedicated to improving the economic health and quality of life in Downtown.

#### **4.3.3 Specific Business Impacts**

The DEIS will examine potential Project-related impacts to specific businesses that vary among Project alternatives. Specifically, the Erie Street Alternative (BR-1 and BR-2) may impact Shanghai Reds, a restaurant near Erie Basin Marina, and Waterfront Village, an office complex near Shanghai Reds. The Main Street Alternative (BR-3) may impact retail operations located in the HSBC Arena, and future, planned development at the Erie Canal Harbor, including a proposed Bass Pro Outdoor World Store at the location of the former Memorial Auditorium. The location of the crossing alternative may affect boaters. Consequently, certain marinas may be looked at unfavorably and may lose business, depending on the location of the crossing due to perceived delays caused by moveable bridge opening requirements.

### **4.4 ENVIRONMENTAL**

#### **4.4.1 Wetlands**

A Wetlands Assessment is being conducted to document the presence of any known or potential wetland resources within or adjacent to the project study area, including federally-defined and/or state-regulated wetlands.

**Regulatory Framework**

Wetlands are defined by the federal government as an area dominated by hydrophytic vegetation, hydric soils, and hydrology. All three parameters must be present to meet the federal definition of wetland. Wetlands meeting these parameters and having a "significant nexus" (surface water connection) with navigable waters of the US are federally protected as "special aquatic areas" and are included as waters of the US by the Clean Water Act.

Wetlands defined as waters of the US are regulated under the jurisdiction of the US Army Corps of Engineers (USACE), as authorized by Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act. Filling of waters of the US, including wetlands, is prohibited without authorization by the USACE. The Section 404 permit program is implemented by the regulations in 33 CFR 330. The intent of the law is to protect wetlands and prevent net loss of their functions. Fills authorized under a Section 404 permit require mitigation, typically by creation of new wetlands to offset the loss of the filled wetland.

**Federal Wetlands**

The project site is under review for the presence of federally-defined wetlands in accordance with the criteria defined in the 1987 US Army Corps of Engineers Wetland Delineation Manual. The first steps of the wetlands assessment include a review of existing agency mapping of wetland resources followed by a site walkover. If areas of potential wetlands are noted, a second field visit would take place to determine their presence by recording the dominant vegetation, soil characteristics, and signs of hydrology at field data points. If wetlands are determined to be present at locations of proposed impacts from any of the proposed alternatives, this assessment will be used as the basis of a field delineation of the wetland boundaries. Where the presence of wetland is confirmed by this method, a delineation of the wetland boundaries would follow.

Based on a review of agency resource maps and a site field visit by a qualified wetlands specialist, the existence of federal wetlands in the project study area is mostly limited to the Lake Erie shoreline. There are additional areas with potential to contain wetlands along the stream banks of the Buffalo River and connected canals, as well as on vacant land along Fuhrmann Boulevard. A wetland field assessment will be required to determine the location of any wetlands in the project study area (and if found), followed by delineation to determine the wetland type, size, and boundaries of wetlands that may be impacted by the project alternatives.

The primary functions of wetlands in the project study area include valuable wildlife habitat, water pollution abatement functions, recreation, and educational opportunities. The NYSDEC wetland at Times Beach is a regionally important resource for large numbers of seasonally migrating and local bird populations. Any potentially impacted wetlands would be taken into consideration when designing the project, and impacts to wetland functions would be avoided or reduced where practicable.

It is anticipated that the proposed project activities will require a USACE Section 404/Section 10 Permit resulting from impacts to the Buffalo River and City Ship Canal, which are waters of the US. It is expected that this work will be processed under an Individual Permit. If wetlands are included in the impact area, any USACE issued permit would be written to include those, as well. However, the data and site observations that have taken place to date indicate that little or no federally-defined wetland within the project area is likely to be directly affected by any of the project alternatives. Any necessary permits would be obtained prior to construction, once the location and the extent of the impacts are ascertained.

All appropriate measures will be taken to avoid and minimize any wetland impacts. Efforts to avoid and minimize impacts would be accomplished through the design process prior to permit application. Generally, projects which impact 1/10 of an acre or more of federal wetlands require compensatory mitigation as described in the USACE's New Mitigation Rule. If required, mitigation measures would be determined in the final design phases.

**State Wetlands**

Freshwater wetlands in New York State larger than 12.4 acres (5 hectares) are protected by Article 24 in Title 15 of the Environmental Conservation Law (ECL). Land uses that are not compatible with wetlands are generally prohibited, and necessary activities that may impair or interfere with the wetland functions must be approved by application to the NYSDEC for an Article 24 Freshwater Wetlands Permit. In addition, state wetlands have a 100-foot buffer zone that is protected. Activities within the 100-foot regulated adjacent area also require a permit.

A review of NYSDEC Freshwater Wetlands maps for Erie County (USGS 7.5', Buffalo SE quadrangle) and the NYSDEC website's Environmental Resource Mapper (see Figure 4-1) indicate the presence of two NYSDEC regulated freshwater wetlands in the project study area:

- BU-3, a 46-acre Class 1 wetland located at the Times Beach Nature Preserve; and
- BU-15, an 89-acre Class 1 wetland located at the Tift Farm Nature Preserve.

The presence of these wetlands was verified by field visits to the nature preserves. There are no other wetland areas in the project study area that qualify for state jurisdiction.

It is not expected that the proposed project alternatives would directly impact NYSDEC-regulated wetlands; however, it appears that Alternatives BR-1 and BR-2 could intersect with the 100-foot regulated adjacent area of BU-3 at Times Beach. A wetland field delineation will likely be required during the preliminary design phases to locate the current boundaries of this wetland. No other state wetlands would be impacted by any of the proposed alternatives.

If the project does impact the State wetland or its buffer area, the project would require a NYSDEC Article 24 Freshwater Wetlands Permit. The permit would be obtained from NYSDEC once the location and extent of the impacts are ascertained, prior to commencement of project activities. The project would adhere to any special conditions or requirements, including applicable public notification requirements. Mitigation to minimize impacts may be required. Work will not commence until applicable permits are acquired, and work will adhere to any conditions set forth by the permit requirements.

**Executive Order 11990**

The site visit has determined that there are federally-defined wetlands within the project study area. However, the proposed project alternatives are not likely to affect them. If the preferred alternative is located in wetlands, the FEIS will contain, to the fullest extent possible, the finding required by EO 11990 that there are no practicable alternatives to construction in the wetlands. Where the finding is included, approval of the FEIS will document compliance with EO 11990 requirements (23 CFR 771.125(a)(1)).

**Wetland Mitigation: Avoidance, Minimization, and Compensation**

Any potential wetlands impacts resulting from the project must be mitigated; that is, (1) they must be avoided where feasible, and (2) unavoidable impacts must be minimized to the smallest feasible extent. Thus, if wetlands are present, the preferred alternative must be a feasible alternative to avoid and minimize wetland impacts. The alternative that is designed to avoid wetland impacts to the extent feasible while meeting the project objectives.

If the preferred alternative permanently impacts federal or state-regulated wetlands, after all feasible avoidance and minimization efforts, any temporary construction disturbances must be restored, and permanent impacts must be compensated. If project impacts to wetlands are unavoidable, compensatory wetland mitigation might be required to offset impacts to federal or NYSDEC wetlands and/or state wetlands buffer zone and mitigation might be required by the USACE and/or NYSDEC as a permit condition. Compensatory mitigation measures to be considered could include: creation of new wetlands or restoration of former wetlands; participation in a mitigation banking site; purchase and preservation or improvement of existing wetlands; or other USACE-approved mitigation.



A wetland monitoring plan specifying the type and frequency of information to be collected would be prepared and implemented for any proposed wetland creation areas to assure their viability for the intended wetland functions.

#### **4.4.2 Surface Waterbodies and Watercourses**

##### **Surface Waters**

The water bodies in the project area include the Buffalo River and City Ship Canal. The total drainage area for the Buffalo River watershed is approximately 440 square miles. The Buffalo River currently has a "Class C" designation. According to the NYSDEC, the best use of the Buffalo River has been identified as "fishing, with waters suitable for fish propagation and survival". In addition, "the water quality is suitable for primary and secondary contact recreation, although other factors may limit the use of these purposes".

It is anticipated that all the proposed project alternatives activities will include temporary fills such as cofferdams for dewatering of the work site in waters of the US, as well as features that will result in permanent impacts. Under consultation with the USACE and NYSDEC, impacts to surface waters will be minimized. It is expected that this work will be authorized by the U.S. Army Corps of Engineers (USACE) under a Section 404/Section 10 individual permit and by the NYSDEC under an individual Section 401 Water Quality Certification. A Joint Application for Permit will be prepared and submitted to the USACE and the NYSDEC after the location and the extent of the impacts are ascertained. Mitigation to offset impacts may be required, and public notification requirements will apply. Work will not commence until the permit is acquired and will adhere to all requirements and special conditions set forth in the permit.

##### **Surface Water Classification and Standards**

Title 6, Part 701 of the Water Quality Regulations (6 NYCRR Part 701).

Based upon a review of the Environmental Resource Mapper on the NYSDEC website, and as verified by a site visit, there are four surface waterbodies and streams in the project study regulated as waters of the state under 6 NYCRR Part 701. These waters of the state are listed in Part 800 of Title 6 of the New York Code of Rules and Regulations (6 NYCRR Part 800) with their assigned classification and water quality standards according to their best use.

The Buffalo River and the City Ship Canal are designated as Class C, Standard C. Lake Erie is divided into several classification areas, two of which are within the project study area. The mouth of the Buffalo River and the lake water from river's outlet to the breakwater is Class C, Standard C to the north. Lake Erie south of the River's outlet, from the shoreline to the breakwater, is designated Class B, Standard B. Outside the study area, the rest of Lake Erie beyond the breakwater is designated as Class A-S, Standard A.

The best usages for Class/Standard "A-S" waters are: source of water supply for drinking, culinary or food processing purposes, primary and secondary contact recreation, and fishing. The water quality shall be suitable for fish propagation and survival.

The best usages for Class/Standard "B" waters are for primary and secondary contact recreation and fishing. The water quality shall be suitable for fish propagation and survival.

The best usage for Class/Standard "C" waters is fishing. Water quality is suitable for fish propagation and survival. The water quality shall be suitable for primary and secondary contact recreation, although other factors may limit the use for these purposes.

The New York State Department of Conservation (NYSDEC) will be consulted to determine any restrictions to construction activities due to fish spawning seasons or other water quality concerns.





#### Part 608 Stream Bed and Bank Protection

Based upon a review of the Environmental Resource Mapper on the NYSDEC website, and as verified by a site visit, there is one protected waterbody and protected streams in the project study area. However, there are no direct impacts from any of the proposed alternatives on the Class B waters, which are located along the Lake Erie shoreline in the Outer Harbor south of the Buffalo River outlet.

#### **Water Quality Issues and Problems**

The Waterbody Inventory and Priority Waterbodies List: In order to fulfill certain requirements of the Federal Clean Water Act, the New York State Department of Environmental Conservation (NYSDEC) must provide regular, periodic assessments of the quality of the water resources in the state. This information has been compiled by the NYSDEC Division of Water into an inventory database of all waterbodies in New York State that is used to record current water quality information, characterize known and/or suspected water quality problems and issues, and track progress toward their resolution. This inventory of water quality information is the division's Waterbody Inventory/Priority Waterbodies List (WI/PWL).

From 1983 through the mid-1990s, the Priority Waterbodies List was limited to recording information for only those waters with known or suspected water quality problems. The expansion of the Waterbody Inventory (WI) database to include information for all waters in the state and record good water quality as well is a fairly recent effort. A subset of the Waterbodies Inventory that is limited to segments with well documented, potentially resolvable, higher priority problems and issues is the PRIORITY Waterbodies List (PWL).

Areas of Concern: The primary water quality issues in the Niagara River-Lake Erie Drainage Basin are associated with the Great Lakes Areas of Concern (AOCs), two of which are located within the project study area: the Buffalo River AOC and Lake Erie shoreline AOC. These are areas where pollutants seriously impair the beneficial uses of a waterbody and where the federal government has committed to develop and implement the plans to restore and protect the uses. Water quality improvement efforts in the AOCs are focused through River Remedial Action Plans (RAPs) and Lakewide Management Plans (LaMPs).

The entire Lake Erie shoreline on the Outer Harbor is listed as Impaired due to a fish consumption advisory for Lake Erie. These advisories are the result of PCBs and dioxin in contaminated sediments.

#### Buffalo River Remedial Action Plan (RAP)

The Buffalo River RAP, developed through a partnership between the NYSDEC and the Buffalo River Citizens' Committee, was completed in November 1989. Periodic Status Reports have been published since 1991, most recently in 2008. Remedial activity efforts have been focused in six major areas: stream water quality monitoring, river bottom sediments, inactive hazardous waste sites, municipal and industrial wastewater treatment facilities, combined sewer overflows, and fish and wildlife habitat.

#### Lake Erie Lake Management Plan (LaMP)

Similarly, the Lake Erie LaMP goals are to restore and protect beneficial uses of the lake by addressing water quality and natural resources management issues. The LaMP focuses on critical pollutants in both the near shore and open water ecosystems.

#### Urban/Industrial/CSO Runoff

The project study area is within the Buffalo MS4 permit boundaries. Various recreational uses, aquatic life use support, and aesthetics in stretches of the urban waterways throughout the basin are significantly restricted by pollutants from various industrial, municipal, and commercial sources. Urban storm runoff transports a variety of pollutants and debris into the project area waterways. Combined sewer overflows (CSOs) convey additional pollutant loads to the Buffalo River during wet-weather periods. At least two



CSOs are located on the Buffalo River within the project study area. Contaminated sediments, inactive hazardous waste sites and other impacts attributed to past/historic discharges also limit waterbody uses.

#### Great Lakes Areas of Concern (AOC)

Great Lakes Areas of Concern (AOC) are severely degraded geographic areas within the Great Lakes Basin. They are defined by the U.S.-Canada Great Lakes Water Quality Agreement (Annex 2 of the 1987 Protocol) as "geographic areas that fail to meet the general or specific objectives of the agreement where such failure has caused or is likely to cause impairment of beneficial use of the area's ability to support aquatic life." The U.S. and Canadian governments have identified 43 such areas; 26 in U.S. waters, 17 in Canadian water (five are shared between U.S. and Canada on connecting river systems). Collingwood Harbour, in Ontario, is the first of these 43 sites to be delisted. The Great Lakes Water Quality Agreement, as amended via the 1987 protocol, directs the two federal governments to cooperate with state and provincial governments to develop and implement Remedial Action Plans for each Area of Concern.

#### Great Lakes Legacy Act Sedimentation Remediation Project

Discharges of toxic substances into the Great Lakes Basin have been reduced in the last 20 years, but persistent, high concentrations of contaminants remain in the bottom sediments of some of the rivers and harbors that feed into the Lakes. These contaminants have the potential to cause harm to humans, aquatic organisms, and wildlife, and there are advisories against consuming the fish from most water bodies around the Great Lakes. These problem harbor and tributary areas in the Great Lakes basin have been identified and labeled as "areas of concern" with 31 of the 43 AOCs located on the U.S. side of the Great Lakes.

To tackle this problem of contamination, and to take a key step toward recovery of these 31 sites, the Great Lakes Legacy Act (the Legacy Act) was signed into law in 2002. The Act provides funding to take the necessary steps to clean up contaminated sediment in "Areas of Concern located wholly or partially in the United States," including specific funding designated for public outreach and research components. The U.S. Environmental Protection Agency's (USEPA) Great Lakes National Program Office (GLNPO) was designated to implement the Legacy Act.

The Great Lakes Legacy Act was reauthorized by Congress and signed into law on October 8, 2008. The new legislation allows GLNPO to continue to move forward with sediment cleanups in the Great Lakes Areas of Concern and includes several new provisions to improve the program.

#### **4.4.3 Wild, Scenic, and Recreational Rivers**

##### **State Wild, Scenic and Recreational Rivers**

There are no NYSDEC Designated, Study or Inventory State Wild, Scenic or Recreational Rivers within or adjacent to the proposed project site. No further review is required.

##### **National Wild and Scenic Rivers**

The project does not involve a National Wild and Scenic River as shown by the Nationwide Rivers Inventory List of National Wild and Scenic Rivers. No further review is required.

#### **4.4.4 Navigable Waters**

The Buffalo River is a tributary to Lake Erie. The City Ship Canal connects to the Buffalo River. The Buffalo River is navigable to Penn Central Bridge 7.1 miles above mouth of River. Both the Buffalo River and City Ship Canal are navigable channels. The project will involve the construction of a new bridge over a navigable water of the United States, the Buffalo River/ City Ship Canal which is used for commercial and recreational traffic. A US Coast Guard Permit will be required for work in / over navigable waters. The US Coast Guard Permit will require a 100 foot vertical clearance through the navigable channel. The



US Coast Guard has been consulted and a USCG Section 9 Permit Application Package will be assembled and submitted to them for approval in the Final Design phase.

#### **4.4.5 Floodplains**

The Federal Emergency Management Agency (FEMA) Regulations on Floodplain Management and Protection of Wetlands requires the identification of potential direct and indirect adverse impacts associated with the occupancy, modification, and development of floodplains and wetlands. Such identification of impacts shall be to the extent necessary to comply with the requirements of Executive Order 11988 (May 24, 1977, 42 FR 26951) to avoid floodplain locations unless they are the only practicable alternatives and to minimize harm to and within floodplains and wetlands (44 CFR § 9.10). The 100 year floodplain in the project area extends into Erie Street and Fuhrmann Blvd. The limits and extent of potential effects to the floodplain will be evaluated and mapped in the development of the DEIS.

#### **4.4.6 Coastal Resources**

##### **Existing Harbor Facilities**

The bridge alternatives are all located within the general Buffalo Harbor and adjacent waterways area that provides access for commercial and recreational waterborne traffic utilizing Lake Erie. The lake is accessible for waterborne travel between approximately April through December. The Port of Buffalo includes two distinct areas:

- The Inner Harbor, which includes the lower 5.8 miles of the Buffalo River and the 1-mile long Buffalo Ship Canal; and
- The Outer Harbor, which includes the areas along Lake Erie protected by a series of breakwaters roughly 1,600 feet from the shoreline.

Vessels up to 630 feet long with a maximum beam of 68 feet can navigate the Buffalo River and Buffalo Ship Canal to various upriver docks (USACE, 1983). Entrance to the Inner Harbor is provided via the Buffalo River Entrance Channel, which connects to the Harbor's North Entrance Channel and Black Rock Channels. The river and the canal are features of the federally improved harbor under jurisdiction of the USACE. The authorized depth of the navigational channel in these areas is 22 feet below the low water datum in soft material and 23 feet below the low water datum in hard material (USACE, 1983). Upstream from the harbor, the Buffalo River is traversed by three moveable bridges (Michigan Street, Ohio Street and South Park Avenue) and two movable railroad bridges. Cargo bearing vessels currently use the Buffalo River and City Ship Canal to destinations on these Federal Navigable channels including Sand Products Corporation, St. Mary's Cement, Lafarge Corporation, and General Mills.

Two marinas operate on the City Ship Canal (USACE, 1987):

- First Buffalo River Marina, a private marina located along the southern shoreline near the mouth of the Buffalo River, which contains 65 slips, four boat ramp lanes, and boat storage and maintenance facilities; and,
- RCR Yachts, a private marina located along the southern shoreline of the Buffalo Ship Canal, which contains 74 slips and boat storage and maintenance facilities.

##### **Significant Coastal Fish & Wildlife Habitats**

A review of the New York State Division of State (NYSDOS) Division of Coastal Resources website was conducted for significant coastal fish and wildlife habitat sites in the project area. According to the coastal atlas that identifies the sites in New York, the alternatives are not located in any identified significant coastal fish and wildlife habitats, as defined by the NYSDOS Division of Coastal Resources and Waterfront Revitalization. The North Buffalo Harbor, Tifft Farm Nature Preserve, Small Boat Harbor, and Times Beach Diked Disposal Area in the area are identified as significant coastal fish and wildlife habitats. The project alternatives are not located in these Significant Coastal Fish and Wildlife Habitats, as defined by the NYSDOS Division of Coastal Resources and Waterfront Revitalization. Coordination will be conducted with NYSDOS, USEPA Fish & Wildlife Service, and the NYSDEC to determine the potential effects of a bridge both during construction and after completion in these areas.

**State Coastal Zone Management Program**

All the identified alternatives lie within the area covered by New York States Coastal Zone Management Program (CZMP) approved by the Department of Commerce pursuant to the U.S. Coastal Zone Management Act of 1972. These areas are defined by NYSDOS Coastal Zone Management regulations, 19 NYCRR §600.2(c), as the area of land and water described in the state Coastal Zone Management Program as including New York State's tidal coastal waters and the adjacent shore lands to approximately one thousand feet inland. As a result, coordination with New York States Coastal Zone Management agency will be required.

New York State requires that State agencies actions are consistent with policies for the State's coastal areas and inland waterways contained in [Article 42](#) of the State Executive Law, Department of State regulations in [19 NYCRR Part 600](#), and [State Environmental Quality Review Act \(SEQRA\)](#) regulations in 6 NYCRR Part 617.

State agencies must complete a [Coastal Assessment Form](#) (CAF) to assist the State agency in making a determination regarding the consistency of its action with coastal policies or an approved LWRP. The final EIS should be submitted to the DOS along with the CAF and sent to the DOS for review.

**Federal Coastal Zone Management Program**

The Federal regulations that implement the consistency provisions of the Coastal Zone Management Act (CZMA) are found at 15CFR Part 930. These regulations establish the procedures to be followed in order to assure that federal agency activities are consistent with the enforceable policies of the New York State Coastal Management Program. The federal Coastal Zone Management Act (CZMA) requires that each Federal agency activity within or outside the coastal zone that affects any land or water use or natural resource of the coastal zone shall be consistent with New York's federally approved coastal management program.

The types of activities that are covered by these regulations are:

- activities requiring authorizations or other forms of approval from federal agencies;
- activities involving financial assistance from federal agencies.

Federal consistency provisions apply to activities both in the State's coastal area and outside of the coastal area when the activities would affect coastal resources or coastal land and water uses (see 15 CFR 930.11(b) and 15 CFR 930.11(g)). Anyone who applies for a federal agency license or permit, including authorizations, certifications, approvals, leases, or other forms of permission, is required to submit a certification that the proposed activity is consistent with all applicable State coastal policies.

The consistency certification must include:

- a completed Federal Consistency Assessment Form (FCAF);
- an identification of coastal policies affected by an applicant's proposed activity;
- a brief assessment of the effects of the activity on the applicable policies; and,
- a statement indicating how the activity is consistent with each applicable policy.

This certification and all other data and information necessary to assess the coastal effects of a proposed activity will be submitted in an application to the federal agency. Applicants are also required to submit a copy of the federal application, the consistency certification, and the other necessary information and data to the Department of State at the same time it is submitted to the federal agency. Since the project will be the subject of an Environmental Impact Statement (EIS), the final EIS will be required for the Department to formally initiate its review. The Department of State is required to review the proposed activity and consistency certification. The Department will then make a decision whether the proposed activity is consistent with the applicable policies of the CMP.





Federal consistency provisions preclude federal agencies from authorizing any activity if the Department of State determines the activity is not consistent with the State's coastal policies or special management area plans, such as Local Waterfront Revitalization Programs that are approved elements of the State Coastal Management Program.

#### **State Coastal Erosion Hazard Area**

The Department of Environmental Conservation (NYSDEC) implements the Coastal Erosion Hazard Areas program wherein it identifies coastal erosion hazard areas and establishes standards for the issuance of coastal erosion management permits to control certain activities and development in those areas under 6 NYCRR Part 505, Coastal Erosion Management Regulations. It has been determined, and confirmed by the NYSDEC, that the project is not within a coastal erosion hazard area.

#### **Waterfront Revitalization and Coastal Resources Program**

New York States CMP authorizes local municipalities to draft and adopt Local Waterfront Revitalization Programs (LWRPs) for the portion of the coastal zone within their jurisdiction. These programs are intended to assess the applicability and expand on the state policies as they relate to specific local conditions associated with the coastal zone. The City of Buffalo's has prepared a Draft Local Waterfront Revitalization Program dated January 26, 2007. While draft, coordination with this plan should be performed, including a notification to the City of Buffalo Office of Strategic Planning that the project will occur within the boundaries of its Draft LWRP. The municipality is continually being consulted and will continue to be consulted throughout the design phase to ensure consistency with their proposed program though a formal request for a coastal consistency determination from the City of Buffalo is not required at this time.

A review of this planning document specifically identifies and states as a policy standard (Standard 9.1(D)(7)): Improve public access from downtown Buffalo and the Inner Harbor area to the Outer Harbor for both pedestrian, bicycles and motorized vehicles. Therefore, the Buffalo Harbor Bridge proposal and series of alternatives is consistent with the draft program and policy standards.

#### **Federal Coastal Barrier Resources Act (CBRA) and Coastal Barrier Improvement Act (CBIA).**

The Coastal Barrier Resources Act (CBRA) establishes certain coastal areas to be protected by prohibiting the expenditure of Federal funds for new and expanded facilities within designated coastal barrier units. None of the alternatives are located in, or near a coastal area under the jurisdiction of the Coastal Barrier Resources Act (CBRA) or the Coastal Barrier Improvement Act (CBIA).

#### **4.4.7 Aquifers, Wells, and Reservoirs**

##### **Aquifers**

NYSDEC aquifer GIS data files have been reviewed and it has been determined that the proposed project alternatives are not located in an identified Primary Water Supply or Principal Aquifer Area. No further investigation for NYSDEC designated aquifers is required.

A review of the EPA-designated Sole Source Aquifer Areas Federal Register Notices, Maps, and Fact Sheets indicates that the proposed project alternatives are not located in a Sole Source Aquifer Project Review Area. No federal review and/or approvals are required pursuant to Section 1424(e) of the Safe Drinking Water Act.

##### **Drinking Water Supply Wells (Public and Private Wells) and Reservoirs**

There are no known municipal drinking water wells, wellhead influence zones, or reservoirs within or near the project area, and according to the NYS Atlas of Community Water System Sources, dated 1982, issued by the NYS Department of Health.



#### **4.4.8 Stormwater Management**

Projects that disturb soils and increase the extent of impervious surfaces have the potential to affect the quality and quantity of stormwater run-off that may discharge into subsurface or surface waters. The proposed alternatives will be screened individually to indicate whether stormwater permits will be required. It is anticipated that the build alternative will cause soil disturbance to more than one acre of land, therefore, the project will require a NYSDEC State Pollutant Discharge Elimination System Phase II (SPDES) General Permit for Stormwater Discharges from Construction Activities (GP-0-08-001). Soil disturbance includes grading existing vegetated areas, as well as the removal of existing pavement that exposes soil or disturbs the bottom 6" of subbase material. A SPDES II Permit with a full Storm Water Pollution Prevention Plan (SWPPP) will be required, which consists of; 1) erosion and sediment control plan; 2) water quality volume control; and 3) water quantity volume control. Additionally, permanent stormwater quality practices will be required. This permit will be applied for during later phases of the project prior to construction.

All of the alternatives involve construction within areas that drain to the Buffalo River and City Ship Canal near their confluence with Lake Erie and the Niagara River. The Buffalo River is identified as a Class C waterway. This classification does not require a NYSDEC Article 15 Protection of Waters because of water quality. However, since excavation and placement of fill in navigable waters is anticipated an Article 15 Protection of Waters permit is necessary for this regulated activity.

During construction, the surface water quality will be protected and impacts to resources will be minimized by implementing appropriate erosion and sediment control measures, storm water management practices, and best management practices (BMPs). These controls and practices will include: (1) temporary soil erosion and sediment control measures including silt fencing, silt curtains, inlet protection, placement of hay bales where appropriate, and covering all exposed soils with mulch and re-seeding as quickly as possible; (2) permanent soil erosion and sediment control through the use of perennial vegetative cover, along with the stabilization of the bank as necessary; (3) staging all construction vehicles as far away as practical from the creek bed and banks; (4) the careful refueling of construction equipment and staging of fuels in a manner consistent with all relevant regulations; and, (5) all excess (staged) materials shall be surrounded by silt fencing, stabilized or promptly removed to prevent sediment transport. Stormwater management will comply with the NYSDEC Stormwater Management Design Manual, Chapter 5 and the NYSDOT Standard Specifications, Section 209, Temporary Soil and Erosion Control.

The Federal Clean Water Act requires states to periodically assess and report on the quality of waters in their state. Section 303(d) of the Act also requires states to identify Impaired Waters, where specific designated uses are not fully supported. For these Impaired Waters, states must consider the development of a Total Maximum Daily Load (TMDL) or other strategy to reduce the input of the specific pollutant(s) that restrict waterbody uses, in order to restore and protect such uses. The Buffalo River is on the Final New York State 2008 Section 303(d) List of Impaired/TMDL Waters. The list identifies those waters that do not support appropriate uses and that require development of a Total Maximum Daily Load (TMDL) or other restoration strategy. Therefore, this project will be evaluated for water quality treatment practices to reduce pollutant and phosphorous loadings.

Potential impact on surface water quality associated with the project would be the result of stormwater runoff and associated pollutants. Pollutants generated by the project could include deicing salts, particulates, nutrients, heavy metals, and hydrocarbons, including polynuclear aromatic hydrocarbons (PAH's). Sources of the pollutants include road surface material, vehicle exhaust and degradation, lubrication system losses, roadway maintenance activities, and by-products of combustion. Of these pollutants, deicing salts are considered a primary pollutant due to the potential quantity of salts applied to the roadway during snow removal operations, and since it is potentially the most difficult to mitigate. However, based on the large Buffalo River watershed of approximately 440 square miles and minor



increases in lane-miles from pavement widening and construction of the bridge, a "Toler Analysis" quantifying the effects of deicing salts and a "FHWA Pollutant Loadings and Impacts from Highway Stormwater Runoff Analysis" are not anticipated to be required for the project.

#### **4.4.9 General Ecology and Wildlife Resources**

##### **Fish, Wildlife, and Waterfowl**

Aquatic and terrestrial habitats within the Buffalo Harbor Bridge Project Area and vicinity are generally in poor condition (BNR, 2008) due to historic habitat and water quality impacts. Fish reproduction in the harbor has been severely hindered by the manmade shoreline and dredged navigational channel. Because the entire shoreline is modified, with over 75 percent containing bulk heading or riprap, there is no natural vegetation or suitable cover substrate. Shallow spawning areas is lacking with less than 5 percent of the harbor less than six feet deep (BNR, 2008). The condition of the fishery at the Buffalo Harbor Project Area was rated as poor to fair (BNR, 2008). The only priority fish identified during 2004 sampling of the lower Buffalo River include yellow perch (adult and larvae) and walleye (adult) (BNR, 2008). An Index of Biotic Integrity (IBI) score for all sites sampled in Buffalo River was "poor" to "very poor" (BNR, 2008). The harbor benthic invertebrate community is dominated by pollution-tolerant sludge worms and midge larvae, and lacks pollution-intolerant mayfly and stonefly nymphs. Aquatic habitat was rated as poor in 1990s, and has continued to decline in subsequent decades due to industrial pollution, lack of vegetation, low dissolved oxygen (DO) (<4 mg/L) levels, high turbidity, and continued navigational dredging (BNR, 2008). Low DO levels in the channel are related to stratification in the Buffalo River at low flow conditions, high sediment oxygen demand, and long residence time of water due to system hydraulics created by dredging (BNR, 2008).

The Buffalo Harbor Bridge Project Area contains little terrestrial wildlife habitat as most of the area is built out with industrial buildings, roads, businesses, marinas, and parking lots. In the Outer Harbor Area, there is vacant land within 100-year floodplain that currently lacks structures and may have served as an old industrial site. cursory review of aerial photography shows that it contains some vegetation, including tree cover, but is used extensively by off road vehicles. It may provide minimal habitat for generalist species and those adapted to urban landscapes. The only substantial wildlife habitat in the study area is located in the Times Beach wetland, as described below.

##### **Habitat Areas, Wildlife Refuges, and Wildfowl Refuges**

Special habitats in the Buffalo Harbor Bridge Project Area consist of a NYS-regulated wetland at Times Beach, located in the southwest corner of the Project study area (BNR, 2008). The 55-acre former disposal site is now a city-owned nature sanctuary that provides significant coastal wetland habitat to a diversity of birds. In 1993, over 220 species were identified including gulls, terns, shorebirds, dabbling and diving ducks, marsh birds and passerines. Rare or stray species identified include yellow crowned night heron, cinnamon teal, American avocet, and Acadian flycatcher. Times Beach also includes a boardwalk and wildlife viewing blind overlooking the open water. Although the wetland provides habitat, its overall value is diminished by heavily contaminated soils with heavy metals and organo-chlorine that remain due to its use as a dredge spoils site (BNR, 2008).

Just southeast outside of the project study area is Tifft Nature Preserve and adjacent wetlands, including a 75-acre marsh with open ponds, brush and thickets, grassland and forested areas (BNR, 2008). In 1993, the marsh supported 63 species of breeding birds and 190 migratory species, and historically supported black terns (until late 1970s). It currently supports several rare species or "species of greatest conservation need (SGCN)" in NYS, including American bittern, American woodcock, black-crowned night heron, blue-winged teal, pied-billed grebe, and willow flycatcher (BNR, 2008).

##### **Invasive Species**

Highway clear zones provide a conduit for the propagation of invasive plant species. These plants, which are often noxious, crowd out native vegetation and damage habitats. Japanese Knotweed (*Polygonum cuspidatum*) is known to be within the project area.

**Endangered and Threatened Species**

In their May 15, 2009 correspondence to the Federal Highway Administration (FHWA) the U.S. Fish and Wildlife Service (USFWS) stated that there are no threatened or endangered species listed in Erie County.

On April 13, 2009, the New York State Department of Environmental Conservation (NYSDEC) provided a general environmental screening of the locations proposed for possible sites for the bridge. NYSDEC did not identify any state-protected, threatened, or endangered species in or near the proposed project area, although the letter did not explicitly state that there were no issues. In development of the DEIS, NYSDEC will be contacted to verify the status of state endangered or threatened species potentially affected by the project.

**Potential Issues**

The Buffalo Harbor Bridge Project has some potential to affect wildlife species in the area, depending on location and design elements. Although the Times Beach wetland and nearby Tifft Nature Preserve and surrounding wetlands will not experience direct impacts from bridge replacement, the wetland areas are a potential source of bird traffic that may attract birds flying to and from the wetlands to the proposed bridge proximity. The USFWS (May 15, 2009) stated, "tall structures such as buildings, towers, smokestacks, and bridges can adversely affect wildlife including migratory and resident birds". The USFWS recommends that the height of the bridge be limited to reduce impacts to migratory birds. There are existing bridges and tall buildings in the vicinity. Of the alternatives that include construction of a new bridge, designs consist of a low-level moveable bridge that would not be significantly higher than the existing infrastructure. However, the height at which a structure becomes a threat has not yet been defined for this project. In developing the DEIS, NYSDOT will consult with USFWS and NYSDEC to assess possible impacts to birds, and will identify design alternatives to minimize impacts.

Buffalo Harbor is within the Atlantic migratory fly zone for bird species migrating between north and south. Potential resting and foraging sites along the primary routes, such as at Buffalo Harbor, are integral during migration. Therefore, in development of the DEIS, available information on migratory behavior of species in the region will be reviewed and NYSDOT will consult with USFWS and NYSDEC regarding potential impacts to migratory birds due to any proposed tree removal. NYSDOT will seek alternatives that minimize such impacts.

Buffalo River Harbor may be suitable for spawning of yellow perch and walleye (BNR, 2008). NYSDOT will prioritize designs that place bridge abutments and piers above the ordinary high water mark, as requested by USFWS (May 15, 2009 correspondence with FHWA). During development of the DEIS, NYSDOT will consult with USFWS and/or NYSDEC to conduct an assessment of possible impacts to these species and potential spawning habitat in the alternative bridge areas, and will identify measures to mitigate them. However, if permanent structures become necessary within the channel to support the bridge, NYSDOT will seek designs to reduce construction impacts to the aquatic environment including using cofferdams and weighted turbidity curtains around the work area, if necessary.

**4.4.10 Critical Environmental Areas**

As stated in Section 4.4.1 Wetlands, a 46-acre Class 1 wetland is located at Times Beach Nature Preserve BU-3; and an 89-acre Class 1 wetland is located at the Tifft Farm Nature Preserve BU-15. These areas will be protected and identified in the DEIS. There are no State Forest Preserve Lands in the project area.

**4.4.11 Historic and Cultural Resources****National Heritage Areas Program**

The City of Buffalo is part of the Erie Canalway National Heritage Corridor. The Erie Canalway National Heritage Corridor encompasses New York's canal system and the communities that grew along its route. The entire City of Buffalo is within the Heritage Corridor. The Erie Canalway National Heritage Corridor





Commission is pursuing designation of the Barge Canal as a Historic District first, and will then consider preparing a Multiple Property Listing for the historic canal eras.

The Erie Canalway National Heritage Corridor management plan received approval from the Governor of New York and the Secretary of the Interior, thus making it possible to begin implementation in June 2006. The Erie Canalway National Heritage Corridor Commission will be contacted regarding the Heritage Area to see if the project is consistent with the existing Heritage Area Management Plan.

**National Historic Preservation Act – Section 106 / State Historic Preservation Act – Section 14.09**

A number of historic properties, listed or eligible for listing in the National Register of Historic Places, exist within or adjacent to the project's area of potential effect. There are six National Register listed properties within the Area of Potential Effect (APE). Three of these are ships, moored within the APE. The remnant of the Buffalo Gas Light Company Works has been integrated into a newly built office building. Additionally, the Buffalo Main Light and the E & B Holmes Machinery Company Building are located in the Project Area.

There are at least ten (table below) additional listed properties in the general area of the APE. It is unlikely that any of these properties will be directly affected by the proposed construction.



Figure 4-1

**National Register Listed Properties within and adjacent to the APE**

Map Pt.	NR #	Site Name
NR1	90NR01230	Buffalo North Breakwater South End Light
NR2	90NR01228	Buffalo Main Light
NR3	90NR01207	USS The Sullivans (Destroyer)
NR4	97NR01143	Edward M. Cotter (Fireboat)
NR5	08NR00597	E&B Holmes Machinery Company Building
NR6	02NR05021	Concrete Central Elevator
NR7	08NR05869	USS Croaker (Submarine)
NR8	98NR01425	Buffalo City Hall
NR9	90NR01232	Buffalo Gas Light Company Works
NR10	90NR01225	County and City Hall
NR11	90NR01216	Prudential Building
NR12	08NR05952	J.N. Adams AM&As Historic District
NR13	90NR01212	U.S. Post Office
NR14	90NR01211	St. Paul's Cathedral
NR15	90NR01211	St. Paul's Episcopal Cathedral
NR16	90NR01235	Durham Memorial AME Zion Church

There are numerous National Register eligible properties within or adjacent to the project's area of potential effect. In the table below "I" indicates properties that have been determined individually eligible for listing while a "D" indicates that the property is, or is part of, and eligible district. In addition to the properties, listed below is the National Register eligible Erie Canal Harbor Archaeological District is located within the Project Area. The district is bounded by Erie Street, Main Street and the Buffalo River. Two properties within the district that are individually eligible include the Commercial Slip and the Inner Harbor Prehistoric Site which is located beneath the new museum on Commercial Street adjacent to the slip. Survey work within the District is ongoing and additional sites may be determined individually eligible in the future.

**National Register eligible properties within the APE**

Map Pt.	USN #	Address	Determination
NRE1	02940.003037	51 Erie St (New York Telephone Building)	D
NRE2	02940.002958	66-68 Erie St (Baker Building)	D
NRE3	02940. 006746	32 Illinois (Oldman Boiler Works)	I
NRE4	02940.023343	170 Ohio St (Swannie House)	I
NRE5	02940.023513	389 Ganson St (Kellogg, Spencer Elevator)	I
NRE6	02940.023512	385 Ganson St (Agway/GLF Elevator and Mill)	I
NRE7	02940.023514	54 South Michigan Ave. (General Mills Elevator)	I
NRE8	02940.000076	250 Ganson St - Great Northern Elevator	I
NRE9	02940.000081	60 Childs St (Electric Elevator)	I
NRE10	02940.023700	630 Ohio St (Truck/Train Transfer Building)	I
NRE11	02940.006734	901 Fuhrmann Blvd (Buffalo Port Terminal)	I
NRE12	02940.023702	975 Fuhrmann Blvd (Freezer Queen Foods)	I

There are at least eleven primarily historic period archaeological sites within the APE which have no eligibility determinations. In many cases, this was due to a lack of data. If the project will have an adverse





effect on these sites then additional data may be required in order for the FHWA and NYSHPO to make an eligibility determination.

There are also a 23 archaeological sites within a one-mile radius of the project's area of potential effect. It is unlikely that the proposed construction will impact any of these sites.

The Buffalo Harbor Bridge Project is a federally funded action which involves a federal permit, or is state funded with the possibility of becoming federally funded; the Section 106 Process of the National Historic Preservation Act is required. This ensures compliance with the NYSHPA Section 14.09 process.

### **Architectural Resources**

A limited architectural survey is being conducted as part of the Phase I cultural resources survey of the project's area of potential effect. Initially, the architectural field survey will focus on properties within or immediately adjacent to the anticipated impact areas of the project alternatives. If potentially National Register eligible structures are identified in areas that may be impacted by project construction, then sufficient data will be transmitted to the FHWA and NYSHPO to make their determinations regarding the structure's National Register eligibility. The results of the reconnaissance survey and any National Register eligibility determinations will be included in the DEIS. Since there are National Register listed and eligible structures in the project area of potential effect, a 4(f) evaluation will be required for the affected structures. Any National Register listed or eligible structures that can not be avoided by construction may require actions to mitigate construction impacts.

### **Archaeological Resources**

A Phase I archeological survey is being conducted to determine the presence of unrecorded archaeological resources in the project's area of potential effect. Field testing will take place in areas that may be impacted by construction alternatives and where previous disturbance can not be documented in those areas. If potentially National Register eligible archaeological sites are identified in areas that may be impacted by project construction, then a Phase II survey will be conducted to determine the geographical limits of the site and whether it is National Register eligible. The results of the reconnaissance survey and any National Register eligibility determinations will be included in the DEIS. Since there are National Register listed and eligible archaeological sites in the project area of potential effect, a 4(f) evaluation will be required for archaeological resources. Any National Register eligible sites that can not be avoided by construction may require a Phase III data recovery to mitigate construction impacts.

### **Historic Bridges**

There are no bridges over 50 years old or listed on NYSDOT's Historic Bridge Inventory that are located within the project's area of potential effect. However, there are two bridges within the APE: the Ohio Street Lift Bridge and the Michigan Avenue Lift Bridge. The Ohio Street Lift Bridge was built in 1962 replacing bascule bridge which was built in 1904. The Michigan Avenue Bridge was built in 1960 replacing a previous lift bridge built in 1933. Both of these bridges will become NRHP eligible in the next two years. According to NYSDOT's Historic Bridge Inventory & Management Plan, all lift bridges (50+ years old) are considered to be eligible unless they have a significant integrity problem, which these bridges do not have.

### **Historic Parkways**

This project does not have potential to impact any Historic Parkways.

### **Native American Involvement**

In accordance with the American Indian Religious Freedom Act of 1978 (amended 1994), the project alternatives are being advanced such that they will not interfere with Native Americans' inherent right of





freedoms, including but not limited to access to sites, use and possession of sacred objects, and the freedom to worship through ceremonials and traditional rights.

The proposed project's area of potential effect contains Federal, Tribal, or Indian-owned property. The Archaeological Resources Protection Act of 1979 applies but conformance with this Act is covered in the Section 106 Process of the National Historic Preservation Act (36 CFR 800). The area of potential effect is within the former location of the Buffalo Creek Reservation and traditional cultural properties may be involved. Consultation with the Seneca Tribal Historic Preservation Officer (THPO) will take place as part of the Section 106 process.

#### **Section 4(f) Involvement**

As discussed above, there are numerous historic properties that are listed in, or eligible for listing in, the National Register of Historic Places located within the project's area of potential effect. It is likely that the Section 4(f) evaluation will apply to this project.

#### **4.4.12 Parks and Recreational Resources**

##### **Park and Recreational Resources**

Existing Parks and Recreational Resources are described in Section 2.3.2.5 and are being evaluated. The DEIS will include the extent of Parks and Recreational Resources adjacent to and near the retained alternatives and will identify affects of the design alternatives to those resources.

##### **State Heritage Area Program**

Buffalo is one of the eighteen State Heritage Areas in New York State based on its unique contribution to the history and culture of the state. Each site is administered locally, with support from the NYS Office of Parks, Recreation and Historic Preservation (OPRHP) under what used to be called the Urban Cultural Parks program. Matching grants are available for projects to preserve, rehabilitate or restore lands, waters or structures, identified in a management plan approved by the Commissioner of OPRHP. Projects must fall within a New York State Designated Heritage Area.

The proposed project is located in Buffalo, a State Heritage Area. The Administering Body or OPRHP will be contacted to determine if a Heritage Area Management Plan for the City of Buffalo exists. If so, the plan will be reviewed to ensure that the project is consistent with the goals identified for the area.

##### **National Heritage Areas Program**

The proposed project is located in the Erie Canalway National Heritage Corridor. Please refer to 4.4.11 Historic and Cultural Resources – "National Heritage Area Program," for detailed information on the Heritage Area, potential impacts, and coordination with the management entity.

##### **National Registry of Natural Landmarks**

There are no listed nationally significant natural areas within, or adjacent to, the project area.

#### **Section 4(f) Involvement**

The Department of Transportation Act (DOT Act) of 1966 included a special provision - Section 4(f) - which stipulated that the Federal Highway Administration (FHWA) and other DOT agencies cannot approve the use of land from publicly owned parks, recreational areas, wildlife and waterfowl refuges, or public and private historical sites unless the following conditions apply: There is no feasible and prudent alternative to the use of land; and the action includes all possible planning to minimize harm to the property resulting from use. Section 4(f) of the Department of Transportation (DOT) Act of 1966 was set forth in Title 49 United States Code (U.S.C.), Section 1653(f). A similar provision was added to Title 23 U.S.C. Section 138, which applies only to the Federal-Aid Highway Program.

Verification of publicly owned parks within the proposed project area will be evaluated in the DEIS. Once a final determination is made, Individual 4(f) evaluation(s) will be completed if required. For other 4(f) involvement, see Section 4.4.11

**Section 6(f) Involvement**

Section 6(f) protects publicly owned parks or improvements to parks where Land and Water Conservation Funds were used. Only improvements made to specific parcels within the park that was acquired or improved with Land and Water Conservation Funds apply. If impacts to 6(f) protected property is determined, mitigation may be to replace the impacted property in kind. Verification of impacts to parklands or facilities that have been partially or fully federally funded through the Land and Water Conservation Act will be completed in the DEIS. If impacts are found, consideration under Section 6(f) may be required.

**Section 1010 Involvement**

Significant funds have been awarded to the City of Buffalo through the Urban Park and Recreation Recovery (UPARR) program; however, this project does not involve the use of land from a park to which UPARR Program funds have been applied.

**4.4.13 Visual Resources**

The Visual Impact Assessment (VIA) will describe the existing visual environment and evaluate positive and negative impacts of the alternatives being considered. The VIA will analyze the degree of change in the visual resources caused by the project and will identify the probable viewer reactions to the changes. The visual resources analysis will be prepared in accordance with FHWA's guidance in *Visual Impact Assessment for Highway Projects, 1981*.

**Effects Assessment**

The DEIS will include an assessment of the alternatives' impact on, or enhancement of visual resources. The assessment will focus on impacts and enhancements at key locations within and outside of the study area from which each of the alternatives' components will be visible. The analysis will include the identification of key visual resources, views, view corridors, and viewer groups. Photographs will be taken at select viewing locations for each alternative to document the existing view and potential changes. Views will be chosen for their ability to effectively convey representative existing conditions and to illustrate the impacts of the proposed bridge alternatives on the visual environment in a range of typical locations. Visualizations will be prepared that simulate the view after construction of the alternative. Potential changes to the visual character will be analyzed and described for each view.

**Mitigation Summary**

Evaluation of mitigation techniques for minimizing negative visual impacts will be identified including buffering; alteration of vertical and horizontal alignments; landscape treatments; and design elements including material choices, color, and finish.

**4.4.14 Farmlands**

The project is located within the City of Buffalo and there are no State Farmland and Agricultural Districts, Federal Prime or Unique Farmland. No further review is required.

**4.4.15 Air Quality****Regulatory Framework**

The conformity requirements for local transportation plans and the proposed project are found in Section 176 of the Clean Air Act Amendments of 1990 (CAAA90) and 40 CFR Parts 51 and 93-Criteria and Procedures for Determining Conformity to State or Federal Implementation Plans of Transportation Plans, Programs, and Projects Funded or Approved Under Title 23 U.S.C. or the Federal Transit Act. The SEQRA and NEPA review process requires that this project meet the conformity requirements of the State Implementation Plan (SIP) for New York State. The SIP was prepared in order to achieve the mandated goals of meeting and maintaining the National Ambient Air Quality Standards (NAAQS).

**Transportation Conformity**

The proposed project is located in Erie County, which is part of the Greater Buffalo-Niagara Region. The USEPA has designated the Greater Buffalo-Niagara Region as in attainment for carbon monoxide and particulate standards. However, with respect to ozone, the USEPA has designated the Greater Buffalo-Niagara Region as an ozone non-attainment area. As an ozone non-attainment area, the region is subject to conformity procedures and the Greater Buffalo-Niagara Regional Transportation Council (GBNRTC) is required to continue to perform air quality analysis for Erie and Niagara County on all projects listed under the Transportation Improvement Plan (TIP). The proposed project, located in an ozone "non-attainment" area and considered "non-exempt", is subject to the conformity requirements of the CAAA90 and 40 CFR Parts 51 and 93. Generally, the conformity determination must demonstrate that the plan or program conforms to an applicable SIP for air quality and that those plans or programs, based on detailed analysis of potential air quality impacts, will improve the region's air quality.

Consequently, Greater Buffalo-Niagara Region Transportation Improvement Plan (TIP) conformity guidelines require that a quantitative air quality analysis be undertaken for each pollutant that exceeds the standards. The 2008-2012 TIP was endorsed by the GBNRTC and received a positive conformity determination from the Federal Transit Administration (FTA) and the Federal Highway Administration (FHWA). This current five-year program demonstrated reduced mobile source emissions, contributed to the improvement of the area's overall air quality, and is consistent with the current SIP for air quality. The proposed project was included in the original 2008-2012 TIP and neither the design, scope or concept of the project have changed significantly since the conformity determination was made. Therefore, pursuant to 23 CFR 770, this project conforms to the SIP.

**Carbon Monoxide (CO) Microscale Analysis**

To determine whether the project is subject to a microscale air quality analysis, the feasible build alternatives will be reviewed and a screening will be performed in accordance with the NYSDOT EPM. The screening will consist of reviewing the Level of Service changes, capture criteria, and traffic volume thresholds. This screening process is performed to identify projects that have a potential for local air quality impacts and warrant the performance of a microscale air quality analysis.

**Mesoscale Analysis**

If the project significantly affects traffic conditions over a large area (i.e. regionally significant), it is also appropriate to consider regional air quality effects of the project by way of a mesoscale analysis. Mesoscale analysis (regional air quality) covers a geographic area that is larger than the immediate project area, but smaller than the entire network system. The size of the analysis area would depend upon the scale and scope of the project, but it should include at a minimum, all the roadways that are affected by the project. A mesoscale analysis would consider the regional effects for all five air pollutants (PM<sub>2.5</sub>, PM<sub>10</sub>, CO, VOC, and NO<sub>x</sub>). Therefore, the feasible build alternatives will also be screened to determine if a quantitative mesoscale analysis should be performed.

**Other Air Quality Analyses**

Due to the scale and scope of the project, screening will also be performed to determine if the following analyses are required: Mobile Source Air Toxics (MSATs) Analysis, Particulate Matter (PM) Analysis, and Greenhouse Gas Analysis.

**4.4.16 Energy****Regulatory Framework and Guidance**

The NEPA and SEQRA processes require review of environmental considerations including energy impacts. The State Energy Plan, adopted in 2002, calls for the State's transportation sector to be more energy efficient and sets goals for reducing consumption. Accordingly, the potential energy effects of the reconstruction and operation of the roadway network within the project study area will be considered in comparison with taking no action (the No-Build alternative).



This project will be reviewed with respect to the Draft Energy Analysis Guidelines for Project-Level Analysis, NYSDOT, November 25, 2003, Executive Order 12185, and the Draft Project-Level Energy Analysis Guidelines, 2003.

### **Energy Analysis**

The NYSDOT criteria for determining which projects may require a quantitative energy analysis include:

- Regional significance
- Projects identified through the scoping process
- Nature of the project
- Existing problems in energy supply or distribution

Of the criteria above, this project has a potential for regional significance. One of the indicators of potential regional significance is a transportation facility construction cost of \$50 million or more. Since this project has a potential construction cost of more than \$50 million, a project-level screening will be required to determine if a quantitative energy analysis would be appropriate. The project-level screening to indicate whether the project is expected to significantly affect energy consumption will involve evaluation of whether the project will:

1. Increase or decrease vehicle miles traveled (VMT);
2. Generate additional vehicle trips;
3. Significantly affect land use development patterns;
4. Result in a shift in travel patterns; or
5. Significantly increase or decrease vehicle operating speeds.

If it is determined that a quantitative energy analysis will be required, the energy analysis should follow the procedures outlined in the NYSDOT's Draft Energy Analysis Guidelines for Project-Level Analysis, identified above. The purpose of the analysis is to determine the direct and indirect energy consumption associated with the No-Build alternative and the proposed build alternatives. However, at this time, it is anticipated that this project will require only a qualitative energy analysis and affects assessment.

### **Qualitative Energy Analysis and Affects Assessment**

The qualitative energy analysis for the project will consider the direct and indirect energy consumed by the alternatives in order to compare the impacts of the future and current conditions of the study area. Direct energy impacts refer to the use of the roadway apart from construction, and include the energy consumed by vehicles using the roadway. Indirect energy impacts include the energy required to construct and maintain the roadway.

Generally, over time the energy impacts of direct energy consumption (traffic) generally outweigh the impacts of indirect energy consumption (construction/maintenance). There will be a slight increase in energy consumption during construction; however, the most substantial contributor to energy consumption for a transportation project is traffic flow. Energy usage is impacted by the number and efficiency of vehicles traveling through the study area. Further, transportation problems such as "stop-and-go" traffic congestion represent a large contributor to the total energy consumed.

Current peak-hour traffic flow patterns on the corridor show minor delays in some areas. Under the No-Build Alternative, future projections on traffic flow for the estimated time of completion and beyond show minor increases in congestion (inefficiency and higher direct energy consumption). In addition, the No-Build Alternative would not reduce the current rising indirect energy consumption due to maintenance on the roadway.

Qualitative consideration will be given to implementation of the feasible build alternatives and how they would affect traffic flow and overall energy consumption. If the build alternatives offer improvements to VMT and traffic flow, free flow traffic efficiency may be improved which would offer a potential for





reduction in direct energy requirements and reduction in long term indirect energy consumption. Additionally, after construction, reconstruction of the roadway may lower the indirect energy consumed for maintenance. However, conversely, if any of the build alternatives impair traffic flow, increase VMT, or increase maintenance requirements, energy consumption would be increased.

The assessment will give an indication of whether the combined total energy usage/fuel consumption would be generally reduced, mainly by optimizing traffic flow to reduce delay from congestion, or increased by other factors. This will indicate whether or not the build alternatives will have a negative or significant impact on the total energy consumption within the proposed project study area.

### **Mitigation Summary**

If the proposed Build alternatives are expected to have a negative or significant impact on the total energy consumption within the proposed project study area, mitigating action (e.g. avoidance, minimizing, rectifying, reducing or eliminating, compensating) will be recommended for energy related effects. Regardless, steps will be taken to reduce energy consumption during construction such as routine maintenance of construction vehicles to improve fuel efficiency, selecting fuel-efficient vehicle and haul routes, and the keeping of lane closures to a minimum.

### **4.4.17 Noise**

#### **Regulatory Framework**

The methods used in this analysis will be in accordance with the provisions and procedures of the policies stated in the federal noise regulations (23 CFR 772), and the NYSDOT Environmental Procedures Manual (EPM) utilizing Part 617 statewide regulations.

#### **Methodology**

The project will be screened to identify whether it is a Noise Regulation Type I project. A Noise Regulation Type I project is a proposed Federal or Federal-aid highway project for the construction of a highway on new location or the physical alteration of an existing highway which significantly changes either the horizontal or vertical alignment or increases the number of through-traffic lanes. If the project is found to be a Noise Regulation Type I project, a noise study will be conducted to assess the impacts of traffic generated noise which may be expected to occur as a result of the proposed project. The procedures followed for this analysis are in accordance with the Federal-Aid Program Guide, 23 CFR 772, "Procedures for Abatement of Highway Traffic Noise and Construction Noise", and the New York State Department of Transportation (NYSDOT), "Noise Analysis Policy".

If a quantitative noise study is performed, a survey of existing conditions will be performed and land uses will be identified to allow for selection of representative residential and non-residential areas for analysis. The identified current land-use categories will be assigned to the properties located within the study area. A review of zoning maps, a site visit, and correspondence with the City of Buffalo will be made to identify existing activities, developed lands, and undeveloped lands for which development is planned, designed, or programmed. If present, particularly-sensitive noise receptors such as residences, schools, and churches will also be identified. In determining noise impacts, primary consideration is given to exterior areas.

#### **Existing Conditions**

If the screening indicates that noise analysis will be necessary, existing noise-level measurements will be conducted at representative receptor sites throughout the study area.

To accurately measure the sound level representative of each site, two measurements of 15-25 minutes will be collected at each site. Measurements will be collected throughout the day, however, each receptor will include at least one measurement during the weekday AM peak hours or weekday PM peak hours to



indicate the worst case noise peak hour for the project. Noise levels recorded by the dosimeter will include the equivalent noise level (Leq).

### **Effects Assessment**

If it is determined that computer modeling will be required, computer models reflecting the field conditions will be created for each site. The FHWA Traffic Noise Model (TNM) computer program will be used for this modeling. After analysis, the noise levels predicted by the TNM models will be compared to the noise levels in the field to verify the ability of the models to predict noise levels at each site. The computer models for each study site will then be modified to reflect the worst case existing and future traffic conditions using the design peak hour volumes, growth rates, and speeds for the project to predict existing and future peak hour traffic-generated noise levels produced by the No-Build and Build Alternatives.

For each alternative, the noise levels predicted using the design year (2028) traffic will then be compared to the FHWA Noise Abatement Criteria (NAC). Receptors at which predicted noise levels approach (within 1 dBA) or exceed the NAC level of 67 dBA will be identified as requiring consideration of noise abatement measures. The future noise levels will also be compared to the existing levels to determine the net increase in noise level. Increases of 6 dBA or more over existing levels also require consideration of noise abatement measures.

### **Mitigation Summary**

If noise impact areas are identified, examination and evaluation of alternative noise abatement measures for reducing or eliminating the noise impacts will be considered. The full range of noise abatement techniques will be considered for acoustic effectiveness, cost, desirability, and feasibility, giving weight to the benefits and cost of abatement, and to the overall social, economic and environmental effects. Abatement measures will be recommended for impacted sites where found to be feasible and reasonable.

Noise abatement considerations that are available include:

1. Traffic management measures such as traffic control devices and signing for prohibition of certain vehicle types, time-use restrictions for certain vehicle types, modified speed limits, and exclusive lane designations.
2. Alteration of horizontal and vertical alignments.
3. Construction of noise barriers.

Mitigation measures to minimize construction noise impacts for short term construction noise will also be discussed.

Preliminary review of the alternatives:

Generally, particularly sensitive noise receptors (e.g. schools, churches, hospitals) are not located adjacent to the proposed construction work for any of the alternatives; however, numerous areas of exterior use have been identified within the immediate area of each alternative which may require noise assessment. Implementation of each individual alternative would result in a dissimilar alteration of traffic patterns. Further investigation will be required, during the EIS process, to identify these traffic patterns and determine the area that will be influenced by each alternative. Once these areas of influence are identified, additional noise receptor study areas may become evident. It is anticipated that the expected increased traffic volumes in the immediate area of each alternative would increase local noise levels to some extent yet to be indicated through noise modeling. For each alternative, exterior areas of frequent human use will be investigated to identify appropriate locations for noise measurement and modeling.

### **No-Build (NB)**

Field noise measurements will be required to indicate whether there are current noise impacts within the study area. Additionally, noise modeling may indicate that new impacts may be



realized in the design year (2028) regardless of whether the build alternatives are constructed. Future noise impacts under this alternative will likely be related to congestion from the normal growth rate of traffic.

#### **Erie Street Bridge (BR-2)**

The following preliminary areas of exterior use have been identified within the immediate area of influence:

- Marine Drive residential apartments.
- Naval Park/Museum.
- Landscaped walkways and bike trails.
- Park like green spaces.
- Scenic overlooks.
- Veteran's memorial.
- Exterior office picnic areas.
- Restaurants with outdoor eating spaces (e.g. Shanghai Reds).
- Marinas/boat docks on both sides of the Buffalo River.
- Historic commercial slip and inner harbor park with interpretative displays.
- Proposed Canal Side project along lower Main Street.
- Adams Mark hotel.
- Times beach trails and boardwalk.
- Coast Guard station sports facilities (e.g. tennis and basketball courts).
- Bike trail along Fuhrmann Boulevard.

#### **Main Street Bridge (BR-3)**

The following preliminary areas of exterior use have been identified within the immediate area of influence:

- Proposed Canal Side project along lower Main Street.
- Light Rail Rapid train stops.
- Historic commercial slip and inner harbor park with interpretative displays.
- Naval Park/Museum.
- Landscaped walkways and bike trails.
- Park like green spaces.
- Scenic overlooks.
- Picnic areas on Kelly Island used by general mills personnel.
- Marina/boat docks on the south side of the Buffalo River.
- Times beach trails and boardwalk.
- Bike trail along Fuhrmann Boulevard.

### **4.4.18 Asbestos**

#### **Screening**

An Asbestos Screening Assessment is being conducted in accordance with NYSDOT Environmental Procedures Manual, Chapter 1.3 and all updates, and New York State Industrial Code Rule 56 (ICR 56). This assessment will be used to document the presence of asbestos containing materials in affected structures and the affiliated roadway corridor.

The Asbestos Screening Assessment typically includes:

- A review of impacted structures (buildings, bridges, culverts, and utilities) to develop an Asbestos Sampling Plan for review and approval.
- A review of available record plan drawings.
- Communications with project designers to determine if utilities will be affected by the project and if so, determine if they contain asbestos containing materials (ACM).



A formal Asbestos Sampling Plan cannot be prepared until the preferred alternative is identified, structures are selected for demolition, and access can be obtained into each building.

### **Assessment and Quantification**

Based upon the age of the structures and utilities in project area, ACM should be anticipated to be present in any structure affected by the project. A review of the alternatives and assessment of possible asbestos impacts has identified the following:

#### **No-Build (NB)**

Under this alternative no impacts are anticipated.

#### **Erie Street Bridge (BR-2)**

The proposed alignment will determine the extent of probable ACM that will be impacted by this alternative. The First Buffalo River Marina has a large structure at the northernmost end of their property. Several small structures are located at the eastern end of the Coast Guard property where it meets the First Buffalo River Marina. A formal asbestos survey will be conducted for any of these structures affected by the project. Any affected utilities would also need to be reviewed.

#### **Main Street Bridge (BR-3)**

This alternative may affect the former Connecting Terminal Railroad Elevator portions of which were built in 1915 and 1954. This structure is apparently now owned by the marina that surrounds it. Any work associated with the grain elevator would require a formal Asbestos Sampling Plan and Survey. Any affected utilities would need to be reviewed.

### **Mitigation Summary**

If asbestos is determined to be present on the project, special notes and specifications will need to be prepared by a consultant with an NYS Department of Labor asbestos designer license.

### **Handling and Disposal**

Impacts of the any of the project alternatives would be limited to the construction phase and may include protection of on-site workers and disposal of asbestos materials removed during demolition or subsequent construction activities.

#### **4.4.19 Contaminated and Hazardous Materials**

##### **Screening**

A Hazardous Waste/Contaminated Materials Site Screening is being conducted in accordance with NYSDOT Environmental Procedures Manual, Chapter 5, in order to document the likely presence or absence of hazardous/contaminated environmental conditions. A hazardous/contaminated environmental condition is the presence or likely presence of any hazardous substances or petroleum products (including products currently in compliance with applicable regulations) on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, ground water, or surface water of the property.

The Hazardous Waste/Contaminated Materials Site Screening will include:

- A review of NYSDEC and USEPA regulatory data files.
- A walkover reconnaissance of each of the proposed alternatives.
- A review of local municipal records including city directories.
- A review of historical aerial photographs.
- A review of available Sanborn Fire Insurance maps.
- A review of topographic, wetland and other maps.





- Review of any identified and readily ascertainable environmental reports for subject properties and areas of concern in proximity to the alternative bridge crossings.
- Interviews with local fire, health, and regulatory agency (e.g., NYSDEC, US ACOE) department officials.

Numerous studies and investigations have been previously performed for other projects in the area. The EIS will include a listing of the reports identified and reviewed in context of this assessment.

### **Assessment and Quantification**

The Buffalo Harbor Bridge study area encompasses a region with a long history of commercial and industrial uses, a history of physical alterations including filling activities and the potential to act as sources of contamination. It should be noted that many of the known inactive hazardous waste sites are upstream of the study area but these sites have contributed to the contamination of the study area as described below through the conveyance of contaminants along the Buffalo River.

Based on previously completed studies dating back to the 1980's, the USEPA has designated the Buffalo River and City Ship Canal as Areas of Environmental Concern (AOC) in the vicinity of each bridge alternative. The Buffalo River and its sediments have been impaired by past industrial and municipal discharges and disposal of waste. Numerous reports have been completed on the AOC and are posted on the internet. Much of this information is summarized in the 2005 Status Report titled, "Buffalo River Remedial Action Plan" and the December 2007 "Draft Field Sampling Report for the Lower Buffalo River, City Ship Canal and Confluence Area". From work completed by the New York State Department of Environmental Conservation, US Army Corps of Engineers, US Environmental Protection Agency and numerous smaller historical investigations the bottom sediments in the Buffalo River and City Ship Canal are known to be contaminated with PCBs, various semi-volatile organic polynuclear aromatic hydrocarbons, industrial volatile organics and heavy metals. A number of figures are available that depict contaminants present along both these bodies of water in the vicinity of all of the alternatives.

Sediment contamination typically varies by location and depth with deeper sediments often exhibiting higher contaminant concentrations. These studies infer that contaminants may be anticipated to be as bad or worse in the City Ship Canal since this water body has no appreciable flow and is dredged less frequently than the Buffalo River. The City Ship Canal is maintained by the USACOE since the majority of the canal is considered a federal navigation channel. The federally authorized portion is 125 feet wide and 5500 feet in length (total canal length is approximately 7400 feet), with a depth of 23 feet.

It is recommended that all the preferred alternative(s) include a Hazardous Waste/Contaminated Materials Detailed Site Investigation (DSI) of the bottom sediments in the precise area where sediments may be disturbed by construction. Currently the contaminants found in the river prevent open lake disposal of dredged spoils.

### **No-Build (NB)**

Under this alternative no impacts are anticipated.

### **Erie Street Bridge (BR-2)**

Contaminated river sediments and the costs to manage and properly dispose of any excavated materials will have to be addressed in this alternative. Historical uses on both sides of the Buffalo River will be researched for potential impacts to the soils in the area. Currently the Erie Basin Marina/Buffalo and Erie Naval Park and adjacent circulatory roadway and parking lots occupy the northern side. Depending on the exact alignment of the crossing, the southern side is either open land adjacent to the Buffalo Coast Guard station or the northernmost portion of the First Buffalo River Marina property. No visible evidence of contamination was identified during a preliminary site reconnaissance on either side of the Buffalo River.

**Main Street Bridge (BR-3)**

This alternative is unique in that it involves crossing both the Buffalo River and City Ship Canal. Therefore, contaminated sediments and the costs to manage and properly dispose of any excavated materials may be greatest in this alternative. Historical uses on both sides of the Buffalo River and Kelly Island shall be researched for potential impacts to the soils in the area. Currently Main Street, the Light Rail Rapid train tracks, NFTA's DL&W terminal, and portions of Buffalo's Inner Harbor/Buffalo and Erie Naval Park all come together on the northern side of this crossing. The middle portion is occupied by Kelly Island and westernmost end of General Mills which is used for parking and storage.

Historically a number of elevators occupied portions of Kelly's Island starting in 1862 with the Watson Elevator and later the Dakota Elevator (that was subsequently closed in 1965 and demolished), the Frontier Elevator and the Washburn-Crosby Elevator (that replaced the Dakota Elevator). The property is now owned and managed by General Mills which established a presence at the site in 1928. Access to the tip of Kelly Island is restricted by the presence of General Mills.

The southern side is occupied by the former Connecting Terminal Railroad Elevator portions of which were built in 1915 and 1954 and the surrounding current uses which is an operational marina. No visible evidence of contamination was identified during a preliminary site reconnaissance on either side of the Buffalo River.

**Mitigation Summary**

Impacts of any of the project alternatives would be limited to the construction phase and may include the potential exposure to on-site workers and disposal of contaminated materials removed during construction. The DEIS will be developed to describe procedures for the investigation and/or management of soils associated with future bridge development and roadway reconstruction activities. An environmental assessment may also be required to assess the impacts of proposed roadway reconstruction activities and the acquisition of right-of-way or easements to complete the project.

**4.5 CONSTRUCTION EFFECTS**

Short-term construction impacts may include but, not limited to:

- Surface waters
- Wetlands, water quality
- Navigable waters
- Critical environmental areas
- Wildlife
- Endangered species
- Air quality
- Hazardous wastes
- Cultural resources
- Noise
- Flood plains
- Invasive species
- Illicit Discharge Detection and Elimination (IDDE).

Construction effects will be evaluated in the DEIS and mitigation measures may include:

- Mitigation measures (proper equipment maintenance, work hour restrictions, monitoring, and construction management);
- Traffic and other operations maintained during construction periods;
- Nuisance impacts such as noise, dust, and vibration during construction;



- Noise abatement measures such as inspecting and maintaining mufflers and adjusting working hours lessen the overall impact;
- Public awareness/information program to keep the nearby residents informed as to the planned activities;
- The use of erosion and sedimentation measures to mitigate potential erosion impacts (such as silt fences, straw bales, and other acceptable erosion control measures);
- Wetting the exposed construction area will control potential dust impacts;
- Construction staging, equipment, materials, and supplies for the construction;
- Wastes, spoil and borrow pits;
- Erosion and sediment control plans (ESC structures that are temporary and permanent);
- Implement practices to minimize spread of invasive species, such as: equipment cleaning, proper disposal of invasive species spoil, use of weed-free mulch, etc.; and
- Identify and mitigate for illicit discharges discovered during construction, including such discharges from stormwater outfalls.

#### 4.6 INDIRECT (SECONDARY) EFFECTS

Secondary effects are those that are "caused by an action and are later in time or farther removed in distance but are still reasonably foreseeable" (40 CFR 1508.8).. In addition, indirect effects may include growth inducing effects and other effects related to changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.

Transportation projects often reduce travel time, enhancing the attractiveness of surrounding land for development through changes in accessibility. These changes in accessibility may influence development in a localized area adjacent to the transportation project (e.g. gas stations and motels near an interchange), as well as larger-scale effects on the location of future development within a region. However, transportation projects are only one of numerous factors that influence development patterns. Other important factors include land availability and prices, economic conditions, political and regulatory conditions, and the quality of public services. The estimation of induced growth effects requires the identification of the Proposed Action's contribution to changes in development patterns.

The DEIS will include an analysis of growth induced impacts and describe any further development which the proposed action may support or encourage (particularly within the Outer Harbor portion of the Project Area), such as:

- Attracting significant increases in local population by creating or relocating employment, or by providing support facilities or services (stores, public services, etc.); or
- Increasing the development potential of a local area, for example, by the extension of roads, sewers, water mains, or other utilities.

During the scoping process a preliminary economic benefit analysis was preformed. The benefit cost ratio for the project was very favorable and the project is forecast to accelerate the development potential for the outer harbor area. More detailed information regarding these benefits will be included in the DEIS.

#### 4.7 CUMULATIVE EFFECTS

Cumulative impacts occur when multiple actions affect the same resource(s). These impacts can occur when the incremental or increased impacts of an action, or actions, are added to other past, present and reasonably foreseeable future actions (40 CFR 1508.7). Cumulative impacts can result from a single action or from a number of individually minor but collectively significant actions taking place over a period of time. Cumulative impacts do not have to all be associated with one sponsor or applicant. They may include indirect or secondary impacts, long term impacts and synergistic effects.



Cumulative effects analysis necessarily involves assumptions and uncertainties, but decisions must be supported by the best available analysis and data. Accordingly, the DEIS will include a cumulative impact analysis that identifies and defines the scope of other non-project actions (e.g., Southtowns Connector, Canal Side Project) and their spacial and temporal interrelationship with the Proposed Action or its alternatives. The cumulative impact analysis will define the:

- Geographic area affected by the Action;
- Resources affected by the Action;
- The time of influence relative to the Action's design life;
- Regulations, Administrative Standards, and Regional Plans for the area affected by the Action;
- Relevant trends within the area affected by the Action;
- Other past, present, and reasonably foreseeable actions that have impacted these resources; and
- Potential cumulative impacts.

#### **4.8 SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY**

The DEIS will discuss in general terms the proposed alternatives relationship of local short-term impacts and use of resources, and the maintenance and enhancement of long-term productivity. The build alternatives would have similar impacts. The discussion should point out that transportation improvements are based on State and/or local comprehensive planning which consider(s) the need for present and future traffic requirements within the context of present and future land use development. This section will evaluate the local short-term impacts and use of resources by the proposed action and verify its consistency with the maintenance and enhancement of long-term productivity for the local area.

During the scoping process a preliminary economic benefit analysis was preformed. The benefit cost ratio for the project was very favorable and the project is forecast to accelerate and increase the development potential for the outer harbor area. More detailed information regarding these benefits including short term construction impacts and longer term development impacts of the outer harbor will be discussed in the DEIS.

#### **4.9 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES**

The DEIS will discuss the proposed action's irreversible and irretrievable commitment of resources. This discussion will address the possibility that the build alternatives would require a similar commitment of natural, physical, human, and fiscal resources.

#### **4.10 ADVERSE ENVIRONMENTAL IMPACTS THAT CANNOT BE AVOIDED OR ADEQUATELY MITIGATED**

The DEIS will discuss the proposed action's adverse environmental impacts that cannot be avoided or adequately mitigated if there are any.