

NIAGARA FALLS STATE PARK ROBERT MOSES PARKWAY-SOUTH SEGMENT-“RIVERWAY”

FINAL DESIGN REPORT/ENVIRONMENTAL ASSESSMENT

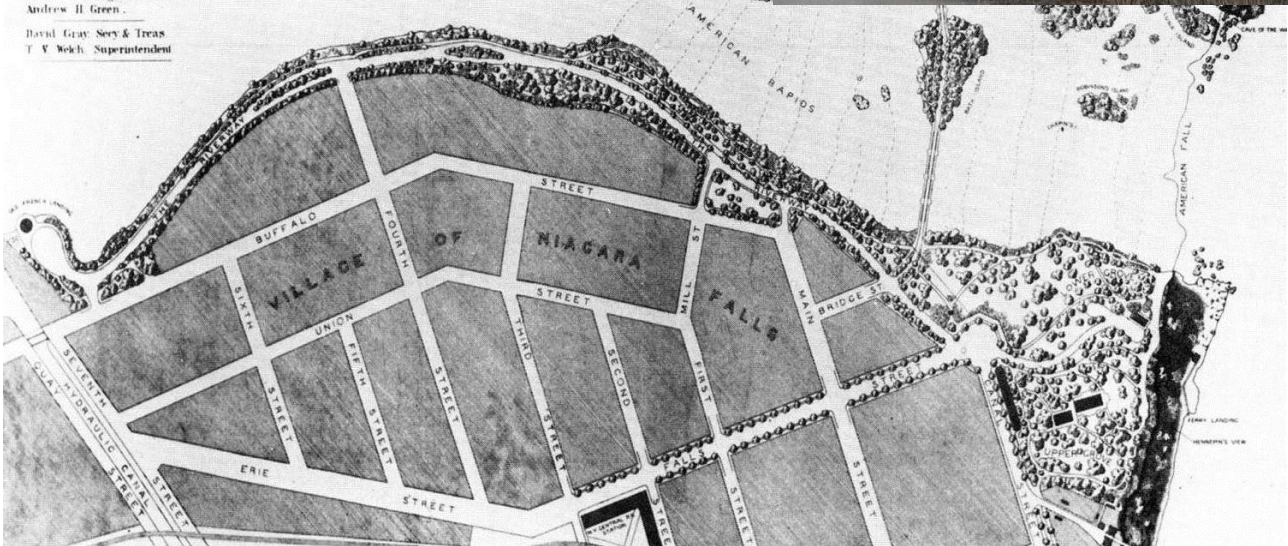
Prepared on Behalf of:

**NEW YORK STATE OFFICE OF PARKS, RECREATION
AND HISTORIC PRESERVATION**

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January 29, 2014



**NEW YORK STATE
OFFICE OF PARKS, RECREATION AND HISTORIC PRESERVATION**

**ROBERT MOSES PARKWAY SOUTH SEGMENT/"RIVERWAY"
FINAL DESIGN REPORT/ENVIRONMENTAL ASSESSMENT
PIN 5410.54**

Prepared by:

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In Association with:

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Heritage Landscapes
Saratoga Associates
The Urban Design Project
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Panamerican Consultants
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JANUARY 29, 2014

In partnership with:



**U.S. Department of Transportation,
Federal Highway Administration**



City of Niagara Falls, New York



**New York State Department of
Transportation**



**USA Niagara Development
Corporation**


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PROJECT APPROVAL SHEET


(Pursuant to SAFETEA-LU Matrix)

- A. IPP Approval:** The project is ready to be added to the Regional Capital Program and project scoping can begin.
The IPP was approved by: Gary V. Gottlieb

Regional Planning and Program Manager
09/29/08
- B. Scope Approval:** The project cost and schedule are consistent with the Regional Capital Program.

Regional Director, NYSDOT
- C. Public Hearing Certification (23 USC 128):** A public hearing is not required.


Western District Director, NYSOPRHP
11/21/13
- D. Recommendation for Design Approval:** The project cost and schedule are consistent with the Regional Capital Program.

Regional Planning and Program Manager, NYSDOT
- E. Recommendation for Design and Nonstandard Feature Approval:** All requirements requisite to these actions and approvals have been met, the required independent quality control reviews separate from the functional group reviews have been accomplished, and the work is consistent with established standards, policies, regulations and procedures, except as otherwise noted and explained.


Western District Director, NYSOPRHP
11/21/13
- F. Nonstandard Feature Approval:** No nonstandard features have been identified, created, or retained.

Chief Engineer, NYSDOT
- G. Design Approval:** The required environmental determinations have been made and the preferred alternative for this project is ready for final design.

Chief Engineer, NYSDOT

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LIST OF PREPARERS

Group Director Responsible for Production of the Design Approval Document:

Ronald J. Klinczar, P.E., Principal, Hatch Mott MacDonald
Description of Work Performed: Directed the preparation of the Design Approval Document in accordance with established standards, policies, regulations and procedures, except as otherwise explained in this document.



Note: It is a violation of law for any person, unless they are acting under the direction of a licensed professional engineer, architect, landscape architect, or land surveyor, to alter an item in any way. If an item bearing the stamp of a licensed professional is altered, the altering engineer, architect, landscape architect, or land surveyor shall stamp the document and include the notation "altered by" followed by their signature, the date of such alteration, and a specific description of the alteration.

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REFERENCE DOCUMENTS (AVAILABLE UNDER SEPARATE COVER)

- Niagara Reservation Concept Plan and Final Environmental Impact Statement, December 1982
- Final Scoping Document, October 2009, available on Parks website:
<http://www.nysparks.state.ny.us/inside-our-agency/public-documents.aspx>

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Section 1 - Executive Summary

1 EXECUTIVE SUMMARY

1.1 Introduction

The **Niagara Falls State Park (“State Park”)**, adjacent to the Niagara Falls, is owned and operated by the **New York State Office of Parks, Recreation and Historic Preservation (OPRHP)**. The State Park provides a natural setting and focal location where visitors from around the world come to experience the wonder and power of the waterfalls and related attractions. Its history dates back to 1885 when the Niagara Reservation (later renamed) was established, making it the oldest state park in the United States. The following year, the Commissioners of the State Reservation at Niagara requested that Frederick Law Olmsted and Calvert Vaux prepare a plan for the restoration of the scenery of Niagara Falls. The General Plan for the Improvement of the Niagara Reservation (“General Plan”) shaped the development of the reservation over several decades. Development of the Niagara Reservation over this period included a scenic park entrance road through the length of the park known as the *Riverway*.



In 1961 the Riverway was removed and replaced by the Robert Moses Parkway (RMP), extending from the Grand Island North Bridges (Interstate 190) to Niagara Falls, then north along the Niagara Gorge to the Town of Porter. This represented a deviation from the concepts identified in the General Plan.

The State Park was designated as a National Historic Landmark by the Secretary of the Interior in 1966. This designation was followed in the 1980’s by the State Park being added to the State and National Registers of Historic Places (S/NRHP). The nomination form cites the State Park’s value in the history of conservation and the involvement of Frederick Law Olmsted both in advocating for the reservation and in development and implementation of a plan to preserve the natural scenery.

With consideration to the newly designated Historical citations, a Master Plan and Final Environmental Impact Statement was completed in 1982 for the State Park. This Master Plan defines a direction for which future development within the State Park should be advanced, including a return to the principals outlined in the Olmsted and Vaux General Plan.

Following a record of decision on the Master Plan, the RMP was severed at the Prospect Point area. This resulted in the RMP being divided into a South Segment, extending from Interstate 190 at the North Grand Island Bridges to just south of the Prospect Street/Old Falls Street intersection and a North Segment, extending from north of the Rainbow Bridge to the Town of Porter. This project involves only the RMP South Segment. Of significance, this action essentially returned the RMP to serve primarily as an entrance road into Niagara Falls State Park.

Use of the RMP as an entrance road into Niagara Falls State Park was an interim configuration intended to take advantage of the remaining useful life of the existing infrastructure. In 2005, in consultation with OPRHP, the New York State Department of Transportation (NYSDOT) and the City of Niagara Falls (City), the USA Niagara Development Corporation (USAN) developed and evaluated a conceptual

alignment to reconfigure the John B. Daly Boulevard interchange and the State Park access road as part of the *Downtown Niagara Falls Multi-Modal Access Program*. This work led to the development of a 2006 Memorandum of Understanding to reconfigure the road system within the State Park. The reconfigured road would be designed to more closely follow the design intent and alignment of the historic "Riverway" park entry road. For this reason the proposed park entry road is referred to in the remainder of this report as the Riverway.

This project addresses a portion of the South Segment of the RMP from the John B. Daly Boulevard Interchange to Old Falls Street.

The Project Scoping Report, dated October 2009, initially evaluated the project and identified the feasible alternatives to be carried forward, and that are assessed in this report. These alternatives were developed after careful consideration of a broad set of project objectives that seek to enhance the State Park while providing both vehicular and pedestrian connectivity with the City of Niagara Falls. The intent is to improve the State Park with the resulting increase in tourism benefiting both the OPRHP and the City.

To this extent, the following alternatives have been developed for the Riverway:

Alternative 1: No-Build Alternative

Alternative 2: Riverway on Existing Alignment

Alternative 3: Riverway on Olmsted-Vaux Inspired Alignment

The build alternatives look to replace the RMP South Segment with a new Riverway that is sensitive to the historical setting of the State Park. Inherent in each alternative are sets of design options that provide treatments for particular locations along the corridor length. Each alternative addresses pedestrian and bicycle accommodations, incorporates the State Park run trolley system, and includes park amenities such as wayfinding signage, lighting, and landscaping improvements.

This Final Design Report/Environmental Assessment identifies both Alternative 2 and Alternative 3 as feasible alternatives. Alternative 3 meets the basis of design and is the preferred alternative.

1.2 Purpose and Need

1.2.1 Where is the Project Located

The State Park is located in Western New York State on the north and east shore of the Niagara River between Lake Erie and Lake Ontario. It is located on the south edge of the City of Niagara Falls in Niagara County.

The project area, as shown in **Figure 1.1**, extends from John B. Daly Boulevard to the intersection with Old Falls Street, a distance of 1.2 miles.



**Figure 1.1
Project Location Map**

1.2.2 Why is the Project Needed

A Master Plan was completed for the State Park in 1982 to guide future development within a National Historic Landmark. Included in this plan was a recommendation to remove the RMP because it did not contribute to the historic character of the State Park. However, at the time of the 1982 Master Plan, the RMP was only 20 years old and was in good condition. While the plan recommended removal of the RMP and construction of a Riverway in the style of Olmsted and Vaux, this effort was deferred until such time as existing infrastructure reached the end of its useful life. The roadway infrastructure is now considered functionally and conditionally obsolete. In addition, there has been increasing recognition that the existing roadway presents a barrier to pedestrian and bicycle access to the waterfront. Therefore, a properly scaled park access roadway with accommodations for non-motorized access is needed. With a reconfigured roadway and improved access, enhancements to the historic park landscape and natural habitats can be implemented in areas formerly occupied by the parkway.

1.2.3 What are the Objectives/Purposes of the Project

The OPRHP intends to reinvest in the State Park through the complete physical reconstruction of the RMP South Segment from the John B. Daly Boulevard interchange to the intersection with Old Falls Street, in partnership with the NYSDOT, the City of Niagara Falls and the USA Niagara Development Corporation. The project mission can be stated as follows:



Build a road system sensitive to and in context with the spectacular wonder of the Upper Rapids and Niagara Falls. This undertaking should create an environment that increases opportunities for recreation and tourism, while respecting the original Olmsted and Vaux park design for access, viewing scenery, reflection, and the renewal of spirit that is inspired by the beauty, power and majesty of this natural wonder.

This Mission is planned to be achieved by following four key principals and their related goals and objectives: Improve the State Park; Improve the State Park Interface with the City; Improve Access to the State Park and the City of Niagara Falls; and Open Economic Possibilities. These are further defined below.

Improve the State Park

- Provide a clear sense of arrival at a world-renowned destination.
- Welcome all visitors with appropriate arrival facilities and access to attractions.
- Create an appropriately scaled scenic park roadway that provides easy and direct access to State Park and the City for all visitors.
- Choreograph the roadway's scenic landscape to provide all users with a cohesive and continuous unfolding experience.
- Preserve and interpret historic Frederick Law Olmsted and Calvert Vaux design features and principles within the roadway landscape.
- Protect existing aquatic and avian habitats associated with the Niagara River and Audubon-designated Important Bird Area so that indigenous wildlife remains a part of the park experience.

Improve the State Park Interface with the City

- Create an integrated vehicle, bicycle and pedestrian circulation system that serve park patrons, local residents, regional users, and visitors from around the world.
- Design a park-city interface that facilitates the park's role as a focal point for City of Niagara Falls tourism.
- Improve visual and physical connections between the State Park and the City to enhance recreational and economic opportunities.

Improve Access to the State Park and the City of Niagara Falls

- Reduce maintenance of the landscape and infrastructure through effective design.
- Improve pedestrian and bicycle access along the Niagara River.

Open Economic Possibilities

- Create an environment that encourages visitors to enjoy the attractions of both the State Park and the City.
- Enhance opportunities for appropriately-scaled uses in City neighborhoods adjoining the Riverway by enhancement of the riverfront setting.

From these objectives, the following Basis of Design has been developed:

- *In recognition of the significance of Niagara Falls State Park as a national historic landmark as recognized in the 1982 Master Plan, all build alternatives should remove the RMP and replace it with*



a scenic park road in the context of the Frederick Law Olmsted/Calvert Vaux design and sustainable design principles.

This approach is consistent with both State Park history and with the accepted historical context by which further development in the State Park should be advanced.

1.3 What Alternatives are Being Considered

Alternatives have been developed to address the project needs and objectives within the context of the State Park. These alternatives reflect consideration of transportation needs, park functionality, historical context, and the park's inter-relationship with the City of Niagara Falls.

Alternative 1: No Build/Null Alternative

The No-Build Alternative would involve keeping the RMP as it currently exists and operates. No improvements would be made. Maintenance activities would continue within the park and interchange.

Alternative 2: Riverway on Existing Alignment

Alternative 2 would remove the Robert Moses Parkway from the John B. Daly Boulevard Interchange to Old Falls Street, and construct a low-speed, two-lane, one-way (westbound) Riverway on about the existing alignment of today's roadbed. By utilizing today's roadbed, overall disturbance to the State Park due to road construction would be limited. The grade separated interchange at John B. Daly Boulevard would be replaced with an improved intersection configuration. Vehicles would enter the State Park at the John B. Daly Boulevard location, travel west toward the falls, and would leave the State Park at the Prospect Street intersection with Niagara Street (near the Rainbow Bridge), similar to today.

Alternative 3: Riverway on Olmsted-Vaux Inspired Alignment

Alternative 3 would remove the Robert Moses Parkway from the John B. Daly Boulevard Interchange to Old Falls Street, and construct a low-speed, two-lane, one-way (westbound) Riverway that would follow an interpretation of the Olmsted-Vaux *General Plan* for the Niagara Reservation alignment as well as other park and parkway designs by Olmsted and Vaux in the context of the physical configuration of the State Park today. The grade separated interchange at John B. Daly Boulevard would be replaced with an improved intersection configuration. Vehicles would enter the State Park at the John B. Daly Boulevard intersection location, travel west toward the falls, and would leave the State Park at the Prospect Street intersection with Niagara Street (near the Rainbow Bridge), similar to today.

Both build alternatives would improve wayfinding signage, lighting, landscaping, pedestrian and bicycle access, and provide for amenities such as park benches.

1.4 How will the Alternatives Affect the Environment

Environmental Classification

The project has been advanced as a **NEPA Class III Action** for both build Alternatives 2 and 3 because insufficient information was originally available to categorically exclude the project from further NEPA processing. The environmental studies summarized in this report indicate an ultimate finding of no

significant impact (FONSI). As the federal funding agency, FHWA is the NEPA lead agency (40 CFR 1501.5).

The project has been advanced as a **State Environmental Quality Review Act (SEQRA) Type 1 Action** because the Build Alternatives are unlisted actions that would result in land disturbance exceeding 2.5 acres in a park. The Environmental Assessment Form (EAF) completed for this project (**Appendix F**) supports a determination of no significant effect (DONSE). As the project owner, OPHRP will act as the SEQRA lead agency.

Social and Economic Effects

The No-Build Alternative would not change the configuration of the parkway or the State Park.

Both Build Alternatives would have similar social and economic effects. In the short-term there would be temporary access and noise impacts during construction activities. In the long term, construction of the proposed Build Alternatives would improve quality of life factors for adjacent neighborhood area residents by improving recreation opportunities through better connections between the community and the State Park and the Niagara River.

The build alternatives would not have any significant adverse impacts on the regional or local economies, or to local development, tax revenues, public expenditures, employment opportunities, retail sales, or property values of the project area. In fact, the build alternatives are expected to create the potential for long term beneficial impacts to the local economy by improving the area's visual character and access to both the State Park and the City. These positive impacts on neighborhood character and amenities have the potential to improve tourism-related business activity within the City.

No disproportionately high and adverse human health or environmental effects of actions on the minority and low income population in the adjacent neighborhood area have been identified for either build alternative.

Environmental Effects

The No-Build Alternative would not change the configuration of the parkway or the State Park. Therefore, the characteristics of the existing environment would not change.

The project is located within a National Historic Landmark designated park and is overlooked by several National Register of Historic Places Listed (NRL) and National Register Eligible (NRE) properties. As a result, the Build Alternatives have been designed in keeping with the documented historic character of the setting.

The project site has been extensively disturbed as the result the continuous reconfiguration of the shoreline throughout the nineteenth and twentieth centuries leading up to the 1960's construction of the Robert Moses Parkway. The extent of disturbance has created a situation where it would be unlikely that intact cultural deposits from the prehistoric period remain. One area directly south and west of the intersection of Main Street (sometimes referred to as "Old Main Street") and Buffalo Avenue may be sufficiently undisturbed such that it may contain contaminants of historic mills. In this area, it is recommended that an archaeologist monitor excavation during construction. The Archaeological Monitoring Plan is included in **Appendix K**.

The Goat Island Bridge over the Niagara River, spanning between the Mainland, Green Island, and Goat Island, is NHL. It is not affected by this project. The American Rapids Bridge, spanning between the Mainland and Goat Island, is not 50 years old, and would not be affected by this project. The Robert Moses Parkway is not recognized as an historic parkway.

Neither of the Build Alternatives (2 and 3) is expected to result in long-term adverse impacts to the usage of the Niagara River because work within the defined streambank would be very limited. Any stormwater discharges into the river waters would be completed in accordance with Best Management Practices as required by the NYSDEC Stormwater Guidelines.

The proposed project is located within the safety zone of the Niagara River due to its proximity to the Falls. Therefore, the River is not allowed for navigation in this stretch.

Both Build Alternatives comply with New York State's approved Coastal Management Program and would be conducted in a manner consistent with such program, as documented in **Appendix I**. There is no approved local waterfront revitalization plan for the project area.

Neither of the Build Alternatives (2 and 3) is expected to result in long-term adverse impacts to the quality nor usage of the ecological resources in and around the project site. Instead, the build alternatives offer long-term benefits to the aquatic habitat adjacent to the project limits and downstream. Small improvements in water quality are expected through implementation of best management practices for roadway stormwater that currently discharge to outfalls and directly to the river. The overall impervious area in the State Park would be significantly reduced by removal of the existing RMP road beds.

The current landside ecology is poor terrestrial habitat. Disturbance of existing habitat at the project site during construction of either Build Alternative (2 and 3) would have few temporary adverse impacts on wildlife, considered to be insignificant. Conversely, both Build Alternatives (2 and 3) offer an opportunity to significantly improve the State Park's terrestrial habitats to benefit many species of wildlife. Installation of a low-maintenance landscape with meadow plantings native to the Erie Lake Plain ecosystem would provide significant long-term benefits to wildlife, including birds using the Niagara River Important Bird Area (IBA) for breeding or migration. In addition, a net decrease in paved surfaces in the project area would provide additional greenspace that may allow more habitat area as well as improved quality.

The Build Alternatives would not negatively impact recreational resources, but instead they would enhance connectivity between the parks along the Niagara River through construction of a new continuous bicycle and pedestrian path through the State Park. This path would form part of the Niagara River Greenway system of paths. New landscape features and plantings would also enhance these resources.

The Build Alternatives would not impact air quality because they would not change travel patterns or increase delays. In general, the build alternatives are not expected to have a discernable effect on traffic flow or energy consumption compared to the No-Build Alternative.

Impacts to noise quality under the Build Alternatives are expected to be negligible due to the inclusion of new smoother pavement, traffic calming measures and a lower posted speed limit which would tend to reduce the noise produced by passing vehicles. These measures would offset some areas where pavement may be slightly closer to the Riverview Drive neighborhoods.

Both Alternatives 2 and 3 would remove the expressway type interchange and the existing RMP road bed. The project area has been screened, and has been found to have potential for encountering hazardous waste or contaminated materials. Additional testing, to be conducted as part of detailed design geotechnical investigations, is required to confirm the presence or absence of hazardous and contaminated materials. Hazardous or contaminated materials to be disturbed would be identified and remediated under either build alternative.

The project has been screened for asbestos containing material (ACM). No suspected ACMs were identified on the bridges at John B. Daly Boulevard interchange. Information on utilities that may contain ACMs has been requested. If these are identified in final design, avoidance or appropriate handling will be incorporated in the construction documents.

The following resources are not present within the project area of potential effect and would therefore not be impacted:

- Wetlands
- Wild, Scenic, and Recreational Rivers
- A river on the Nationwide Rivers Inventory
- Floodways
- Primary, Principal, or Sole Source Aquifers
- Farmland
- State Designated Critical Environmental Areas

Permits

Permits required for either Build Alternative are expected to be the same, as the magnitude of the scope of impacts is very similar. These would include:

- Part 608 NYS Use and Protection of Waters permit – for disturbance to the Niagara River banks within a 50-ft buffer from the water's edge for path construction.
- Section 404 permit and Section 10 permit would be required from the Army Corps of Engineers for work below the ordinary high water mark for removal of existing drainage outlets and for construction of new outlets (NWP #14).
- NYSDEC Article 15 permit
- Section 401 WQC from NYSDEC would be required if issuance of a Section 404 and/or Section 10 permit from the Corps is necessary.
- SPDES Permit for stormwater discharges (depending on final drainage design)

1.5 What are the Costs and Schedules

All feasible alternatives are under consideration. **Table 1.1** identifies costs for each of the feasible alternatives assuming a roundabout option at John B. Daly Boulevard based on the conceptual level of design. Additional estimates related to various feasible design options are further discussed in Section 3.3.7.

**Table 1.1
Project Costs
(Escalated to 2014 Dollars)**

Activity	Alternative 2 with Roundabout	Alternative 3 with Roundabout
Construction	\$16.1M	\$16.9M

The project development process includes scoping, preliminary design, environmental assessment, design approval, final design, and construction. Project scoping is the stage at which the purposes, needs, objectives and goals for advancing the project are identified, what is to be accomplished, and what alternatives will be studied. During preliminary design, the alternatives established in scoping are further developed and their social, economic, and environmental effects are studied. These studies are summarized in a design approval document, and a preferred alternative design is recommended. Once an alternative is approved, detailed plans are prepared during final design for use in construction.

A summary of the key schedule dates is presented in **Table 1.2**.

**Table 1.2
Project Schedule**

Activity	Date
Scoping Approval	October 2009
Design Approval	Late 2013
Project Letting Date	Mid 2014
Construction Start	Late 2014
Construction Complete	Late 2015

1.6 Which Alternative is Preferred

The significance of Niagara Falls State Park as a national historic landmark is recognized in the 1982 Master Plan. The plan calls for the eventual removal of the RMP and its replacement with a scenic park road in the context of the Frederick Law Olmsted/Calvert Vaux design and sustainable design principles. NYSOPRHP has adopted this approach which establishes the Basis of Design for this project. This approach is consistent with both State Park history and with the accepted historical context by which further development in the State Park should be advanced.

Both Alternatives 2 and 3 develop a new low speed Riverway, and eliminate the remnant of the Robert Moses Parkway from John B. Daly Boulevard to Old Falls Street in the State Park. Alternative 3, by virtue of its definition, develops a fully interpreted design based on the principals and concepts of Frederick Law Olmsted and Calvert Vaux. **As such, Alternative 3 fully meets the Basis of Design and is the preferred alternative. The Preferred Alternative is shown in Appendix A.**

Alternative 2 attempts to do much of the same as alternative 3, but does so under the constraint of remaining within the footprint of the existing alignment of the Robert Moses Parkway. It provides no significant benefit, functional, sustainable, or otherwise, to view it as preferred.

Comparison of Design Options

Design options have been prepared at three separate locations:

Robert Moses Parkway Ramp Transitions, east of John B. Daly Boulevard

Transitioning from the expressway to the proposed intersection approaches may be accomplished via several different configurations which provide traffic calming elements for access to the City and access to the State Park.

Robert Moses Parkway at John B. Daly Boulevard Interchange

Option JBD-B – Roundabout provides a gateway entrance to the Park and the City, and is preferred. This option provides an at-grade roundabout to be designed in accordance with current traffic engineering principles and standards. Exiting traffic from the Robert Moses Parkway would either be directed into the City or the State Park via the roundabout. The roundabout would also accommodate traffic exiting the City of Niagara Falls from John B. Daly Boulevard. This option requires modifications to the northbound Robert Moses Parkway approach to reduce speeds entering the roundabout, to minimize conflicts within the roundabout at the entry from John B. Daly Boulevard, and to provide clear traveler information for visitors.

This is the preferred option that will be carried to the detailed design phase of the project.

Option JBD-A – Riverway Underpass of John B. Daly Boulevard Outbound Lanes would provide a compact and modified grade-separated intersection at this location. Exiting traffic from the Robert Moses Parkway entering the Riverway would be carried at-grade into the State Park. Outbound traffic from John B. Daly Boulevard would be carried over the Riverway on a single minimalistic arch type bridge structure. This option requires construction of an earthen berm to carry the outbound traffic over a park entrance road.

This option retains a grade separation at the interchange, and therefore is not preferred.

At-Grade Intersection Design Option JBD-C – Loop Road Intersection would provide an at-grade intersection with an oval shape. Drivers leaving the City would have to yield to drivers entering the State Park, with some delays and queuing onto John B. Daly Boulevard expected during peak traffic periods.

This option is a non-standard design and creates a large unusable area within the State Park. It is therefore not considered for further analysis.

JBD-D: Modify Existing Interchange would retain the existing westbound bridge at the interchange, while creating a low speed access road into the State Park. The embankment at the west side of the bridge would be lowered to open up the views of the waterfront for residents of Riverside Drive. The parkway would be modified to the east of the interchange by incorporating traffic calming techniques such as reduction of the parkway to a single lane, and use of lane channelizing devices as appropriate.

This option retains a grade separation at the interchange, and therefore is not preferred.

Riverway/Main Street and Buffalo Avenue (to Goat Island) Intersection

Option G-M-D – Riverway Connection to Buffalo Avenue removes the existing RMP/Buffalo Avenue/ Main Street connection and connects the Riverway to Buffalo Avenue south of the Buffalo Avenue/Main Street intersection, and is preferred. Riverway access to Buffalo Avenue would be via a turning lane designed to accommodate tour buses and park trolleys. Once on Buffalo Avenue, motorists would be able to turn left onto Main Street or continue straight on Buffalo Avenue toward the 1st Street/American Rapids Bridge intersection. Motorists on Buffalo Avenue southbound would continue through the Main Street/Buffalo Avenue intersection onto the Riverway. Under this option, pedestrian accommodations would be provided from the Main Street/Buffalo Avenue intersection to and across the Riverway, and would connect with the path system along the river.

This option provides direct connectivity and minimizes pavement, and is therefore preferred.

Option G-M-B - Modified Intersection Configuration retains the configuration with modifications including a segregated turning lane to Goat Island via Buffalo Avenue. Riverway access and egress from Main Street and Buffalo Avenue would be consolidated into a single two way connecting road established nearly perpendicular to the Riverway and in line with Main Street. This would eliminate the free flow movement from Buffalo Avenue to the current RMP which can be problematic. This option provides a turning lane to Buffalo Avenue and Goat Island, which is advantageous to drivers, as it gives a better view of the destination and more time in which to make a decision to go to either the City or to Goat Island.

This option requires more pavement than Option G-M-D, and does not directly connect to Buffalo Avenue, so it is therefore not preferred.

Option G-M-C single intersection with Buffalo Avenue is similar to the original intersection except that access from Buffalo Avenue to the Riverway requires a left turn. This option is not preferred.

1.7 Who Will Decide Which Alternative will be Selected and How Can I be Involved in this Decision

OPRHP owns and has jurisdiction over State Park land and all State Parkways including the RMP. As the Lead Agency under SEQRA, OPRHP, in consultation with its MOU partners, will select an alternative for implementation based upon the assessments and studies documented in this Final Design Report/Environmental Assessment. As the Lead Agency under NEPA, FHWA also has approval authority for projects funded through federal transportation programs. Since the project is a NEPA Class III Action, it is anticipated that FHWA will be responsible for approving the environmental findings, but will, as part of its normal policy, delegate Design Approval signature authority to NYSDOT's Chief Engineer. Input from all affected parties is welcomed and is mandated by law to be solicited and considered at all preliminary stages of project development.

The following public input opportunities have been provided during design development:

- ♦ On December 8, 2008 an initial Public Information Meeting was held to introduce the project, display project information, and receive public input.
- ♦ On April 28, 2009 a second Public Information Meeting was held to introduce scoping-level project alternatives, display additional project information, and receive public input.
- ♦ During October 2009, a survey was taken of visitors to the State Park to collect information on who uses the park and to gather data for use in economic impact evaluations. (See **Appendix G** for full report of results)
- ♦ The Project Scoping Document was posted on the OPRHP website in February 2010. A link to an email address to provide an opportunity for project-specific comments was also posted at that time.
- ♦ Focus group sessions have been held to obtain a broad base of input from public stakeholders.
 - ♦ There have been two separate public stakeholder focus groups each with parallel compositions of approximately ten people. They were heterogeneous groups, comprised of businesses, residents, faith based organizations, cultural and educational institutions, environmentalists, tourism groups and historic advocates. The focus group meetings were not observed by agency partners.
 - ♦ A third focus group included private sector partners with operations within the State Park.
 - ♦ Each focus group meeting included an overview of the project and opportunities for feedback regarding project alternatives.
- ♦ A Final Open House was held on December 13, 2012 to present the preferred alternative to the public.
- ♦ Public comments received at this meeting have been summarized in an Appendix P of this report.

Table 1.3 defines the Public Participation Schedule.

**Table 1.3
Public Involvement Plan Schedule and Milestone Dates**

Activity	Date Occurred/Tentative
Initial Public Information Meeting	December 8, 2008
Second Public Information Meeting – Presentation of Draft Alternatives	April 28, 2009
State Park Visitor Survey	October 3-10, 2009
Project Website	February 22, 2010
Focus Groups	March 3-4, 2010
Final Public Open House	December 13, 2012

During any of these information meetings, and in a reasonable timeframe thereafter, the public was provided the opportunity to provide comments on the project. Comments may be given in writing at any time to the contact below.

For more information, please contact:

Andrew Giarrizzo, Regional Capital Program Manager
NYSOPRHP
PO Box 1132
Niagara Falls State Park
Niagara Falls, New York 14303
andrew.giarrizzo@parks.ny.gov

Please reference in your correspondence:

*Robert Moses Parkway, South Segment
PIN 5410.54*

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Section 2 - Project Context:
History, Plans, Conditions and Needs

2 PROJECT CONTEXT: HISTORY, PLANS, CONDITIONS AND NEEDS

2.1 History and Historical Design Considerations

2.1.1 Park History and its Premise as the Basis of Design

The Niagara Falls State Park (“State Park”) dates back to 1885 when the Niagara Reservation (later renamed) was established, making it the oldest state park in the United States. By the early 1800’s, the area was recognized as a tourist destination due to its natural beauty and majesty. As early as 1869, Landscape Architect Frederick Law Olmsted and Calvert Vaux added their support to the effort to generate public interest in preserving and restoring the scenery of Niagara Falls. These efforts culminated in the establishment of the Niagara Reservation in 1885.

In 1887 Olmsted and Vaux compiled and presented the *General Plan for the Improvement of the Niagara Reservation (General Plan)* to the President of the Board of Commissioners of the State Reservation at Niagara. This report and accompanying plan helped shape the development of the reservation over several decades, as is evident in

DRIVE ON THE MAINLAND – “RIVERWAY”

It will be seen from the drawing that the carriage road called **the Riverway is intended to be made from end to end of the Reservation. This is a necessity** and will stand instead of the old village street from which it varies in course only through the motive of keeping it, as a broad artificial object, and those moving upon it, as far from the shore and as much out of sight of Goat Island as possible, and in the substitution of continuous, long, curving outlines for the present discontinuous straight outlines with angular changes in direction. At points it is divided in order to avoid injury to a few promising trees of spontaneous growth.

numerous plans and photographs. Within the *General Plan*, Olmsted and Vaux stated, “The conservation of the natural scenery at Niagara, [is] accepted as the primary purpose of the undertaking.” Other principal objectives on the plan were to “re-establish a permanently agreeable natural character” where the land had been utilized for industry, and “make a suitable provision of roads and walks, of platforms and seats, at the more important points of view, and of other accommodations, such as experience has shown to be necessary to decency and good order when large numbers of people come together.” Included in the general plan is a mainland drive named “Riverway”.

The *General Plan* implementation was partial, but structured and guided improvements were implemented throughout the late 19th and early 20th centuries. Judging from the first orthographic aerial photograph of the site, taken in 1927, the *General Plan* was still the guiding document for the management of the reservation through the 1920s. As a result, the historic period for the early design spans from 1887 to 1927.

In the 1950’s construction began on a major project within the Reservation – the Robert Moses Parkway (RMP). This project represented a major departure from the *General Plan*. The RMP, completed in 1961, replaced the Riverway with an expressway-style parkway with internal landscape and views out toward the Niagara River and screening toward the city. The RMP is classified as a “parkway” in the context of other OPRHP facilities, specifically a limited-access expressway for non-commercial vehicles that provide access to State Parks. Construction of the roadway embankment was accomplished through the use of excavated material from the construction of the Niagara Hydropower project water intakes.

In 1966, the State Park was designated as a National Historic Landmark by the Secretary of the Interior because, as indicated in the National Historic Landmark database:

“This reservation is the first instance in the nation in which the legal doctrine of eminent domain was employed to acquire land for aesthetic purposes. Consisting of more than 400 acres along the eastern shore of the Niagara River, the reservation preserves and enhances views of Niagara Falls unencumbered by commercial enterprises. Under Frederick Law Olmsted’s guidance, some 150 structures, mostly tawdry eyesores, were removed. Niagara Reservation was a tremendous step forward in the organized movement to protect America’s scenic and historic resources and set precedents that other states have followed.”

This designation was followed in the 1980’s by the State Park being added to the State and National Registers of Historic Places (S/NRHP). The nomination form cites the park’s value in the history of conservation and the involvement of Frederick Law Olmsted both in advocating for the reservation and in development and implementation of a plan to preserve the natural scenery. As an exception, the National Register documentation states that the RMP does not contribute to the historic significance of the State Park’s National Register of Historic Landmark status (U.S. Department of the Interior, Keeper of the National Register, 1983).

This historic designation was followed in 1982 by the completion of a Master Plan and Final Environmental Impact Statement which recognizes the historical setting of the State Park and identifies that further actions taken within the park are to be in context with this setting. Specifically, the Master Plan recognizes the *General Plan* as the guiding document for park improvements, and remains the document which guides the development of the park today.

While the Master Plan recognizes the *General Plan*, it also recognizes that the land was reserved for the purpose of conservation and identifies a sustainable approach to park improvement that seeks to restore natural scenery while improving visitor accommodations and access. The Master Plan states that “it is not feasible or even desirable, given the amount of development which has taken place over the years, to return completely to the original landscape plan of Olmsted and Vaux.” Therefore it recommended modifications to the park to recapture “the spirit of the Reservation as originally conceived.” It is this context that drives a *historic interpretation* of the *General Plan* within the alternatives developed within this document. There is no attempt to fully restore the State Park to previous conditions, since the environmental impacts of such an attempt would be dramatic and not in the context of sensibility or sustainability. As an example to this effect, a restoration would require the dramatic excavation of significant portions of the Niagara River shoreline that was filled as part of embankment construction of the RMP. This would have significant effects on the habitat of the river and encounter environmental compliance difficulties.

Generally concurrent with and in the context of the Master Plan, the RMP was physically severed within the park to attempt to somewhat re-establish the concept of a Riverway. At the time the RMP was only 20 years old, and in a condition that would not have justified its complete replacement. This severing created a South Segment of the RMP, extending from Interstate 190 at the North Grand Island Bridges to Niagara Street, and a North Segment, extending from north of the Rainbow Bridge to the town of Porter near Four Mile State Park.

The RMP South Segment continues to operate as a two-lane, one-way westbound park entrance drive from John B. Daly Boulevard to Old Falls Street. However, its initial configuration as an expressway type road is not in context with and of a different character than the Historic Landmark State Park. The roadway and bridge infrastructure today is 50 years old and beyond its useful life.

The significance of Niagara Falls State Park as a national historic landmark is recognized in the 1982 Master Plan. The plan calls for the eventual removal of the RMP and its replacement with a scenic park road in the context of the Frederick Law Olmsted/Calvert Vaux design and sustainable design principles. NYSOPRHP has adopted this approach which establishes the Basis of Design for this project. This approach is consistent with both State Park history and with the accepted historical context by which further development in the State Park should be advanced.

2.1.2 Project History

In 2005, in consultation with OPRHP, the New York State Department of Transportation (NYSDOT) and the City of Niagara Falls (City), the USA Niagara Development Corporation (USAN) developed and evaluated a conceptual alignment to reconfigure the John B. Daly Boulevard interchange and the State Park access road as part of the *Downtown Niagara Falls Multi-Modal Access Program*. This work led to the development of a 2006 Memorandum of Understanding to reconfigure the road system within the State Park. An Initial Project Proposal (IPP) was approved by NYSDOT in September 2008, at which time the project was added to the Transportation Improvement Program (added Sept. 7, 2006 as "PIN 5410.54: RMP @ John B Daly: Southern CBD Gateway Improvements – NYSDOT, City of Niagara Falls, USA Niagara, NYS Office of Parks & Recreation. Replace grade-separated interchange). The IPP was followed by public information meetings on December 8, 2008 and April 28, 2009. A Project Scoping Report was prepared in 2009 that identified concept alternatives to be advanced and studied in this DR/EA.

As the project has moved through the preliminary design phase, coordination with agencies and the general public has been ongoing. These efforts have included:

- Phase I-Draft DR/EA
 - Visitor's survey completed in Fall 2009
 - Focus Groups
 - Project Poster Exhibit
 - Final Open House December 13, 2012
- Phase II – Agency Involvement
- Phase III – Public Review of Draft DR/EA
- Phase IV – Addressing comments on Draft DR/EA in the Final DR/EA

2.1.3 Historic Site Needs

As identified in Section 2.1.1, Niagara Falls State Park, the Niagara Reservation was designated as a National Historic Landmark in October of 1966, as an early listing recognizing the universal value of the property to the nation. As a National Historic Landmark, the proposed designs are subject to review under the State Historic Preservation Act by the State Historic Preservation Office (SHPO). The National Register nomination form recognizes the *General Plan* as the guiding document for park development. These principles were adopted in the 1982 Master Plan and form a steering document for this project. As a result, the following historically based needs must be considered in the development of the State Park:

- Decommissioning of the Parkway with a return to a lower speed park road that reflects the design character of the Riverway as originally envisioned in the *General Plan*.

- The 1982 Master Plan identifies the need to preserve and interpret the historic character of the State Park to the greatest extent feasible in consideration of contemporary needs, conditions and park use requirements.

2.2 Transportation Plans and Roadway Conditions

2.2.1 Local Plans for the Project Area

The area immediately outside of Niagara Falls State Park is in an ongoing state of redevelopment. Most projects currently under design are scheduled to be completed before construction begins within the State Park. There are no known development plans with funding in place that would conflict with the proposed project.

2.2.2 Transportation Corridor

Importance of the Project Route Segment

The RMP provides primary vehicular access to Niagara Falls State Park, an international, national, and regional tourist destination with approximately 8 million visitors per year. Visitor surveys in 2003-2004, and 2009 all identify that the majority (75-80%) of visitors to the State Park arrive by private motor vehicle. The RMP is directly connected to the United States interstate system to the east, making it a convenient route to the State Park. The roadway runs the length of the State Park and provides access to the mainland park, Goat Island, and adjacent amenities in the City of Niagara Falls. The RMP South segment merges with Prospect Street near Old Falls Street. Prospect Street ends at Niagara Street located near the Rainbow Bridge.

Parallel Roadways

Two City streets, Buffalo Avenue and Rainbow Boulevard run parallel with the RMP within the project limits.

Buffalo Avenue between John B. Daly Boulevard and Main Street is a local urban street through a primarily mixed commercial/residential neighborhood. It has two lanes and is about 30 feet wide.

Rainbow Boulevard (NY 384) between John B. Daly Boulevard and Niagara Street is an Urban Principal Arterial through a primarily commercial neighborhood. It has four lanes and is about 52 feet wide.

Abutting Highway Segments and Future Plans for Abutting Highway Segments

The RMP from I-190 to John B. Daly Boulevard was resurfaced under PIN 5810.51 in the fall of 2009 under the American Recovery and Reinvestment Act.

There are no other future plans for abutting highway segments.

2.2.3 Operations (Traffic and Safety) and Maintenance

Functional Classification, Access Control, and National Highway System (NHS)

The RMP from Interstate 190 (near the Grand Island Bridges) to John B. Daly Boulevard is classified as a Parkway and an Urban Arterial Expressway and is on the NHS. Between John B. Daly Boulevard and Niagara Street, the RMP is not classified and is not on the NHS. Vehicular access is limited to interchange-style intersections at 4th Street and Main Street. Between Main Street and Niagara Street, vehicular access is limited to at-grade intersections and Parking Lot No. 1 entrance and exit. Pedestrian access is not restricted by fencing within the project limits.

John B. Daly Boulevard between NY 384 (Rainbow Blvd) and RMP is classified as an Urban Principal Arterial and is on the NHS.

Traffic Control Devices and Intelligent Transportation Systems (ITS)

Traffic control devices on the Robert Moses Parkway are generally limited to regulatory signage at John B. Daly Boulevard and within the State Park. At the RMP/John B. Daly Boulevard grade-separated interchange traffic is controlled by interchange type signage. At 4th Street, the southbound access is controlled by a yield sign. Just west of 1st Street, westbound motorists can access the City via old Main Street or Buffalo Avenue. The ramp from the RMP park road to Buffalo Avenue provides access to the American Rapids Bridge to Goat Island to the south and 1st Street to the north. The ends of the off-ramp are controlled by stop signs. The ramp from Main Street/Buffalo Avenue to the westbound Riverway is yield controlled. Approaching Old Falls Street, the RMP merges with Prospect Street, a one-way City street. Old Falls Street has been recently reconstructed to restore vehicular access via a new intersection with Prospect Street opposite the State Park entrance. Prospect Street is stop sign controlled at Old Falls Street. Just north of Old Falls Street, at Mayor Michael O'Laughlin Drive, motorists must stop at a stop sign before bearing left to access State Park Parking Lot No. 1, or bearing right onto Prospect Street to enter the City. Prospect Street ends at the Rainbow Bridge/Niagara Street with a stop sign.

There are no intelligent transportation system elements in the State Park. There is a manually operated traffic advisory device just east of the ramp to Main Street/Buffalo Avenue. When the lights are manually activated by Parks personnel to flashing mode, motorists are alerted that Parking Lot No. 1 is full and are directed to additional parking on Goat Island.

During summer and holiday weekends, the search for parking often results in queuing on the RMP within the State Park. This is managed through manual monitoring of available parking lot capacity, police direction at intersections, and portable VMS signs placed near the east end of the State Park.

The nearest connection to the regional ITS system is at the Rainbow Bridge, immediately to the north of Parking Lot No. 1, where the delay at the border crossing is monitored. This is outside of the project limit.

Speeds and Delay

Existing operating speeds (85th percentile) were observed on December 8, 2008 by matching speeds with other vehicles on the roadway. The road conditions and weather was fair to good during observations. Observed operating speeds are shown in Table 2.1. Although the RMP is posted for 35 mph beginning

1500 feet east of the John B. Daly Boulevard interchange, operating speeds remain high until drivers reach the American Rapids Bridge. This observation has been confirmed by Parks Police who frequently issue citations to drivers going over the speed limit in this segment. There is a need to provide a roadway that is not a continuation of a high speed expressway and more like a scenic park entrance road, such that drivers have multiple visual cues to reduce speed.

**Table 2.1
Roadway Speeds**

Roadway	Direction	From	To	Observed Operating Speed (mph)	Posted Speed Limit (mph)
RMP	Westbound	John B. Daly Blvd	American Rapids Bridge	45	35
RMP	Westbound	American Rapids Bridge	Prospect Street	25	35
Exit Ramp	Westbound/ Northbound	Robert Moses Parkway	John B. Daly Blvd	40	N/A
Entrance Ramp	Southbound/ Eastbound	Robert Moses Parkway	John B. Daly Blvd	40	30
Entrance Ramp	Southbound/ Westbound	Robert Moses Parkway	John B. Daly Blvd	25	N/A
John B. Daly Blvd	Southbound	Buffalo Avenue	Robert Moses Parkway	40	45
4 th Street	Southbound	Buffalo Avenue	Robert Moses Parkway	25	30
Buffalo Avenue	Eastbound	Robert Moses Parkway	John B. Daly Blvd	25	30
Prospect Street	Northbound	Robert Moses Parkway	Niagara Street	15	30

Traffic delays are generally limited to summer weekends and are associated with parking lots reaching capacity. For instance, on Saturday July 4, 2009, a peak holiday weekend, queues on the RMP ranged from 200 feet to 1 mile in length, with vehicles being delayed up to 25 minutes. The maximum delays occurred shortly after both Parking Lots No. 1 and 2 (located on Goat Island) reached capacity.

Traffic Volumes, Level of Service and Mobility

Traffic volumes and percent buses on the RMP vary noticeably with seasonal tourism. Peak traffic volumes occur within three distinct time frames:

- Off-Season—Between Labor Day and Memorial Day
- Tourist Season (Summer)—Memorial Day to Labor Day, and Columbus Day Weekend
- Summer Holiday Weekends—The Saturday and Sunday nearest Memorial Day, July 4th, and Labor Day.

During nine off-season months of the year, traffic volumes along the roadway are generally low and delays are minimal. During the tourist season, the roadway can reach capacity during peak periods (more

than 600 vehicles per hour) due to delays caused at decision points along the road. There is consistent traffic with a City destination that uses John B. Daly Boulevard, and this grows during the seasonal peaks to reflect the tourist segment.

As a parkway, traffic on the RMP is restricted to non-commercial vehicles and buses. However, the organized tours tend to come to the State Park on weekday mornings and avoid the more crowded summer holiday weekends. Therefore, the percentage of bus traffic varies from 14.4% during fall weekdays (as observed in September 2008) to 1.2% on summer holiday weekends (as observed on July 4, 2009). Commercial vehicles, including full-size semi-truck trailers, making deliveries to Prospect Point are allowed to utilize the RMP if escorted by State Park police. Vehicles are routed onto the eastbound RMP lanes under the American Rapids Bridge due to vertical clearance constraints above the westbound RMP lanes.

Weekday off-season traffic data was collected by the Greater Buffalo-Niagara Regional Transportation Council (GBNRTC) in September 2008 and April 2007. AADT values for the existing condition, the Estimated Time of Completion (ETC) and design year (ETC+20) are shown in **Table 2.2**. AADT has been projected for ETC and ETC+20 using a growth factor of 2.8% per year, which is the growth rate obtained from GBNRTC for this area.

**Table 2.2
Average Annual Daily Traffic**

Roadway	Direction	From	To	Existing (veh/day)	ETC (2014)	ETC + 20 (2034)
RMP	Westbound	Interstate 190	John B. Daly Blvd	9,436	10,540	18,310
John B. Daly Blvd	Southbound	Buffalo Avenue	Robert Moses Parkway	9,960	11,125	19,325
RMP/(Park Road)	Westbound	John B. Daly Blvd	Niagara Street	3,500	3,910	6,790

Since Niagara Falls State Park is a major tourist destination, peak traffic flows for visits to the State Park occur primarily on summer and summer holiday weekends. However, peak traffic at the RMP/John B. Daly interchange occurs on Friday evenings, when commuter, casino, tourist and cross border traffic are all on the roadways. The Friday peak traffic volumes were compared to a peak weekend, and it was found that the regular weekend traffic volumes were slightly lower than the Friday evening traffic. Due to the heavy traffic volumes that are encountered during the summer tourist season, Hatch Mott MacDonald collected traffic data via hose counters and manual intersection turning counts on July 4-5 and September 5-6, 2009. These counts showed that summer holiday weekends are 1.3 to 1.4 times higher than the regular weekend traffic.

Peak Hour Volumes for the weekday, weekend, and holiday weekend traffic Labor Day weekend are presented in **Table 2.3**.

The ability of intersections and interchanges to function under traffic conditions is quantified as Level of Service (LOS), with LOS A given for locations with minimal delay and LOS F given for intersections with excessive delay. The current grade separated interchange for the State Park entrance does not cause any delay or congestion. The traffic signal at John B. Daly Boulevard and Buffalo Avenue creates queues that occasionally delay traffic entering or exiting the City of Niagara Falls.

**Table 2.3
Design Hour Traffic Volumes for RMP/John B. Daly Boulevard**

Roadway Segment	Existing Volume			ETC Volume (2014)			ETC +20 Volume (2034)		
	Weekday	Weekend	Holiday Weekend	Weekday	Weekend	Holiday Weekend	Weekday	Weekend	Holiday Weekend
RMP to City of Niagara Falls	773	630	721	938	744	805	1,629	1,292	1,399
RMP to The State Park	202	281	586	226	332	654	392	576	1,137
City of Niagara Falls to RMP	945	833	1,067	1,147	983	1,192	1,992	1,708	2,070

Safety Considerations, Accident History and Analysis

As indicated in the scoping document, there has only been 1 recorded traffic accident on the RMP within the State Park in the last three years. Therefore, no safety deficiencies have been identified based on accident history for the existing interchange and roadway configurations.

Existing Police, Fire Protection and Ambulance Access

Under current conditions, ambulances access the State Park from any of the City street connections and from the westbound RMP to the east. In the City of Niagara Falls, a fire truck responds to every ambulance call. Fire trucks access the State Park via 4th Street. Emergency services vehicles approach Prospect Point from the east via the remnants of the RMP eastbound. Emergency vehicles can also access areas of the State Park not served by the RMP via trolley paths and wide paved pedestrian paths. Vehicles that require more vertical clearance pass under the American Rapids Bridge on the eastbound RMP.

There is a boathouse with a State Parks Police rescue boat located at the former Adams Intake near John B. Daly Boulevard. The boathouse is accessed from the RMP eastbound on-ramp via a driveway that connects to the bicycle/pedestrian trail. Police vehicles access the boat house daily and rescue trucks access the boathouse occasionally. Vehicles leaving the boathouse re-enter the RMP eastbound from the NYPA icebreaker boat staging area.

Emergency services vehicles access the Robert Moses Parkway outside of the State Park at existing interchanges. No concerns have been raised regarding the frequency of the existing emergency U-Turns.

Parking Regulations and Parking Related Conditions

Parking within the mainland portion of the Park is restricted to designated parking areas, which include Parking Lot No. 1 and the portion of the eastbound RMP between the American Rapids Bridge and John B. Daly Boulevard. No overnight parking is permitted within the State Park. Parking restrictions are enforced by Parks Police.

Parking Lot No. 1 is the State Park's primary parking facility and is located on the mainland northeast of the Visitor Center and South of the Rainbow Bridge. Lot 1 is accessed by RMP from the south and

Mayor Michael O’Laughlin Drive from the east. The lot is approximately 110,234 sq. ft. and contains 270 parking spaces, for cars and trucks only. There is a flat rate charged throughout the year.

There are also 74 marked parking spaces along the former eastbound lanes of the RMP between the American Rapids Bridge and just east of 4th St within the State Park. These parking spaces are free and not metered at any time throughout the year. These parking spaces can only be accessed by the Westbound RMP via a U-turn Drive beneath the American Rapids Bridge.

During many of the peak summer weekends Parking Lot 1 reaches its capacity, sometimes as early as 9:30-10:00 AM. When this occurs vehicles are turned away at either the parking lot entrance or via flashing light direction at the American Rapids bridge overpass of RMP, and redirected to available parking on Goat Island and in the City of Niagara Falls. This causes short-term delays and queuing onto the RMP westbound while advance signage is activated and Parks Police close the westbound RMP at Main Street. Signs with flashing lights are supplemented on holiday weekends by temporary variable message signs, which alert motorists that the parking lot is full and direct vehicles to Goat Island for parking. On some holiday weekends, parking lots on Goat Island reach capacity, at which time the Parks Police close the American Rapids Bridge and direct all traffic into the City of Niagara Falls.

Ownership and Maintenance Jurisdiction

The Parkway west of the John B. Daly Boulevard interchange to Prospect Street, the American Rapids Bridge, and Goat Island roadways are both owned and maintained by the NYSOPRHP. Beginning at the John B. Daly Boulevard interchange and proceeding east, the RMP right-of-way is owned by the New York Power Authority (NYPA). In this area NYSOPRHP has a use and occupancy permit and NYSDOT has maintenance jurisdiction of the roadway and interchange through an interagency agreement. John B. Daly Boulevard is both owned and maintained by NYSDOT. Prospect Street, 4th Street, Buffalo Avenue and Mayor Michael O’Laughlin Drive are owned and maintained by City of Niagara Falls.

2.2.4 Infrastructure

Existing Highway Section including Pavement and Shoulder

The RMP between Robert B. Daly Boulevard and Old Falls Street currently operates as a two-lane, one-way westbound park entrance drive for automobiles. The eastbound lanes are connected to the westbound parkway at intervals and are used as a one-lane, one-way park road with marked parallel parking. The curb-to-curb width for each direction is 24 feet, with vertical curb on the left side and mountable curb on the right side. The median between eastbound and westbound varies from 15 to 30 feet.

The RMP generally parallels the Niagara River and consists of a divided highway and landscaped median. It is constructed of concrete pavement. The westbound lanes have been overlaid with asphalt pavement. The concrete pavement is essentially 55 years old and is past its useful life. Segments of pavement are heavily cracked, spalled, and separated from adjacent sections. Extensive cracking and spalling is visible at the joints in the concrete pavement and around drainage structures, as well as evidence of extensive patching.



Drainage Systems

The majority of the State Park outside of the roadway is drained via overland flow toward the river. The Robert Moses Parkway lanes and median are drained by a closed drainage system installed during roadway construction. It collects water from the existing curbed pavement section and outlets it to the Niagara River via culverts along the shoreline. The inlets for this system are in fair to poor condition, with many of the inlet structures settled. At 4th Street, one of the grates is clogged with leaves and other debris, resulting in ponding within the turning area onto the RMP.

The closed drainage system outlets to the Niagara River at several locations within the State Park. The headwalls of the outlets appear to be in good condition, but the outlet pipes are partially clogged with branches, leaves, and other debris.

The water level in the Niagara River through the State Park is variable but highly regulated due to the presence of hydropower plant intakes upstream. Between 4th Street and Main Street there is a National Oceanic and Atmospheric Administration (NOAA) water level monitoring station in the river, with an associated equipment building located on the shoreline within the State Park. Between January 2006 and December 2008, the difference between the annual maximum and minimum water levels at the monitoring station varied between 2.53-2.90 feet. The mean water level for these years varied from 559.149 feet to 559.360 feet (Note: all NOAA elevations have been converted from IGLD 85 to NAVD 88 to be consistent with the survey data utilized for this project). On November 18, 2009, between 10:21 am and 11:09 am, water levels at four other locations were surveyed. Near the John B. Daly Boulevard interchange, the water level was 561.37 feet. From there the water level fell to 560.09 feet near 4th Street, 549.64 feet upstream of the American Rapids Bridge, and 529.32 feet upstream of the Goat Island Bridge. Within the same time period that the survey data was acquired, the NOAA water level was at 559.12 feet. This value is within three inches of the annual mean water levels for the last three years, so the surveyed water levels are assumed to reflect mean water levels along the shoreline.

Roadway Geometric Design Elements Not Meeting Standards

Critical Design Elements

NYSDOT has established critical design criteria for the geometry of roadway elements and requires that features that do not meet these criteria be identified as non-standard features.

The existing RMP west of John B. Daly Boulevard has been assessed against the critical design criteria for an urban arterial and found to have the following non-standard geometric features:

- The vertical clearance under the American Rapids bridge is less than the 14'-0" minimum design criteria.

The existing RMP interchange ramps with John B. Daly Boulevard have been assessed against the critical design criteria for free flow turning roadways on an urban arterial expressway and were found to have the following non-standard features:

- The existing traveled way width for a two lane curbed ramp is 23 feet wide which is less than the 26 foot standard minimum width for a curved ramp.

- The existing right horizontal clearance from the edge of the John B. Daly Boulevard ramp to the RMP eastbound ramp to the guiderail is 1.5 feet which is less than the 6 foot minimum standard horizontal clearance.

The existing RMP east of John B. Daly Boulevard has been assessed against the critical design criteria for an urban arterial expressway. The existing roadway has no shoulders or curb offsets and the standards require 4 foot left and 10 foot right minimum shoulder widths.

Non-Conforming Features

The existing Robert Moses Parkway east of John B. Daly Boulevard features curbs on both sides of the roadway. On the left side of the road, the curb features a vertical faced curb which is not accepted design practice along roadway with operating speeds greater than 50 mph (per NYSDOT Highway Design Manual Section 10.2.2.4). On the right side of the road, the curb has an angled face but does not conform to the shape of the T100 traversable curb identified in the NYSDOT Highway Design Manual as acceptable for use along parkways with less than standard shoulder widths.

Geotechnical

Soils in the project corridor vary from native clayey silt at the west end of the project to sizable deposits of fill from hydropower plant intake construction at the east end. Rock is at a variable depth. The John B. Daly Boulevard interchange is constructed on fill, which was placed into a former inlet in the Niagara River at the time of construction. The content of this fill is unknown, but much of it is believed to have come from excavation of the NYPA power intakes. A geotechnical investigation will be undertaken during detailed design to evaluate the content and properties of the fill and native soils at key locations.

Structure

Two bridges carry the RMP over John B. Daly Boulevard, forming a grade separated interchange. These are referred to as BIN 1068141 and BIN 1068142. The westbound bridge is open to traffic and is in operating condition. The eastbound bridge is in an unmaintained condition, and is closed to all but maintenance traffic. The vertical clearance under the bridges is posted at 12 feet 7 inches. Both bridges are approximately 55 years old and do not meet current standards for vertical clearance. The eastbound bridge is functionally obsolete, since there is no two-way traffic in the State Park, and the bridge serves in a limited capacity.

Guide Railing, Median Barriers and Impact Attenuators

Approaching John B. Daly Boulevard from the east, box beam guiderail is provided on the right side of both the eastbound and westbound lanes to protect the bridge approaches. The guiderail on the right side of the eastbound lanes is connected to the bridge rail. Just east of the bridge, box beam guide rail is provided on the left side of the RMP and is connected to the bridge rail. The box beam guiderail appears to be in good condition. No guide rail is provided between John B. Daly Boulevard and Niagara Street.

Utilities

The following companies and agencies have utilities in the project area:

- Communications: AT&T, Verizon, Sprint/Nextel, Time Warner Cable
- Electric: National Grid

- Gas: National Fuel Gas
- Water and sanitary sewer for the State Park are confined to the Prospect Point area. Utility service to Goat Island is conveyed on the Goat Island pedestrian bridge.

2.2.5 Miscellaneous

The following features are not present in the project corridor:

- Airports, Railroad Stations, and Ports
- Railroad Facilities
- Major culverts

Modifications to the bridges over the Niagara River are not included in the project scope.

2.2.6 Transportation Needs

Based on the assessment of existing conditions presented in Section 2.2 above, the following transportation needs have been identified:

- There is a need to provide a roadway that is functionally different from the 4-lane expressway configuration that is the remnant of the Robert Moses Parkway, both at the east entrance and through the length of the State Park, to help restrict operating speeds and create a park type roadway.
- A low-speed scenic park road through Niagara Falls State Park is needed as part of an overall plan to maintain easy access to Niagara Falls State Park.
- Connectivity between the State Park and the City needs to be improved by eliminating the expressway configuration and providing defined pedestrian/bicycle access and connections from the State Park/River's edge to adjoining City neighborhoods.
- There is a need to consider configurations that allow for the management of traffic during peak periods, so that visitors are directed to available parking without sizable delays.
- There is a need to reduce maintenance efforts and costs by replace aging and functionally obsolete infrastructure with new, appropriately scaled infrastructure.

2.3 Pedestrian, Bicycle, and Trolley Path Considerations

Walking and bicycling are primary modes of travel within the State Park, whether a visitor arrives by private motor vehicle, tour bus or trolley. While the terms 'pedestrian' and 'bicyclist' are used for these sections, it is important to note that these terms include a wide range of park users, including runners, walkers, wheelchairs, strollers, bicyclists, in-line skaters and others. The following sections are focused on the project area between John B. Daly Boulevard and Mayor Michael O'Laughlin Drive, although it is important to recognize that connectivity and design continuity with Goat Island and the Visitors Center / Prospect Point areas are important issues.

2.3.1 Pedestrian Considerations

The path system in the study area is configured as a central hub/destination with pedestrian paths radiating out from Prospect Point, and as a linear system between the Goat Island Pedestrian Bridge and the State Park's east end. Existing paths are constructed in a range of materials and cross sections, with generally wider paved asphalt or concrete paths closer to the falls and narrow paved paths towards the

east end. Path cross sections vary from the 6-8' wide asphalt shared use paths near John B. Daly Boulevard to a 10' wide shared use path cross section near the Goat Island Bridge to the more than 16' wide paths near the Falls. Path surface conditions range from sections of patched and aging asphalt along the river to new concrete sections with paver stone edging on connecting paths from Heritage Park to decorative brick paver sections at the main park entrance near Old Falls Street. Bike/pedestrian access between the City of Niagara Falls and the State Park is limited to at-grade crossings near Heritage Park and Mayor Michael O'Laughlin Drive. A grade separated bike/pedestrian path undercrossing is provided at the existing John B. Daly interchange.

Bicycle and pedestrian traffic is mixed on shared use paths east of the Goat Island Bridge. In Prospect Point, there are multiple paths and surface types, with priority given to pedestrian access. Separation of pedestrians and the path system is provided at overlooks along the rapids and falls. Bicyclists are required to dismount and walk in the Prospect Point area by signage placed at the Heritage Park crossing. 'Social' trails created by runners, bicyclists and other trail users are visible in multiple locations.

Access to the State Park across the existing parkway is provided at multiple at-grade crossings. Existing at-grade pedestrian crossing locations include Old Falls Street and Heritage Park (2 crossings). Pavement markings are generally worn and high visibility signage is not provided at all crossings. A stop sign is located at the Old Falls Street crossing, and a speed table is provided as a traffic calming feature at the east Heritage Park crossing. The crossing from First Street to the American Rapids Bridge is signalized, but ADA-compliant pedestrian access is not provided down to the river at this location.

Pedestrian/bicyclist counts conducted on Columbus Day weekend in 2008 and additional observations were made on July 4th weekend in 2009 and during other project site visits. Average hourly counts ranged from 56 pedestrians / 8 cyclists at the river overlook east of the Goat Island Bridge to 824 pedestrians / 18 bicyclists at the west side of the Bridge. These data confirmed visual observations of decreasing park use increasing with distance from the Falls and major parking areas. The low numbers of bicyclists are unusual as the State Park and the Niagara River have the potential to be major destinations and could be the result of the lack of proper facilities and accommodations for bicyclists.

The lack of access between the American Rapids Bridge and the river on the mainland side is a key barrier to improved mobility for pedestrians and bicyclists. In addition, because most access and parking is located near Prospect Point, few State Park visitors experience the sequence of the river from calm water to the rapids to the falls. High volume zones and overlooks are not sufficiently delineated and signed to maintain pedestrian priority. In addition, inconsistent trail surface materials detract from user orientation and wayfinding.

2.3.2 Bicycle Considerations

Currently, bicyclists are not encouraged to use the State Park's trails within the Prospect Point area, and the limited access points for bicycling do not help diversify the user experience along the river. The path system described above is primarily oriented to pedestrians, and does not include clearly defined bikeways parallel to the river and connecting the City and the State Park. There are no bicycle racks in the State Park, and bicycle riding in the Prospect Park area is prohibited by signage at the Heritage Park crossing. Bicycle rentals or bike sharing programs are not currently available in the State Park but are beginning to emerge in adjoining downtown venues. Pavement conditions include sections with patched and aging asphalt and the narrow path widths east of the Goat Island Bridge do not meet current shared-use path guidelines.

The existing facilities between John B. Daly Boulevard and the Goat Island Bridge are classified as shared-use paths and are connected to a shared use path between the North Grand Island Bridges and the State Park. Bicyclists are prohibited from riding on the existing Robert Moses Parkway. There is no defined bikeway through the State Park between the Goat Island Bridge and Rainbow Bridge. It is important to note that north of Rainbow Bridge, the two river-side lanes of the Parkway have been converted to a shared-use path for pedestrians and bicyclists.

The Niagara River Greenway is a long-term project to create a continuous waterfront trail system (and associated amenities) to connect communities along the river. NYS OPRHP is a partner in this vision, and the RMP project can complement the goals of the Greenway. The Greenway Vision recommends that a bicycle and pedestrian trail system be developed to provide direct access to the Niagara River, running continuously along the entire length of the Niagara Falls waterfront. The Vision promotes the concept of making sure that the path is connected to adjacent neighborhoods and the city street pattern for pedestrian and bicyclist access.

As noted above, existing bicycle volumes are low for a destination such as Niagara Falls State Park. Bicycling is an increasingly popular activity for both transportation and recreation. While priority needs to be maintained for pedestrian access to primary destinations in the State Park, increased capacity for bicycling can be created parallel to the river, especially towards the east end, which is beyond the typical walking distance for park visitors. Creating a continuous bikeway along the river would provide the opportunity for more visitors to participate in a healthy outdoor physical activity that improves the State Park's environmental footprint.

Because bicyclists generally travel at higher speeds than pedestrians, it is preferred to maintain separation between bicyclists and pedestrians – either by providing appropriate width shared-use paths or by providing separated path surfaces. Intersection treatments at locations where local streets intersect the State Park and at-grade crossings of the Parkway do not currently provide treatments (signals, pavement markings and signage) designed for bicyclists' use.

For bicyclists, there is no current existing defined route through the State Park along the river. This linear movement is a potentially key element of the State Park experience, especially since a bicyclist can travel the length of the park quickly, can help diversify visitor use beyond high-volume zones, and provides a healthy, popular activity that supports ongoing NYS OPRHP efforts.

2.3.3 Trolley Path Considerations

The State Park operates visitor trolleys during the summer months. During project team observations on the July 4th, 2009 weekend, the State Park utilized two-section rubber-wheeled trolleys with a capacity of about 100 persons (about 80 seated). These trolleys operated in pairs, with a maximum of 4 pairs operating at 20-30 minute intervals. These trolleys operate on both pedestrian paths and existing roadways.

The Niagara Falls Scenic Trolley allows visitors to enjoy an overview of the State Park in half an hour as a knowledgeable guide shares the history of the park along the three-mile route. There are six stops that allow visitors to explore the Niagara Falls attractions. The trolley route is one-way and goes from the Visitor's Center to the Aquarium and Discovery Centers, goes back to the Maid of the Mist area before heading to Goat Island via the American Rapids Bridge. The trolley travels around Goat Island counterclockwise. From the American Rapids Bridge, it returns via 1st Street, Rainbow Boulevard and

4th Street. There are no trolley stops on city streets. The trolleys take 4th Street to the Robert Moses Parkway and return to the Visitor's Center.

For the trolley routes on existing State Park roads, there is no physical delineation that differentiates these routes from other park paths. As a result, the State Park roadways are shared by combinations of pedestrians, bicyclists and trolleys in various areas.

Trolley passes (colored wrist bands) are sold in the visitor's center and several trolley stops. Trolley passes are also included in the multi-attraction discount packages. Trolley service is not currently provided to the east end of the State Park. The vintage-style trolleys run on environmentally friendly natural gas and figure prominently in Niagara Falls State Park's "Green Park Project," a program that received the 2006 Clean Air Excellence Award.

Near Prospect Point the trolley route utilizes and/or crosses the pedestrian paths. The junction between the Trolley road and the Goat Island Bridge is not clearly defined, resulting in a large area of asphalt shared by pedestrians, bicyclists and trolleys. Most trolley stops are equipped with benches, but transit shelters are not present at most locations. The benches at the trolley stops were observed to contain persons resting in addition to those waiting for the trolley. Other persons waiting for the trolley were sitting or standing nearby. As the trolleys became busier, groups of passengers had difficulty staying together, particularly when a folded up stroller had to be carried into the trolley. Bicycles are not permitted on board the trolleys, and the trolleys are not equipped with racks to carry bicycles.

2.3.4 Pedestrian, Bicycle, and Transit Needs

- ♦ **Easy Access to Park/Park Scaled Road**
The existing four-lane Robert Moses Parkway creates a barrier to pedestrian and bicycle access to the State Park from multiple locations. The road needs to be properly scaled to ensure safety of State Park visitors crossing at-grade in multiple locations.
- ♦ **Easy Access Along Waterfront**
Movement along the river needs to be in a continuous and clearly defined system of shared-use and/or separated paths for pedestrians, bicyclists and trolley riders.
- ♦ **Connectivity Between State Park and Local Street System**
Links to adjacent neighborhoods and destinations needs to be improved by connecting with local streets at multiple locations.
- ♦ **Integrated Circulation System that Serves all Users**
Diversifying the modal choices available at the State Park provides visitors of all ages and abilities an appropriate park experience.
- ♦ **Reduce Maintenance**
The existing maintenance budget for the State Park is limited and high quality design and materials are needed to reduce long-term maintenance of path facilities.
- ♦ **Quality of Existing Pedestrian/Bike User Experience (Interpretation, Wayfinding, etc.)**
As a premier destination, the user experience needs to match expectations, with clearly defined wayfinding designed for an international audience.

2.4 Park Conditions, Deficiencies and Engineering Considerations

2.4.1 Historic Site Conditions and Character

The condition of the RMP today is deteriorated due to time, weathering and use. The current roadway, now 50 years old, was developed through the Niagara Reservation landscape in the character of a high speed expressway. Today the relatively narrow landscape along the east bank of the Niagara River is dominated by a four-lane, median separated roadway corridor.

The landscape character is generally that of a highway rather than a parkway within a scenic landscape as originally designed. There is a single pedestrian path close to the river bank that has no connections to the roadway or the adjacent neighborhood. Pedestrian access functions are limited to movements from the north area near the American Falls along the narrow riverfront path. Parkway and landscape multi-modal access is not present. In contrast, a landscape in the Olmsted and Vaux style would have a graceful, low speed roadway that focuses views on the river and an extensive, diverse multiple use pathway system that affords a scenic experience of the landscape and river throughout the State Park.

The riverfront walkway, the willow trees along the river bank, some scattered old canopy trees and the dense native trees on steep slopes to the east are the remaining historic landscape features. These limited historic features are somewhat isolated within a modern highway landscape.

The median separated roadway transportation element dominates the open landscape character. Parkway plantings reflect the aesthetics and style of the late 20th century rather than that of the Olmsted - Vaux design and principles of scenic landscape. The nineteenth century landscape topography and plantings would have afforded a continuous scenic experience with a visual on a park landscape of trees over turf or meadow that focused consistently on views of the riverfront. The current character and condition at the east end of the parkway is not welcoming to pedestrians, is vehicle dominated and directs traffic at high speeds. The landscape has a highway character that fails to emphasize the visual and physical connection to the river. The landforms and grading, with extensive undefined turf areas, are characteristic of expressway road and bridge design. There are large blocks of shrubs at the bridge abutment slopes designed in a contemporary style.

In summary the landscape condition today is degraded, contemporary in style and focused on the roadway. The landscape character fails to reflect the historic design intent.

2.4.2 General Park Conditions and Character

Description of Existing Conditions

Currently the State Park generally consists of expansive lawn areas that are populated by large mature trees. Hard surfaced trails provide access along the Niagara River and connect to City streets. This landscape character varies from east to west. The eastern end of the State Park, in the vicinity of John B. Daly Boulevard, is open, includes expansive lawn areas and provides views of the Niagara River. Relatively few trees and minimal trails are located in this section of the State Park. The southwestern portion of the State Park, in the area known as Upper and Lower Groves and east of Prospect Point, is characterized by large deciduous trees that create dense shade through their prolific canopy, and includes multiple trails, lighting, benches and signage. Generally the western portion of the mainland State Park, from Old Falls Street to Prospect Point, is the most heavily used area in the park and provides the most pedestrian amenities, landscape detail and diversity.

The park area directly adjacent to the RMP can generally be described as open lawn area. Few trees are in close proximity to the roadway in the eastern portion of the State Park. Expansive lawn areas characterize the landscape from John B Daly Boulevard to 4th Street. West from 4th Street to Main Street, the landscape becomes denser and consists of large trees and woodland areas within close proximity to the roadway. The landscape from Main Street to Niagara Street is characterized by a large trees and lush lawn areas that extend from Prospect Street to Prospect Point and include numerous walkways, lights, benches signs and structures including the Visitor Center, Maid of the Mist gift shop and the Observation Tower.

Intent of Existing Designed Landscape

Park landscape as a whole is comprised of many individual features. Holistically, it creates a framework of outdoor spaces, each providing their own unique role in the sequential experience of moving through the State Park. The primary intent of the landscape is to enhance the aesthetic appearance of the State Park and is used to provide access to distinct attractions, services and natural features. The landscape character is intentional and designed to meet visitor expectations related to the character of RMP and the State Park, as well as offering choreographed experiences. Some landscape treatments consist of open lawn areas and others are densely planted, each suggests the type of use the visitor may engage in within the sub-spaces and corridors created by this visually open and closed system. The intent of the landscape directly adjacent to RMP is to provide a view into the State Park and generally consists of open lawn.

The landscape within the State Park provides a greater role than beautification; it also establishes a framework for the facility and function of the existing amenities, attractions and services. It provides visual hierarchy, scale, sequence and repetition to signify movement from one place to another within the State Park. The features utilized to choreograph this unfolding experience are sometimes inherent and subconscious. These forms include a broad pallet of materials including plants, walkways, plazas, walls of various styles, land sculpting and architectural features that all layer together to create a unique system that is pleasing to the eye, is directional, and indicates use and behavior. In high-use areas the holistic landscape framework establishes an overall character that is associated with the destination or natural attraction. Areas that are used heavily provide hard paved surfaces and dense landscaping while low intensity use areas merely consist of lawn. The visitor should not visibly discern the landscape's functional intent and framework from its inherent beauty and it should provide a seamless and timeless appearance.

Visual Character Created by the Landscape

Three of the primary functions landscape provides are to define use, frame views and direct circulation. Visually prominent features, recognizable from various vantage points, lead visitors from one place to another within the State Park. Large vertical elements are sometimes located in specific places within a public space to provide this visual orientation. This celebratory gesture is designed and utilized to guide visitors across large geographic areas. Flagpoles, large buildings and large trees in an open field serve this purpose. They help visitors orient themselves through a sequence of experiences and back to their origin. This functional use of landscape contributes to the character of the State Park by providing orientation as well as identifying special places like the Visitor Center or knowing where parking areas are located. The visual character provided by the open lawn landscape treatment adjacent to RMP suggests that this area is not a high intensity use area and the function and character of the landscape along RMP is to provide views into the State Park.

Moving and directing people are distinct functions of the landscape, which includes hardscape systems like trails and sidewalks. These systems also serve to provide access to a wide variety of user groups, including those with physical impairments. The broad spectrum of user needs creates another layer of responsiveness that is often overlooked and includes safety, security and ease of access and use.

Overall the landscape framework of the State Park provides an adequate setting for visitors viewing the Falls. It has been 125 years since the hands of Olmsted and Vaux designed the Park and although much of the design intent remains, the pieces of the original design are generally gone. Management and maintenance of the State Park are obviously a high priority and the grounds are pleasing.

Existing Elements within the State Park

Many site features, fixtures and amenities exist in the State Park and combine as distinct elements and systems that enhance the visitor's experience. These primary elements include the following:

- ♦ Pedestrian and Vehicular Lighting
- ♦ Pedestrian and Vehicular Signage
- ♦ Roadways: RMP, Prospect Street and Service/Trolley Roads
- ♦ Parking Areas
- ♦ Sidewalks, Trails and Pathways
- ♦ Stone Walls and Gateways
- ♦ Benches, Bike Racks and Trash Receptacles
- ♦ Railing and Fences
- ♦ Landscape
 - ♦ Open Lawn Areas
 - ♦ Specialty Garden Areas
 - ♦ Woodland Settings
 - ♦ Large Specimen Trees
 - ♦ Detailed Ornamental Plantings
 - ♦ Planters

Primary Landscape Zones and Function

There are several distinct landscape zones within the State Park along the RMP west from John B Daly Boulevard to Prospect Street and Old Falls Street. Each is identified by distinct changes in the landscape form and character. In addition, each of these distinct areas serves a unique function within the overall park setting and includes the following:

- ♦ Main Entrance (John B. Daly Boulevard to 4th Street)

The main entrance to the State Park from the RMP is located west of the interchange with John B. Daly Boulevard. This gateway to the State Park consists of open lawn and meadow areas from John B Daly Boulevard to 4th Street. Spacious lawn areas, informal asphalt trails and irregular groups of trees and along the Niagara River characterize the landscape in this portion of the State Park. Little to no lighting is provided. The northern side of the RMP to Riverside Drive consists of a well-maintained open lawn area that appears to be mostly used by nearby residents that includes large widely spaced trees.

The primary function of this area of the State Park, along with its physical relationship to the RMP, is to establish a welcoming setting and direct people from the regional road and trail networks into parking areas and attractions. Because it is one of the first views visitors have of the State Park, it should create a truly welcoming scene that establishes a unique gateway with a dramatic appeal. This section of the RMP should maintain and frame views of the Niagara River and the American Rapids.

- 4th Street to Main Street

The landscape in the area of 4th Street west to Main Street includes large trees that form masses on both sides of the RMP. The northern woodland is not maintained and appears as a natural woodland and buffer from the City. Large trees are also located on the south side of the RMP, however the character of this woodland massing is quite different because the understory is maintained as lawn area, is accessible by the parking area and appears to be utilized as a neighborhood park. The informal trail continues along the Niagara River shoreline. Little to no lighting is provided. However, the floodlights that illuminate the rapids begin in this location.

The functional aspects of this portion of the park currently serve two primary populations and include regional visitors and City residents who may frequently visit the State Park. The parking area and woodland area located west of 4th street, between RMP and the river, appears to be utilized by local residents. Picnicking, fishing, running and biking were all observed during visits to the site. 4th Street provides direct access to the State Park to and from the City.

- Main Street to Prospect Street and Niagara Street

The landscape character of this portion of the State Park is fairly dynamic and is characterized by the intersection of park, city street and sidewalk systems. The trolley route also utilizes this area as its primary link between the mainland park and Goat Island. Roads, trails, sidewalks, the American Rapids Bridge, the pedestrian bridge, Heritage Park, Main Street, Buffalo Avenue and Prospect Street all intersect within the overall landscape of this subsection of the State Park. As a result, the overall appearance of the landscape responds to a variety of conditions including sloping areas, a roadway boulevard, ramp embankment and sloped landscape areas south of Heritage Park. Lights, sidewalks, benches and signs are located within this area. Styles and sizes vary among these elements.

From Heritage Park to Niagara Street, the landscape character changes dramatically from other areas of the State Park. Dense trees occupy the eastern border of the State Park from Old Falls Street, within the existing boulevard at the intersection of Mayor O'Laughlin Drive and the primary entrance to the State Park. This dense clustering of trees buffers views from Prospect Street into the park and from the park into the City. South and west from Prospect Street and Mayor O'Laughlin Drive, the State Park consists of the Visitor Center, the American Falls Overlook, the Observation Tower and Maid of the Mist gift shop. Walkways and plazas connect the buildings and facilities. Signage directs people throughout this area of the State Park and is relatively well lit in evening hours when lights illuminate the Falls.

The landscape within this area of the State Park serves many functions. It provides access to and from City streets to Prospect Street, Main Street, Buffalo Avenue and Goat Island. The American Rapids Bridge serves as a gateway to a more densely used portion of the State Park along the American Rapids. Generally this area is a transitional zone that provides access throughout the State Park including the City and Goat Island.

The dense landscape and existing trees along the west side of Prospect Street buffer views of Parking Lot No. 1 from the City streets. The west and south sides of the parking area are heavily landscaped and provide thorough screening of the parking lot from within the State Park. Large stone walls create pedestrian gateways and are incorporated with the landscape plantings along the south side of the parking area.

Usage and Demand of the Mainland Park

In general the use of the State Park intensifies from east to west. The eastern portion of the State Park in the vicinity of the John B Daly Boulevard receives little use. The woodland area near the parking area at 4th Street is used moderately. The State Park area west of the American Rapids Bridge is highly used primarily to view the American Rapids and to access the pedestrian bridge that leads to Goad Island. The primary visitor demand occurs from Old Falls Street to the American Falls viewing area, Maid of the Mist and Observation Tower. Many of the visitors using this portion of the park access the area through Parking Lot #1, the Visitor Center and the walkways along the American Rapids. During peak periods, the popular viewing areas around the American Falls and the Rapids become congested with pedestrians.

2.4.3 Grading and Landscape

The topography of the parkway roadway today is the result of bridge construction and river edge fill in the mid-20th century. It is functional and regular rather than graceful and scenic. The roadway is positioned prominently within the topography so that it is highly visible and dominant. To the east the functional grading for the bridge forms a significant visual and physical barrier to the riverfront. The roadway topography and relatively open landscape is not welcoming as paths do not connect through the landscape to the community or along the landscape for a varied experience. Due to these current conditions there is limited landscape use by pedestrian and bicyclists along the roadway areas. Intensive landscape use is currently focused at the west around the American Falls. Little of the current landscape along the roadway expresses the historic design or character. The west area adjacent to the American Falls does express the Olmsted Vaux design with a network of paths, and groves of trees that offer landscape variety as well as direct access to the falls overlook.

2.4.4 Access to Recreational Features and Wayfinding

Purpose and Intent of Wayfinding

The purpose and intent of wayfinding is to direct visitors to the natural features and attractions located in the State Park. In many respects Niagara Falls provides its own inherent wayfinding features and is primarily based on the fact that visitors can see the Niagara River, hear the roar of the Falls and see the rising mist. All these elements can be observed from the RMP when entering the State Park from the east. This existing sensory wayfinding system is also interconnected with City streets, including bridges and ramps, and existing buildings. Parking areas have also been developed to accommodate the traveling tourist and tour busses and provide key destination locations within the State Park. Each brings a degree of noise and activity that diminishes the inherent sensory orientation. One of the most useful wayfinding aspects of the RMP and the State Park is the existing open lawn areas. These open meadows provide a direct line of site to the river and rapids, as well as the Falls and attractions located throughout the State Park.

Use and Function

Wayfinding occurs at various stages and distances from the State Park. Regardless of the form of transportation, physical orientation begins when visitors enter the State Park from the RMP or City streets. Primarily it occurs everywhere from the point of entry to the State Park and includes accessing the individual attractions. It occurs by walking as well as riding the trolley. Wayfinding is required at every location where a directional decision must be made, traveling anywhere in any direction. Most importantly it provides a choreography and progression system that guides visitors through a series of experiences. Its primary use and function is to direct visitors to the natural features and park attractions. The wayfinding system must provide directional and orientation cues from State Park entrances to primary attractions and orientation decision points. It must also provide for safety.

Existing signage systems within the State Park must address a variety of user types. One of the most significant aspects of wayfinding systems is that State Park visitors come from a wide range of countries. The diversity and international make-up of the visitors requires a signage and wayfinding system that is understood by a wide range of users. International destinations like Niagara Falls State Park rely on a universal language of symbols to communicate attractions, services and directions. In addition, it is also important to recognize the physical challenges and impairments of visitors and that the wayfinding systems should respond to these complex needs and meet ADA requirements. A simplified system comprised of symbols, graphic icons and directional arrows must be maintained to provide a consistent appearance and to promote the character of the State Park.

Access to Recreational Features

Access to the recreational features within the State Park is accomplished by use of the transportation systems and includes roads, trails, trolley routes and sidewalks. These systems provide a means of access to the individual features within the State Park. This network is strengthened by visual cues that are integrated into the open lawn areas, the existing landscape, lighting and signage. This framework of interconnected wayfinding systems combines to direct and guide visitors through the State Park and provides direct access to both recreational and programmatic amenities.

The State Park also provides resources for local City residents. Signage and wayfinding systems should also respond to residents and visitors entering the State Park from City streets and other local park and recreational sites.

How Wayfinding Creates Character

One of the primary functions that wayfinding and signage provides is to orient and direct visitors. Although signs are usually combined with landscape and lighting, they stand alone and are generally visually prominent features, recognizable from various vantage points. This prominence creates the opportunity to establish the character of the State Park and the level of service and amenities visitors expect. Graphically appealing signs can often establish a mood or behavior based on content and design. Signs therefore have the ability to influence the overall character of the State Park. Distinctive graphics, artful colors, size and shape can suggest a great deal about the type of experience the user is allowed and expected.

Style and Hierarchy Considerations

One of the basic principles of wayfinding and signage is that it provides a sense of hierarchy, scale and sequence based on its surrounding context and visual interest. Larger signs should be provided in areas that require key decision-making points; intimate spaces require signage that is scaled to the field of vision and proximity to the user. Design and appearance are also key factors in the successful use and function of signage. Signs must compliment and contribute to the overall aesthetics of their location. That is accomplished through design, content, size and color. Lighting also influences the appearance and character of signage.

Existing Conditions

Based on site visits, it is apparent that a variety of sign styles and sizes exist within close proximity to the RMP within the State Park. Some are very large while others are small and not discernable relative to the context. Roadway signs have a different style than the pedestrian signs located nearby within the State Park and the City. Countless colors and graphic styles are present throughout the State Park.

Most of the signage within the State Park appears to be in good condition. Recent installations and/or regular maintenance provide the visitor with a wayfinding system that is well maintained. It appears that a great deal of thought and energy has been devoted to providing a system that is organized and unified throughout large portions of the park, particularly in the vicinity of the Visitor Center.

Key RMP Wayfinding Locations

Based on project area observations the following areas have been identified as key wayfinding locations along and in close proximity to the RMP. These key locations are useful in directing visitors to key natural features, attractions and recreational amenities.

- Highway System interchange with John B Daly Boulevard and RMP
- East Entrance to the State Park west of John B Daly Boulevard
- 4th Street lay-by parking area
- 4th Street area (directing traffic to Goat Island, Main Street and Parking Lot #1)
- Main Street (directing traffic to Goat Island, Main Street and Parking Lot #1)
- American Rapids Bridge (pedestrian and vehicular directions and orientation)
- Heritage Park (pedestrian orientation)
- Pedestrian Bridge (pedestrian orientation)
- Old Falls Street (pedestrian and vehicular directions)

Concerns and Opportunities

Overall, it is important to promote, implement, and maintain a signage and wayfinding system that is simple and easily understood. Attractiveness, content and bold directional information is key to successful use of signs so that they readily deliver information and provide orientation that compliments the environmental context, and that it is unified with other site furnishings and design vocabulary. These considerations must also consider operations, experience and safety.

Roadway signage along City streets and the RMP will need to meet MUTCD standards as well as provide traveler information.

Signs throughout the State Park should be designed and located to provide guidance to key destinations. Signage also needs to provide for guiding and orienting the visitor after they have reached the destination and prepare them for the next destination during their visit. This can be accomplished in several ways including providing signs or kiosks centered near the destination and providing two-sided signs along trails.

An existing sign system is currently in place within the State Park and along the RMP. Signs would be required as part of the RMP improvements. Current signs may be relocated, new signs designed similar to the current signs can be implemented, or new styles of signs may be preferred. Signage style will be determined during subsequent portions of this analysis.

2.4.5 Lighting

Purpose, Role and Effect of Lighting

The purpose and role of lighting within the State Park and along the RMP is to provide for safe access to park attractions, the Rapids and Falls and to enhance the character and experience of the park during evening hours. Visitors that access the State Park at night generally are directed to the natural features and attractions by the use of lighting. Those areas that are lit tend to be the areas that visitors access. Lighting is also utilized to emphasize key park features and provide for overall visitor orientation.

Use of Lighting to Create Visual Character

Lighting has more than a function effect - it also creates drama and provides wayfinding cues. Special-use lighting, particularly the lighting of the Falls at night, creates a truly unique experience for the visitor. Lighting along roadways and sidewalks can have a similar effect when used creatively. It serves to identify a special place, which is distinct and different than the surrounding City streets or the regional roadways. This is accomplished through the use lighting styles that are unique to the State Park and primarily represented by the existing globe fixtures found in Prospect Point. This use of similar lights provides a sense of orientation as well as establishing the character and use of the State Park at night. Lighting levels and intensity also suggest use and behavior.

Existing Conditions

Existing lighting in the State Park and along the RMP is inconsistent in type and location, though overall the lighting fixtures appear to be in good condition. Generally there are six types or styles of lights that exist within close proximity to RMP including the State Park and City streets. These styles consist of the following:

- ♦ Single Pole Globe Light (typical of Prospect Point)
 - ♦ Pedestrian scaled, green pole, white globe
- ♦ Single Pole Historic Styled City Street Light (typical of Old Falls Street)
 - ♦ Street and pedestrian scaled, black pole, transparent luminaire
- ♦ Single Pole Modern Styled Road Light (Heritage Park along Prospect and Main Street)
 - ♦ Street scale, silver pole, round cut-off fixture
- ♦ Single Pole Cobra Styled Pedestrian Light (Heritage Park)
 - ♦ Pedestrian scale, silver pole, transparent arm supported luminaire
- ♦ Single Pole Modern Styled Light (located along the trail north of the Pedestrian Bridge)
 - ♦ Pedestrian scaled

- ♦ Floodlights (located along the north and west shoreline of the Niagara River)
 - ♦ Directional and enclosed lights

There may be other lighting fixtures within the general project area, which may not be included in surveys conducted in association with this project.

Many different lighting effects are created by the variety of lighting styles, globes and luminaries. It is also not clearly evident what bulb type is provided within each of the individual lights and lighting styles. Metal halide, LED or other energy efficient bulbs should be utilized in future lighting applications including regular maintenance operations, through systematic condition related replacement and as new improvement projects are implemented.

Based on project area observations, it does not appear that any areas are overly illuminated and certain portions of the RMP and the State Park could be improved with additional lighting. A determination of the appropriate style of lighting will also need to be determined.

Areas that could be improved with additional lighting include the following:

- ♦ East entrance to the State Park from John B Daly Boulevard to the American Rapids Bridge
- ♦ Trails adjacent to the River east of the American Rapids Bridge

Areas where multiple lighting styles are visually apparent include the following:

- ♦ Trail along the rapids from the Pedestrian Bridge to the American Rapids Bridge
- ♦ Area south of Heritage Park and north of the Pedestrian Bridge
- ♦ Prospect Street

Park Use and Function Relative to Existing Lighting Conditions

Generally, most of the mainland State Park is not used at night, except for the areas directly adjacent to the Rapids and the Falls and is based on the existing lighting provided and the fact that there are other user needs that occur at night. Visitors generally pass through the State Park from City streets and congregate around the American Falls overlook. Access from the City generally occurs at street intersections including Mayor O'Laughlin Drive, Old Falls Street and Main Street where City street lights provide well-lit environments. The general purpose of the lighting is to provide access the river, rapids and Falls. Generally, lighting throughout Prospect Point is not overly illuminated and merely provides enough lighting to access the walkway along the rapids. Lighting in the eastern portion of the State Park, especially east of the American Rapids bridge is not prevalent. Consequently this area is not well used by visitors at night.

Lighting Styles and Hierarchy

Lighting fixture locations and styles vary throughout the State Park. Generally no roadway lighting is provided along the RMP east of the American Rapids Bridge. This inconsistency and lack of lighting can greatly impact the visitor's sense of welcome, safety and orientation at night. Extending lighting along the RMP, providing lighting at the State Park entrance or lighting the trail along the Niagara River in the east end of the park can address park use, safety, character and wayfinding. Similar lighting styles that currently exist within the State Park should be incorporated into these areas. The existing globe light, prevalent in Prospect Point, that is mounted on a Victorian styled green pole can be utilized as the basis for new fixtures within the State Park. Roadway light poles, varying pole heights and bollard style

lighting can be incorporated to match this existing fixture. This would provide a consistent style of light fixture throughout the State Park and would be easily identified by the visitor as part of the park lighting system. This continuity would provide a holistic design and help to unify the character of the State Park.

Hierarchy of lighting, fixture size and intensity of illumination are all factors that provide the visitor with a sense direction, orientation and provides for the intended use. For example, not all lighting is provided for safety purposes. Some lighting is provided to enhance the character of the State Park and for orientation. More specifically, lighting may be provided along a roadway even though it is not necessary for safe vehicular access. It is merely provided to establish the setting and differentiate it from its surroundings and provides character and a sense of welcome. Similarly, not all aspects of the State Park need to be illuminated to the same degree. The hierarchy of the light style and size can influence the visitor. Varying illumination intensities would facilitate orientation and use.

A coordinated and comprehensive lighting strategy is recommended on a site-wide basis both to achieve a hierarchy of lighting that makes the site more legible and attractive at night and to identify a palette of lighting fixtures for all categories of appropriate lighting needs. Strategic placement of lights, with attention to not over lighting, gives the park patron the ability to pleurably enjoy the natural surroundings. Consistency through use of a family of coordinated light fixtures strengthens the feeling of the entire area being part of Niagara Falls State Park. Attention to lighting hierarchy based on roadway, parking lot, path and trail provides a sense of order as each light type is associated with a specific use or activity.

The selection of new lights should be based on their hierarchal purpose and design consistency. The lighting system should respond to the following systems:

- Roadway
- Bike Path
- Pedestrian Trail
- Overlook Areas
- Rapids Area
- Sidewalk Lighting
- Traffic Control

Maintenance

Lighting maintenance and associated operational costs should be an important consideration in selecting new lights for the proposed RMP improvements. Consistency of fixture types throughout the parkway would also simplify lighting maintenance. Energy use, lighting elements and bulb replacement also have an impact on maintenance costs and life cycle. The use of light source and bulb style also has an effect on the character of the State Park. Utilizing similar lighting styles throughout the State Park would also improve the ease of maintaining the overall lighting system.

Lighting Concerns and Opportunities

Other considerations related to installing new light fixtures associated with the RMP improvements include light pollution and light spill. All new light fixtures should follow Dark Sky standards, therefore fixtures for parking areas, walkways and road/street lighting should direct all of their light to the ground by using cut-off style fixtures.

New lighting solutions related to RMP improvements should consider energy efficient solutions including but not limited to lights source, such as LED, and solar or renewable power sources.

2.4.6 Park Needs

The term "park" is generally used to describe an area that is set aside for public use and is reserved for the enjoyment and recreation of visitors. Niagara Falls State Park, in association with RMP, is a park that includes a variety of natural and manmade features specifically preserved, designed and managed to provide for the preservation of, and access to, the Falls and to provide for the needs of visitors. Based on the popularity of the State Park and annual visitation, these needs are met in a variety of ways. Foremost the State Park must clearly be distinct from its surroundings and provide for the basic needs the park visitors expect from this world-class destination.

The State Park and roadway combine to create a place that serves many functions. Primarily it was first developed as a setting to view Niagara Falls. Over time the land known as Niagara Falls State Park has been preserved, managed and maintained to provide for local, regional, national and international visitors. It is also a local park for residents of Niagara Falls and serves the local region through the Niagara Greenway connections. The State Park includes viewing areas and attractions associated with the Falls. It is also parkland that provides for a variety of recreational needs. Some areas of the State Park are highly maintained, while others are wooded and natural. Each of these distinct landscapes are managed to provide for the wide array of uses that occur in the park. Seasonal recreational interests are also prevalent.

Niagara Falls State Park is a destination-oriented park and provides services and accommodations for travelers. Generally, there are a variety of amenities provided including restrooms, concessions and other facilities that serve the traveling visitor needs. These needs are varied and not only include parkland, but also include elements that make it safe and enhance the character of the visitor's experience.

The description of needs within this section focuses on the mainland State Park area within close proximity to the proposed RMP improvements. Current challenges include a lack of clarity in the arrival experience that generally extends from John B Daly Boulevard to Old Falls Street. The lack of welcome and distinctive landscape character does not provide the needed transition from the broad landscape of the high speed roadway and creates a sense of uncertainty for the visitor. This condition occurs for most of the length of the RMP within the State Park, and is not easily addressed without considering all of the components that exist within the park and along RMP.

General Park Needs Relative to RMP Improvements

- ♦ Provide a well-maintained landscape character
- ♦ Ensure healthy plants and shoreline environs
- ♦ Introduce durable, lower maintenance turf margins along roadways
- ♦ Manage overgrown landscape areas
- ♦ Utilize short height native grasses and wildflowers for meadow
- ♦ Trim and maintain existing trees
- ♦ Maintain and frame views of the river and rapids
- ♦ Ensure that park features are aesthetic attributes and in good condition
- ♦ Ensure aesthetic maintenance procedures including mowing limits, trimming methods, mulching, and painting of fixtures (lights, benches, railings, receptacles)

- Provide more pedestrian amenities including benches along the river and consider picnicking facilities
- Reduce maintenance of landscape

Areas of Concern

- Maintenance of lawn and meadow areas located in the east side of the State Park
- Tree condition and appearance along the river, including the grove east of the American Rapids Bridge
- Organization and utilization of lawn area south of Buffalo Avenue and Main Street
- Visually incorporating Heritage Park with its State Park surroundings
- Conditions and aesthetics of the lawn and landscape plantings in the area adjacent to the Pedestrian Bridge

Park Needs Relative to Wayfinding and Signage

There are key areas within the State Park and along the RMP where wayfinding and signage is important relative to use and visitor experience or comfort. These areas serve as a basis for further evaluating the wayfinding needs and expectations of visitors in terms of orientation and character.

- Welcoming signage clearly identifying Niagara Falls State Park from all entrance points
- Directions to Falls
- Parking for those arriving by personal vehicle, charter or tour bus
- Signage from all Parking areas to attractions
- Signage from attractions to services and parking areas
- Non-motorized arrival, either pedestrian or by bicycle
- Orientation and directional cues from City street
- Recognizable orientation and information stations/kiosks
- Visitor access to State Park attractions and services
- Major pathway nodes
- Concessionaire operated attractions and services
- Directions to regional attractions when exiting the State Park

Areas of Concern

- East Entrance to the State Park (near John B. Daley Boulevard)
- 4th Street and nearby layby parking area
- American Rapids Bridge
- Main Street and Buffalo Avenue (directing traffic to Goat Island, Cave of the Winds, Parking Lots No. 2 and No. 3)
- Pedestrian Bridge to Goat Island
- Parking Areas (from streets and from parking areas to attractions)
- City sidewalk connections to the State Park

Park Needs Relative to Lighting

There are key areas within the State Park and along the RMP where lighting is paramount to use and character. These areas serve as a basis for further evaluating the lighting needs and expectations of visitors in terms of safety, security, character and that they provide a welcome setting during evening hours of park operation.

- ♦ Intersection of John B Daly Boulevard and RMP
- ♦ RMP corridor
- ♦ Riverside Drive
- ♦ Pathway adjacent to the river from the east end of the State Park to the Pedestrian Bridge
- ♦ Intersecting streets including Main Street and 4th Street
- ♦ Layby parking areas

Areas of Concern

- ♦ Need for lighting in the large open areas in the east end of the State Park
- ♦ Need and intensity of illumination along RMP from John B Daly Boulevard to the American Rapids Bridge
- ♦ Riverside Drive views of RMP
- ♦ Pathway adjacent to the river from the east end of the State Park to the Pedestrian Bridge
- ♦ Multiple lighting styles and sources relative to immediate and long-term implementation and or improvement projects
- ♦ Implications of providing new lighting styles

Park Needs Relative to Historic Context

As a historic park originally designed by Frederick Law Olmsted and Calvert Vaux there is a need to address the limited perception of the landscape as scenic with extensive close mown turf throughout and lack of spatial constructs within the park landscape with framed views toward the Niagara River.

The related needs are:

- ♦ To recapture the historic design principles making the park roadway a scenic drive integrated into the landscape
- ♦ To improve visual and physical connections to river and riverfront for visitors and community
- ♦ To apply Olmsted Vaux design principles to the pedestrian and bicycle access paths, fitting them into the landscape effectively and providing a varied, scenic experience, to increase landscape use
- ♦ To reduce the visual presence of the road and at the same time manage stormwater with overland flow to increase infiltration and improve sustainability
- ♦ To use durable, lower maintenance turf margins and short height native grasses and wildflowers for meadow

Section 3 -Alternatives

3 ALTERNATIVES

3.1 Design Criteria

Design criteria have been established for the Riverway and adjacent parkland that are reflective of the setting within a listed historic State Park, while being inclusive of the transportation needs and recreational uses of the facilities.

3.1.1 Historic Site Design Criteria

The following design criteria are developed with deference to the National Landmark Status of the Niagara Falls State Park as documented in the 1982 Master Plan. As a National Landmark and National Register listed site, all designs are subject to review and approval by the State Historic Preservation Office, acting on behalf of the United States Department of Interior.

Design Standards and References

The Design will be advanced in accordance with the 1982 Master Plan, which is the steering document for park development. The Master Plan cited the Robert Moses Parkway as an exception to the historical aspects of the State Park.

The Master Plan clearly cites the 19th Century "General Plan" as the reference document to be used in returning the State Park to its original Olmsted and Vaux design intent. Olmsted and Vaux have been cited in numerous references as desiring that the State Park be in a natural state with respect to the park setting. At the same time, Olmsted recognized that the park is meant for public activity, and as a result, recognized the need for amenities such as buildings and shelters, public convenience facilities, benches, and walkways. Olmsted recognized the need for the public to access the park, and developed a park length "Riverway" in the Plan.

Critical Design Elements

Renovation of a Historical Property can fall under three categories:

- **Renovation without consideration of Historical Context:** The National Landmark Status of Niagara Falls State Park requires consideration of its historical context. In addition, the 1982 Master Plan clearly cites the need to consider the historical context of the park. Therefore, not considering the historical context of the State Park is not appropriate, and is therefore not deemed feasible, and will not be considered further.
- **Reconstruction:** This is the return of a historical site to its previous state, accurately and exactly. Since the riverbank of the Niagara River has previously been filled in, this action is not achievable. Restoration of the shoreline alone to its 19th century configuration would result in impacts to the Niagara River habitat, and is therefore not desirable. In addition, the configuration of the east end of the Robert Moses Parkway is to remain at the east project limit, as would John B. Daly Boulevard and the interchange between these roadways. These were not present in the 19th century. Several other elements along the length of the State Park, including the American Rapids Bridge, were not part of the original configuration. These elements are critical to today's operations. As a result,

reconstruction of the State Park in accordance with the US Department of Interior's Historical definition is not practical or feasible, and is not considered further.

- Historical Interpretation:** This action considers the Historical context and character of Niagara Falls State Park, and seeks to develop a Historical Interpretation of the past, with consideration to the fact that there are elements of the park that cannot be returned to their historical state (e.g. such as the Niagara River shoreline). This action would be developed by considering the practices, principals, and designs of Olmsted and Vaux in their development of the General Plan in the late 1800's. **This action is consistent with the approved 1982 Master Plan and will be advanced throughout this report in the development and analysis of alternatives.**

Other Design Parameters

The following design parameters are based on interpretation of the Olmsted and Vaux historical data for the Niagara Reservation, including readings of literature, plans, and other documents. These design principals will be incorporated into the development and assessment of alternatives.

**Table 3.1
Olmsted Vaux Design Principles**

Element	Olmsted/Vaux Principle	Existing Conditions	Proposed Condition
Site Design	Integration of overall quality of experience. Scenic park landscape turns viewer focus to the riverfront features	Expressway design bisects the State Park. Olmsted-Vaux design only remains in vicinity of the American Falls	Design for overall quality of experience of the scenic landscape with all elements in harmony and features integrated.
Road Alignment Horizontal	Curvilinear with Spiral Curves and without Straight Sections	Straight/Tangential	Curvilinear with Spiral Curves
Road Alignment Vertical	Ascending and descending for variety of visual experience	Engineered for single long movements patterns, mostly level	Ascending and descending, for variety of visual experience along park/riverfront
Roadway Speed	Low Speed	High Speed	Low Speed
Pulloffs or Laybys	Separate areas where travelers can pull off the roadway to enjoy the State Park. These are positioned below view lines from road	Parallel parking on eastbound RMP implemented after closure of the highway in this direction	Design of layby areas to meet both scenic and access objectives within the Olmsted Vaux design style
Path System			
Walk Alignment - Horizontal	Curvilinear with multiple circuitous loops providing a variety of experience without retracing the	Straight/Tangential	Curvilinear, incorporating circuitous loops at higher pedestrian activity areas; integrated with landscape and visually unobtrusive.

Element	Olmsted/Vaux Principle	Existing Conditions	Proposed Condition
	same route; visually secondary to the overall park landscape		
Walk Alignment – Vertical	Changes in grade, added visual interest and often separated from vehicular routes	Relatively Level	Incorporate vertical relief into the alignment for improved user experience
Landscape	Informal plantings to include groupings of odd numbers of native deciduous canopy trees with varied topography in turf and meadow ground plane Trees located at park perimeter for identification of public landscape. Individual trees and small groves of trees positioned to define spatial areas within the landscape and to frame and direct views.	Masses of shrubs designed in contemporary style and to dress down sloped roadway embankments. Cluster of small size, single species flowering and evergreen trees of modern cultivars. Lack of definition at park borders and limited canopy trees. East bank with native trees infested with invasive species.	Apply Olmsted Vaux principles to plantings. Integrate healthy existing vegetation with new vegetation.
Slopes	Topography, a variety of convex and concave forms integrated with circulation and vegetation for a flowing graceful overall landscape	Expressway type linear slopes with limited topographic variation or expression	Apply Olmsted Vaux principles to Riverway topography for an overall graceful flowing landscape

3.1.2 Transportation Design Criteria

Design Standards and References

The following Highway Design Standards and References have been used in developing the design criteria and the highway elements of the alternatives and options:

- NYSDOT Highway Design Manual, October 2009
- A Policy on Geometric Design of Highways and Streets, American Association of State Highway and Transportation Officials (AASHTO), 2004
- NYSDOT Comprehensive Pavement Design Manual, February 2008
- NYSDOT Structures Design Manual, January 2008

- Flexibility in Highway Design, US Department of Transportation, Federal Highway Administration, 1997, Publication No. FHWA-PD-97 -062 HEP 30/7-97(10M)E
- New York State Office of Parks, Recreation, and Historic Preservation Sustainability Plan, April 22, 2009
- New York State Green LITES Project Design Certification Program, December 2009

Critical Design Elements

Design Criteria is presented below for several different features affected by project design. These features are:

- Riverway west of John B. Daly Boulevard
- Roundabouts: Option for at-grade intersections
- Robert Moses Parkway east of John B. Daly Boulevard
- Robert Moses Parkway terminus ramps at John B. Daly Boulevard
- Local Street connections

Proposed Riverway

The Robert Moses Parkway within the State Park does not have a functional classification. Under this project, it would be removed and replaced with a low speed park access road to be called the "Riverway". Design criteria for a Principal Arterial have been selected due to the park road's direct connection with a freeway to the east, and a 30 mph design speed in concert with traffic calming features has been selected in accordance with the Olmsted and Vaux concept of a low-speed Riverway, and in compliance with Parks policy.

**Table 3.2
Transportation Design Criteria - Riverway**

Component:	'Riverway' Park Entrance Roadway		
PIN:	5410.54	NHS:	No
Route No. and Name	957A Riverway	Functional Class:	Urban Arterial
Project Type	Reconstruction	Design Class:	Urban Arterial
% Trucks	1.2	Terrain:	Level
ADT	4695	Truck Access/Qualifying Highway:	Neither
Element	Standard Criteria	Existing Conditions	Proposed Condition
Design Speed (posted speed)	30 mph (25 mph)	60 mph (35 mph)	30 mph (25 mph)
Lane Width (Curbed)	10' (min)	11'	10'
Curb Offset	0' left, 0' right	1'	1' right and left
Bridge Roadway Width	N/A	N/A	N/A
Maximum Grade	8%	< 3%	0% - 3%
Horizontal Curvature	250'	> 250'	333' normal crown 278' minimum @2%
Superelevation Rate	4% max.	4% max	2% max.
Stopping Sight Dist.	200'	> 200'	200' min
Horizontal Clearance	1.5' from curb	2' min	1.5' from curb
Vertical Clearance	14'-6" desired	> 14'	14'-6" min.
Pavement Cross Slope	1.5%-2.0%	2.0%	2.0%
Rollover	4% max. between travel lanes, 8% max. at edge of traveled way	4% max. between travel lanes, 8% max. at edge of traveled way	4% max. between travel lanes
Structural Capacity	N/A	N/A	N/A
Pedestrian Accommodations	See Table 3.6	See Table 3.6	See Table 3.6

A clear zone of 13'-0" is proposed under any new bridges over the Riverway as per NYSDOT Structures Design Manual 2.5.1 and NYSDOT Highway Design Manual table 10-1 if no guide rail is provided. If guiderail is provided, the minimum horizontal clearance identified in the design criteria table (e.g. 1.5 ft) for the Riverway would be utilized. A vertical clearance within this clear zone area (under the bridge) has been established at 13'-0", 1' greater than the maximum legal vehicle height for a tour bus. Establishment of this clear zone would ensure that should a tour bus or other vehicle errantly leave the pavement the vehicle has an opportunity to correct its path without striking the structure.

Roundabout Intersections

Roundabout design criteria are provided for development of an at-grade intersection option adjacent to and off of the John B. Daly Boulevard Interchange terminus. A 45' long intercity bus (Bus 45) will be used to establish intersection geometrics as this is the largest vehicle allowed on the Parkway. Geometrics will also be checked for a plow vehicle (SU). **Table 3.3** cites Roundabout criteria.

**Table 3.3
Transportation Design Criteria-Roundabout**

Component:	Roundabout		
PIN:	5410.54	NHS:	Yes
Route No. and Name	957A Robert Moses Parkway/ John B. Daly Blvd/ Riverway		
Project Type	Reconstruction	Design Class:	N/A
% Busses	1.2-14.4	Terrain:	Level
ADT	10,528	Truck Access/Qualifying Highway:	Neither
Element	Standard Criteria	Proposed Condition	
Maximum Entry Speed (posted speed)	20 mph (15 mph)	20 mph (15 mph)	
Maximum Entry Superelevation	5.0 %	5.0 %	
Effective Flare Length	40'-325'	N/A	
Minimum Entry Lane Width	10'	10'	
Maximum Entry Width	50'	22' min.	
Entry Radius	30'-325'	30' to 325'	
Entry Angle	20-60 degrees	20-60 degrees	
Approach Stopping Sight Distance	113'	113'	
Intersection Sight Distance	191'	191'	
Sight Distance to Crosswalk	113'	113'	
Inscribed Circle Diameter	50'-325'	180'	
Circulating Roadway Cross-Slope	0.5%-2.5%	2.0%	
Circulating Roadway Width	1.0-1.2 times the Max. Entry Width	1.0-1.2 times the Max. Entry Width	
Control of Access and Parking	Minor driveways and parking prohibited	Minor driveways and parking prohibited	
Minimum Circulating Sight Distance	113'	113'	
Minimum Exit Radius	130'	130'	
Design Vehicle	SU	SU & Bus 45	
Rollover Rate	4.0% (max) between travel lanes	4.0% (max) between travel lanes	

Robert Moses Parkway: East of John B. Daly Boulevard

Design Criteria for the Robert Moses Parkway east of John B. Daly Boulevard is included, since the project must connect to the existing expressway at the project limits. This area has a functional class of expressway and a design speed of 65 mph. **Table 3.4** presents Design Criteria.

**Table 3.4
Transportation Design Criteria-RMP**

Component:	Robert Moses Parkway: East of John B. Daly Boulevard		
PIN:	5410.54	NHS:	Yes
Route No. and Name	957A Robert Moses Parkway	Functional Class:	Urban Principal Arterial Expressway
Project Type	Reconstruction	Design Class:	Other Freeway
% Buses	0.5-14.4	Terrain:	Level
ADT	9,974	Truck Access/Qualifying Highway:	Neither
Element	Standard Criteria	Existing Conditions	Proposed Condition
Design Speed (posted speed)	65 mph (55 mph)	65 mph (55 mph)	Match Existing
Lane Width	12' (min)	12'	Match Existing
Shoulder Width	4' left, 10' right	0' right and left curb offset	4' left, 10' right ¹
Bridge Roadway Width	N/A	N/A	N/A
Maximum Grade	3%	0.8%	<3%
Horizontal Curvature	1480 @ e=8%	2000'	1500'+
Superelevation Rate	8%	6%	6% (max)
Stopping Sight Dist.	645'	700'	645' (min)
Horizontal Clearance	15' without rail, shoulder width (4' min) with rail	10' with rail	15' without rail, shoulder width (4' min) with rail
Vertical Clearance	14'-6" desired	No overhead obstructions	14'-6"
Pavement Cross Slope	1.5%-2.0%	2%	2.0%
Rollover	4% max. between travel lanes, 8% max. at edge of traveled way	4%	4% max. between travel lanes, 8% max. at edge of traveled way
Structural Capacity	N/A	N/A	N/A
Control of Access	Full	Full	Full
Median Width	10' (min)	30'	10' (min)

¹Within limits of pavement reconstruction, raised, grassed shoulders would be provided, including provision of traversable curbs per HDM 10.2.2.4.A.

Robert Moses Parkway Terminus Ramps at John B. Daly Boulevard

Under this project, the Robert Moses Parkway would terminate at the Interchange located at John B. Daly Boulevard. The interchange would also serve to provide access to the Niagara Falls State Park. Interchange Design criteria, including ramp bridge design criteria, is identified in **Table 3.5**.

**Table 3.5
Transportation Design Criteria-RMP Terminus Ramps**

Component:	Robert Moses Parkway Terminus Ramps		
PIN:	5410.54	NHS:	Yes
Route No. and Name	957A Robert Moses Parkway/ John B. Daly Blvd	Functional Class:	Urban Principal Arterial Expressway
Project Type	Reconstruction	Design Class:	Ramp
% Busses	1.2-14.4 (depending on season)	Terrain:	Level
ADT	10,528	Truck Access/Qualifying Highway:	Neither
Element	Standard Criteria	Existing Conditions	Proposed Condition
Design Speed (posted advisory speed)	30 mph (25 mph) (semi direct ramp)	N/A	30 mph (25 mph) min
Traveled Way Width (Curbed, 2 Lanes)	25' (min) for an inside edge of pavement radius $\geq 200'$	N/A	25' (min) for an inside edge of pavement radius $\geq 200'$
Shoulder Width	3' left 6' right	N/A	3' left 6' right ¹
Bridge Roadway Width	Full Roadway	N/A	Full Roadway
Maximum Grade	7%	N/A	3% max
Horizontal Curvature	231' @ e=6%	N/A	231' min @ e=6%
Superelevation Rate	6% max.	N/A	6% max.
Stopping Sight Dist.	200'	N/A	$\geq 200'$
Horizontal Clearance	4' left and shoulder width (6' min) right	N/A	4' left, 6' right (min)
Vertical Clearance	14'-0" minimum 14'-6" desired	N/A	14'-0" min. over Roadway
Pavement Cross Slope	1.5%-2.0%	N/A	2.0%
Rollover	4% max. between travel lanes, 8% max. at edge of traveled way	N/A	4% max. between travel lanes
Structural Capacity	AASHTO HL-93 Live Load	N/A	HL-93 Live Load and NYSDOT Permit Vehicle

¹Within limits of pavement reconstruction, raised, grassed shoulders would be provided, including provision of traversable curbs per HDM 10.2.2.4.A.

Local Roads

Main Street, Buffalo Avenue and Prospect Street are City Streets that connect to the State Park. The work on these streets would be limited to the replacement of curbing or pavement and amenities that are affected by the work. Any work on these streets would be limited to replacement in kind of disturbed elements.

Sidewalks would be constructed on 4th Street to improve pedestrian access. 4th Street pavement would be narrowed somewhat to accommodate this action. The design criteria width for this street is for 10 foot minimum lane width. The existing lanes are 12 feet wide. Lanes are proposed to be 11 feet wide. Per the NYSDOT Highway Design Manual Chapter 18, the minimum sidewalk width, exclusive of curb width for sidewalk adjacent to a curbed road where parking is not permitted is 5 feet.

Other Design Parameters

In addition to the criteria identified above, the following parameters have been considered in developing the design:

- A NYSDOT GreenLITES Certification is being pursued for this project. Refer to Section 3.3.1 for further information.

3.1.3 Bicycle, Pedestrian, and Trolley Path Design Criteria

Design Standards and References

The following Design Standards and References have been used in developing the design criteria and the bicycle and pedestrian elements of the alternatives:

- AASHTO Guidelines for the Development of Bicycle Facilities
- 2009 Manual of Uniform Traffic Control Devices (MUTCD)
- ITE Innovative Bike/Ped Treatments
- NYSDOT Highway Design Manual
- OPRHP BikePed Policy
- Niagara River Greenway Plan
- APBP Bike Parking Guide
- FHWA Designing Sidewalks and Trails for Access

Critical Design Elements

The following Design Criteria have been used in developing the bicycle and pedestrian elements of the alternatives.

**Table 3.6
Pedestrian, Bicycle and Shared Use Path Design Criteria**

Element	Standard Criteria	Existing Conditions	Proposed Condition
Pedestrian Accommodations	HDM Chapter 18		Per HDM Chapter 18
Path Width	Varies (5' minimum sidewalk)	Varies	5' minimum sidewalk; 8' minimum path 10' desirable where needed
Cross Slope	ADA	Varies	<2%
Path Slope	5% max grade	Varies	3% max grade
Shared Use Bicycle/Pedestrian Path	AASHTO Guidelines		AASHTO Guidelines
Design Speed	20 mph	20 mph	20 mph
Path Width	10' minimum (two directional) 15' minimum (if to be striped)	Varies 6 – 20'	10'
Cross Slope	2% maximum	< 2%	< 2%
Path Slope	5% maximum	< 4%	< 4%
Shoulder	6:1 slope maximum with 2' clear zone	Varies	6:1 slope maximum with 2' clear zone
Vertical Clearance	10'	Varies	> 10'
Stopping Sight Distance	150'	> 150'	> 150'
Horizontal Curve	74' radius minimum	> 74' radius	> 75' radius

3.1.4 General Park Design Criteria

In addition to Historic Site Design Criteria identified in Section 3.1.1, the following general design criteria apply to this State Park site:

Design Standards and References

There are a variety of requirements and guidelines utilized in designing parks and public spaces. Although there are numerous organizations that regulate and ensure public, health safety and welfare, generally there is a great deal of overlap. The most widely recognized standards are provided through the following agencies and organizations:

- United States Department of the Interior -Standards for Parks
- United States Army Corps of Engineers (ACOE)
- New York State Office of Parks, Recreation and Historic Preservation (NYSOPRHP)
- New York State Department of Environmental Conservation (NYSDEC)
- New York State Department of State (NYSDOS) (historic policies)
- NYSDOS Division of Coastal Resources
- New York State Department of Health (NYSDOH)
- United States Department of Justice Americans with Disabilities Act Standards (ADA)
- Building Code of New York State
- City of Niagara Falls Planning and Development Department
- Niagara County Planning, Development and Tourism Board
- Niagara River Greenway Commission
- Niagara County Soil & Water Conservation District (USDA)
- Animal and Plant Health Inspection Service (insect pests) (USDA)
- American Nursery & Landscape Association ANS-Z60
- Plant Hardiness Zones Map (USDA)
- Other: Local (Village, City, County) building regulations and standards

Critical Design Elements

**Table 3.7
Park Design Criteria**

Element	Standard Criteria
Landscape including: plant materials, trees, shrubs, groundcover, lawn, etc.	Plant Hardiness Zones Map (USDA) Animal and Plant Health Inspection Service (insect pests) (USDA) American Nursery & Landscape Association ANS-Z60
Pedestrian Gathering Areas and sidewalks (hardscape)	Good professional practice <ul style="list-style-type: none"> • 2% out-slope • ADA compliant at steps and ramps
Signage	New York State Office of Parks, Recreation and Historic Preservation (NYSOPRHP) National MUTCD with NYS Supplement City of Niagara Falls
Pedestrian Lighting (park trails)	• 0.5 - 1.0 FC (LAGS p. 165) spacing determined by fixture specs.
Parking Lots (park areas)	• 3.0 FC (LAGS p. 165) spacing determined by fixture specs.
Roadway Lighting	• IES Standards (likely 0.5 - 0.8 FC) spacing determined by fixture specs.

Key Design Criteria and Considerations

The redesign of the Robert Moses Parkway South Segment "Riverway" involves site parameters that also provide unique design opportunities. The linear parkway adjoining the Niagara River, the reduction of pavement from changing a divided expressway to a single roadway, the potential for re-grading the parkway area, the adjoining urban texture of the City of Niagara Falls, the parkway green-space, and the

entry into the more developed Niagara Falls State Park are all site features useful as criteria for a new park design. The intent is to create a more cohesive all-encompassing sense of the park and parkway. This redesign can potentially provide additional park features and site design responses that reflect the *City Beautiful Movement* in park design that began to take shape in the mid-nineteenth century with the philosophy of Frederick Law Olmsted and Charles Vaux. Additionally, design responses that reflect the recreational needs of State Park user groups and other obvious aesthetic concerns can logically be addressed during this design process.

Design criteria and considerations to be addressed include:

- Overall character and appearance of the Niagara Falls State Park in coordination with the proposed parkway improvements.
- Establish a sequence of arrival, orientation and direction for visitors.
- Establish a unique selection of site elements including lights, benches, signage, and landscape treatment that creates a distinct response to the State Park.
- Inventory and address known visitor, resident and functional needs of the State Park.
- Existing site conditions and elements including: existing trees, landscape, lighting, sidewalks and paved areas, connections to the City, and man-made conditions that influence the proposed design.
- Views to and from existing scenic resources and address potential visual impacts through thoughtful location of the proposed roadway improvements.
- Respect environmental issues including: wildlife habitat, river ecology, wetlands, light pollution, invasive plants and biodiversity and sustainable design solutions.
- Balance existing earthwork relative to the current and proposed roadway configuration.
- Improve stormwater management, site drainage and water quality. Consider sustainable design elements potentially including: rain gardens, vegetated bioswales, erosion control, wetland remediation, and permeable pavements.
- Provide lighting selection and location based on the photometric requirements that provide for pedestrian safety and enhance the experience of the State Park during evening hours. Incorporate *Dark Skies* design principles and energy efficient lighting solutions.
- Signage: kiosk, freestanding, way finding, interpretive, educational.
- Site landscape planting design: trees, groundcovers, entrance features. Proposed plantings should consist of native plants. Thinning of trees and mature landscapes should be considered to open views and allow for sunlight to filter through the tree canopy in key areas of the State Park.

Key Design Constraints to be addressed include:

- Park design near waterway: adhere to environmental and ecological design guidelines established by NYSDEC and NYSEPA.
- Park design adjoining city of Niagara Falls: adhere to design guidelines per local city and county planning, development and parks agencies.
- Park design in New York State Park: adhere to design guidelines per NYS Office of Parks, Recreation & Historic Preservation.
- Roadway planting design: adhere to planting design guidelines per NYSDOT.
- Roadway, bikeway and pedestrian path lighting design: adhere to lighting design guidelines per NYSDOT.
- Test existing site soil through the U.S. Agriculture Extension Service. Retain existing soil for reuse where possible. Amend soils in planting areas per USDA standards.
- Determine USDA Plant Hardiness Zone for site and select plants accordingly.
- Adhere to American Nursery & Landscape Association ANS-Z60 plant standards.

Design Issues and Opportunities Relative to Key Park Locations

- ♦ Eastern State Park Entrance: Overall design details to recognize the importance of the State Park entrance including landscape form, structures, grading, lighting, signage, wayfinding general character that should be distinct from the adjacent surroundings.
- ♦ General interface between Parkway and State Park: The arrival sequence should be evident for the visitor. This is accomplished through scale, choreography, spacing and response to views of the river and context of the influence created by the City to the north of the project.
- ♦ 4th Street: The overall design should not lend importance to this intersection. The features of the roadway and parkland design should lead the visitor westward towards the Falls and Niagara Street.
- ♦ Buffalo Avenue/Main Street: The intersection of the Parkway and Buffalo Avenue/Main Street is a key location in the overall design of the project. Many vehicular functions occur in this location including westbound visitor traffic, trolley traffic and interface with the City street system. It is important to ensure that the overall design and treatment of this intersection continues to establish the vehicular traffic flow from east to west towards Niagara Street. It is also important to cue visitors towards Goat Island and additional parking. The Parkway interface with the City is also sensitive in this location due to the pedestrian access that flows from many of the local hotels. It is important that the overall design reflect the scale and transitional nature of this area.
- ♦ Pedestrian Entrance at Old Falls Street: The stone walls that identify a primary entrance to the State Park are well maintained and illustrate an appropriate design response that demonstrates key wayfinding principles. This entrance is a key pedestrian focus relative to hotel accommodations and other activities located within the City.

3.2 Alternatives Considered

In 2009 a Final Scoping Report was prepared for the project that identified alternatives that should be advanced for evaluation in this Design Report. Three alternatives were recommended that merit further development and assessment. These alternatives are:

- ♦ **Alternative 1: No Build/Null.** This would maintain the State Park Roadway in its current configuration.
- ♦ **Alternative 2: Riverway on Existing Alignment:** This would remove the Robert Moses Parkway within Niagara Falls State Park and construct a low speed Riverway on about the same alignment as the Robert Moses Parkway. Consideration to incorporating historically interpreted elements into the design would be given.
- ♦ **Alternative 3: Riverway on Olmsted-Vaux Inspired Alignment:** This would remove the Robert Moses Parkway within Niagara Falls State Park and construct a low speed Riverway on an Olmsted and Vaux inspired alignment which largely follows the original 1887 General Plan.

These three alternatives are described in more detail below.

3.2.1 Alternative 1: No Build/Null

Alternative 1 would keep the Robert Moses Parkway through the State Park as it currently operates. Normal maintenance activities would continue within the park and the John B. Daly Boulevard interchange. These maintenance activities would be required more and more frequently as the infrastructure continues to age.

The Robert Moses Parkway within the park is an aging piece of infrastructure that does not functionally serve the purpose needed. It is not appropriately scaled, has too much unused pavement, and has the character of the expressway road it was originally designed to be. It has been identified in the approved Master Plan as an exception to the historical setting of the State Park. It has now reached a point where the infrastructure condition does not merit its continuous repair and maintenance.

Retaining the RMP does not meet the project objectives to create an appropriately scaled scenic park roadway inspired by the 1887 Olmsted-Vaux design. The alternative maintains the expressway type configuration which is a hindrance to waterfront access, and therefore would not improve the State Park interface with the City for local users. It would not create an environment that is in context with the State Park and the riverfront setting.

For these reasons, the No Build/Null Alternative does not meet the project objectives, and is not considered to be a feasible alternative. The No-Build/Null Alternative, however, is carried through the design assessment as a basis for comparison relative to the benefits and disadvantages of the feasible alternatives.

3.2.2 Alternative 2: Riverway on Existing Alignment

Alternative 2 would remove the Robert Moses Parkway from the John B. Daly Boulevard Interchange to Old Falls Street and construct a low-speed, two-lane, one-way (westbound) Riverway on about the existing alignment of today's roadbed. The grade separated interchange at John B. Daly Boulevard would be replaced with an appropriate intersection at the expressway terminus. Vehicles would enter the State Park at the John B. Daly Boulevard location, travel east toward the falls, and would leave the park at the Prospect Street intersection with Niagara Street (near the Rainbow Bridge), similar to today.

Alternative 2 would construct a properly scaled Riverway within Niagara Falls State Park, while limiting disturbance to the adjacent park by using the RMP roadbed for the new road location.

This road alignment is constrained by the desire to stay within the existing roadbed. This objective limits the ability to fully develop an Olmsted and Vaux inspired alignment, as conceived in the 1887 General Plan, and as established in this Report Section 2.1.1, Basis of Design.

To overcome this constraint, Alternative 2 attempts to pay deference to the General Plan by incorporating elements of the Olmsted & Vaux design into the layout. Each of these elements adds to the character of the design, and attempts to create a design that has attributes Olmsted and Vaux are believed to have valued. Some of these elements are:

- ♦ Curvilinear Alignment and Vertical relief: The developed alignment attempts to imitate the rolling, curvilinear Riverway shown in the Olmsted and Vaux General Plan by alternative use of the upper (northbound) and lower (southbound) RMP alignments. Since in many locations the northbound and

southbound alignments are at different elevations, alternating between them can create some horizontal and vertical relief and continuous curvilinear alignment.

- ♦ Naturalistic design: The design does not disrupt a majority of the State Park and thereby integrates itself into the surroundings while retaining much of them.
- ♦ Parking 'lay-bys': These are pull-off areas where vehicles can be parked facing and with a view of the Niagara River. These are found in the original General Plan documents. Benches for viewing the river would be integrated into these pull off areas as defined in the General Plan drawings.

In general, Alternative 2 meets the Basis of Design to a degree, by attempting to replicate Olmsted design elements, while minimizing impacts to park lands. Plans depicting the proposed Alternative 2 are included in **Appendix A**.

3.2.3 Alternative 3: Riverway on Olmsted-Vaux Inspired Alignment

Alternative 3 would remove the Robert Moses Parkway from the John B. Daly Boulevard Interchange to Old Falls Street and construct a low-speed, two-lane, one-way (westbound) Riverway that would fully follow an interpretation of the Olmsted-Vaux *General Plan* alignment in the context of the physical configuration of the State Park today. The expressway type interchange at John B. Daly Boulevard would be replaced with an improved intersection configuration. Vehicles would enter the State Park at the John B. Daly Boulevard location, travel east toward the Falls, and would leave the park at the Prospect Street intersection with Niagara Street (near the Rainbow Bridge), similar to today.

Alternative 3 would construct a properly scaled Riverway within Niagara Falls State Park, while providing a modern interpretation of the Olmsted and Vaux General Plan Roadway alignment. Since the General Plan was developed over 125 years ago, the interpretation would take into account modern uses of the Riverway including appropriate scale and adjustments for today's motor vehicles, in accordance with relevant design standards for development.

Alternative 3 meets the requirements of the Basis of Design, established in Section 2.1.1, by removing the RMP within the State Park and creating a low-speed scenic Riverway in the context of the Olmsted & Vaux design, as identified in the 1982 Master Plan. Alternative 3 incorporates the following features found in the Olmsted and Vaux *General Plan*:

- ♦ Curvilinear Alignment and Vertical relief: The developed alignment provides a rolling, curvilinear Riverway shown in the Olmsted and Vaux *General Plan*.
- ♦ Naturalistic design: This alternative provides a naturalistic design with softening of the drive alignment and separation of uses by addition of pedestrian and multi-modal pathways throughout the State Park. These improvements impact a substantial portion of the RMP era park landscape.
- ♦ Parking 'lay-bys': These are pull-off areas set apart from travel lanes by park landscape where vehicles can be parked facing and with a view of the Niagara River. These are found in the original General Plan documents. While benches for viewing the river may be integrated into these pull off areas as defined in the *General Plan* drawings, pedestrian walks provide easy access to designated seating areas along the water frontage.

Alternative 3 meets the Basis of Design by developing an interpretation of the Olmsted and Vaux General Plan in the context of the today's setting. The plan prioritizes the drive alignment providing for prominent views of the Niagara River with minimal consideration to the alignment of the Robert Moses Parkway. The result is a roadway with different horizontal and vertical alignments from most of the current parkway. Plans depicting the proposed Alternative 3 are included in **Appendix A**.

3.2.4 Detailed Engineering Description of Alternatives 2 and 3

To develop a low speed Riverway within the State Park, the Robert Moses Parkway would need to terminate at the John B. Daly Boulevard Interchange, and transition from a high speed westbound expressway type configuration to low speed configuration entering the park and the City of Niagara Falls. To accomplish this, each Alternative would begin approximately 2000 feet east of the RMP/John B. Daly Boulevard interchange, near the former Adams Intake. From this point, the RMP would be reconfigured to create an expressway ends transition into a reconfigured intersection, connecting with John B. Daly Boulevard and the new Riverway.

Vehicles leaving the City of Niagara Falls via southbound John B. Daly Boulevard would be directed to the southbound (eastbound) RMP as they are today, via a reconfigured intersection at the Parkway terminus.

Several design options have been developed both for the RMP eastbound terminus and for the John B. Daly Boulevard Intersection. Each of these options is discussed further in this section.

From the RMP terminus, vehicles could either access the City via a John B. Daly Boulevard Extension or enter the State Park on the Riverway. Up to two lanes in each direction would be provided on each of these roadways.

Vehicles entering the State Park would traverse along the Riverway toward the Falls, and to Prospect Street. Connections to the City street grid would be retained at 4th Street, at Buffalo Avenue/Main Street, and at Prospect Street approaching Niagara Street. At 4th Street, a right-off/right-on configuration would be retained and improved. The intersection connection with Buffalo Avenue/Main Street would allow for continued access to Goat Island and the City streets. Design options have been developed for this area and are further discussed in the sections that follow.

The proposed Riverway would provide adequate traffic capacity and queue storage during peak events, such as July 4th weekend. The curvilinear geometries would reinforce the low posted speed limit to varying degrees by having a traffic calming effect.

New bicycle and pedestrian facilities would be constructed and would include continuous bicycle and pedestrian paths along the length of the project, with connectivity to the Niagara River Trail on either end. Integration with the City Street network would occur through a series of paths perpendicular to the Riverway, and at key locations that offer ease of connection. Accommodations would be made through the path system for the Parks operated Niagara Scenic Trolley system. Bicycle and pedestrian paths may be combined, but trolley and pedestrian paths would remain segregated.

At 4th Street, sidewalks would be constructed. This would require 4th Street pavement to be narrowed, and as such the street would be reconstructed between the Riverway and Buffalo Avenue. The pavement would be narrowed from 24 feet wide to 22 feet. The new sidewalks would connect to existing sidewalk at Buffalo Avenue and to the proposed path system within the State Park.

The addition of sidewalks on 4th Street will require Temporary Easements for construction and for grading adjustments. The effect of the right-of-way acquisitions is de-minims and the public interest will not be prejudiced by the construction of the project.

Each of the build alternatives would also include improvements and amenities to the State Park facilities such as appropriate roadway drainage, new wayfinding signage, new area lighting systems, and enhanced landscaping. Landscaping would include a pond near John B. Daly Boulevard north of the Riverway that would be an interpretation of Day Pond, and located in that general area as shown on historical maps and photographs.

Both the Riverway and path systems would provide a choreographed experience for visitors that would help to enhance their stay. These features are further defined in the sections that follow.

From a sustainable design perspective, Alternatives 2 and 3 disturb similar areas of parkland. Alternative 3 requires the relocation of larger amounts of fill than Alternative 2 but results in a lower volume of excess fill. **Table 3.9** defines the disturbed area and earthwork impacts.

**Table 3.9
Alternatives 2 and 3: Disturbed Areas and Earthwork**

Build Alternative or Option	Alternative 2: Riverway on Existing Alignment	Alternative 3: Riverway on Olmsted/Vaux Inspired Alignment
Area of Disturbance: (Acres)	6.07	6.44
Total Volume of Earthwork Moved (Cut + Fill) (cubic yards)	14,400	16,600
Excess Material (Net Cut) (cubic yards)	3,100	1,700

3.2.5 Design Options for Feasible Build Alternatives

At particular locations within the project study area, more than one possible solution has been evaluated. These solutions are identified in this report as Design Options. These can be incorporated with minor adjustment into either Alternative 2 or Alternative 3. The locations where design options have been developed are:

- Robert Moses Parkway Ramp Transitions, east of John B. Daly Boulevard – Five design options have been developed for the termination of the Robert Moses Parkway eastbound, involving a transition from a 4 lane, high-speed roadway to a lower speed roadway suitable for connection to both the City and the State Park.
- Robert Moses Parkway at John B. Daly Boulevard Interchange: Four design options have been developed for the terminus of the Robert Moses Parkway with John B. Daly Boulevard at the new Riverway. These consist of grade separated and at-grade design options.
- Riverway/Main Street and Buffalo Avenue Intersection: Four design options have been developed to provide access to and from both the City and to Goat Island to and from the Riverway.

These are discussed below.

Robert Moses Parkway Ramp Transitions, east of John B. Daly Boulevard

Under the Build Alternatives, the westbound Robert Moses Parkway would be terminated at John B. Daly Boulevard. Five design options for transitioning from the expressway to intersection approaches have been developed. This location would also begin the Robert Moses Parkway eastbound. All options retain two lanes on each direction of the expressway, carry up to two lanes to the City via the John B. Daly Boulevard exit, and carry up to two lanes into Niagara Falls State Park.

Option RMPT-A – Left Ramp Fork with Either/Or Lane

This option develops a fork type configuration at the RMP terminus transition. To develop this configuration, a third left ramp lane is developed 2800 feet east of the terminus, which is dedicated for State Park traffic. Three lanes are carried to the fork, with the center lane widening to an either-or lane allowing access to either the City or the State Park.

This configuration creates a default condition where a driver that does not make a lane movement is directed into the City. The development of a left ramp lane, while not overly common, does allow a reasonable distance for cars to move into the dedicated State Park lane. Since the added lane becomes the left ramp lane, the cars in it are not in conflict with those in the either-or lane. This creates easy last minute access into the State Park. The capacity of this terminus type is reasonable for the projected traffic. The configuration is also suitable to carry the 2/3 City traffic and 1/3 Park traffic split.

The fork with either/or lane provides easy access to both the State Park and the City. It has several advantages and should be an option considered for implementation. **Plans showing this design option are included in Appendix A, Figure 1A.**

Option RMPT-B – Left Ramp: Taper Type

This option develops a left ramp configuration at the RMP terminus transition. To develop this configuration, a third left ramp lane is developed 2100 feet east of the terminus, which is dedicated for State Park traffic. Three lanes are carried to the ramp exit, where a second dedicated lane to the State Park is developed via a taper type configuration.

This configuration creates a default condition where a driver that does not make a lane movement is directed into the City. The development of a left ramp configuration, while not overly common, does allow a reasonable distance for cars to move into the dedicated State Park lane. However, since this lane becomes the right ramp lane, fewer cars are expected to use the left ramp lane. The taper type lane allows for last minute access into the State Park, and it does so into a lane that should be moderately occupied. The capacity of this terminus type is reasonable for the projected traffic. The configuration is also suitable to carry the 2/3 City traffic and 1/3 Park traffic split.

The Left Ramp, Taper Type provides easy access to both the State Park and the City. It has several advantages and should be an option considered for implementation. **Plans showing this design option are included in Appendix A, Figure 1B.**

Option RMPT-C – Left Ramp: Parallel Type

This option develops a left ramp configuration at the RMP terminus transition. To develop this configuration, a third left ramp lane is developed 2500 feet east of the terminus, which is dedicated for State Park traffic. A fourth lane is developed 400 feet east of the terminus via a parallel type configuration.

This configuration creates a default condition where a driver that does not make a lane movement is directed into the City. The development of a two left ramp configuration, while not overly common, does allow a reasonable distance for cars to move into the dedicated State Park lanes. However, a lane balance prediction for this configuration shows that the fourth far left lane is likely to be lightly occupied, while the third lane is heavily occupied and does not allow easy access for those wishing to make a last minute exit to the State Park.

The Left Ramp, Parallel type requires significant pavement to construct, and does not result in the optimum flow of traffic into the State Park, while possibly restricting traffic into the City during busy park periods. For these reasons, it is not a recommended configuration. **Plans showing this design option are included in Appendix A, Figure 1C.**

Option RMPT-D – Right and Left Ramp Fork with Dedicated Lanes

This option develops a four lane fork configuration at the RMP terminus transition. To develop this configuration, right and left ramp lanes are developed 1800 feet east of the terminus. The two left lanes approaching the fork are dedicated for State Park traffic, and the two right lanes are dedicated to the City.

This configuration creates a default condition where a driver in the right lane that does not make a lane movement is directed into the City, while a driver in the left lane is directed to the State Park. A lane balance prediction for this configuration shows that the right and left lanes can be lightly occupied, creating a situation where most of the traffic is found in the center two lanes. This does not allow for easy last minute weaving to destinations, which can occur if vehicles find themselves heading to the wrong destination.

The Fork with Dedicated Lanes does not result in the optimum flow of traffic into the intersection, as there is the likelihood that vehicles will by default end up in the wrong destination. Furthermore, there are about twice as many vehicles entering the City as the State Park, and this design does not accommodate that traffic split evenly. Therefore, it is not a recommended configuration. **Plans showing this design option are included in Appendix A, Figure 1D.**

Option RMPT-E – Combined Ramp

This option carries all RMP eastbound traffic via a combined left ramp configuration. This is accomplished by directing all traffic via signage and pavement markings that the expressway ends, and to exit on a curved geometry. The ramp design speed would be lower than the RMP speed, and speed limit signs would be posted appropriately. To transition traffic from the RMP to the ramps, grooved pavement strips would be evaluated for use at the expressway terminus, before the ramp exit.

This configuration applies to John B. Daly intersection configurations that direct all traffic through a single feature. These are discussed in the immediate section below.

The combined ramp would be selected if a compatible at-grade intersection carrying all traffic is selected. **Plans showing this design option are included in Appendix A, Figure 1E.**

Robert Moses Parkway at John B. Daly Boulevard Interchange

The grade-separated interchange at John B. Daly Boulevard would be reconfigured. Several design options have been developed, consisting of grade separated and at-grade design options. Each design option removes excess infrastructure such as the eastbound Robert Moses Parkway bridge over the John B. Daly overpass lanes. These options would eliminate the embankment west of John B. Daly Boulevard that interferes with the view of the River for residences fronting Riverside Drive. As a result, these options "open up" the entire area of the State Park at John B. Daly Boulevard.

Option JBD-A – Riverway Underpass of John B. Daly Boulevard Outbound Lanes

This option would provide a compact and modified grade-separated intersection at this location. Exiting traffic from the Robert Moses Parkway entering the Riverway would be carried at-grade into the State Park. Outbound traffic from John B. Daly Boulevard would be carried over the Riverway on a single bridge structure. Ramp lanes for traffic entering the City from the RMP terminus would remain segregated and would not be carried in the vicinity of this structure.

Drivers entering the State Park would pass under this new structure. This bridge could serve as an entrance or "Gateway" feature to the State Park, and be of a stone arch or other architectural type. An arch type structure would provide a visual cue that drivers are entering the low-speed Riverway. It would be constructed to be smaller in magnitude and better integrated into the landscape than the bridges at this interchange today.

This option would eliminate the bridges and embankment that carries the Robert Moses Parkway over the John B. Daly Outbound lanes today. This embankment has been negatively viewed as it interferes with the view of the River for residences fronting Riverside Drive. The embankment created by the John B. Daly outbound overpass would not provide this visual interference, and could be constructed by utilizing some of the removed fill from the current embankments.

This option retains a grade separation between vehicles exiting the city onto eastbound RMP (the heaviest traffic movement at that location) and entering the State Park on the Riverway. **Plans showing this design option are included in Appendix A, Figure 2A and 3A.** This option is compatible with transition options RMPT-A, RMPT-B, RMPT-C and RMPT-D.

Option JBD-D – Modify Existing Interchange

This option would retain the existing westbound bridge at the interchange, while creating a low speed access road into the State Park. The embankment at the west side of the bridge would be dramatically lowered to open up the views of the waterfront for residents of Riverside Drive. This option takes advantage of the remaining useful life of the bridge, and in doing so, reduces the project cost while meeting the project objectives. The lowered embankment would accommodate a low speed transition to the Riverway.

The parkway would be modified to the east of the interchange by incorporating traffic calming techniques such as reduction of the parkway to a single lane, and use of lane channelizing devices as appropriate.

A bridge inspection and structural analysis would be undertaken if this option were advanced to confirm the westbound structure's integrity and to define any necessary minor rehabilitation.

The eastbound Robert Moses Parkway Bridge and its embankments and pavements, closed to public traffic since 1985, would be removed. **Plans showing this design option are included in Appendix A, Figure 2D.**

At-Grade Intersection Design Options

These options would provide an At-Grade Intersection at this location. There are two options developed.

Option JBD-B – Roundabout

This option would provide an at-grade intersection at this location consisting of a two-lane roundabout. This roundabout would carry inbound traffic from the Robert Moses Parkway terminus via an exit ramp configuration to access the Riverway and the City, and outbound traffic from John B. Daly Boulevard to access the eastbound RMP or the Riverway. Ramp lanes for traffic entering the City from the RMP terminus could either remain segregated or be carried in the roundabout.

The overall diameter of the roundabout, including travel lanes, would be about 180 feet. The roundabout would have a speed limit of approximately 15 miles per hour and the speed reduction would be reinforced via signage and geometric design of the approaches.

This option would eliminate the bridges and embankment that carries the Robert Moses Parkway over the John B. Daly Boulevard outbound lanes today and locate the roundabout at a grade compatible with the John B. Daly Boulevard/Buffalo Avenue intersection. The roundabout could have a landscaped central island that would serve as a gateway feature for both the City and the State Park. The low operating speed of the roundabout requires expressway terminus and ramp treatments that effectively reduce approach speed.

This option creates an at-grade intersection where a grade separated interchange exists today. Since drivers leaving the City would have to yield to drivers entering the State Park, queuing onto John B. Daly Boulevard during peak park visitation periods are projected to occur with this configuration. Refer to the section on traffic in this Chapter for a detailed discussion on this topic. **Plans showing this design option are included in Appendix A, Figure 2B (with segregated inbound lanes to the City), 2B-1 (without segregated inbound lanes), and 3B.** Option JBD-B is compatible with transition Options RMPT-A through RMPT-D. Option JBD-B-1 is compatible with Option RMPT-E.

Option JBD-C – Loop Road Intersection

This option is a variation on the formal roundabout option. Instead of a traditional modern roundabout, an elongated traffic circle would be provided that would carry all traffic in the vicinity of the RMP, John B. Daly Boulevard, and to the Riverway. The loop would have a speed limit of 25 miles per hour. The overall average diameter of the loop would be about 150 feet.

This option would eliminate the bridges and embankment that carries the Robert Moses Parkway over the John B. Daly Outbound lanes today. The loop could have a landscaped central island that would serve as a gateway feature for both the City and the State Park. The loop configuration would require drivers to reduce their speed. The low operating speed of the loop requires expressway terminus and ramp treatments that effectively reduce approach speed, particularly since all RMP eastbound traffic enters this configuration and merges with all State Park exiting traffic.

This option creates an at-grade intersection where a grade separated interchange exists today. However, it is not a standard roundabout configuration, and creates short weaving and conflict points that are controlled under a roundabout configuration. Therefore, this design is not appropriate and is not considered a feasible option. **Plans showing this design option are included in Appendix A, Figure 2C and 3B.** Option JBD-C is compatible with transition options RMPT-E.

Earthwork Summary

Earthwork for each feasible intersection option is presented below:

John B. Daly Interchange Options	Option JBD-A Grade Separated (Bridge)	Option JBD- B At-Grade (Roundabout)	Option JBD-D (Modify Connection)
Area of Disturbance: (Acres)	19.1 (low) 20.0 (high)	19.83	3.2
Total Volume of Earthwork Moved (Cut + Fill) (cubic yards)	183,400 (low) 192,400 (high)	160,800	26,640
Excess Material (Net Cut) (cubic yards)	64,800 (low) 80,600 (high)	103,800	26,610

Riverway/Main Street and Buffalo Avenue (to Goat Island) Intersection

The Build Alternatives include maintaining the connection between the State Park road system and the City via an intersection with Main Street and Buffalo Avenue. This intersection would provide access between the Riverway and Goat Island via Buffalo Avenue and the American Rapids Bridge. At this location, there are four configurations being considered.

Option G-M-A – Maintain Configuration at Main Street

Under this option, the existing connection between the Riverway, Main Street and Buffalo Avenue would be retained in its current configuration. Access to Goat Island would be provided by a dedicated turning lane from the Riverway. Access would be provided to Main Street via a tee intersection with Buffalo Avenue off of the dedicated turning lane. Access would also be retained for access to the Riverway from Buffalo Avenue.

While this configuration works today, it is not a standard configuration. Drivers accessing the dedicated turning lane have limited time to make a decision at the split of the legs accessing Buffalo Avenue eastbound and Main Street because the intersection is not visible upstream of the American Rapids Bridge. Drivers from Buffalo Avenue to the Riverway are yield controlled. **Plans showing this design option are included in Appendix A, Figure 7A.**

Option G-M-B – Modified Intersection Configuration

Under this option, the connection between the Riverway, Main Street and Buffalo Avenue would be retained with modifications. A dedicated turning lane to Goat Island via Buffalo Avenue would be segregated from the access to Main Street. A dedicated turning lane would be added to allow for dedicated egress from the Riverway. The beginning of this lane would be located upstream of the American Rapids Bridge to improve visibility. Riverway access and egress from Main Street and Buffalo Avenue would be consolidated into a single two way connecting road established nearly perpendicular to the Riverway and in line with Main Street.

Providing a dedicated turning lane to Buffalo Avenue and Goat Island is an advantage, as it gives drivers a better view of the destination and more time in which to make a decision to go to the island. The dedicated turning lane provides dedicated access to Buffalo Avenue eastbound (toward the American Rapids Bridge to Goat Island), which is advantageous. **Plans showing this design option are included in Appendix A, Figure 7B.**

Option G-M-C – Single Intersection with Main Street/Buffalo Avenue

Under this option, the dedicated turning lane from the Riverway to Buffalo Avenue would be combined with the access from the Riverway to Main Street at a location to the west of its existing location. The access from Main Street/Buffalo Avenue to the Riverway would be closed and combined with the access from the Riverway to Main Street.

Providing a single intersection is an advantage, as it simplifies and consolidates traffic patterns in this area. In addition, its location gives a driver more decision time between being able to see the intersection and arriving at the intersection. A disadvantage to this option is that the intersection queues may extend into the right lane of the Riverway on peak days because the access to Buffalo Avenue eastbound is not segregated from Main Street traffic. **Plans showing this design option are included in Appendix A, Figure 7C.**

Option G-M-D – Riverway Connection to Buffalo Avenue

Under this option, the existing RMP/Buffalo Avenue/Main Street intersection would be replaced with a connection to Buffalo Avenue southwest of the Buffalo Avenue/Main Street intersection. Riverway access to Buffalo Avenue would be via a 310 degree turning lane designed to accommodate tour buses and park trolleys. Once on Buffalo Avenue, motorists would be able to continue straight on Buffalo Avenue toward the 1st Street/American Rapids Bridge intersection or turn left onto Main Street. Motorists on Buffalo Avenue southbound could continue through the Main Street/Buffalo Avenue intersection directly onto the Riverway. The connection from Buffalo Avenue to the Riverway would intersect the Riverway at an angle to discourage wrong-way access to the Riverway. Under this option, pedestrian accommodations would be provided from the Main Street/Buffalo Avenue intersection, to and across the Riverway, and would connect with the path system along the river.

This option provides a single point of ingress and egress from the Riverway to Buffalo Avenue, locates the point of egress 250 feet further to the west, and sets up the primary traffic movement in the Main Street/Buffalo Avenue intersection to be a through (straight) movement. This simplifies and consolidates traffic patterns in this area, provides additional decision sight distance for drivers, and provides easy access to both the City and State Park (both mainland and Goat Island). Plans showing this design options are included in **Appendix A, Figure 7D**.

3.3 Engineering and Landscape Architecture Considerations

3.3.1 Sustainable Site Considerations

In keeping with the conservation purpose for which the State Park was established and in accordance with the New York State Office of Parks, Recreation, and Historic Preservation Sustainability Plan dated April 22, 2009 this project is incorporating sustainable site design principles into the formation of the alternatives.

Since this project provides transportation improvements within a park setting, the project will utilize the NYSDOT adopted Sustainability program known as GreenLITES. This program, developed in concert with Federal Highway Administration Sustainable Guidelines, contains a framework of well over 100 sustainable design initiatives that can be undertaken in the development of transportation projects. GreenLITES essentially is a scorecard type of program that sets criteria for sustainable actions, and awards points for their achievement on the project. There are different levels of achievement. Due to the prominent, historic, scenic, and waterfront setting of Niagara Falls State Park, the design intent is to become NYSDOT *Evergreen Certified*, which is the highest level of achievement recognized by the program.

The NYSDOT GreenLITES rating system divides sustainable design features into five categories:

1. Sustainable Sites
2. Water Quality
3. Materials and Resources
4. Energy and Atmosphere
5. Innovation/Unlisted

The following sustainable design practices are intended to be incorporated into the design and construction of this project. To see the details of the GreenLITES program scorecard, refer to **Appendix E**.

1. Sustainable Sites

The historical context and character of the site lends to careful consideration of site re-development. The following sustainable site design elements are intended to be incorporated into the build alternatives:

Alignment Selection

- The design will attempt to avoid previously undeveloped lands. While most of the land within the State Park has been developed at some time, there are areas that have either not been developed or have reverted to a natural state over time. These areas will be avoided where feasible.
- Alignments will be designed to provide a 100 foot buffer zone between edge of pavement and the Niagara River where feasible. However, there are some areas where the park is narrow where the buffer between pavement and river will be somewhat less. In those areas measures to maximize the buffer area will be considered.
- Alignments which minimize overall construction footprint will be developed. However, there are goals for the project, which include the development of an Olmstedian type design, which may require some deviation from a minimalistic approach.
- The alignment will optimize benefits among competing constraints. These constraints include developing a historically interpreted design, removal of earthen embankments, reuse of earthwork on site, and minimization of site disturbance.
- Landscape design will seek to use seed mixtures that help reduce maintenance and increase carbon sequestration.

Context Sensitive Solutions

- The design will incorporate highway features to respond to the unique character or sense of place that exists at Niagara Falls State Park. In this case, Olmstedian features will be incorporated.
- Local or natural materials will be incorporated into the design. Features such as retaining walls and bridge fascias provide opportunities to accomplish this initiative.
- Visual enhancements will be incorporated into the landscape to frame the water and screen less desirable views.
- Period street furniture, lighting, and appurtenances will be evaluated and incorporated within the context of an Olmstedian design.
- Visually contrasting pedestrian crosswalk treatments will be evaluated and used where appropriate.
- The design is to be context sensitive with respect to the historical State Park as a primary objective.

Land Use/Community Planning

- Engaging public participation techniques have been used, and will continue to be used. **Appendix O** defines the public involvement process for this project.
- Enhanced outreach efforts include a project specific web-page.
- The project is incorporating walkable communities and complete streets concepts by giving careful consideration to pedestrian and bicycle accommodations within the length of the project, and in accordance with the Riverfront Plan of the Niagara Greenway Commission "bikeway".
- The project is consistent with Regional Planning Documents.

- Recreational facility enhancements including river overlooks, benches and informational kiosk panels will be provided.
- This project seeks to improve access to the Niagara Falls State Park as a primary objective.

Protect/Enhance, or Restore Wildlife Habitat

- The project will seek ways to provide for existing wildlife habitat.
- The project will install mowing markers to protect natural areas.

Protect, Plant, or Mitigate for Removal of Trees

- The project will avoid significant continuous stands of established desirable trees.
- The project design will provide for a net increase in ultimate tree canopy within the project limits.
- Unhealthy trees will be thinned, but native replacements will be selected for planting. Native seed mixes will be specified.
- Avoidance of individual significant trees will occur.
- Planting of trees, shrubs, and plant material in lieu of traditional turf grass will be evaluated, and incorporated where it is practical within the park setting.
- Undesirable (invasive) plant species will be removed.
- The project seeks to enhance vegetation associated with the historic Niagara Falls State Park as a primary objective.

2. Water Quality

The presence of the Niagara River as a significant and majestic waterbody requires that the project not deleteriously affect the quality of its water, through stormwater discharges from the project site. Water quality will be improved through the initiatives defined below.

Stormwater Management (Volume and Quantity)

- The removal of the Robert Moses Parkway and replacement with a one-way low speed Riverway will result in a reduction in impervious area.
- Stormwater quality and quantity would be managed by using a combination of open drainage, overland flow, and vegetated stormwater detention/infiltration areas. Direct discharges of stormwater to the Niagara River would be avoided.
- The project will incorporate Best Management Practices (BMP's) for the treatment of stormwater

Best Management Practices (BMP's)

- The project will use structural BMP's as appropriate to treat stormwater runoff from roadways within the project area
- The project will use grass lined channels where appropriate to carry runoff.

3. Materials and Resources

Where possible, existing materials to be removed will either be reused on-site or nearby to limit the project's impact due to transportation and disposal of project waste. Specific efforts to achieve this objective are described below.

Reuse of Materials

- ♦ 75% of topsoil removed for grading will be stored and reused on site.
- ♦ Given the constraints present within the State Park, and the desire to remove embankments that were constructed as part of the Robert Moses Parkway, the project will attempt to balance cuts and fills on site to the extent practical.
- ♦ Reuse of excess fill (spoil) within the project area to minimize the amount of excess embankment that is removed off site. Soils will be evaluated during detailed design to determine their suitability for reuse.
- ♦ The City of Niagara Falls will be consulted to determine whether suitable excess embankment material above and beyond that which can be reused on site can be accepted for reuse by the City. Use of suitable excess embankment material along portions of the Robert Moses Parkway east of the project site is planned to enlarge and extend existing berms.
- ♦ Trees to be removed will be specified to be mulched for reuse on site.
- ♦ Project documents will specify that structural steel will be either reused or recycled.

Recycled Content

- ♦ The use of Recycled Asphalt Pavement or Recycled Concrete Aggregate will be evaluated during design

Local Materials

- ♦ Local seed stock and plants will be specified.

Hazardous Material Minimization

- ♦ No hazardous materials have been identified on site. During detailed design soils borings will confirm that embankments are uncontaminated. Should contamination be discovered, appropriate disposition of these materials will be evaluated.

4. Energy and Atmosphere

Efforts to reduce energy consumption and air pollution will be undertaken in the design of the project. Techniques to accomplish this are presented here.

Improved Traffic Flow

- ♦ Evaluation of a system to monitor capacity of Parking Lot No. 1, and to provide ITS warning to motorists along the Riverway when this lot is full, such that alternative routing to Goat Island or City Parking can be pursued.

Reduce Petroleum Consumption

- ♦ Reduce mowing areas outside of the clear zone by establishing natural ground cover in selected areas.

Improve Bicycle and Pedestrian Facilities

- New bicycle paths and pedestrian pathways along the project limits, providing integration with the Niagara River Greenway.
- Widen existing paths within the Riverway limits.
- New crosswalks.
- Advance warning of crosswalks with signs and yield or stop pavement markings (white triangles).
- Evaluation of cast iron embedded detectable warning units.

5. Innovation

- Implementation of Olmstedian features interpreted for 21st century usage.

The above criteria represent targets for this project, in an attempt to create a sustainable yet historically interpreted design.

3.3.2 Historic Site Considerations

The No Build/Null Alternative does not meet the Basis of Design and would not provide a scenic park entrance road in character with the historic Olmsted and Vaux design concepts.

Both Build Alternatives meet to differing degrees the Basis of Design by incorporating the following features and principles found in the *General Plan* and other Olmsted and Vaux parkways and park landscapes:

- Curvilinear roadway alignments incorporating spiral horizontal curves
- Provision of parking laybys
- Seating at scenic overlook locations
- Interconnected pathway systems that are curvilinear, visually recessive, promote ease of movement, and enhance the experience of seeing and moving along the river, past the rapids and to the Falls.

Alternative 3 more fully applies design principles employed by Olmsted and Vaux for the Niagara Reservation as well as other parkways and park landscapes. These characteristic elements are applied to the greatest extent possible within the context of the Niagara Riverfront landscape, enhancing contemporary uses and development patterns. Key examples of elements more fully realized in Alternative 3 are:

- Integration of the road into the landscape in a naturalistic manner that is more park-like and transitions from the urban roadway grid, responding to the river features and following the historic spiral curve alignment.
- Incorporation of vertical alignment characteristics of the 19th century Olmsted-Vaux road designs using varied gradients to enhance the scenic landscape experience.
- Creation of vehicular pull-offs that are set away from the parkway drive lanes separated by park landscape and slightly below the park drive elevation for visual relief from the travel lanes. Pull-offs are more park-like in character, curved in form to lessen the visual effect and placed with focus on predominant views of the Niagara River.
- Drive alignment, placement of overlooks, paths and seating placed in response to establishing picturesque views of prominent natural features, including the river.

- Incorporation of vegetation to reinforce the spatial constructs of the park landscape that includes trees placed along drives and park edges, use of informal tree groupings within open turf areas and more densely planted tree groves for shaded areas.
- Incorporating large areas of meadow and mown turf, providing differing user experiences and visual interest in the landscape
- Incorporation of long, spiral-curved path alignments that promote circular (looped) routing within the State Park, offering full and differing visitor experience of the landscape and avoidance of doubling back to the point of origin. Paths provide ease of movement, connections to neighborhoods and generous seating locations focused on prominent riverfront views and set slightly apart from faster paced multi-modal uses.
- Creation of a naturalistic water element as an amenity to the State Park and for park users

Alternative 2 only somewhat provides these elements, as it is constrained by its definition to develop a roadway within the existing Robert Moses Parkway alignment. This alignment has no historical relationship to the alignment developed in the Olmsted and Vaux General Plan.

The State Historic Preservation Office (SHPO) reviewed the proposed design and commented in a March 25, 2011 Memo that "this project is an exciting opportunity to restore a sense of the original parkway designed by Fredrick Law Olmstead, but lost to the Robert Moses Parkway."

3.3.3 Transportation Considerations

Functional Classification, Access Control and National Highway System

For each of the Build Alternatives and related design options, the functional classification of the roadways would remain the same. The Robert Moses Parkway, from the John B. Daly Boulevard Interchange to the east, would remain on the NHS. This would remain a controlled access highway.

The new "Riverway" within Niagara Falls State Park would remain as an unclassified road off of the NHS. Vehicular access to the Riverway would continue to be limited to:

- Westbound access from the RMP terminus at the John B. Daly Boulevard Interchange
- Two way egress/ingress at 4th Street
- Two way egress/ingress from Main Street/Buffalo Avenue
- One way northbound egress to Prospect Street, with connection to Old Falls Avenue and Niagara Street

Traffic Control Devices and Intelligent Transportation Systems (ITS)

Traffic control devices would be limited to use along the Riverway as follows:

- Stop signs would be evaluated at pedestrian crossings of the Riverway
- 4th Street would be stop sign controlled at the Riverway
- The Riverway would be stop sign or yield sign controlled at Main St./Buffalo Avenue
- The roundabout intersection option at the RMP/John B. Daly Boulevard intersection would be yield sign controlled.

Traffic congestion related to State Park tourism occurs on holiday and many summer weekends. During this period, parking lot No. 1 reaches capacity. At that time, State Park officials manually turn on a flashing yellow light on the parkway, directing visitors to Goat Island and Parking Lot No. 2 and 3. This system is manually intensive and not time sensitive. Traffic is frequently delayed at the Prospect Street and Niagara Street intersection, causing operational breakdown of the traffic system.

Speeds and Delay

The Robert Moses Parkway, east from the John B. Daly Boulevard Interchange would remain as an expressway with a posted speed of 55 mph.

The proposed Riverway would have a design speed of 30 miles per hour, and a posted speed limit of 25 miles per hour. This speed is lower than the existing 35 mph speed limit, which has been posted for an expressway type configuration with a 60 mph design speed. The Riverway would introduce traffic calming elements, such as curves, entry features, landscaping, and raised cross-walks to limit the practical speed on the road.

The Riverway would be constructed with two lanes of traffic to accommodate a high volume of vehicles during holiday and summer peaks. During congested periods the two lanes would allow vehicles to store for a short period until they are able to reach a parking destination.

Traffic Volumes, Level of Service and Mobility

Traffic conditions under the No-Build Alternative are described in Section 2.2.3.

Under the No-Build Alternative, vehicle speeds would remain the same.

Under the Build Alternatives, traffic calming features inherent in the Riverway would result in reduced vehicular speeds. Improvements to wayfinding and traffic signage would reduce driver confusion. Operations at John B. Daly Boulevard and Main Street would be dependent on the options selected, as described below.

John B. Daly/RMP/Riverway Intersection

Four design options for reconfiguring the grade-separated interchange at RMP and John B. Daly have been analyzed under weekday peak, summer weekend, and summer holiday weekend conditions utilizing VISSIM version 5.10-05 traffic modeling software. Analysis has also been completed with peak hour volumes projected 20 years into the future (ETC +20). The results of these analyses are provided in **Table 3.10**. The final option would retain operations consistent with the future no-build traffic analysis shown in section 2.2.3.

Option JBD-A Riverway Underpass of John B. Daly Boulevard Outbound Lanes

This option retains a grade separation between vehicles exiting the city onto eastbound RMP (the heaviest traffic movement at that location) and entering the State Park on the Riverway. The grade separated intersection keeps traffic free-flowing by eliminating interference between traffic movements.

The grade separated intersection option does not introduce vehicle conflict points and would therefore be expected to have an accident rate similar to the existing interchange.

Option JBD-D Modify Connection to Existing Interchange

This option increases the downward grade immediately west of the existing westbound Robert Moses Parkway bridge over John B. Daly outbound but otherwise does not change the existing functionality of the existing facility.

Option JBD-B Roundabout

Option JBD-B Roundabout creates an at-grade intersection where a grade separated interchange exists today. As shown in **Table 3.10**, this introduces queuing and delay, which in ETC +20 would extend onto the Buffalo Avenue intersection during peak periods. The original analysis used the 2.8% per year growth rate obtained from the regional traffic model. Delays would be most pronounced on holiday weekends when there would be a high volume of traffic both entering the State Park and exiting the City.

Extensive discussions about the traffic effects of the roundabout were held with the project partners (NYSOPRHP, City of Niagara Falls, USA Niagara, NYSDOT). It was agreed that the forecast growth rate of 2.8% per year obtained from the regional traffic model was overly optimistic. Therefore, the analysis was revised using a 1% per year growth rate, which is twice the current traffic growth rate in the region. The revised analysis for ETC +20 with a 1% per year growth rate indicated that the roundabout would only experience long queues under the holiday weekend condition. With holiday weekends representing less than 20 days of traffic, the project partners agreed that the roundabout satisfied the 30th highest hour and best met project objectives by providing a gateway entrance to the State Park and calming the traffic entering both the State Park and the City. It was agreed that if future traffic in the roundabout caused queueing issues, these would be mitigated through joint Parks and City traffic management strategies.

The roundabout would introduce conflict points that do not exist today. Therefore, some increase in accident rates would be expected with this option. Accident rates would be comparable to other two-lane roundabouts. However, low speeds should result in low potential for severe accidents.

A formal terminus of the expressway with a recognizable intersection configuration is needed to provide for safe and efficient access into the State Park and the City. The JBD-B Roundabout Option can be designed as the formal terminus of the expressway. Modifications to the Robert Moses Parkway approach would be necessary to reduce speeds of vehicles entering the roundabout and providing clear visual cues to limit confusion for visitors.

**Table 3.10
Maximum Delay (Sec) and Maximum Queue (ft) for RMP/John B. Daly Boulevard**

Option	Measure	ETC (2014)			ETC +20 (2034)		
		Weekday	Summer Weekend	Holiday Weekend	Weekday	Summer Weekend	Holiday Weekend
JBD-B Roundabout 2.8% growth rate	Delay (Sec)	10.9	11.1	55.1	46.2	59.9	151.2
	Queue (ft)*	15.5	14.5	496.1	1,149.3	1,162.7	1,243.3
JBD-B Roundabout 1.0% growth rate	Delay (Sec)	---	---	---	19.7	20.8	79.9
	Queue (ft)*	---	---	---	74.3	71.1	1,116.4

*NOTE: Approximately 700 feet of queue length is available from the Roundabout to Buffalo Avenue.

Option JBD-C Loop Road Intersection

This option also creates an at-grade intersection where a grade separated interchange exists today. Under this configuration, all drivers exiting the RMP, whether to the State Park or the City would pass through an elongated traffic circle which maintains some of the entry and exit design features of a modern roundabout. Drivers entering the City would do so via a right hand exit from the Loop. Drivers exiting the City would be required to yield to drivers entering the State Park.

This configuration is non-standard, and is not being further considered.

Riverway at Main Street/Buffalo Avenue

Access to the American Rapids Bridge to Goat Island via Buffalo Avenue is provided from the existing RMP at Main Street. Delays at this intersection today are generally limited to summer holiday weekends when Parking Lot No. 1 reaches capacity and all traffic is required to exit at Main Street. Four design options for connection of Main Street and Buffalo Avenue to the Riverway have been developed.

All four options have been analyzed under summer holiday weekend conditions utilizing Synchro traffic analysis software. Analysis has also been completed with peak hour volumes projected 20 years into the future (ETC + 20). The results of these analyses are provided in **Table 3.11**.

Option G-M-A – Maintain Configuration at Main Street

Under this option, the existing connection between the Riverway, Main Street and Buffalo Avenue would be retained in its current configuration. This configuration provides acceptable operations for vehicles during most periods, but does not meet project objectives for pedestrian accessibility.

Table 3.11
Level of Service (delay in seconds) for RMP/Main Street/Buffalo Avenue
Summer Holiday Weekend

Direction	G-M-A		G-M-B		G-M-C		G-M-D	
	ETC	ETC + 20	ETC	ETC + 20	ETC	ETC + 20	ETC	ETC + 20
WB	B (10.6)	C (18.3)	B (10.9)	C (19.3)	B (12.9)	E (35.7)	B (11.1)	C (22.4)
NB	A (8.9)	B (10.6)	A (8.9)	B (10.7)	B (12.4)	C (23.7)	B (11.5)	C (20.6)
SB	A (9.0)	B (10.8)	A (9.3)	A (11.3)	A (9.9)	B (13.2)	A (9.8)	B (12.5)

Option G-M-B – Modified Intersection Configuration

Under this option, the connection between the Riverway, Main Street and Buffalo Avenue would be retained with modifications.

As shown in Table 3.11, this option has slightly more delay than the existing condition. Vehicles approaching the Riverway from Buffalo Avenue would be required to stop prior to entering the Riverway, reducing speeds at the crosswalk.

Option G-M-C – Single Intersection with Main Street/Buffalo Avenue

Under this option, the access from the Riverway to Buffalo Avenue would be combined with the access from the Riverway to Main Street at a location to the west of its existing location.

As shown in Table 3.11, this option has slightly more delay than the existing condition. In addition, its location gives a driver more decision time between being able to see the intersection and arriving at the intersection. A disadvantage is that the intersection queues may extend into the right lane of the Riverway on peak days because the access to Buffalo Avenue is not segregated from Main Street traffic.

Option G-M-D – Riverway Connection to Buffalo Avenue

As shown in Table 3.11, this option has slightly more delay than the existing condition. However, it requires less pavement and improves pedestrian access from the intersection to the river.

Safety Considerations, Accident History and Analysis

In general, there is not a documented accident history on this section of highway.

Under the No-Build Alternative, the expressway continues into the State Park without any curves or roadway character changes. As a result drivers continue to drive at high speeds until they reach the American Rapids Bridge. These high speeds reduce the sense of safety that park visitors would otherwise have crossing park roads.

Under the Build Alternatives, the Robert Moses Parkway would terminate at an intersection at John B. Daly Boulevard, with a transition to a low speed Riverway. This is expected to reduce operational speeds within the State Park. In addition, well-marked cross-walks will delineate locations where paths cross the Riverway. The stop conditions at these crosswalks would reduce speeds and improve pedestrian safety.

The Riverway underpass, roundabout intersection, and modified interchange options are feasible options for maintaining safe and efficient access into the State Park and City.

Impacts on Police, Fire Protection and Ambulance Access

Emergency service vehicles would continue to be able to access the State Park at existing City street connections. In addition, they would continue to be able to use trolley paths to access locations near Prospect Point. Access to the eastern end of the State Park would need to utilize the shared use paths, which at 10 to 12 feet are wide enough to accommodate most emergency service vehicles. Access will be provided to the existing State Park Police boathouse suitable for use by police vehicles and rescue trucks. Access to Goat Island would remain via the American Rapids Bridge, which is not being disturbed as part of this project.

As part of the design, an emergency vehicle access plan will be developed. The emergency vehicle access plan will be provided for review by Parks Operations personnel and to emergency service providers. Those pathways that may serve to accommodate emergency vehicles will be designed to accommodate emergency vehicle loads.

Parking Regulations and Parking Related Issues

Under the No-Build alternative, no changes would be made to parking.

Under both Alternative 2 and 3, Laybys would be provided along the Riverway both east and west of 4th Street. Laybys would consist of roadside stopping areas that would include a through road, and adjacent off road parking. They would be designed to accommodate short term parking along the riverfront for purposes of public enjoyment. The laybys would be designed to accommodate between 50 and 75 angled parking spaces for vehicles facing the Niagara River.

Proposed Highway Section including Pavement and Shoulder

The Build Alternatives would provide 2-10 foot wide lanes into the State Park with 1 foot curb offsets on both sides. The curb would be six inches high and mountable curbs will be evaluated to allow access at certain locations to the trails by emergency service vehicles. An appropriate clear zone would be provided on either side of the Riverway.

Special Geometric Design Elements

All of the build alternatives would meet the critical design standards and conform to current roadway design guidelines within the project limits.

Stormwater Management

The existing Robert Moses Parkway collects storm drainage at the roadway curbs and carries the stormwater via closed drainage via intermittent outlets that discharge into the Niagara River. Pipes are discharged at outlet headwalls along the river shore. This system is 50 years old and was constructed as part of the original Robert Moses Parkway.

As part of the new Riverway, the amount of roadway pavement would be reduced. Two bi-directional roadways would be replaced with a single direction low speed park access road. Under Alternative 2 or 3, the impervious area would be reduced from about 10.8 acres to 6.1 acres.

Stormwater quality and quantity would be managed by using a combination of open drainage, overland flow, and vegetated stormwater detention/infiltration areas. Direct discharges of stormwater to the Niagara River would be avoided. Stormwater treatment using best management practices (BMP's) will be incorporated as necessary to treat the water quality volume. For both Build Alternatives, the pavement would be drained into stormwater management features and/or vegetated areas to allow for infiltration and settlement of suspended solids.

A stormwater pollution prevention plan will be developed as part of final design.

Structures

Under the Build Alternatives, up to two bridges (BIN 1068141 and 1068142) would be removed. These two bridges are 55 years old and the eastbound bridge is functionally obsolete. They were originally designed to be expressway overpass type structures.

Option JBD-A – Riverway Underpass of John B. Daly Boulevard Outbound Lanes

Under the Underpass Option of John B. Daly Boulevard outbound lanes, a new bridge would be constructed over the new Riverway. Unlike the structures present today, this bridge would be small in

size and span. A precast concrete arch bridge with stone facing is one bridge type under consideration, because it is context sensitive to the setting of the site, and meets the visual objectives of NYS Parks.

Option JBD-D Modify Existing Interchange

Under this option the existing westbound Robert Moses Parkway Bridge over John B. Daly outbound lanes would be retained. A detailed structural inspection and evaluation would be conducted during final design to determine if any repairs to the bridge are needed as part of proposed construction.

No changes would be made to the American Rapids Bridge under any build alternative.

Guide Railing, Median Barriers and Impact Attenuators

Option JBD-A – Riverway Underpass of John B. Daly Boulevard Outbound Lanes

Under the Underpass Option of John B. Daly Boulevard outbound lanes, guide rail would be required on the bridge approaches. Guide railing is not required below the bridge should a standard horizontal clearance be provided. No other guide rail, median barriers, or impact attenuators are expected to be required under the Build Alternatives.

Option JBD-D Modify Existing Interchange

Under this option the guide rail west of the existing westbound Robert Moses Parkway Bridge over John B. Daly outbound lanes would be replaced from the bridge to a point where adequate clear zone can be provided via grading.

Ownership and Maintenance Jurisdiction

The Robert Moses Parkway and the Niagara Falls State Park are under the ownership of the State of New York. Currently the NYSDOT maintains the Robert Moses Parkway. NYSOPRHP maintains the State Park and the parkway within the State Park.

No changes to ownership and maintenance agreements for the roadways and the State Park are proposed. NYSDOT will maintain the Robert Moses Parkway up to and including the intersection with John B. Daly Boulevard, including all lanes connected to John B. Daly Boulevard at Buffalo Avenue. NYSOPRHP will maintain the Riverway and Niagara Falls State Park from the State Park entrance located to the west of the John B. Daly Boulevard intersection westward.

City Streets fall under the jurisdiction of the City of Niagara Falls, who owns and maintains these. This includes Buffalo Avenue, Main Street, 4th Street, and Prospect Street. Intersections with the Riverway, namely at 4th Street and Prospect Street, will be maintained by NYSOPRHP.

Right of Way

The addition of sidewalks on 4th Street will require Temporary Easements for construction and for grading adjustments. The effect of the right-of-way acquisitions is de-minimis and the public interest will not be prejudiced by the construction of the project. A "de minimis" finding letter is included in **Appendix H**.

Constructability Review

Under the Build Alternatives, the demolition of the RMP and construction of the Riverway would take place in stages to limit disruption to the State Park. Access to destinations and activity centers within the State Park would be maintained. Where necessary, portions of the westbound RMP would be overlaid and used as temporary lanes.

Once the Riverway is constructed, removal of the existing RMP within the State Park would be completed and path systems and landscaping would be provided.

One multi-use path would be maintained through the length of the State Park at all times. This will likely be provided by constructing the portions of the path system furthest from the river first, then directing traffic to the upper paths while the new paths are constructed near the river.

A detailed maintenance and protection of traffic plan will be developed during final design.

Construction activities will be limited to the minimum required to complete the project. The contractor will be required by the construction documents to stake and restrict work to a defined footprint.

Geotechnical

A geotechnical investigation program will be conducted during detailed design to determine the soil parameters for use in pavement design, embankment/wall design, sign foundation design, and drainage design. In addition, information will be gathered to determine if the fill near John B. Daly Boulevard is suitable to use for fill elsewhere on the project.

Utilities

There is an AT&T Buried Fiber Optic line that extends parallel to the RMP through the John B. Daly Boulevard interchange area. Given the fill removal planned for this area this line may need to be lowered to maintain the required cover over the line.

In addition, there are 3 utility poles within 3 feet of the face of curb along the east side of 4th Street that may require relocation to accommodate a new sidewalk.

Utility coordination will be included in final design activities.

Other Features not affected by the proposed design

No airports, railroad facilities, or ports exist near the project area that would be affected. The intakes for the Lewiston Power Plant are located over 1 mile upstream of the site and would not be affected by the work. There are no other features not identified in this report that would be affected.

3.3.4 Bicycle/Pedestrian/Trolley Accommodations

In Alternatives 2 and 3, pedestrian, bicycle and trolley accommodations east of the Goat Island Pedestrian Bridge would be enhanced to improve the experience for State Park visitors. In both alternatives, the proposed park paths would connect to existing paths within the Prospect Point area to provide a continuous system from John B. Daly Boulevard to the Rainbow Bridge. The design emphasis for each

alternative incorporates varying techniques for accommodating pedestrians and bicyclists. Core elements shared by both alternatives include overlooks connecting visitors to the landscape zones along the River and connections to adjacent City streets at multiple locations. Cross-walks will be designed for high visibility to enhance safety. In both alternatives, amenities would be consistent with the historic character of the State Park. Lay-bys, overlooks with benches, lighting, information kiosks, benches, and bicycle parking would be provided as part of the project.

Specific pedestrian/bike access improvements would be provided at the following locations under both build alternatives:

Heritage Park: Provide two (2) new upgraded at grade pedestrian crossings with either stop controls for motorists on the Parkway or yield to pedestrians treatments. Provide high visibility crosswalk markings and signage.

Fourth Street/Riverside Drive: Provide a new shared use path on the east side of Fourth Street and at the junction of Holly Street/Riverside Drive. Connect both paths to the River side of the Parkway with an at-grade crossing featuring stop or yield controls.

Provide a new continuous sidewalk on the west side of Fourth Street. This sidewalk will require regrading of a driveway at 6 Fourth Street, and a temporary easement to complete the work.

John B. Daly Boulevard: Provide a new bicycle/pedestrian crossing as an integral element of a new Parkway intersection option.

Alternative 2 includes a variety of path cross sections, ranging from a shared bicycle/trolley cross section with separated pedestrian zones near Prospect Point to a gradually narrower cross section with 12' asphalt shared use paths moving east towards John B. Daly Boulevard. Pedestrian paths would be 8' wide crushed stone surfaces along the River east of the Goat Island Bridge. Pedestrian paths within the existing Prospect Point area would maintain their current surface materials and be extended to connect with the new paths. The shared bicycle/trolley paths would be 20' wide asphalt and may include colored surfaces and/or native stone edge treatments to define different use areas and coordinate with the overall park design themes.



Figure 3.1 Alternative 2 Bicycle/Pedestrian Path Simulation

In Alternative 3, the main paths are shared use asphalt sections for both pedestrians and bicyclists with a typical 10' cross section east of the Goat Island Bridge. Pedestrian paths to bench areas would be 8' wide crushed stone surfaces. Pedestrian paths within the existing Prospect Point area would maintain their current surface materials and be extended to connect with the new paths. The bicycle and trolley paths would be 20' wide asphalt and could include colored surfaces and/or native stone edge treatments to define different use areas and coordinate with the overall park design themes.

Both alternatives meet the project objectives relative to pedestrian and bicycle accommodations. The primary difference between alternatives from a pedestrian/bicyclist perspective is that Alternative 2 provides separated surfaces for pedestrians and bicyclists. Alternative 3 utilizes a shared-use path for both pedestrians and bicyclists with curvilinear alignments to create changing views. These options provide for different types of movement and experiences within the State Park landscape.

The Trolley service would be maintained as part of the project on a combination of the Riverway and shared use bicycle/trolley paths.



Figure 3.2 Alternative 3 Bicycle/Pedestrian Path Simulation

3.3.5 General Park Considerations

General Park Character

There are several distinct landscape zones within the State Park along the RMP west from John B Daly Boulevard to Prospect Street and Old Falls Street. Each is identified by distinct changes in the landscape form and character. In addition, each of these distinct areas serves a unique function within the overall park setting and includes the following:

- Main Entrance to the State Park (near John B Daly Boulevard)
- 4th Street to Main Street (including Buffalo Avenue and the American Rapids Bridge)
- Main Street to Prospect

Generally the landscape character of the State Park and RMP varies from east to west. The eastern end of the State Park in the vicinity of John B Daly Boulevard is open, includes expansive lawn areas and provides views of the Niagara River. Relatively, few trees and minimal trails and pedestrian amenities are located in this section of the State Park. The character of the landscape at the western end is dramatically different and consists of larger trees with dense canopies with an understory of lawn and landscape, especially on the south and west sides of Prospect Street. Use, views and the role of the landscape vary as visitors' progress from east to west. Therefore, the role of the landscape and park character must be designed to meet user needs and expectations in this varying landscape.

The primary intent of the proposed landscape improvements is to enhance the aesthetic appearance of the State Park, to promote a transitional welcome and entrance from the highway, to establish a visual choreography and to provide access to distinct attractions, services and natural features offered within the State Park. Some landscape treatments consist of open lawn areas and others are densely planted - each suggests the type of use the visitor may engage in within the sub-spaces and corridors created by this visually open and closed system. The intent of the proposed landscape directly adjacent to RMP is to provide views into the State Park and allow for intentional views and orientation. See the Conceptual Landscape Plans, Appendix B for further details.

The proposed landscape improvements include the following:

- ♦ Eastern State Park Entrance to 4th Street
 - ♦ Park Welcome signage and associated landscape improvements consisting of a highly detailed planting scheme that serves to visually establish this important location and appropriately celebrate the unique quality of the State Park and its natural features throughout each season.
 - ♦ Eastern Lay-by planting improvements consisting of lush native plant material that screens views of the parked cars and frames views of the river.
 - ♦ Meadow Area plantings consisting of native meadow grasses, wildflowers and low growing shrubs. The intent of this landscape is to provide a natural setting along the river, to create habitat and to provide seasonal interest upon entering the State Park. Meadow plantings are proposed from the eastern project limits to Riverside Drive. This planting scheme proposes to create a mixture of naturalistic meadows and maintained lawn areas.
 - ♦ Proposed Pond and associated plantings located south of Buffalo Avenue and Riverside Drive and north of RMP. The pond and plantings are designed to create a natural setting and to improve views for motorists entering the State Park and the residents north of these two streets. Many of the existing trees would remain in this area of the State Park.
 - ♦ The lay-by located to the east of 4th Street would be planted similarly to the eastern most lay-by and be designed to create a well maintained and beautifully landscaped setting.
 - ♦ Seating and viewing areas along the river would be planted with low-growing perennials to provide for seasonal interest and to create a pedestrian scale setting for safe and open views of the river.
- ♦ Central Portion of RMP and the State Park near 4th Street to Main Street
 - ♦ The central portion of the project area would consist mainly of well-maintained lawn areas and large canopy trees that frame views of the river and rapids. The intent of this landscape is to provide a transitional space that initiates orientation and views of the river.
 - ♦ Low and dense planting would be implemented within the island established by the proposed RMP improvements. Detailed plantings in key areas like 4th Street establish a clear visual relationship with RMP and City Streets.
 - ♦ Thinning and removing trees in poor health and visual condition to improve views to the river and to allow for sunlight to filter to the lawn areas below would improve the existing woodland west of 4th Street. This strategy would promote safety, use and overall character of this locally utilized portion of the State Park. Improved management of the understory in this location would also promote a more inviting character and views.
 - ♦ The lay-by located between 4th Street and the American Rapids Bridge, including the proposed pedestrian access from the river walkways to the bridge, would be densely planted with low growing and native plant materials that provide seasonal interest, screen views of parked cars and visually draw visitors to this important pedestrian node. The level of landscape planting and detail should be notable and maintain views of the rapids.
 - ♦ Seating and viewing areas along the river would be planted with low-growing perennials to provide for seasonal interest and to create a pedestrian scale setting for safe and open views of the river.
- ♦ Western Portion of RMP and the State Park from Main Street to Old Falls Street
 - ♦ The intersection of RMP and Main Street is one of the most prominent visual conditions within the entrance to the State Park. The American Rapids Bridge provides a strong visual portal into the heart of the State Park and establishes a transition point within the existing landscape from the

eastern end of the State Park toward the west and north. Many of the large trees in this portion of the project will remain except as needed to relocate the RMP roadway improvements. Trees and planting would be improved in this area to strengthen the visual transition from the City to the State Park and promote views of the river from this high vantage point.

- Improvements to the trail intersection at the Pedestrian Bridge are important to visually orient motorists and pedestrians. Detailed garden-like planting beds in this area would assist in emphasizing this key location within the State Park. Seating should be provided to serve visitors and to provide a viewing area for the rapids.
- The western side of RMP and Prospect Street is an important visual viewshed into the State Park and City. Currently the dense tree plantings and understory prevent views and may affect visitor's sense of security and welcome. Thinning and selective removals in this section of the State Park could provide distinct advantages in terms of overall park character, orientation and wayfinding.

The overall intent of the landscape improvements proposed above is to establish a transitional redevelopment of the parklands in coordination with RMP improvements and include the following design themes:

- Create a welcoming appeal appropriate to the natural features and attractions, including facilities that are easily located by visitors
- Create a park roadway that appears as a scenic drive that is fitted into the landscape setting and provides an overall character that is unique
- To improve the arrival experience by providing a clear sense that the visitor has transitioned into the State Park from the highway, City streets or through multi-modal paths
- To improve visual and physical connections to the State Park, river and riverfront for visitors and community residents including the natural character of the shoreline
- To apply design principles to the pedestrian and bicycle access paths fitting them into the landscape effectively and providing a varied, scenic experience to increase landscape use and viewshed or setting
- Promotes views and interaction with motorists and State Park amenities
- Protects shoreline habitats and promotes native species
- Reduces State Park grounds maintenance and associated operational costs

The character of the State Park would change in a variety of ways from its current condition. Due to the significant nature of the RMP improvements the roadway would transition into a more pronounced parkway bordered by diverse plantings that emphasize the character and use of the varied segments of the State Park from east to west. The eastern third of this proposed parkway would create a more natural setting through the use of native meadow planting and the proposed pond. The central portion of the project area would frame views of the river and promote a passive multi-use recreation area. Perhaps the most important effect is gained from the removal of the current overpass and associated embankment.

Landscape Development

The landscape is derived by applying the design principles employed by Olmsted and Vaux for the Niagara Reservation as well as other parkways and parks systems they designed. The characteristics are applied in Alternative 3 and to a varying degree in Alternative 2. In simplified terms, the characteristic elements include:

- Structured plantings along park borders for identity of park (public) space and separation from the urban context

- Use of deciduous shade trees in informal groupings and individually throughout the landscape
- Use of native shrub materials in informal mixed species bed plantings
- Use of differing plant materials for a variety of textures including both meadow and mown turf areas
- Vegetation masses as one of the spatial constructs of the landscape
- Naturalistic vegetation along the river edge
- Use of topography in creating visual scenery and experience in the landscape
- Use of topography for minimizing visual intrusion of circulation and built systems
- Separation of vehicle and pedestrian circulation systems
- Use of spiral horizontal curvature on drives and path systems without straight segments
- Use of vertical curvature for added interest and experience
- Provision of wide pedestrian and bicycle walks for accommodation of public uses
- Avoidance of "T" intersections on either path or drives
- Path systems with looped circuitous movement through the landscape that do not require return via the same route of embarkation
- Path systems that connect neighborhoods and with good access into the landscape
- Avoidance of singular importance or "look at me" elements in the landscape
- Creation of views and vistas directed to highlight natural features and elements
- Provision of benches and seating in multiple areas throughout the landscape
- Integration of design elements with natural systems in addressing stormwater and site infrastructure

Access to Recreational Features and Wayfinding

Access to recreational features within the State Park is accomplished by use of varied transportation systems and includes the RMP, park roads, trails, trolley routes, sidewalks and bridges. These systems provide a means of access to the natural features, recreational amenities, attractions and services located within the State Park. This network is strengthened by visual cues that are integrated into the overall landscape, including signage, lighting and landscape. This framework of interconnected wayfinding systems combines to welcome, orient and guide visitors through the State Park and direct them through an intentionally choreographed experience.

The Riverway and pathways provide access to recreational resources for visitors traveling from outside the state or region, nearby communities and local City residents. Because this State Park is a destination for such a large and diverse population, wayfinding systems must be coordinated with other features throughout the park and be recognizable to a wide range of users and cultures.

One of the primary methods of providing access to the recreational features found at the State Park is through wayfinding systems primarily including signage. Aside from the roads and paths, wayfinding is one of the most important services in terms of providing access to recreational features and needs to be appropriately located and designed to maximize its effectiveness in the State Park. Although signs are usually combined with landscape and lighting, they stand alone and are generally visually prominent features, recognizable from various vantage points. This prominence also creates the opportunity to establish the character of the State Park and the level of service and amenities visitors would expect.

Wayfinding occurs at various stages and distances from the State Park. Regardless of the form of transportation, physical orientation begins when visitors enter the State Park from RMP or City streets. See the Pedestrian Wayfinding Concept, Figure No. C.4, for further details.

The wayfinding features that provide access to the recreational features provided below are generally located along the Riverway or paths and include the following improvements:

Eastern State Park Entrance to 4th Street

- ♦ The primary wayfinding feature located in the eastern end of the State Park is the Park Welcome sign that would be integrated with the John B Daly Boulevard intersection improvements. This signage would clearly identify the transition into the State Park from the RMP. As mentioned previously, this would be coordinated with detailed seasonal landscape and planting treatments.
 - ♦ The introduction of multi-sided signage kiosks would be implemented within the two lay-by parking areas. This would serve to orient motorists, pedestrians and bicyclists to the State Park. The kiosks would include State Park information including directions to natural features, attractions, services and recreational amenities. They would be designed to be visually prominent within the landscape and promote the overall character of the State Park.
 - ♦ The State Park wayfinding panel signs would be located at primary sidewalk intersections with the City including the intersection of John B. Daly Boulevard and Buffalo Avenue and south of the Riverside Drive. These two-sided panel signs would direct visitors in either direction of travel and would include information for the State Park and attractions within the City.
 - ♦ Smaller directional signs are located along the river walkway to help ensure that pedestrians and bicyclists are heading in the right direction and serve to support the two previous methods of wayfinding and orientation.
- ♦ Central Portion of Riverway and the State Park Near 4th Street to Main Street
 - ♦ In the vicinity of 4th Street to Main Street the character of the State Park is transitional. Access to this area is also less accessible from the City and does not require the same level of service that is required in the eastern and northern portions of the State Park.
 - ♦ Multi-sided signage kiosks are located in lay-by areas primarily for motorist orientation, a panel sign is located at 4th Street and directional signs are located along the river walkway and multi-use trail.
 - ♦ Western Portion of Riverway and the State Park from Main Street to Old Falls Street
 - ♦ The western and northern portions of the State Park and Riverway up to Old Falls Street presents a higher degree of attention in terms of wayfinding and access to recreational features.
 - ♦ Multi-sided signage kiosks are located at the intersection of Main Street and Riverway. This area is currently disorienting and requires improved wayfinding features. A second kiosk is located in the vicinity of the northern landing of the Pedestrian Bridge. Each of these locations is a primary decision-making point within the State Park and requires a high degree of orientation and wayfinding.
 - ♦ Three prominent Niagara Falls State Park panel signs are located in this area of the park where high pedestrian access occurs between the City and the State Park. One is located west of Heritage Park. Another is located at the intersection with Old Falls Street and Prospect Street. A third panel sign is located at the intersection of Buffalo Avenue and The American Rapids Bridge (1st Street). Each of these two-sided panel signs would direct visitors in either direction of travel and would include information for the State Park and attractions within the City.
 - ♦ Directional signs are located at three prominent sidewalk intersections southwest of Heritage Park between the Riverway and the north side of the Pedestrian Bridge and along the river walkway and multi-use trail.

The overall intent of the wayfinding improvements proposed above is to establish a visually accessible strategy to improve orientation and access to the State Park's recreational features. The design of the proposed and replacement wayfinding features would provide a transitional redevelopment strategy that acknowledges the systems located in the remainder of the State Park. Given the limited impact of the Riverway improvements relative to the State Park, it is important to maintain a similar theme to those wayfinding elements that currently exist throughout the rest of the park. Presenting new design styles is possible; however, it may cause a negative impact on overall visitor orientation. If a new system and style is implemented, a larger project area should be considered to mitigate any negative orientation impacts and for the thoughtful coordination with existing signs.

The proposed improvements, replacement signs and wayfinding features include the following elements:

- ♦ Wayfinding and Information Kiosk
 - ♦ This multi-sided structure would be designed to be visible within the landscape to achieve an architectural appeal and to provide a range of information. This small structure would be designed to allow for permanent information panels as well as seasonal activities information. Overall, this feature should provide an improvement to the overall appearance of the State Park and be attractive to visitors.
- ♦ Wayfinding Panel Sign
 - ♦ Panel signs are currently located throughout the State Park in other key locations. The current and proposed signs would provide a similar level of information including a map of the State Park, viewer's location, natural features, attractions, services, trolley stations and parking areas.
- ♦ Directional Signs
 - ♦ Directional signs are currently located throughout the State Park, mainly at key sidewalk intersections, to provide for easy orientation for pedestrians. These post signs generally provide orientation to features in all directions and utilize simple text, symbols, and are shaped to provide directional cues.
- ♦ Welcome and Arrival Sign
 - ♦ The design of a new Park Welcome would be incorporated with the John B Daly Boulevard improvements. The materials, size and style will be designed to be highly visible within the landscape setting and context and to achieve a welcoming appeal that celebrates the State Park as a special destination.

The proposed improvements resolve a primary need for orientation along the northern and eastern borders of the State Park, specifically in relation to the City and the visitor arrival sequence along the Riverway. Little to no signage is currently provided in the locations proposed above and as a result, establishes a diminished sense of orientation and welcome when entering the State Park. The proposed wayfinding improvements are coordinated with landscape and lighting improvements and are intended to establish key visual nodes within the landscape that improve the aesthetics and pedestrian organization of the State Park.

Lighting

The primary purpose and role of lighting within the State Park and along the Riverway is to provide for safe access to park attractions, the rapids and Falls and to enhance the character and experience of the park during evening hours. Additionally, lighting creates visual interest and provides wayfinding cues. Special use lighting, particularly the lighting of the Falls at night, creates a truly unique experience for the

visitor. Lighting along roadways and sidewalks can have a similar effect when used creatively. It serves to identify a special place, which is distinct and different than the surrounding City streets or the regional roadways.

Currently this is accomplished through the use lighting styles that are unique to the State Park and primarily represented by the existing globe fixtures found in Prospect Point. The use of similar lighting styles throughout the State Park provides a sense of orientation as well as establishing the character and use of the park at night. Lighting levels and intensity also suggest use and behavior. Other light styles do exist within the State Park and represent a smaller percentage of the total lights.

Two lighting schemes have been developed for the purpose of replacing and improving the lighting conditions in coordination with the Riverway improvements. Lighting Concept A proposes a significant advancement of the lighting conditions along the Riverway and in the adjacent parklands directly adjacent to the river. See Lighting Concept A, Figure No. C.2, for further details. Lighting Concept B also significantly enhances the lighting conditions related to the Riverway improvements, however it varies in that it does not propose lights the entire length of the Riverway within the State Park and does not include low level lighting along the river walkways. See Lighting Concept B, Figure No. C.3, for further details.

The two lighting schemes proposed for the RMP improvements are more fully outlined as follows.

- ♦ Lighting Concept A

This alternative primarily proposes three distinct lighting systems with accents in key locations and suggests a relatively well lit, but not overly saturated environment. Illumination levels can be designed to fine-tune the illumination levels to respond to function and character. The three primary lighting styles include roadway lighting along the Riverway, pedestrian scale lighting along the multi-use pathway and bollard lighting along the river pathways and pathways south of Buffalo Avenue near the proposed pond. Accent lighting, which are decorative variations of the roadway lighting, are proposed at the intersection of John B Daly Boulevard and Riverway and key intersections with City streets and sidewalks. The size and visual hierarchy of these three systems clearly identifies the type of use and level of lighting required to provide a welcoming and safe environment during evening hours. The lights associated with this alternative include the following:

- ♦ Roadway Lighting 14-16 feet height, spaced roughly 185 feet apart
- ♦ Pedestrian Lighting 12-14 feet height, spaced roughly 125 feet apart
- ♦ Decorative Lighting 12-14 feet height, placed in key locations
- ♦ Bollard Lighting 3-4 feet height, spaced roughly 100 feet apart

- ♦ Lighting Concept B

This alternative proposes two distinct lighting systems with accents in key locations. The two primary lighting styles include decorative pedestrian lighting at key intersections with City Streets and sidewalks, and pedestrian lighting along river walkway and multi-use trail. Like Concept A, the lighting proposed is based on the globe style lights found throughout the State Park. The decorative lighting proposed is an elaboration of the globe design and includes a cluster of three lights to signify key decision-making locations. Pedestrian lights located along the river walk are globe lights. Minimal roadway lighting is provided along the Riverway except in key locations including the RMP/ John B Daly Boulevard/Riverway intersection, the American Rapids Bridge and southwest of Heritage Park. The size and visual hierarchy of these three systems clearly identifies the type of use and level of lighting required to provide a welcoming and safe environment during evening hours,

however this option provides significantly less lighting than Concept A. The lighting concept is also provided for visitor orientation and wayfinding purposes.

- ♦ Roadway Lighting 14-16 feet height, placed in key locations
- ♦ Pedestrian Lighting 12-14 feet height, spaced roughly 125 feet apart
- ♦ Decorative Lighting 12-14 feet height, placed in key locations

The overall intent of the lighting improvements proposed above is to establish a transitional redevelopment of the parklands in coordination with Riverway improvements. Both options propose unique and characteristic improvements to the current conditions and would improve the appearance of the State Park along RMP, especially in the eastern portion of the park. The benefits of these improvements include the following:

- ♦ Create a welcoming roadway and pedestrian system that is appealing and appropriate to the unique character of the State Park and assist in locating the natural features, attractions and facilities.
- ♦ Improves the arrival experience by providing a clear sense that the visitor is clearly in a distinct setting that is unique to the State Park and establishes a sequence of arrival, orientation and direction.
- ♦ Improves visual connections from the roadway, City streets and sidewalk to the State Park and river walkways.
- ♦ Applies an integrated approach relative to other wayfinding systems including landscape and signage.
- ♦ Provides for safe and accessible access throughout the State Park
- ♦ Promotes safe interaction with motorists and pedestrians
- ♦ Provides lighting selection and location based on photometric standards that provide for pedestrian safety and enhance the experience of the State Park during evening hours.
- ♦ Incorporates *Dark Skies* design principles and energy efficient lighting solutions.

Although each of the concepts proposes to utilize the globe lighting styles and variations, it also recognizes that this project would provide a significant opportunity to introduce a comprehensive program to introduce a new lighting style throughout the State Park. This can only be effective if the comprehensive replacement of lighting styles is implemented, otherwise it will only detract from the overall character of the State Park and diminish wayfinding and orientation. There are a variety of lighting options that could be utilized including historic styled lights found within the City, historic lights reminiscent of the Olmsted and Vaux influences and a wide variety of modern designs. Regardless of the style of light design, modern lighting technology should be utilized including internal cut-off features to direct light downward and diminish light spill and pollution. Similar energy efficient light sources (bulbs) should also be utilized.

NYS Smart Growth Public Infrastructure Policy Act (SGPIPA)

Pursuant to ECL Article 6, this project is compliant with the New York State Smart Growth Public Infrastructure Policy Act (SGPIPA).

To the extent practicable this project has met the relevant criteria as described in ECL § 6-0107. The Smart Growth Screening Tool was used to assess the project's consistency and alignment with relevant Smart Growth criteria; the tool was approved by the Responsible Local Official on December 18, 2013 and reflects the current project scope. The completed Smart Growth Screening Tool is included in **Appendix H**.

3.3.6 Comparison of Alternatives

This section compares how well each alternative and design option meets the project objectives as exemplified in the Basis of Design identified at the beginning of this Chapter.

The significance of Niagara Falls State Park as a national historic landmark is recognized in the 1982 Master Plan. The plan calls for the eventual removal of the RMP and its replacement with a scenic park road in the context of the Frederick Law Olmsted/Calvert Vaux design and sustainable design principles. NYSOPRHP has adopted this approach which establishes the Basis of Design for this project. This approach is consistent with both State Park history and with the accepted historical context by which further development in the State Park should be advanced.

Comparison of Alternative 2 and Alternative 3

Both alternatives develop a new low speed Riverway, eliminating the remnant of the Robert Moses Parkway from John B. Daly Boulevard to Old Falls Street. Alternative 3, by virtue of its definition, develops a fully interpreted design based on the principals and concepts of Frederick Law Olmsted and Calvert Vaux. As such, this alternative fully meets the Basis of Design.

Alternative 2 attempts to do much of the same as alternative 3, but does so under the constraint of remaining within the footprint of the existing alignment of the Robert Moses Parkway. Use of this alignment minimizes the amount of parkland that is impacted by construction, and so therefore can be viewed as a sustainable measure. However, the difference in footprint impacted is only 0.37 acres, being the difference between 6.07 acres of park disturbance (Alternative 2) and 6.44 acres of park disturbance (Alternative 3). Alternative 2 requires the movement of 14,400 CY of earth (exclusive of the John B. Daly Interchange Area), while Alternative 3 requires the movement of 16,600 CY of earth (exclusive of the John B. Daly Interchange Area). Both of these differences are measurable, but cannot be considered significant for a project of this magnitude.

In summary, Alternative 3 fully meets the basis of design. Alternative 2 partially meets the basis of design in the attempt to minimize park disturbance, of which its reduction in disturbed parkland and earthwork movement is not a significant value.

Comparison of Design Options

Design options have been prepared at three separate locations.

Robert Moses Parkway Ramp Transitions, east of John B. Daly Boulevard

Five design options for transitioning from the expressway to intersection approaches have been developed. This location would also begin the Robert Moses Parkway eastbound. All options retain two lanes on each direction of the expressway, carry traffic to the City via the John B. Daly Boulevard exit, and carry traffic into Niagara Falls State Park. Option RMPT-A – Left Ramp Fork with Either/Or Lane develops a fork type configuration at the RMP terminus transition. The fork with either/or lane provides easy access to both the Park and the City. Options RMPT-B – Left Ramp: Taper Type, RMPT-C – Left Ramp: Parallel Type, RMPT-D – Right and Left Ramp Fork with Dedicated Lanes, and RMPT-E – Combined Ramp all are accepted practice. All options affect a similar amount of land and have no significant environmental impacts.

Robert Moses Parkway at John B. Daly Boulevard Interchange

Several design options have been developed, consisting of grade separated and at-grade design options. Each design option removes both bridges on the Robert Moses Parkway that overpass the John B. Daly Boulevard outbound lanes that meet the Parkway. Option JBD-B – Roundabout (with or without Segregated Inbound Lanes to the City) would provide a compact and low-speed intersection at this location. Exiting traffic from the Robert Moses Parkway entering the Riverway would have the right of way for entry to the State Park. Outbound traffic from John B. Daly Boulevard would have to yield to the inbound State Park traffic. VISSIM traffic modeling shows that during summer weekends and holidays, this would cause back-ups on John B. Daly Boulevard.

The Option JBD-A Riverway Underpass of John B. Daly Boulevard Outbound Lanes maintains free flow traffic which allows both those accessing the State Park and those accessing the City to remain segregated. It provides a direct connection of the Expressway at its terminus with the City at Buffalo Avenue and John B Daly Boulevard. It is compatible with a left off ramp for State Park users directly onto the new Riverway. It requires a relocated embankment and more earthwork to construct.

At-Grade Intersection Design Option JBD-C – Loop Road Intersection creates an at-grade intersection where a grade separated intersection exists today. Drivers leaving the City would have to yield to drivers entering the State Park, with some delays and queuing onto John B. Daly Boulevard expected during peak park visitation periods. Elements of this option may be incorporated into the roundabout option during the detailed design phase. This option is not standard, and for the volume of traffic expected does not suitably control traffic. It is therefore rejected from consideration.

The Option JBD-D – Modify Existing Interchange would retain the existing westbound bridge at the interchange, while creating a low speed access road into the State Park. The embankment at the west side of the bridge would be dramatically lowered to open up the views of the waterfront for residents of Riverside Drive. This option takes advantage of the remaining useful life of the bridge, and in doing so, reduces the project cost while meeting the project objectives. The lowered embankment would accommodate a low speed transition to the Riverway.

Riverway/Main Street and Buffalo Avenue (to Goat Island) Intersection

This intersection would provide access between the Riverway and Goat Island via Buffalo Avenue and the American Rapids Bridge. Option G-M-A – Maintain Configuration at Main Street essentially keeps the intersection as it is today. Option G-M-B- Modified Intersection Configuration retains the configuration with modifications including a segregated turning lane to Goat Island via Buffalo Avenue. Riverway access and egress from Main Street and Buffalo Avenue would be consolidated into a single two way connecting road established nearly perpendicular to the Riverway and in line with Main Street. This would eliminate the free flow movement from Buffalo Avenue to the current RMP which can be problematic. Option G-M-C – Single Intersection with Main Street/Buffalo Avenue combines the turning lane from the Riverway to Buffalo Avenue with the access from the Riverway to Main Street at a location to the west of its existing location. A disadvantage to this option is that the intersection queues may extend into the right lane of the Riverway on peak days because the access to Buffalo Avenue eastbound is not segregated from Main Street traffic. Option G-M-D – Riverway Connection to Buffalo Avenue removes the existing RMP/Buffalo Avenue/Main Street connection and connects the Riverway to Buffalo Avenue south of the Buffalo Avenue/Main Street intersection. This option provides the advantage of a single point of ingress and egress from the Riverway to Buffalo Avenue, locates the point of egress 250 feet further to the west, and sets up the primary traffic movement in the Main Street/Buffalo Avenue intersection to be a through (straight) movement. This simplifies and consolidates traffic patterns

in this area, provides additional decision sight distance for drivers, and provides easy access to both the City and State Park (both mainland and Goat Island).

Option G-M-B Provides a dedicated turning lane to Buffalo Avenue and Goat Island, which is an advantage, as it gives drivers a better view of the destination and more time in which to make a decision to go to either the City or to Goat Island. Option G-M-C Provides a simplified intersection similar to the original Olmsted Vaux intersection in this area.

Preferred Alternative

The preferred alternative is Alternative 3 as it fully meets the project objectives. The preferred option for the interchange is the roundabout without segregated lanes (JBD-B-1), as this option provides a gateway entrance to the State Park. The roundabout option requires Robert Moses Parkway Ramp Transition option RMPT-E. The preferred option for the Riverway/Main Street connection is G-M-D as it best meets traffic and pedestrian access in this area.

3.3.7 Costs of Alternatives

Costs for alternatives and design options are presented in **Table 3.12**.

**Table 3.12
Project Costs
(Millions)**

Construction Costs	Alternative 2 Riverway on Existing Alignment			Alternative 3 Riverway on Olmsted-Vaux Inspired Alignment		
	JBD-A Grade Separated	JBD-B Round- about	JBD-D Modified Interchange	JBD-A Grade Separated	JBD-B Round- about	JBD-D Modified Interchange
Riverway						
John B. Daly Blvd to 4 th Street	\$1.1M			\$1.1M		
4 th Street to Old Falls Street	\$4.1M			\$4.1M		
Related Park Improvements						
Pedestrian/Bicycle/ Trolley/Paths)	\$1.0M			\$1.1M		
Landscaping	\$1.1M			\$1.5M		
Lighting	\$0.4M			\$0.4M		
Environmental Remediation Allowance	\$0.5M			\$0.5M		
John B. Daly Boulevard/ Riverway Intersection	JBD-A Grade Separated	JBD-B Round- about	JBD-D Modified Interchange	JBD-A Grade Separated	JBD-B Round- about	JBD-D Modified Interchange
	\$7.6M	\$5.6M	\$1.5M	\$7.6M	\$5.6M	\$1.5M
Miscellaneous- Survey, Mobilization, Field Office, etc. (10%)	\$0.9M	\$0.6M	\$0.7M	\$0.9M	\$0.7M	\$0.7M
Contingency (10%)	\$1.7M	\$1.4M	\$1.0M	\$1.7M	\$1.5M	\$1.1M
Total Construction (2013\$)	\$18.4M	\$15.8M	\$11.4M	\$18.9M	\$16.5M	\$12.0M
Right-of-Way Acquisition	<\$0.01M			<\$0.01M		
TOTAL (Escalated to 2014\$)	\$18.8 Million	\$16.1 Million	\$11.7 Million	\$19.4 Million	\$16.9 Million	\$12.3 Million

Section 4 -Social, Economic and
Environmental Considerations

4 SOCIAL, ECONOMIC AND ENVIRONMENTAL CONSIDERATIONS

4.1 Introduction

4.1.1 Environmental Classification and Lead Agency

This Design Report/Environmental Assessment (DR/EA) report will serve as the Design Approval Document (DAD) for the RMP South Segment/Riverway project, subject to review by the Federal Highway Administration (FHWA) prior to release of funding. **Section 4** serves as the environmental portion of the document, highlighting existing conditions and potential social, economic, and environmental impacts of the proposed work to assist FHWA and other involved agencies in determining the significance of adverse impacts.

As the project site owner and sponsor, NYSOPRHP is evaluating this project in accordance with New York State's environmental review law, the State Environmental Quality Review Act (SEQRA) and its implementing regulations in 6 NYCRR Part 617.

NEPA Classification and Lead Agency

Federal funding and approvals required for this project are subject to environmental review in compliance with the National Environmental Policy Act (NEPA) and the general regulations implemented in 40 CFR Part 1501. As the federal funding agency, FHWA will act as the NEPA lead agency (40 CFR 1501.5).

Proposed actions are classified in 23 CFR 771.115 as Class I, II, or III, depending on the significance of potential impacts and the level of effort required for their documentation. NEPA Class I projects are actions that normally result in significant environmental impacts, thus requiring an Environmental Impact Statement (EIS). NEPA Class II projects are actions that do not individually or cumulatively have a significant environmental effect on the human environment. They are categorically excluded (CE) from the requirement to prepare a NEPA EA or EIS. NEPA Class III projects are actions in which the significance of the environmental impacts is not clearly established, requiring an Environmental Assessment to study potential impacts and determine their significance.

The project had been advanced as a Class III Action in accordance with 23 CFR Part 771 for both build Alternatives 2 and 3. This NEPA classification was originally determined as the result of: neither of the build alternatives have the potential to adversely affect the environment to the degree that an EIS is required; and insufficient information was originally available to categorically exclude the project from further NEPA processing.

It is expected that the environmental studies summarized in this report will allow the project to receive a finding of no significant impact (FONSI).

SEQRA Classification and Lead Agency

NYSOPRHP, as the owner and operator of the facility, is the lead agency coordinating the NY State Environmental Quality Review (referred to as "the SEQR process") in accordance with SEQRA and the implementing regulations in 6 NYCRR Part 617.

Both build alternatives are identified as SEQRA Type I actions and will require SEQR processing involving the completion of a Full Environmental Assessment Form (EAF) and a coordinated review by state agencies. Removal of a divided four-lane limited access parkway, and subsequent replacement with a “Riverway” or scenic park entrance road on the same or similar alignment, together with a walkway/bikeway network, may typically be classified as an unlisted action. The project, while located within a National Historic Landmark, is designed to preserve and interpret the historic character of the State Park, therefore the project location does not qualify it as a Type I project under SEQR. However, the project work under either build alternative is expected to disturb more than 2.5 acres of State Park land, thus elevating the project to a Type I action per 6NYCRR 617.

As project sponsor and lead agency, NYSOPRHP has completed Parts 1, 2, and 3 of the Full EAF, a copy of which is provided in **Appendix F** of this document. It is expected that neither build alternative will have a significant adverse effect and that the analyses in Parts 2 and 3 will result in a determination of no significant effect.

4.1.2 Cooperating, Participating and Involved Agencies

NEPA Cooperating Agencies

Under NEPA regulations 40 CFR 1501.6, federal agencies (other than the lead agency) that have legal jurisdiction over or special expertise on an aspect of the project must act as ‘cooperating agencies’ upon the request of the lead agency.

The following agencies may be identified by the lead agency as cooperating agencies due to their legal jurisdiction or special interest in an aspect of the proposed project:

- The State Historic Preservation Officer (SHPO) – in the Bureau of Historic Preservation within the NYSOPRHP.
- US Fish & Wildlife Service (USF&WS);
- US Army Corps of Engineers (USACE) – if work is conducted below the ordinary high water mark on the stream bank.
- US Environmental Protection Agency (USEPA)
- National Park Service (NPS) – For expertise due to National Historic Landmark status

SEQR Involved Agencies

Involved agencies under SEQRA have approval authority over the project through their roles in funding, permitting, or otherwise approving the project. Four NY State agencies have entered into a written agreement (Memorandum of Understanding) to remove the RMP South segment and replace it with a smaller-scaled “Riverway” in accordance with the State Park’s Master Plan. As co-sponsors of the proposed action, these MOU partners are involved agencies in the SEQR process:

- NYSOPRHP (lead agency);
- City of Niagara Falls;
- NYS Department of Transportation (NYSDOT); and
- USA Niagara Development Corporation

Others have been identified as involved agencies due to their approval authority over the project through their roles in funding, permitting, or otherwise approving the project design and implementation: The additional agencies involved in determining the significance of environmental impacts under SEQRA are:

- ♦ NYS Department of Environmental Conservation (NYSDEC)
- ♦ NYS Department of State (NYSDOS)

Under the coordination of the NYSOPHRP as lead agency, each involved agency will review the EAF and other project information and determine the significance of environmental impacts that fall under their jurisdictions, while the lead agency will make a determination on the project as a whole.

SEQR Interested Agencies

Interested agencies are state or municipal agencies with no legal jurisdiction but have an interest in the project itself or may be affected by the resulting impacts. The following agencies have been identified as Interested Agencies under SEQR:

- ♦ Niagara County
- ♦ Seneca Nation of Indians
- ♦ Tonawanda Seneca Nation
- ♦ Tuscarora Nation

Other Stakeholders

The following other interested parties have been identified for the purposes of public involvement. This list is presented as a minimum of those parties who may have an interest in the project:

- ♦ Tourism
 - ♦ Niagara Tourism and Convention Corporation
 - ♦ Bi-national Tourism Alliance
- ♦ Environmental Organizations
 - ♦ Buffalo Audubon Society
 - ♦ Buffalo Niagara Riverkeeper
 - ♦ Niagara Group of the Sierra Club
- ♦ Historical advocacy
 - ♦ Niagara County Historical Society
 - ♦ Niagara Heritage Partnership
- ♦ Cultural/Educational Institutions
 - ♦ Niagara University
 - ♦ Niagara Falls Historic Preservation Commission
- ♦ Businesses
 - ♦ Niagara USA Chamber
 - ♦ Main Street Business and Professional Association
 - ♦ Downtown Niagara Falls Business Association
 - ♦ Adjacent hotels
 - ♦ Other adjacent businesses
- ♦ Residential Interests
 - ♦ Niagara Falls Block Club Council
 - ♦ Adjacent residents

- ♦ Faith Based Organizations
 - ♦ Niagara Falls Council of Churches
 - ♦ Adjacent churches

4.2 Social

The purpose of this section is to evaluate and analyze the social effects of design alternatives as well as construction activities on both State Park users and residents in the surrounding communities.

Affected Social Groups

The primary affected social groups include those living in the neighborhoods surrounding the project area. These surrounding neighborhoods are referred to as the “adjacent neighborhood area”. The adjacent neighborhood area is defined as the area which has the greatest potential for being affected (either positively or negatively) by the proposed project.

Adjacent Neighborhood Area

The adjacent neighborhood area includes the area that is within walking distance of the project site, or roughly within a ¼-mile radius of the project area edge. The demographic data includes a slightly larger area that aligns with US census tract 211 block group 3, and tract 212 block group 5.

In 2000, the population of the adjacent neighborhood area was 1,139 people, or approximately 2% of the total population of the City of Niagara Falls (55,593). The adjacent neighborhood area’s population declined 17% from a 1990 population of 1,372, while the city’s population declined only 10% from a 1990 population of 61,840.

Other demographic data can be seen in **Table 4.1** and is described in more detail in section 4.2.3 General Social Groups Benefitted or Harmed.

**Table 4.1
2000 Niagara Falls and Adjacent Neighborhood Area Demographics***

Attribute	Niagara Falls	Adjacent Neighborhood Area
Population	55,593	1,139
Households	24,099	624
Median Household Income (\$1999)	\$26,800	\$15,167 (tract 212, block group 5) \$24,667 (tract 211, block group 3)
Poverty Rate (Individuals)	19.5%	22.0%
Unemployment Rate (workforce)	10.1%	14.6%
Means of Transportation to Work (workforce)		
Car, Truck, or Van	89.1%	65.3%
Public Transportation	3.1%	2.1%
Walked	5.2%	25.6%
Other	2.6%	7.0%
Age		
0-17	24.7%	15.5%
18-64	56.7%	61.8%
65 and older	18.6%	22.7%
Race		
White	76.6%	68.3%
Black	18.8%	22.1%
Hispanic	2.0%	5.2%
Other	2.6%	4.3%
Disabled Population (non-institutionalized population 5 years or older)	25.2%	35.8%

*All data from 2000 US Census

4.2.1 Land Use

Project Area

Land use in the immediate project area is comprised of a New York State Park used for recreational purposes.

Adjacent Neighborhood Area

Land use in the 1/4 mile adjacent neighborhood area varies greatly, with low density residential in the center of the adjacent neighborhood area, bordered by industrial land to the east, and Niagara Falls' central business district with higher density commercial to the west. See **Appendix G** for details.

Consistency with Regional and Local Plans

The adjacent neighborhood area and the overall Niagara USA region have been addressed by several recent planning studies targeted toward preservation, protection, and revitalization of the city, the environment, and the river. As part of the Environmental Assessment process, an assessment of the

degree to which the build alternatives impact the land use policies and growth identified in these planning documents is required. These planning documents include:

- The Buffalo Avenue Heritage District Revitalization Strategy, 2009
- The Niagara Falls Comprehensive Plan and Zoning Amendments, 2008
- The Niagara River Greenway Master Plan, 2007
- Achieving Niagara Falls Future, 2002

The Buffalo Avenue Heritage District Revitalization Strategy

The Buffalo Avenue Heritage District Revitalization Strategy, co-sponsored by the City of Niagara Falls and the USA Niagara Development Corporation (USAN), aims to revitalize one of Niagara Falls' oldest neighborhoods; the Buffalo Avenue Heritage District. The District, which is located along the Niagara Falls State Park, the Niagara River Upper Rapids, and Downtown Niagara Falls, is envisioned as a potential heritage tourism destination.

The Strategy envisions the neighborhood revitalization to occur through:

- Preservation and adaptive reuse of historic structures, emphasizing the predominant late 19th century/early 20th century architectural styles
- Removal of structures in poor condition
- Infill development in vacant lots that
 - Compliment the historic structures
 - Create a gradual transition from lower density uses adjacent to the State Park to higher density uses closer to Rainbow Boulevard
 - Place lower-height buildings closer to emphasize views of the Niagara River
- Development of restaurants, internet cafes, and boutiques/shops to serve both residents and tourists
- Improving pedestrian connections with the State Park

The proposed No-Build Alternative would require increased roadway maintenance over time, which may impact activities associated with the proposed revitalization. The No-Build Alternative would not address conditions that are perceived as inhibiting revitalization in the Buffalo Avenue Heritage District; access and views of the water would see no improvement.

The Build Alternatives would complement the planned revitalization by removing a roadway berm that restricts views of the river from Riverside Drive, removing the existing expressway, providing a Riverway in context with the area's history, and improving pedestrian connectivity between the State Park and the adjoining neighborhood.

The Niagara Falls Comprehensive Plan

The Niagara Falls Comprehensive Plan is a result of ongoing planning efforts within the City. The Plan is focused on the City of Niagara Falls, with the 'core city', which is loosely bound by Portage Road, Whirlpool Bridge, and the Niagara River, as a target area. The Comprehensive Plan sets out a foundation for revitalizing the City of Niagara Falls and the regional economy. It also assesses current challenges and opportunities that the City faces, and highlights policies that could be implemented that could have long-term benefits.

The plan includes the following principles and projects that will impact the adjacent neighborhood area:

- ♦ Build on core assets.
 - ♦ These assets include heritage buildings and neighborhoods, like the Buffalo Avenue Heritage District.
- ♦ Develop the waterfront; recreation, adjacencies, and cultural potential – “The Big Move”.
 - ♦ Reinvest in neighborhoods adjacent to the waterfront
- ♦ Create green streetscape connections that link riverfront amenities to the city, its neighborhoods and main streets.
- ♦ Prioritize residential development; revitalize neighborhoods and make living in the core city attractive.
- ♦ Carefully target ‘catalyst projects’ to ignite renewal efforts and encourage private sector interest and reinvestment.
 - ♦ Create a downtown festival square between Prospect Street and Rainbow Boulevard.

The proposed No-Build Alternative would require increased roadway maintenance over time, which may impact activities associated with the proposed revitalization. The No-Build Alternative would not address conditions that are perceived as inhibiting reinvestment in downtown Niagara Falls and its surrounding neighborhoods.

The Build Alternatives would complement the planned revitalization by improving connections between the river, State Park and the city and making investment in the adjacent neighborhood area more attractive.

The Niagara River Greenway Master Plan

In 2004, the Niagara River Greenway Commission was created to enhance waterfront access, complement economic revitalization of the communities along the river, and to ensure the long-term maintenance of the Greenway, whose boundaries fall within thirteen municipalities of Erie and Niagara County. The Commission’s vision for the greenway was documented in the Niagara River Greenway Master Plan, which calls for a world-class corridor of places, parks and landscapes that celebrate and interpret the area’s unique natural, cultural, recreational, and scenic and heritage resources. The plan established a Greenway fund, supported by the New York Power Authority, for projects within the Greenway.

The plan includes the following goals that will impact the adjacent neighborhood area:

- ♦ Improve access to Greenway assets and the waterfront.
- ♦ Protect and restore environmental systems through habitat restoration, preservation of unique ecological resources, and the reclamation of damaged areas like brownfields.
- ♦ Celebrate history and heritage of the Niagara Reservation and surrounding neighborhoods, including the legacy of Olmsted and Vaux.
- ♦ Spark revitalization and renewal through sustainable development, tourism, and improved quality of life.

The proposed No-Build Alternative would require increased roadway maintenance over time, which may impact activities associated with waterfront access. The No-Build Alternative would not address conditions that are perceived as inhibiting reinvestment in downtown Niagara Falls and its neighborhoods, environmental restoration, and historic interpretation.

The Build Alternatives would complement Greenway goals in adjacent neighborhood areas. Access to the waterfront would be improved, historic neighborhoods may see revitalization as the State Park is improved to resemble its historic character, and tourism may increase, all benefitting local business.

Achieving Niagara Falls' Future

Achieving Niagara Falls Future focuses on the revitalization of the City of Niagara Falls including designated heritage sites, downtown, the upper Niagara River, the Niagara River Gorge, and the State Park. It was developed by incorporating the best ideas from nearly a dozen different plans, reports, studies and proposals for the area.

The plan includes the following strategies that will impact the adjacent neighborhood area:

- Reconnect Niagara Falls, its downtown and neighborhoods with the Niagara River waterfront.
- Repair and improve both the urban and natural environments for the benefit of residents and visitors alike.
- Develop the means to tell the compelling stories of the city and region to build the visitor industry and create meaning for those who live there.

The proposed No-Build Alternative would require increased roadway maintenance over time, which may impact activities associated with waterfront access. The No-Build Alternative would not address conditions that are perceived as inhibiting tourism development in the State Park and the surrounding communities.

The Build Alternatives would complement the plan's strategies in adjacent neighborhood areas. Access to the waterfront, downtown, and adjacent neighborhoods would be improved, environmental improvements would benefit tourists and residents alike, and potential visitor increases would benefit the tourism industry.

Niagara Falls National Heritage Area Management Plan (Draft March 2012)

The Niagara Falls National Heritage Area was designated by Congress in 2008 to "recognize the national significance of the region's natural and cultural legacies." The legislation that designated the area also established a local coordinating agency, the Niagara Falls National Heritage Area Commission, to manage and coordinate the area and set goals, policies, strategies, recommendations, and actions to tell the stories of Niagara Falls and the Niagara Gorge. In March 2012, the Commission published a Draft Management Plan that identifies their preferred approach as one that focuses on "Niagara's Visitor Experience" and utilizes partnerships with various groups, including OPRHP to implement improvements.

The management plan seeks to enhance interpretation of the following themes:

- Natural Phenomenon—this aspect of the plan seeks to interpret the geologic forces, unique ecosystems, changes in landscape due to human activity, and stewardship of the land and its features.

The plan identifies that this interpretation would occur along a continuous system of trails, a portion of which would be within the State Park.

- Tourism and Recreation—this aspect of the plan seeks to interpret the history of human interaction with the landscape, from discovery of the falls through commercial exploitation and sensationalism to creation of the Niagara Reservation. The plan identifies that this theme would be presented in the City of Niagara Falls immediately adjacent to the State Park.
- Power and Industry—this aspect of the plan seeks to interpret the history of hydropower generation, Robert Moses, chemical manufacturing, industrial development, and hazardous waste disposal. The plan identifies that portions of this interpretation would occur within the State Park.
- Borderland/Border Crossing —this aspect of the plan seeks to interpret the human interactions in the border area along the Niagara River including interactions with Native Americans, the Revolutionary War, the War of 1812, and the Underground Railroad. The plan identifies that this interpretation would occur along a continuous system of trails, a portion of which would be within the State Park.

As part of the Natural Phenomenon and Tourism and Recreation themes, one of the Management Plan's action items is to "support New York State Park's study and rehabilitation of the Olmsted-inspired landscape of the historic Niagara Reservation."

The proposed No-Build Alternative would require increased roadway maintenance over time, which may impact access to portions of the State Park. The No-Build Alternative would not include improvements to landscape or trails systems supported by the Management plan.

The Build Alternatives would be consistent with and complimentary to the management plan's strategies. Trail, wayfinding, roadway and landscape improvements would be consistent with the plan's action items and would provide a setting conducive to telling the story of Niagara Falls and the Niagara Gorge.

Relocations

No business or residential relocations would be required by any of the project alternatives.

Effects on Property Values

Owner occupied housing values in Niagara Falls are lower than regional, state and national averages. According to the City Assessor's records, the median sale price of one- and two-family homes in 2003 was \$64,000—a very low number compared to national and state figures. **Table 4.2** compares median owner occupied housing values as reported by the US Census in 2000.

The two block groups that comprise the adjacent neighborhood area have vastly different residential property values. Owner occupied housing values are lower in tract 212 block group 5 (the eastern portion of the adjacent neighborhood area) and higher in tract 211 block group 3 (the western portion of the adjacent neighborhood area that includes the Buffalo Avenue neighborhood and the central business district), compared to the city.

**Table 4.2
2000 Niagara Falls and Adjacent Neighborhood Housing Statistics***

Attribute	Niagara Falls	Adjacent Neighborhood Area
Housing Units	27,837	855
Owner Occupied	49.9%	22.6%
Renter Occupied	36.7%	50.4%
Vacant	13.4%	27.0%
Median Year Structure Built	1946	1939 (tract 212, block group 5) 1939 (tract 211, block group 3)
Median Housing Value (Owner Occupied)	\$59,300	\$35,700 (tract 212, block group 5) \$72,800 (tract 211, block group 3)

*All data from 2000 US Census

Alternative 1: No-Build Alternative

The no-build alternative would not directly alter existing property values in surrounding neighborhoods.

Alternatives 2 and 3

State Park and parkway improvements would not have negative impacts on property values in the adjacent neighborhood area. In fact, the build alternatives may improve property values surrounding the State Park over the long term. The impacts of construction activities would be short term and therefore are not expected to impact property values.

4.2.2 Neighborhoods and Community Cohesion

Community cohesion is the degree to which residents have a sense of belonging, commitment, and attachment to their community. Neighborhood stability, the presence of community facilities and historic resources, and access to public transportation are factors important to community cohesion.

In 2000, there were 855 housing units in the adjacent neighborhood area, or 3.1% of the city's total of 27,837. The total number of housing units in the adjacent neighborhood area increased 9.9% from a 1990 total of 778 housing units, while the total number of housing units in the entire city decreased 2.8% from a 1990 total of 28,635 housing units. Although this might indicate that the adjacent neighborhood area is more stable than the rest of the city, other factors suggest otherwise. **Table 4.2** shows that in 2000, the adjacent neighborhood area had low owner occupied housing rates and high vacant housing rates compared to the city.

There are no community facilities in the adjacent neighborhood area other than places of worship. The Buffalo Avenue Heritage District is within the adjacent neighborhood area. There are two historic resources on the National Register of Historic Places in the district; the Holley-Rankine House and the Whitney Mansion. The Niagara Falls State Park is on the National Register of Historic Places as it is an Olmsted-designed park and is the nation's first state park.

There are three NFTA bus routes that run through the adjacent neighborhood area. The number forty connects downtown Niagara Falls to Buffalo. The number fifty connects downtown Niagara Falls to Lewiston. The number fifty five connects Niagara Falls to Tonawanda and Lockport. This bus route travels along the Robert Moses Parkway between the John B. Daly interchange and LaSalle Expressway.

Alternative 1: No-Build Alternative

The No-Build alternative would have no direct impact on existing neighborhoods or community cohesiveness.

Alternatives 2 and 3

The build alternatives would not isolate or divide neighborhoods, isolate a portion of a neighborhood or an ethnic group, separate residents from community facilities, or negatively impact historic resources. No public transportation routes would have to be altered as a result of the project. During construction, noise and short-term diverted traffic will have minor and temporary impacts on the quality of life of residents living in the directly adjacent neighborhood. No businesses would lose access during construction, and would otherwise not be impacted. The build alternatives would have no negative impacts on neighborhood or community cohesion.

The project, by restoring physical access between the river and the neighborhood, and by enhancing and reopening scenic views to the State Park and the river, is anticipated to have a positive effect on community character in the adjacent neighborhood area. By reinforcing neighborhood connections to the State Park and the river, the project would increase community cohesion in the adjacent neighborhood area by stimulating more neighborhood pedestrian activity. Thus, quality of life factors related to the State Park for residents in the immediate area and beyond is expected to improve.

4.2.3 General Social Groups Benefited or Harmed

The demographic data in **Table 4.1** shows that when compared to the city, the adjacent neighborhood area has a much higher proportion of its workforce that walk to work (25.6%), a slightly higher elderly (65 years and older) population (22.7%), and a much higher disabled population (35.8%). These factors suggest that pedestrian accessibility is important to the social groups in the adjacent neighborhood area.

Also, when compared to the city, the adjacent neighborhood area has a slightly higher minority population, a slightly higher Hispanic population, and a less affluent population. These social groups described in more detail in the Environmental Justice section of the report.

Alternative 1: No-Build Alternative

The no-build alternative would not alter the demographic characteristics of the adjacent neighborhood area. Since the parkway would continue to need more extensive and frequent maintenance, adjacent neighborhood areas would have more negative noise and visual impacts in the long term. There would be no negative impacts that fall disproportionately on elderly, disabled, transit dependent, low-income or minority populations.

Alternatives 2 and 3

The build alternatives are not likely to alter the demographic characteristics of the adjacent neighborhood area and would have no long term negative impacts on social groups there. Some noise and visual impacts would occur during construction in the short term, but would be fewer in the long term because there will be less frequent maintenance of the State Park entrance road than under the no-build alternative.

Quality of life factors of the adjacent neighborhood area population would be improved with improvements to the State Park via Riverway construction, increased recreation opportunities, and improved visual and physical connections to the State Park and river. Pedestrian accessibility between the river, State Park, and city would be improved through new and enhanced connections and other improvements to the State Park. New pedestrian pathways, sidewalks, and crosswalks would be ADA compliant and would therefore improve park visitor experience for disabled visitors.

Environmental Justice in Minority and Low Income Populations

Consistent with Executive Order 12898, disproportionately high and adverse human health or environmental effects of actions on minority and low-income populations must be identified. Environmental Justice concerns are addressed following guidance found in "Interim Final Guidance for Incorporating Environmental Justice Concerns" in EPA's NEPA Compliance Analyses.

The guidance document states that minority populations should be identified where either the minority population of the affected area exceeds 50 percent, or the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population.

Table 4.2 shows that there are greater proportions of minority and low income populations in the adjacent neighborhood area than the City of Niagara Falls as a whole. The adjacent neighborhood area has lower median household incomes, higher poverty and unemployment rates, and more minorities as a percentage of the total population.

When taken as a whole, only 32%, of the adjacent neighborhood area's population were minorities in 2000. This is less than the 50% threshold for determining environmental justice areas. However, nearly 54% of the residents were minorities in one of the two adjacent neighborhood area block groups (census tract 212 block group 5). In the same block group, median household incomes were much lower than the rest of the city and poverty and unemployment rates were much higher. It should be noted that land use maps indicate that the vast majority of housing in this block group, and therefore residents, are further than a ¼ mile from the project area, meaning that this population is less likely to be impacted by the project.

No disproportionately high and adverse human health or environmental effects of actions on the minority and low income population in the adjacent neighborhood area have been identified. The project does not extend into the neighborhoods and all social impacts, other than short term noise and sound impacts from construction are expected to be positive.

4.2.4 School Districts, Recreational Areas and Places of Worship

The adjacent neighborhood area is part of the Niagara Falls City School District. The district serves approximately 7,200 students in 11 schools; eight elementary schools, two prep schools, and one high school. None of these schools are in the adjacent neighborhood area. There are several places of worship within the adjacent neighborhood area, as noted in **Appendix G**.

No negative impacts on school districts or places of worship are anticipated with any of the build or no-build alternatives. The project does not contain a residential component, nor does it involve any relocation of residents. There would not be any required relocations of any properties, including places of worship, in the adjacent neighborhood area. As a result, there would be no effects on school enrollments or places of worship.

Effects on Recreation Areas

Niagara Falls State Park is a significant recreation area. There are no structured recreation facilities (baseball diamonds, basketball courts, swimming pools, etc.) in the State Park other than pathways. There are available attractions, such as the Maid of the Mist and Cave of the Winds attractions, that require a fee access, but these are not part of the project scope. There are no additional parks or recreation areas in the adjacent neighborhood area, other than the small Heritage Park near Buffalo Avenue and Main St.

Although residents of the adjacent neighborhood area are likely to use the State Park for recreation, the 2009 park visitor survey showed that the vast majority of visitors are not from the adjacent neighborhood area. In fact, most were not even from New York State. Of 363 respondents, 297 were from the US (82%) and 66 (18%) were from other countries. In this survey, because of language barriers, international visitors were likely undercounted. Fifty eight (16%) were from New York State, 25 (7%) were from Western New York (counties: Niagara, Erie, Chautauqua, Cattaraugus, Allegany, Wyoming, Genesee, Orleans), two or less than 1% were from the City of Niagara Falls, and none were from the adjacent neighborhood area (zip code 14303). (See **Appendix G** for complete survey results)

Alternative 1: No-Build Alternative

The no-build alternative would have no impacts on recreation areas, positive or negative, since no changes to Niagara Falls State Park will result.

Alternatives 2 and 3

The build alternatives would have no negative impacts on Niagara Falls State Park, other than short term access, noise, and sound impacts during construction activities. The build alternatives would enhance visitor experience in the park. The build alternatives would improve recreation opportunities and connections between the river, the State Park, and surrounding neighborhoods. Construction of the proposed Build Alternatives would improve quality of life factors for adjacent neighborhood area residents by increasing recreation opportunities and connections between the State Park, river, and community.

4.3 Economic Considerations

The purpose of this section is to evaluate and analyze the economic effects of design alternatives and related construction activities. There are no negative economic consequences predicted from the project. The build alternatives are expected to have a positive impact on study area economic conditions.

4.3.1 Regional and Local Economics

In 2007, the largest economic sectors by number of employees in Niagara County were manufacturing (10,748), health care and social assistance (10,079), and retail trade (9,823). Combined, these sectors had approximately half of Niagara County's employees. The retail trade had the most establishments (744), followed by other services (533), health care and social assistance (525), construction (506), and accommodation and food services (488). See **Appendix G** for a complete table.

Niagara Falls State Park's visitation was estimated to be 7.8 million in 2008, greater than that of Grand Canyon and Yosemite National Parks combined. A 2009 park visitor survey showed that the average travel party size in the park was 3.13 people, and **each travel party spent an average of \$68 within the State Park and \$248 outside of the park in the city**. Given this data, the estimated total park and city spending of State Park visitors in a single year is \$787.5 million, while the estimated spending in the city alone is \$618 million.

OPRHP data shows that between 2005 and 2008, park visitation grew by an estimated 0.8% annually. If these rates continue, there will be approximately 9.1 million visitors in 20 years (2028, assuming a base year of 2008), spending \$918.7 million in the State Park and city combined, and \$712 million in the city alone.

Alternative 1: No-Build Alternative

The no-build alternative would not have any significant adverse impacts on the regional or local economies to local development, tax revenues, public expenditures, employment opportunities, retail sales, or property values of the project area.

Alternatives 2 and 3

The build alternatives would not have any significant adverse impacts on the regional or local economies to local development, tax revenues, public expenditures, employment opportunities, retail sales, or property values of the project area. In fact, the improvements in the State Park may increase the number of visitors to the park, increasing total spending within the park and the city. This may be particularly true with respect to visitors who enjoy their stay more, and are either more likely to return, or to recommend visitation to others. An increased enjoyable experience also may lead to longer stays within the State Park and the City, which would have a positive effect on the local economy. Since there are no overnight accommodations in the State Park, new visitors staying overnight in the region would seek accommodations outside of the park. Restaurants, local attractions, shopping districts, and related tourist services all could be expected to benefit.

The estimated regional economic benefit from construction expenditures is predicted to be 2.16 times the construction cost, or \$45 million. See Appendix J for additional information.

4.3.2 Business Districts

Being adjacent to Niagara Falls, the area's economy is based largely on tourism. There are many large and medium sized hotels and several smaller bed and breakfasts in the adjacent neighborhood area. There are also a few restaurants and souvenir gift shops that cater to tourists.

None of the alternatives would adversely affect access to or visibility of businesses. Specifically there would be:

- No changes in traffic circulation that would divert traffic (customers) away from businesses
- No elimination of parking spaces.
- No acquisition of businesses.

The design alternatives are expected to create the potential for long term beneficial impacts to the local economy by improving the area's visual character and scenic views and by enhancing access to the State Park and as a result, the City. These positive impacts on neighborhood character and amenities have the potential to improve tourism-related business activity.

Minor temporary changes to existing travel patterns may occur during construction. Traffic would be maintained on all City Streets and access to all properties adjacent to the project area would be maintained throughout construction.

4.3.3 Specific Businesses Impacts

An inventory of existing businesses in the adjacent neighborhood area can be found in the **Appendix G**.

Alternative 1: No-Build Alternative

There would be no adverse impacts to businesses within the adjacent neighborhood area.

Alternatives 2 and 3

Long-term impacts to the existing business district are anticipated to be positive. This determination is based upon access improvements for vehicles and pedestrians and on the enhancements proposed within the State Park. The project may improve sales for specific businesses in the adjacent neighborhood area due to improved access between the business and the State Park, especially for businesses that cater to tourists.

4.4 Environment

The purpose of this section is to document the existing environmental conditions and evaluate the potential environmental effects, both temporary and permanent, of the feasible build alternatives.

4.4.1 Wetlands

State-regulated – The NYSDEC Environmental Resource Mapper indicates that no Freshwater Wetlands are mapped in the vicinity of the project corridor. The nearest state-regulated wetlands are upstream on the River on and around Buckhorn Island State Park.

Federally-defined – Digital National Wetland Inventory (NWI) mapping was reviewed on the US Fish & Wildlife Service website's Wetlands Mapper. The NWI mapping depicts the Niagara River as a riverine habitat but does not depict wetlands in the vicinity of the subject corridor. The National Resource Conservation Service (NRCS) Web Soil Survey was also reviewed for potentially hydric conditions. The soil map depicts the property as "Urban Land, not surveyed" with no further description. The Niagara County Soil Survey published in 1972 labels the "limit of detailed soil survey", which does not extend into the urban core of the City of Niagara Falls, including the project site. The Survey's General Soil Map depicts the project site in a broad band of the somewhat poorly to very poorly drained Odessa-Lakemont-Ovid soils association, portions of which would be hydric (wetland-type soils).

A qualified wetland delineator from Watts inspected the project corridor and found there to be no potential for federal or state wetlands on the site, as the site consists primarily of hard fill and developed parkland that has been intensely maintained for over a century (RMP for the last 50 years). This development extends to the Niagara River shoreline, which is hard-armored with rip-rap, forming an abrupt land/water interface on the Upper River for the length of the site. This fill, most of which was placed during construction of the subject Robert Moses Parkway in 1960-1961, precludes federally-defined wetland habitat on the site, despite the occasional presence of characteristic wetland vegetation along the edge of the water.

Because no wetlands resources exist within the project limits, neither the Null nor the Build Alternatives (Alt. 2 and Alt. 3) would impact wetlands.

4.4.2 Surface Waterbodies and Watercourses (Surface Water Resources)

The Niagara River is the only surface waterbody in the project study area. The Niagara River is characterized as a strait connecting the two lower Great Lakes, flowing north from its source at Lake Erie and carrying all the water from the four upstream Great Lakes a distance of 35 miles (56 km) to Lake Ontario. As with most of the Great Lakes waters, the Niagara River is shared between Canada and the United States, with the international boundary drawn down the middle of the River. The 15-mile segment above the Falls is known as the Upper (Niagara) River, and the segment below the Falls is the Lower (Niagara) River. The Upper River's shoreline forms the entire southern project boundary, starting upstream from the Rapids at the east end and continuing west to the Falls.

Governing Laws and Regulations

Federal Jurisdiction – The federal Clean Water Act (CWA) establishes the authority and structure to regulate surface water quality standards and discharges of fill and pollutants into the waters of the United States.

Section 404 of the CWA authorizes regulation of the discharge of dredged or fill material into waters of the United States. The implementing regulations promulgated in 33 CFR 330 establish a permit program under the jurisdiction of the USACE. The Corps evaluates permit applications under a public interest review, as well as the environmental criteria set forth in the regulations known as the Section 404(b) (1) Guidelines. For minor discharges, a nationwide permit (NWP) may be applicable. The NWP program is a series of general permits with prescribed conditions devised to cover activities that normally result in minimal impacts. The NWP process allows these activities to proceed with minimal delay, provided that all the permit conditions are met.

The Niagara River is considered a water of the US regulated by the US Army Corps of Engineers (USACE; the Corps) under Section 404 of the CWA. If a project disturbs the bed or banks of a stream below the ordinary high water mark (OHWM), a Section 404 permit would be required.

In the project area, the Niagara River elevation is controlled by hydroelectric power stations located on both the American and Canadian side of the river. The river elevations are higher during daytime hours as defined in the permits issued for power generation. Therefore, the Ordinary High Water Mark can be defined as the normal river level maintained during the daytime, when diverted river flow for hydropower purposes is at a lower rate. During the nighttime, the diverted flow is significantly increased. As the project is linear along the river, and the river water surface elevation drops by several feet from the upstream project end to the downstream project end, the Ordinary High Water Mark varies. Daytime Water Surface Elevations have been obtained by survey at several locations and can be used to define the OHWM for any necessary permit condition.

At this time, excavation below the OHWM is not anticipated.

State Jurisdiction – The CWA also establishes the authority of each state to co-approve Section 404 permits in the waters of the US. Section 401 of the CWA establishes the state's role in the Section 404 permit program. Issuance of a Section 404 permit requires that the applicant simultaneously obtain a water quality certification (WQC) from the State asserting that discharges resulting from the proposed activity will not violate applicable state water quality standards. The New York State Department of Environmental Conservation (NYSDEC) has jurisdiction over the Section 401 WQC program in NY State.

Article 17 of New York State's Environmental Conservation Law (ECL) governs the use of waters of the State by establishing a classification system and minimum water quality standards according to their designated best usage. The NYSDEC classifies waters of the state according to regulations promulgated in 6 NYCRR Parts 700 and 800 et al., to maintain their water quality and best uses.

The Niagara River is a Class A-Special water of the State (6 NYCRR Part 837.4, Table 1, Item O-158). The best usages of Class A-S waters are: a source of water supply for drinking, culinary or food processing purposes; primary and secondary contact recreation; and fishing. The waters shall be suitable for fish, shellfish, and wildlife propagation and survival.

Class A waters are also designated as Protected Waters under 6 NYCRR Part 608. Section 608.2 provides that a permit is required to "change, modify or disturb any protected stream, its bed or banks...without a permit issued pursuant to this Part." For the Niagara River the streambank can be assumed to be 50 feet horizontally from the water's edge, and any work along the River within that area will require a Part 608 Permit.

Existing Conditions and Uses of the Niagara River

The Niagara River is part of the Niagara River/Lake Erie Drainage Basin, which includes four of the five Great Lakes and their surrounding drainage basins. Within New York State, the basin drains approximately 2,380 square miles of Western NY, including all of Erie County and portions of Niagara, Genesee, Wyoming, Cattaraugus and Chautauqua Counties. The largest tributary drainage basin along the Niagara River itself is Tonawanda Creek, with 1,538 stream miles.

The main uses of the Niagara River are recreation, including boating and fishing; as a means for generation of hydroelectric power; and as a drinking water source. Water quality issues in the Niagara River/Lake Erie Watershed are for the most part associated with past and current industrial activities and remedial actions in the Great Lakes and urban centers in the watershed, as well as urban stormwater runoff, combined sewer overflows in the Buffalo-Niagara area, and upland agricultural areas.

Control of the flow by hydropower plants draws at least half the water volume from the Upper River at the intakes upstream from the project site. On average, more than 200,000 cubic feet per second (cfs), or 1.5 million gallons of water a second, flows from Lake Erie into the Niagara River. At least 100,000 cfs of flow is required to spill over Niagara Falls during daylight hours of the tourist season, but is reduced to 50,000 cfs at night during the tourist season and throughout the rest of the year. The remaining Niagara River flow is shared equally by Canada and the United States for hydroelectric power generation. Water level fluctuations are generally up to 1.5 feet per day.

Fish consumption suitability in the Niagara River is impaired, particularly due to PCBs, and is subject to NYS Department of Health advisories for fish consumption over and above the statewide advisories. The Niagara River has a long history of shoreline fills, development, bulkheading, dredging and water level alterations that have destroyed the River's natural aquatic and riparian (shoreline) habitats, including that of the project area. In particular, the River was filled on the project site including a large area west of the former Adams Hydraulic Canal and along the Rapids placed in the 1959-1961 on which the John B. Daly interchange with the Robert Moses Parkway was built.

Further information on the ecological characteristics of the Niagara River can be found in the General Ecology section, and water quality is further addresses in the Surface Water Quality section, below.

Permits Required and Potential Impact

The Null alternative would have no impacts on the quality or usage of the Niagara River, positive or negative, and no environmental permits would be required.

Neither of the Build Alternatives (2 and 3) is expected to result in long-term adverse impacts to the usage of the Niagara River. Work within the defined streambank will be limited to reconstruction of walking pathways. There will also be the need to modify drainage stormwater discharges from the current Robert Moses Parkway. This may include bulkheading or removing existing drainage outlets, and constructing new drainage outlets. Any stormwater discharges into the waters would be completed in accordance with Best Management Practices as required by the NYSDEC Stormwater Guidelines.

Beneficial effects in the area of recreational usage would be enhanced by the new system of pedestrian and bike pathways under either of the design alternatives. Although short-term interruptions of use may occur during earthwork and installation of the paths and surrounding landscaping, limited access to the shoreline area would be maintained throughout the construction of the project.

The permits required for Alts 2 and 3 are expected to be the same, as the magnitude of the scope of impacts are very similar. These would include:

- The project is focused on the land side of the River and neither alternative is likely to significantly modify the shoreline. Work below the OHWM would be limited to the removal or replacement (as necessary) of highway drainage outlets located at intervals along the shoreline. A federal Section 404 permit and Section 10 permit would be required from the Army Corps of Engineers and would likely qualify as a Linear Transportation Project (NWP #14).

- Part 608 NYS Use and Protection of Waters permit – for disturbance to the Niagara River banks within a 50-ft buffer from the water's edge. This would be needed for: 1) the proposed bike/ped paths segments within 50 feet of the water's edge; and 2) removal or replacement of existing drainage outlets. This would be a major permit under the NY State UPA, unless the length of bank disturbance totals less than 100 feet for every 1000 feet of shoreline. However, this construction would not reach the water's edge, and impacts to the shoreline itself are not expected.
- Section 401 WQC from NYSDEC would be required if issuance of a Section 404 and/or Section 10 permit from the Corps were necessary. If meeting the conditions of NWP #3, the project would be covered under a blanket WQC previously approved by NYSDEC. This would likely be a minor permit under the NY State UPA.
- Construction will be in accordance with the conditions required by the SPDES General Permit for Stormwater Discharges from Construction Activities (GP-0-10-001) administered by the NYSDEC. A Stormwater Pollution Prevention Plan (SWPPP) will be prepared to include temporary and permanent stormwater management measures. Construction best management practices will be specified during the final design phases. (See details below in 4.4.8 Stormwater Management).

4.4.3 Wild, Scenic and Recreational Rivers

The Niagara River is not designated by the federal or state governments as a Wild, Scenic, and Recreational (WSI) Rivers, nor is it listed on the Nationwide Rivers Inventory (NRI); therefore, none of the project alternatives would impact WSI or NRI rivers.

4.4.4 Navigable Waters

The jurisdiction of the Rivers and Harbors Act of 1899 includes all navigable waters of the United States which are defined (33 CFR Part 329) as, "those waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible to use to transport interstate or foreign commerce." The Niagara River is a navigable water of the US, as regulated by the USACE under Section 10 of the Rivers and Harbors Act. Any work in the stream below the OHWM would be regulated and require a Section 10 permit. Activities requiring Section 10 permits include structures (e.g., piers, wharfs, breakwaters, bulkheads, jetties, weirs, transmission lines) and work such as dredging or disposal of dredged material, or excavation, filling, or other modifications to the navigable waters of the US.

The U.S. Coast Guard has a station at the mouth of the Niagara River in Youngstown, New York. The mission of the US Coast Guard is to minimize the loss of life, personal injury, property damage, and environmental impact associated with the use of recreational boats, through preventive means, in order to maximize safe use and enjoyment of US Waterways by the public. Section 9 permits are related to Coast Guard navigability, and are not applicable in the project area.

The Niagara River is also defined as a state-regulated navigable water body. These include lakes, rivers, streams, and other water bodies on which water vessels with a capacity of one or more persons are operated or can be operated. A NYSDEC Protection of Waters Permit for Excavation or Placement of Fill in Navigable Waters, pursuant to Environmental Conservation Law Article 15, Title 5 is required for excavating or placing fill in navigable waters below the mean high water level.

Boating is allowed in most parts of the Niagara River. However, recreational boating is restricted within the Niagara River safety zone. The Niagara River Safety Zone is defined as the United States waters of the Niagara River from the crest of the American and Horseshoe Falls, Niagara Falls, New York to a line

drawn across the Niagara River from the downstream side of the mouth of Gill Creek to the upstream end of the breakwater at the mouth of the Welland River. A Safety Zone is a water area, shore area, or water and shore area to which, for safety or environmental purposes, access is limited to authorized persons, vehicles, or vessels. Regulations (33 CFR part 165.23) state that (a) No person may enter a safety zone unless authorized by the US Coast Guard Captain of the Port (COTP) or the District Commander; (b) No person may bring or cause to be brought into a safety zone any vehicle, vessel, or object unless authorized by the COTP or the District Commander; (c) No person may remain in a safety zone or allow any vehicle, vessel, or object to remain in a safety zone unless authorized by the COTP or the District Commander; and (d) Each person in a safety zone who has notice of a lawful order or direction shall obey the order or direction of the COTP or District Commander issued to carry out the purposes of this subpart.

The Null alternative would not require navigable waters permits. A USACE Section 10 permit and NYSDEC Article 15 permit would be required under either of the Build Alternatives (2 and 3). The permit application would be submitted to each agency once the extent of the work is fully ascertained, and the permit will be obtained prior to the commencement of work.

Since the proposed project is located within the safety zone of the Niagara River, navigability of the waters will not be affected and none of the alternatives would impact recreational boating opportunities.

4.4.5 Floodplains

Federal Emergency Management Agency (FEMA) Flood insurance maps were reviewed and they indicate that there is no floodplain outside the floodway of the Niagara River, which is located at the southern boundary of the project corridor.

The floodway is the area which consists of the stream channel itself and the adjacent areas that carry flood flows. It is where the water is likely to be deepest and fastest. It should be kept free of obstructions to allow floodwaters to move downstream. The Niagara River floodway is generally confined to banks that have been lined with hard fill. There is very little seasonal variation of water levels affecting the banks, and proximity to the Falls prevents any potential flooding of the State Park.

None of the project alternatives would impact the floodway of the Niagara River.

4.4.6 Coastal Resources

The purpose of the Coastal Zone Management Act of 1972 (16 U.S.C. SS1451-1464), as amended, is to "preserve, protect, develop, and, where possible, to restore or enhance, the resources of the nation's coastal zone ..." The primary means of achieving this end is through coastal zone management programs adopted by the states and designed to regulate land use activities that could affect coastal waters. The Act states that federal actions must be consistent to "the maximum extent practicable" with the approved state coastal management program (CMP). New York State has a federally-approved CMP administered through the New York State Department of State (DOS).

The New York State CMP includes 44 policies intended to support the Act's goal of promoting a balance between economic development and coastal resource preservation and optimization, further shaped by Local Waterfront Revitalization Plans (LWRPs) for specific issues in local communities. The City of Niagara Falls has not adopted an LWRP in accordance with DOS procedures. The build alternatives for the Robert Moses Parkway South/Riverway Project would reconfigure a portion of the coastal zone area designated in the approved New York State CMP. The project area falls entirely within the designated

coastal zone (see **Figure 4.1**). Because the project involves federal and state funding and other approvals, both federal and state reviews of consistency with coastal management policies are required. These state and federal consistency determinations use identical policies and can therefore be accomplished through a single review process. The Project's consistency with these policies is demonstrated by the assessment in **Appendix I**, which includes both the federal and state consistency assessment forms.

A review of the 44 New York State Department of State Coastal Zone Consistency policies was conducted and the consistency with all policies that are applicable to the proposed project was evaluated. Each of the Build alternatives is fully consistent with the CMP policies. Implementation of each of the Build alternatives promotes the revitalization of the coastal area and is consistent with state and federal policies related to the management of fish and wildlife, flooding and erosion hazards, public access, recreation, historic and scenic resources, development, energy, water and air resources, and wetlands in the coastal area.

4.4.7 Aquifers, Wells and Reservoirs (Groundwater Resources)

The subject corridor was reviewed for compliance with federal and state regulations regarding aquifer and drinking water protection. A review of the USEPA Sole Source Aquifer webpage indicates that the project is not located in or adjacent to a designated Sole Source Aquifer. A review of the NYSDEC Division of Water's aquifer mapping indicates that the subject corridor is not located in or adjacent to state-mapped Primary or Principal Aquifers. There are no known water supply wells in either the unconsolidated deposits or bedrock in the project area.

Virtually all groundwater aquifers in the state are defined as potential drinking water sources, thus are Class A waters of the state according to regulations found in 6 NYCRR Part 700 et al, to maintain their water quality and potential best use. The source of nearly all groundwater in the Niagara Falls area is precipitation, which infiltrates the surface and either settles in aquifers (in both the unconsolidated deposits and bedrock layers) or seeps into the Niagara River, especially out the exposed gorge walls of the Lower River. A history of subsurface industrial contamination has resulted in shallow groundwater contamination in various hot spots in and around the City of Niagara Falls. There are no known current threats to groundwater in the project area; however, sampling of groundwater for priority pollutants has been recommended if groundwater is encountered at locations with evidence suspected contamination during the planned soil boring investigation.

NYPA draws surface water from the Upper River through hydraulic tunnels under the City, leading to a large reservoir used for hydroelectric power generation. There are no drinking water supply reservoirs in the area. The Niagara Falls Water Authority withdraws and treats water from the Niagara River upstream from the project area providing drinkable water supplier for the City of Niagara Falls. The water intakes for the power reservoir are located several hundred feet upstream from the project site and would not be affected by any of the project alternatives.

Existing and potential drinking water resources would not be affected under the Null Alternative. Groundwater may be encountered during excavation in some areas under either of the Build Alternatives (2 and 3); however, neither alternative is expected to significantly affect groundwater or other drinking water resources.

4.4.8 Stormwater Management

Existing Condition

The existing RMP drainage is collected via drop inlets in the curbed roadway, found in both northbound and southbound lanes. Stormwater is then directly discharged to the Niagara River via outlet pipes that run perpendicular to the Parkway. These pipes then outlet at concrete headwalls at the river edge. These drainage pipes and headwalls can be found about every 200 feet.

Proposed Stormwater Management System

The RMP intersection with John B. Daly Boulevard and the new Riverway would consist of curbed roadway sections that are suitable to collect and carry stormwater runoff. Roadway stormwater runoff from the modified terminus of the Robert Moses Parkway (near John B. Daly Boulevard) and from the Riverway would be collected via shallow drop inlets in the roadway, or, if the situation presents itself as satisfactory, through curb breaks along the road. From these locations, shallow pipes or overland flow would carry this stormwater runoff to areas that will contain stormwater and allow sediments to settle out. These areas will be designed in accordance with NYSDEC Stormwater Management guidelines.

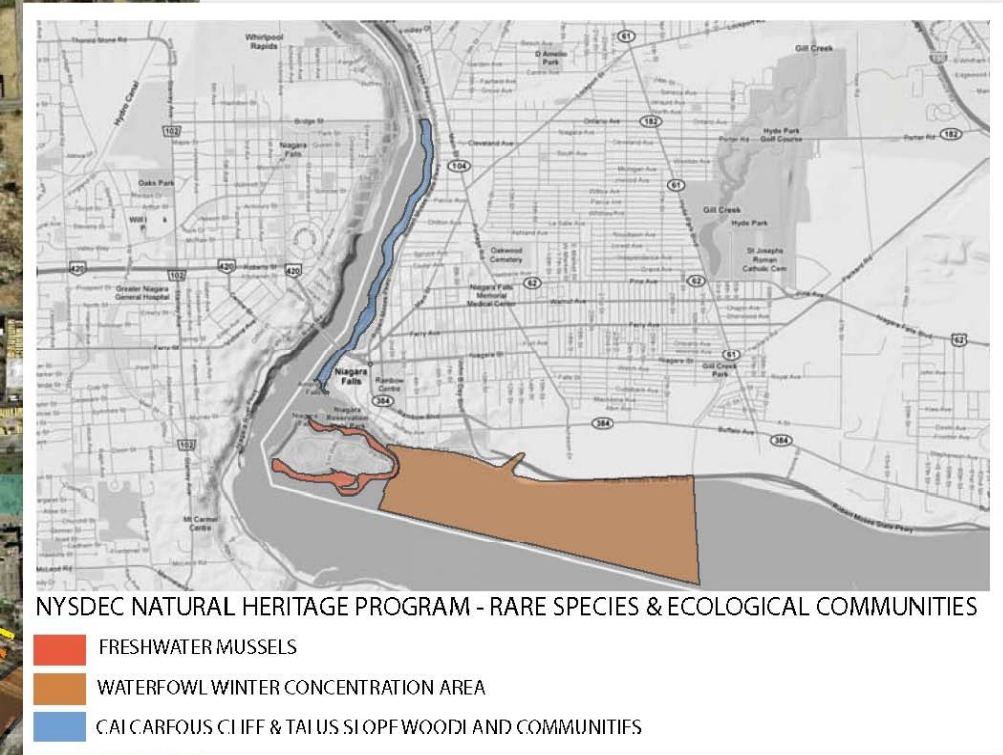
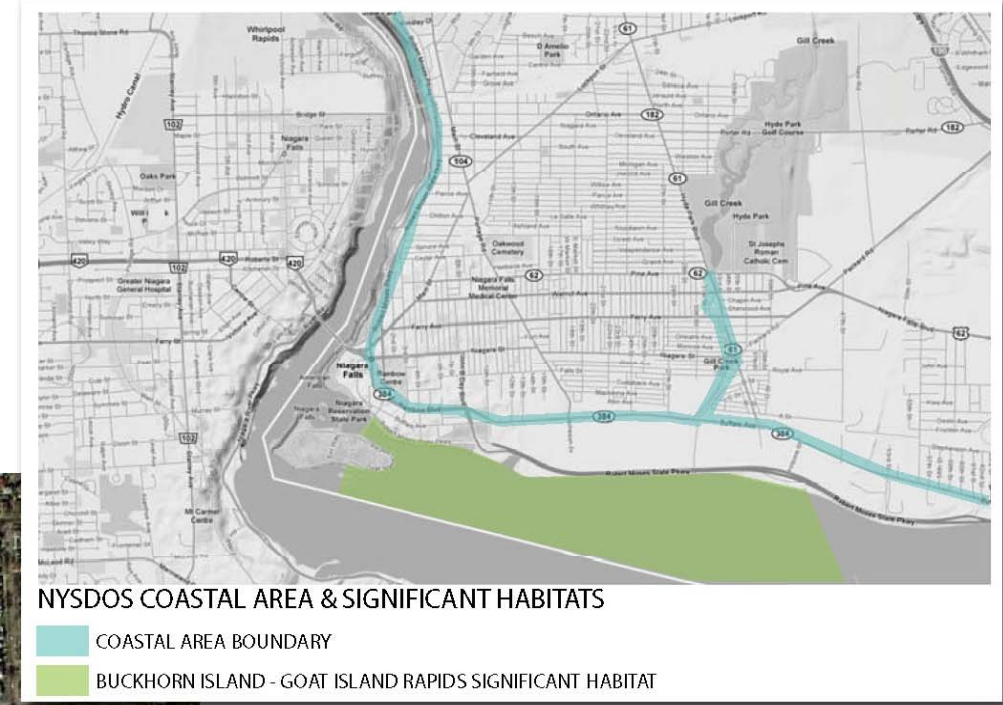
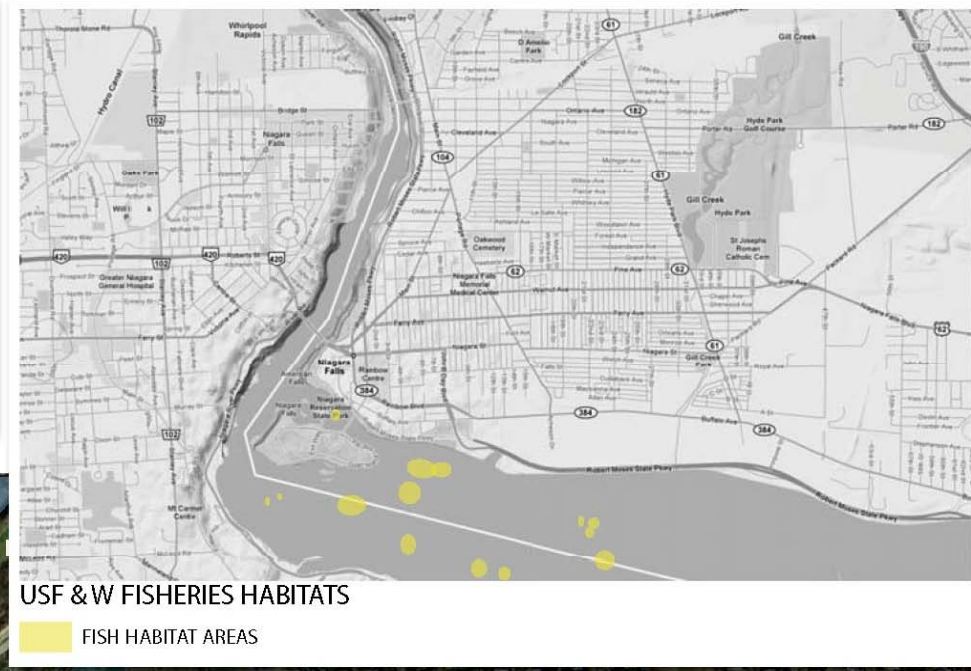
Three types of stormwater treatment facilities have been proposed for further study in the detailed design stage. These are shown together with the stormwater collection system in **Appendix A.1**. These systems are:

- ♦ Re-creation of an interpretation of Day Pond: This would be a pond projected to be located in the State Park and just west of John B. Daly Boulevard. This pond would be established to hold water year round. Development of this pond would require an evaluation of groundwater conditions during detailed design.

Since the elevation of the pond can be accurately predicted (this is based on the Niagara River being a carefully controlled water body as it related to discharge quantity and related surface water elevations from hydropower facilities) it is relatively easy to establish the volume of water that can be treated within this pond. The water quality volume will be calculated through approved methods.

Roadway stormwater runoff from the RMP terminus and the east end of the Riverway can be captured and treated in this pond. A forebay tank will be evaluated during detailed design. This pond is anticipated to be sized to accommodate roadway stormwater treatment at the east end of the site.

- ♦ A second type of treatment system would consist of shallow water settlement areas. These are shown in Appendix A.2. One location would be just south of the Riverway. These would be shallow areas suitable for treatment of roadway stormwater. Consideration would be given as to whether these areas would be natural in landscape concept. These areas would not be expected to hold water year round, but rather, only retain water until it percolates into the ground. Design would be subject to geotechnical evaluation of soils during detailed design.
- ♦ A third system would be located on the west end of the site near the American Rapids Bridge. This area is very tight in terms of space and can become congested with pedestrians during peak season. To accommodate this activity, an underground treatment tank would be considered. This tank might



ROBERT MOSES PARKWAY
 SOUTH SEGMENT / RIVERWAY
 ECOLOGICAL RESOURCES

FIGURE 4 - 1

FILE NAME = DGN\$SYTIME0123456
 DATE/TIME = DGN\$USER\$NAME



consist of a Vortfilter or other means. Since this end of the State Park is small in terms of road paving, this system may be reasonable for implementation.

Final disposition of stormwater treatment will be made during detailed design, and will be based on water, soils, and runoff characteristics.

4.4.9 General Ecology and Wildlife Resources

The Niagara River ecology is comprised of both aquatic and terrestrial resources and includes the Niagara Falls State Park. Agencies concerned with fish and wildlife resources recognize the regional and world-wide significance of the Niagara River ecology. Several important designations of these are shown in **Figure 4.1**.

Site Description

Despite its location adjacent to such an extraordinary ecological complex, the landward side of the project corridor does not contain any noteworthy ecological communities. There are no natural cover types or habitats due to a long history of shoreline fill and development. Ecological communities occupying the project area were either artificially created and/or severely altered by human activity. Cover types (communities recognized in the NYSDEC NHP's 2002 publication of the Ecological Communities of New York State) noted during a site inspection walkover on October 29, 2009 were: mowed lawn with planted trees (vast majority of the corridor); cultural riverine (Niagara River shoreline along the southern project limits); successional shrub (narrow band of unmaintained vegetation along the shoreline at the east end of the corridor); and successional field (managed as such by periodic mowing). Although the shoreline along the project corridor is not currently known as a fishery of significance, locals are known to fish along the shore line, often with success. Vegetated shallows were seen in the water along the shoreline within the project limits, appearing to be populated by wild celery. These special aquatic sites are plant beds known to be food favored by ducks, and are desirable for fish habitat as well.

NYSDOS Significant Coastal Fish & Wildlife Habitat

The water side of the project area is occupied by a designated Significant Coastal Fish and Wildlife Habitat, which is part of New York State's Coastal Management Program (CMP) administered by the NYSDOS (see Coastal Resources section, above). The Buckhorn Island-Goat Island Rapids mapped habitat occupies the Niagara River from the northern tip of Grand Island (Buckhorn Island SP) to the State Park bridge to Goat Island. The NYSDOS maps a second significant habitat located upstream and southeast of the project corridor: the Buckhorn Island Wetlands complex at Buckhorn Island SP at the northern end of Grand Island.

Important Bird Area

The State Park and Niagara River shoreline serve as prime bird-watching locations, particularly for viewing waterfowl migrating or over-wintering on the Niagara River. The project corridor is adjacent to the NYSDEC-identified Waterfowl Winter Concentration Area that covers the entire Niagara River, is a major migratory bird route within the Atlantic flyway. In 1996, the entire Niagara River Corridor became the first site in North America to receive international recognition as a "Globally Significant Important Bird Area (IBA)" by major conservation groups in both Canada and the United States.

The Niagara River Corridor was chosen as a "Globally Significant IBA" because it contains habitats that support significantly large concentrations of migrating and wintering waterfowl and seabirds. The criteria for significance include: for waterfowl, a site having more than 100,000 ducks and geese during migration and/or wintering; and for seabirds, colonies of 50,000 individuals or more, omitting Herring and Ring-billed Gulls.

The Niagara River has the largest and most diverse concentration of gulls in the world—nineteen species of gulls have been identified, including an estimated 50,000 to 75,000 Bonaparte's Gulls that spend the winter months feeding in the ice-free Niagara River. The Niagara River is a critical winter feeding area for these birds and many others. The swift current keeps it free of ice, assuring the bird's access to water when many other areas along the migratory path freeze over. The fast moving waters also carry a steady supply of alewives, shiners and other small fish that make up the birds winter diet.

The corridor is also a major wintering area for several species of ducks, including: Canvasback, Common Goldeneye, Common Merganser, and Greater Scaup. Aerial surveys have shown that annual peak numbers range from 2,000-15,000 Canvasbacks, 2,500-15,000 Greater Scaup, 2,300-3,000 Common Goldeneyes and 2,500-12,000 Common Mergansers. The river also supports breeding colonies of Double Crested Cormorants, Great Blue Herons, Great Egrets, Black-crowned Night Herons, Ring-billed Gulls, Herring Gulls and Common Terns.

Complementing the waterfowl habitat, the River shoreline supports an exceptional diversity of migratory songbirds during spring and fall migrations. The few remaining marshes, including Buckhorn Island State Park, have supported breeding Least Bitterns, Northern Harriers, and Sedge Wrens. Other species at risk supported at the site as include Pied-billed Grebe, Cooper's Hawk, American Woodcock, American Black Duck, Common Loon, Common Nighthawk, Redheaded Woodpecker, Willow Flycatcher, Horned Lark, Wood Thrush, Bluewinged Warbler and Cerulean Warbler. Some are confirmed or probable breeders; others are winter visitors.

Agency Reports and Correspondence

Several reports were found on government agency and non-governmental organization (NGO) websites, including NYSDEC, USEPA, Buffalo Niagara Riverkeeper, and the US Fish & Wildlife Service.

NYSDEC Natural Heritage Program (NHP) – Correspondence with the NYSDEC's NHP indicates that two significant natural communities, calcareous talus slope woodland and calcareous cliff community are present at the west end of the project study area. Elsewhere in the State Park, two ecologically significant freshwater mussel species, Hickorynut and Rainbow, were identified around the Goat Island shoreline to the Falls. These resources will not be directly affected by any of the project alternatives, as they are located outside the project limits across the Niagara River American Rapids. Potential indirect impacts to the rare mussels, as in short-term increases in turbidity during construction, are not expected to occur. Although the populations are located in a technically downstream position, sediments from the project would not likely cross the rapids in significant quantities to reach the mussel beds due to the significant distance and fast current. Furthermore, water quality during construction will be maintained thru compliance with the SPDES general permit for stormwater discharges from construction activities, as discussed above in 4.4.8 Stormwater Management.

USEPA – The USEPA identifies the Niagara River as an Area of Concern due to a long history of shoreline development that has severely affected the native fish and wildlife habitat along the river, including the subject site. Aquatic degradation is due to habitat severely impaired by toxic chemicals such as PCBs, mirex, chlordane, dioxin, dibenzofuran, hexachlorocyclo-hexane, PAHs, and pesticides.

USACE and USF&WS – The USF&WS National Fisheries Research Center-Great Lakes prepared an extensive report that identifies various fish habitats of several species in the Niagara River. The 1989 report, *Effects of Altered Water Levels and Flows on Fish in the Great Lakes Connecting Channels*, indicates approximately 80 fish species have been recorded in the Niagara River in the following habitats: open water, emergent wetlands, littoral habitat, rapids and tributaries. The subject corridor is adjacent to the littoral and rapids fish habitats. The littoral habitat is considered an important spawning and nursery habitat for many fish species. This report, in turn, relies heavily on a 1982 report prepared by a joint team of the USACE and USF&WS Biological Services Program, *Atlas of the Spawning and Nursery Areas of Great Lakes Fishes, Volume X – Niagara River*, which provided data and maps showing the locations of spawning and nursery areas of several species. The habitats nearest Niagara Falls State Park are depicted on the Ecological Resources map that can be found in the Project Scoping Report (PSR).

NYSOPRHP – The NYSOPRHP developed a Final Environmental Impact Statement for the Niagara Reservation Concept Master Plan in 1982. The proposed plan was to restore some of the natural features of the Niagara Reservation (Niagara Falls State Park), and to guarantee the character and quality of the park for future generations. The report indicated that the vegetation in the State Park was once quite extensive and varied, but the vegetation has been disturbed over the years by human activities. According to the report, the only undisturbed natural areas left in 1982 were located on some of the small islands (Bird, Robinson & Three Sisters). The report also indicated that a small number of mammals and a wide variety of birds are found in the area.

Endangered and Threatened Species

The US Fish and Wildlife Service (USFWS) indicate that there are two Federally listed, delisted, or proposed endangered or threatened species located within Niagara County. The bald eagle was identified as a delisted species and the eastern prairie fringed orchid is listed as a threatened species. There is no known occurrence of the listed orchid on the project corridor, and the assessment for this project has determined there is no potential habitat located in the project impact area. Although no longer listed for protection under the Endangered Species Act, the bald eagle is still federally protected under the Migratory Bird Act. The bald eagle is known to feed in the vicinity of the project corridor although there are no known breeding or roosting locations in the project impact area.

An Information Planning and Conservation (IPAC) review of the project area originally revealed that there were no Federal listed species found within the vicinity of the project. In December 2013 the USF&WS announced that in October 2014 they would list the Northern Long-Eared Bat as an endangered species throughout all of New York State. This project is anticipated to be let and construction to begin before October 2014. NYSDOT will continue to conference with FHWA and USF&WS during this interim period to determine the effect, if any, the project will have on this proposed endangered species once it is listed.

Potential Ecological Impacts

The Null alternative would have no additional impacts on the quality or usage of the ecological resources in and around the project site, positive or negative.

Neither of the Build Alternatives (2 and 3) is expected to result in long-term adverse impacts to the quality or usage of the ecological resources in and around the project site, including the Waterfowl Winter Concentration Area and the Buckhorn Island-Goat Island Rapids Significant Habitat mapped on the River

side of the project boundary. Conversely, the build alternatives offer long-term benefits to the aquatic habitat adjacent to the project limits and downstream.

Aquatic Habitat: Small improvements in water quality are expected through implementation of best management practices for roadway stormwater that currently discharge to outfalls and directly to the river. The overall impervious area in the State Park would be significantly reduced by removal of the existing RMP road beds. Furthermore, water quality during construction will be maintained through compliance with the SPDES general permit for stormwater discharges from construction activities, as discussed above in 4.4.8 Stormwater Management.

The musselbeds containing populations of rare species identified by the NHP will not be directly affected by any of the project alternatives, as they are located outside the project limits across the Niagara River American Rapids. Potential indirect impacts to the rare mussels, as in short-term increases in turbidity during construction, are not expected to occur. Although the populations are located in a technically downstream position, any sediments from the project site would not likely cross the rapids in significant quantities to reach the mussel beds due to the significant distance and fast current.

Terrestrial Habitat: The current landside ecology is poor terrestrial habitat. Disturbance of existing habitat at the project site during construction of either Build Alternative (2 and 3) would have few temporary adverse impacts on wildlife, considered to be insignificant. Conversely, both build alternatives (2 and 3) offer an opportunity to significantly improve the State Park's terrestrial habitats that would benefit many species of wildlife starting immediately upon completion of the project.

As part of the landscape plan for both build alternatives, areas near the east State Park entrance would be restored as meadow areas. The meadow areas would be planted with low-maintenance native meadow grasses, wildflowers, and low growing shrubs. These areas would be located along the shoreline and between designated paths and overlooks, creating a system of spaces that accommodates both habitat and recreational activities such as bird watching and fishing.

Installation of a low-maintenance landscape with plantings native to the Erie Lake Plain ecosystem would provide significant long-term benefits to wildlife, including birds using the Niagara River IBA for breeding or migration. In addition, a net decrease in paved surfaces in the project area would provide a net increase in greenspace that may allow more habitat area as well as improved quality.

4.4.10 Critical Environmental Areas

There are no NYSDEC-designated Critical Environmental Areas (CEAs) in the project study area.

4.4.11 Historic and Cultural Resources

Niagara Falls State Park, formerly known as the Niagara Reservation has been designated as a National Historic Landmark and is listed on the National Register of Historic Places. In addition to the State Park itself, there are many historic sites located in the surrounding area.

National Heritage Areas Program

The City of Niagara Falls is part of the Niagara Falls National Heritage Area (NHA). Designated by the U.S. Congress in 2008, the Niagara Falls NHA extends from the mouth of the Niagara River on Lake Ontario to the western boundary of the Town of Wheatfield. In addition to the City of Niagara Falls, it

includes the villages of Lewiston and Youngstown. The region supports natural wonders, rich cultural traditions, and nationally significant historical sites.

A Draft Niagara Falls National Heritage Area Management Plan was issued in March 2012. A summary of the Plan as it relates to the project is provided in Section 4.2.1.

National Historic Preservation Act – Section 106/State Historic Preservation Act – Section 14.09

A number of historic properties, listed and eligible for listing in the National Register of Historic Places (NRHP), exist within or adjacent to the project's Area of Potential Effect (APE). There are 21 National Register listed (NRL) properties within the APE. In addition, there are numerous National Register eligible (NRE) properties within or adjacent to the project's APE. Additional description of these resources is included in the Architectural Resources section below. Information on these properties is being provided to the State Historic Preservation Office (SHPO) to make an eligibility determination.

There is at least one historic period archaeological site within the APE which has no eligibility determination. In many cases, this was due to a lack of data. There are also a number of archaeological sites within a one-mile radius of the project's area of potential effect. It is unlikely that the proposed construction would impact any of these sites. Additional discussion of archeological resources is included below.

Because the project is a federally funded action, the project will be following the Section 106 Process of the National Historic Preservation Act. This ensures compliance with the NYSHPA Section 14.09 process.

The SHPO has issued a finding of No Adverse Effect with Conditions following a review of the Cultural Resource Report (Appendix K) and the Finding Document (Appendix Q). The condition referred to in the SHPO determination is the need for archaeological monitoring during construction at the area of undisturbed soil. The SHPO determination memo is included in Appendix H.

Architectural Resources

The RMP, South Segment Riverway project area is contained within the boundaries of the NRL Niagara Reservation (90NR01961), which is further distinguished as a National Historic Landmark. The project area borders the southern edge of the central business district of the City of Niagara Falls. Properties adjacent to and opposite the northern boundary of the Niagara Reservation were documented as part of a Phase IA cultural resources study. The northern boundary of the Area of Potential Effect (APE) extends west on Buffalo Avenue from east of the John B. Daly Boulevard/RMP interchange west to Main Street.

Properties on Buffalo Avenue included in the Phase IA architectural survey are located on the north and south sides of Buffalo Avenue from the City of Niagara Falls Wastewater Treatment Plant at 1111 Buffalo Avenue to 900 Buffalo Avenue; the north side of Buffalo Avenue from John B. Daly Boulevard to Riverside Drive; the south side of Buffalo Avenue from the modern hotel complex at 401 Buffalo Avenue to the apartment high-rise at 151 Buffalo Avenue; and the north side of Buffalo Avenue between Main Street and First Avenue. Other properties adjacent to the APE are located on Hillcrest Street, Riverside Drive, and Fourth Street. Commercial and residential properties adjacent to or near APE range in date from the mid-nineteenth century to the late twentieth century. The residential character of the Buffalo Avenue neighborhood changes to commercial and industrial east of John B. Daly Boulevard.

Buffalo Avenue west of John B. Daly Boulevard is a residential street with two modern hotel complexes and several vacant lots. Niagara Reservation land borders the south side of Buffalo Avenue, between John B. Daly Boulevard and Riverside Drive. Buffalo Avenue residences were constructed during the mid-1800s through the 1930s, many of which were built in the early twentieth century for executives associated with the city's flourishing industrial period. Architectural styles represented on Buffalo Avenue include: Greek Revival, Italianate, Queen Anne, Craftsman, Neo-Classical, Colonial Revival and Tudor Revival. The NRL E.B. Whitney Mansion (335 Buffalo Avenue) is an excellent example of an early-to-mid-nineteenth-century Greek revival building of stone masonry construction. The Whitney Mansion has a deep setback and overlooks the Niagara River. Twelve residences adjacent to, or overlooking, the project on Buffalo Avenue (and Hillcrest Street) are NRE. Two other NRE buildings on Buffalo Avenue overlooking the proposed APE are commercial properties: The Red Coach Inn at 10 Buffalo Avenue (Photograph 4.9) and 900 Buffalo Avenue (Moore Business Forms, Inc.).

A small residential enclave on Riverside Drive consisting of eight buildings is adjacent to and overlooks the Niagara Reservation and APE. Located at an angle facing the upper rapids of the Niagara River, Riverside Drive is the most uniquely sited block in the City of Niagara Falls. The street extends from Buffalo Avenue south and then turns west to Holley Place. Riverside Drive originally paralleled the river's shoreline with residences restricted to the north side of the street, leaving uninterrupted views of the river. However, construction of the elevated Robert Moses Parkway impacted the open vistas of the river from Riverside Drive. Fill from the Niagara Power Plant project was deposited along the river's edge to accommodate the new parkway, thus altering the original setting Riverside Drive and the eastern portion of the Niagara Reservation. The oldest building on Riverside Drive is the NRL Holley-Rankine House (a.k.a. Lovelace House), a highly intact example of a stone Gothic Revival cottage. Riverside Drive contains seven NRE residences constructed in the early twentieth century. One of the most prestigious architectural firms in Buffalo, Esenwein & Johnson, designed the Alfred W. Gray House (1912) at 600 Riverside Drive.

Two NRE buildings on Buffalo Avenue have been demolished in the last five years. The first of which was a ca. 1900 residential building at 706 Buffalo Avenue (Unique Site Number [USN] 06340.001028) located at the west end of the block of residences between John B. Daly Boulevard and Riverside Drive. The second demolished building was the Miss Gladys Pettebone House at 305 Buffalo Avenue (USN 06340.001007). The presently vacant parcel is adjacent to the project area. Built in 1921, the Pettebone House was an excellent example of a Dutch Colonial-style residence (Longiaru et al. 2004:5-5). It was constructed behind the former stone house associated with Elizabeth J. Townsend. The entrance gate remains on the northwest corner of the parcel.

According to the OPRHP online database three properties currently adjacent to the project have been previously surveyed, but lack S/NRHP determinations of eligibility. These include the Niagara Club at 24 Buffalo Avenue (USN 06340.000002); the Tatler House at 6 Fourth Street; and the Old Stone Chimney at 951 Buffalo Avenue (USN 06340.000032). The Niagara Club and the Tatler house are distinguished as Niagara Falls Local Landmarks.

The following NRL properties within the mainland area of Niagara Reservation are National Register Listed:

- Administration Building (Prospect Street, west side, south of Rainbow Bridge — USN 06340.000146);
- Civil War Monument (Prospect Street, west side, at Falls Street—USN 06340.000145);
- Green Island Toll House (Prospect Street, west side, at Goat Island Bridge— USN 06340.000155);

- Information and Park Service Building (Prospect Street, west side, north of Falls Street—USN 06340.000157);
- Information and Park Service Building (Prospect Street, west Side, north of Falls Street—USN 06340.000156);
- Prospect Point Upper Souvenir Store (Prospect Street, west side, on Prospect Point—USN 06340.000153)
- Prospect Point Lower Souvenir Store (Prospect Street, west side, on Prospect Point—USN 06340.000154);
- Goat Island Bridge over Niagara River (USN 06340.000048).

All of these properties were included as part of the Niagara Reservation National Historic Landmark (90NR01961) on May 23, 1963, and were listed on the NRHP on October 15, 1966. They were all listed on the New York State Register of Historic Places (SRHP) on June 23, 1980.

Additional information and photographs of the NRL and NRE properties are provided in **Appendix K**. This information will be submitted to SHPO as part of the Section 106 process.

Archaeological Resources

The APE has been extensively disturbed as a result of actions including the construction and subsequent filling in of the hydraulic canal at the eastern end of the APE, construction, reconstruction and demolition of mills and mill races along the shoreline in the western section of the APE, and by the continuous reconfiguration of the shoreline throughout the nineteenth and twentieth centuries leading up to the 1960's construction of the Robert Moses Parkway. While some remains of the mills that existed toward the brink of the falls may still exist, these areas will not be directly impacted by the proposed project.

The Cultural Resource Assessment (Appendix K) identifies the areas outside the existing roadway area that will be directly impacted by the roadway construction. Of these, **only one area that lies at the intersection of Main Street and Buffalo Avenue** (see location denoted by the arrow in **Figure 4.2**) **may contain a natural surface**. As this area is small (< 0.25 acres) and would require a backhoe to retrieve a meaningful sample, monitoring of excavation in this area by an archaeologist during construction is recommended in lieu of a Phase 1B survey. No additional archaeological survey work beyond this single location is recommended. The approved Archaeological Monitoring Plan is included in **Appendix K**.

Historic or Historic Eligible Bridges

The Goat Island Bridge over the Niagara River, spanning between the Mainland, Green Island, and Goat Island, is NRL. It is not affected by this project. The American Rapids Bridge, spanning between the Mainland and Goat Island, is not 50 years old, and will not be affected by this project.

On the RMP, two overpass bridges at John B. Daly Boulevard are nearing 50 years old. They are single span multi-girder, which is a structure type that is very unlikely to be considered historical eligible. These are to be removed by this project. There are no other bridges over 50 years old or listed on NYS DOT's Historic Bridge Inventory that are located within the project's APE.

Historic Parkways

The Robert Moses Parkway is not recognized as an historic parkway. Although it lies within the NRL Niagara Reservation, the NRL nomination form for the Niagara Reservation specifically indicates that the

parkway does not contribute to the national significance of the landmark. As part of the 1982 Master Plan, which cited the NRL nomination form, the Parkway is an exception.

Historical Landscape

As defined in Section 2.1.1, Niagara Falls State Park is a National Historic Landmark of national significance. With the exception of the area directly adjacent to the American Falls, the landscape along the roadway today does not exhibit the historic design. The area around John B. Daly Boulevard is particularly characterized by mid-20th century highway design. Removing that non-historic element is an important component of recapturing the historic landscape character. Existing conditions of those elements that contribute to its historic character are discussed in Section 2.4.1. The historic riverfront path, the water edge willow trees, a few older deciduous canopy trees and the topography and native trees on the steep slopes would all be retained and incorporated into the design, as discussed in section 3.3.2.

Figure 4.2 Possible Area of Natural Surface



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 APE does not contain Federal, Tribal, or Indian-owned property. The APE is adjacent to Niagara Falls, which may be considered a sacred site, and Goat Island, where Native American burials were reported during the early twentieth century; however, these areas are outside of the APE and will not be impacted by the proposed project. There are no known Native American or prehistoric archaeological sites within the APE and there would have been few resources that prehistoric groups would have exploited along this section of the Niagara River. The APE has been extensively disturbed as a result of construction of the Robert Moses Parkway, the construction of the hydraulic canal at the eastern end of the APE, construction, reconstruction and demolition of mills and mill races along the shoreline in the western section of the APE, and by the continuous reconfiguration of the shoreline throughout the nineteenth and twentieth centuries up to the construction of the Parkway. The extent of disturbance within the APE has created a situation where it would be unlikely that intact cultural deposits from the prehistoric period exist.

The tribal governments in Western New York have been contacted about the proposed project. The Seneca Nation participated in one of the Focus Groups during the Scoping Phase of the project. The Draft Design Report/Environmental Assessment was sent to three tribal governments for review and comment, and the Seneca Nation provided comments. Comments related to project scope, specifically traffic operations, have been addressed in this report.

A separate letter was sent to the three tribal governments offering to meet to review the project and answer questions. The only response to this letter was from the Tuscarora Nation, who requested notification if any human remains, funerary or sacred objects were uncovered. This comment is addressed by the Construction Monitoring Plan.

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, requiring Section 4(f) involvement. The project type and setting is such that a programmatic Section 4(f) evaluation is appropriate for this project. Refer to **Appendix Q** for Section 4(f).

The SHPO has issued a determination of No Adverse Effect with Conditions related to the 4(f) property. The condition referred to in the SHPO determination is the need for archaeological monitoring during construction at the area of undisturbed soil. See Appendix H for the determination memo.

4.4.12 Parks and Recreational Resources

Niagara Falls State Park

Niagara Falls State Park is the oldest state park in the United States. Its origin and lasting interest is Niagara Falls. There are several ways to witness the Falls within the park. These include viewing the Falls from Prospect Point on the Mainland, or from Goat Island at either Luna Island or Terrapin Point.

Two popular attractions that the Parks operates include the Cave of the Winds tour and the Maid of the Mist ® boat ride. The State Park has many other offerings including the Visitor's Center, Niagara Gorge Discovery Center and Goat Island nature area. An observation tower extends over the Niagara Gorge allowing guests a direct view of the falls. Another way to explore the State Park is through the Niagara Falls Scenic Trolley. It offers half hour tours with guides that tell the history of the park along a three-mile route. They run on natural gas and are part of the Niagara Falls State Park's "Green Park Project," which received the 2006 Clean Air Excellence Award from the EPA.

Adjacent to the State Park, there is access to about 14.5 miles of trails. These trails are located along the Niagara Gorge Trail System, which extends from Niagara Falls to Lewiston, New York. A path within the park extends from the Horseshoe Falls, connecting to the Upper Great Gorge Trail, which is connected to the Whirlpool Rapids Park. The Robert Moses Parkway (RMP) Trail runs parallel to the Gorge Rim Trail. The RMP Trail is a popular three-mile multi-use recreational trail in which people cycle, rollerblade, run and walk. It can be accessed from the Discovery Center, Whirlpool and Devil's Hole State Parks.

In addition to the inherent natural beauty found in Niagara Falls State Park it is also important for ecological reasons. Close to 140 of the 400 acres of the State Park are under water. The Niagara River supports numerous wintering gull and waterfowl species. In addition, it supports the Lake Sturgeon, one of New York's endangered fish, as well as other protected animal species, such as the Peregrine Falcon and the American Bald Eagle. Fourteen (14) species of rare plants, some of which are threatened and endangered, are found at the Niagara River Gorge. An island between the American and Canadian falls, Goat Island, is also important ecologically. There have been over six hundred (600) species documented on the Island over the last two centuries. Also, 140 of the 170 trees native to western New York were found growing on the Island in 1901 (<http://www.niagarafallsstatepark.com>).

Section 6(f) Involvement

This project will impact parklands or facilities that have been partially or fully federally funded through the Land and Water Conservation Act. A small grant (less than \$10,000) was used for a State Park project in the 1970's. Specific information on the amount, date and location for the project was not found.

The proposed project does not result in loss or conversion of parkland to transportation facilities. The Findings Document in **Appendix Q** describes that the project will transform over 101,000 square feet of roadway and parking area into landscape parkland.

The National Park Service (NPS) has agreed that that the project will result in a net increase in parkland and a net benefit to the State Park and a formal review for Section 6(f) of the Land and Water Conservation Fund Act is not necessary. Correspondence from the NPS is included in Appendix H.

Context Driven Park Needs, Connections and Programmatic Relationships

The natural splendor of Niagara Falls State Park is one of the things that sets it apart from other state parks in the area. The grandeur of the Falls is what draws people to this area. As such, there is not the same need for active recreation such as ball fields and playgrounds that other neighboring parks may offer. The recreation at the Niagara Falls State Park is more passive and comes in the form of people experiencing the Falls or learning more about them through the educational offerings of the park. Niagara Falls State Park offers tours of the Falls, educational opportunities at the Visitor's Center, an Aquarium, an Observation Tower, a Scenic Trolley ride, and trails. The following amenities and activities are

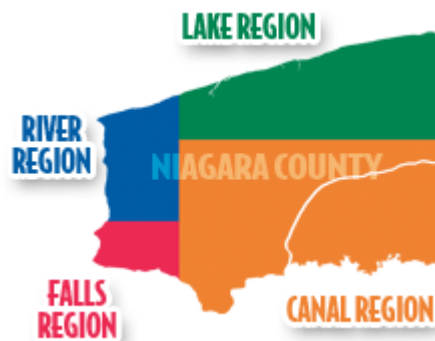
offered at other parks within about a 30-mile radius of Niagara Falls State Park: shelters for gatherings, golf, tennis, baseball, softball, basketball, soccer, volleyball, winter sports such as ice skating, a model airplane field, horseshoe pit, playgrounds, pools (sprinkler, wading, and Olympic sized), fishing, trails, and historic sites. Since the draw of the State Park is its natural features and other parks in close proximity to Niagara Falls State Park offer active recreational opportunities, there is not the need for this park to provide the range of active recreational components that other parks do. A Visual Impact Assessment describing the effects of the proposed alternatives is included in **Appendix N** of this report.

Physical and Regional Connections

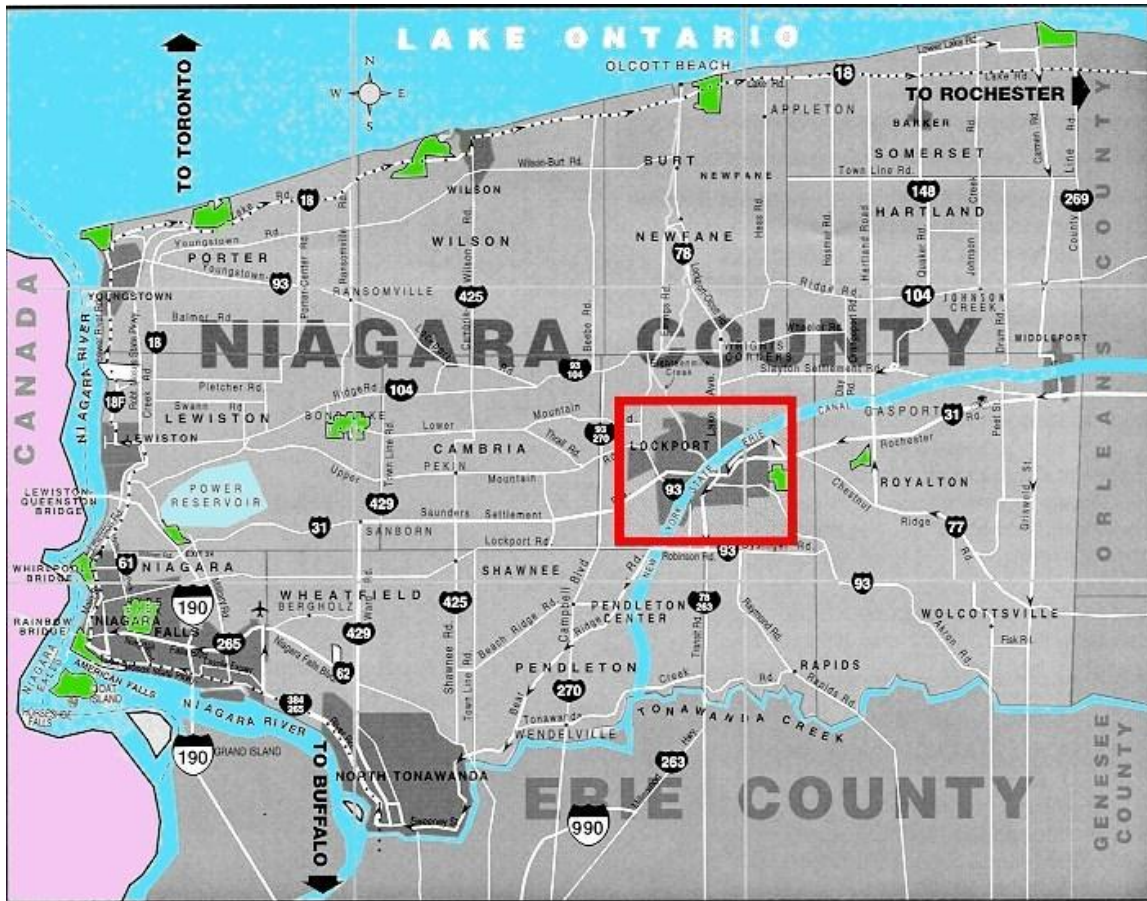
There are roughly 21 parks located in Niagara County, within roughly a 30-mile radius from Niagara Falls State Park. As such, all residents who live within this radius have access to a plethora of recreational resources.

Several of these parks are interconnected to Niagara Falls State Park through the Niagara Gorge Trail System. The Discovery Center of Niagara Falls State Park serves as the gateway to the Niagara Gorge Trail System. This system winds through Devil's Hole State Park, Whirlpool State Park, and Earl W. Brydges Artpark State Park. The trails offer varying degrees of hiking difficulty. Another physical connection for these parks is that the Robert Moses Parkway runs alongside the Gorge Trail System, to the east.

There are 11 State parks in Niagara County, including Niagara Falls State Park. The others are De Veaux Woods State Park, Devil's Hole State Park, Earl W. Brydges Artpark State Park, Fort Niagara State Park, Four Mile Creek State Park, Golden Hill State Park, Joseph Davis State Park, Reservoir State Park, Whirlpool State Park, and Wilson-Tuscarora State Park.



<http://www.niagara-usa.com/index.html>



“The map produced above is based on one published in promotional literature by the County of Niagara. It has been slightly modified by the publisher of this reference to enhance certain features.

Largest public park areas shown in green. Major waterways shown in blue.
Within the red central block, Lockport City is the darker background.”

<http://www.lockport-ny.com/Reference/county.htm>

Porter Park is a City Park

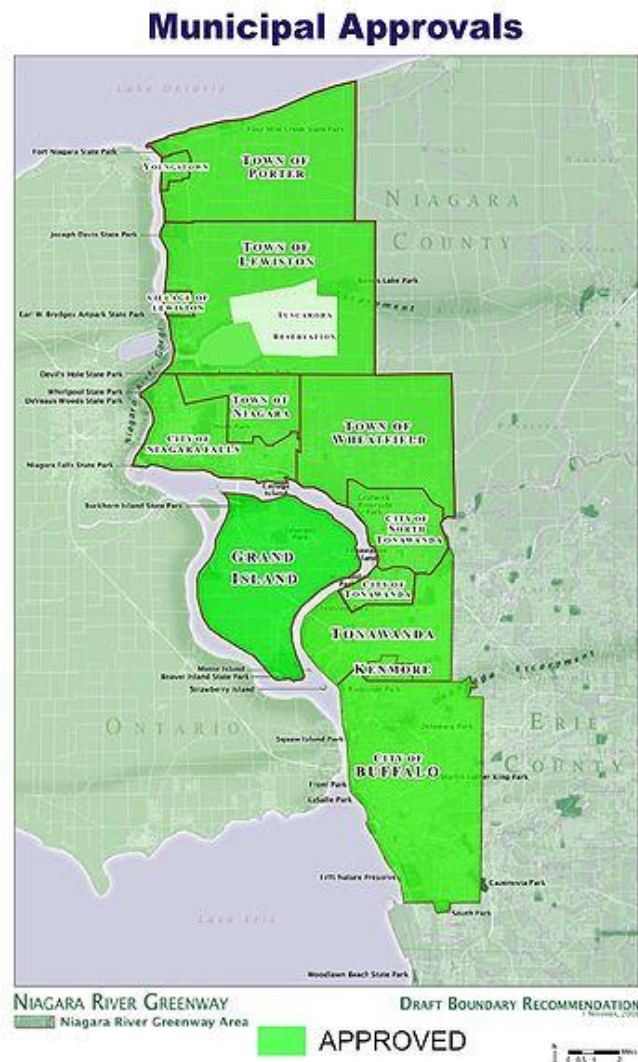
“Porter Park, as a city-owned park, is located northeast of the John B Daly Boulevard interchange and contains a chimney from the historic Fort Schlosser, which dates back to the 1760’s. A privately owned parcel, which is used for parking, is directly west and adds to an underutilized appearance of Porter Park. An existing office complex, abandoned industrial facility, and water treatment plant are next to Porter Park and also add to the underutilized nature of the area. Land uses northwest of John B. Daly Boulevard are dominated by residential neighborhoods and lodging establishments, such as a Bed & Breakfast and Rodeway Inn Hotel.

This project will not affect Porter Park, with the exception that there is discussion with respect to relocating the chimney to a more prominent area. A final decision on this issue has not been made at this time.

Extension of the Greenway Commission Bike Path

Regional trail networks inherently serve both local residents as well as tourism opportunities. These extensive park networks find value in a wide variety of parks, recreation and open space networks. Community and regional planning advocacies also support interconnected park resources. It is logical to recognize the opportunities that Niagara Falls State Park provides these comprehensive systems.

The Niagara River Greenway Commission set out to create a plan for the development of the Niagara River Greenway. It is defined as “a system of trails, parks, environmental resources and other important assets along the Niagara River” (<http://www.niagaragreenway.org/GreenwaysBrochure.pdf>). The southern portion of the Greenway begins at Buffalo and the northern portion ends at the Town of Porter. The Commission was created “to identify and define a natural boundary of the Niagara River from Buffalo to Old Fort Niagara and then act as an advocate and clearinghouse for development and ecological restoration projects along it.



Part of the Commission's focus is to create an inventory of parks and other lands that are under the jurisdiction of the state, public corporations, and municipalities along the Greenway. They also wish to identify other portions of land that can contribute to the purposes of the Greenway. Additionally, they want to recommend how upland and interior communities could be linked to the Greenway to promote linkages to the River. In this way, the purposes of the Commission line up with the purposes of this Project (<http://www.niagaragreenway.org/>).

This project, by advancing a continuous bicycle and pedestrian path through the State Park, would promote the purpose of the Commission. This project does nothing to negatively impact the Commission activities or purpose.

4.4.13 Farmlands

There are no agricultural lands in the project area.

4.4.14 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 project is located in Niagara County, which is now considered to be in attainment for all NAAQS pollutants, including ozone. Therefore, the transportation conformity regulations, published by the USEPA on August 15, 1997 (40 CFR Parts 51 and 93), do not apply.

In addition, the 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 Greater Buffalo/Niagara Regional Transportation Council and received a positive conformity determination from the Federal Transit Administration (FTA) and the 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 prior to Niagara County being declared in attainment for all NAAQS pollutants, and neither the design, scope, nor 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

A microscale air quality analysis is performed for projects that have a potential for local CO air quality impacts. To determine whether this project is subject to a CO microscale air quality analysis, the feasible build alternatives were reviewed and a screening was performed in accordance with the NYSDOT EPM,

including updates. A CO microscale screening consists of reviewing the level-of-service (LOS) changes, capture criteria, and traffic volume thresholds for the existing and proposed future conditions.

The screening indicated that since the build alternatives have a level-of-service of C or better, a CO microscale analysis is not warranted for any of the project alternatives, per NYSDOT EPM Chapter 1.1 Section 9.A.i.

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_{2.5}, PM₁₀, CO, VOC, and NO_x).

The feasible build alternatives (2 and 3) were screened to determine if a quantitative mesoscale analysis should be performed. It was determined, per the NYSDOT EPM criteria that this project is not regionally significant and is not expected to significantly change traffic patterns outside the immediate vicinity of the State Park. Therefore, a mesoscale analysis is not warranted for any of the project alternatives, per NYSDOT EPM Chapter 1.1 Section 9.A.ii.

Other Air Quality Analyses

Due to the scale and scope of the project, none of the project alternatives would significantly affect other air quality parameters; therefore, screening for additional pollutants (Mobile Source Air Toxics, Particulate Matter, and Greenhouse Gases) are not warranted for any of the project alternatives.

4.4.15 Energy

Regulatory Framework and Guidance

The NY 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 has been 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.

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

The project was evaluated to determine whether it would significantly affect energy consumption by assessing its potential to:

- Increase or decrease vehicle miles traveled (VMT);
- Generate additional vehicle trips;
- Significantly affect land use development patterns;
- Result in a shift in travel patterns; or
- Significantly increase or decrease vehicle operating speeds.

Based on the traffic analysis data, this project does not meet any of the NYSDOT criteria identified above; therefore, it has been determined that a quantitative energy analysis is not required. A qualitative energy assessment is presented below.

Qualitative Energy Assessment

The qualitative energy assessment for the project considers the direct and indirect energy consumption 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.

Since highway and bridge facilities have reached the end of their life cycles, continual maintenance would be required to keep them functional. Therefore, the No-Build Alternative would result in rising indirect energy consumption in the long term due to maintenance on the roadway. Over time, piecemeal maintenance of aged infrastructure can consume more indirect energy than reconstruction of the roadway.

Either of the build alternatives would reduce the long-term maintenance activities anticipated under the No-Build Alternative, thus reducing the long-term indirect energy consumption along the project corridor. It is expected that Build Alternative 3 has a slightly greater footprint and total earthwork so it would consume slightly more indirect energy to construct than Build Alternative 2. This is not a significant difference, since each Alternative constructs the same linear footage of roadway.

Energy usage depends on the number and efficiency of vehicles traveling through the study area, and transportation problems such as "stop-and-go" traffic congestion represent a large contributor to total energy consumption. In general, the build alternatives would not have an effect on traffic flow or direct energy consumption compared to the No-Build Alternative. There are slight differences between selection of a grade separated intersection at John B. Daly Boulevard and a roundabout at-grade option.

The grade-separated option maintains a free flow condition, and will not increase energy consumption compared to the null alternative. The at-grade design options introduce a conflict point at the future State Park entrance that may have an effect on traffic flow efficiency. However, these options require somewhat less embankment removal from the site than the grade-separated option, with less construction related energy consumption.

Summary

With respect to total energy consumption, the No-Build Alternative would require more maintenance in the long term. This may result in the no-build consuming the most energy in the long term. Alternative 3 is likely to consume slightly more energy than Alternative 2 as a result of construction, but in the long run this difference is negligible.

The at-grade option for an intersection at John B. Daly Boulevard would marginally increase both direct and indirect energy consumption compared with the null alternative. The grade-separated option maintains a free flow condition, and would not increase energy consumption compared to the null alternative.

4.4.16 Noise

Regulatory Framework

The methods used for the noise assessment are 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).

Methodology

This project was 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 a 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 a project is found to be a Noise Regulation Type I project, a noise study may 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".

Distance measurements of the proposed design alignments have been made to determine if the design is encroaching on existing areas of exterior use that may be susceptible to noise impacts. The project's noise screening indicated that, while the build alternatives may alter the traffic related noise within the study area to some extent, the project is not a Noise Regulation Type I project. Therefore, neither field noise measurements nor an analytical noise study is required by the NYSDOT guidance document.

Preliminary Review of the Alternatives

Generally, with the exception of local churches, particularly sensitive noise receptors (e.g. schools or hospitals) are not located adjacent to the proposed construction work; however, numerous areas of frequent exterior human use have been identified along the project corridor. The following have been identified as potential noise receptors within the immediate project study area:

- ♦ Residences on Riverside Drive, Buffalo Avenue and the Parkway
- ♦ Churches
- ♦ Green spaces
- ♦ Scenic overlooks
- ♦ Walkways and bike paths
- ♦ Picnic areas, and
- ♦ Historic features.

It is anticipated that the proposed build alternatives may have an audible affect on these areas of exterior human use within the project study area as indicated below; however; no significant adverse effect is anticipated from any of the project alternatives. In general, with respect to the green space and park use-

type noise, receptors could not be assessed since the landscaping, trails, and park use along the parkway are expected to be reconfigured as part of the chosen alternative. However, it can be stated that the reduction in travel speed resulting from the construction of a low speed Riverway would have a positive effect on noise, and will generally not increase noise levels within the State Park. It is likely that noise levels could be reduced as a result of providing new pavement and by controlling speeds.

Null Alternative – This alternative would maintain the State Park roadway in its current configuration. Future noise impacts, if any, would likely be related to the normal growth rate of traffic.

Build Alternative 2 – This alternative would remove the Robert Moses Parkway within Niagara Falls State Park and construct a low speed roadway on about the same alignment as the Robert Moses Parkway. This alternative would not generally move the alignment of the roadway closer to noise receptors. The design also incorporates new smoother pavement, traffic calming measures and a lower posted speed limit which would tend to reduce the noise produced by passing vehicles. These factors would result in a negligible change in noise levels.

Build Alternative 3 – This alternative moves the roadway alignment closer to the residences along Riverside Drive. However, similar to Alternative 2, this design also incorporates new smoother pavement, traffic calming measures and a lower posted speed limit which would tend to reduce the noise produced by passing vehicles. The combination of these factors would tend to cancel each other out, resulting in a negligible change in noise levels.

4.4.17 Asbestos

An Asbestos Screening Assessment was performed in 2010 by a certified asbestos inspector to determine whether asbestos-containing materials (ACM) would be encountered during construction. The assessment was performed in accordance with New York State Industrial Code Rule 56 (ICR 56) and the December 2002 New York State Department of Transportation (NYSDOT) Environmental Analysis Bureau Environmental Procedures Manual, Volume II, Chapter 1.3 - Asbestos Management Project Environmental Guidelines (April 2008).

The assessment consists of a review of record plans, discussions and correspondence with the utility companies located within the project corridor, and a site walkover to inspect structures that would be disturbed during the proposed construction. The affected structures in the subject corridor most likely to contain ACM are the bridges and roadway, particularly the overpass structures at the John B. Daly Boulevard interchange. Asphaltic type joint fillers in the concrete pavement was also evaluated.

This assessment has not identified any known or suspect ACM in the project corridor. No extant materials associated with the existing RMP highway or overpass bridge have been identified as known or suspect asbestos-containing materials. No buildings or structures, other than the historic chimney, have been investigated because they will not be impacted by this project.

As part of the screening, utility owners were contacted regarding asbestos associated with their facilities. Not all of them responded to this request for information. If additional utility lines with suspect ACM are identified during final design, it is recommended that representative samples be collected and analyzed for asbestos by the utility owner(s). If results are positive, and the utility must be disturbed, then appropriate specifications would be incorporated into the contract documents.

The Asbestos Assessment is included in **Appendix M** of this report.

4.4.18 Contaminated and Hazardous Materials

A preliminary screening investigation for the Hazardous Waste/Contaminated Materials Assessment of the subject property was performed to determine the likelihood of encountering contamination during excavations in the Robert Moses Parkway project study area. The screening efforts identified nine sites of potential environmental concern to the proposed project, as well as an over-arching concern due to a large area of fill from the original RMP construction. The Hazardous Waste/Contaminated Materials Assessment is included in **Appendix L** of this report.

Sites of Environmental Concern

The findings for each identified site of potential environmental concern are presented below, followed by conclusions of the screening and a summary table of the nine sites in **Table 4-3**.

Site A: Niagara Falls Water Treatment Plant – 1111-1501 Buffalo Ave - This property is located on the south side of Buffalo Avenue, east of John B. Daly Boulevard. The present use of this property as a wastewater treatment plant for more than 30 years and the past use as a paper company for more than 65 years indicates the potential for encountering soil contamination from solvents, chemical and petroleum products and the potential for abandoned USTs.

Site B: Moore Business Forms – 900 - 1001 Buffalo Ave - This property is located on the north and south side of Buffalo Avenue, east of John B. Daly Boulevard. The past use of this property as a business form manufacturer, storage area for the adjacent paper company, chocolate company, auto repair shop, and gas station with tanks indicates the potential to encounter chemicals and solvents associated with these historical manufacturing processes. A portion of this site is made land—formerly a cove in the Niagara River shoreline that was filled prior to the construction of the RMP. Most of the fill was placed at a time when waste disposal laws were not in place; therefore, if excavation is expected in this area, there is a potential to encounter historic contaminated fill from unknown sources. In addition, the site is located in an industrial area where industrial wastes were commonly disposed of as fill at the time this site was filled.

Site C: Niagara Falls State Park – John B. Daly Boulevard Exit - This property is located south of Buffalo Avenue between the intake canal and 4th Street. The past use of the property as the former Port Day Pond and hydraulic canal, both of which have since been filled indicates the potential for encountering soil contamination from the filling of the pond and hydraulic canal. Most of the fill was placed at a time when environmental laws were not in place; therefore, if excavation is expected in this area, there is a potential to encounter historic contaminated fill from unknown sources. In addition, the site is located in an industrial area where industrial wastes were commonly disposed of as fill at the time this canal was being filled. This area is shown in **Figure 4.3**.

Site D: Niagara Falls State Park – Bridge to Goat Island Area - This property is located in the present Niagara Falls State Park along the river in the area of the walking and automobile bridges to Goat Island. The past use of the property as a woolen factory, flour mill, saw mill, cabinet shop, hat factory, carriage shop, blacksmith shop and chair factory indicates the potential for soil contamination from petroleum, chemicals, and solvents to exist on site.



Project Location



Figure 4.3 - Sites of Potential Environmental Concern Due to Past Land Use

Robert Moses Parkway South Segment/Riverway
City of Niagara Falls
Niagara County, New York

Not to Scale

April 2010



Watts Architecture &
Engineering, P.C.
95 Perry Street
Buffalo, New York

Site E: Red Coach Inn & Former Turtle – Main St - This property is located adjacent to the project limits on the east side of Main Street, north of Buffalo Avenue. The past use of this property as a garage and/or an auto repair shop with underground storage tanks for more than 30 years indicates the potential for encountering soil contamination from petroleum products and the potential for abandoned USTs in the existing ROW.

Site F: Comfort Inn – 1 Prospect St - This property is located adjacent to the project limits on the east side of Prospect Street, south of Old Falls Street. The past use of this property as an auto repair shop indicates the potential for encountering soil contamination from petroleum products and the potential for abandoned USTs in the existing ROW.

Site G: Niagara Falls State Park – Parking Lot #1 Area - This property is located beyond the project limits on the west side of Prospect Avenue, between Niagara Street and Old Falls Street. The past use of the property for a bus garage, bus repair shop, auto repair shop, and gas stations indicates the potential for soil contamination from petroleum, chemicals, and solvents to exist on site. In addition, there is a potential for abandoned USTs to be present on the property.

Site H: Niagara Falls Welcome Center – 360 Rainbow Blvd - This property is located beyond the project limits on the southeast corner of Rainbow Boulevard and Niagara Street. The past use of the property as a dry cleaner, a laundry and corporate headquarters for a chemical manufacturer, as well as the past presence of tanks on the property indicate the potential for soil contamination from petroleum, chemicals, and solvents to exist on site. In addition, there is a potential for abandoned USTs to be present on the property.

Site I: Rainbow Bridge Plaza - This property is located beyond the project limits north of Niagara Street at Prospect Street. The past use of the property as a manufactured gas plant, silverware manufacturer, paper mill, flour mill, aluminum manufacturer, and power plant, as well as the past presence of large gas tanks on the property indicate the potential for soil contamination from petroleum, chemicals, and solvents to exist on or adjacent to the site. In addition, there is a potential for abandoned USTs to be present on the property.

Conclusions

Sites C&D are expected to be directly impacted by project construction activities. In these areas, it is recommended that additional testing of soils and groundwater be advanced during detailed design as part of the geotechnical evaluation.

Site F is located immediately adjacent to the east project limit and a potential for encountering abandoned USTs has been identified in adjacent areas. However, proposed work in this area is limited to the existing road bed, so this potential is low. Therefore, notes will be added to the plans indicating the potential to encounter petroleum contamination and abandoned UST, but no further testing is proposed for detailed design.

Sites A, B and E are located adjacent to, but not within, proposed limits of excavation. It is recommended that any geotechnical samples obtained for design also be tested for contaminants associated with these sites.

Sites G, H and I are outside the project limits. No testing is recommended as part of this project.

Urban/industrial fill is likely present throughout the corridor. Historic research has confirmed that significant amounts of fill have been placed at Sites A, B and C (former canals, former waters of the Niagara River, and RMP road base). This fill was placed at a time when environmental laws were not in place; therefore, there is potential to encounter historic contaminated fill from unknown sources at these sites. If construction is anticipated in the area of these sites, we recommend that soil boring inspections (and laboratory analysis for general industrial compounds, if warranted) be conducted in the area of each involved site, to determine whether contaminated soil or groundwater is present within the existing ROW.

**Table 4.3
Summary of Findings HWCMA Preliminary Screening**

Site	Property Name and Address	Environmental Concerns	
		Known	Potential
A	Niagara Falls Water Treatment Plant – 1111-1501 Buffalo Ave.	USTs/ASTS, Former Manufacturing Facility	Abandoned USTs, Petroleum/solvent contamination
B	Former Moore Business Forms – 900-1001 Buffalo Ave.	Former Gas Station, Former Auto Repair Shop, Former Manufacturing Facility, USTs,	Abandoned USTs, Petroleum/solvent contamination
C	Niagara Falls State Park – John B. Daly Boulevard Exit	Former Hydraulic Canal (filled)	Contaminated Fill
D	Niagara Falls State Park – Bridge to Goat Island Area	Former Manufacturing Facilities	Abandoned USTs, Petroleum/solvent contamination
E	Red Coach Inn & Former Turtle–Main St.	Former Gas Station, Former Auto Repair Shop, USTs,	Abandoned USTs, Petroleum/solvent contamination
F	Comfort Inn – 1 Prospect St.	Former Auto Repair Shop	Abandoned USTs, Petroleum Contamination
G	Niagara Falls State Park – Parking Lot #1 Area	Former Gas Stations, Former Bus Garage and Repair Shop	Abandoned USTs, Petroleum Contamination
H	Niagara Falls Welcome Center – 360 Rainbow Blvd.	Former Dry Cleaner and Laundry, UST	Abandoned USTs, Petroleum/solvent contamination
I	Rainbow Bridge Plaza	Former Manufacturing Facility, Former Manufactured Gas Plant	Abandoned USTs, Petroleum/solvent contamination

Recommendations for Additional Testing

A Detailed Site Investigation (DSI) is recommended for sites C and D under either build alternative. The investigation activities recommended are a geophysical survey, a soil gas survey, soil boring inspections, and laboratory analysis if warranted, in the area of each affected site to determine whether excavated soil or groundwater is contaminated with petroleum or hazardous substances. It is recommended that this effort be coordinated with the project's geotechnical investigation.

If the results of the DSI indicate that construction will involve the excavation of large areas of contamination, a Soil Management Plan may be necessary.

Impacts

Null Alternative – No hazardous or contaminated materials would be identified or remediated.

Both Alternatives 2 and 3 would remove the John B. Daly Boulevard overpass bridges and the existing RMP road bed, resulting in a similar amount of excess fill. The intersection options (new overpass, roundabout, or modified interchange) result in differing amounts of excess material. Under both Alternatives 2 and 3, no excavation is proposed north of Old Falls Street. Hazardous or contaminated materials to be disturbed would be identified and remediated under either build alternative.

4.5 Construction Effects

All build alternatives under consideration would have a short term construction impact on adjacent residents and State Park visitors. Attempts would be made to minimize impacts to park visitors and residents during construction. Maintenance of pedestrian and bicycle traffic would be accommodated during construction.

Vehicular access to Prospect Point and Goat Island will be maintained. Access for State Park Police will be maintained at all times. Access will be maintained to the State Parks Police boathouse. During design, State Parks police will be consulted to ensure that the construction activity will not interfere with their patrol activities.

All alternatives would involve traditional construction methods and materials. The consequences of construction are therefore well known and would be mitigated using conventional methods. Impacts, such as dust and noise would be minimized, and Federal, State and local regulations would be adhered to. Temporary soil erosion and water pollution prevention measures, such as silt fences, hay bales and sedimentation basins, would protect water quality during construction. All disturbed areas would immediately be re-vegetated to control erosion. Proper wetting of the construction area would prevent excessive airborne dust. Noise levels would temporarily increase during construction, but construction restrictions as to hours of activity would be specified in the Contract Documents. Noise from heavy construction equipment would be minimized to the maximum extent practical through the requirement for use of mufflers.

4.6 Indirect (Secondary) Effects

Indirect or Secondary impacts are defined by the Council of Environmental Quality (CEQ) regulations in 40 CFR 1908.8 as "effects which are caused by the action and are later in time or further removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced 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." These may include both beneficial and detrimental effects. Given the scope of this project, there are no identified indirect or secondary impacts expected on this project.

Improved State Park facilities may foster commercial development to provide additional services such as restaurants, museum and tourism attractions, and other public facilities. The secondary impacts of these commercial activities would be expected to occur within the developed portion of the City of Niagara Falls. Therefore, effects on the environment of such future activities, including water pollution, the loss of natural habitat and endangering native species, could be expected to be minimal. Future activities could improve vacant or brownfield sites, and could therefore be positive in nature. Generally, this project's impact on development is expected to be limited.

The beneficial impacts of the project are expected to be significant, and would include improved parkland, improved pedestrian and bicyclist facilities, improved motor vehicle access, improved water quality due to drainage improvements, improved areas for habitat, improved landscape, aesthetics, and improved waterfront access.

4.7 Cumulative Effects

The project site has a long history of human intervention characterized by cycles of development and restoration. Prior to European settlement, the Niagara River was essentially unaltered by human activity. According to The Niagara Reservation Archaeological and Historical Resource Survey, "By the late 1820's tourists were complaining that the banks of the Niagara were '...rendered less attractive by the erection of hotels, paper manufactories, saw mills, and numerous other raw, staring, wooden edifices'"(Scott and Scott, 1983). The shoreline of the Niagara had been altered to create various raceways and canals to provide hydropower to various industries in the area as part of this development.

The first cycle of restoration began in the late 1800's when a citizen's movement began to advocate for creation of a park along the shores of Niagara Falls. On July 15, 1885 the Niagara Reservation was established by the State of New York, beginning a period of restoration to the land and environment around Niagara Falls. The Board of Commissioners of the State Reservation of Niagara hired Frederick Law Olmsted and Calvert Vaux to develop a plan for the restoration, coupled with "the provision of necessary conditions for making the enjoyment of the natural scenery available" (The General Plan for the Improvement of the Niagara Reservation, Olmsted and Vaux, 1887). This plan, while never fully implemented, served as the guiding document for the management of the Reservation through the 1920's.

In the 1950's the shoreline of the Niagara River and the Niagara Reservation was again altered as part of the development of the Niagara Hydropower Project construction. Spoils from the power project were placed on the riverbank and the Robert Moses Parkway was constructed on this "made land" and extended through the Niagara Reservation.

A second wave of restoration began in 1966 with the designation of the Niagara Reservation as a National Historic Landmark. This was followed by listing the Reservation on the National and State National Registers of Historic Places. The National Register documentation for Niagara Falls State Park states that the Robert Moses Parkway does not contribute to the historic significance of the park. The direction for this second wave of restoration was defined in a Master Plan and Final Environmental Impact Statement completed in 1982. The Robert Moses Parkway South Segment "Riverway" project implements actions identified in the Master Plan and the project is therefore part of this cycle of restoration. Since the project site is located within a National Historic Landmark State Park, reasonably foreseeable projects would be limited to park-related maintenance, restoration, and operational improvements. The adjacent properties are already developed and are served by existing city infrastructure. Reasonably foreseeable projects in adjoining properties would be restricted by zoning to those uses compatible with the State Park and adjacent residential areas. For these reasons, the incremental impact of the Robert Moses Parkway South Segment "Riverway" project, when added to other past, present, and reasonably foreseeable future actions is expected to be restorative.

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