

CHAPTER 3



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3.0 AFFECTED ENVIRONMENT

The description of the affected environment is intended to document the existing conditions of the project site and adjacent areas that could potentially be affected by the proposed alternatives. This section provides a technical baseline for the subsequent evaluation of impacts documented in Chapter 4.

3.1 SOCIO-ECONOMIC CONDITIONS

3.1.1 Land Use and Property Ownership

Land Use

The project site is located along the Georgetown waterfront, less than ¼ mile west of Key Bridge, in Northwest Washington, D.C. The land parcel (Tract 102-114) is approximately 1.09 acres in size, 440 feet in length, and has a variable depth between 94 and 127 feet. The parcel is located within the legislative boundary of the Chesapeake and Ohio Canal National Historical Park (C&O Canal NHP) under the administration of the National Park Service (NPS). The Park includes the historic C&O Canal prism and towpath that run roughly parallel to the Potomac River for 184.5 miles from Washington, D.C. to Cumberland, Maryland. Formerly a transportation route, the canal and towpath are now available for visitor use.

Historically, the project site was open water and had structures located on it with piles in the river. The site was filled when the Upper Potomac Interceptor Relief Sewer line was placed there in the 1960s. Immediately to the east of the project site is public land also administered by the NPS, where the Washington Canoe Club (WCC) is located. The WCC is a private canoe club that has existed since 1904. The WCC is the nearest developed facility to the proposed project site. The dead end of Water Street, the nearest point of vehicular access, is at the eastern edge of WCC. To the east of the WCC are the remains of the Alexandria Aqueduct, followed by the Potomac Boat Club (PBC), three townhouses and Jack's Boathouse. Continuing farther to the east, Water Street passes under Key Bridge, turning into K Street, and passes through the remainder of the Georgetown waterfront area. The Georgetown Waterfront Park begins at the historic Aqueduct and continues downstream to Rock Creek. The NPS proposes to construct the landscaped portion of the Park in two phases: Phase I from 34th Street, N.W. to Wisconsin Avenue would begin construction in 2006; Phase II, which is the Wisconsin Avenue Terminus and would complete the rebuilding of the park to 31st Street, would be constructed when funds become available.

Residential and commercial neighborhoods are located to the northeast of the project site, and Georgetown University (the University) campus is located due north. The Capital Crescent Trail (CCT), a paved pedestrian-bicycle trail opened for use in 1990, and beyond that, the C&O Canal and towpath, formerly used as a waterway transportation route, border the project site to the north. These lands are also part of the federal parkland and open space controlled by NPS that continues to the west of the project site. The C&O Canal NHP is used for cultural and natural resource interpretation, preservation of historic and natural resources and recreational purposes. Above these historic features to the north is Canal Road, a major arterial street that borders the southern edge of The University.

Property Ownership

NPS is the owner of the project site, Tract 102-114, and the University is the owner of an undisturbed land area upstream, Tract 102-109. The University's existing site, Tract 102-109, is located slightly more than one mile northwest of Key Bridge. The upstream parcel is located along the Potomac River shoreline and is bordered by the CCT. The University owns a 15-foot wide private access right-of-way over the CCT to reach their property. The original owner of the upstream parcel was CSX Railroad who conveyed the land, along with access rights, to the University in 1989.

Tract 102-109 is within the boundaries of the Potomac Palisades Park, established in 1927 as an effort to protect the shoreline of the Potomac River north of Georgetown. The Potomac Palisades Park is located within the C&O Canal NHP under the administration of the NPS. The effort to protect the riverfront area was furthered by the passage of the Chesapeake and Ohio Canal Development Act (Public Law 91-664), its purpose being "to preserve and interpret the historic and scenic features of the Chesapeake and Ohio Canal and to develop the potential of the canal for public recreation."¹ In an effort to protect the riverfront land and construct the CCT as approved on the Georgetown Waterfront Park Plan, NPS acquired railroad property from CSX Railroad within the shared boundary of the Potomac Palisades Park and the C&O Canal NHP. This 34-acre land area extends from the old Alexandria Aqueduct Bridge Abutment to the District of Columbia boundary line. Prior to this transaction, CSX Railroad conveyed Tract 102-109 as a gift to the University.

Tract 102-114, the proposed site for the boathouse, is approximately 470 feet north of the Alexandria Aqueduct Bridge Abutment. This land area is a result of landfill when the Upper Potomac Interceptor Relief sewer line was placed below grade in 1969, and when an access road was constructed on site in the 1970s in connection with the anticipated construction of the Three Sisters Bridge. The site is currently undeveloped although the very eastern portion of the property is being used by WCC for canoe and other outdoor storage uses (see Figure 1-2).

The District of Columbia Water and Sewer Authority (DC WASA) owns an easement over the portion of the project site where the Upper Potomac Interceptor Relief sewer line was buried. The easement was granted by Permit No. 6:850:73, dated June 28, 1967. The District of Columbia's easement allows for operation, maintenance, repair, replacement, inspection and removal of the Upper Potomac Interceptor Relief Sewer located below the surface of Tract 102-114. Due to surveying errors, this interceptor sewer line is not located within the easement, but is located 72 feet south of the existing easement at the site's eastern boundary and 40 feet south of the existing easement at the site's western boundary.

3.1.2 Visitor Experience

The 19,586 acres C&O Canal NHP offers visitors opportunities to enjoy the park's cultural, natural and recreational resources. In the vicinity of the project site, the predominant experiences offered in the park include: hiking, biking and walking along the towpath and CCT;

¹ Environmental Assessment, Proposed Exchange of Properties between the NPS and Georgetown University within the District of Columbia and within the Boundary of Potomac Palisades Park within the Chesapeake and Ohio Canal National Historical Park, 1995.

canoeing or riding along the canal on a NPS tour boat; and access to the Potomac River for canoes and kayaks from the WCC (for WCC members and guests).

Visitor experience along the towpath varies – in Georgetown, visitors are offered an opportunity to walk, bike or ride in a boat along the canal in an urban environment; northwest of Georgetown to Cumberland, visitors experience the park in an increasingly natural setting, including areas of river habitat, upland piedmont forests and other habitat supporting state listed plants and plant communities. While the Potomac River runs parallel to the canal, for most of the length of the canal, and especially in the vicinity of the project site, physical access to the river from the towpath is limited due to the canal's steep embankment.

The CCT offers visitors an opportunity to walk or bike for a three mile stretch in a natural, vegetated environment along the Potomac River. Visitors use the trail both as a commuter route, and for recreation. Other than hiking and biking, visitors are also offered an opportunity to take part in nature walking experiences where they access natural resources along the CCT, as well as fishing activities.

In the vicinity of the project site, within the C&O Canal NHP, opportunities are available to access the Potomac River for canoeing or kayaking at the WCC. This access is limited to members of the WCC and school groups or visitors enrolled in canoe or kayak programs sponsored by the club.

3.1.3 Planning Controls and Policies

Non-motorized Boating in the Potomac and Anacostia Rivers – Washington, D.C.

Beginning in 1985, NPS conducted a series of studies to assess the demand for rowing facilities along the Georgetown waterfront. A study released in 1987 assessed the increasing demand and overall need for new boathouses along the Potomac and Anacostia Rivers, as well as appropriate locations for such facilities. In its later 1989 report, NPS noted that the demand for rowing nationwide had doubled and increased by 60% in the Washington metropolitan area over the past three years. They saw this as an opportunity to “enhance the boathouse row along the Georgetown waterfront (a historical use appropriate for the waterfront’s shoreline park values).”² NPS determined that two or three additional boathouses were needed as a result of the increased demand for rowing facilities.

The studies compared nine possible boathouse locations based on a “site of one-half acre (that) was considered minimal to accommodate a boathouse that would match the scale of the existing boathouses, with floor space ranging from 4,000 square feet to about 20,000 square feet.” One of the locations examined was west of the WCC and encompassed approximately one-half acre.³

In 1999 and 2000, a Georgetown Supplemental Report was prepared which reaffirmed the findings of the prior Non-Motorized Boating Study.⁴ This report gave closer evaluation to four sites, including the proposed Georgetown University site, and eliminated the historic icehouse

² Nonmotorized Boating in the Potomac and Anacostia Rivers, Washington D.C., NPS, 1989.

³ Ibid.

⁴ Draft Supplemental Report/Non-Motorized Boating on the Potomac River in Georgetown, NPS, 2000.

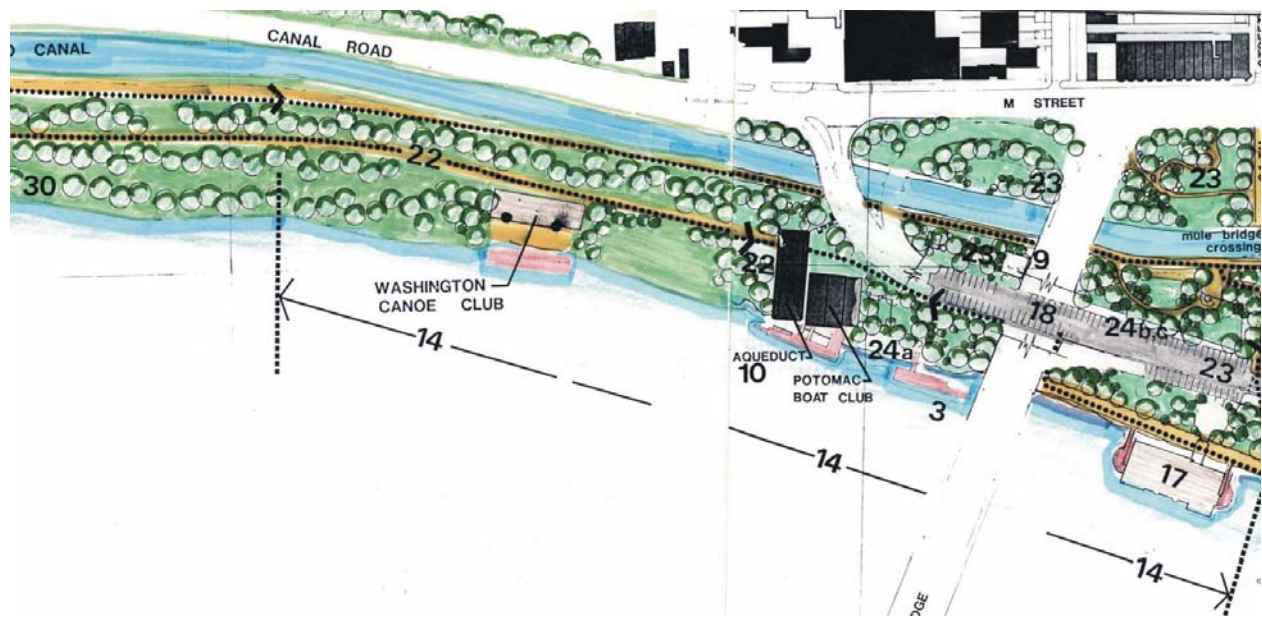
site located between 34th Street and Key Bridge north of K Street because of the conflicts that would result from carrying 60-foot shells across the heavily used vehicular street and bicycle route along K Street. It still left open the possibility that the site between 34th Street and Key Bridge on the south side of K Street, where a proposed floating restaurant was pending at that time, could be used for a boathouse in the event that the restaurant was not approved.

With regard to the proposed Georgetown University site, the 2000 Supplemental Report concluded that a one-acre site with a 15,000 square foot boathouse remained viable and referenced the ongoing feasibility studies by the University. The study also concluded that no additional facilities beyond those mentioned above and the proposed Arlington County Boathouse across the river should be considered in Georgetown, and that any additional demand should be met by new facilities on the Anacostia River.

Georgetown Waterfront Park Plan

The *Georgetown Waterfront Park Plan* seeks to develop the Georgetown waterfront as a park, transforming it from its current state of mostly paved surfaces to a public waterfront park. The Plan is intended to beautify the area and make the Georgetown waterfront a place for public enjoyment (see Appendix for a copy of the Plan).

In response to the identified need for additional non-motorized boathouses, the Plan identified a boathouse zone for the development of non-motorized boathouses. The area includes the existing boathouses, WCC, and PBC, and, according to the Plan, extends approximately 1,100 feet farther west from Key Bridge along the Potomac. As illustrated in the *Georgetown Waterfront Park Plan*, the proposed Georgetown University boathouse site is at the western edge of the designated boathouse area (Element 14 on Figure 3-1). According to the Plan (Element 30), the land area farther to the west is slated to remain undeveloped in order to preserve the natural appearance of the Palisades.



Source: NPS, 1987.

Figure 3-1: Georgetown Waterfront Park Plan, Designated Boathouse Zone

Approval of the *Georgetown Waterfront Park Plan* was given in 1987 by NCPC, the Commission of Fine Arts (CFA), the District of Columbia Historic Preservation Review Board, the Advisory Council on Historic Preservation, and the Chesapeake and Ohio Canal National Historical Park Advisory Commission. The original Plan includes a rendering of the components to be included in the Park. Since then, a detailed design has been approved and construction for Phase I (34th Street to Wisconsin Avenue) is expected to start in 2006.

Finding of No Significant Impact and Environmental Assessment for the Proposed Exchange of Properties between the NPS and Georgetown University within the District of Columbia and within the Boundary of Potomac Palisades Park within the C&O Canal NHP

The *Environmental Assessment for the Proposed Exchange of Properties* (Land Exchange EA) between the NPS and Georgetown University and the *Finding of No Significant Impact* resulting from the EA were conducted in 1995. This Land Exchange EA discussed the exchange of Tract 102-109 (owned by the University) with Tract 102-114 (owned by the NPS).

The land exchange has been approved by the National Capital Planning Commission (NCPC). During the approval process, it was determined that the development of the boathouse on Tract 102-114 was consistent with the applicable policies outlined in the Federal Elements of the *Comprehensive Plan for the National Capital* and “determined that it would not negatively affect the Potomac River Waterfront, the Georgetown Waterfront Park or the Chesapeake and Ohio Canal National Historical Park.”⁵

A Preliminary Exchange Agreement signed in 1998 by NPS and the University proposed to expand the boathouse zone boundary identified in previous NPS documentation. The Exchange Agreement states that “the boathouse may be situated more than 1,155 feet west of Key Bridge so long as no portion of the boathouse structure(s) is located beyond a point 1,250 feet west of Key Bridge. In the event the University proposes siting the boathouse or any portion thereof within the space between 1,155 feet to 1,250 feet west of Key Bridge, NPS will seek and obtain the concurrence of NCPC and the CFA prior to issuing a final determination as to an approved site for the boathouse.”⁶

Comprehensive Plan for the National Capital

The *Comprehensive Plan for the National Capital* establishes the principles, goals, and planning policies for the growth and development of the National Capital over the next 20 years. The Plan consists of two parts: the Federal Elements and the District of Columbia Elements. The Federal Elements address seven areas of focus related to federal properties and interests in the region: Federal Workplace; Foreign Missions and International Organizations; Transportation; Parks and Open Space; Federal Environment; Preservation and Historic Features; and Visitors. The Elements guide the *Comprehensive Plan for the National Capital* and establish new goals and priorities for future federal development.

The Federal Elements of the plan constitute the road map for the NCPC’s land use planning and development decision-making processes in the National Capital Region. The overarching goals

⁵ Environmental Assessment, Proposed Exchange of Properties between the NPS and Georgetown University, 1995

⁶ Preliminary Agreement to Exchange Real Property. Signatories – Georgetown University Vice President and Treasurer and Regional Director, National Capital Region, NPS, October 1998.

of the Parks and Open Space Element are to “conserve and enhance the park and open space system of the National Capital Region, ensure that adequate resources are available for future generations, and promote an appropriate balance between open space resources and the built environment.”⁷

The policies of the Parks and Open Space Element are oriented towards encouraging boating, fishing, and other water-oriented facilities along the local rivers. The Parks and Open Space Element identifies the Georgetown Waterfront, in particular, as an underutilized park area due to the lack of accessibility and poor conditions of the park. Also specific to this area, the Element states that “preservation of the Chesapeake and Ohio Canal Historical Park’s historic and natural resources, including its biodiversity and endangered species should remain the primary focus of the park. However, recreational uses such as bicycling, jogging, hiking and boating should be permitted, where consistent with this focus. Adjacent development should be low density, except in Georgetown.”⁸ Policies within this Element that are related to waterfront development and conservation include:

- “Retain the palisades and gorges of rivers and stream in their natural state;
- Manage all lands along the Anacostia and Potomac Rivers in a manner that encourages the enjoyment and recreational use of water resources, while protecting the scenic and ecological values of the waterways;
- Retain both privately and publicly owned land along waterways in a natural state, except in areas that are determined appropriate for development; and
- Encourage swimming, boating and fishing facilities, as well as water-oriented tourist activities, on the Anacostia and Potomac Rivers.”⁹

The District Elements are developed and adopted by the District of Columbia. The eleven Elements include General Provisions; Economic Development; Housing; Environmental Protection; Transportation; Public Facilities; Urban Design; Preservation and Historic Preservation; Downtown Plan; Human Services; and Land Use.

The Land Use Elements seeks to:

“Develop a waterfront and shoreline plan, in cooperation with NCPC, which capitalizes on unrealized opportunities for creating exciting and imaginative water focused recreation, housing, commercial, and cultural development along the Anacostia and Potomac Rivers and which ensures that new development enhances the physical and environmental quality of the rivers and adjoining areas.”¹⁰

The District Plan is also organized by Ward. The proposed project area is located in Ward 2. Ward 2’s waterfront development objectives state that there “is a considerable unmet demand for non-motorized boating facilities along (the Georgetown) waterfront. Additional boathouses for non-motorized vehicles are needed west of the Washington Harbour complex; these facilities shall be sited to also allow for public fishing.”¹¹

⁷ National Capital Planning Commission. Comprehensive Plan for the National Capital: Federal Elements, 2004.

⁸ National Capital Planning Commission. Comprehensive Plan for the National Capital: Federal Elements, 2004.

⁹ National Capital Planning Commission. Comprehensive Plan for the National Capital: Federal Elements, 2004.

¹⁰ District of Columbia Comprehensive Plan, Chapter 11: Land Use Element, 1984.

¹¹ District of Columbia Comprehensive Plan, 1984.

The actions specified in support of this objective include improvements to the Georgetown waterfront west of Washington Harbor for the purpose of meeting this “increasing demand for non-motorized boating and as a component of a program to increase public access to the river for recreation purposes.”¹²

Washington, D.C. Zoning

The project site is currently under Federal ownership and not subject to Washington, D.C. zoning controls. The University and NPS have received approval to designate the parcel within the W-O zone (Waterfront Open Space) once the land exchange agreement is in place and the University gains ownership of the property.

The original zoning change application, submitted on August 6, 2002 by the University and NPS as co-applicants, requested Tract 102-114 to be zoned to W-1 (Waterfront Zone- Low Density). In conjunction with the zoning application, a text amendment was requested. The purpose of the amendment was to permit the development of a boathouse under W-1, specifically to provide a definition of non-motorized boathouse uses in the zoning regulations. On October 18, 2002, the D.C. Office of Planning recommended that the D.C. Zoning Commission consider changing the property to a new zoning category: W-O. The proposed new zoning category was intended to account for less intense uses than originally planned for W-1 zoning and would be the most restrictive waterfront zone district in Washington, D.C. As a result, the text amendment was withdrawn and the zoning application was changed to request W-O zoning.

The W-O zoning district is a new zoning category intended:

“to provide a low density alternative to previously existing waterfront zones; permit most open space and recreational uses as a matter-of-right;... permit by special exception other retail, cultural, and recreational uses for which direct access to the river is necessary, or that serve to activate the water surface; provide by special exception for the review of appropriateness of certain uses and developments to their sites and whether they are designed and sited to augment the natural environment and the waterfront experience; seek to minimize negative environmental, physical, and visual impacts of development along the river’s edge; and include regulations pertaining to the size and siting of structures.”¹³

The W-O zone district restricts industrial, manufacturing, and high density commercial and residential uses. Under the regulations, the district permits boathouses, marinas, yacht clubs and low density retail and cultural uses as special exception. Special exception permitted uses are subject to a maximum Floor Area Ratio (FAR) of 0.75 for marina, yacht club or boathouse, a maximum height of 40 feet, and a lot occupancy of 50% for recreational, marina, yacht club, or boathouse.¹⁴ There is a 12-foot side yard requirement and no front or rear yard requirement (see Table 3-1 for W-O zoning allowances specific to boathouse uses).

¹² District of Columbia Comprehensive Plan, 1984.

¹³ Zoning Commission for the District of Columbia, Notice of Final Rulemaking, Z.C. Order No. 02-42 (Waterfront Open Space Recreation Zone District).

¹⁴ The District measures building height from finished grade to the ceiling of the uppermost story.

Section 937.1 of the zoning regulations requires a building setback from the mean high water level of at least 100 feet. A smaller setback, between 20 feet and 100 feet, is allowable by special exception and a variance is required for a setback less than 20 feet from the mean high water level. Parking requirements for the W-O zone are one off-street parking space for every 2,000 square feet of gross building area, unless a special exception is granted.

Table 3-1: W-O Zoning Allowances Specific to Boathouse Uses

Maximum FAR	0.75
Maximum Height	40 feet
Maximum Lot Occupancy	50%
Minimum Side Yard	12 feet
Minimum Front/Rear Yard	None
Minimum Setback from mean high water level	100 feet

Source: Zoning Commission for the District of Columbia, Order No. 02-42 (note that the District measures building height from finished grade to the ceiling of the uppermost story).

Because a boathouse falls under special exception allowances in the W-O zone, the University requested zoning relief to allow for the land to be used as a boathouse. A special exception was granted by the D.C. Zoning Commission for the construction of a boathouse and for the elimination of W-O off street parking requirements. A variance was also requested to allow the structure to have a setback of less than 20 feet. The Zoning Commission approved the map amendment to the W-O zone, and the requested special exceptions and variance, on December 11, 2003.

In 2004, a lawsuit was filed in the District of Columbia Court of Appeals (No. 04-AA-463) appealing the Zoning Commission’s Order granting special exceptions and an area variance to allow for the construction of Georgetown University’s boathouse. In its decision on December 30, 2005, the District of Columbia Court of Appeals affirmed the Zoning Commission’s Order.

NHPA Section 106 Memorandum of Agreement

A Section 106 Memorandum of Agreement (MOA) was signed in 1997 by representatives from the NPS National Capital Region, the Chesapeake and Ohio Canal National Historical Park, the District of Columbia State Historic Preservation Office (DC SHPO), and the Advisory Council on Historic Preservation regarding the land exchange and approval process. (The University was not a party to the MOA.) The purpose of the MOA was to fulfill the requirements under Section 106 of the National Historic Preservation Act (NHPA). Stipulations included in the MOA require that specific design criteria be met, including that the facility’s footprint or aggregate footprints not exceed 15,000 square feet and the height not exceed 40 feet above grade (see Appendix for a copy of the MOA). If any changes are proposed, the MOA would need to be modified.

3.1.4 Community Facilities

There are several recreational resources in the vicinity of the proposed project site. The CCT is a publicly shared use trail, used by bikers, joggers, rollerbladers, and walkers. The CCT borders the site to the north, parallel to the river. The CCT was converted from the old abandoned railbed of the 11 mile Georgetown Branch of the Baltimore & Ohio Railroad and runs from Georgetown to Silver Spring, Maryland. The CCT serves as a 12-foot right of way, with ten feet of paved surface and two foot-wide shoulders.

The CCT provides the only direct access to the proposed project site. Currently, the only vehicles that access the site are for emergency and administrative services. The general waterfront area is currently served by the Metropolitan Police Department's Second District, District Fire and Emergency Services Engine 5 Station and the United States Park Police (USPP).

Beginning in Georgetown and reaching Cumberland, Maryland, the C&O Canal Towpath is an approximately 185 mile long trail that runs parallel to the C&O Canal. The historic towpath is used by walkers, joggers, and bicyclists. The canal was used as a transportation route from 1828 through 1924, mainly carrying coal from western Maryland to the port in Georgetown. Many of the original features, such as locks and lockhouses, are still intact and illustrate the historical significance of the canal. The towpath runs along the southern bank of the canal, providing recreational, natural and cultural resource opportunities for park visitors.

Nearby recreational facilities include the Georgetown Recreation Center (34th Street & Volta Place Intersection, N.W.) and Rose Park Recreation Center (26th & O Street Intersection, N.W.). Private facilities for use by the University students and staff are also nearby on campus. Additional recreational facilities along this portion of the Potomac include other boathouses. The closest boathouse is the WCC, adjacent to the site. Slightly downriver from the WCC is the PBC, a private rowing club, followed by Jack's, a boat rental facility. Thompson Boat Center (TBC) is located farther downstream, on the downstream side of Key Bridge.

WCC is a historic private member club for the canoe and kayak community. It is a privately owned building on federal land that operates by special use permit. The facility is at full capacity, with its space for approximately 142 private canoes and kayaks, 13 club canoes, and three sailboats all in use. In addition to inside storage space, WCC has several outdoor wooden racks for boat storage, enclosed within an outdoor fenced area.

PBC is a historic 260 member private boat club. The club houses the Washington and Lee High School crew shells and approximately 132 member-owned shells. These shells are stored indoors within the PBC structure and outdoors below the Aqueduct Bridge remains. PBC members use Washington and Lee's boats in return for allowing them to store their shells in the facility.

There are also two boating facilities along the Potomac that are available for public boat rentals. The boathouse at Fletcher's Cove is located two miles upstream from Key Bridge, and one mile downriver from Chain Bridge, at the intersection of Reservoir Road and Canal Road. The rental facility is operated as a NPS concession, located in the C&O Canal NHP. A government concessionaire, GSI, runs this boathouse. Jack's is also a public boating facility located on the Potomac. The facility is located at the end of K Street, beneath Key Bridge. Canoes and kayaks

are stored outdoors and are available for rent from Jack's. Both facilities provide recreational boats to the general public.

TBC is a concessionaire-operated boating facility on NPS property, also run by GSI. The facility is open to the public, offering rental boats and bicycles. A number of high school and university teams store their boats at Thompson's, both inside and outside the facility. Storage capacity at this facility can accommodate 146 shells, 57 crew boats and launches, 33 windsurfers, 25 canoes, and 14 rowboats and sailboats, as well as 50 rental boats. There is currently a waiting list (over 100) of private individuals and local schools interested in using space at Thompson's.

All boating facilities along the Georgetown waterfront are governed by the Potomac River Safety Committee's guidelines for safety on the river. Each facility has a representative on the committee including: Georgetown University Crew, Georgetown Local Organizing Committee (GLOC), George Washington University Crew, PBC, TBC, and WCC.

There is also one boathouse on the Virginia side of the River. The Alexandria Schools Rowing Facility, located at the end of Madison Street in Old Town Alexandria, was opened in 1986. The Alexandria Boathouse has a total of five bays with three bays holding racks of doubles through eights, flyspace for singles, and a fleet of launches. The upstairs serves as a loft for meetings, a locker room, and a workout room. The boathouse primarily serves the T.C. Williams High School crew.

George Washington University (GWU) is planning to construct their own boathouse in the future. Their proposed location at a site south of the Key Bridge, is also in the boathouse zone of the Georgetown Waterfront Park. GWU currently uses TBC facilities. The project is still in the planning stages. Also, NPS plans to construct a boathouse at the Jack's site. The three existing townhouses adjacent to Jack's would be acquired and demolished. A new boathouse for singles, doubles, canoes and kayaks would be constructed between Key Bridge and PBC. This would free up space at TBC for fours and eights for scholastic and club rowing. There is no set time-frame for constructing the boathouse at Jack's.

3.2 CULTURAL RESOURCES

3.2.1 Historic Resources

In order to understand the historical significance of the resources around the project site, the history of the development of Georgetown, as well as of boating activities in the area, is provided in this section of the EA.

Background and Historical Significance

Georgetown

In the early half of the eighteenth century, Georgetown's ideal location along the Potomac River made the area an important port in the tobacco trade. Under the guidance of the Maryland Assembly, the Georgetown area began to expand into a formal settlement with the construction of a warehouse for tobacco in 1744 and a tavern in 1747. By 1751, a formal request for establishment of a town was accepted by the Maryland Assembly. Sixty acres of land were divided into 80 lots and the central road, presently known as Wisconsin Avenue, was designed and constructed. The town of Georgetown expanded very rapidly in the years following the American Revolution. The boundaries of the town were increased in 1769, 1783, and 1785. The waterfront of Georgetown continued to be developed and its importance as a port town increased as the nineteenth century approached.

Georgetown, an independent city for the first three-quarters of the nineteenth century, developed its own political, social, and economic amenities required by its residents. At the beginning of the century, M Street and Wisconsin Avenue were dominated by commercial structures and served as the core of the Georgetown community. Throughout the nineteenth century, M Street (also known as Bridge Street) and Wisconsin Avenue (also known as 32nd Street or High Street) continued to develop.

During the 1850s and 1860s, Georgetown was serviced by the Georgetown-Navy Yard line of the omnibus. The line started at Bridge and High Streets (M Street and Wisconsin Avenue) and ended at the Navy Yard at Pennsylvania Avenue and Eighth Street East. Washington, D.C. annexed the city of Georgetown in 1871. By 1895, the electric cable car line was extended further into Georgetown and a terminal was established at 36th and M Streets. This method of public transportation contributed to the continued growth of M Street as the commercial core of Georgetown and made the Georgetown community more accessible.

During the 1870s, the C&O Canal experienced great success carrying many necessary raw materials to the waterfront industries in Georgetown. The waterfront quickly became a manufacturing center for the District of Columbia and Georgetown, experiencing a rise in popularity and importance, and saw a building boom and numerous houses erected in Georgetown in the late nineteenth century. Georgetown University, located on the western edge of town, was a witness to the growth of Georgetown and a stable feature in the city's landscape.

By the end of the nineteenth century, the railroad had effectively replaced the canal as the major transportation source for commerce and trade. In 1924, the C&O Canal closed, following years

of decreased activity. Industrial businesses and warehouses located on streets near and along the waterfront left, resulting in the demolition of many buildings and structures, unless otherwise adapted. By the 1930s, Georgetown shifted from a highly industrial and commercial area to one more residential in character. Particularly among the upper middle class, the character of Georgetown and the close proximity to Washington drew many to the area that worked in government-related jobs in Washington.

History of the Chesapeake & Ohio Canal

In 1785, George Washington founded the Potomack Company to improve the navigation of the Potomac River. Washington sought to make the Potomac River navigable to the West and the Ohio River Valley by canals. Although the National Road reached Wheeling, Virginia by 1818, moving things by road was difficult and time consuming. A canal could move things faster, and was subsequently more profitable.

Some forty years later, the Erie Canal was completed in 1825. The Erie Canal did much in the way of spurring interest in a canal that would connect Washington and Ohio's Rivers, and ultimately, the Mississippi. Building on Washington's vision, the Chesapeake & Ohio Canal was viewed as a way for the east coast to tap into the Ohio River trade. Construction began on the C&O Canal in 1828, as chartered by the Chesapeake and Ohio Canal Company. During canal construction, many businesses were established along the length of the canal to produce the needed construction materials.

Gradually, the canal was opened in phases and eventually reached Cumberland in 1850. Cumberland, Maryland became the terminus of the canal, as construction was cut short on the remainder due to labor shortages, lack of materials, and lack of funds. The canal was still a profitable enterprise in the 1870s. Many "canal towns" such as Georgetown saw industrial and economic success as a result of the canal. The Georgetown waterfront in particular, rising in popularity and importance quickly became a manufacturing center for the District of Columbia and saw perhaps, its greatest building boom. Due to its location alongside the Potomac River, however, the C&O Canal was susceptible to flooding. Repeated flooding could close the canal for months, and sometimes, for whole seasons. Eventually, devastation from floods eventually cut short the end of the canal's operating era. Similarly, the canal could not compete with the speed and dependability of its rival, the Baltimore and Ohio Railroad. In 1910, the Georgetown Branch rail line of the Baltimore and Ohio Railroad was put into use. Exclusively used for freight, this branch of the railroad carried primarily coal and building materials to Chevy Chase, Bethesda, and Georgetown. The railroad had captured almost all of the canal's trade by 1924 when another devastating flood struck. This time, no repairs were made and the canal ceased commercial operations.

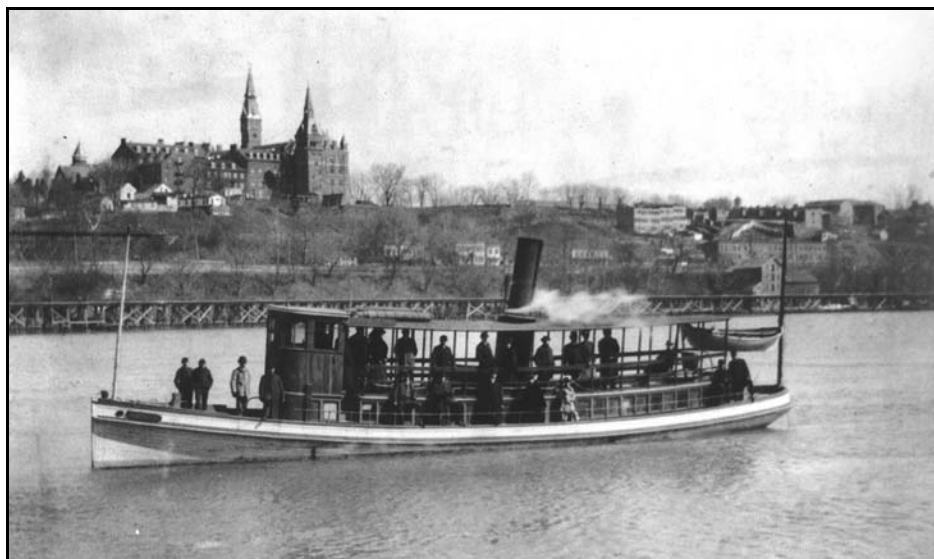
In 1938, NPS assumed ownership of the canal. In 1939, the Civilian Conservation Corps restored the first 22 miles of the C&O Canal as a national park. Although there were ideas of redeveloping the canal as a roadbed, it was ultimately decided that preservation was the best course for the canal, a cause largely spearheaded by Supreme Court Chief Justice William O. Douglas in the 1950s. In 1971, the 184.5-mile canal through the District of Columbia, Maryland, and West Virginia was designated the Chesapeake and Ohio Canal National Historical Park.

In 1990, following appropriations by Congress, NPS purchased a portion of the former Georgetown Branch of the Baltimore and Ohio Railroad in the District of Columbia. This 4.3 mile right-of-way from Georgetown to the Maryland boundary was developed as part of the 11-mile CCT, now a component of the C&O Canal NHP.

The Chesapeake and Ohio Canal operated from 1828-1924 and served as a major transportation route between western Maryland to the port of Georgetown in Washington, D.C. Hundreds of original structures, including locks, lockhouses, and aqueducts remain from the canal, serving as reminders of its role as a transportation system during the Canal Era. In addition, the canal's towpath provides a nearly level, continuous trail along the length of the canal. Every year, millions of D.C.-area residents and visitors hike or bike along the C&O Canal and enjoy the cultural, natural and recreational opportunities available.

Georgetown Waterfront

Georgetown was already established as an important port town towards the last quarter of the eighteenth century. Once considered the largest tobacco port in the United States, the development of Georgetown is largely attributed to its success as a port town. Merchants including millers and carpenters located their businesses and warehouses in close proximity to the waterfront to gain better access to the port. An area ripe with activity, the Georgetown waterfront was busy with the arrival and departure of ships of all sizes. In response to the overcrowding of the area, a public wharf was constructed in 1762.



Source: Library of Congress

Photograph 3-1: Potomac River waterfront west of the Aqueduct Bridge, including trestling for the Washington & Great Falls Electric Railway, circa 1900.

Gradually, as the goods shipped in and out, Georgetown evolved, and so too, did the appearance of the waterfront. Towards the end of the eighteenth century, wholesale grocery and fish markets prospered, which in turn, spawned the arrival of markets on streets bordering the waterfront. By the mid-nineteenth century, mills began to replace tobacco warehouses and wholesale grocery markets. The construction of the Alexandria Aqueduct Bridge (1833-1843) resulted in the linkage of the C&O Canal to the Alexandria Canal (on the Virginia side of the

Potomac River). This linkage provided a greater accessibility than ever before to far reaching markets. Georgetown and its waterfront experienced a surge in growth, as most of the buildings in Georgetown were erected at this time. Both the canal and the waterfront had a more industrial purpose than ever before, with saw mills, iron furnaces, and cotton factories being constructed and operated. As a result of the coal trade, elevated railways were constructed along the waterfront and used to transfer the coal from barges in the canal to the vessels moored along the riverside. A Sanborn Insurance Map from 1888 illustrates the presence of lumber yards, ice houses, flour mills, and various piles of coal, lumber, and related products (See Figure 3-2.).

Just as some businesses wanted to locate along the waterfront, others wanted to locate along the C&O Canal. Many businesses “tapped the canal water as a power source as well as using the waterway for shipping.”¹⁵

The Aqueduct Bridge eventually became inadequate. In 1861 the aqueduct was drained and the bed was converted for use as a bridge. In 1868, Congress authorized the erection of a highway bridge over the existing piers from the original Aqueduct Bridge. The configuration of and materials for the bridge trusses changed several times. The adjacent Key Bridge was eventually opened in 1924. In 1962, all but one of the piers from the original Aqueduct Bridge were removed.

By the start of the twentieth century, the role of the waterfront had again changed. For example, the Capital Traction Powerhouse was built along the waterfront on K Street. This building provided the power for the streetcars that serviced Washington in the late-nineteenth and early-twentieth century. Boathouses began to emerge on the waterfront in greater number, illustrating the popularity of the activity and the use of the river for recreational purposes.

The Whitehurst Freeway was built in 1948, to provide a more direct route from Maryland and the northwest portion to the downtown portion of Washington, DC. Towards the end of the twentieth century several studies of the waterfront were undertaken in an effort to devise a comprehensive plan for the area. As a result of these studies, the waterfront has gained historical importance. A survey of historic buildings along the waterfront was conducted in 1968, resulting in the listing and designated of many buildings and structures in the National Register of Historic Places and the Landmarks of the Nation’s Capital. Despite these designations, many important resources were lost, such as the stretch at the river’s edge, cleared between 31st Street and 35th Street, and the Capital Traction Company Powerhouse. The waterfront is now a highly sought-after location for residential and commercial development. A conglomerate of various uses that span centuries, the waterfront now has a piecemeal appearance reflecting its diversified history in Georgetown.

¹⁵ Chesapeake and Ohio Canal National Register Form.

Thus, characteristic elements of the building styles were confined to the façade that fronts on the water. Together, boathouses along a shore line create a “riverscape,” similar to townhouses in an urban setting.



Source: Library of Congress

Photograph 3-2: Boathouses along the West Bank of Schuylkill River.

Because boathouses were typically owned by organizations or clubs, the layout of space within the boathouse reflected social and community involvement. In addition to boating activities, clubs often sponsored events such as dances, dinners, and various other gatherings. To provide the space necessary for these events, boathouses were frequently designed with rooms for social or business functions, such as ballrooms and board rooms. The Columbia Boat House, for example, had a ballroom on its second floor, as did the WCC. Not just for boating, the PBC was also “the scene of high school dances in the 40’s, memorable beer busts, and faded and jaded romances.”¹⁷

Boathouses in Washington, D.C. Along the Georgetown Waterfront

The location of Washington, D.C. along the Potomac River made recreational boating a popular leisure time activity. The temperate climate of Washington, D.C. also made it a key location for professional boating because it allowed long training seasons and exemplary weather conditions. At the height of boating popularity, there were several boathouses along the Potomac River in Georgetown. These early-twentieth century boathouses and their associated clubs represent the role of athletic clubs and active sports in the District of Columbia’s recreational life in the early twentieth century.

¹⁷ Robert Sellers, “The Potomac Boat Club: Entwined with History of Georgetown,” the *Georgetownner*, July 23-August 5, 1982, p.9.

The 1888 map also shows that there were at least four boathouse-related structures present along the waterfront at this time: the Potomac Boating Club House and the Columbia Athletic Clubhouse at 32nd and Water Streets; and two, two-story buildings marked as “Boat Builders” (See Figure 3-2). In addition to the boathouses, there were many different uses present along the waterfront in Georgetown, including the Georgetown Branch rail line of the Baltimore & Ohio Railroad (See Photograph 3-3).



Source: Georgetown University Archives

Photograph 3-3: WCC and Georgetown Branch of the B & O Railroad, c.1910.

According to historic maps, in 1903 there were at least six boathouses along the Georgetown waterfront: a one-story building located at 34th and Water Streets; the Georgetown College (now Georgetown University) Boathouse at 32nd and Water Streets (the former Columbia Athletic Clubhouse) and an adjacent two-story boathouse; a two-story boathouse at 31st and Water Streets; and two, one-story boathouses located between the Aqueduct Bridge and 34th Street.

Boathouses are present on historic maps with less frequency beginning in 1913. A Baist map of the area shows the PBC, a parcel that is designated for use as a “Boat House” and shows the parcel where the present WCC is located. The WCC does not appear by name on a map until in 1937. From 1913 to 1937, only the PBC is mentioned by name on historic maps.

Existing boathouses along the Georgetown Waterfront in 2006 include the WCC, PBC, and TBC.



Source: Library of Congress

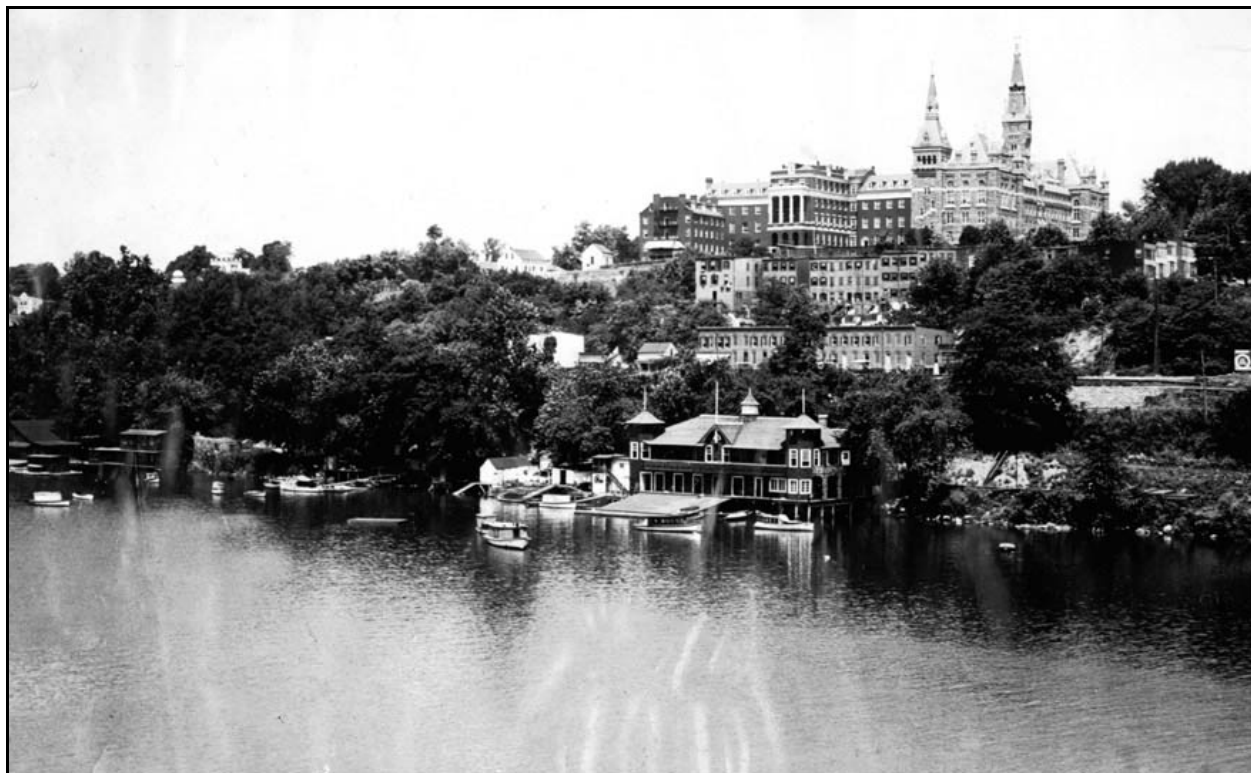
Photograph 3-4: Boathouses and clubs, west of Key Bridge in Georgetown, 1939.

Washington Canoe Club (WCC): The WCC was chartered in 1904 for “mutual improvement, the promotion of physical culture, and the art of canoeing” and incorporated activities typical of athletic and country clubs of the early-twentieth century.¹⁸ Built in four phases, the Shingle style building was constructed circa 1890. Later photographs depict the building as a “two-story building framed by octagonal towers” (see Photograph 3-5).¹⁹ The WCC was originally built on pilings, with the first floor of the building located 8-10 feet above the water line. Following ice floes in the 1950s, which pushed the building five feet downstream, the structure was lifted back up and returned to its original location. In the 1960s, the embayment under the WCC was filled with concrete. After the Aqueduct Bridge was demolished, masonry from the bridge was used as riprap along the shoreline. Because no riprap was placed under the WCC, the resulting embayment under the WCC became stagnant and needed to be in filled.²⁰

¹⁸ Washington Canoe Club National Register Nomination.

¹⁹ Ibid.

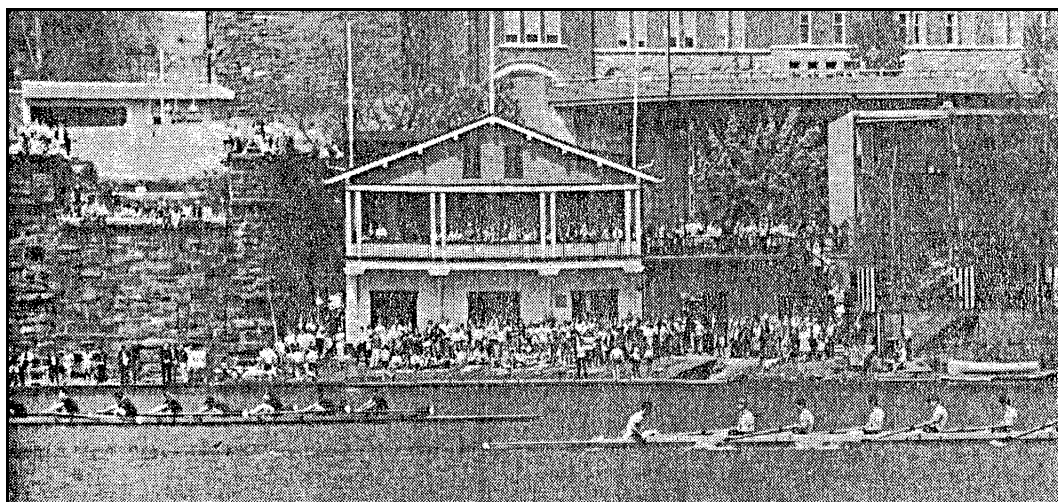
²⁰ Ibid



Source: WCC

Photograph 3-5: WCC and project site in circa 1930.

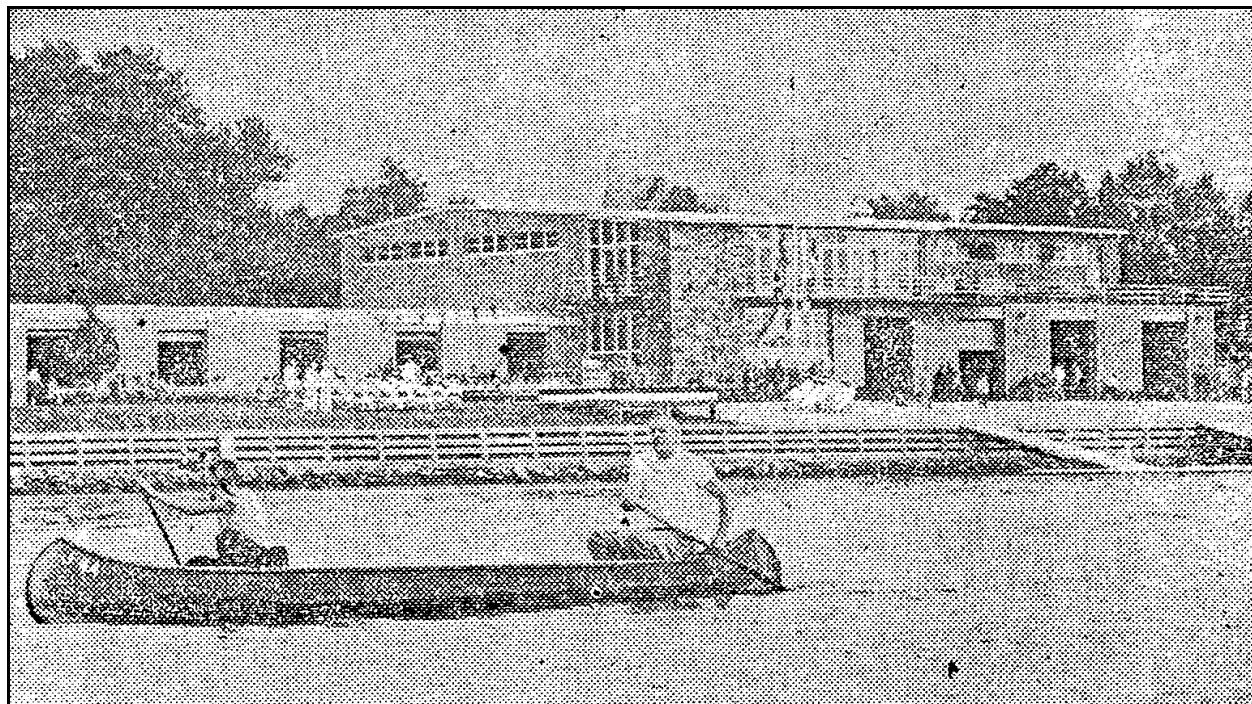
Potomac Boat Club (PBC): Founded as the Potomac Barge Club in 1859, the PBC was organized to represent Georgetown. The first boathouse was located at the 10th street canal bridge, followed by three successive boathouses at the foot of 31st street in Georgetown. Located to the west of the Aqueduct Bridge, the Potomac Boat Clubhouse, built in 1908 and designed by A.B. Mullett & Company, is now situated beneath the elevated Whitehurst Freeway.



Source: Washington Post

Photograph 3-6: PBC pictured in the Washington Post, 1967.

Thompson Boat Center (TBC): The TBC was built by the NPS in 1960 as a public boathouse facility. Representative of the modern era in which it was built, the building is functional in its design. Constructed of native stone, brick, and wood, the interior space is comprised of areas for boat storage, indoor and outdoor lounges, and space for social gatherings. As mentioned in Section 1.3, a number of local colleges and universities, high schools, and boat clubs use the facility.



Source: Washington Post

Photograph 3-7: TBC pictured in the Washington Post, 1960.

History of Georgetown University Boathouses

Although popular among the masses, crew was not recognized as an official Georgetown sport until 1899; those interested in crew instead joined rowing clubs or rowed independently of the college. In 1876, a gift of land was donated to the University to build a boathouse. The location of this boathouse was nearby the campus “at the mouth of Foundry Run, and the Run...passing through the tunnel under the canal, one comes immediately upon the spot.”²¹ This site was located northwest of the Aqueduct Bridge and the WCC near the intersection of the present-day Glover Archbold Trail and Canal Road. According to the *Georgetown College Journal*, Architect J.L. Smithmeyer incorporated “a canal fifty feet long and six feet wide to run through the length of the house.” Built on piles, this first boathouse was one-story in height, with dimensions of 60’ x 26’.²² By 1891 however, the boathouse had washed away, lasting for only one year.

The crew team could not sustain itself continuously during 1876-1878. They therefore had to rely on friends, alumni, and social events to provide the necessary funding to cover expenses

²¹ No author, “Boat Club,” *Georgetown College Journal*, (Volume V, No. 1, August, September, October 1876), 7-8.

²² No author, “Boat Club,” *Georgetown College Journal*, (Volume V, No. 1, August, September, October 1876), 7-8.

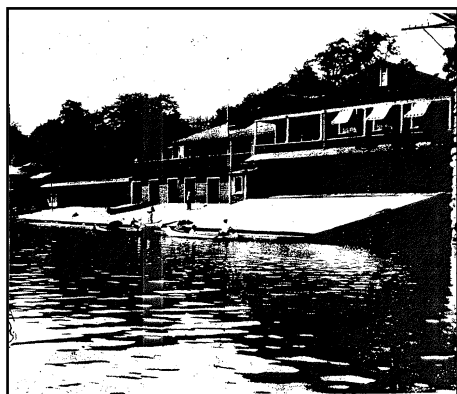
such as obtaining shells, equipment, and a boathouse. As a result of their fluctuating status, crew was not recognized as an official Georgetown sport until 1899, at which point there was enough interest and funds to support a team. Located at the end of 34th Street, N.W. in Georgetown, the Columbia Athletic Club was the second boathouse used by Georgetown. The college was able to buy the building (the land was owned by the government) from the Columbia Athletic Club for use as their boathouse. Georgetown used this facility from 1901-1904.²³



Source: *Georgetown College Journal*

Photograph 3-8: Columbia Athletic Club, home of the Georgetown Crew team, c.1900-1904.

In 1904, Georgetown was forced out of the boathouse by the government, who, in turn wanted to demolish the building. The team moved to an ice house at 36th and Water Streets, N.W. that was owned by their coach, P.A. Dempsey, where they could store their shells and access the water. In 1903, Dempsey built a two-story frame boathouse to replace the recycled ice house facility. Due to lack of crew supporters and severe financial difficulties, the crew team again lost official recognition and support from the University. Many crew members continued to row as a club, or also on their own.



Source: the *Washington Post*

Photograph 3-9: Dempsey's Boathouse, c.1921.

²³ Lawrence H. Cooke, "The History of Georgetown Crew," in *Swift Potomac's Lovely Daughter*, edited by Joseph Durkin, S.J., (Washington, DC: Georgetown University Press, 1990), 332-333.

During the 1940s, the Georgetown Rowing Club participated in races on an infrequent basis, using shells borrowed from the PBC. Gradually, interest in crew increased amongst the Georgetown community. Following five successful years as a club sport, the University again adopted the sport officially in 1957. After Dempsey's Boathouse was destroyed in a fire in 1961, Georgetown again needed to find a boathouse. The addition of Thompson's Boat House, formerly known as the Water Sports Center, to the waterfront in 1960 provided Georgetown a place to store their boats for the long term. The Georgetown crew team has remained an officially-recognized Georgetown University sport since 1957, for nearly fifty years. They now compete in the "most challenging region in the nation for rowing."²⁴ Since 1960, Thompson's Boathouse has been the home of Georgetown University rowing.

Historic Districts and Individual Landmarks – Study Area

The project site is situated in an area that is overlapped by three recognized historic areas: the National Register-listed Georgetown Historic District, the National Register-listed Chesapeake and Ohio Canal National Historical Park, and the D.C.-listed Potomac Gorge.

Georgetown Historic District

The Georgetown Historic District was created in 1950 by an Act of Congress. This law mandates the regulation of the height, exterior design, and construction of private and semi-private buildings in the Georgetown area, "In order to promote the general welfare and to preserve and protect the places and areas of historic interest, exterior architectural features and example of the type of architecture used in the National Capital in its initial years" (Public Law 808-81st Congress-H.R. 7670, D.C. Code 5-801, 64 Stat. 903). The Georgetown Historic District was listed as a District of Columbia Landmark District in 1964, placed in the National Register of Historic Places in 1967, and designated a National Historic Landmark in 1967. The period of significance for the Georgetown Historic District ranges from Georgetown's establishment (1751) to the mid-20th century and includes the Georgetown University campus. The make-up of the historic district includes a blend of upscale residential, commercial, and institutional structures from the late 18th, 19th and early 20th centuries. The proposed project site is located within the Georgetown Historic District.

Chesapeake and Ohio Canal National Historical Park

The C&O Canal NHP is the site of the United States' most intact 19th-century canal (see historical description above on page III-12). The flood of 1924 caused the C&O Canal to cease operation, and it was acquired by NPS in 1938. The C&O Canal was designated a National Monument in 1961, listed as a District of Columbia Landmark in 1964, and nominated to the National Register in 1966. The park was established as a National Historical Park in 1971 by the US Congress. The CCT (on the site of the former B & O Railroad), was added to the National Historical Park in 1990. The proposed project site is located within the C&O Canal NHP. The C&O Canal NHP is partially within the Georgetown Historic District as well as the Potomac Gorge.

²⁴ 2005 Georgetown Crew Media Guide, as gleaned from: <http://guhoyas.collegesports.com/sports/m-crew/gu-m-crew-body.html>, accessed June 14, 2005.

Potomac Gorge (Potomac Palisades)

The Potomac Gorge includes all of the parkland along the Potomac River to the canal upstream from Key Bridge. The Potomac Gorge is a deep, narrow valley where the Potomac River passes from the “hard, erosion-resistant bedrock of the Piedmont to the softer, sandy deposits of the Atlantic Coastal Plain” and contains rapids known as Great Falls.²⁵ It was designated a District of Columbia Landmark in 1964 and is located adjacent to and partially within the C&O Canal NHP. Additionally, portions of the 15-mile gorge shoreline are located in Maryland and Virginia. The proposed project site is located within the Potomac Gorge area.

Alexandria Aqueduct Bridge Abutment and Pier (at the Potomac River west of Key Bridge)

The existing abutment and pier located west of Key Bridge are remnants of the former Alexandria Aqueduct Bridge that linked the Alexandria Canal with the C&O Canal over the Potomac River. The abutment and stone pier represent a major early 19th century engineering achievement involving construction of piers to bedrock 35 feet under the waterline. Bridge construction was begun in 1833 from the Virginia shore, and from the District of Columbia shore in 1840; construction was completed in 1843. Although the Alexandria Aqueduct Bridge was demolished in 1933, the stone piers remained in place until 1961 when they were finally removed. Only one of the original stone piers remains in place, located at the shoreline of the Potomac River west of Key Bridge. The abutment and pier were designated a District of Columbia Landmark in 1973 and are located within the Georgetown Historic District.

Washington Canoe Club (WCC), 3700 Water Street

Built in four phases, the Shingle style building was constructed circa 1890 (see Photograph 3-4), although there is no record of the WCC’s architect or date of construction for the Shingle Style building. It is possible that the original building permit was lost, or could have easily been filed without a block, lot, or federal reservation number due to its original location in the river. Due to flooding and erosion problems, in the 1950s, the WCC had to be moved from its original location on concrete pilings in the Potomac River to its present location. The Olympic sport of flatwater racing is rumored to have begun at the WCC. In 1924, four members of the WCC represented, and were victorious, in representing the United States at the Paris Olympics in the double blade races. Designated a D.C. Landmark in 1973, the WCC was listed on the National Register of Historic Places in 1991. The WCC is located within the Georgetown Historic District, the Potomac Gorge, and the boundaries of the C&O Canal NHP.

Potomac Boat Club (PBC), 3530 K Street

Founded as the Potomac Barge Club in 1859, the Club was organized to represent Georgetown. The existing clubhouse, constructed in 1908, is the fifth boathouse for the PBC. Other locations were near the foot of 31st Street in Georgetown. Designed by A.B. Mullett & Company, the existing Potomac Boat Clubhouse is located east of the Aqueduct Bridge. The PBC serves as the home to the Washington-Lee High School, as well as a club for adult members. Similar to the WCC, the PBC had to remodel its clubhouse in the late 1930s due to problems with ice jams caused by the Potomac River. Designated a landmark by the District of Columbia in 1973, the

²⁵ National Park Service, Brochure for the Potomac River Gorge.

PBC was listed in the National Register of Historic Places in 1991. Additionally, the PBC is within the Georgetown Historic District and the Potomac Gorge.

Key Bridge

Built in 1923 and designed by noted architects Wyeth and Sullivan, the bridge was listed as a District of Columbia Landmark in 1964. The reinforced concrete bridge reaches across the Potomac River in five large segmental arches. The bridge was named in honor of Francis Scott Key whose house stood near the District terminus of the bridge.

Historic District and Individual Landmarks - Georgetown University

Old North

Old North is the oldest structure on the Georgetown University campus. Built between 1795 and 1797, its position marks one boundary of the original quadrangle of Georgetown University. The red brick structure, with its central five-bay projecting pavilion, is a cornerstone of the old University campus. Old North was listed as a District of Columbia Landmark in 1964.

Healy Building

The Healy Building, designed by J.S. Smithmeyer and Paul J. Pelz, was begun in 1877 and completed in 1901. The towering spires of the Victorian building are dominant on the Washington, D.C. landscape and can be seen from across the Potomac River in Virginia. The Healy Building was the second major building located on the original quadrangle of the Georgetown University campus, and was designed with a Romanesque style on the façade and faced with brick on the rear. The building was named for Rev. Patrick Healy, the first African-American Jesuit, and also the first African-American president of a major university. It was listed as a District of Columbia Landmark in 1964, listed in the National Register of Historic Places in 1971, and designated a National Historic Landmark in 1987.

Georgetown University Astronomical Observatory

The Observatory was designed by Father James Curley and constructed between 1841 and 1844. The third oldest observatory in the nation, the Georgetown University Observatory has an imposing vantage point over the expanse of the university campus. The Small Greek Revival observatory was the site of Father Curley's discovery of the exact latitude of Washington, D.C. The Observatory closed in 1971 because of the increasing glare on the sky from the city lights. It was designated a District of Columbia Landmark in 1964 and listed in the National Register of Historic Places in 1973.

3.2.2 Visual Resources

Methodology

This section describes the existing character of identifiable visual resources within the surrounding area that could be affected by the development of the proposed boathouse. In addition, this section documents various viewpoints that could be influenced by the proposed action. The selected viewpoints for visual simulations of the boathouse were determined based on the visibility of the proposed boathouse building to viewers from public places. This was determined through field reconnaissance as well as from input received during the public scoping process.

Visual Character of the Surrounding Area

The project site sits at the confluence of two predominant character areas: to the west, inclusive of the site, the character of the visual environment is mostly natural; whereas, to the east, and immediately above the site on a higher elevation, and on both sides of the river, the character is urban. In addition, the area also has a seasonal recreational character that includes motorized and non-motorized boating, and crew rowing, canoeing and kayaking.

The visual environment to the west consists of a vegetated shoreline at the edge of the Potomac River, as well as the Potomac Palisades, that are part of the C&O Canal NHP (see Photograph 3-10). In addition to a vegetated landscape, the Park includes the C&O Canal, hundreds of structures such as locks, lockhouses, and aqueducts associated with the canal, and a towpath that provides a nearly level, continuous trail adjacent to the canal, which is 185 miles long.

To the north and east of the project area, the visual environment is mostly urban in character, and includes a mix of transportation, residential, and commercial structures. To the north of the project site, Georgetown University, with its multi-storied buildings, dominates the urban landscape (see Photograph 3-11). To the immediate east, the two-storied WCC and PBC boathouses continue the urban landscape and add a recreational character to the area (see Photograph 3-12). Further to the east of the PBC, Key Bridge, spanning across the Potomac River, dominates the visual environment in the vicinity of the project site (see Photograph 3-13).

The C&O Canal runs primarily through a natural environment adjacent to the Potomac River and has areas that are mostly urban in character such as Georgetown to the immediate east and a few canal towns to the west. In the Georgetown section, the canal and towpath pass through one- to six-storied structures (see Photograph 3-14). Also to the east, beyond Key Bridge, the shoreline along the Potomac River is more urbanized and includes parking areas, the elevated Whitehurst Freeway, and the Washington Harbor development (see Photograph 3-15). As part of ongoing efforts related to the Georgetown Waterfront Park, the area west of Washington Harbor is planned to be developed as a public open space and park.



Photograph 3-10: A vegetated shoreline, boathouses and the Georgetown University campus extend westward along the Potomac River (west of Key Bridge).



Photograph 3-11: Georgetown University's multi-storied buildings dominate the urban landscape above the project site (looking north from Rosslyn).



Photograph 3-12: The WCC immediately adjacent to the project site (looking east from the proposed boathouse site).



Photograph 3-13: Key Bridge dominates the visual environment to the east of the project site (looking southeast from the Potomac River shoreline).



Photograph 3-14: The C&O Canal enters an urbanized area to the east of the project site (looking east along the canal).



Photograph 3-15: The Potomac River shoreline east of Key Bridge is urbanized with taller structures and parking areas (looking north from the river).

Viewpoints Potentially Influenced by Proposed Action

Due to the general topography of the immediate surrounding area, where the land steeply slopes down to the edge of the river, Georgetown University (located to the north and northwest) sits at a higher elevation than the project site. Similarly, Foxhall Village (also located to the northwest) and Georgetown neighborhoods (located to the east and northeast) are located at higher elevations. From these locations, the site is mostly hidden.

The site is visible from several locations accessible to the public, including the George Washington Memorial Parkway, Key Bridge, the C&O Canal Towpath, and the CCT. These viewpoints were identified as important during the public scoping process and have been used in conducting the visual impact analysis contained in this EA. These are highlighted in Figure 3-3, and described below:



Source: EDAW, 2005.

Figure 3-3: Location of Viewpoints

View from the Virginia including the George Washington Memorial Parkway

To the south, the Virginia shore of the Potomac River is approximately 1,200 feet from the project site. The general topography is such that there is a steep incline upwards from the river. On that side, the George Washington Memorial Parkway (GWMP), a unit of the National Park System, is located at a slightly higher elevation and is parallel to the river. GWMP offers visitors driving along the parkway an opportunity to view the river and the shoreline on the D.C. side. From that viewpoint, the project site is visible to the right to occupants of vehicles headed northbound. Also, the project site is visible to the left to occupants of vehicles headed in the southbound lanes (see Photograph 3-16). The site is also visible from the Potomac Heritage Trail, a pedestrian trail that runs parallel to the river and connects to the Mount Vernon Trail at the Roosevelt Island parking area.

This site is not visible from other roadways or public areas including the Arlington Gateway Park in Rosslyn.



Winter View



Summer View

Photograph 3-16: View from the George Washington Memorial Parkway

View from Key Bridge

Key Bridge provides both vehicular and pedestrian access between Virginia and the District of Columbia. The bridge pavement is sufficiently above the project site to provide a vantage point for bridge users. The project site is visible on the upriver side as part of a visual environment that is dominated by the Potomac River with predominantly naturally vegetated shoreline extending on either side. The Georgetown University campus, with multi-storied buildings, also contributes to this visual environment (see Photograph 3-17).



Winter View



Summer View

Photograph 3-17: View from Key Bridge

View from the C&O Canal Towpath

The project site is approximately 440 feet long and sits at the eastern edge of a wooded area that extends along the river north of the WCC. The C&O Canal and towpath sit at a higher elevation (Elevation ~38'-6" above mean sea level) than the project site (Elevation ~10 feet above mean sea level), on an embankment to the north. The canal and towpath run roughly parallel to the river, in a northeasterly direction from the project site.

Along the 184.5 mile route between Georgetown and Cumberland, Maryland, the C&O Canal dominates the viewshed along the towpath. When approaching Georgetown, the visual condition changes, where, after mostly passing through a vegetated environment, the towpath enters an urban environment in the vicinity of the project site. Adjacent to the project site, the view along the towpath continues to be dominated by the C&O Canal. In addition, in the eastward direction, the Whitehurst Freeway and buildings in Georgetown are visible. Views towards the river to the south are available intermittently through existing vegetation consisting of trees and shrubs. This vegetation grows on the embankment and acts as a visual buffer (especially during the summer) between the towpath and the project site and river (see Photograph 3-18).



Winter View



Summer View

Photograph 3-18: View from the C&O Canal Towpath

View from Capital Crescent Trail

The CCT starts less than 500 feet to the east of the project site and extends in the northwesterly direction for more than 10 miles to Silver Spring, Maryland. The WCC sits between the beginning of the CCT and the project site (see Photograph 3-19). The visual character along the trail changes from an urban environment in Silver Spring to a natural environment when the trail nears the Potomac River, to an urban context again as it ends near the project site. At the project site, the visual environment along the trail is natural with the trail pavement and the embankment of the C&O Canal being the dominant visual elements. The Potomac River is visible intermittently through existing vegetation within the portion where the trail borders the project site. This condition continues for the length of the CCT along the Potomac River.



Winter View



Summer View

Photograph 3-19: View from the CCT, looking west.

3.3 TRANSPORTATION SYSTEMS

3.3.1 Vehicular Traffic and Parking

Currently, there is no vehicular right-of-way to the project site other than for emergency purposes, and if needed, by the University in accordance with their access easement over the CCT. The nearest vehicle access point is at the dead end of Water Street, just east of the site. Water Street runs along the waterfront, turning into K Street at Wisconsin Avenue as it runs eastward. K Street is the main arterial that is used by visitors to the Georgetown waterfront, running from the project site along the waterfront and continuing into downtown Washington, D.C.

Much of the traffic that accesses the Georgetown waterfront area is due to local businesses. There are several surface parking lots and garages along the waterfront, which are used by local employees and visitors. Washington Harbour, located on Water Street approximately one-half mile east of the proposed project site, is currently the main visitor attraction along the waterfront.

Water Street becomes K Street that also serves as a vehicular access route to the TBC, the current Georgetown University training facility. From K Street, vehicles follow Rock Creek Parkway for a short distance, to access the TBC parking lot.

Wisconsin Avenue is the first road to the east of the project site that connects the Georgetown waterfront to the main street that runs through Georgetown, M Street. M Street is a four-lane street that carries much of the local traffic coming from Maryland and Virginia into Washington, D.C., and vice versa. Key Bridge is accessible from M Street, approximately 0.3 miles west of Wisconsin Avenue.

The main route connecting the University to the waterfront begins at Canal Road, on the southern edge of the campus. Heading east, Canal Road turns into M Street, which intersects with Wisconsin Avenue. Heading south on Wisconsin Avenue brings you to the waterfront; turning left would bring you towards Washington Harbour and TBC and turning right brings you towards PBC, WCC, and the project site.

Currently, parking is provided to waterfront visitors in the surrounding area along K Street, N.W. and at TBC during events. The parking along K Street includes metered spots and public parking lots. Much of the waterfront is currently paved surfaces, providing parking to local businesses. The public parking lot at TBC is owned by NPS and provides metered spots for patrons. The closest boating facilities to the project site, WCC and PBC, use the parking meters along K Street during their regattas in addition to on-site parking. In the past, WCC has been granted permits for parking on an unpaved area at their boathouse site during events.

As a general rule, the University does not allow students to park on campus or to have vehicles on campus unless handicapped. Parking is provided in the parking garages on the University's campus for employees and visitors to the campus. A limited number of visitor parking spaces are available on an hourly or daily basis at various lots on campus.

Because on-site parking is not included in the plans for the boathouse project, the University proposed a parking management plan. The proposal outlines vehicular and pedestrian access to the site. In its memorandum to the D.C. Office of Planning on May 27, 2003, The D.C. Department of Transportation (DDOT) endorsed the plan for the boathouse and reported on the parking and access to the site in relation to the *Georgetown Waterfront Park Plan*. In its review of the zoning applications, the District of Columbia Zoning Commission also endorsed the University's proposed parking management plan for the boathouse (see Section 4.3.1).

3.3.2 Public/Georgetown University Transit Service

There are a number of public transportation systems that serve the Georgetown area, close to the waterfront. No routes currently provide direct access to the proposed boathouse site. Transit options include University run bus service, Metro Connection, and Metro bus service. Metro does not provide rail service to the area. Nearby Metro stations include the Rosslyn station, located near the intersection of Wilson Boulevard and North Moore Street in Arlington County, and the Foggy Bottom-GWU station located near the intersection of 23rd & I Streets, N.W.

The University's bus system is called the Georgetown University Transportation Shuttle (GUTS). Faculty, staff and students with a valid Georgetown University ID card can ride on any GUTS route at no charge. The GUTS routes include service to Wisconsin Avenue, Dupont Circle, Rosslyn, the Georgetown Law Center, and various points in North Arlington. None of the routes currently provide service to the Georgetown waterfront.

Georgetown Metro Connection provides the most frequent bus service through Georgetown. Metro Connection bus routes include two routes:

Route 1, the Wisconsin Avenue Line, travels between Georgetown and Foggy Bottom-GWU metro station via Wisconsin Avenue N.W., the Georgetown Waterfront and K Street N.W.

Route 2, the M Street Line, travels between the Rosslyn Metro Station, Georgetown and 19th Street and Sunderland Place, (one half block south of the Dupont Circle Metro Station) via Key Bridge, M Street, Pennsylvania Avenue, L Street and New Hampshire Avenue, N.W.

Metro Bus Connection Route 1 is the only line that directly accesses the Georgetown waterfront. The bus service runs daily, with buses leaving every 10 minutes. Service is available on Mondays through Thursdays, beginning at 7 a.m., running through midnight, Fridays from 7 a.m. to 2 a.m., Saturdays from 8 a.m. to 2 a.m., and Sundays from 8 a.m. to midnight.

Two Washington Metro buses provide service through Georgetown. Route 38B begins in Virginia, at the Rosslyn Metro station, continuing to the east, along M Street, ultimately reaching the Farragut North and Farragut West Metro stations. Route 13M also runs through Georgetown, ending at the Foggy Bottom Metro station. The closest stop to the waterfront on these routes is at M Street and Wisconsin Avenue. Service is provided every half hour between 5:30 a.m. and 1:30 a.m. on weekdays and from 6:15 a.m. to 8:45 p.m. on weekends. In July 2005, a

new Circulator bus service, managed by WMATA, was implemented that links Union Station to Georgetown (at the intersection of Wisconsin and K Streets).

3.3.3 Pedestrian/Bicycle Facilities

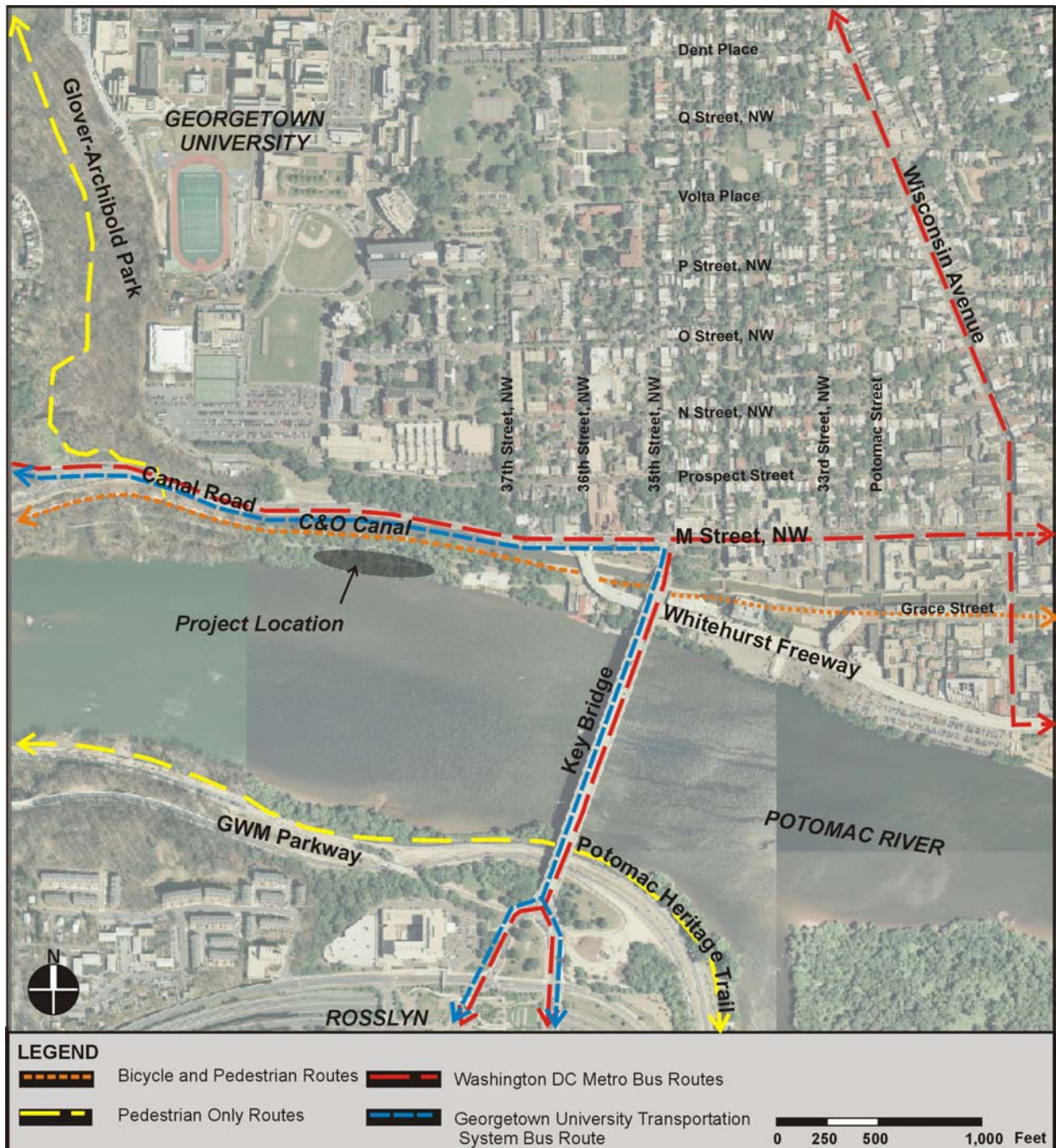
The proposed project site and the Georgetown waterfront are most easily accessed by bicycle or foot. Several trails connect the area to points west along the waterfront, as well as through Washington, D.C. The closest trails to the proposed project site include the CCT, the C&O Canal Towpath (towpath), and the Glover Archbold Trail.

The CCT runs just north of the site and is used both for recreational purposes and daily bicycle commuting. The trail begins in Georgetown, at the dead end of Water Street, and ends in Silver Spring, Maryland. Several other trails connect to the CCT, including the towpath and Rock Creek Trail.

The towpath runs parallel to the C&O Canal, used by walkers, joggers and bicyclists. The towpath is used for recreational purposes and runs along the waterfront to Cumberland, Maryland. A set of stairs to the east of the WCC connect the towpath to Water Street. This is one of the routes for residents living to the northeast and University students to access the waterfront area.

The Glover Archbold Trail, part of NPS property, runs roughly perpendicular to the river. The trail can be accessed from the University near the intersection of 44th Street and Reservoir Road. It continues for 0.6 miles and connects with the C&O Canal Towpath via a paved tunnel beneath Canal Road and the canal.

Students currently travel along these pathways to access the Georgetown waterfront and reach TBC. Students bicycling to TBC leave campus via Canal Road, turning right onto the bike path and through a tunnel that connects to the towpath. An alternative bikepath that is used runs along Prospect Street to 34th Street, which connects to the towpath. The towpath is connected to Water Street by stairs near Whitehurst Freeway. Heading east on Water Street, students use the existing walkways along Washington Harbour to reach TBC, located at the intersection of Virginia Avenue and Rock Creek Parkway. Pedestrians may access TBC via the Glover Archbold Trail which connects to the CCT as described above. From the end of the Trail, pedestrians pass through the waterfront area, along Water Street (see Figure 3-4). Walkways in front of Washington Harbour provide a connection to TBC.



Note: Most major streets including the Key Bridge provide access for pedestrians and bicycles.
 Source: Georgetown University, WMATA, EDAW; 2005.

Figure 3-4: Existing Transportation Routes Accessing the Georgetown Waterfront

3.3.4 River Navigation/Use

Boat traffic in the vicinity of the site primarily consists of non-motorized competitive and recreational boats, including canoes, kayaks, and rowing shells. Although small fishing boats pass through the area, motorized boat access is limited by a no-wake zone and the shallow water depth along the shore. The no-wake zone extends west along the river from the Arlington Memorial Bridge.

As many as six boathouses once resided on the shores of the Potomac River in the vicinity of the Georgetown waterfront. Currently there are three boathouses (TBC, WCC, and PBC) along this stretch, of which the WCC and the PBC remain from the late 19th/early 20th centuries.

Rowing teams that currently train and race along this segment of the river include three university and college teams (Georgetown University, George Washington University, and Trinity University) and thirteen scholastic teams. The rowing season for these teams includes a spring season, from late March through early June, and a fall season, from September through October. The University holds weekday trainings in the morning, from 6:15 a.m. to 8:45 a.m., and in the afternoon from 4:30 p.m. to 6:30 p.m.

Regattas take place on weekends, typically on Saturday mornings. The University participates in up to six regattas in the spring season and two in the fall season on the Potomac. The majority of their regattas require traveling to other locations. The Georgetown University 2005 season race schedule is provided in Table 3-2.

Table 3-2: Georgetown University Rowing Regatta Schedule, 2005

2005 Season			
Day	Date	Competition	Location
Saturday	March 19	Jesuit Invitational	Camden, N.J.
Saturday	March 26	UNC/Indiana	Washington, D.C.
Saturday	April 02	GW/BU/Navy	Washington, D.C.
Saturday	April 02	Radcliffe	Washington, D.C.
Saturday	April 02	Cornell	Princeton, N.J.
Saturday	April 09	George Washington Invitational	Washington, D.C.
Saturday-Sunday	April 09-10	Windermere Classic	Palo Alto, CA
Saturday	April 10	BC/Col./Del./Harvard	West Windsor, N.J.
Saturday	April 16	Navy	Washington, D.C.
Saturday-Sunday	April 16-17	Knecht Cup Regatta	Camden, N.J.
Sunday	April 17	Rutgers	New Brunswick, N.J.
Saturday	April 23	MIT	Boston, MA
Saturday	April 23	Wisconsin	Madison, WI
Saturday	April 23	Temple/Syracuse/Penn/Princeton	Philadelphia, PA
Sunday	April 24	Big East Challenge	Worcester, MA
Saturday	April 30	Penn	Philadelphia, PA
Saturday	April 30	Yale	Princeton, N.J.
Saturday	April 30	MIT/Rutgers	West Windsor, N.J.
Sunday	May 15	Eastern Sprints	Camden, N.J.
Thursday-Saturday	June 02-04	103rd IRA Regatta	Camden, N.J.
Saturday	September 24	Head of the Potomac	Washington, D.C.
Saturday	October 15	Navy Day Regatta	Philadelphia, PA
Sunday	October 16	Occoquan Chase	Fairfax, VA
Sunday	October 23	Head of the Charles	Boston, MA
Saturday	October 29	Head of the Schuylkill	Philadelphia, PA
Sunday	October 30	Princeton Chase	Princeton, N.J.
Saturday	November 05	University of Virginia	Washington, D.C.
Saturday	November 12	Philadelphia Frostbite	Philadelphia, PA
Sunday	November 13	Belly of the Carnegie	Princeton, N.J.
Sunday	November 13	Rivanna Romp	Charlottesville, VA

Source: Georgetown University Athletics, <http://guhoyas.collegesports.com>, 2006.

Practice and racing routes have been established to guide the various boating teams who use this area of the Potomac River. Safety Rules and Guidelines are available for the Potomac River, specific to the area from Fletcher’s Cove to National Airport. The Potomac River Safety Committee’s river traffic map provides guidance on the routes to follow when boating in this area (see Figure 3-5).

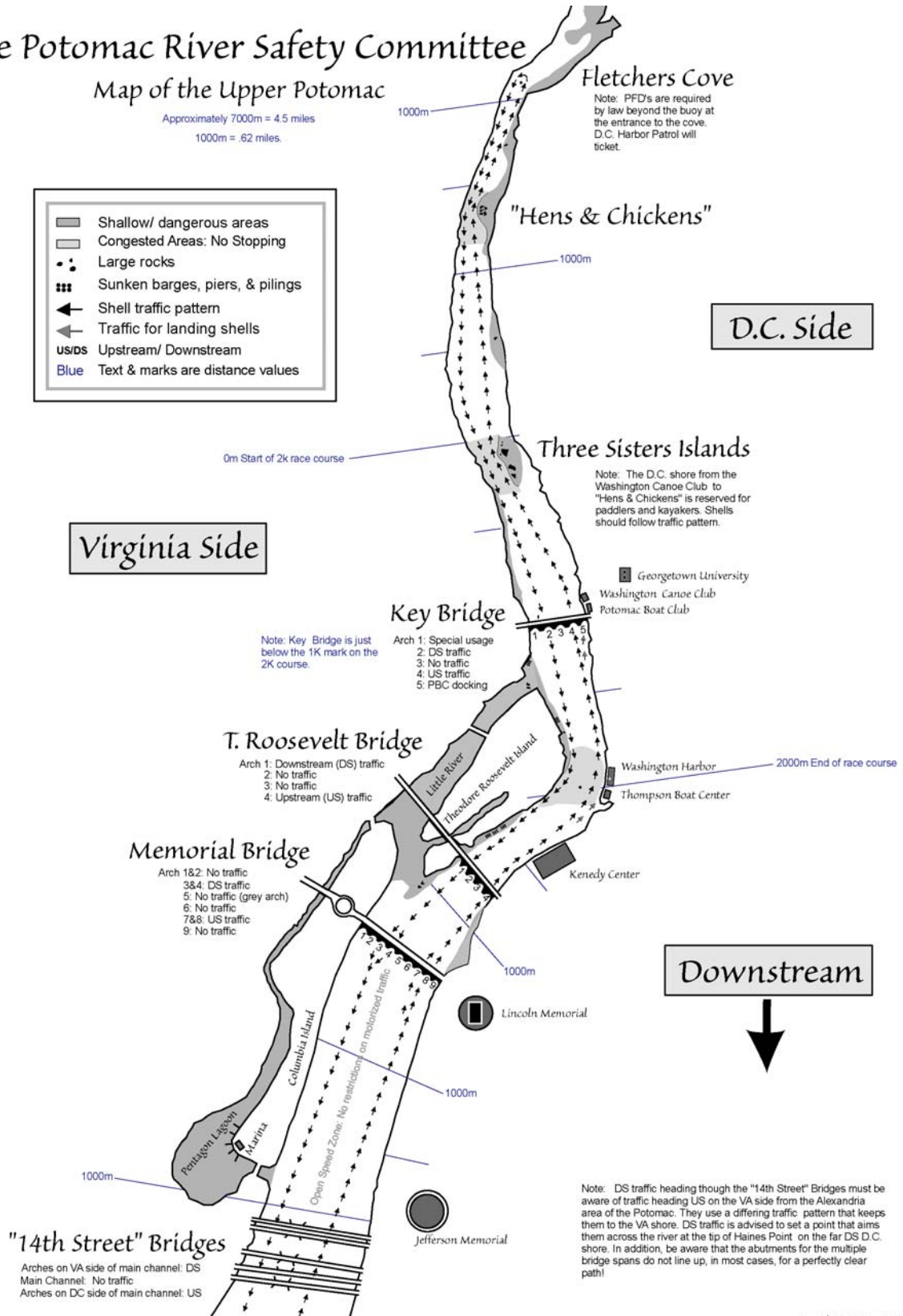
The rowers’ race course, illustrated on the Potomac River Safety Committee’s map in Figure 3-5, begins slightly upstream from Three Sisters Islands, on the Virginia side of the river. The race course continues in a straight path, crossing beneath Key Bridge and ending in front of the TBC. The course is 55 meters wide and runs for a distance of 2,000 meters. The high school race course is shorter, running for 1,500 meters.

The Potomac River Safety Committee

Map of the Upper Potomac

Approximately 7000m = 4.5 miles
1000m = .62 miles.

	Shallow/ dangerous areas
	Congested Areas: No Stopping
	Large rocks
	Sunken barges, piers, & pilings
	Shell traffic pattern
	Traffic for landing shells
US/DS	Upstream/ Downstream
Blue	Text & marks are distance values

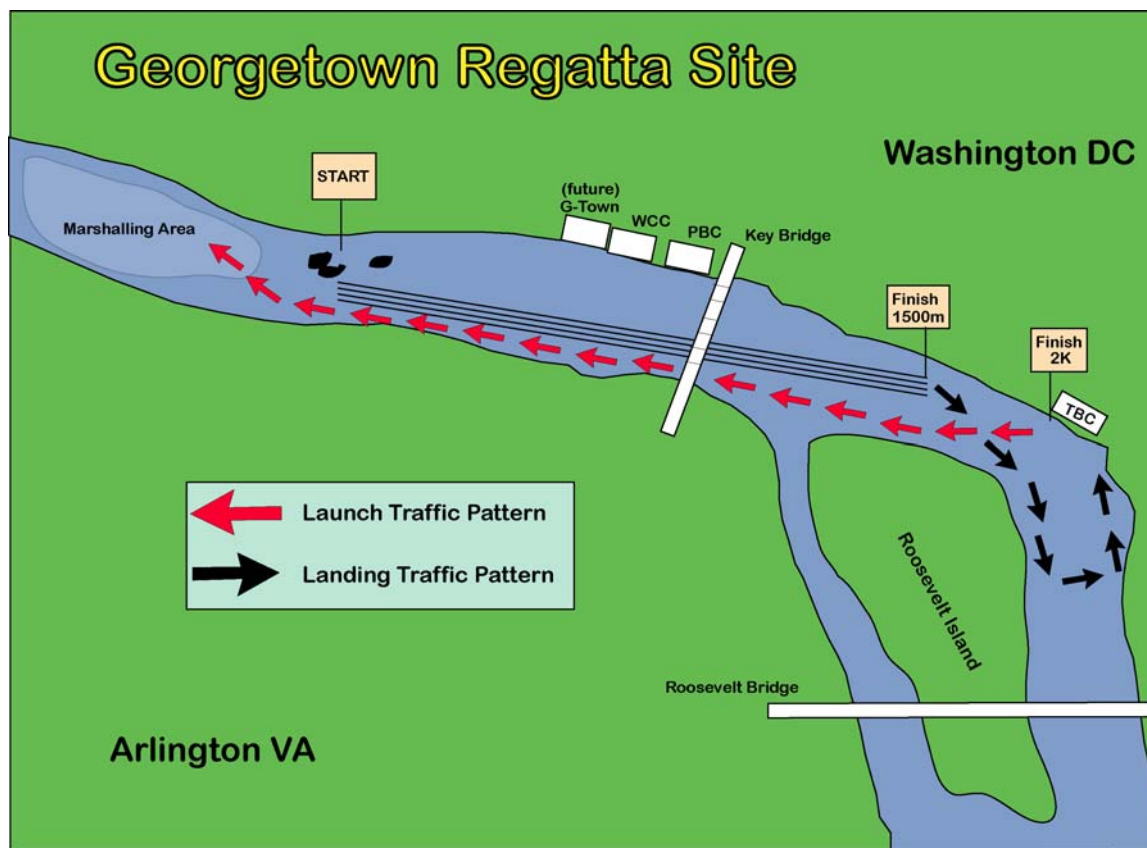


Note: DS traffic heading though the "14th Street" Bridges must be aware of traffic heading US on the VA side from the Alexandria area of the Potomac. They use a differing traffic pattern that keeps them to the VA shore. DS traffic is advised to set a point that aims them across the river at the tip of Haines Point, on the far DS D.C. shore. In addition, be aware that the abutments for the multiple bridge spans do not line up, in most cases, for a perfectly clear path!

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Source: Potomac River Safety Committee, 2005.

Figure 3-5: River Traffic Patterns



Source: Potomac River Safety Committee, 2005.

Figure 3-6: River Traffic Patterns on Race Day

Boating activities occur during most of the year, with the exception of the winter months. The launching docks at TBC are removable docks that are only kept in the water during the rowing season. The removable docks are placed in storage in November and returned to the boating facility in mid-February.

In addition to rowing, the river is used for recreational, as well as competitive canoeing, kayaking and several other forms of boating. Recreational canoes use the nearby rental facilities and the competitive programs are run out of WCC.

WCC's on-the-water practice season begins in late March and continues through October. According to the 2005 season schedule posted on WCC's web site, training times vary by experience level. Weekday morning trainings are held from 7:00 to 8:30 a.m. with two afternoon sessions lasting from 4:30 to 6:30 p.m. and from 6:30 to 8:00 p.m. Three training sessions are held on Saturdays, beginning at 7:00 a.m., with the last one ending at 11:30 a.m. A Saturday afternoon session is held for the elite group from 4:30 to 6:30 p.m. The only Sunday training session is for the elite group, lasting from 7:00 to 9:00 a.m.

The paddling (canoeing and kayaking) racing season begins in mid-April and lasts through the beginning of November. Regattas hosted by WCC are held on weekends in the summer. The 2005 race schedule is provided in Table 3-3.

Table 3-3: WCC Canoe/Kayak Regatta Schedule, 2005 Season

2005 Season			
Day	Date	Competition	Location
Saturday	April 23	Lula Bridge Trophy Race	Gainesville, GA
Sunday	April 24	Nanticoke River Canoe and Kayak	Salisbury, MD
Saturday-Sunday	May 14-15	Lainer Sprint Races	Gainesville, GA
Sunday	May 22	Pocomoke River Canoe Challenge	Snow Hill, MD
Sunday	June 19	Janes Island Power Paddle	Salisbury, MD
Friday-Saturday	June 24-25	US Jr/Sr World Championship Trials	Lake Placid, N.Y.
Friday	July 01	Canada Day Regatta	Canada
Thursday-Sunday	July -10	Pan American Championships	Quebec Canada
Sunday	July 10	Nanticoke River Festival Canoe and Kayak	Seaford, DE
Sunday	July 17	North East River Regatta	Elkton, MD
Saturday-Sunday	July 23-24	WCC Annual Regatta	WCC
Friday-Monday	August 05-08	Junior World Championships	HUN
Tuesday-Saturday	August 09-10	US National Championships	Green Lake, WA
Tuesday-Sunday	August 09-14	USCA National Championships	Warren, PA
Sunday	September 18	Potomac River Paddle Rally	Point of Rocks, MD
Saturday	October 08	Middle States Championship	WCC
Saturday	October 29	WCC Scholastic Championships	WCC
Saturday	October 29	Frank Havens 10k Challenge	WCC

Source: WCC, www.wcanoe.org, 2006.

WCC's racing lanes begin just upstream from, and on the D.C. side of, the Three Sisters Islands, and end at a point in front of the Club. The course runs in a continuous straight line. The paddlers' race course is 50 meters wide and runs for a distance of 1,000 meters. Races are typically either 500 meters long or 1,000 meters long.

The WCC also has removable docks. The docks are put into the water at their facility in mid-April and taken out in late November.

The race courses of the rowers and the paddlers do not cross paths. They run on opposite sides of the river, as illustrated in Figure 3-7.



Source: WCC, Georgetown University crew, EDAW, 2005.

Figure 3-7: Canoe/Kayak and Crew Race Courses

Motorized boats also pass through this area. Motor boats are restricted to a no-wake zone that extends upriver from Memorial Bridge. Mud flats and submerged rocks limit how far motorized boats can travel past the project site. The D.C. side of Fletchers Cove and Three Sisters Islands are particularly rocky and are avoided by many motor boats. Most motorized boat traffic occurs below Memorial Bridge and does not interfere with crew or paddling use above and below Key Bridge. Recreational fishing areas are located along the portion of river upstream from WCC, up to the boathouse at Fletcher’s Cove.

Motor boats have the potential to interfere with crew and paddling activities, particularly when they are unaware of a regatta taking place. The current practice during these times involves sending a coach, or other authorized person, out in a launch boat to warn fellow river users of the regatta taking place and where the boats will be.

3.4 PHYSICAL/ BIOLOGICAL RESOURCES

3.4.1 Water Resources

Surface Water and Water Quality

The project site is located along the northern bank of the Potomac River, whose principal tributaries are Rock Creek and the Anacostia River, located downstream from the project site. The river is affected by tidal fluctuations in water level; however, it is completely freshwater at the project site location. Downstream, the river water transitions to brackish and eventually saltwater conditions as it drains to Chesapeake Bay in southeastern Virginia. Upstream of the project site, the river drains a large area that includes portions of northern Virginia, western Maryland, West Virginia, Pennsylvania and Washington, D.C. and is a source of water supply for the Washington metropolitan area. The river is designated a “water of the U.S.,” as defined by the Clean Water Act (CWA), as it applies to the jurisdictional limits of the U.S. Army Corps of Engineers (the Corps) for the discharge of dredged or fill material.

During rainfall events, surface water exists on-site as stormwater, which is initially absorbed by site vegetation and surface soil. Once saturated, surface soil is similar to an impervious surface, where stormwater runs off the site to the nearest surface water body, in this case, the Potomac River.

Water quality of the river is affected by various pollutant sources including stormwater runoff from urban development and agricultural uses, groundwater flow, precipitation, and point source discharges. Sediment and contaminants are deposited into the river via stormwater runoff from exposed or eroded soils upland and along the river shoreline, and from impervious surfaces. Contaminants of concern to water quality include fecal coliform, volatile organic compounds, inorganics (metals), pesticides, phosphorus, nitrates, PCBs, and petroleum hydrocarbons. The DC Department of Health (DC DOH), Water Quality Division is responsible for water quality control including river sediments and contaminant levels, stormwater runoff, and submerged aquatic vegetation.

Measurable parameters determining water quality include pH, total suspended solids, dissolved oxygen, conductivity, turbidity, temperature, and biological and chemical oxygen demand. Water quality of the river is monitored in the vicinity of the project site at the Middle Potomac River – Little Falls station north of Washington, D.C. (by the Maryland Department of Natural Resources), and, upriver from the site in Great Falls (by the Washington Suburban Sanitary Commission) where water temperature, dissolved oxygen (DO), and pH are measured. Daily turbidity and rainfall information is measured at a station in Great Falls, upriver from the proposed boathouse site. Review of data collected from these monitoring stations indicates that pH levels are fairly constant throughout the year (see Appendix for Water Quality data collected). In addition, stream temperature decreases, while DO levels increase during winter months. Turbidity levels generally increase due to rainfall events, although higher turbidity levels were visible in the fall, which do not appear to be linked to precipitation events.

Nutrient loading has historically been a major factor in the water quality of the Potomac River, which has been continually degraded by the discharge of municipal wastewater associated with increasing population in the Washington, D.C. metropolitan area. Wastewater discharges have

resulted in high levels of phosphorus and nitrogen, and low levels of dissolved oxygen in the river, promoting the growth of large nuisance populations of algae.

Algae that floats on the water's surface lowers water quality within the river by blocking sunlight from penetrating the water, limiting the growth of more desirable zooplankton, limiting water clarity, and increasing oxygen demand in the bottom river layers and at the soil/water interface. Algae growing on submerged plants and structures limits the growth of submerged aquatic vegetation (SAV) in the river by blocking sunlight to the leaves and stems, preventing photosynthesis and reducing dissolved oxygen levels. SAV stabilizes shoreline sediments and limits erosion, thus, improving water quality.

Floodplains

Flooding of the Potomac River generally results from a combination of storm surge along the river from the Chesapeake Bay due to tropical storms and hurricanes moving up the coastline, and from fluvial flows of localized storms. Based on maps published by the Federal Emergency Management Agency (FEMA) in 1985, the project site is located within the Potomac River's 100-year floodplain, which is composed of a horizontal floodway (includes the existing stream channel and a buffer area) plus a floodway fringe on either side of the floodway. The 100-year flood elevation is at approximately 19 feet above mean sea level (or approximately 9 feet about the average grade of the project site) and is within the FEMA-designated flood zone A18, defined as a Special Flood Hazard Area inundated by the 100-year flood. There are no major flood protection structures (e.g., sea walls) built along the Potomac River in Washington, D.C. Encroachment on a floodplain, such as the construction of structures or placement of fill, reduces flood-carrying capacity, increases flood heights and velocities, and increases flood hazards in areas beyond the flooding encroachment. The project site is currently owned by the NPS; and therefore, subject to Executive Order 11988, *Floodplain Management*.

Chesapeake & Ohio Canal

The historic C&O Canal is located north of the project site. The artificial waterway was constructed in the 19th century to create a controlled transportation channel for boats, pulled by mules along the towpath. The canal is setback inland and elevated from the river in the project vicinity. The towpath is approximately 38 feet above mean sea level, or 28 feet above the project site.

Wetlands

The project site is 1.09 acres in size and contains approximately one third of an acre of artificial vegetated wetlands. Water leaking from the C&O Canal, located adjacent and upgradient from the site, is believed by the US Army Corps of Engineers to be the source of ponding water on-site (see correspondence included in the Appendix). Due to the artificial source of water, the Corps determined that the wetlands are artificial and do not come under Corps jurisdiction. Therefore, the Corps will not exert its regulatory authority under Section 404 of the Clean Water Act. In addition, according to the District's Wetland Conservation Plan (1997), there are no mapped wetlands within or in proximity to the site. The U.S. Fish and Wildlife "Wetland Mapper" shows no aerially-detected wetlands at or in the vicinity of the project site.

Chesapeake Bay Watershed

The Potomac River discharges to the Chesapeake Bay, and therefore, is within the Chesapeake Bay Watershed. The watershed extends over 64,000 square miles, encompassing parts of the states of Delaware, Maryland, New York, Pennsylvania, Virginia, West Virginia, and all of the District of Columbia. The Chesapeake Bay is North America's largest and most biologically diverse estuary, home to more than 3,600 species of plants, fish, and animals, including threatened and endangered species, waterfowl, raptors, neotropical migratory birds, anadromous fish, and commercially important fish and shellfish. More than 15 million people reside or work in the Chesapeake Bay Watershed. Human activities over the past 300 years have led to a decline in water quality, mainly due to an increase in nutrients such as nitrogen and phosphorus, from agricultural and urban runoff. Development has caused a loss of wetlands, forests, and shallow water habitats vital to Chesapeake Bay wildlife.

The Chesapeake Bay is protected by the U.S. Environmental Protection Agency's Chesapeake Bay Program, which is a state/federal partnership including the District whose main goal is to protect and restore the Chesapeake Bay's ecosystem by establishing management plans, guidelines, and goals for the jurisdictions within the watershed. DCDOH, Watershed Protection Division is responsible for stormwater management and sediment and soil erosion control of construction sites to protect watersheds in the District and the Chesapeake Bay. DCDOH is the responsible D.C. agency for the EPA Chesapeake Bay Program and has prepared the *D.C. 2004 Nutrient and Sediment Tributary Strategy* to reduce pollution in Washington D.C. waters as well as the Chesapeake Bay.

Groundwater

Groundwater level readings at the site, obtained during a 2002 geotechnical study conducted by Schnabel Engineers, indicated groundwater levels between 1 and 7 feet below ground surface. Fluctuations in the groundwater levels may occur due to environmental conditions (rainfall, time-of-year, temperature, and evaporation rates), surface drainage, or the hydraulic tidal effects of the Potomac River. There are no groundwater wells on-site.

Based on topography, local groundwater is expected to flow in a southern direction towards the Potomac River. However, the direction of groundwater flow may be influenced by the presence of man-made features such as storm drains, nearby buildings, and sewer lines. Based on groundwater level readings within the 2002 soil borings, if a building was constructed on site, earth-supported slabs would not be considered suitable and framed floor slabs would be recommended. Special subdrainage would not be necessary as a building on-site would be flooded during high water levels of the river.

Groundwater sampling was performed during a 2005 site soil investigation and water samples from hand auger locations were submitted for laboratory chemical analysis for analytical parameters of hydrocarbons, PCB, VOC, pesticides, and priority pollutant metals. Based on the laboratory test results, all of the water pesticides, PCB, VOC, and TPH test results were below their respective laboratory detection limits. For the priority pollutant metals tested, elevated test results were obtained for arsenic, chromium, copper, lead, nickel, and zinc. Review of the water metal test results obtained at the site indicates that only the arsenic and lead results were above established regulatory limits. The lead result is above the EPA's Drinking Water

Standard, and the arsenic levels exceeded the EPA's limit for tap water and the EPA's Drinking Water Standard. Therefore, site groundwater is not considered a source of potable water (for consumption by humans).

3.4.2 Geology, Topography, and Soils

Geology

The project site lies within the Piedmont Plateau Physiographic Province, whose eastern limit is the Fall Line, which marks the boundary between the sedimentary formations of the Coastal Plain and the crystalline formations of the Piedmont Plateau. The Fall Line is a low, east-facing cliff, paralleling the Atlantic coastline from New Jersey to the Carolinas, separating hard Paleozoic metamorphic rocks of the Appalachian Piedmont to the west from the softer, gently dipping sedimentary rocks of the Coastal Plain. This erosional scarp is the site of many waterfalls (e.g., Great Falls, MD). The Fall Line is roughly delineated in the District by Little Falls where the free flowing Potomac River meets the tidal portion of the river. In recent geological time (over approximately the past 100,000 years), the Potomac River has eroded through the Piedmont Plateau and deposited alluvial sediment consisting of clays, silt, sand, and gravel along the river banks.

The project site contains layers of fill material over alluvial sediments and disintegrated rock. The density of soil layers generally increases with depth. There are no natural geologic features at this site. According to a 2002 geotechnical study, bedrock on-site is located at approximately 40 feet below the site's soil surface.

Topography

According to the USGS topographic map of the Washington West Quadrangle, the approximate elevation of the site is approximately 10 feet above mean sea level (msl). The site is relatively flat, with approximately a three percent slope riverward and steeper slopes near the bank of the Potomac River. However, in the center of the site, the slope directs drainage to the center of the site where artificial wetlands are located. The natural topography of the site has been altered from intertidal freshwater flats to uplands as a result of filling activities on and adjacent to the site, including construction of the C&O Canal, the B&O Railroad, and the Upper Potomac Interceptor Sewer pipeline. Site elevations vary from 11 feet above msl at the northwest corner of the site to approximately 8 feet above msl at the shoreline.

From the CCT at the northern boundary of the site, the land slopes sharply upward from about 10' to 38'-6" above msl along the canal towpath. Adjacent to the site to the east and west, the topography is relatively flat, at a similar elevation range as the project site.

Soils

Soils on the project site have been severely impacted from past human activities. Although the area historically was presumably within the tidal range of the Potomac, fill activities over the past 50 to 75 years have resulted in the site's conversion from intertidal freshwater flatlands to uplands. Initial filling first occurred for the purpose of constructing of the Baltimore & Ohio Railroad. Later, filling to install the 84" sewer interceptor pipeline resulted in further elevation of the site above the Potomac River. The top of the sewer main is approximately two to three feet below the existing soil surface. The elevation of the soil surface ranges between approximately 8 and 11 feet above msl.

No portions of shoreline are in natural condition, and one section near the eastern portion of the site consists of concrete presumably deposited during a time when concrete trucks were rinsed and dumped at the site location. Other portions of the shoreline consist of silty/clayey fill materials and are unsloped, approximately four to five feet straight up from the shallow intertidal zone of the Potomac River.

The Soil Survey for the District of Columbia (1976) shows the existence of both U₁ (Udorthents) and U_b (Urban) soils. Udorthents consist of very heterogeneous, earthy fill material that has been placed on poorly-drained to somewhat excessively-drained soils on uplands, terraces, and floodplains of the Coastal Plain and Piedmont. The sources of fill material used in this unit are variable; consequently, the fill is a mixture of organic and inorganic waste from human activity, as well as sandy, gravelly, clayey, silty, and micaceous soil material. Neither of these soils are in their natural condition, and both are variable in their make up and have been moved by machinery in some way. The permeability of the soil is variable, as is the drainage class. Alluvial deposits underlie these disturbed soils.

Shallow soil borings collected during the 2004 wetland assessment revealed the disturbed nature of the soils. Compacted gravel appears about six inches beneath the ground surface. Relatively recent disturbance, due to the sewer installation, may be the reason for the consistent location of gravel in the surface soils.

Soil borings performed during the 2002 geotechnical study indicated a maximum depth of fill material at 13 feet below the ground surface, alluvial soils extending to 32 feet below ground surface, and very compact, disintegrated rock to a depth of 40 feet (see Appendix for a copy of the study). Obstructions were encountered in the fill, and possible boulders in the residual soils and disintegrated rock were identified. The 2002 geotechnical study recommended that additional borings and rock coring be performed on-site prior to site development. Due to the presence of soft soils and boulders, the 2002 study recommended that if the site was developed, deep foundations with pipe pilings rather than timber should be used to avoid possible pile driving difficulties. The study also recommended minimum penetration to assure bearing in hard disintegrated rock and bedrock. In addition, the study recommended pre-augering to penetrate boulders and fill obstructions to reduce vibration effects on the sewer interceptor.

Soil laboratory testing was performed in 2005 to determine the presence of contaminants in the fill layers of the soil (see Appendix for a copy of the soil tests). Soil samples obtained during the hand auger activities were screened with a photoionization detector (PID), an instrument used to detect volatile organic compounds (VOCs). No elevated PID measurements were obtained

from the soil samples obtained from the hand augers. Note that a PID reading is a measure of the VOCs present in the sample and are not a direct measure of the quantity of total petroleum hydrocarbons (TPH) present in the soil sample. In addition, a PID may not detect older and heavier fuel patterns, as the volatiles in such substances may no longer be present due to the passage of time or the nature and/or composition of the fuel type.

Selected soil samples from each hand auger location were submitted to an EPA-approved laboratory for chemical analysis for the following analytical parameters:

- Total Petroleum Hydrocarbons (TPH)
- Polychlorinated Biphenyls (PCBs)
- Semi-volatile Organic Compounds (SVOCs)
- Volatile Organic Compounds (VOCs)
- Organochlorine Pesticides
- Priority Pollutant Metals, which include antimony, arsenic, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, thallium, and zinc

Based on the laboratory test results, all of the soil pesticides, PCBs, SVOCs, VOCs, and TPH test results were below their respective practical quantization limits (PQLs), or below the laboratory detection limits.

For the priority pollutant metals tested, elevated test results (above PQLs) for arsenic, chromium, copper, lead, mercury, nickel, and zinc were obtained. The metal results are below the federal Environmental Protection Agency's (EPA's) Risk-Based Concentrations (RBCs) for Region III industrial soils, with the exception of arsenic at all three hand auger locations. All test results were below this recommended action level for lead. Heavy metals, such as arsenic, lead, and mercury, are naturally occurring elements in this region and the site's arsenic, lead, and mercury levels are within their naturally occurring ranges. Additionally, the Federal Register (1990) provides regulatory level concentrations for these three metals that are a standard (based on leaching capabilities) for which a substance is considered hazardous. This analysis was performed on these three metals and indicated that, based on this method of comparison, none of the soil samples contain hazardous levels of these metals.

3.4.3 Terrestrial/Aquatic Vegetation & Wildlife

Terrestrial Vegetation

Vegetative cover on the project site includes a combination of mature and immature hardwoods, as well as herbaceous plants, around the perimeter, and generally herbaceous plant cover within the central portions of the study area. The site consists of the following plant cover types: mowed turf grass, wet meadow, hardwood swamp, upland hardwood shrub dominated, and upland hardwood tree dominated. The site is largely dominated by invasive non-native plant species, interspersed with mature native trees and some native saplings.

Based on field reconnaissance conducted during the fall of 2004 for the purposes of this EA, the dominant plants identified at the site consist of the following:

Plant Name	Native (✓)
<i>Acer negundo</i> - Box elder	✓
<i>Acer platanoides</i> - Norway maple	
<i>Acer rubrum</i> - Red maple	✓
<i>Acer saccharinum</i> - Silver maple	✓
<i>Agrostis alba</i> - Red top	
<i>Clematis virginiana</i> - Virgin's bower	✓
<i>Cyperus strigosus</i> - Flat sedge	
<i>Digitaria sanguinalis</i> - Crabgrass	
<i>Echinochloe crusgalli</i> - Barnyard grass	
<i>Fagus grandifolia</i> - American beech	✓
<i>Fraxinus nigra</i> - Black Ash	✓
<i>Hedera helix</i> - English ivy	
<i>Impatiens sp</i> - Touch-me-not	✓
<i>Juncus effusus</i> - Needle rush	✓
<i>Liriodendron tulipifera</i> - Tulip poplar	✓
<i>Lonicera japonica</i> - Japanese honeysuckle	
<i>Lonicera maackii</i> - Amur honeysuckle	
<i>Lysimachia nummularia</i> - Moneywort	
<i>Morus alba</i> - White mulberry	
<i>Phalaris arundinacea</i> - Reed canary	
<i>Platanus occidentalis</i> - Sycamore	✓
<i>Polygonum persicaria</i> - Lady's thumb	
<i>Polygonum cuspidatum</i> - Japanese knotweed	
<i>Robinia pseudoacacia</i> - Black locust	✓
<i>Rubus idaeus</i> - Raspberry	
<i>Rumex crispus</i> - Curled dock	
<i>Salix nigra</i> - Black willow	✓
<i>Setaria viridis</i> - Green Foxtail Grass	
<i>Smilax glauca</i> - Cat briar	✓
<i>Solidago rugosa</i> - Rough goldenrod	
<i>Typha latifolia</i> - Cattail	✓
<i>Ulmus americana</i> - American elm	✓
Unidentified grass (potentially <i>Agrostis alba</i>)	✓

The most dominant plant in the uplands and along the upland/wetland transition is Amur Honeysuckle (*Lonicera maackii*). Thickets of honeysuckle cover sections of the site and most of the understory consists of the same. White Mulberry (*Morus alba*) also dominates sections of the uplands. The most dominant species within the wetlands are a grass, presumably Green Foxtail (*Setaria viridis*). The invasive, non-native grass species appear to be growing on hummocks in some portions of the wetland area. The site, both upland and wetland areas appear to consist mostly of invasive, non-native vegetation. Only one obligate wetland plant has been identified - Cattail (*Typha latifolia*) - and only in sporadic locations, possibly indicating that the site dries out from time to time.

The vegetative structure appeared to occur in linear bands, progressing parallel to the edge of the Capital Crescent Trail and the riverbank. The first vegetative cover type starting from the path, consists of about a 25-foot-wide section of more native mature trees, in both wetland and upland areas. This section is wetter in the central and southern sections. The next consistent band of vegetation is about 30 feet in width and was dominated by herbaceous plants, mostly grasses, and with both upland and wetland areas (drier at either end). There are a few scattered Black Willow (*Salix nigra*) tree seedlings within this band. The final band extends out about 30 feet and ended at the bank of the Potomac, and was dominated by a growth of saplings (mostly mulberry) and areas of honeysuckle thickets. Ground cover in this waterfront band includes English Ivy (*Hedera helix*). The wetland area extends mostly within the herbaceous growth band but also extends into the mature wooded area and the sapling band.

It appears that these “bands” of vegetation represent the development activity that has taken place at the site. The band of mature trees running along the hiking path was most likely the previous frontage on the Potomac River. The hiking/biking path was once the Baltimore & Ohio Railroad but has been converted to the CCT. In the early 1960s, a 84” sewer main was installed along this previous shoreline. The herbaceous cover along this pipeline corridor may persist due to long-term saturation and unsuitable soils for tree establishment. There may have also been maintenance efforts within the easement to keep woody trees off the pipeline corridor.

The District of Columbia provides protection to “special trees” from unauthorized removal under the District’s Urban Forest Preservation Act of 2002. “Special trees” are defined as any non-exempt District tree having a circumference of 55” or greater (i.e., a diameter of 17.5” or greater measured at a height of 4.5’). There are three tree species exempt from this Act: *Ailanthus altissima* (Tree of Heaven), *Morus* species (Mulberry), and *Acer platanoides* (Norway maple). The purpose of the Act is to establish an urban forest preservation program; to require community notification prior to the removal or replacement of trees on public space; and to require penalties for injuring trees on public space and private property.

Except as otherwise provided, no person or non-governmental entity shall remove a Special Tree without a Special Tree Removal Permit. In return for permitted removal of trees, the applicant either plants new trees of equal circumference to the removed tree, and or pays to a Tree Fund collected by the District.

Of the trees on-site, there are two American Elm trees (at 20” and 21” diameters) that meet the District’s minimum diameter criteria for Special Trees. Both are located in the northwest corner of the site.

Submerged Aquatic Vegetation

Submerged Aquatic Vegetation (SAV) is a major threatened resource within the Potomac River and the Chesapeake Bay. The Chesapeake Bay Coastal Program has coordinated the surveying and monitoring of SAV beds in order to identify trends in the composition, number, and distribution of SAV species. The program has also developed guidelines for maintaining and improving conditions for SAV, which are valuable for the role they play in providing habitat and food for shellfish and other aquatic organisms, as well as waterfowl habitat.

In the 1920s, the Potomac River, as well as other areas in Chesapeake Bay, was infested with an undesirable plant, the water chestnut (*Trapa natans*). During the 1950s, the Potomac was overrun by dense beds of Eurasian watermilfoil. Heavy growths of water chestnut and milfoil competed with other aquatic plants for light and nutrients and often crowded out other plant species. Since 1960, the upper Potomac River has been experiencing massive summer blooms of algae (*Anacystis*), promoted by high levels of phosphorus and nitrogen. Excessive blooms effectively shade out submerged grasses, which could be the reason the upper Potomac River no longer supports dense grass beds. Several years ago aquatic areas along the shoreline of the site were dominated by a thick growth of *Hydrilla*, a very common, very invasive non-native plant known to cover large expanses of water bodies thereby, limiting habitat for native species and eliminating light penetration into the water bodies. Naturally occurring SAV normally do not dominate large expanses of waterbodies, and instead provide valuable habitat for aquatic insects, fish, and amphibians.

Conditions in the river have varied over the years and monitoring has identified major negative trends in the numbers and distribution of major SAV species. Most of these negative trends are related to water clarity, which depends largely on eutrophication levels within the river as well as stability of the bottom, bar, and bank sediments.

Recorded data on SAV coverage indicates that the last year SAV was found in the area of the project site was 2001. Since this time, the coverage of SAV has greatly decreased. Coinciding with the beginning of this decrease was the end of a four- to five-year drought, increased snowfall in winter and rainfall in summer, and several of the heaviest hurricane/tropical storm seasons in recent years. The increased precipitation has resulted in a higher than average river flow and increased sediment loading, which may have caused the destruction of existing SAV beds and the limiting of their growth and proliferation.

In addition to a review of historic data, a field reconnaissance of the river shoreline and adjacent offshore area at the project site was conducted for potential SAV beds (by Schnabel Engineering, 2005). Field sampling was conducted 15-20feet offshore using a skiff and a rake for the entire length of shoreline at the project site. In addition, the intertidal zone was observed for plant growth, and the shorelines and coves within the vicinity of the site were observed, as well as the C&O Canal, for presence of SAV. Although historical records of SAV beds exist for the area around the project site, there were no root systems or remnants of stems/leaves observed in the vicinity of the shoreline. Since the assessment was conducted in late fall, when SAV would typically not be visible, a review of the tidal flats in the vicinity of the site was performed. Flats across the river and down the Little River and the Georgetown Channel were observed from the water at low tide. Also, river users and government agencies working on the river were

interviewed. SAV was found in one location, but generally there was a lack of SAV for the extensive tidal flats and shallows in the river (Schnabel 2005).

According to frequent river users and the Chesapeake Bay Program, SAV beds have drastically reduced in size and number over the past two to three years. There are records that beds of Hydrilla had been located off the shoreline of the project site in 2002. No current remnants of this bed remain. However, there is the potential for SAV to reoccur in the vicinity of the site, based on the documentation of previous occurrences, and the efforts of the Chesapeake Bay Coastal Program and its local jurisdictions to protect and restore the Chesapeake Bay watershed, which this site is part of, by improving water quality, reducing sedimentation, and restoring wetlands and shallow water habitats.

Wildlife

Benthic Invertebrates

Benthic invertebrates are those invertebrate organisms that live within the sediments of the shallows and bottom area of water bodies, including streams, rivers, and perennially flooded wetlands. There was no specific sampling of the benthic areas around the shoreline of the boathouse site for aquatic invertebrates. However, during the SAV assessment, sediment raking of the top three inches of the bottom sediments revealed the presence of numerous *Mollusca* species, including one species of clam and two species of snails. These organisms were not identified, except for the bivalve, which was identified as the Asiatic clam (*Corbicula fluminea*) which was pulled up in abundance, sometimes 15 or 20 in one rake.

This clam species is an exotic species. The Asiatic clam is a known biofouler in power plant and industrial water systems and has also caused problems in irrigation canals and pipes. Ecologically, this species can alter benthic substrates and compete with native mussel species for food and space. In addition, Asian clams appear to be capable of tolerating polluted environments better than many native bivalves.

Native mussel species are known to occur locally. In the C&O Canal approximately one mile upstream of the Key Bridge, native mussels were studied and documented in *Evaluation of Native Freshwater Mussel Populations in the C&O Canal NHP Final Report, 2004* (USGS-Leetown Science Center 2004). A sample site in the canal at mile 0.93 of actual towpath (upriver from Key Bridge) revealed the following mussel species: *Utterbackia imbecillis* (listed Rare in Maryland - State of the Streams: 1995-1997 Maryland Biological Stream Survey Results), and *Pyganadon cataracta*.

The artificial wetland area on-site does not have appropriate habitat for aquatic organisms due to the continual drying out of the site indicated by the plant community at the site.

Fish

A joint effort by the U.S. Fish and Wildlife Service and the Interstate Commission on the Potomac River Basin began in 1995 has resulted in a significant re-establishment of American shad in the Potomac River. In eight years, over 15 million shad fry were introduced into the

Potomac River. Monitoring in the tidal freshwater Potomac has revealed significant success in increased collection of adult, young of year, and shad fry in this area since release occurred.

The C&O Canal NHP completed a park-wide fish survey in 2004 (see Appendix).²⁶ Additionally, naturally ranging fish in this portion of the Potomac and tributaries to the river have been identified by the Maryland Biological Stream Survey. Fish that likely range around the project site include American eel, lamprey, killifish, dace, minnows, shiners chubbs, bluegills, and bass.

Birds

The Potomac River has historically supported many types of bird species, including waterfowl, raptors, songbirds, wading birds, etc. Birds of interest that have been observed in the area of the site include turkey vultures, great blue herons, bald eagles, Canada geese, cackling geese, mergansers, and peregrine falcons. Many more bird species could possibly be found in the environs due to the proximity to a large waterbody and expanses of wild, open river and wooded uplands, wetlands, and marshes.

The site supports plants that produce fruits and seeds which would be attractive to nesting and resting bird species. The proximity to urban areas, however, limits this site from being of great use to the larger wild bird species mentioned above.

Mammals

There were very few animals of any type observed, which would be expected for a site so close to an urban environment. Animal signs belonging to White-tailed deer (scat, browse, and prints) were observed and it appears that deer use the site extensively. The site is most likely suitable for other small mammal use, including raccoon, skunk, fox, and rodents. Although the site serves in some capacity as an animal habitat, its proximity to an urban area and the continuous natural shoreline and habitat area to the west indicates that it is probably not a significant habitat resource.

Reptiles and Amphibians

Reptiles and amphibians have been studied within the C&O Canal NHP and observed within the C&O Canal and offsite in the tributaries and natural areas along the Potomac (see Appendix).²⁷ However, there were no observances of herptiles or of appropriate habitat of any type during a fall 2004 field visit. Records of turtle species, including Eastern redbellies, painted, and Eastern box turtles exist in the area; however, there does not appear to be suitable habitat for these species to exist at the site. There are not enough perennial, deeper wetland ponds to support the species during their life cycle. In addition, the soils are very hard both on the site and at the river/shoreline interface due to fill material and concrete deposited on the shoreline. It is possible that Eastern red-back salamanders (*Plethodon cinereus*) or Red-spotted newt (*Notophthalmus viridescens*) use the site at the adult stages. However, due to the contaminated

²⁶ Raesly, Richard L., Inventory and Biological Monitoring of Fishes in National Parks of the National Capital Region, NPS, 2004.

²⁷ Dr. Thomas K. Pauley, Herp Species observed by habitat at CHOH Surveys, NPS-Center for Urban Ecology, 2005.

condition of the soils on the site, it is not likely that amphibians that are sensitive to degraded water quality would use this site for prolonged periods of time, if at all.

Protected Plant and Animal Species

Plant and animal species, which are rare, threatened and endangered, (RT&E) either locally, regionally, or nationally, are considered sensitive and are protected (along with their habitat) under a number of federal, state, and local laws. These include the federal Endangered Species Act (ESA), the Bald and Golden Eagle Protection Act, the Migratory Bird Treaty Act, Maryland and Virginia sensitive species laws, and the applicable critical area plans for the Chesapeake Bay Program. The U.S. Fish and Wildlife Service (USFWS) has authority over projects that may affect federally listed species.

RT&E Plant and Animal Species

USFWS has indicated there are no Federally listed RT&E plant or animal species near the site (see correspondence in Appendix). There are Mussels listed as rare in Maryland as discussed above that have been located in the C&O Canal with the closest location almost a mile upstream from the site. There are also locally listed RT&E plant species located in the District of Columbia. An inventory in the vicinity of the project site is provided by *Inventory for Rare Plants & Significant Habitats along the C&O Canal NHP and Potomac River (within the District of Columbia) March 2001* (Wildlife & Heritage Division Maryland DNR, 2001). The project site lies within the Fletcher's Floodplain Survey Site from Key Bridge upstream approximately two miles towards Chain Bridge to the boathouse at Fletcher's Cove. Within this area are small pockets of scoured bedrock terrace habitats including river overwash habitat, scour prairie, scour savanna and woodland and exposed bedrock habitats. Although this description of the habitat is accurate for areas upstream, the boathouse site is primarily a fill site (for the railroad and Interceptor Sewer) and does not include any of these specialized habitat areas.

Nineteen plant species listed in the District of Columbia as rare, highly rare, historical or extirpated are documented within the Fletcher's Floodplain Survey Site. The *Inventory for Rare Plants & Significant Habitats along the C&O Canal NHP and Potomac River; Field Forms & Maps (Part Three)* (Wiegand, April 2001) lists twelve RT&E plant species within the Fletcher's Floodplain Survey Site.

Maryland DNR has field knowledge of the RT&E plants and the potential for populations in the vicinity of the C&O Canal NHP. They have documented good RT&E habitat for plant species near the boathouse at Fletcher's Cove, approximately two miles upriver from the project site.

3.4.4 Noise

Noise or unwanted sound is a function of the noise source, the noise receptors, and the physical conditions between the source and receptors (i.e., topography/structures, climate, ambient noise, time of day). There are no noise sources on the project site. The predominant source of noise in the project area is occasional human activity at the adjacent boathouse and vehicle traffic on Canal Road, Key Bridge, and Whitehurst Freeway, which are elevated near the project site. Helicopter and commercial aircraft flyovers occur sporadically but in short duration. Due to the site's location in proximity to the urban area of Georgetown, ambient noise levels would naturally be higher during the daytime and evening hours, and lower during the night.

District of Columbia regulations limit the noise levels allowable in residential, commercial, industrial, and waterfront zones, and provide a noise threshold for construction and demolition activities (excluding pile driving) limited to 80 dB(A) averaged over an hour occurring between 7:00 a.m. to 7:00 p.m and 55 dB(A) between 7:00 p.m and 7:00 a.m.²⁸ Noise levels are typically measured and expressed in decibels (dB) that are perceivable by the human ear (dB(A)).

Receptors considered to be sensitive to noise generally include humans performing specific activities, or located within specific land uses, that may be stressed by significant interference from noise. Noise-sensitive receptors typically include residential dwellings, hotels, hospitals, nursing homes, education facilities, and libraries, where sleeping, healing, or concentrating is a priority. Noise-sensitive receptors may also include threatened or endangered biological species, or their habitat, during breeding and/or nesting seasons. Commercial (office buildings) and industrial land uses are not considered to be sensitive to noise. The WCC and PBC boathouses east of the site also do not meet the noise-sensitive criteria as these are recreational facilities primarily used for private recreational purposes and boat storage.

²⁸ District of Columbia Municipal Regulations, Title 20, Chapter 27 – Noise Control.

3.5 UTILITIES/INFRASTRUCTURE

3.5.1 Stormwater Drainage and Stormwater Management

The project site's stormwater drainage area is from the towpath, as the high point, sloping to the south and down to the river's edge. Site investigations revealed that stormwater flows to the artificial wetland area from most portions of the site and some areas around the site. In some locations, shoreline fill blocks drainage to the Potomac River creating almost a bowl-shape with drainage being held within it. However, there are locations along the shoreline where small drainage channels have cut through the bank and where water flows over the bank and directly into the river. There are some locations along the shoreline where there are cavities in the fill and it appears that water flows into the cavities to enter the river through the shoreline fill so that drainage is not directly over land.

There are no storm drainage systems or stormwater management facilities on or adjoining the site. The project site has not been developed and, therefore, does not have any drainage channels to direct the flow of runoff, and there are no impervious surfaces to expedite the transport of sediment and contaminants, retard the surface absorption and assimilation of stormwater, or inhibit groundwater recharge.

The section of the Potomac River adjoining the site is tidal. The site is flooded periodically and is within the Federal Emergency Management Agency (FEMA) 100-year floodplain. Therefore, flood waters drain off the site similar to stormwater as described above.

3.5.2 Urban Systems

Sanitary Sewer

The project site is not served by an existing sewer lateral. An 84" sanitary interceptor sewer traverses the site from east to west. An inactive 48" sanitary relief sewer is located south of the C&O Canal Towpath at the base of the canal embankment. The towpath parallels the north side of the proposed boathouse location. The sanitary sewers are owned and operated by the District of Columbia Water and Sewer Authority (DC WASA). The 84" is a surcharged (pressurized) concrete pipe supported by piles with slightly greater than one foot of cover. The inactive 48" sanitary relief sewer was constructed to supplement the capacity of the interceptor. Due to the condition of the 48" sewer, this pipe running north of the project site was made inactive by DC WASA. DC WASA has projected to repair the 48" sewer pipe in the next few years.

Throughout the preliminary project planning process, it was determined that DC WASA would allow for a connection to the 48" sanitary sewer east of the WCC and west of the Alexandria Aqueduct abutment along Water Street, N.W. The existing 48" sanitary sewer is active east of a 42" sewer interconnection between the interceptor and relief sewers. The site is not presently developed and is not being used for activities that would require sanitary sewer service. Therefore, the existing D.C. sanitary sewer collection system has not provided a service lateral to the site.

Potable Water

The project site is not served by an existing water main. An existing 12” water main is located on the east side of the Alexandria Aqueduct Bridge Abutment near Water Street, N.W. The water main is owned and operated by DC WASA. The main was recently tested for static pressure and fire flow residual pressure by DC WASA. The results of the pressure test were 65 and 50 pounds per square, respectively.

Throughout the preliminary project planning process, it was determined that DC WASA would provide potable water service for the boathouse. DC WASA would allow for the extension of the water service area from the 12” water main to the site. The existing site is not developed and is not used for any activities that require water service. Therefore, the existing water distribution system does not serve the site.

Natural Gas

The project site is not served by an existing gas main. An existing gas main is located to the east of the Alexandria Aqueduct Bridge Abutment near Water Street, N.W. The gas main is owned and operated by Washington Gas District of Columbia Division. The existing site is not developed and, therefore, is not currently served by the existing gas system. An application for gas service extension has been made and approved by Washington Gas.

Solid Waste Disposal

Currently, the project site is not served by the District of Columbia Department of Public Works, Solid Waste Management Administration. Vehicle access for the trash collection is not available, nor is there public vehicular access to the site. The existing site has no development, and, therefore, is not currently generating solid waste relating to human activities.

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