



# FOUR MILE RUN VALLEY AREA PLAN

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# INTRODUCTION

## PURPOSE OF THIS PLAN

The character of Arlington County has changed greatly through the years, such that the Four Mile Run Valley (4MRV) is the last large area where there is a concentration of property zoned for industrial uses within the County. The previously unplanned 4MRV area is located between the Nauck Revitalization District, where new mixed-use development is planned around a Town Square, and Shirlington Village, which has grown from a neighborhood shopping strip to a major mixed-use hub with housing, office, retail, arts and civic uses, as well as a Bus Transit Center.

Over time, businesses in the 4MRV area have shifted from industrial to service commercial uses, and the most recent new developments include public storage and a small brewery, which were approved by-right under the existing zoning. In the absence of planning guidance for this area, this type of piecemeal development will likely continue to occur. Community members have requested, for some time, that a Plan be developed for this area. This planning process was initiated to provide an opportunity for community dialogue about the future of this area, considering the built and natural environments, potential future public and private investments, and how those elements would work together, building on the history of the area.

### PLANNING PROCESS GOAL

The overall goal of the Four Mile Run Valley (4MRV) initiative is to develop a comprehensive future vision for the Four Mile Run Valley and specific strategies to achieve that vision through the adoption of a **4MRV Area Plan**, a Park Master Plan, and a design for the Nauck Town Square (see page I.4.). These plans will help guide public and private investment, including County operations for the long term, along with the preservation and enhancement of natural resources, open spaces, and future development in a manner compatible with the surrounding area and consistent with the County's overall policies.

### THE AREA PLAN

The Area Plan addresses key planning issues including environmental sustainability, open space planning, building height, land use mix, urban design, and transportation systems. The Area Plan includes short- and long-term recommendations and strategies to address how the character of the area might change over time. The Plan assesses demand for the area's existing industrial and service commercial uses, including analysis of how this area can support countywide demands over the long term, and evaluate potential for appropriate future uses that are consistent with the Area Plan vision.

### RELATIONSHIP TO THE PARK MASTER PLAN

The Park Master Plan was developed in coordination with the Area Plan, and provides a vision for the comprehensive replacement and realignment (exclusively for park purposes) of existing park features and the addition of new park amenities to meet the growing demand for active recreation, cultural resources and natural resource preservation. The Park Master Plan is a comprehensive Master Plan for Jennie Dean Park, Shirlington Park, the Shirlington Dog Park and other potential park spaces. The Plan is phased and incorporated into the County's Capital Improvement Program (CIP). The Parks Master Plan establishes a vision, policies and implementation strategies, including but not limited to, design guidelines detailing the placement, orientation, materials and programming of open space/park amenities. The Master Plan includes recommendations for use, sizes and locations of parks within the study area; park area circulation, multi-modal transportation and parking needs; environmental/floodplain/Resource Protection Area/energy considerations; massing and phasing for potential indoor facilities and cultural amenities; and exploration of opportunities to re-naturalize and integrate Four Mile Run stream into the parks.





# PLANNING PROCESS OVERVIEW

The Four Mile Run Valley Area Plan process began in June 2016. A Working Group was established and charged with providing advice, feedback, and guidance to County staff and the consultant teams for both the Area Plan and Parks Master Plan. There have been a number of opportunities for community input, including attendance at bi-monthly Working Group meetings and the following milestones:

**JUNE 2016:** County / Working Group Walking Tour

**SEPTEMBER 2016:** Working Group Community Forum

**DECEMBER 2016:** Four-day Community Visioning Workshop

**MAY 2017:** County Board Work Session

**JULY 2017:** Community Open House

**MAY 2018:** County Board approves Policy Framework

A compilation of relevant documents and presentations is maintained on the County website ([4mrv.com](http://4mrv.com)). Input from the Working Group as well as community feedback have shaped the ideas that have been explored.

## AREA PLAN THEMES

During the planning process, several **recurring themes** were heard at major public engagement events and reinforced in discussions with the Working Group. These recurring themes help to formulate the vision for the Four Mile Run Valley.

- **IMPROVE FOUR MILE RUN:** enhance natural areas, create paseo/walkway on the Run, manage stormwater, provide additional pedestrian crossing(s)
- **ACCESS / SAFETY FOR PEDESTRIANS & CYCLISTS:** improve intersections & Four Mile Run Drive
- **Maintain INDUSTRIAL CHARACTER**
- **ARTS:** want studios/theater/rehearsal spaces, maker spaces, connection to Shirlington & Nauck
- **SPACE FOR COUNTY NEEDS:** civic facilities, storage, bus parking, and open space
- **Create better PUBLIC ACCESS TO THE RUN**
- **Address PARKING:** serve existing businesses and Jennie Dean Park and facilitate future vision/growth
- **Maintain SPACE FOR INDUSTRIAL BUSINESSES AND COUNTY USES**
- **Make IMPROVEMENTS TO AESTHETICS** (such as by painting)

*Note: Themes for the Parks Master Plan can be found in Appendix A.*



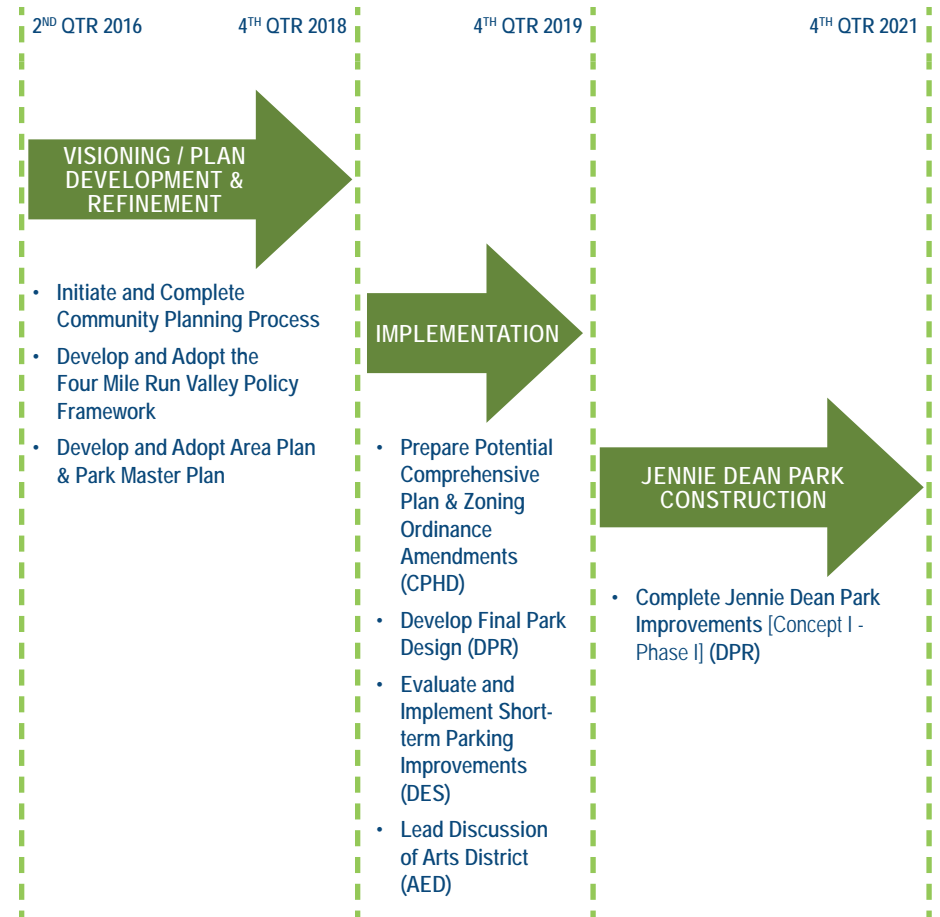




**FIGURE 1.1: 4MRV PLANNING PROCESS**

June 2016 Walking Tour (*above*);

The December 2016 Community Visioning Workshop included community input sessions, stakeholder meetings, and an on-site planning studio (*bottom*)



**FIGURE 1.2: PLANNING TIMELINE**



## NAUCK TOWN SQUARE

The Nauck Town Square (NTS) is one of the core components of the Nauck Village Center Action Plan (2004). The NTS will be the anchor of the Nauck Village Center and serve as the social and cultural heart of the neighborhood. Amenities will include public art/history, a place for outdoor performances, and other urban public space amenities, such as moveable seating and game tables, along with well-designed landscape/hardscape areas and a dry stream. Walter Hood, a renowned landscape architect and artist, worked with the community through a series of visioning sessions to develop the conceptual design for the space. A series of community charrettes in 2015 and 2016 were held to develop a final concept design (shown right) that was presented to the community in October 2017. The project will go to construction in Fall 2018 and be completed by Spring 2020.



**FIGURE I.3: NAUCK TOWN SQUARE CONCEPT PLAN**

Rendering of Nauck Town Square (Hood Design Studio, *above*);  
Concept Plan (Hood Design Studio, *right*)





# HOW TO USE THIS DOCUMENT

This Area Plan provides a review of the Four Mile Run Valley's history and relevant existing conditions and constraints; *Guiding Principles*, a *Vision Statement*, and other considerations that led to the Plan concepts; policy guidance and design guidelines to achieve the vision for the area; and, most importantly, an implementation matrix that provides a framework and timeline for how and when public improvements and other policy-related follow-up actions may be accomplished.

The *Guiding Principles*, which were adopted by the 4MRV Working Group, are included in Chapter 3. These principles and community input helped to shape the crafting of the *Vision Statement*, which, in short, ties the area's future to its industrial past and suggests that strategic interventions by the County can contribute to a safer, more accessible area that includes revitalized public parks, enhanced access to natural areas, better connectivity, and new public and private investment that could include the arts.

Based on input that has been received, the Plan incorporates the policy related elements that were adopted as part of the 4MRV Policy Framework and indicates staff recommendations in terms of synthesizing input and balancing it with adopted County policy. Several ideas that are central to the development of the Vision for the area guide the development of this Plan, including:

- Increasing access to and improving natural spaces;
- Maintaining the existing industrial character / supporting existing businesses;
- Expanding parking to support public and private uses;
- Mitigating environmental impacts, where possible;
- Encouraging the expansion of arts uses;
- Improving pedestrian and bicycle safety and connections to/through the area; and
- Redeveloping Jennie Dean Park and Shirlington Park, and investing in other area parks, over time.

As with the Policy Framework, these ideas are woven through the *Guiding Principles*, conceptual drawings, policy and design guideline recommendations, with the goal of creating, in the long run, a distinct area where the historic industrial/service commercial character is preserved and integrated with new arts and creative spaces, and improved parks and informal natural areas, while long-standing environmental impacts are mitigated, to the extent possible.

Staff developed Design Guidelines to guide public and private development throughout the study area over time, in a manner consistent with the industrial vision. In a subsequent draft, this section will be further refined to more clearly delineate options for reuse and redevelopment and to bolster guidance for future public realm improvements.

Chapter 5 (Implementation) summarizes potential changes/improvements to the area that will occur in phases, over many years, as private property owners make individual decisions in response to market forces and the County identifies and implements capital investments. It also describes initial actions and follow-up studies that can be undertaken to begin to implement the 4MRV Plan vision.

## OTHER PLANS AND POLICIES

During this process, staff reviewed the various elements of the Arlington County Comprehensive Plan, such as the General Land Use Plan (GLUP), the Master Transportation Plan (MTP), and the Public Spaces Master Plan (PSMP), to gain an understanding of adopted County policy. In addition, other Plans and policy documents were reviewed, including the Four Mile Run (Stream) Restoration Master Plan and Design Guidelines.

These policy documents were reviewed in order to gain a better understanding of the context for the study area and also to ensure that the concepts, ideas and policy recommendations that are produced in this planning effort are consistent with previously established policy.





1.6



# FOUR MILE RUN VALLEY

## EXISTING CONDITIONS OVERVIEW

This chapter contains an overview of existing conditions in the Four Mile Run Valley study area. In 2016, the County engaged a team of consultants to review and analyze existing conditions and surrounding context, and to help develop ideas and concepts for review with the 4MRV Working Group and the broader community. In addition to reviewing existing plans and policy documents that might inform this planning process, the consultant team carried out analysis of existing conditions in six topic areas: Urban Form, Transportation, Environment, Economics, Open Space, and Historic Resources. This chapter highlights key conditions, constraints and opportunities from that analysis, organized in the following sequence:

- HISTORY
- 4MRV TODAY
- LAND USE / ZONING
- WATER RESOURCES
- ENVIRONMENTAL ASSESSMENT
- OPEN SPACE
- MOBILITY

## AREA PLAN STUDY AREA

The Four Mile Run Valley Area Plan study area [See Figure 2.2: 4MRV Planning Area Map] is approximately 95 acres in southern Arlington County bordered by the Nauck residential neighborhood (north), Four Mile Run stream (south), I-395 (east), and Barcroft Park (west). The study area is divided into four subareas:

Subareas A and B located along S. Four Mile Run Drive include significant community spaces and recreational resources, including the Four Mile Run Trail, the W&OD Trail, Allie S. Freed Park, and the immediately adjacent Jennie Dean Park, Shirlington Dog Park, and Barcroft Park. The greatest visibility of Four Mile Run itself is from area bridges; along much of its length, the waterway is faced by the rear of lots/buildings and dense vegetation.

Subareas A and B contain primarily industrial and service commercial uses, including many auto- and dog-oriented services. Although there are some multi-story buildings, most structures are single-story and set back from the street edge amongst parking areas. Sidewalks are intermittent, resulting in limited definition of the public realm and a suboptimal pedestrian experience along the south side of S. Four Mile Run Drive. In Subarea A, to the west of South Walter Reed Drive, the sidewalk system is more continuous, but multiple overhead power lines and a major electrical substation contribute to visual disorder. Allie S. Freed Park, which is a natural area located on the south bank of Four Mile Run Drive west of S. Walter Reed Drive, is also located in Subarea A.

Subareas C and D have no public open spaces and limited tree canopy. The historic Lomax A.M.E. Zion Church anchors the northern edge of the study area. Other uses found here include service commercial facilities, hotel buildings (near Glebe Road / I-395) and the Vulcan Concrete facility. Shirlington Road is the primary vehicular and pedestrian access through these Subareas.





Although there is a connected sidewalk, a lack of building frontages to define the streetscape as well as wide pavement areas detract from the pedestrian experience. East of Shirlington Road, parking and storage facilities border the highway; the County recently purchased 2.5 acres in this area for ART bus storage. Due to the limited through movement and visibility, uses located here have less impact on surrounding neighborhoods. The Nauck Branch tributary of Four Mile Run traverses this area. Where it is above ground, the banks have been degraded and buildings directly abut the waterway. Much of the waterway is under private ownership.

## PARK MASTER PLAN STUDY AREA

The Four Mile Run Valley Park Master Plan (PMP) includes three parks: the 12-acre Jennie Dean Park, the 2.3-acre Shirlington Park, and 2.5-acre Shirlington Dog Park. Four Mile Run and its associated floodplain traverse the parks study area from east to west.

Jennie Dean Park, originally designed in 1949, is located on the eastern portion of the study area along with the recently acquired parcels, which front along portions of Four Mile Run Drive, 27th Street South, South Nelson Street and South Oakland Street. Shirlington Road forms the eastern limit of the Parks study area, Arlington Mill Drive the southern limit and Walter Reed Drive, the western limit. The core of the Jennie Dean Park includes a basketball court, two tennis courts, a restroom building with covered space for three picnic tables, and diamonds for baseball and softball. A playground is in the shadiest part of the park, surrounded by mature trees near the stream. A picnic/grill area is also located in this area, with approximately eight picnic tables that can be moved around. A small casual use space lies just west of the playground.

Shirlington Park includes a shared used path (Four Mile Run Trail) and open space along the southern boundary of Four Mile Run. The path accommodates both pedestrians and cyclists, and shade trees are provided both along the path and along the roadway edge. Site features include fitness stations, bike racks, benches, and a Capital Bikeshare Station, all located along the trail.

Shirlington Dog Park is a unique, heavily used facility and is considered both a local and regional attraction. Its popularity largely stems from its natural setting, its quarter-

mile length and ADA accessible trail, plus access points to Four Mile Run stream. The entire area (approximately 100,000 square feet) is enclosed so that dogs can wander freely off-leash. A small, separately fenced small dog area is provided near the main entrance. Park amenities include two dog water fountains, poop/scoop stations, a storage shed, benches, shade trees, and a small memorial tree.

## SURROUNDING CONTEXT

To the north along Shirlington Road is an area where future development is guided by the Nauck Village Center Action Plan. Adopted by the County Board in 2004, this plan aims to spark revitalization of the Nauck community's commercial core. The Nauck Town Square, a central component of this plan and future community anchor, is currently under design.

South of the study area is the Village at Shirlington, a regional destination that includes a mix of housing, office, retail, arts and cultural, and civic uses; and the County's Trades Center, which contains municipal facilities including vehicle maintenance and storage. The eastern boundary of the study area is Interstate 395 and the western boundary is Barcroft Park, one of the County's major recreational facilities.

FIGURE 2.1: CONTEXT MAP







**FIGURE 2.2:**  
**4MRV PLANNING AREA MAP**

**LEGEND**

- Area Plan Boundary
- County Line
- - Subarea Boundary

*Note: Parks Master Plan concept information is located in Appendix A.*



FIGURE 2.3: AERIAL MAP

LEGEND

- Area Plan Boundary
- Parks Master Plan Boundary
- County Line
- Resource Protection Area (RPA)





# HISTORY

Development of the study area's built environment began with the arrival of several gristmills along Four Mile Run in the mid-1700s. Records from that period indicate that there was a mill located within the study area near the site of present-day Jennie Dean Park. The area was generally "swampy and wooded" with little other physical development. It was not until the introduction of the railroad in the nineteenth century that the corridor began to evolve. During the Civil War, a massive Convalescent Camp constructed by the Union Army was located in what is now the Nauck neighborhood, north of Four Mile Run. The camp was primarily intended for injured soldiers who no longer required active medical treatment, and could recuperate within a fixed amount of time. During its first twelve months of operation, the camp processed approximately 111,000 soldiers. A growing railway system shepherded soldiers and supplies between the camp and its surrounds.

After the war, the railroad became an economic driver for the region and emerging commercial rail development began to change the character of the Four Mile Run Valley. Industrial plants and warehouses began to develop along the corridor enjoying easy access to the Washington and Old Dominion Railroad lines. A few sites containing small warehouses, sheds, brick making plants, and lumber yards looking to gain access to the shipping opportunities afforded by the railway started to locate inside the study area. Development continued into the twentieth century as access to the railroad fostered the growth of new and diverse industries.

In the mid-twentieth century, the business focus began to shift from railroad-supported industry to an automobile-oriented economy. When Interstate 395 opened in 1952, commercial and industrial businesses continued to locate along South Four Mile Run Drive in order to serve their customers and to gain better access to the new highway. In the late 1940s and early 1950s, a Pepsi Cola Company bottling plant, Virginia Concrete Company, and the Rosslyn Gas Company established facilities in the study area.

In 1968, the railroad ceased operations due to the impact of the interstate and other access roads in the region. With the decline of the railroad, many businesses vacated properties, which were soon transitioned to automobile-focused enterprises.



**FIGURE 2.4:**

Historic map of study area (above);

Aerial photo of study area, 1934 (below)





**FIGURE 2.5:** Lomax A.M.E. Zion Church (1978)

## EXISTING HISTORIC PROPERTIES

The Lomax A.M.E. Zion Church is located within the study area. In 1874, Trustees of the Church purchased an acre of land in the Nauck neighborhood and constructed their house of worship. In 1922, parishioners replaced an existing structure with the Gothic Revival-styled church that stands today. Members of the congregation reportedly had an active role in the construction. A historic cemetery is located to the south and east of the church. It contains approximately 107 interments of church congregants dating from 1894 to 1982. Unmarked graves and deteriorated markers may date prior to 1894.

Arlington County designated Lomax A.M.E. Zion Church & Cemetery as a Local Historic District in 1984 and the property was listed on the National Register of Historic Places in 2004.

## POTENTIAL HISTORIC PROPERTIES

In 2016, Cox, Graae + Spack Architects completed an architectural survey of 50 resources within the study area. Seventy-five percent of the resources were commercial buildings built between 1950 and 1970. The commercial buildings represent elements of the Modern-era, corporate commercialism, and vernacular architecture. The pragmatic buildings utilized new technologies to create open floor plans and enclose large volumes of space for light industrial and commercial purposes.

## NATIONAL REGISTER OF HISTORIC PLACES ELIGIBILITY

Cox, Graae + Spack found that the 4MRV study area contains no resources eligible for the National Register of Historic Places, either individually or as part of a historic district. While the buildings do represent the last remaining enclave of light industrial/commercial architecture within Arlington County, they fail to satisfy Criteria A (events and significant contributions to the broad patterns of our history), Criteria B (association with the lives of significant persons), or Criteria C (embodiment of the characteristics of a type, period, or method of design/construction) of the National Register of Historic Places. In addition, the majority of the buildings lack integrity of design, workmanship, or material to express their period of construction as most of them have been altered over time. Many of the commercial buildings in the study area, however, have the potential for adaptive reuse within the context of the Area Plan's vision.

## ARLINGTON COUNTY LOCAL HISTORIC DISTRICT ELIGIBILITY

Section 11.3.4 of the Arlington County Zoning Ordinance requires that at least two of the eleven established evaluation criteria be met in order for a potential project to be deemed eligible for local Historic District designation by the County Board. After careful evaluation of the 50 structures located within the Four Mile Run Valley study area that were constructed prior to 1966, four properties were identified for further consideration; the relative merits of their preservation or adaptive re-use can be evaluated among other County goals for the area, since these properties at a minimum demonstrate: (a) character, interest, or value as part of the development, heritage, or cultural characteristics of the County and are (b) suitable for preservation or restoration. These properties include:

- **2680 Shirlington Road**

In 1950, brothers Carl and Bill Staton founded the Weenie Beenie in Arlington County. The restaurant was named after Bill Staton, whose nickname was in fact, "Weenie Beenie." The restaurant on Shirlington Road was the brother's flagship location and is the sole remaining Weenie Beenie today. Constructed in 1956,



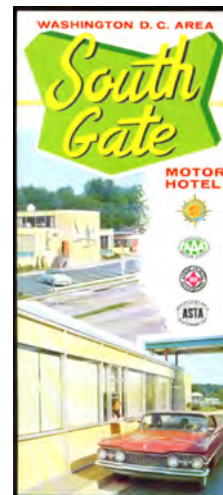
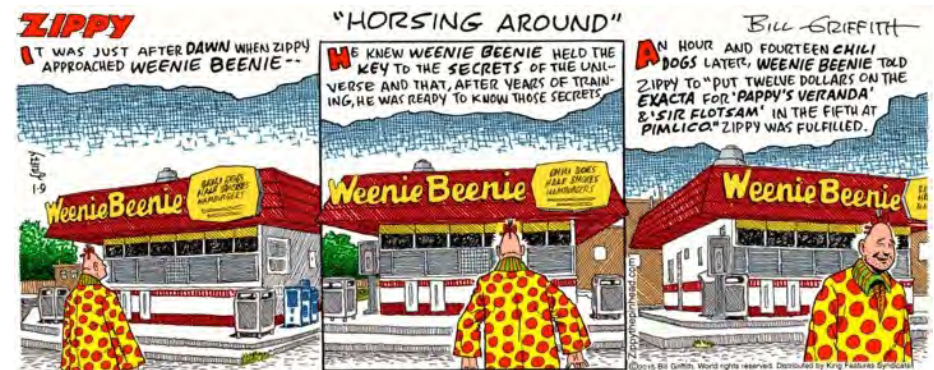
the colorful building with a wood shingle overhanging roof and bright yellow sign has changed little since and stands in stark contrast to the brick and concrete commercial buildings that otherwise populate the study area. It has continually served as a fast-food “joint” for 60 years, offering up the same menu on which the restaurant was founded. The establishment has become a cultural fixture along Shirlington Road and was featured in a nationally syndicated Zippy comic strip. “Weenie Beenie” is also a song title on the Foo Fighters’ debut album, immortalized by band front man Dave Grohl, who grew up in Arlington and Alexandria.

- **2480 South Glebe Road**

Interstate 395 was built through Arlington in 1952, and the South Gate Motor Hotel was constructed in 1958. Now part of the Best Western chain, this motel is a good, though not exceptional, example of classic American Motel architecture. It includes all the features typical of a classic motel: swimming pool, restaurant, long two-story guest buildings with outdoor hallways, gift shop, and easy access to the highway. While its architectural embellishment has been significantly altered through renovations over time, its core organization and continued function represent a rapidly disappearing development type.

- **3700 South Four Mile Run Drive**

In 1947, Russell M. Arundel seized an opportunity to franchise Pepsi-Cola’s expanding market by opening the Old Dominion Pepsi-Cola Bottling Company. Strategically located near the railroad, the site was ideal for moving this increasingly in-demand product more quickly to market. Pepsi was the first large scale manufacturing business to open its warehouse along Four Mile Run and take advantage of the railroad access the location afforded. The Old Dominion Pepsi Cola Bottling Plant building is potentially locally significant based on its loose Art Deco design underpinnings and its use of a new type of building material: prefabricated concrete. The prefabricated reinforced concrete freed the center of the building from needing load-bearing walls or columns for support. The completely open space allowed for the assembly line production of the bottling machines. While the building has architectural elements that are emblematic of 1940s architecture and is unique to the study corridor, subsequent building users have altered the exterior of the building over time. From a cultural standpoint, the building supported one of the earliest industrial users and a recognizable national retail brand.



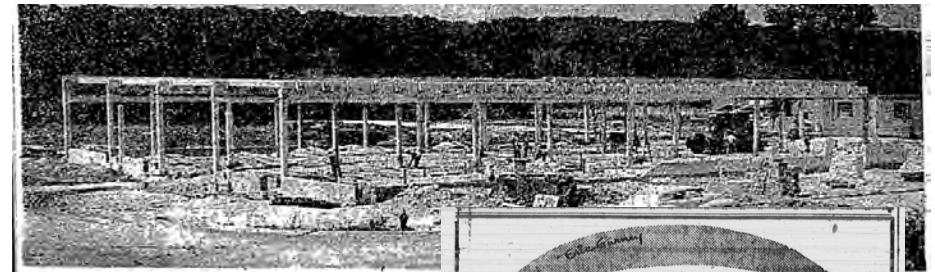
**FIGURE 2.6:**

The Weenie Beenie, existing conditions (above);  
Zippy Comic Strip (date unknown) (middle);  
South Gate Motor Hotel Promotional Brochure (date unknown) (left)



- **3806 South Four Mile Run Drive**

Originally constructed as a warehouse in 1951, 3806 South Four Mile Run Drive was one of the earlier commercial buildings constructed in the industrial corridor. It is most significant for housing the Signature Theater from 1993 through 2007, offering an interesting example of the evolution of commercial / industrial utility structures along the study corridor. Founded in 1989, Signature Theater rose in local popularity and quickly became renowned for reinventing classic musicals and presenting brand new ones. Over the years, the theater has garnered 305 Helen Hayes Award nominations and in 2009 received the prestigious Regional Theatre Tony Award. In 1993 Signature Theatre acquired the building in the Four Mile Run area affectionately known as “The Garage”, which they converted into a 136-seat black box. The theatre was so successful that in 2007, they moved to a larger performance venue in Shirlington, with assistance from Arlington County. Because of Signature Theatre’s impact on Four Mile Run, the Theatre on the Run and other arts and entertainment businesses continue to thrive in the area.

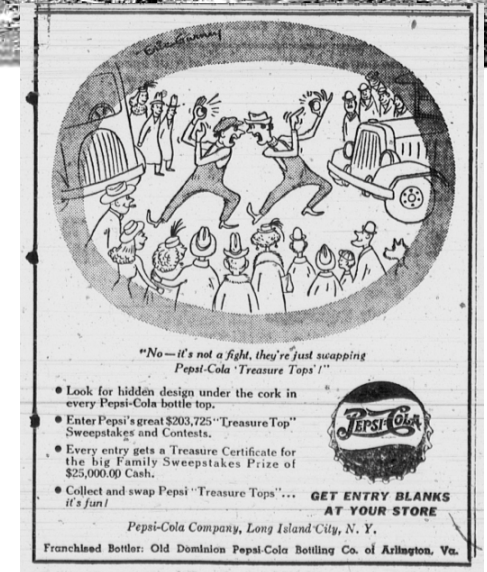


**FIGURE 2.7:**

Old Dominion Pepsi-Cola Bottling Plant under construction, June 1947 (The Washington Post) (above);

Pepsi Advertisement noting the Old Dominion Bottling Co. of Arlington, VA (The Sun, January 9, 1948) (right);

The Signature Theater (date unknown)(below)





## 4MRV TODAY

Today, the Four Mile Run Valley is still a largely commercial and automotive-oriented business district interwoven with storage warehouses. Recently it has seen the introduction of small specialized service businesses, many that are canine-centered due to proximity to the dog park and trails serving growing nearby residential communities.

4MRV includes most of Arlington's remaining industrial land. Previously, industrial land lined the County's rail corridors, corridors that now accommodate Metrorail. Decades of redevelopment have transitioned most of that land to higher-density residential and commercial uses.

Though Arlington's economy has evolved away from manufacturing and related industries, industrially-zoned land still plays an important role in the 4MRV by:

- Accommodating uses not allowed in other zoning districts, including breweries, machine shops, kennels, building contractors, large-scale caterers and wholesalers;
- Providing affordable older building space for start-up companies, artisans, art studios, arts production uses and other users unable to afford the rents for newly-built spaces or to compete with other businesses for commercial spaces;
- Providing convenient access to heavy commercial and industrial services for residents and for businesses servicing local homes and companies;
- Supporting small businesses, including several owned by immigrant and minority businesspeople, many of which offer entry-level jobs and provide on-the-job training and advancement opportunities for workers without college degrees;
- Potentially meeting County needs for public uses that are most compatible with industrial and heavy service uses, such as vehicle and equipment storage, as well as materials staging for major repair and construction projects; and
- Providing spaces that can be flexibly designed for a range of uses, with features such as higher ceilings or wider spans between columns.

## BUSINESS MIX

The study area includes a wide variety of businesses and organizations that together employ an estimated 1,660 workers. ESRI and Dun & Bradstreet (D&B) identify 78 private businesses in the study area.<sup>1</sup> Small businesses predominate with 39 businesses having one to five employees and another 15 having six to ten employees.

The mix of businesses by industry is quite diverse. Thirty automotive repair, auto dealers, parts dealers, service stations and a car wash form a key cluster. The link to the Dog Park and zoning limitations that require dog boarding kennels to locate in industrial areas are evidenced by four pet services and pet supply businesses in the study area. Two major caterers operate in the area along with a party rentals business, taking advantage of I-395 for easy access to customers. Two hotels operate on S. Glebe Road between 24th Road South and I-395.

Four major self-storage facilities in the area offer 325,400 square feet of space. They serve a growing number of apartment residents and small businesses, including home-

<sup>1</sup>These job statistics should be used as general indicators rather than precise counts as they depend on periodic telephone surveys of local businesses and are not always precise. In cases where the business does not provide information, the number of employees is estimated based on similar businesses in the same business category. Based on matching the Planning Division's survey with D&B and CoStar information, Partners for Economic Solutions has eliminated some listings for businesses no longer in the area; some duplicates may remain where a business may have multiple names.

**Table 2.8 Four Mile Run Study Area  
Businesses by Employment Size**

Number of Employees	Businesses	
	Number	Percent
1-5	39	50%
6-10	15	19%
11-20	7	9%
21-30	4	5%
31-40	-	0%
41-50	1	1%
51-75	-	0%
76-100	1	1%
101-150	1	1%
151-200	-	0%
201-250	1	1%
Not Reported	9	12%
<b>Total</b>	<b>78</b>	<b>100%</b>

Source: Dun & Bradstreet, 2016; ESRI, 2016; Partners for Economic Solutions, 2016.



based entrepreneurs. Small businesses are increasingly relying on self-storage facilities for their inventory, supplies and records, reducing their need for expensive office space and/or an independent warehouse of their own. The lease flexibility with the ability to quickly expand makes self storage particularly attractive to young companies. For most uses, convenience is the leading factor in choosing a self-storage facility, though some place a higher premium on low rents. Given the relatively low capital investment and low operating costs, self storage is a profitable and growing segment of the market.

## ARTS AND CULTURAL USES

Arts uses represent another key cluster. Arlington Economic Development/Arlington Cultural Affairs Division's management of 3700 South Four Mile Run Drive supports dozens of arts organizations. Facility support for arts organizations and artists includes an 85-seat black box theater (Theater on the Run), rehearsal spaces, dance studios, recording studios, artist studios, conference rooms, office space and a community art gallery. In 2017, Theater on the Run hosted 133 performances. The rehearsal spaces are completely booked evenings and weekends. Presently, over 40 Arlington arts organizations and individual artists use the facilities of the 3700 South Four Mile Run Drive building. The arts organizations include ACW Dances, Dominion Stage, Jane Franklin Dance, Educational Theatre Company, Encore Stage & Studio, Halau O'Aulani, Old Dominion Cloggers, Peters Alley, Teatro de la Luna, UrbanArias and Washington Shakespeare/Avant Bard. Signature Theatre, which now operates from a Shirlington theater space, maintains a major set storage facility in the area. WETA's production studio is located within the Jennie Dean Park portion of the study area on 27th Street South; however, relocation and consolidation at another location is being discussed currently.

## MUNICIPAL, STATE/UTILITY & COMMUNITY NON-PROFIT USES

Other County uses currently located in the study area include:

- Department of Parks and Recreation offices (*to be relocated to Lubber Run*);
- Arlington Transit (ART) bus parking;
- Arlington County Police vehicles;
- Arlington County Police mobile equipment storage.

At the western end of the corridor, the Virginia Department of Motor Vehicles has full-service office, and Dominion Power maintains a major electrical substation.

Non-profits include the Arlington Food Assistance Center (AFAC), which provides food for 1,100 Arlington families (roughly 150 families per day) and the Shirlington Employment and Education Center (SEEC), which serves a day laborer population averaging 30 persons per day.

## BUILDING CHARACTERISTICS

Thirty-seven of the study area's buildings are industrial or flex space. The area also includes another nine general retail buildings and two hotels.

The study area's industrial and flex buildings have no vacancies. Almost one-third of these buildings have between 10,000 and 20,000 square feet of space, and almost two-thirds have less than 20,000 square feet. Some of the largest spaces are self-storage facilities.

The building age data assembled by Cox Graae + Spack

Architects indicate that almost 90 percent of the buildings were built before 1970. Almost two-thirds of the buildings were built before 1960. Only three buildings have been developed since 1980, including two self-storage facilities.

**Table 2.9 Four Mile Run Study Area Industrial Properties by Size**

Square Feet	Buildings	
	Number	Percent
Less than 2,500	3	8%
2,500-4,999	5	14%
5,000-9,999	3	8%
10,000-19,999	12	32%
20,000-29,999	5	14%
30,000-39,999	2	5%
40,000-49,999	0	0%
50,000-74,999	4	11%
75,000-99,999	0	0%
100,000 or More	3	8%
<b>Total</b>	<b>37</b>	<b>100%</b>
Source: CoStar, 2016; Partners for Economic Solutions, 2016.		



## INDUSTRIAL LAND USE TRENDS

Urbanization has increased demand for conversion of industrial land and buildings in the County to other higher value uses, particularly on land near Metro stations. The Four Mile Run Valley has benefited from these trends as new businesses have filled vacant spaces in some of the few remaining industrial buildings in the County. At the same time, the national economy has shifted its focus from manufacturing to knowledge industries, other services and distribution. Manufacturing never was a major factor in Arlington; however, the County developed a base of businesses that supplied and serviced Arlington residents, homes and businesses. The opening of Metro's Orange and Blue lines accelerated Arlington's economic transformation as the County's population grew and Metro station areas redeveloped at much higher densities for office, residential and retail uses. Often, existing industrial and service commercial facilities were demolished to make way for those higher-density uses. Increasingly, service commercial uses (e.g., auto repair) have been pushed out of their long-time locations onto lower-cost sites with industrial zoning.

As shown in Table 2.10, the County had 79 buildings identified by CoStar as industrial or flex space with 1.7 million square feet of space in 1995. By 2010, the supply had been reduced by seven buildings to a total of 1.5 million square feet. The trend accelerated from 2010 to 2015 with the loss of another seven buildings to reach a total inventory of 1.3 million square feet – a 22.6-percent reduction from 1995. Demolitions occurred near the East Falls Church, Pentagon City and Ballston Metro stations. Occupancy increased from 94.2 percent in 1995 to 96.8 percent in 2015.

Arlington's supply of industrially zoned land has dwindled significantly since the County examined this issue in 2000. At that time, the County had a total of 298 acres zoned industrial, an inventory that has fallen to 102 acres today. The Four Mile Run study area now represents 55 percent of the County's total supply of industrially zoned land. Subsequent to completion of the *Industrial Land Use and Zoning Study (2000)*, prepared by the Planning Division of the Department of Community Planning, Housing & Development, many of the industrial properties that existed outside of the Four Mile Run area have been rezoned for commercial mixed-use development.

The Four Mile Run study area and the inventory of industrial buildings in turn have remained more stable. Shown in Table 2.11, the supply of industrial and flex building space declined by one 11,700 square-foot building acquired by the County for expansion of Jennie Dean Park. The current full occupancy shows a steady improvement from an occupancy rate of 93.7 percent in 1995, reflecting the shortage of close-in industrial properties.

**Table 2.10 Industrial Space Trends, Arlington County, 1993-2015**

Year	Inventory		Building Square Feet				
	Build-ings	Square Feet	Vacant	Occupied	Percent Occupied	Net Absorption	Deliv-eries
1995	79	1,683,763	98,096	1,585,667	94.2%	45,102	-
2000	79	1,683,763	35,328	1,548,435	92.0%	-93,800	-
2005	78	1,673,403	139,629	1,533,774	91.7%	-85,983	-
2010	72	1,506,035	28,300	1,377,735	91.5%	-72,491	-
2015	65	1,302,802	41,455	1,261,347	96.8%	8,281	-

Source: CoStar, 2016; Partners for Economic Solutions, 2016.

**Table 2.11 Industrial Land Trends, Four Mile Run Study Area, 1993-2015**

Year	Inventory		Building Square Feet				
	Build-ings	Square Feet	Vacant	Occupied	Percent Occupied	Net Absorption	Deliv-eries
1995	38	706,196	44,407	661,789	93.7%	20,976	-
2000	38	706,196	45,828	660,368	93.5%	-5,800	-
2005	38	706,196	12,700	693,496	98.2%	1,834	-
2010	38	706,196	15,700	690,496	97.8%	37,768	-
2015	37	694,496	-	694,496	100.0%	1,500	-

Source: CoStar, 2016; Partners for Economic Solutions, 2016.



## REGULATORY FRAMEWORK: GLUP

The General Land Use Plan (GLUP) is the primary policy guide for future development in Arlington County. The plan establishes the overall character, extent and location of various land uses and serves as a guide to communicate the policy of the County Board to citizens, the business community, developers, and others.

Most of the privately-owned parcels in the study area have been categorized as “Service Industry.” A few parcels of “Service Commercial” front Shirlington Road. “Medium” Residential is applied to the hotel parcels near 24th Road S. and Glebe Road.

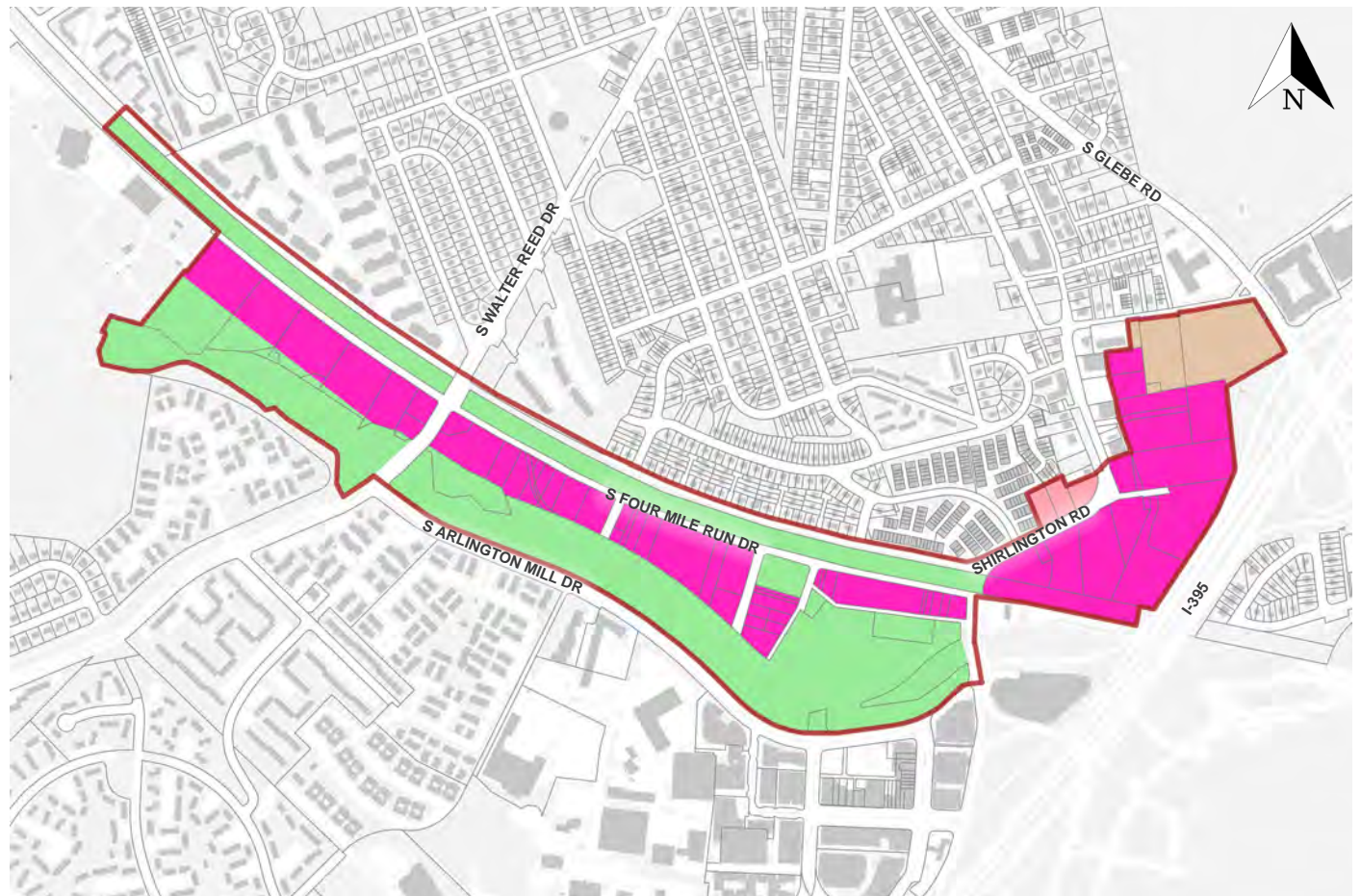
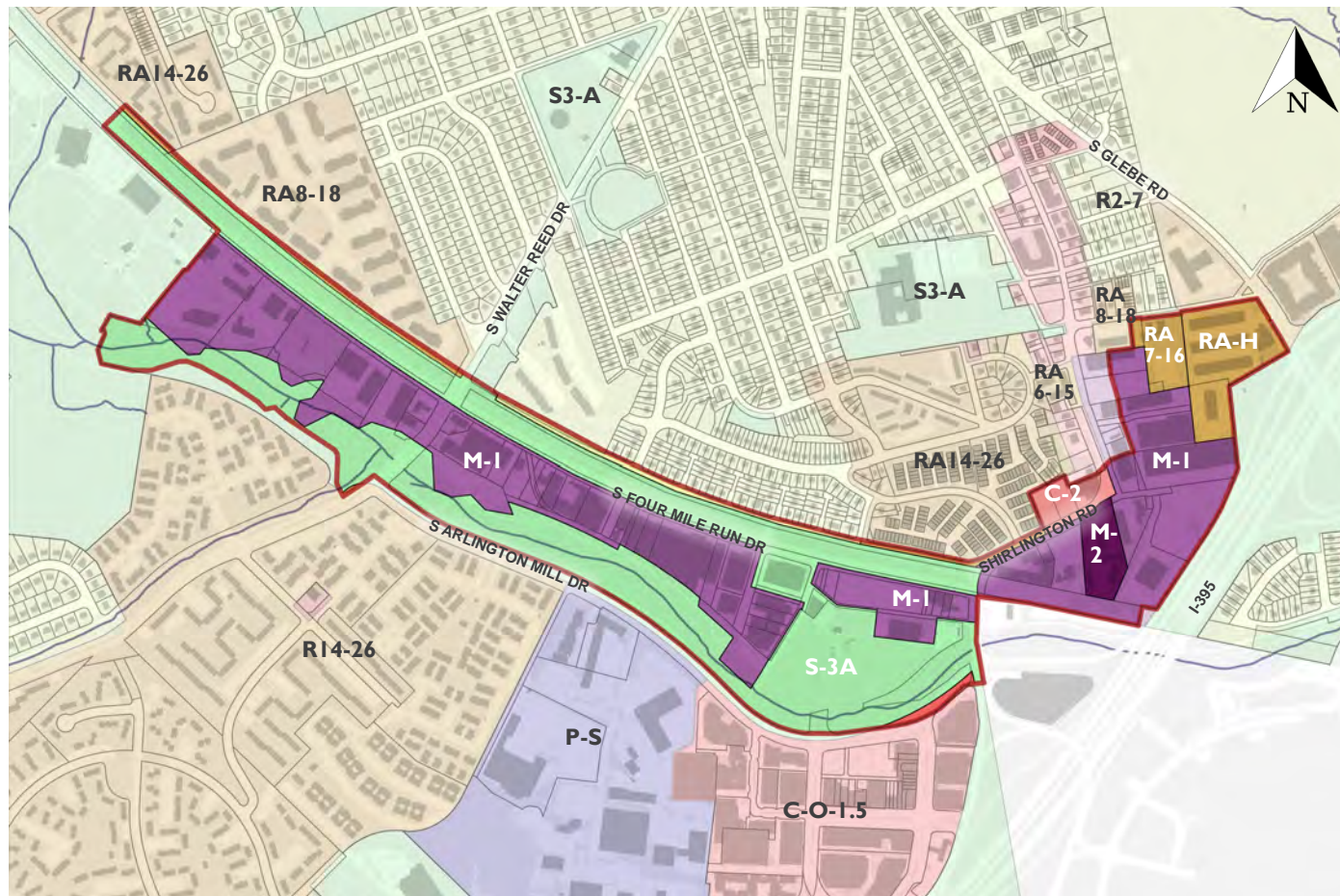


FIGURE 2.12: GENERAL LAND USE PLAN MAP

### LEGEND

- Service Commercial
- Service Industry
- Medium Residential
- Public





**FIGURE 2.13: ZONING MAP**

**LEGEND**

**Study Area:**

- Service Industrial
- Light Industrial
- Service Commercial
- Hotel / Multifamily
- Special District

**Surrounding Context:**

- Residential Districts
- Multifamily Districts
- Service Commercial / Mixd-use Commercial
- Public Service District
- Special District

## REGULATORY FRAMEWORK: EXISTING ZONING

Most private parcels in the study area are zoned M-I Light Industrial. This classification is intended to provide areas for light manufacturing, wholesale businesses and distribution centers and other uses inappropriate to residential or service business areas. Additionally, this classification permits concrete batching operations, motor vehicle storage, towing services, public facilities for processing refuse or water carried waste, railroad lines and associated structures.

Public lands in the study area are zoned S-3A Special District. The purpose of the S-3A Special District is to encourage the retention of certain properties in a relatively undeveloped state. Land so designated may include properties that have distinct and unique site advantages or other features so as to make them desirable to retain for active or casual use recreation or as scenic vistas.

Near the intersection of Glebe Road and I-395 is a hotel district (RA-H). This district allows apartment houses or townhouses (as permitted in RA7-16 districts), and hotels regulated with site plan approval by the County Board.

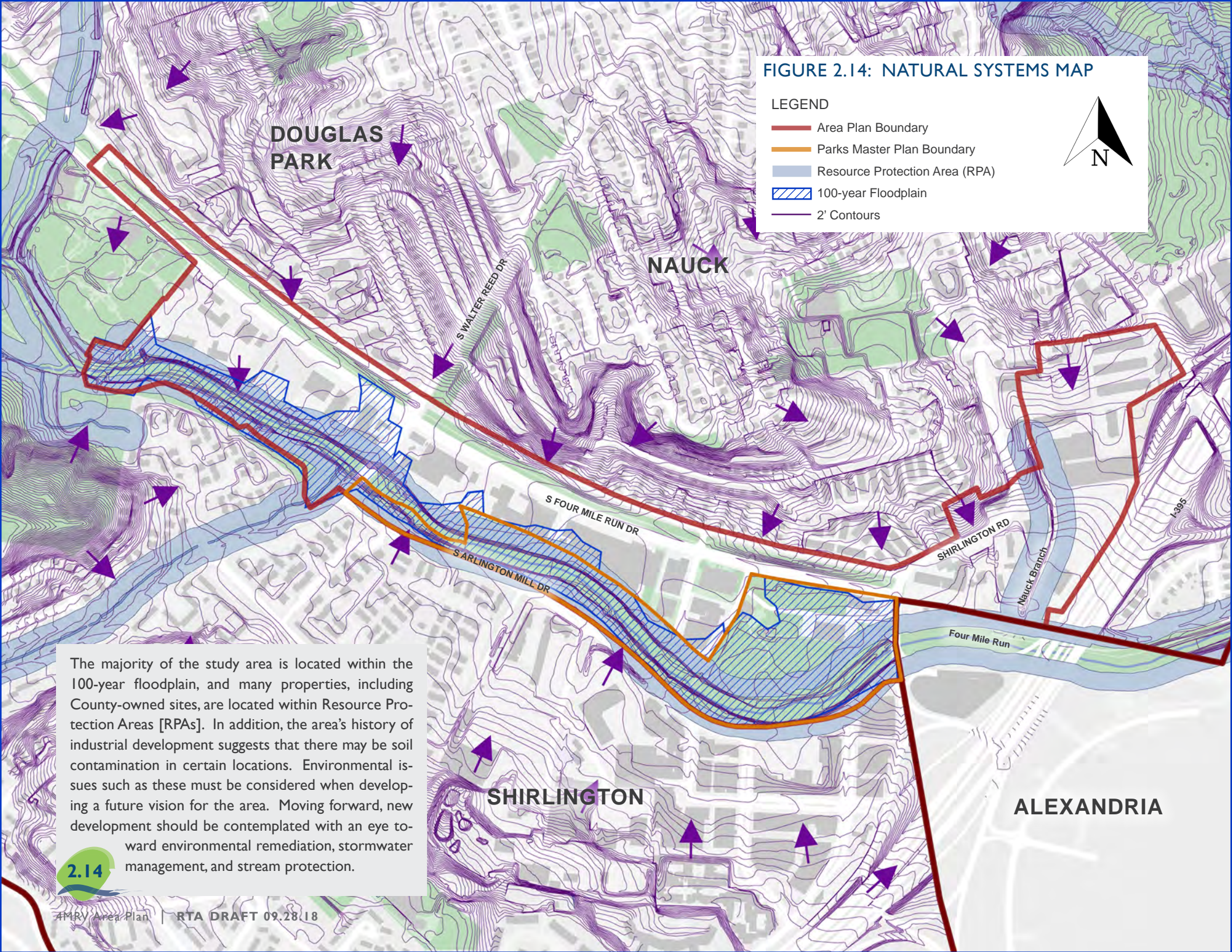
Along Shirlington Road is a Service Commercial (C-2) district. The purpose of this classification is to provide locations for commercial development with a variety of retail, service and office uses.



FIGURE 2.14: NATURAL SYSTEMS MAP

LEGEND

- Area Plan Boundary
- Parks Master Plan Boundary
- Resource Protection Area (RPA)
- 100-year Floodplain
- 2' Contours



The majority of the study area is located within the 100-year floodplain, and many properties, including County-owned sites, are located within Resource Protection Areas [RPAs]. In addition, the area's history of industrial development suggests that there may be soil contamination in certain locations. Environmental issues such as these must be considered when developing a future vision for the area. Moving forward, new development should be contemplated with an eye toward environmental remediation, stormwater management, and stream protection.

2.14



# WATER RESOURCES

## FOUR MILE RUN WATERSHED AND WATER QUALITY

Four Mile Run is approximately nine miles in length, with a contributing watershed of about 20 square miles. Four Mile Run empties into the Potomac River, which ultimately reaches the Chesapeake Bay. The Four Mile Run watershed intersects four political jurisdictions: Fairfax and Arlington counties, and the cities of Alexandria and Falls Church. The watershed is heavily developed, and many of the historic natural streams have been replaced with stormwater conveyance infrastructure.

The project study area includes one mile of the lower Four Mile Run corridor, from Barcroft Park upstream to the downstream limit at the County line. The extent of tidal influences on the run extends upstream of the Potomac River to slightly upstream of Mt. Vernon Avenue, approximately 1.1 miles downstream of the study area. Because the watershed is so urbanized and Four Mile Run is surrounded by highly used public open spaces, water quality is a significant focus. In 2010, the US EPA established the Chesapeake Bay Total Maximum Daily Load (TMDL). The TMDL is a comprehensive document including measures and target dates for restoration of clean water to the Bay and the region's streams, creeks and rivers – affecting six states and the District of Columbia. The overarching goal is “fishable and swimmable” waters by 2025. Arlington County and other jurisdictions within the Chesapeake Bay Watershed are required to reduce nutrient and sediment pollution to the Bay and its tributaries. In addition to the Chesapeake Bay TMDL, Four Mile Run was listed as impaired in 1996 for not meeting water quality standards for fecal coliform bacteria. A TMDL was established in 2002 for the non-tidal portion of the run including the study area, and a TMDL was established for the tidal portion of Four Mile Run in 2010.

An implementation plan for non-tidal Four Mile Run TMDL has been developed, relying on a range of structural (e.g., street sweeping, catch basin cleaning, sewer re-lining, etc.) and non-structural (e.g., green infrastructure, stream restoration, outreach and education, etc.) practices to help meet evolving requirements. In 2007, a TMDL was established for PCB contamination in the tidal Potomac and Anacostia Rivers, including tidal tributaries like Four Mile Run.

Over time, Four Mile Run's natural meandering alignment has been constricted and channelized. Due to urbanization and a history of flooding in

*Continued on p. 2.17*

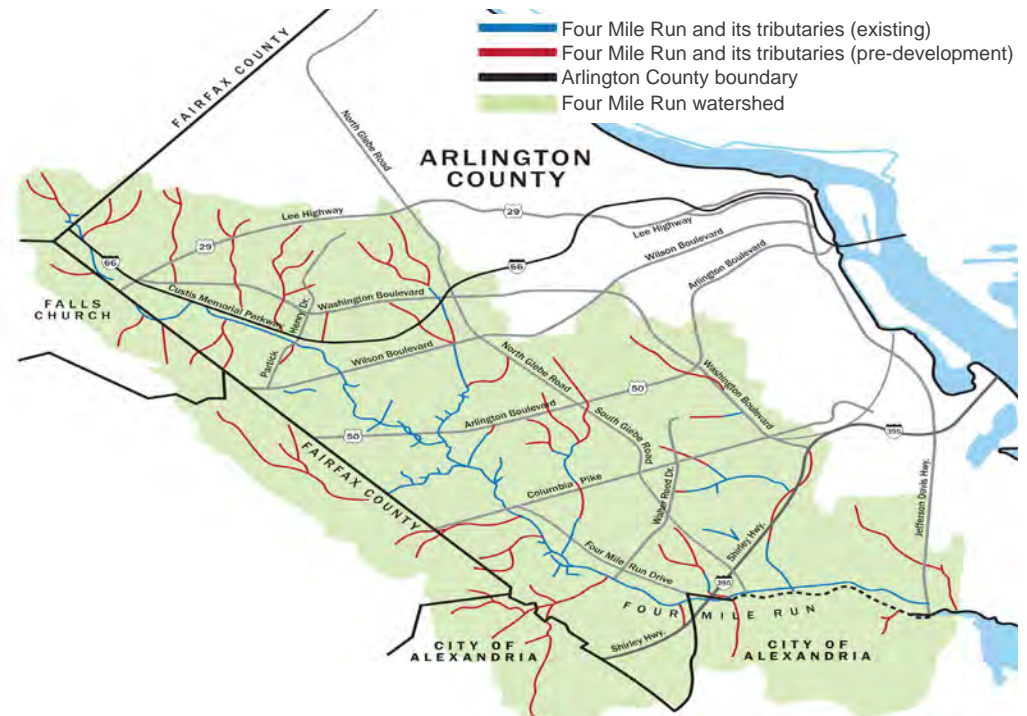


FIGURE 2.15: Four Mile Run Watershed

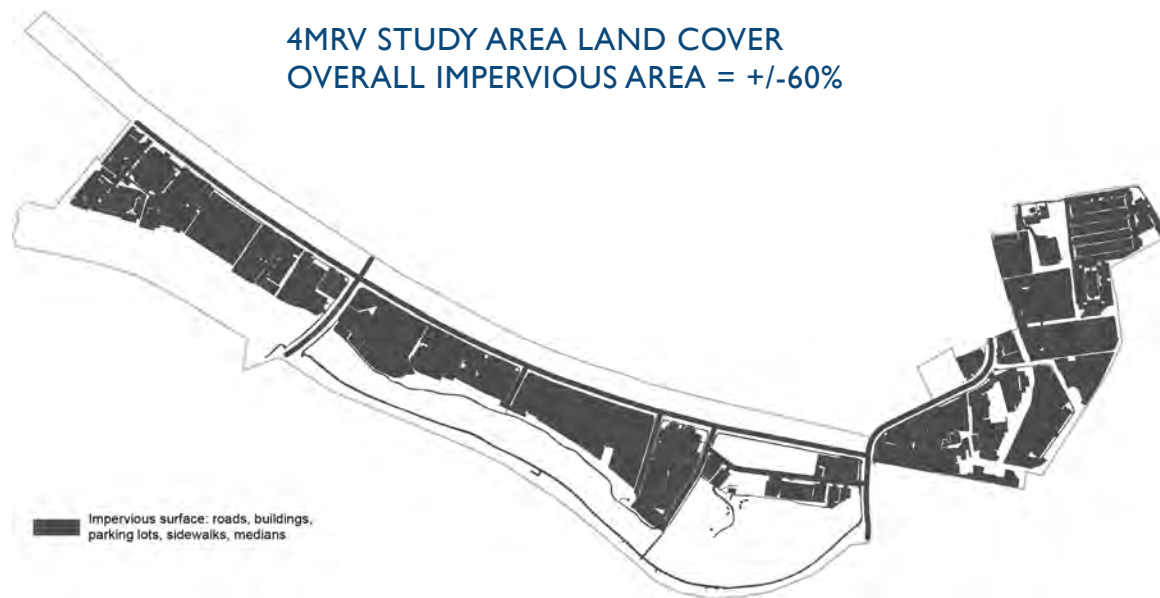
### FLOODPLAIN, FLOODWAY, AND RPA: WHAT'S THE DIFFERENCE?

The floodplain is the area adjacent to rivers and streams that is naturally subject to flood inundation. Typically this area is classified as the area at risk to flooding from the 1% chance event: the 100-year flood. In many urbanized stream and river corridors development and fill, or “encroachments”, reduce this area that would naturally have been subject to flooding.

The floodway is the area that must be kept free of encroachments in order to continue to pass the deeper, faster moving 100-year flood without raising water level beyond a regulated limit, i.e. one foot. When the floodway is obstructed by buildings, structures, or debris, flood waters will be dammed and will flood even greater areas. Communities regulate development in the floodway to ensure that there are no increases in upstream flood elevations.

Resource Protection Areas (RPAs) are defined as “sensitive lands adjacent to water bodies with perennial flow that have an intrinsic water quality value due to the ecological and biological processes they perform or are sensitive to impacts which may cause significant degradation to the quality of State waters...”





**FIGURE 2.16:**

Study area land cover at-a-glance (*above*);

Erosion protection weir located between S.Walter Reed Drive and the Shirlington pedestrian bridge, installed by Arlington County (*below left*);

Typical land cover in the study area is highly impervious, dominated by building roofs, pavement, and compacted earth (*right*)



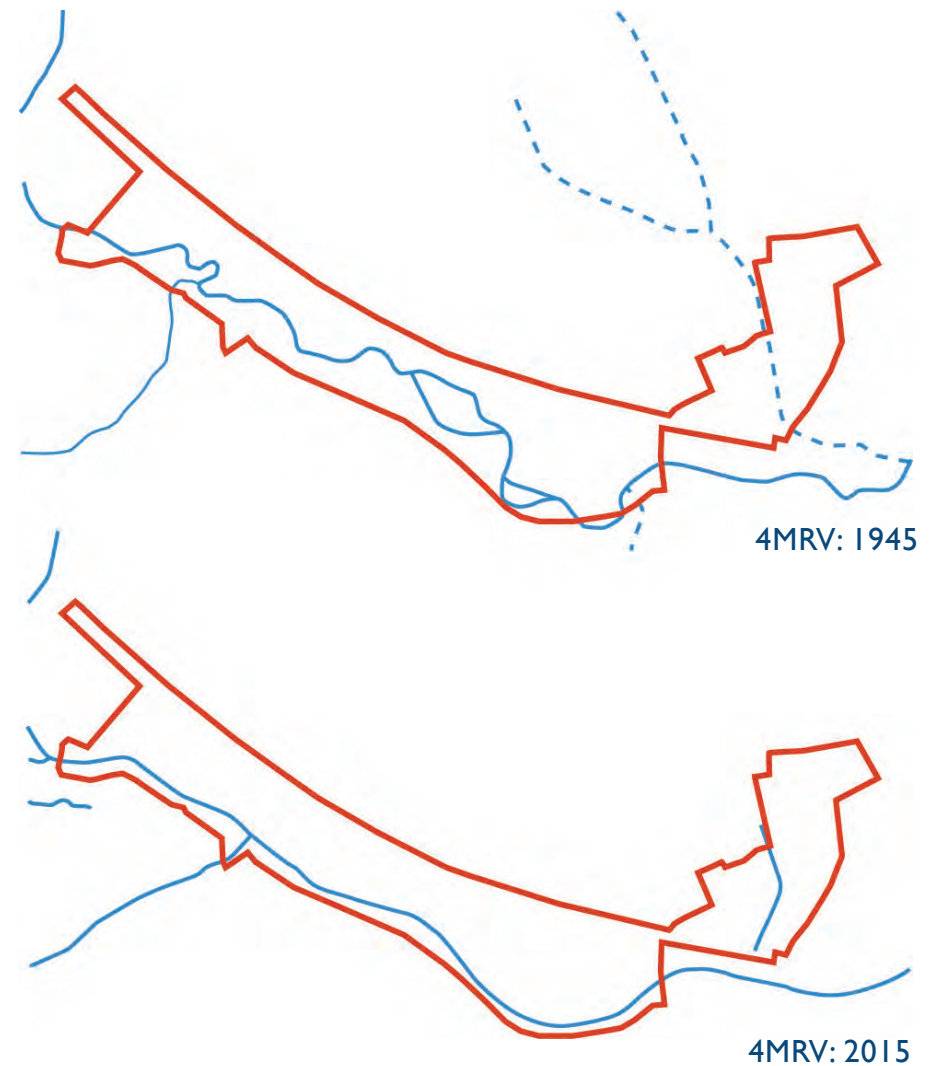


the area, the US Army Corps of Engineers (USACE) in the 1970s constructed a flood control project downstream of Shirlington Road to provide a stable stream channel and protect adjacent properties. Work was followed in the early 1980s with additional weirs between Shirlington Road and Walter Reed Drive installed by Arlington County as an erosion control project. The projects are still in place today, including armored banks, levees, and weirs controlling flow.

The reach immediately downstream of the study area is comprised of the mostly non-tidal stretch of the run to Mt. Vernon Avenue, whereupon a tidal portion of Four Mile Run stretches through the City of Alexandria to the confluence of the run with the Potomac River at Ronald Reagan National Airport. The Lower Mainstem has been the focus of significant study, including completion of the Four Mile Run Restoration Master Plan (2006) and the Four Mile Run Design Guidelines (2009).

Implementation of the 2006 Four Mile Run Master Plan recommendations in the Lower Mainstem since 2006 includes a significant wetland restoration at Four Mile Run Park opposite the Water Pollution Control Plant (County “Site 3”). Additional notable recent projects downstream of the study area include greening of one of the remaining Potomac Yard bridges for use as a dog park, a trail-side public art installation at the Water Pollution Control Plant, and trail connectivity improvements. Implementation of “Site 2” was completed in 2017, and includes replacement of riprap with planted stabilization, installation of “living shorelines” on the bottom of the bank and viewing platforms between Mt. Vernon Avenue and Route 1.

*Note: Additional background information and analysis is located in Appendix B.*



**FIGURE 2.17:** Four Mile Run channelization & realignment over time - 1945 (*top*); 2015 (*bottom*)



# ENVIRONMENTAL SITE ASSESSMENT

An Environmental Site Assessment of parcels within the study area was conducted at the onset of the planning process. The primary goal of the assessment was to review current, and to the extent practicable, historic utilization of the parcels within the study area, and from that develop a baseline understanding of potential environmental conditions that would potentially complicate any redevelopment of the parcel for alternative uses. More than 150 parcels in the Nauck Revitalization District (Nauck Area) and in the Area Plan study area (Four Mile Run Area) were reviewed. (See Figure 2.18)

This Plan document provides an overview of findings and recommendations from the assessment. Identification of potential environmental concerns, both past and present, was limited by the availability of information at the time of the study. It is possible that unreported disposal of waste or illegal activities impairing the environmental status of a parcel may have occurred but could not be identified. The conclusions and recommendations regarding environmental conditions in the assessment are based on the scope of work authorized by the County. The possibility remains that unexpected environmental conditions may be encountered at a parcel within the study area in locations not specifically investigated.

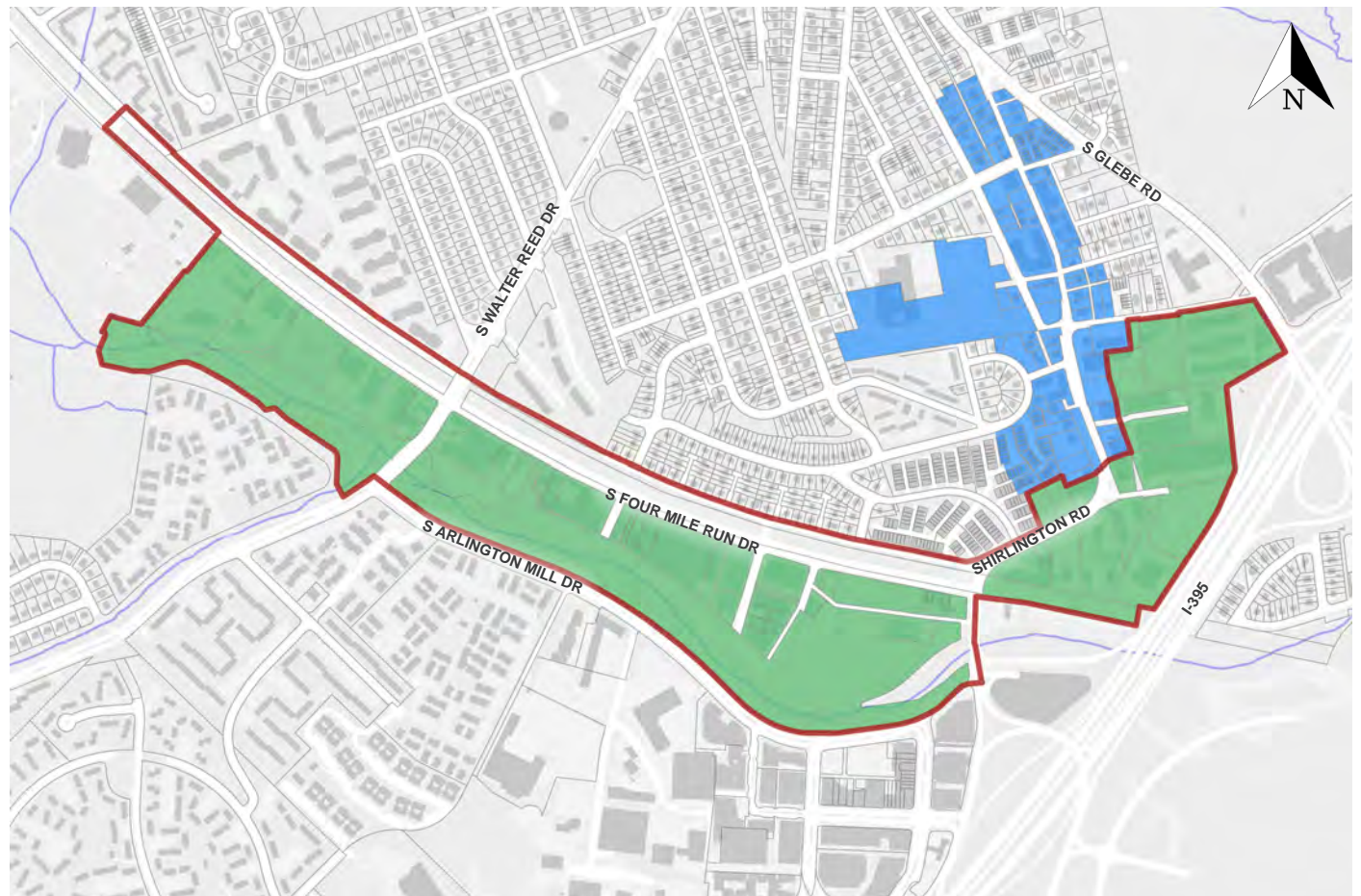


FIGURE 2.18: SITE ASSESSMENT AREA OF STUDY

## LEGEND

- Four Mile Run Area
- Nauck Area





## SITE ASSESSMENT FINDINGS

- More than 150 parcels in the Nauck Area and the Four Mile Run Area were reviewed, including a field assessment conducted on August 16-18, 2016 and a review of readily available documents and records for each parcel.
- Within the Four Mile Run Area, more than 30 parcels were designated as High Risk relative to the other assessed parcels. Fifteen of the parcels with this designation feature records of on-site petroleum storage and/or releases of oil or hazardous materials, or evidence of drycleaning operations.
- Within the Nauck Area, 6 parcels were designated as High Risk based on records of on-site petroleum storage and/or releases of oil or hazardous materials, or evidence of drycleaning operations.
- The assessment did not identify records of storage or releases of oil or hazardous materials in the Jennie Dean Park and recreational spaces on either side of Four Mile Run stream. A former railroad spur historically occupied the space that is now utilized as the Four Mile Run dog park.

*Note: The Site Assessment is based on observations in the field (2016) and a review of background documents and data. Horsley Witten Group (HW) does not warrant or guarantee the accuracy, completeness, and/or current status of the information contained in the environmental record sources for this study. Such information is the product of independent investigation by parties other than HW and/or information maintained by government agencies. Therefore, no representation concerning agency records, other than those described herein, is expressed or implied.*

## CONSIDERATIONS

- The historic utilization of parcels located within the Four Mile Run Area is consistent with other densely developed commercial areas. Preliminary planning for the redevelopment and reuse of these types of properties should include a baseline investigation early in the process to aid in identifying the most cost effective risk reduction strategies and potentially eliminate certain uses from consideration for a parcel or portion of a parcel.
- Areas adjacent to either side of Four Mile Run should undergo additional assessment and investigation to determine the potential presence of soil contamination associated with former uses and anthropogenic/urban fill.
- Prior to the purchase or transfer of any parcel or property within the study area to County ownership, a Phase I ESA completed in accordance with ASTM E1527-13 should be conducted to further evaluate the potential for Recognized Environmental Conditions (RECs).



# OPEN SPACE

Four Mile Run Valley has a unique combination of industrial and service commercial land uses abutting both residential neighborhoods and a natural area containing trails and waterways, presenting an opportunity to strike a balance between productive activity and open space amenities. Three major themes were identified for potential improvements within the open space network:

- **Recreation and Programs:** The area contains a number of popular recreational resources that are well-loved and well-used. There is potential to build upon synergies between open spaces and nearby businesses and other activities, which create a cohesive identity for this stretch of Four Mile Run. Opportunities to explore include:
  - Explore potential for enhancing and expanding well-used existing facilities;
  - Seek to find a balance between programmed, unprogrammed, and flexible spaces for multiple uses;
  - Explore potential for co-location / multiple use facilities;
  - Look for ways to integrate cultural resource education and interpretation;
  - Explore ways to integrate public art with open space; and
  - Consider creating a trail hierarchy based on a stacked loop system.
- **Access and Connectivity:** Currently, the planning area is isolated from surrounding neighborhoods by high-traffic roads, sparse streetscapes and few points of access into the existing green spaces and across Four Mile Run. Opportunities to explore include:
  - Safely link neighborhoods to public open space and waterways;
  - Explore potential for enhanced gateways at key intersections;
  - Consider street design interventions to Four Mile Run Drive to increase pedestrian safety and experience; and
  - Look for locations to increase internal connectivity in the study area.
- **Environmental Sustainability:** Following years of unplanned development of the service commercial corridor and encroachment on the riparian buffer, the quality of the natural areas surrounding the Run has been diminished. Opportunities to explore include:
  - Consider increasing natural areas and open spaces where possible;

- Seek opportunities to maximize pervious surfaces;
- Look for ways to reduce stormwater quantity and improve quality of waterways;
- Look for ways to increase quantity and quality of urban forest;
- Explore potential for improving in-stream habitat and ecology in Four Mile Run ; and
- Consider increasing ecotypes and biodiversity of the riparian buffer.

## ARLINGTON COUNTY PUBLIC SPACE MASTER PLAN

The Open Space component of the Four Mile Run Area Plan is guided by the 2005 Public Space Master Plan (PSMP), which is currently being updated. The PSMP is a countywide document that guides decisions about parks and other public spaces, sets the level of service for public spaces and prioritizes recommendations. The 2005 PSMP includes four actions that support a high-priority focus on the “Lower Reach” of Four Mile Run from Barcroft Park to the Potomac River:

- Complete the Four Mile Run Restoration Master Plan (complete)
- Develop a long-term land use plan for the Shirlington Crescent / Four Mile Run area
- Develop a master plan for the park land and visual and performing arts facilities between I-395 and Barcroft Park
- Continue to acquire ownership or easements for land adjacent to Four Mile Run

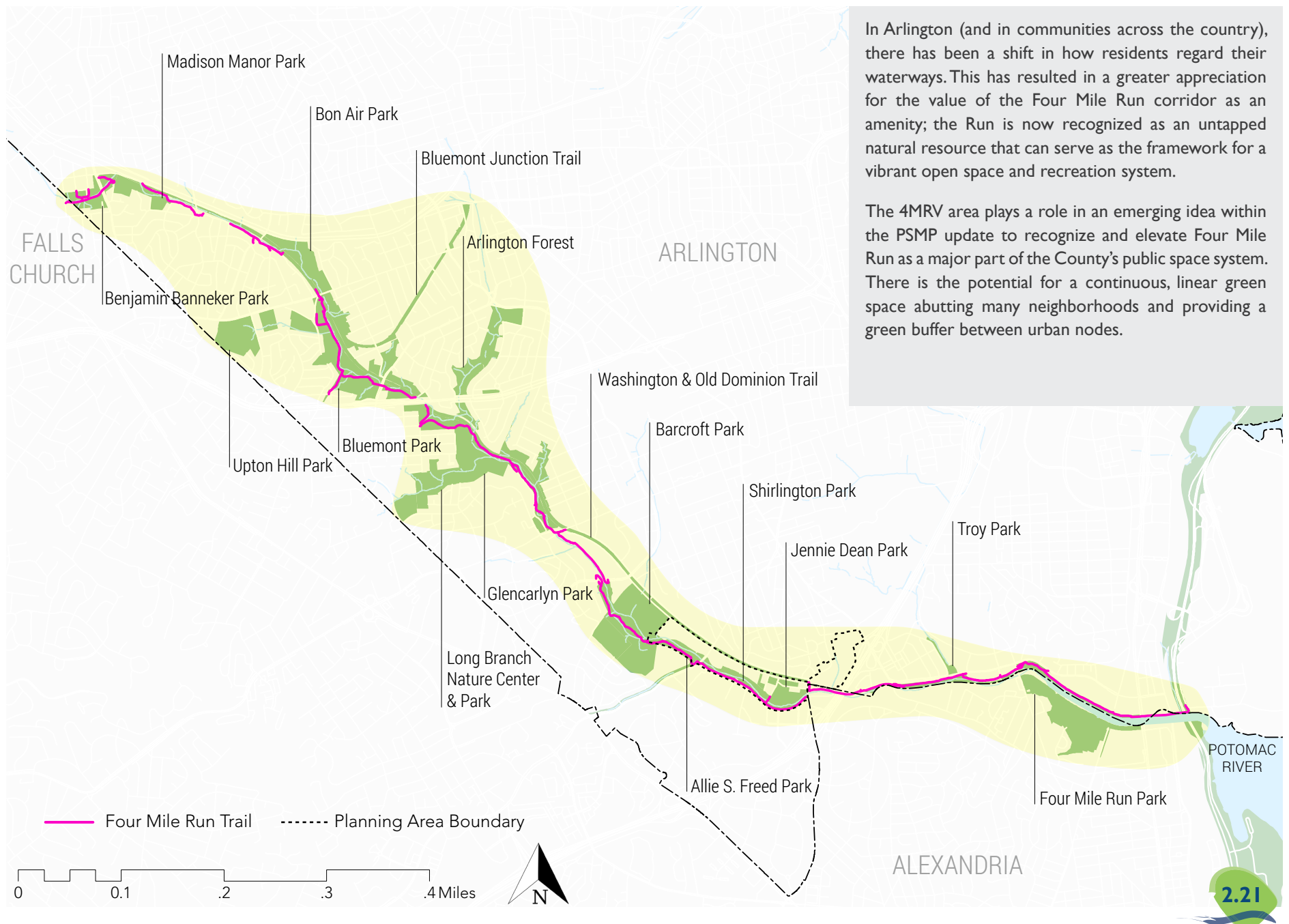
The 2005 PSMP states that “vibrant public spaces are planned for the area along Four Mile Run including additional land acquisition, arts/entertainment, festivals, major outdoor recreation and improvements to the natural environment along the stream.”

The update to that Plan, while still underway, recommends adding to the existing Arlington Loop, of which Four Mile Run Trail is a part, to create a network of trail loops throughout the County. This more robust trail system would enable users to choose from a variety of trip lengths and geographical locations. It also emphasizes context-sensitive park design, acknowledging that a variety of park typologies are needed to suit the character of different parts of the County.





FIGURE 2.19: FOUR MILE RUN TRAIL



In Arlington (and in communities across the country), there has been a shift in how residents regard their waterways. This has resulted in a greater appreciation for the value of the Four Mile Run corridor as an amenity; the Run is now recognized as an untapped natural resource that can serve as the framework for a vibrant open space and recreation system.

The 4MRV area plays a role in an emerging idea within the PSMP update to recognize and elevate Four Mile Run as a major part of the County's public space system. There is the potential for a continuous, linear green space abutting many neighborhoods and providing a green buffer between urban nodes.



## COUNTYWIDE RECREATIONAL NEEDS SURVEY

In 2016, ETC Institute carried out a needs assessment survey<sup>1</sup> for parks and recreation amenities in Arlington County. Top priorities for investment for outdoor facilities, indoor facilities, and programs were calculated. The method used, called a Priority Investment Rating, is a measurement that reflects residents' responses to the relative importance and the unmet needs of certain facilities.

For outdoor facilities, the top three priorities for investment were hiking trails, natural areas and wildlife habitats and paved multi-use trails. For indoor facilities, the top priorities for investment were swimming pools and exercise equipment. For programs, the top three priorities for investment were nature programs, fitness and wellness programs, special events and festivals.

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<sup>1</sup> The survey results are based on a statistically valid sample of 1,470 completed surveys. The Executive Summary of the report can be found here: <https://projects.arlingtonva.us/wp-content/uploads/sites/31/2016/01/Arlington-County-Parks-Rec-Survey-Findings-Report-May-9-2016.pdf>

For a more in-depth demographic information, here: [https://projects.arlingtonva.us/wp-content/uploads/sites/31/2016/01/Arlington-County-Findings-Report\\_APPX-A\\_Crosstabs-May-9-2016.pdf](https://projects.arlingtonva.us/wp-content/uploads/sites/31/2016/01/Arlington-County-Findings-Report_APPX-A_Crosstabs-May-9-2016.pdf)



**FIGURE 2.20: RECREATION FACILITIES**

Courts at Jennie Dean Park (left); Barcroft ball fields (right)



## RECREATIONAL AMENITIES IN AND NEAR THE STUDY AREA

**Barcroft Park** is a large, popular multi-function park on the western edge of the planning boundary that serves many recreational needs for the area. It is used for both formal activities like baseball tournaments, as well as for more passive recreation and picnicking. It also includes a large indoor sports and fitness center and multi-level parking garage.

**Jennie Dean Park** is another multi-function recreational asset, anchoring the eastern side of the Four Mile Valley section of the planning area. The majority of the park includes two diamond fields (baseball and softball) and other outdoor courts, with a playground and grilling area tucked in between, as well as casual use open space.\*

**Shirlington Park** is a small linear park along the Run. The northern side includes Shirlington Dog Park, while the southern side accommodates outdoor fitness equipment, extensive tree canopy, and casual use open space.\*

**Shirlington Dog Park**, on the north bank of the Run, includes a gated area for small dogs and puppies. Numerous small businesses catering to dog owners are located nearby.\*

**Allie S. Freed Park** is a linear connection and casual use open space between Barcroft and Shirlington Parks.

Two schools with a range of facilities are also nearby the planning area. **Drew Model School**, to the north, has a baseball diamond, a large green field and two playgrounds. **Abingdon Elementary School**, to the south, has an outdoor track and a playground. Other recreational assets include **Fort Barnard Park**, to the north of the planning area, a small neighborhood park with a baseball diamond and community garden plots.

**Capital Bikeshare**, the DC metro area bike sharing program, has five stations within or close to the planning area. Many are located along the bike trails.

**Four Mile Run Trail** on the southern edge of the site and the **W&OD Trail** on the northern edge are regional pedestrian and bicycle amenities that connect the site to other parts of the County.

*\*Note: Information about the Parks Master Plan, a comprehensive Master Plan for improvements to Jennie Dean Park, Shirlington Park, and the Shirlington Dog Park developed concurrently with the Area Plan, is in Appendix A.*



FIGURE 2.21: EXISTING RECREATION FACILITIES MAP

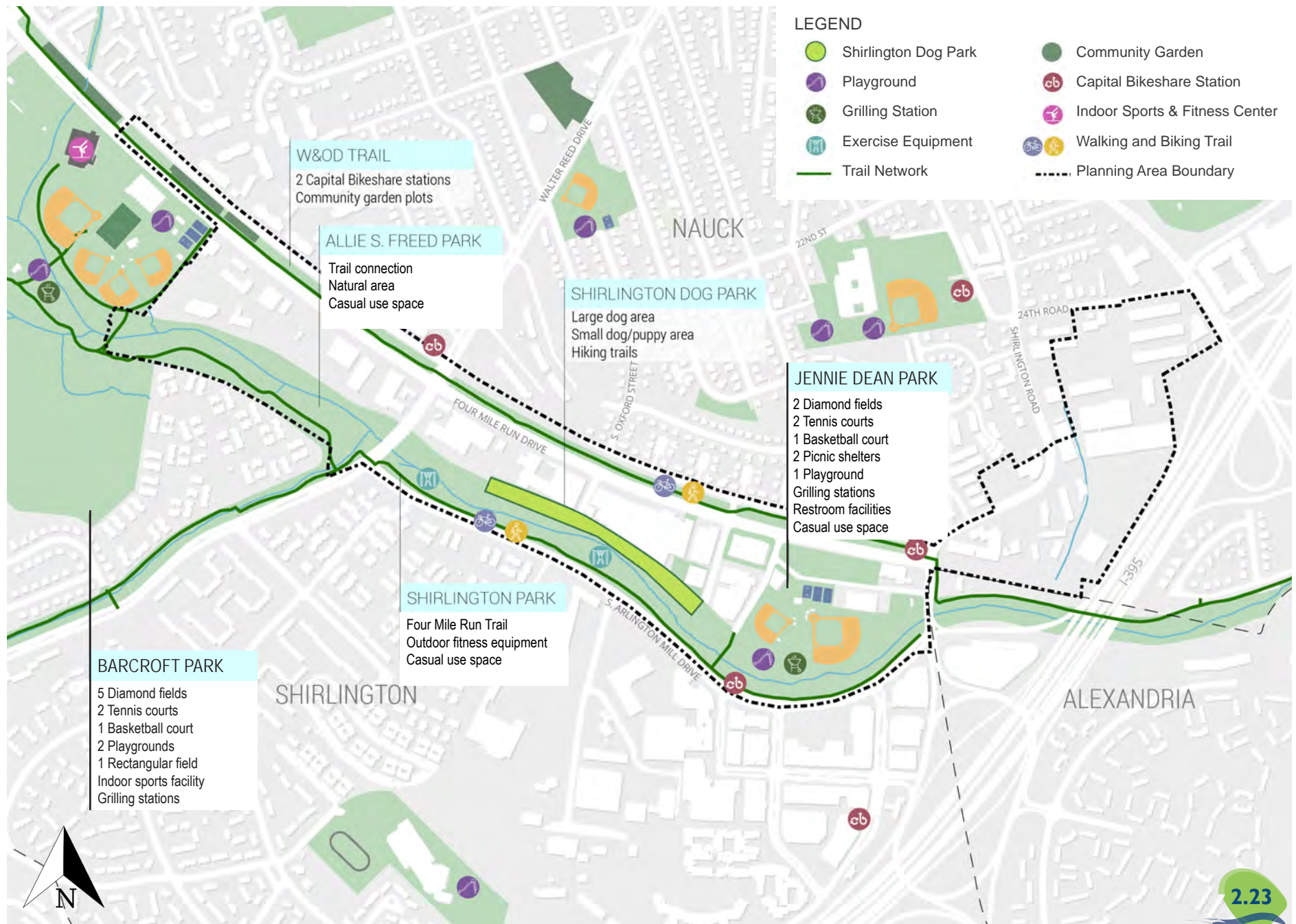
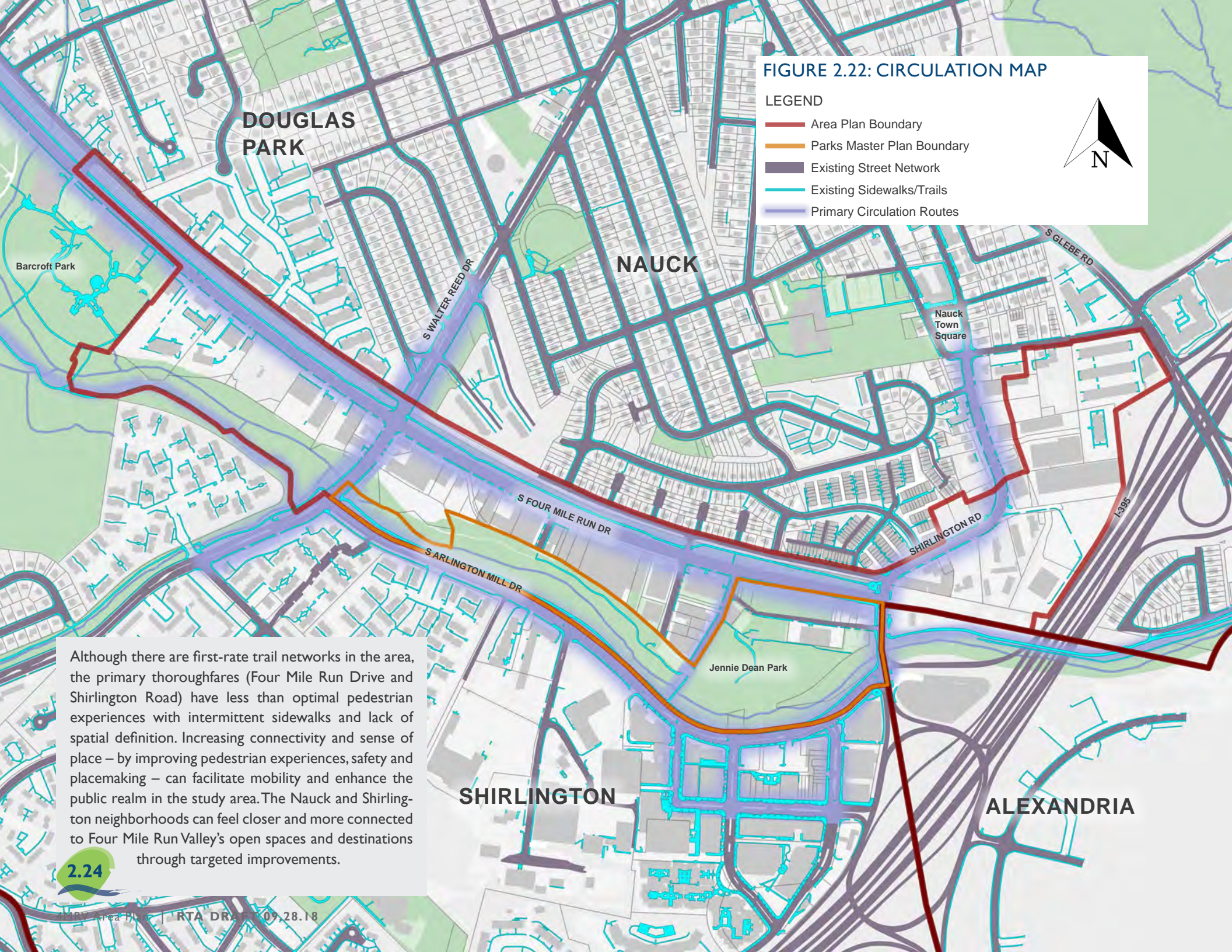




FIGURE 2.22: CIRCULATION MAP

LEGEND

- Area Plan Boundary
- Parks Master Plan Boundary
- Existing Street Network
- Existing Sidewalks/Trails
- Primary Circulation Routes



Although there are first-rate trail networks in the area, the primary thoroughfares (Four Mile Run Drive and Shirlington Road) have less than optimal pedestrian experiences with intermittent sidewalks and lack of spatial definition. Increasing connectivity and sense of place – by improving pedestrian experiences, safety and placemaking – can facilitate mobility and enhance the public realm in the study area. The Nauck and Shirlington neighborhoods can feel closer and more connected to Four Mile Run Valley's open spaces and destinations through targeted improvements.



# MOBILITY

## BIKE/TRAIL NETWORKS

The 4MRV study area is a hub of the regional bicycle network. The two primary facilities are the Washington & Old Dominion Trail, which parallels South Four Mile Run Drive, and the Four Mile Run Trail, which passes under I-395 to the east of the study area north of the Four Mile Run and parallels South Arlington Mill Drive.

The Washington & Old Dominion Trail starts at Shirlington Road and ends 45 miles away in Purcellville, Virginia traversing Arlington County, Fairfax County, and much of Loudoun County. The trail is separated from the roadway by a landscaped buffer for its entire length in the study area. The seven-mile long Four Mile Run Trail connects the Mount Vernon Trail to Madison Manor. In the study area, the Four Mile Run Trail is immediately adjacent to westbound traffic from Shirlington Road to Randolph Street before being separated by a landscaped, tree-lined buffer of varying size. Both trails are low-stress transportation corridors for pedestrians and bicyclists, and are major bicycle commuter routes that connect the study area to the rest of the region.

At South Arlington Mill Drive and South Walter Reed Drive, a short spur trail parallels the southbound lanes of South Walter Reed Drive, terminating at King Street. In the other direction on South Walter Reed Drive, there is a bicycle lane in the uphill direction that begins with a pocket bike lane at South Arlington Mill Drive and continues to South Pollard Street. In the downhill direction, South Walter Reed Drive has shared lane markings.

While the Four Mile Run Trail parallels the westbound side of South Arlington Mill Drive, there is a bicycle lane in the eastbound direction from South Walter Reed Drive to the Arlington Public Schools Maintenance Yard access drive. There are bicycle lanes on Shirlington Road between South Four Mile Run Drive and 24th Road S. While the lanes are in both travel directions, at intersections they are often dropped to provide space for turning lanes.

Immediately south of the study area, South Randolph and South Quincy Streets through Shirlington Village have bicycle lanes for most of their lengths.

There are several Capital Bikeshare stations in and around the study area. Specific locations and the number of inbound and outbound trips are presented in Figures 2.23 and 2.24 below.

Station Name	Year			Total Outbound Trips
	2015	2016	2017	
S Arlington Mill Dr & Campbell Ave	2320	1821	2521	6662
S Four Mile Run & Walter Reed Dr	537*	1340	1451	3328
S Four Mile Run Dr & S Shirlington Rd	993	990	1031	3014
S Kenmore & 24th St S	225	269	443	937
Shirlington Transit Center / S Quincy & Randolph St	697	789	868	2354

Table 2.23: Outbound Capital Bikeshare trips

Station Name	Year			Total Inbound Trips
	2015	2016	2017	
S Arlington Mill Dr & Campbell Ave	2552	2119	2884	7555
S Four Mile Run & Walter Reed Dr	580*	1626	1662	3868
S Four Mile Run Dr & S Shirlington Rd	1090	1076	1185	3351
S Kenmore & 24th St S	266	347	449	1062
Shirlington Transit Center / S Quincy & Randolph St	1031	1123	1158	3312

Table 2.24: Inbound Capital Bikeshare trips

*Note: 2015 ridership data for the station at South Four Mile Run & Walter Reed Drive covers September – December.*



## PEDESTRIAN ENVIRONMENT

Walking conditions in the study area are varied, with some streets providing continuous and accessible sidewalks and others featuring sidewalk gaps and frequent curb ramps and walkways that are inaccessible for people with disabilities. The density of housing in both Shirlington and Nauck, and the presence of numerous parks and community gathering places in both neighborhoods, creates a strong demand for walking in the area. Overall, there are numerous opportunities to improve safety and comfort for pedestrians.

Four Mile Run Drive has sidewalks along most of the south side and none on the north, though the Washington & Old Dominion Trail runs along this side of the street. On the south side, the majority of the curb ramps are either missing or non-compliant with the Americans with Disabilities Act due to issues with the landing area or cross-slope, or missing detectable warning pads. A few block faces feature a 4-5 foot sidewalk buffer, particularly west of Walter Reed Drive, though most of the segments do not have a buffer. The frequency and width of driveways accessing businesses along the south side of the street create barriers and possible safety issues for those walking in this area.

There are three streets that run north-south between Four Mile Run Drive and the Shirlington Dog Park: S. Nelson Street, S. Oakland Street and S. Oxford Street. Continuous sidewalks exist along each of these streets, though there are many instances where nearby businesses park cars in sidewalks or where driveways lead to varying surface slopes that are not accessible for people using wheelchairs. Particularly since all three of these streets serve as access points to the dog park and to Four Mile Run, there is a significant opportunity to improve pedestrian conditions here.

The intersections between Four Mile Run Drive, Shirlington Road, and S. Arlington Mill Road create a daunting environment for pedestrians and trail users. Pedestrian comfort in this area will be improved through the reconstruction of the Shirlington Road bridge, though further improvements should be explored. This area serves as a gateway to the community for those arriving via I-395 and should use urban design features to signal to drivers that they are entering a slower, pedestrian-friendly district. A pedestrian activated Rectangular Rapid Flashing Beacon (RRFB) device assists with pedestrian and bicycle crossings of Shirlington Road at this location.

Along the stretch of Walter Reed Drive that falls within the study area, the sidewalks are complete and feature a narrow, grassy buffer. However, the driveways into businesses located at the intersection with Four Mile Run Drive are wide and frequent, creating the potential for conflicts between pedestrians and vehicles and compromising access for people using wheelchairs.

Between Four Mile Run Drive and 24th Street S., Shirlington Road features continuous sidewalks, narrow grass buffers, a mix of compliant and non-compliant curb ramps, and one marked crosswalk near the intersection of S Kemper Road.

## TRAFFIC AND VEHICLE CIRCULATION

The study area includes several important roadways that are integral transportation connections for both local and regional trips. Most notably, I-395 serves as the east border of the study area and features two exit ramps that bring drivers onto Shirlington Road and South Arlington Mill Drive. South Glebe Road is a major County arterial located to the northeast that has an Annual Average Daily Traffic (AADT) of approximately 23,000 vehicles. Below is a summary of the key characteristics of the major roadways in the study area.<sup>1</sup>

- **South Four Mile Run Drive:** Two travel lanes in each direction, with left turn lanes at the intersection of South Walter Reed Drive. AADT: 15,000 vehicles. Posted Speed Limit: 30 mph.
- **South Arlington Mill Drive:** One or two travel lanes in each direction with center median and left turn lanes at all intersections. AADT: 12,000 vehicles. Posted Speed Limit: 30 mph.
- **Shirlington Road:** North of South Kemper Road, one travel lane in each direction with continuous center turn lane. South of South Kemper Road, two travel lanes in each direction, with center northbound lane serving as a turn lane north of Four Mile Run Drive. AADT: 18,000 vehicles south of Four Mile Run Drive, 7,700 vehicles north of Four Mile Run Drive. Posted Speed Limit: 25 mph.
- **South Walter Reed Drive:** Two travel lanes in each direction with left turn lanes at intersections. AADT: 16,000 vehicles south of Four Mile Run Drive, 13,000 vehicles north of Four Mile Run Drive. Posted Speed Limit: 30 mph.

Other roadways in the study area include: S. Oakland Street, S. Nelson Street, and S .

<sup>1</sup> Annual Average Daily Traffic. Virginia Department of Transportation.





**FIGURE 2.25: PEDESTRIAN CONDITIONS IN FOUR MILE RUN VALLEY**

Four Mile Run Trail (*left, top*);

Four Mile Run Drive and Shirlington Road intersection (*left, bottom*);

The south side of Four Mile Run Drive (*middle*);

Pedestrian experience along Shirlington Road (*right*)



Oxford Street, each of which features one travel lane in each direction and dead-ends at the Shirlington Dog Park; 27th Street S., which is one-way westbound in between the parking lots for Jennie Dean Park; South Four Mile Run Drive Minor, which is one lane in each direction with no centerline marking; and 24th Road S, which is one travel lane in each direction.

Toole Design Group conducted an evaluation of the existing traffic conditions in the study area. The focus of the existing conditions traffic study were the corridors Four Mile Run Drive, Arlington Mill Drive, and Shirlington Road with a specific focus on I I area intersections. Currently, most intersections in the project area are operating in stable traffic conditions (Level of Service A to D). The assessment found that there is excess lane capacity on Four Mile Run Drive, which presents an opportunity to reconfigure Four Mile Run Drive between George Mason Drive and Shirlington Road to enhance comfort and safety for people biking and walking without creating adverse traffic impacts.

The highest volume and most complex intersections on the west section of Four Mile Run Drive are George Mason Drive and Four Mile Run Drive/Four Mile Run Drive (Minor), and Walter Reed Drive and Four Mile Run Drive. For both intersections the majority of the traffic volume is carried on the cross streets, George Mason Drive and Walter Reed Drive, rather than on Four Mile Run. The Washington and Old Dominion Trail parallels Four Mile Run Drive and is directly north of these intersections. Signal modifications and right turn on red restrictions can improve safety for trail users.

In both the AM and PM peak periods, the most congested conditions occur at the intersections of Shirlington Road and Four Mile Run Drive, and Shirlington Road and Arlington Mill Drive. These two intersections are approximately 400 feet from each other connected by a bridge that crosses Four Mile Run. New signal timing options can address the vehicle queuing, which sometimes blocks the uncontrolled crosswalk at 27th Street S., which is a crossing point for the Four Mile Run Trail.

## TRANSIT

The study area is served by both Arlington Transit (ART) and Washington Metropolitan Area Transit Authority (WMATA) bus routes. The Shirlington Transit Center, located on South Quincy Street just south of the study area, is a major bus transfer center. Some bus routes terminate here and others stop here on the way to Crystal City, the Pentagon, Virginia Square, Ballston, and Tysons Corner. South Arlington Mill Drive, South Four Mile Run Drive, Shirlington Road, and South Walter Reed Drive are all used by transit vehicles in the study area.

Arlington County recently completed a significant Transit Development Plan (TDP) which will guide the County's Arlington Transit and Metrobus improvements through 2026. The TDP generally consolidates routes, reduces peak and all-day headways, and adds weekend service. An effort was made for WMATA service to serve regional destinations and ART routes to serve intracounty routes. When Alexandria's West End Transitway is implemented, there will be some rerouting of other bus lines to eliminate redundancies. The Plan highlights Glebe Road (which runs to the northeast of the study area) as part of the Primary Transit Network. It develops a suite of transit routes that provide this corridor with 15 minute headways all day, connecting Shirlington and Ballston.

In addition to fixed route transit service, the TDP describes the creation of "Flex Zone" demand-responsive areas. The Nauck neighborhood is within Flex Zone 4. When implemented, those not within walking distance of a bus route during the midday hours will have access to on-demand point-to-point transit service from 9am to 3pm. This service could be used to connect the area to Columbia Pike or other destinations agreed upon by the community.







## PARKING

The availability and management of on-street parking in the study area varies greatly from block to block, including various restrictions on time and hours permitted (see Figure 2.27). Area stakeholders noted the complexity of the mixture of regulations can be confusing; in addition, “No Parking” restrictions in evening hours was identified as a problem for people coming to visit arts facilities (Theater on the Run, dance studios, etc.) and the brewery.

Toole Design Group conducted parking demand counts on two days in September 2016 in order to evaluate the supply and use of on-street parking in the study area. Parking in the lots at Jennie Dean Park was evaluated separately as part of the parallel master planning process for the park, though data was collected on the same dates. On-street parking occupancy in the study area was documented on two days: Tuesday, September 20th, 2016 at 3:00pm, 5:00pm and 7:15pm, and Saturday, September 24th, 2016 at 11:00am, 1:00pm and 3:00pm. On Tuesday the 20th, the weather was around 80 degrees and clear, while on Saturday the 24th, the weather was overcast and in the upper 70s.

On weekdays, parking counts documented a demand for commercial-serving on-street parking during daytime hours, particularly in front of the auto shops on Four Mile Run Drive. The occupancy was also greater than 85% on some segments of Four Mile Run Drive Minor during daytime hours, with more spaces becoming available in the evening hours. This suggests that either residents in this area tend to use their vehicles more during the evening, or that the businesses on Four Mile Run Major use parking on the parallel Minor street during the day. Parking along Shirlington Road and 27th Street South was also in demand during the daytime data collection period.

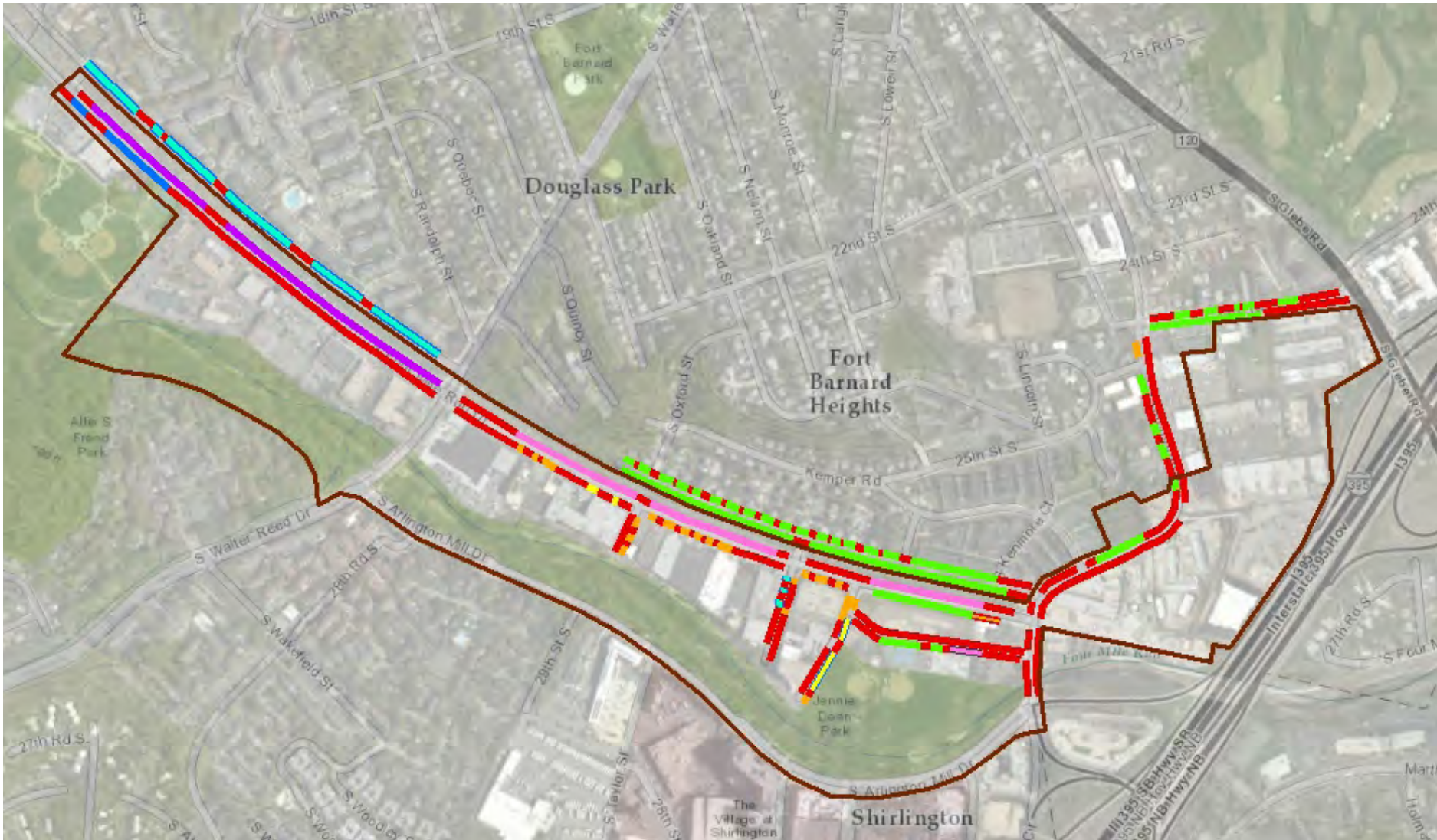
During the 5:00pm data collection period, parking demand on Four Mile Run Drive east of Walter Reed Drive lessened, with fewer vehicles parked on the north side of Four Mile Run Drive and the south side of Four Mile Run Drive Minor. At the same time, parking occupancy increased on the north side of Four Mile Run Drive Minor. Overall parking demand in the study area peaks at this time.

In the evening, there was increased parking demand on Four Mile Run Drive Minor west of Walter Reed Drive, presumably as residents return to the apartments and townhomes. Parking on Shirlington Road is fully or nearly fully occupied for the afternoon, with demand lessening some in the evening.

On Saturday, there were more vehicles parked in the study area compared with the weekday data collection period. This was true for almost all of the street segments included in the data collection. The lowest weekend parking count (438 vehicles at 3:00pm) is larger than the highest parking count on weekdays (432 vehicles at 5:00pm). During weekend counts, the total number of parked vehicles trended downward, from 517 at 11:00am to 438 at 3:00pm. More so than on the weekday, the project team observed vehicles illegally parked in front of the auto body shops on South Four Mile Run Drive. Generally, these vehicles were parked in front of the driveways for the automotive businesses. Additionally, the project team observed that many of the vehicles parked in the westbound direction of South Four Mile Run Drive between Shirlington Road and Oxford Street were larger trucks like dump trucks, delivery trucks, and tractor-trailers. Delivery trucks were also observed parked on Shirlington Road adjacent to the catering businesses located there.



FIGURE 2.27: EXISTING PARKING REGULATIONS



LEGEND

- |   |   |
|---|---|
| Study Area  | 2 Hour Parking, No Parking 1AM-4AM                                  |
| Free Parking  | 3 Hour Parking 9AM-4PM Mon-Fri, No Parking 7AM-9AM, 4PM-7PM Mon-Fri |
| 15 Min Parking  | 4 Hour Parking 8AM-6PM Mon-Fri                                      |
| 1 Hour Parking  | No Parking  |
| 1 Hour Parking 8AM-3PM Tues-Thurs, 3 Hour Parking 8AM-6PM MWF | No Parking 7AM-8PM  |
| 2 Hour Parking 8AM-6PM  | No Parking 7PM-9PM  |







## VISION AND PRINCIPLES

*The vision for the Four Mile Run Valley is to enhance the area's unique strengths over time, addressing natural areas while guiding public realm improvements, including open space and recreational development, and encouraging new investment that contributes to the valley's arts-oriented, industrial character.*

*The Four Mile Run Valley will be safer, healthier, more accessible, and more responsive to the natural environment – restoring and better connecting to Four Mile Run; reducing stormwater impacts and flooding; expanding transportation options and increasing safety; addressing parking needs; integrating aesthetic improvements to streetscapes; expanding open space and recreational resources, incorporating public art; and preserving existing land uses while providing flexibility for new arts and cultural uses.*

*Note: The Guiding Principles (at right) were adopted by the 4MRV Working Group; these principles helped to refine Concept Drawings for both the Area Plan and the Park Master Plan. The Guiding Principles also informed the development of the Area Plan Vision Statement (above). These elements, considered together, informed the development of the policy recommendations that are found in this chapter.*

## GUIDING PRINCIPLES

- Create a cohesive plan for the entire study area.
- In general, maintain existing zoning and types of uses.
- Balance countywide and neighborhood needs, accommodating current and anticipated future demand.
- To the greatest extent possible, maintain capacity of existing County facilities, in the study area or elsewhere.
- Consider affordable, creative, and functional solutions that can be implemented incrementally.
- Enhance the area's accessibility, with attention to safety and pedestrian and bicycle connections.
- Consider the impact of planning options on locally-owned and operated businesses and organizations.
- Preserve, protect, and rehabilitate the natural environment and biodiversity of the study area to the greatest extent possible.
- Maximize green, casual-use space in Jennie Dean Park and in other parks along Four Mile Run.
- Promote new arts and recreational opportunities for users of all ages and abilities.
- Improve water quality by implementing best stormwater management practices.
- Buffer noise-generating uses with trees, landscaping, or other elements.
- Celebrate the area's history and culture, especially the community's African-American heritage and the history of Jennie Dean Park.

—Adopted by the 4MRV Working Group on 9.18.17





# CONCEPT PLAN

## RECOMMENDED CONCEPT: RETENTION & ADAPTIVE REUSE


In keeping with the overall theme of maintaining industrial character, several alternative Concept Plans were examined, where existing industrial and service commercial uses could remain throughout the majority of the study area, while new complementary uses or public uses could infill over time.


Within Subarea D, which is located between Shirlington Road and I-395, potential redevelopment opportunities were observed due to a prevalence of large single-use land holdings that are generally underutilized; a lack of access and circulation (vehicular and pedestrian); failing flood control facilities (Nauck Branch); and a lack of neighborhood oriented amenities, such as retail or open space. Thus, for Subarea D, two alternatives were considered, each with varying areas identified for Broader Uses. (“Broader Uses” would include a mix of office, residential and retail, which, given the existing zoning, are not generally allowed in this area.) For either concept, potential redevelopment was keyed to the vision for the Nauck Revitalization District, which includes mid-rise, mixed-use development for properties fronting on Shirlington Road, directly adjacent to this study area.


Based on community input and transportation analysis, staff and the consultant team revised the Concept ideas. This concept, Retention & Adaptive Reuse, which was adopted as part of the 4MRV Policy Framework, suggests continuation of light industrial and service commercial uses throughout the planning area, with the exception of underutilized sites along Shirlington Road adjacent to the Nauck Revitalization District, where “Broader Uses” could be permitted.


This revised concept was developed in response to community concerns about the potential loss of industrial character within Subarea D, as well as a review of potential negative transportation impacts associated with other alternatives that were considered. Large portions of the study area [Subareas A, C and most of D] are mapped as “Preserve Existing Uses,” envisioned to contain buildings that have the same types of uses as those that currently exist and permitted heights as apply today. Within Subarea B, continued light industrial and service commercial uses are envisioned, along with new arts and complementary retail uses. Incentives for inclusion of new arts-oriented uses (such as creative “maker” spaces) could be explored in this Subarea.


## LEGEND


 Four Mile Run Valley Study Area

 Nauck Revitalization Area

 Parks Master Plan Study Area

 Allie S. Freed Park & Natural Areas

 Lomax A.M.E. Zion Church (historic)

 Preserve Existing Uses

Uses: Industrial / Service Commercial / Public

Height: Up to 75 feet (existing height), except for County Use site, which may have height up to 120 feet

Character: Area could change, over time, with reuse/redevelopment of industrial/service commercial or public uses already prevalent in the area. To the extent possible, design standards could reinforce the pedestrian realm and the vision for industrial character.


 County Use (Bus Parking)

 Preserve Existing Uses / Encourage Arts-Oriented Uses

Uses: Flex Industrial / Retail / Public

Height: Up to 75 feet (existing height)

Character: This area could have a mix of arts, maker spaces, public open spaces, and retail to blend with existing industrial and service commercial uses. Existing buildings could be retrofitted for new uses and/or infill development could occur. Design standards for new development could reinforce the pedestrian realm and the vision for industrial character in the area.

 Broader Uses

Uses: Flex Industrial / Retail / Office / Residential / Public

Height: Up to 75 feet

Character: Flexible industrial/retail ground floor uses and industrial, residential or office development on the upper floors. Design standards could reinforce the pedestrian realm and the vision for industrial character in the area.





FIGURE 3.1: ADOPTED CONCEPT – RETENTION & ADAPTIVE REUSE

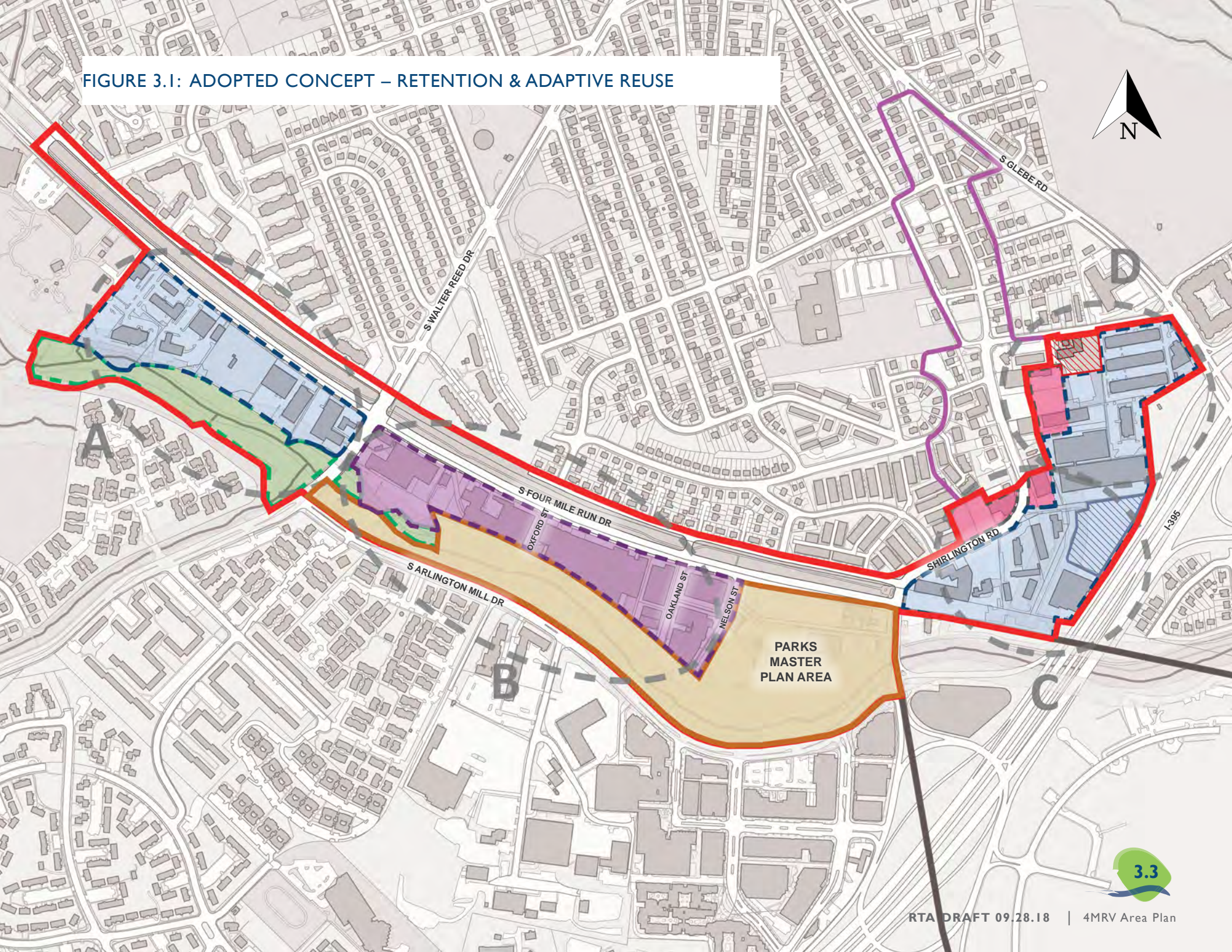




FIGURE 3.2: ILLUSTRATIVE PLAN

LEGEND

- Area Plan Boundary
- Parks Master Plan Boundary
- County Line
- Existing Building
- Potential New Building
- Parking Area





## KEY ILLUSTRATIVE PLAN CONCEPTS

- a** Park Master Plan improvements (see policies A3.2 A3.3, A.5, and Appendix A for details)
- b** Four Mile Run Drive street design improvements will maximize parking and improve pedestrian safety, as well as potential for green infrastructure / street trees (see policies A1, A3.4, C2 and C3.1)
- c** Add pedestrian crossings across Four Mile Run Drive with median refuge islands at Oxford, Oakland and Nelson streets (see policy C3.1)
- d** Reuse of existing buildings is encouraged; design guidelines for reuse and new development reinforce a high quality pedestrian realm and industrial aesthetic (see policy B1 and Chapter 4)
- e** Broader uses permitted in limited areas (as identified in Concept Plan) to facilitate new development and implementation of the Nauck Village Center Plan vision along Shirlington Road.
- f** Improve pedestrian sidewalks/paths and wayfinding (see policies A3.4 and C3.1)
- g** Four Mile Run stream restoration and stabilization to improve habitat and stability (see policy A2)
- h** Improve access along the north and south sides of Four Mile Run while providing overlooks and safe, stable water access at key points in order to reconnect with water and nature (see policies A3.4 and C3.1)
- i** Explore potential for trail underpasses to allow for safe, continuous connectivity (see policies A3.4, C3.2, and C3.3)
- k** Improve pedestrian and bicycle conditions at the Four Mile Run Drive / Shirlington Road intersection (see policy C3.1)
- l** Nauck Town Square Improvements (see page 1.4)

***For a complete list of potential public improvements envisioned for the study area, see Chapter 5, Figure 5.2.***

## ILLUSTRATIVE PLAN

The Illustrative Plan illustrates potential changes and improvements on public and private property according to the community vision. All of these concepts are described further, and illustrated in greater detail, in other sections of this document (as noted at left).

The purpose for the plan is not to prescribe a specific plan for redevelopment of a specific parcel or site; rather, the purpose is to document the community vision for the area, and to shape future development and improvements by providing inspiration to property owners and providing guidance to regulators and future decision makers.

Much of the study area shows existing building footprints remaining. This is consistent with the community vision to preserve existing uses and industrial character in the study area. However, there could be reuse of these buildings or redevelopment following existing zoning/development policies. Any new buildings will be the result of decisions made by private property owners and likely will occur incrementally over time. In addition, this plan envisions improvements to the public realm, in the near and long term, to environmental systems, trails, streetscapes, on-street parking, and open space network.



# POLICY GUIDANCE

*The following policy directives advance the community vision for Four Mile Run Valley. They are organized around the following major themes:*

*A. Environment / Sustainability / Open Space ... pg 3.7*

*B. Development Form / Land Use ... pg 3.17*

*C. Street Design / Transportation ... pg 3.23*

*These strategic actions, once undertaken, will help to enhance the area's unique strengths over time, addressing natural areas while guiding public realm improvements and encouraging new development true to the Valley's future arts-oriented industrial character.*

*In many cases, additional study is recommended, as the development of the specific idea or outcome would entail analysis and/or community involvement that is outside of the scope of this process. Also, some ideas that were developed during the process would necessarily involve policy discussions on a countywide basis, such as the siting of a Multi-use Activity Center (MAC) that might house recreational and other community uses. The Policy Guidance captures and addresses these important ideas in a manner that suggests general support for continued exploration, rather than recommending a specific policy action and/or outcome.*



**Policy Framework Revisions:** Based on community input and additional staff review, the policy guidance contained in the adopted Policy Framework and shown in the draft Area Plan in Chapter 3 and Chapter 5 has been revised. Policy guidance shown in **ORANGE** is revised wording, while policy guidance shown in **RED** is entirely new language proposed to be adopted as part of this document.



## A. ENVIRONMENT / SUSTAINABILITY / OPEN SPACE

Many decades of impacts from industrial land uses, replacement of natural land cover and riparian buffers with impervious surfaces, and channelization of Four Mile Run and Nauck Branch to accommodate land development and flood control have resulted in increased runoff, negative impacts on water quality, degradation of wildlife habitat, and disconnection of natural systems from the surrounding community. The environmental/sustainability/open space framework sets out a strategy to restore, protect, and celebrate natural systems as an integral and valuable part of the Four Mile Run Valley.

The policy and programmatic goals and strategies of the County's adopted Stormwater Master Plan (SWMP), which is part of the County's Comprehensive Plan, are especially relevant to the study area due to the high levels of impervious cover, as well as the many pollutant 'hotspot' land uses, including multiple auto-related business as well as the Shirlington Dog Park. The adopted SWMP emphasizes that, as properties and the streetscape redevelop over time, there are significant opportunities to incorporate green infrastructure practices to reduce stormwater runoff and pollution. These opportunities are both defined and reinforced by stringent federal, state, and local laws and regulations that require the County not only to make stormwater improvements through the redevelopment process, but also to reduce stormwater pollution from existing lands.

### AI. NEIGHBORHOOD GREEN INFRASTRUCTURE & SUSTAINABILITY FRAMEWORK

The Four Mile Run Valley will lead by example: designing, implementing, and encouraging innovative green infrastructure practices where possible, and treating stormwater as a resource rather than a waste product. Green infrastructure practices designed to soak, filter, and infiltrate stormwater runoff will provide environmental and ecosystem benefits, while adding economic value to the neighborhood.

- a. Replace extraneous impervious area with vegetation, plant trees, and implement green infrastructure practices such as pervious pavement, bioswales, bioretention systems, and stormwater planters.
- b. Support implementation of green design practices in the private realm using design guidelines and incentives where appropriate.
- c. Integrate green infrastructure practices with public realm transportation, way-finding/gateway, open space, and public art improvements. Identify and fund high-profile demonstration projects to build awareness and momentum.
- d. Encourage public education enhancements, such as interpretive signage, nature walks, and partnerships with neighborhood schools and other institutions.

- e. Implement additional investigation and risk reduction strategies as required to address soil and groundwater contamination from prior land uses.
- f. Utilize and encourage green building techniques such as green roofs, rainwater harvesting systems, solar energy panels and other efficient building systems, and use of recycled and renewable materials.



FIGURE 3.3: Green Infrastructure Examples



## A2. STREAM RESTORATION AND STABILIZATION FRAMEWORK: FOUR MILE RUN & NAUCK BRANCH

The streams within the study area—Four Mile Run and Nauck Branch—have been heavily impacted by urbanization. Both are physically constrained and confined and have been straightened and hardened. Nauck Branch is in especially poor condition, consisting of a straight, concrete channel. Flood risk is an issue for both streams.

Acknowledging these heavy constraints, while also looking towards the overarching goals of the adopted SWMP to reduce the impact of development on streams and to restore stream corridors, leads to the following key recommendations for each stream:

### A2.1 FOUR MILE RUN

- a. Stabilize banks where erosion, scour, and structural failures exist.
- b. Improve and expand vegetated buffers at top of bank.
- c. Naturalize stream banks where possible.
- d. Remove invasive plant species and plant native species.
- e. Investigate stream habitat and stability improvements for the low-flow stream channel.
- f. Evaluate best practices to address stormwater and other impacts on Shirlington Dog Park and work with adjacent property owners, on a volunteer basis, to implement improvements over time.

### A2.2 NAUCK BRANCH

- a. Seek opportunities to better manage flooding.
- b. Pursue drainage easements, over time, to allow for proper maintenance, repair and/or improvement of the facility.

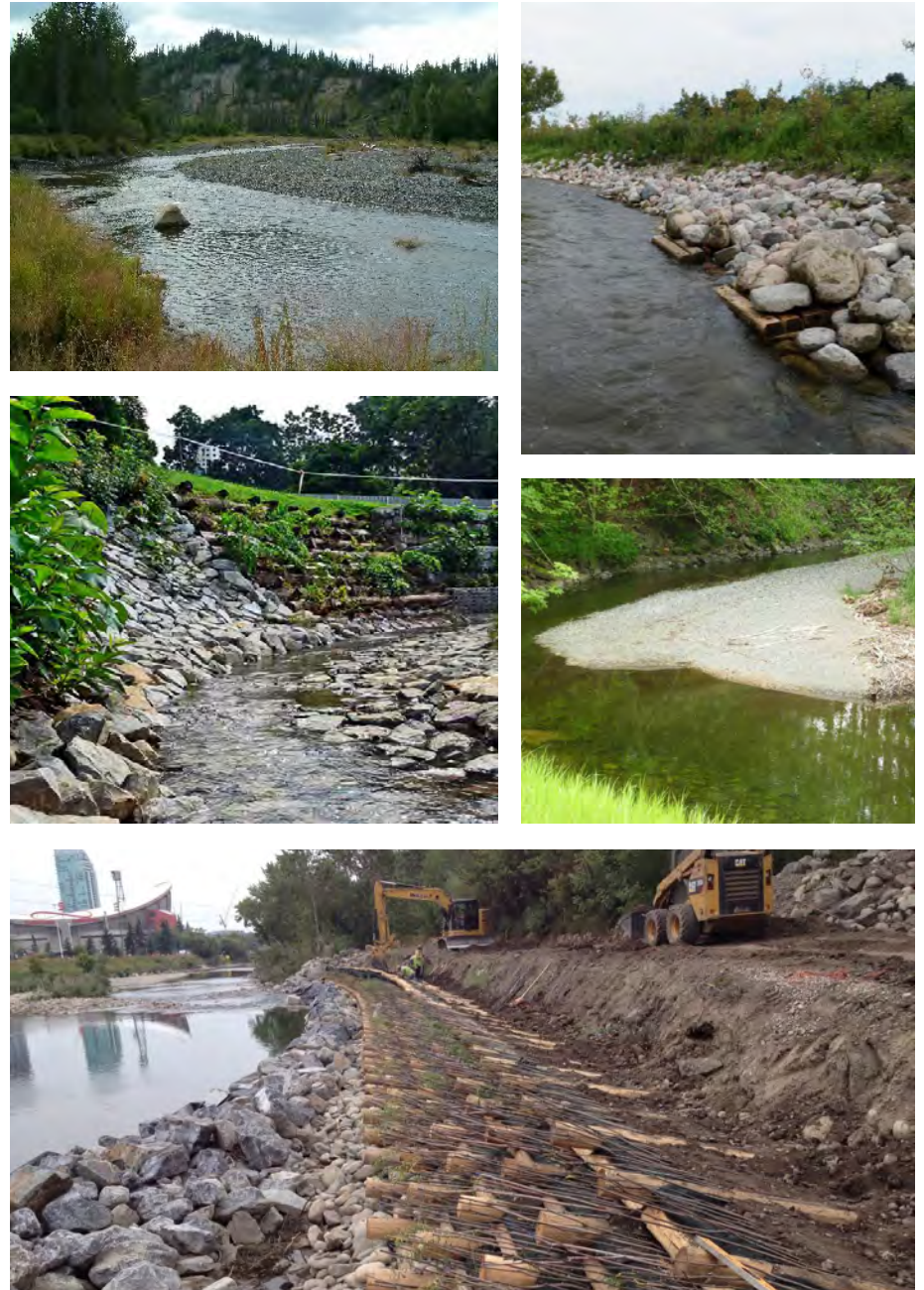


FIGURE 3.4: Stream Stabilization Examples



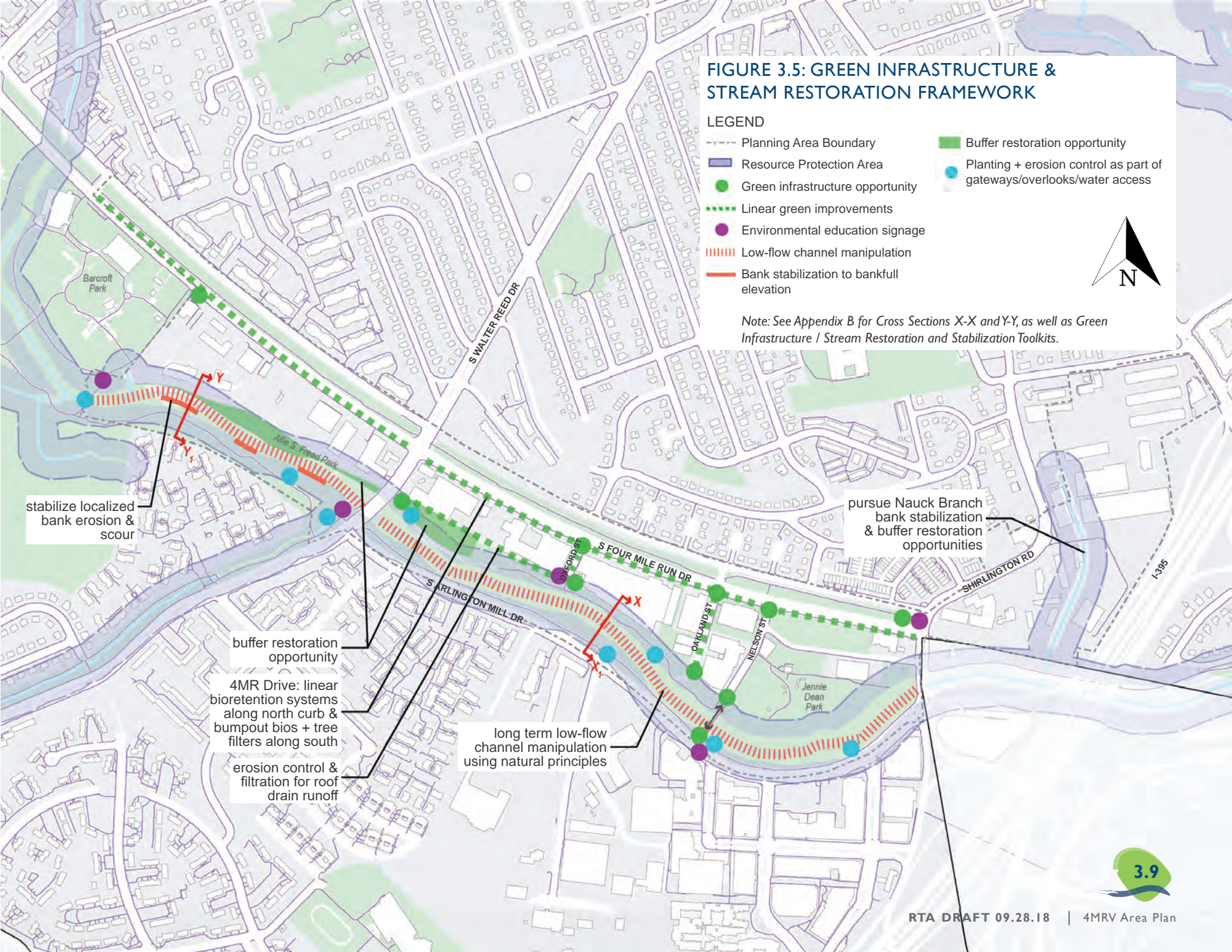
**FIGURE 3.5: GREEN INFRASTRUCTURE & STREAM RESTORATION FRAMEWORK**

**LEGEND**

-  Planning Area Boundary
-  Resource Protection Area
-  Green infrastructure opportunity
-  Linear green improvements
-  Environmental education signage
-  Low-flow channel manipulation
-  Bank stabilization to bankfull elevation
-  Buffer restoration opportunity
-  Planting + erosion control as part of gateways/overlooks/water access



*Note: See Appendix B for Cross Sections X-X and Y-Y, as well as Green Infrastructure / Stream Restoration and Stabilization Toolkits.*





### A3. NATURAL / OPEN SPACE NETWORK

Today, access and visibility to the Four Mile Run stream corridor is limited; the waterway is flanked by the backs of buildings, and is generally viewed only from above on intermittent area bridges. Recently, there has been a shift in how Arlington residents regard their waterways. This has led to a greater appreciation for the potential of Four Mile Run to serve as an amenity. The vision is for a vibrant open space network that connects the many open public spaces and natural areas existing and proposed in this Plan.

The major east-west trails and connections—W&OD Trail, Four Mile Run Trail, as well as South Four Mile Run Drive and South Arlington Mill Drive—will be linked by a stacked loop system of pedestrian and multi-modal connections. This network will enable easier movement within the study area and its varied environs, better access to the area from surrounding neighborhoods, and a greater variety of trail loop lengths for users. The trail hierarchy includes classifications for Commuter Trails, Community Trails, Promenade Trails, and enhanced Sidewalk Networks all tied to adjacent park trails and pedestrian networks by a system of welcoming gateways that maximize safe and attractive pedestrian crossings. An overarching goal is to enhance multimodal transportation in the corridor as an alternative to vehicular traffic.

#### A3.1 OPEN SPACE NETWORK

- a. Develop a cohesive open space network with enhanced recreation opportunities that can support health and wellness.
- b. As part of a corridor-wide public art project:
  - integrate natural and cultural resource education and interpretation; and
  - work with local artists to incorporate artistic elements.

#### A3.2 PARK MASTER PLAN SPACES

- a. Jennie Dean Park - Improve and replace existing amenities, while incorporating new spaces and amenities to meet growing recreation demands.
- b. Shirlington Park - Improve its function as a casual use space and gateway between Shirlington Village and the arts, recreation, and business uses north of Four Mile Run stream.

- c. Shirlington Dog Park - Keep the dog park as it is today, in terms of maintaining its current size, location and configuration, while providing for its future sustainability by seeking innovative ways to address environmental, operational, safety, and aesthetic conditions (including, but not limited to, stormwater management and shoreline maintenance).

#### A3.3 ACQUISITION / PHASING

- a. Acquire additional properties east of Nelson Street, over time, to implement the vision for an expanded Jennie Dean Park.
- b. Seek CIP or other funding for future phases of park development (beyond Phase I, Jennie Dean Park).
- c. Investigate obtaining public access to the western end of Shirlington Dog Park from Walter Reed Drive (See map on p.3.12).

#### A3.4 ACCESS

- a. Improve access along the north and south sides of Four Mile Run while providing overlooks and safe, stable water access at key points in order to reconnect with water and nature while accentuating scenic views along the waterway.
- b. Improve sidewalk conditions and intersection accessibility along South Four Mile Run Drive as part of a complete street enhancement.
- c. Improve pedestrian paths, accessibility and wayfinding along South Walter Reed Drive, South Oxford Street, and Shirlington Road.
- d. Create potential trail underpasses or overpasses at South Walter Reed Drive and Shirlington Road to allow for continuous connectivity.

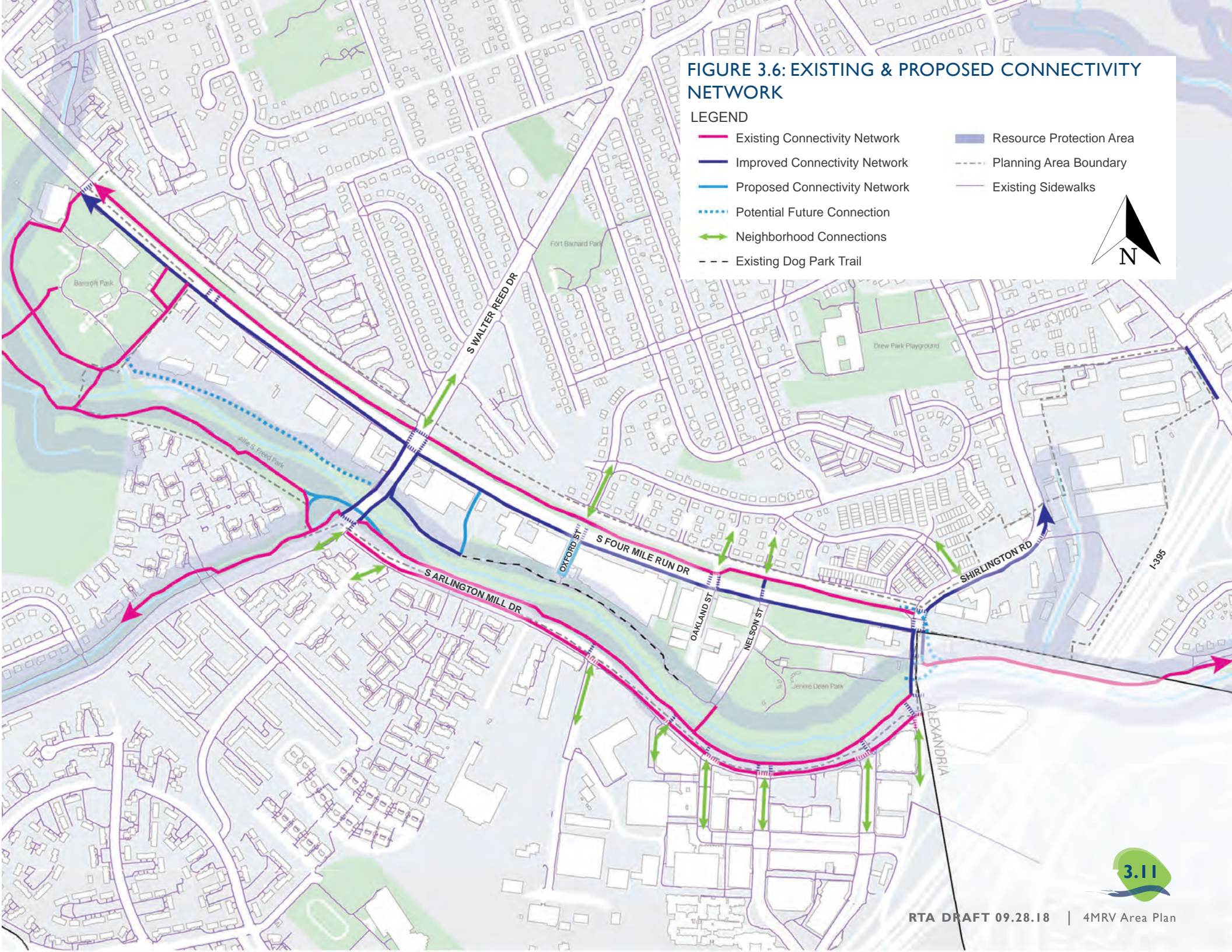




**FIGURE 3.6: EXISTING & PROPOSED CONNECTIVITY NETWORK**

**LEGEND**

- Existing Connectivity Network
- Improved Connectivity Network
- Proposed Connectivity Network
- Potential Future Connection
- Neighborhood Connections
- Existing Dog Park Trail
- Resource Protection Area
- Planning Area Boundary
- Existing Sidewalks

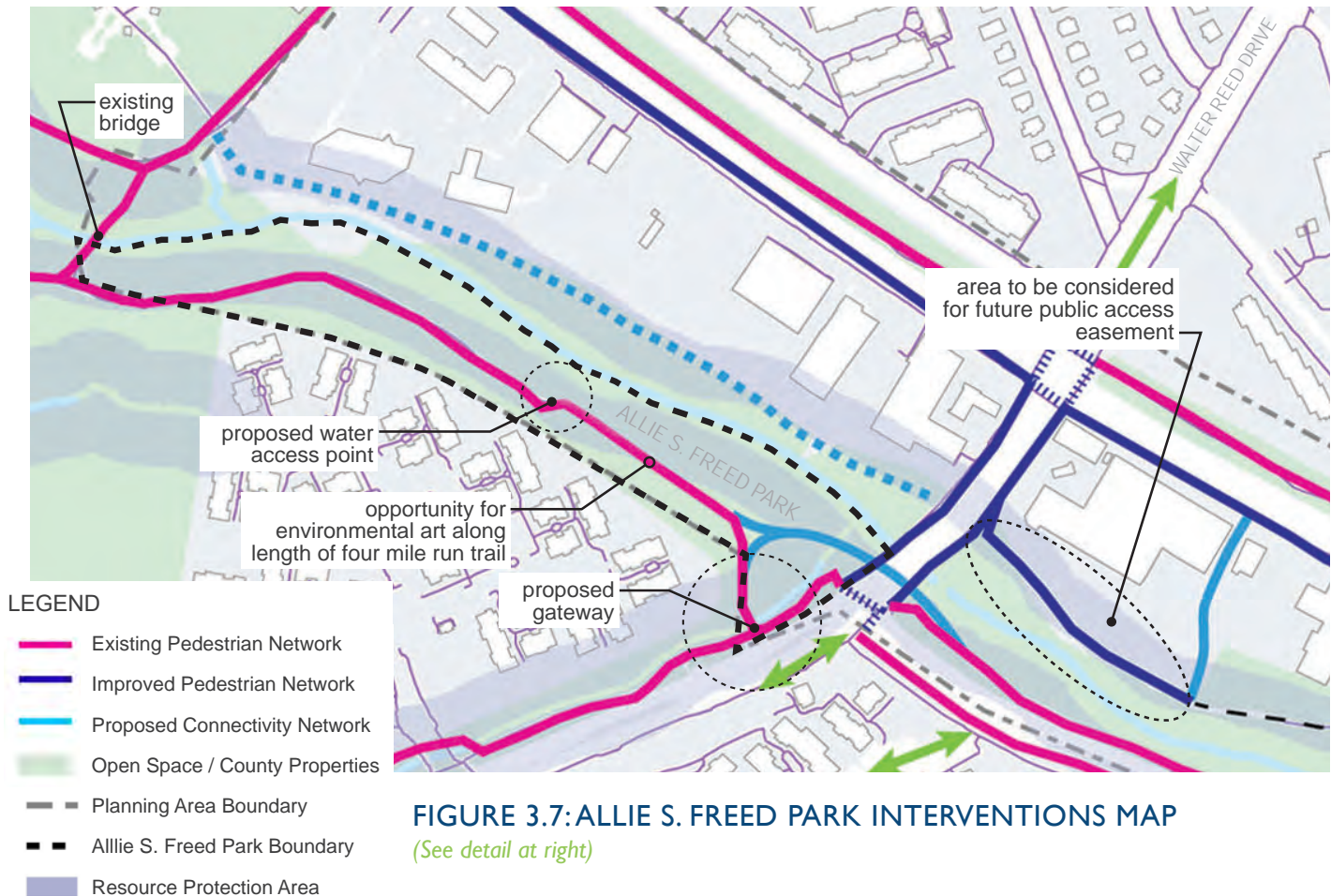




### A3.5 ALLIE S. FREED PARK

Allie S. Freed Park provides casual open space and a connection to Barcroft Park. The aim is to keep the park in its natural state, with minimal intervention, to enhance users' connection to nature and improve Four Mile Run's riparian function.

- Conduct stream restoration and stabilization as part of an enhanced riparian buffer.
- Provide water access from Four Mile Run Trail along the lower-elevation southern side of the Run.
- Provide tree canopy overlooks along the Promenade Trail at the higher-elevation northern side of the Run.
- Include environmental and cultural interpretation.
- Create an enhanced gateway at South Walter Reed Drive with park user accommodations, highlighting the connection between the Four Mile Run Trail and the Lucky Run Trail.



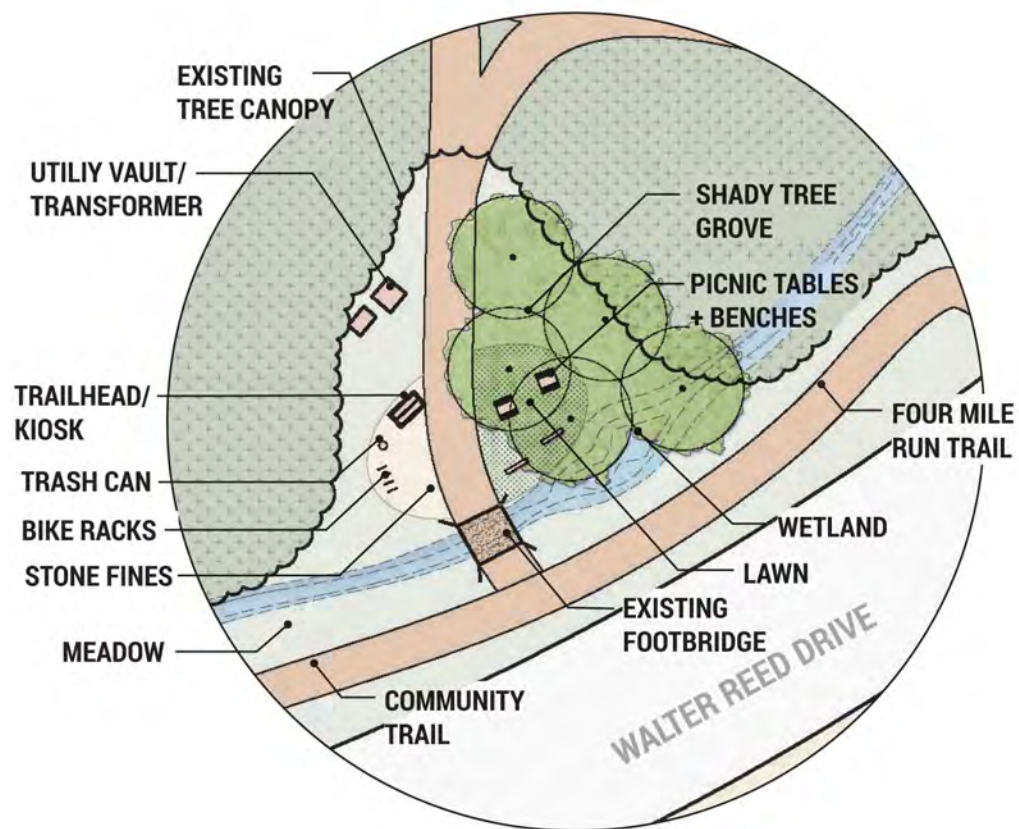
**FIGURE 3.7: ALLIE S. FREED PARK INTERVENTIONS MAP**

(See detail at right)

### A3.6 SIGNAGE/WAYFINDING

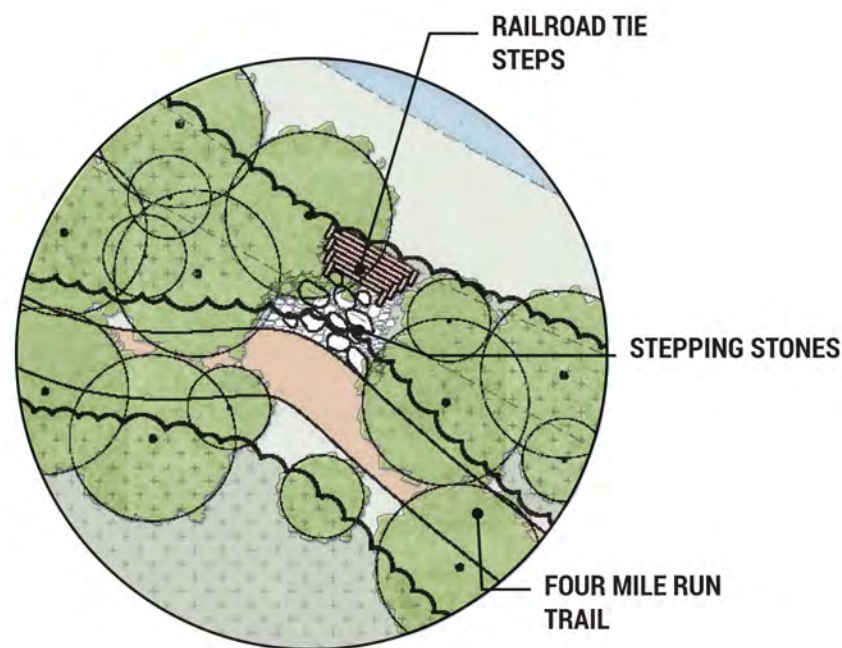
There is a need for improved signage and a wayfinding strategy to enhance the Four Mile Run Valley's identity and





## 1 Concept: Proposed Gateway Features

- + BENCHES IN SHADE
- + TRAILHEAD
- + SIGNATURE PLANTINGS
- + INTERPRETIVE SIGNAGE
- + PUBLIC ART OPPORTUNITY
- + WAYFINDING
- + BIKE RACKS



## 2 Concept: Proposed Water Access Point

- + STEPPING STONES
- + RAILROAD TIE STEPS
- + FLAT STONE AT WATER'S EDGE

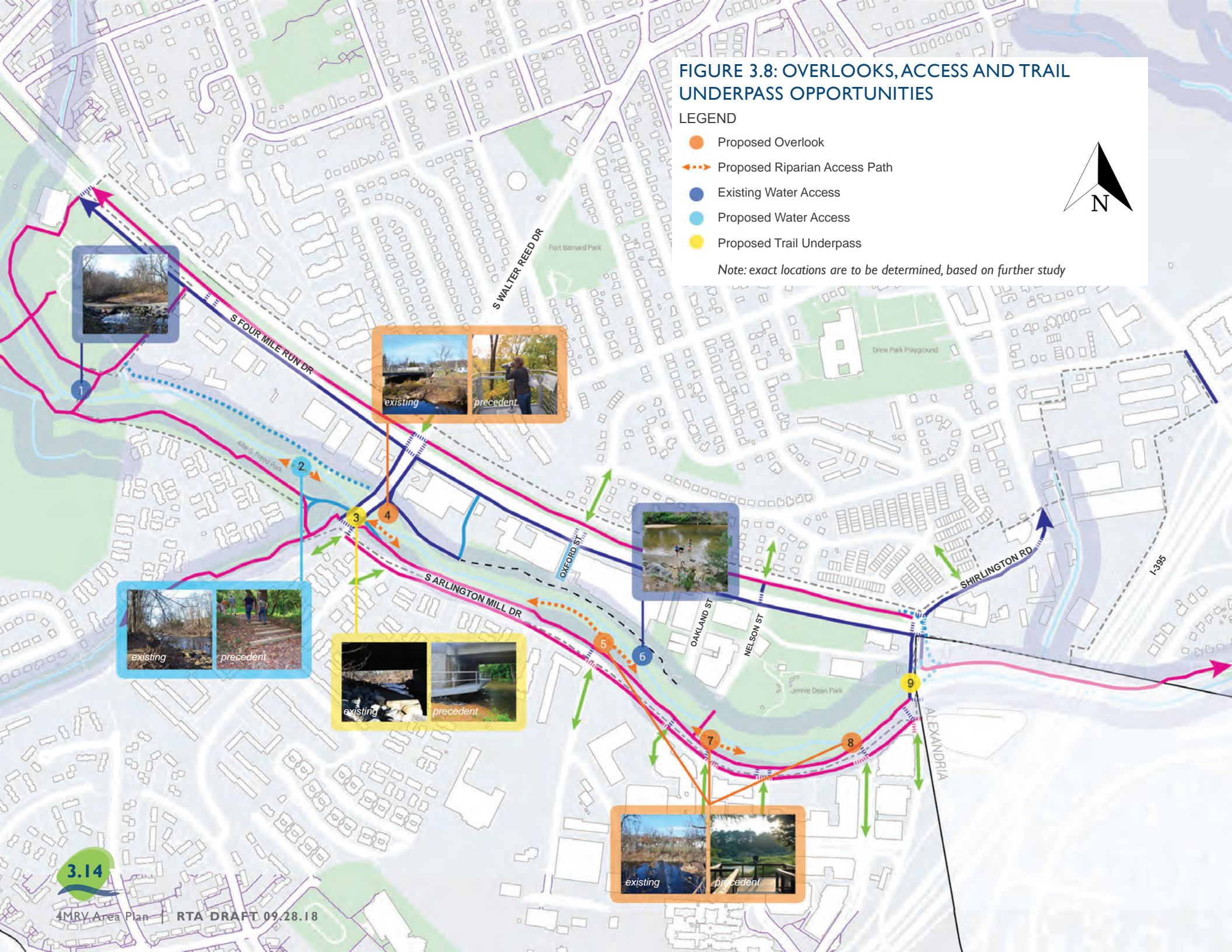


**FIGURE 3.8: OVERLOOKS, ACCESS AND TRAIL UNDERPASS OPPORTUNITIES**

**LEGEND**

- Proposed Overlook
- Proposed Riparian Access Path
- Existing Water Access
- Proposed Water Access
- Proposed Trail Underpass

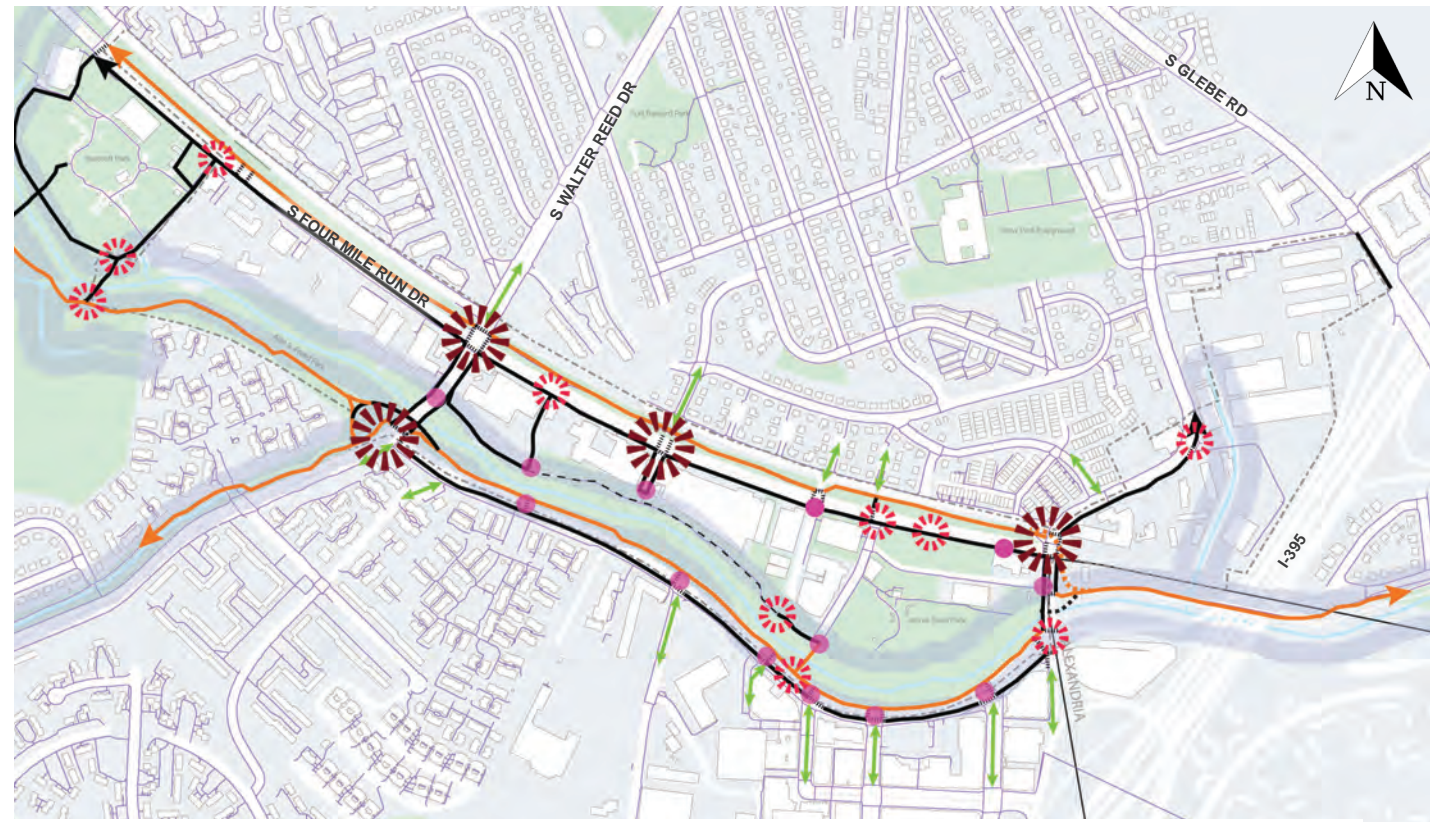
*Note: exact locations are to be determined, based on further study*





improve access to and within the area for visitors and neighboring residents. A coordinated strategy can be implemented with the following elements:

- a. Consider improving major gateways with directional signage and a range of amenities such as seating, trailheads, signature plantings, bike racks, trash cans, and Arlington Parks welcome signage.
- b. Consider improving minor gateways with directional signage, cultural or environmental interpretation opportunities, and trash cans.
- c. Provide locational signage and trail markers at regular intervals along commuter and community trails.



**FIGURE 3.9: GATEWAY AND SIGNAGE OPPORTUNITIES**

**LEGEND**





**FIGURE 3.10: TRAIL HIERARCHY AND MATERIALS MAP**

**LEGEND**

- Community Trail
- Commuter Trail
- Potential Future Trail
- Connector Trail
- Sidewalk Network
- Existing Barcroft Park Trails
- Stream Crossing
- Elevated Pedestrian Bridge
- Neighborhood Connections
- Existing Dog Park Trail
- Resource Protection Area
- Planning Area Boundary
- Existing Sidewalks



Trail Type	Location/Trail Name	Width	User	Materiality
Commuter	W.&O.D.	12'	Multi-Use (ped/bike)	Asphalt with recycled aggregate
Community	Four Mile Run / Long Branch	10'	Multi-Use (ped/bike)	Asphalt with recycled aggregate
Connector	Nauck Branch / Private Trail west of Dog Park	6' - 8'	Pedestrian	Porous paving or elevated metal walkway
Sidewalk	S. 4MR Dr / S. Arlington Mill Dr / S. Walter Reed Dr / S. Shirlington Rd / 24th Rd	6'	Pedestrian	Concrete (broom or exposed aggregate)

**3.16**



## B. DEVELOPMENT FORM / LAND USE

### BI. DEVELOPMENT FORM AND CHARACTER

Four Mile Run Valley contains some of the last areas of industrially-zoned land in Arlington County, as well as popular community facilities including trails, parks, open spaces and natural areas. There is a desire in the community to retain existing uses and an industrial aesthetic in this area. Additionally, strategic improvements in the public realm are recommended to support existing and future uses.

- a. Encourage reuse of existing buildings where possible.
- b. Implement Design Guidelines (see Chapter 4) to guide future improvements and new development. The standards should reinforce a high quality pedestrian realm, flexible use and an industrial aesthetic.
- c. Employ environmental and cultural interpretation where possible throughout the Four Mile Run Valley area to instill and enhance a sense of place and connection to its history.
- d. Incorporate public art throughout the Four Mile Run Valley area and consider local history and environmental concerns as its subject matter.
- e. Permit broader uses, including residential, in limited areas (identified on page 3.2 to 3.3) to complement and coordinate with development allowed in the Nauck Revitalization Area along with improved streetscape along Shirlington Road. *(Analysis to identify zoning and other tools to facilitate this development will be undertaken as a follow-on action, after the Area Plan is adopted. Implementation steps are outlined in further detail in Chapter 5 of this document.)*
- f. Examine the Zoning Ordinance to develop additional flexibility (i.e. parking, signage, etc.) to incentivize development in keeping with the vision for the area.

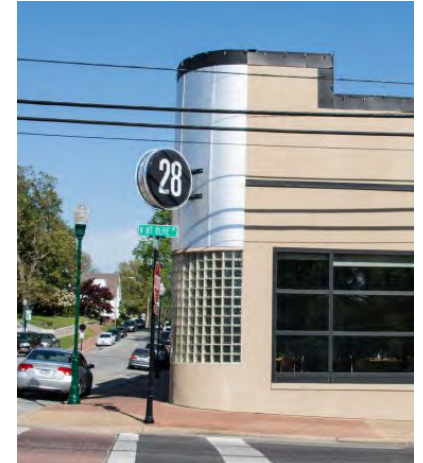


FIGURE 3.11: Industrial Character Examples



## B2. LAND USE

### B2.1 PRESERVE EXISTING INDUSTRIAL USES

Recommendations to preserve industrial uses include:

- a. Maintain industrial zoning for all properties that are currently zoned for industrial uses so that industrial land will remain available for small businesses, including both existing businesses and similar operations into the future.
- b. While allowing for mixed-use development in portions of Subarea D, through changes on the General Land Use Plan and zoning, incorporate building and site design guidance that buffers those uses from existing industrial uses to prevent or mitigate future use conflicts. These actions could include buildings designed with noise attenuation or locating parking at the rear between any residential units and industrial uses.
- c. Develop ideas to strengthen business retention in the area including:
  - Developing an on-street parking design that maximizes the number of available spaces.
  - Providing outreach and technical assistance to assist existing businesses in complying with stormwater management requirements, avoiding any flood risks and incorporation of sustainability measures, e.g., solar electricity.
- d. Continue to work with the Business Association, using its network as a conduit for Arlington Economic Development to offer 4MRV businesses access to technical assistance where available. Consult with the business association, property owners and business owners on the potential future expansion of arts uses in the area.

### B2.2 PUBLIC USES

The County's needs for support facilities are critical and increasing with the growth in population and development and the challenges of maintaining aging infrastructure. The limited supply of appropriately-zoned land suitable for County facilities and storage of heavy equipment and supplies greatly constrains its ability to meet those needs. Private redevelopment of former industrial properties has eliminated many lease and purchase options. 4MRV offers unique opportunities to meet County needs with its supply of industrial land and buildings, as well as close proximity to the County Trades Center.

- a. Sites within Four Mile Run Valley should continue to be considered for public use, within the context of a countywide review process.
- b. Consolidate and co-locate County uses, where possible.

### B2.3 GUIDANCE FOR SUBAREAS C AND D

Plan policy and future design guidelines can shape the form of new development in Subareas C and D.

- a. Generally, support the continuation of industrial and public uses within these subareas.
- b. Reinforce guidance from the Nauck Village Center Plan, with similar heights, density, and use mix, for sites indicated for "Broader Uses" within Subarea D.
- c. Encourage a mix of building types, with 4 to 6 stories maximum height.



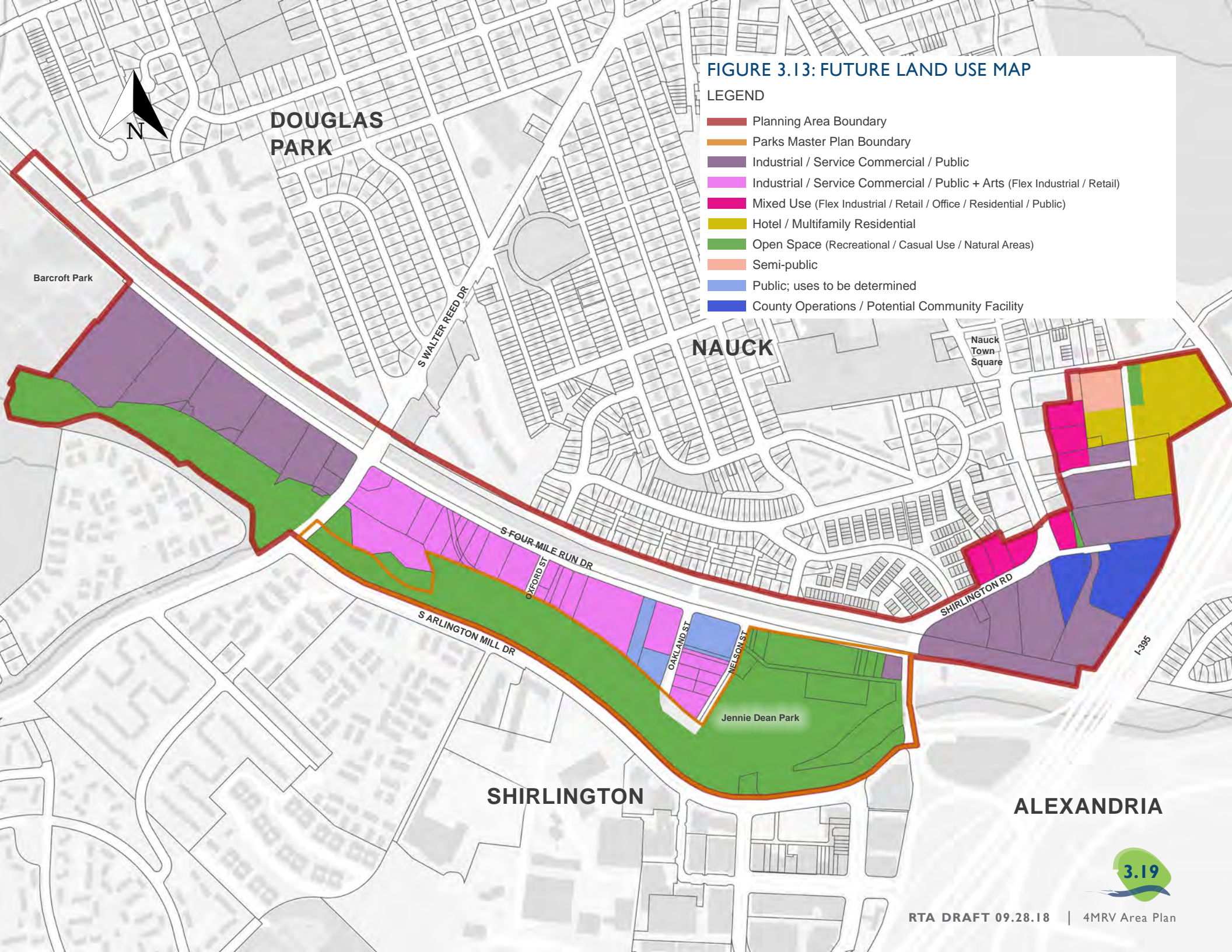
FIGURE 3.12: Area Plan Concept, Subareas C and D



**FIGURE 3.13: FUTURE LAND USE MAP**

**LEGEND**

- Planning Area Boundary
- Parks Master Plan Boundary
- Industrial / Service Commercial / Public
- Industrial / Service Commercial / Public + Arts (Flex Industrial / Retail)
- Mixed Use (Flex Industrial / Retail / Office / Residential / Public)
- Hotel / Multifamily Residential
- Open Space (Recreational / Casual Use / Natural Areas)
- Semi-public
- Public; uses to be determined
- County Operations / Potential Community Facility





### B3. BUILDING HEIGHT

Policy guidance for the height of new buildings includes:

- a. Maintain building height in the majority of the study area at 75', which is consistent with existing M-1 and M-2 zoning.
- b. Allow a future County-owned parcel, immediately adjacent to I-395 and distant from surrounding neighborhoods, to have buildings permitted up to a maximum height of 120'.
- c. Limit height of buildings adjacent to the historic Lomax A.M.E. Church and west of and adjacent to Shirlington Road to 45'.

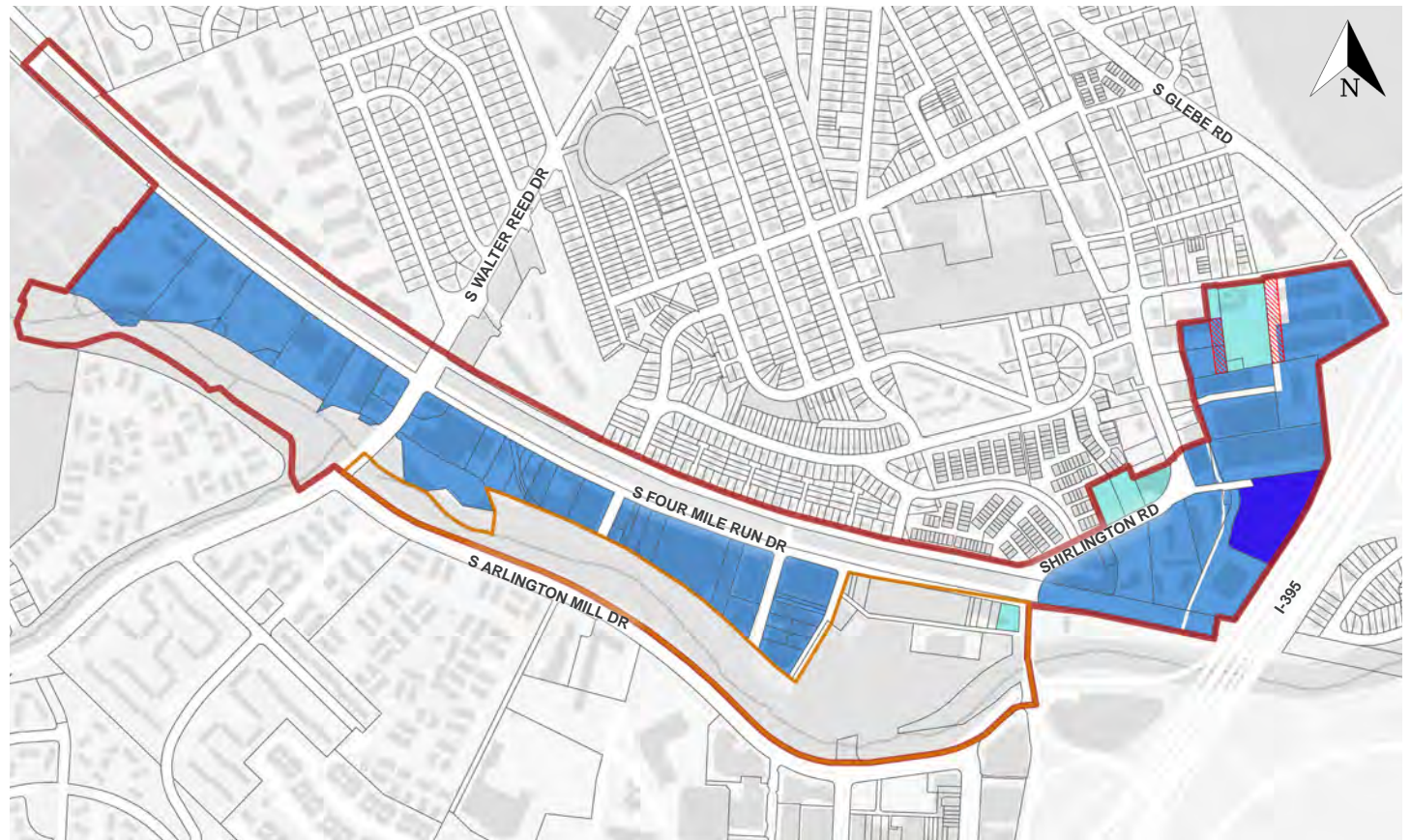








FIGURE 3.14: BUILDING HEIGHT MAP

#### LEGEND

-  Planning Area Boundary
-  Parks Master Plan Boundary
-  45' Maximum Building Height
-  75' Maximum Building Height
-  120' Maximum Building Height
-  Transitional Height Area



## B4. ARTS DISTRICT

A variety of visual and performing artists, arts organizations, and cultural affairs staff currently operate in 4MRV, primarily in the County-owned building at 3700 Four Mile Run Drive. The rehearsal, artist, and recording studios, black box theater, and office spaces located within the building provide users with a unique clustering of arts and creative activities producing a fertile environment for collaboration and innovation. The vision for the future is that this confluence of arts and creative activities will continue to evolve, and potentially grow into an Arts and Industry District.

- a. Work with the Arts Commission and the arts community to focus on the production needs of artists and develop a strategy for expanding arts uses within the study area consistent with ***Enriching Lives: Arlington Arts and Culture Strategy***. (See *Chapter 5* for discussion and timeline for initiation of a public process to explore this issue.)
- b. Explore opportunities to promote the expansion of arts uses within the area, including the evaluation of an Arts and Industry District.
- c. Encourage the introduction of additional arts, maker uses, and new retail uses in the area between Nelson Street and Walter Reed Drive as properties become available.
- d. Collaborate with adjoining business and property owners and the business association in developing appropriate street designs for Oakland Street to further the vision for the area.
- e. Work with the Arts Commission, the Public Art Committee, Public Art Staff and the community to identify opportunities, per the Public Art Master Plan, to integrate public art within identified parks, public spaces, and other Four Mile Run Valley locations.
- f. Work with Virginia Dominion Power, the arts community, and area businesses and residents to explore possible artistic screening options for the substation located on Four Mile Run Drive.

The classification of an “Arts District” can vary dramatically – it can be as minimal as nominal marketing and branding within an organically formed area or as intense as a legally defined geographic boundary with new facilities, financial incentives and dedicated programming. A review of these various types of districts will be necessary to evaluate the potential benefits in realizing the vision for 4MRV. Components that classify the district will include, but not be limited to:

- Key attributes of the district;
- Geography of the district;
- Relationship to parks and open space;
- Utilization of County resources and facilities;
- Marketing and branding;
- Zoning and/or other regulatory requirements;
- New or expansion of existing facilities; and
- Tax benefits or other financial incentives.

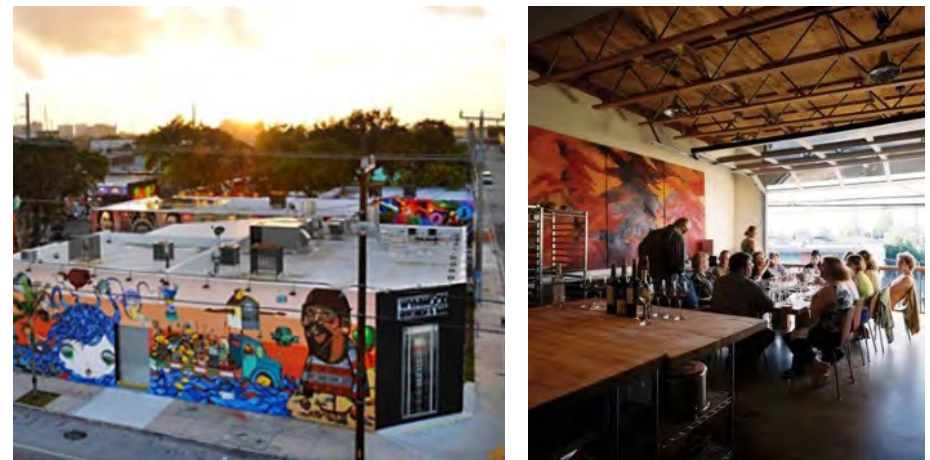


FIGURE 3.15: Arts Use Examples



## B5. GUIDANCE FOR COUNTY-OWNED PROPERTIES WITHIN SUBAREA B

The County owns three parcels within Subarea B. Policy guidance for these properties include:

- a. Continue to meet performance, studio, rehearsal, storage and meeting space needs for artists, arts organizations and the County, in the short-to-medium term.
- b. Examine how to best utilize the County's land holdings to implement the Plan's vision, consistent with existing County policy, in the long term. *(To be discussed as part of the community process regarding Arts / Arts District as a short term implementation exercise. see Chapter 5.)*



FIGURE 3.16: COUNTY-OWNED PARCELS WEST OF S. NELSON STREET

### LEGEND

- Parks Master Plan Boundary
  - Preserve Existing Uses / Arts-Oriented Uses
  - Public (County-owned Parcels); uses to be determined after further study
1. 3806 S. Four Mile Run Drive
  2. 2654 S. Oakland Street
  3. 3700 S. Four Mile Run Drive



## C. STREET DESIGN /TRANSPORTATION

The Four Mile Run Valley study area has a number of important, existing transportation assets, including the trail network, its proximity to I-395 and the Shirlington Transit Center, and a relatively well-connected network of streets. The area's key transportation issues include fragmented/discontinuous pedestrian and bicycle facilities, congestion and safety at intersections, and limited sidewalk buffers and street trees in some areas. This section outlines preliminary recommendations related to Safety and Traffic Flow, Four Mile Run Drive, Parking, Pedestrian and Bicycle Improvements, and Transit.

### C1. SAFETY AND TRAFFIC FLOW IMPROVEMENTS

- a. Complete an in-depth study of the Four Mile Run / Shirlington Road intersection to develop a design that better accommodates east-west bicycle and pedestrian crossings, minimizes vehicular delay, and promotes overall safety for all modes.
- b. Consider intersection design and operations improvements at key locations within the study area to address existing traffic and potential future traffic growth.

### C2. FOUR MILE RUN DRIVE STREET DESIGN AND PARKING

Due to the cost and land requirements of structured parking, maximizing on-street parking is an appropriate solution to support the vision and land use goals of the area. By changing the street design of Four Mile Run Drive, the County can provide additional on-street parking and support a number of the other goals of the plan.

- a. Develop policies and practices to address parking on a district-wide basis, utilizing expanded on-street parking resources to support existing and future public and private uses.
- b. Develop and review street design alternatives for Four Mile Run Drive with community stakeholders to maximize on-street parking, while also ensuring safety for pedestrians and maintaining appropriate traffic flow.
  - Implement changes in phases; monitor for effectiveness and safety.
  - Explore utility pole relocation or replacement as part of long-term streetscape implementation.
  - Explore continued partnerships with NorthernVA Parks Authority for seamless trail connections and sidewalks on north side of Four Mile Run Drive.

- c. Explore the possibility to augment parking resources by utilizing existing parking garages in the surrounding area at off-peak times.
- d. Maximize recreation and/or casual use space within Jennie Dean Park in lieu of providing additional on-site parking, to the greatest extent possible, by utilizing on-street parking resources.

#### ANGLED PARKING ON FOUR MILE RUN DRIVE

Head-out angled parking is recommended for Four Mile Run Drive, fronting Jennie Dean Park, instead of head-in angled parking, because it is documented to be safer for all users. Head-out parking is safer for drivers because, when leaving the parking space, the drivers have clear vision of oncoming vehicles, pedestrians, and cyclists and do not have to pull out blindly. It is also easier to load car trunks or truck beds from the sidewalk instead of the travel lane. Children, pets, and all users entering and exiting a vehicle that is parked as head-out angled are directed and channeled toward the sidewalk area because the doors open in that direction instead of toward the travel lanes.



**FIGURE 3.17:** Head-out angled parking concept on Four Mile Run Drive



## CONCEPTUAL PLAN FOR FOUR MILE RUN DRIVE

The conceptual plan graphic (right) shows a potential re-configuration of Four Mile Run Drive to maximize on-street parking and meet other plan goals, such as pedestrian safety and maintaining appropriate traffic flow. The future street cross section should change along the corridor length to address adjacent land uses and necessary turning movements. Improved crosswalks and bicycle crossings are shown at key intersections; continuous sidewalks and street trees are shown throughout.

As an interim solution, the reconfiguration of Four Mile Run drive could be implemented using paint, bollards and landscaped planters (see page 3.26). This would create a temporary 10 foot sidewalk on the south side of the street, a pedestrian crossing island at the intersections of Nelson and Oxford streets, and curb extensions (with planters) along the corridor. Parking lanes would still be provided on both sides of the street. This interim solution would allow the County to pilot the new street design and collect input/data on vehicle speeds and delay, pedestrian comfort, safety and access to businesses. There is an example of a similar street design change at the intersection of Arlington Mill Drive and Walter Reed Drive, where the county has re-configured travel lanes and created curb extensions using paint, bollards and planters.

In the longer term, reconstruction of the road would allow for changes to sidewalks and landscaping, which could include green infrastructure improvements.



**FIGURE 3.18:** Example of temporary street installation at Arlington Mill Drive and Walter Reed Drive. (See also Figure 3.20, potential temporary design solution for Four Mile Run Drive).

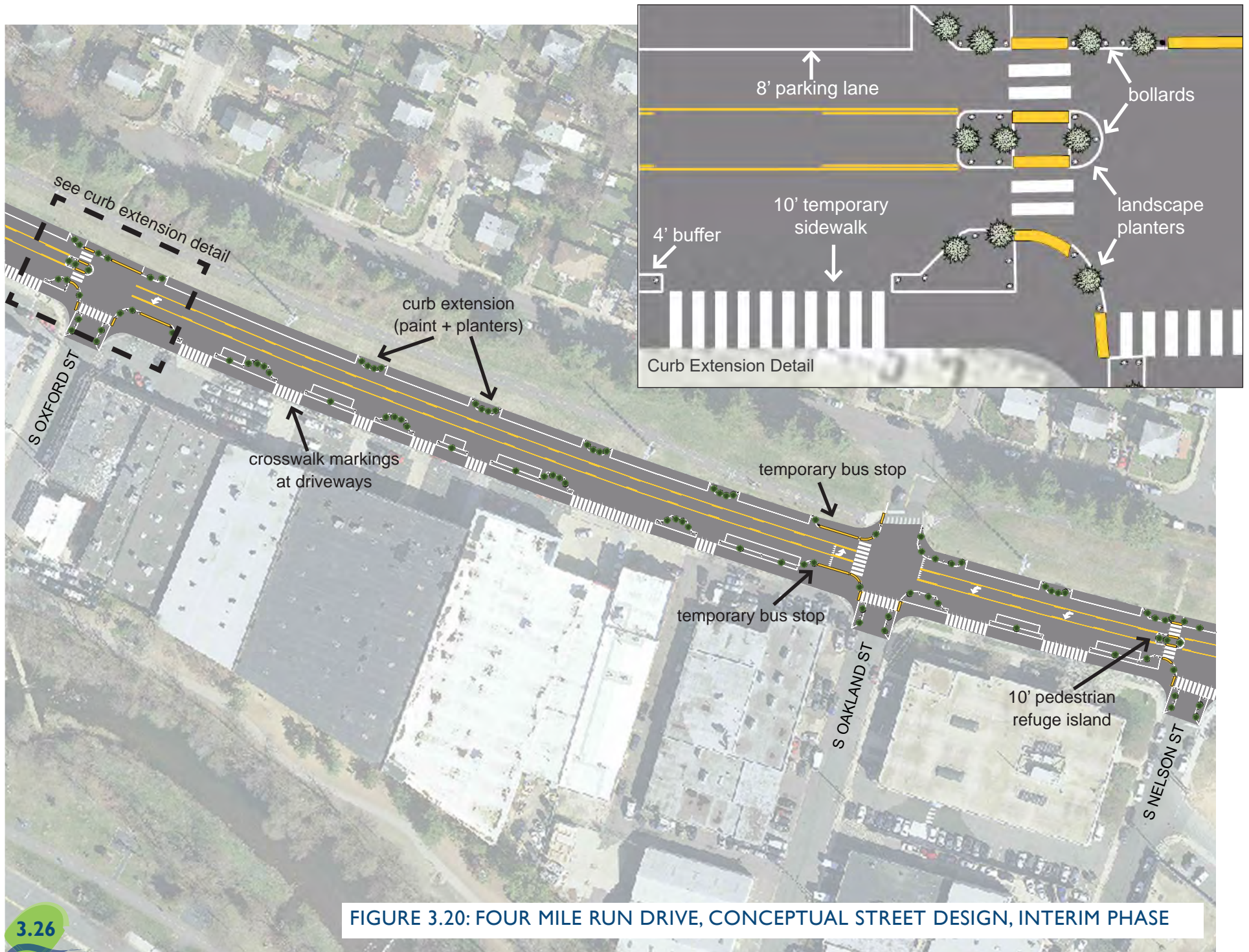




FIGURE 3.19: FOUR MILE RUN DRIVE CONCEPTUAL PLAN DRAWING







**FIGURE 3.20: FOUR MILE RUN DRIVE, CONCEPTUAL STREET DESIGN, INTERIM PHASE**

*Note: This illustration is highly conceptual, and is intended to help visualize an idea that was identified in the 4MRV process. Final details, such as driveway connections, bus stop locations, etc., will be reviewed at the appropriate time prior to implementation.*

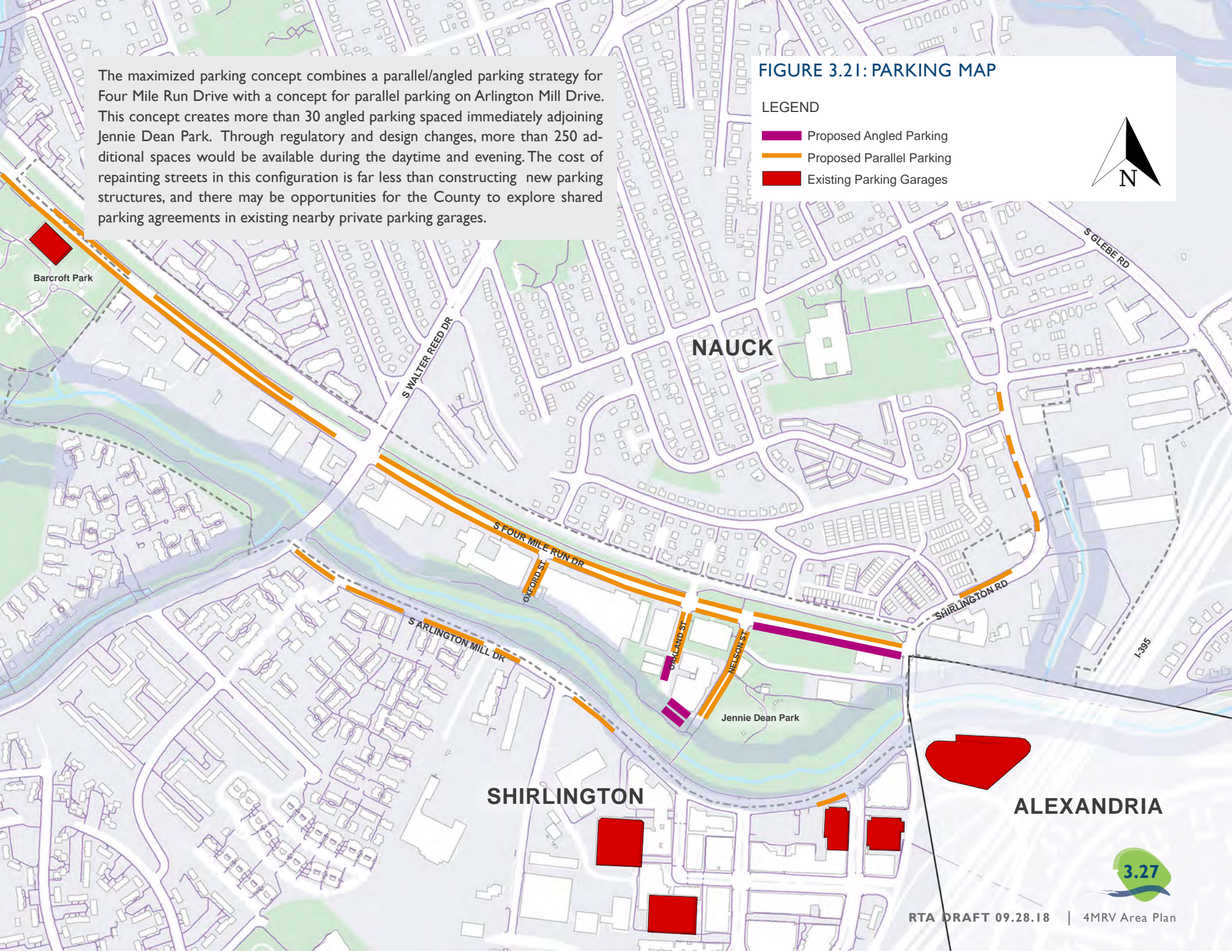


The maximized parking concept combines a parallel/angled parking strategy for Four Mile Run Drive with a concept for parallel parking on Arlington Mill Drive. This concept creates more than 30 angled parking spaced immediately adjoining Jennie Dean Park. Through regulatory and design changes, more than 250 additional spaces would be available during the daytime and evening. The cost of repainting streets in this configuration is far less than constructing new parking structures, and there may be opportunities for the County to explore shared parking agreements in existing nearby private parking garages.

FIGURE 3.21: PARKING MAP

LEGEND

- Proposed Angled Parking
- Proposed Parallel Parking
- Existing Parking Garages





### C3. PEDESTRIAN AND BICYCLE IMPROVEMENTS

The existing sidewalks along Four Mile Run Drive are discontinuous and, where they exist, provide limited comfort for pedestrians. There is no sidewalk along the north side of Four Mile Run Drive and pedestrians are expected to use the W&OD Trail to move east-west along the corridor. The sidewalk that is present on the south side of the street is interrupted by driveways and utility poles. The sidewalk is largely absent along the south side of Four Mile Run Drive from South Nelson Street to Shirlington Road. Arlington Mill Drive has sidewalks along the south side of the street, but pedestrians are expected to use the Four Mile Run Trail to traverse the north side of the street. There is a pedestrian bridge that connects to Jennie Dean Park and the Shirlington Dog Park located at South Nelson Street.

#### C3.1 PEDESTRIAN

- a. Widen and improve the pedestrian zone along the south side of Four Mile Run Drive by reconfiguring the roadway.
- b. Make the sidewalks on the south side of Four Mile Run Drive continuous by adding the segment between Nelson Street and Shirlington Road.
- c. Add pedestrian crossings across Four Mile Run Drive with median refuge islands at Oxford Street, Oakland Street, and Nelson Street.
- d. Add new high visibility crossings for pedestrians and bicyclists at the intersection of Four Mile Run Drive and Shirlington Road.
- e. Consider how to incorporate expanded sidewalk or trail space at the northwest corner of Shirlington Road / Arlington Mill Drive to improve safety.
- f. Explore potential for flush street design on S Oxford Street and Oakland Street, to create a flexible space that works for cars, parking, walking, biking, public markets, festivals and other events.
- g. Improve curb ramps and intersections along Four Mile Run Drive to provide continuous accessibility for people with disabilities.
- h. Consider changes at uncontrolled crossings of Arlington Mill Road to improve safety and comfort for pedestrians crossing the street.

*Note: additional concepts for pedestrian/trail connectivity integrated with open space resources are shown on the maps on pages 3.11 – 3.16.*

#### C3.2 BICYCLE

Because the W&OD and Four Mile Run Trails provide excellent east-west access, there are no on-street bike facilities on Four Mile Run Drive or Arlington Mill Drive. These shared use paths are heavily used by bicyclists, walkers, runners, and people rollerblading. In addition to the Four Mile Run Trail, which parallels Arlington Mill Drive, a section of the roadway also includes a marked bike lane in the eastbound direction.

- a. Evaluate the east-west pedestrian and bicycle crossings of Shirlington Road at Four Mile Run Drive:
  - (1) As a short-term measure, study options for safer at-grade crossings; and
  - (2) Long term, study underpass and overpass options to determine costs and feasibility.
- b. Evaluate the feasibility of a Four Mile Run Trail underpass at Walter Reed Drive, considering cost and Four Mile Run stream channel flow and floodplain impacts and constraints.
- c. Ensure that the proposed enhancements to the bridge at Shirlington Road and the enhancements being added to the bridge at Walter Reed Drive will make access to Arlington Mill Drive easier and improve connectivity between the W&OD Trail, Four Mile Run Trail, Jennie Dean Park, and the development along Four Mile Run Drive and in Shirlington.

#### C3.3 STREAM CROSSINGS

- a. Complete design and construction of the Walter Reed and Shirlington Road bridges, which will greatly enhance pedestrian and bicycle access in/through the area.
- b. Evaluate the effectiveness of the planned bicycle and pedestrian improvement to the Walter Reed and Shirlington Road bridges, over time, to determine whether additional Four Mile Run stream crossings are warranted.
- c. Evaluate the utilization of the Nelson Street pedestrian bridge. Determine whether existing or future demand warrants widening or other improvements, such as lighting.



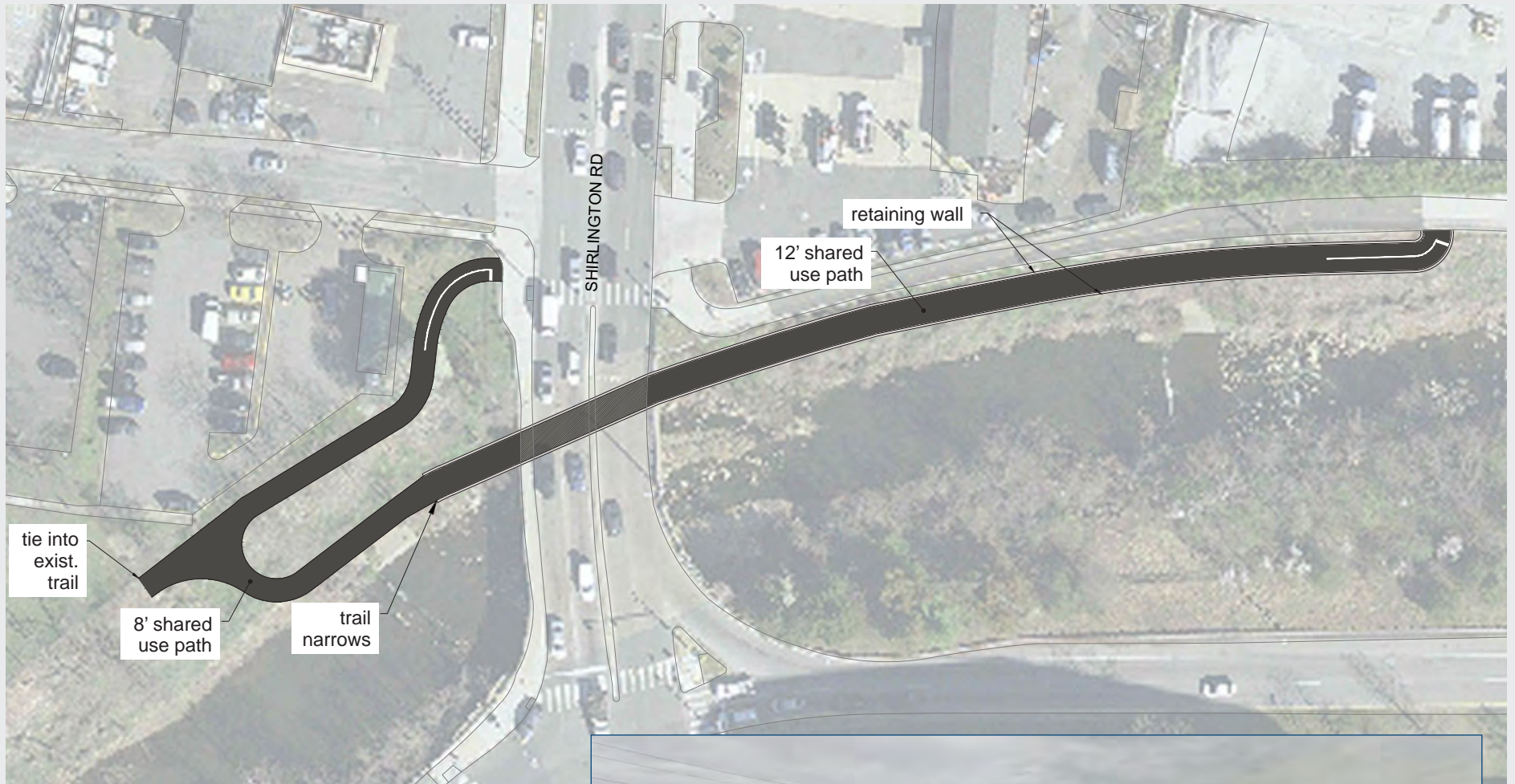


### LEGEND

- 







*Note: This illustration is highly conceptual, and is intended to help visualize an idea that was identified in the 4MRV process. Final details regarding the connection to and through Jennie Dean Park would have to be developed and reviewed at the appropriate time prior to implementation.*



**FIGURE 3.23: CONCEPT FOR SHIRLINGTON ROAD BRIDGE UNDERPASS**

*Note: A similar concept could be considered for Walter Reed Drive.*



## SHIRLINGTON ROAD CROSSINGS

The crossings on Shirlington Road north of the Shirlington Bridge are the only way for trail users to continue east-west on the Four Mile Run Trail or connect to the Washington & Old Dominion Trail. This location is frequently noted by trail users as a potential safety concern due to vehicle speed, sightlines and limited yielding.

A future trail underpass or overpass could eliminate the need for people walking or biking across Shirlington Road at grade, helping to improve safety and comfort for trail users. A future study is identified in this Plan to evaluate underpass and overpass options, weigh costs and benefits, and to develop a final solution to be implemented [See Chapter 5 - Implementation].

In the underpass concept shown on the left, westbound trail users could use the underpass to access the W&OD Trail by walking/riding north on the western sidewalk of Shirlington Road. To continue west on the Four Mile Run Trail they could use the western sidewalk on the Shirlington Bridge, which is slated for widening.

A trail underpass at the Shirlington Road bridge will likely require additional review by both the Arlington County Department of Environmental Services (DES) and the Army Corps of Engineers. The Resource Protection Area (RPA) buffer requires establishing/maintaining a vegetated natural buffer to Four Mile Run. As a trail connection to the County's trail network, the underpass could be considered an allowable use within an RPA.

The underpass, is also within the limits of the Army Corps of Engineers flood control channel; the level of analysis and review for a proposed underpass in this location is to be determined. The Army Corps of Engineers maintains a flood control model in this location, used to evaluate flood capacity of Four Mile Run and to evaluate impacts of stream restoration and/or development proposals on flood capacity. Generally, no encroachments, fill, or substantial improvements are allowed within the regulatory floodway without analysis determining that there will be no increase in flood levels during the base flood discharge.

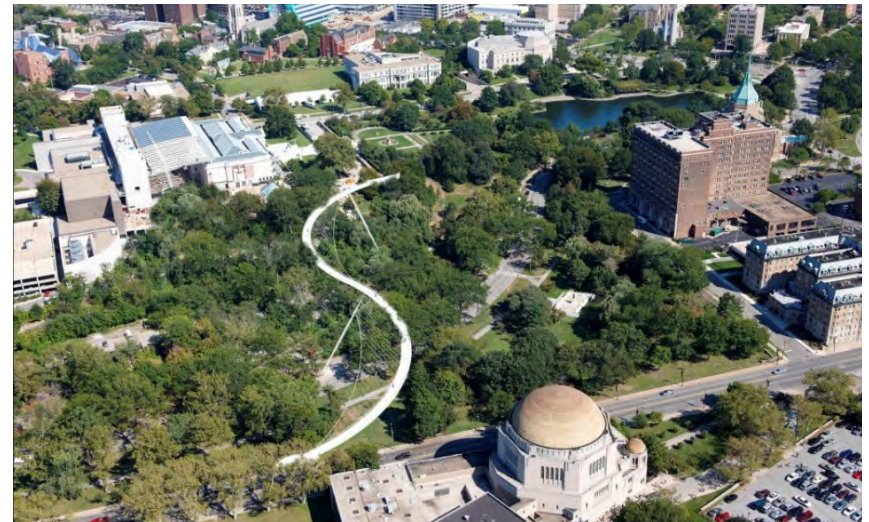
The following design objectives should be considered for the path underpass to address sustainability goals and the expected regulatory requirements:

1. Consider a boardwalk design for the path, and utilize proper erosion control practices for bank stabilization.
2. Bench the path into the Four Mile Run bank, minimizing fill within the flood plain and floodway.
3. Design railings and edge protection, if required, to minimize obstructions to fast-moving floodwaters.

## C4.TRANSIT

- a. As part of a multimodal transportation approach, consider proposed future changes to transit in the area, including:
  - The expansion of the Shirlington Transit Center.
  - The proposed West End Transitway Bus Rapid Transit project being led by the City of Alexandria, which would serve the study area along Arlington Mill Drive.
  - Proposed transit routing and service adjustments, as described in the Arlington County Transit Development Plan, which can add more bus service on the existing routes for reduced wait times between buses.
- b. Ensure that planned street improvements in the area will accommodate improved transit, including transit access and a comfortable space for bus stops, boarding and alighting.
- c. Improve bus stops/shelters along Four Mile Run Drive to provide greater comfort for patrons. At all bus stop locations, the proposed concept plan for Four Mile Run Drive includes bus shelters on curb extensions, which maintain continuous accessibility for people using the sidewalk and accessing transit.

*Note: See existing conditions transit map in Chapter 2, Figure 2.26.*



**FIGURE 3.24: CLEVELAND PEDESTRIAN BRIDGE**

*Note: This design could be applied to create a W&OD Trail connection.*









# DESIGN GUIDELINES

*The goal of the 4MRV Design Guidelines is to reinforce the pedestrian realm and a community vision for industrial character infused with arts. The guidelines can inform and shape new development in the area, as well as building and site design improvements that accompany the reuse and retrofit of existing structures.*

During the 4MRV planning initiative, the Working Group and community expressed a strong desire to retain an industrial character in the study area and to support a blending of additional arts uses and aesthetics into the district. Four Mile Run Valley is different from the County's other commercial areas, and there is a desire to retain and strengthen a unique identity here. There is also a desire to improve streetscapes and the public realm, specifically to make the area safer and more inviting for pedestrians so that the existing and future uses in the district can thrive.

The Concept Plan described in Chapter 3 designates areas where certain uses and building heights are envisioned and identifies a general character of development for those areas. Building upon this concept, the Design Guidelines in this chapter describe important design elements of new or reused buildings, and improved streetscapes, that can reinforce the pedestrian realm and implement the vision for an Arts and Industrial District that is complemented with arts, recreation and cultural resources.



## PRESERVE EXISTING USES

Character: Area could change, over time, with reuse/redevelopment of industrial/service commercial or public uses already prevalent in the area.

Uses: Industrial / service commercial / public

Height: up to 75 feet (existing height limit); up to 120 feet (adjacent to I-395)



## PRESERVE EXISTING USES / ENCOURAGE ARTS-ORIENTED USES

Character: This area could have a mix of arts, maker spaces, and retail to blend with existing industrial and service commercial uses. Existing buildings could be retrofitted for new uses and/or infill development could occur.

Uses: Flex Industrial / retail / public

Height: up to 75 feet (existing height limit)



## BROADER USES

Character: Flexible industrial/retail ground floor uses and industrial, residential or office development on the upper floors.

Uses: Flex Industrial / retail / office / residential / public

Height: up to 75 feet

**FIGURE 4.1:**

Recommended Concept Plan for the 4MRV area (at right; see Chapter 3 for details)



# GUIDELINES TO REINFORCE THE INDUSTRIAL / ARTS-FOCUSED VISION

Design Guidelines can reinforce and guide implementation of the community vision as public and private improvements envisioned by the Plan are implemented and building uses change over time.

The images at right show how Oakland Street could transform, retaining an industrial character, but with improved public space and some new arts-focused uses. The street design accommodates vehicular movement, on-street parking, street trees, and a widened sidewalk that can be used for walking and dining. A flush street design, where the sidewalk is level with the rest of the streetspace, provides flexibility; portions of the street could be easily closed off to vehicles on certain days and times for local festivals or markets.

Building facades maintain an industrial appearance and character; buildings can have increased transparency (openings), murals, and shopfronts that are inviting to pedestrians. The form and materials of improved buildings should provide a cohesive setting that fits with existing industrial and service commercial buildings in the district.

The following pages describe key design features and typical materials that are used in flex industrial buildings.



**FIGURE 4.2: OAKLAND STREET, BEFORE-AND-AFTER**

*above:* Potential street design improvements and building reuse

*right:* Existing conditions





## WHAT IS FLEX INDUSTRIAL?

Flex Industrial buildings contain adaptable spaces that could accommodate a number of uses, including workspaces, maker spaces, artist/dance studios, warehouse space, service commercial spaces, retail shopfronts, and public uses.

In 4MRV, Flex Industrial buildings should be designed to have consistent building detailing as typically found in light industrial settings, so they fit within and enhance the existing urban context and community vision for industrial character. Design details could include:

1. Rectilinear building forms with simple massing, typically open floor plans, and flat roofs.
2. Generous floor-to-ceiling heights (at least 14' floor-to-ceiling on the ground floor)
3. Ample windows / openings on the building facade, including floor-to-ceiling windows or the repurposing of garage doors as building fenestration.
4. Use of exposed building materials, such as metal rafters and concrete block.
5. Use of brick, concrete or stone masonry for primary building wall material; use of metal paneling and glass systems for ornamentation (see page 4.4).



FIGURE 4.3: FLEX INDUSTRIAL PRECEDENT IMAGES



## MATERIALS

Use of a consistent palette of materials and consistent detailing can unify buildings within the district. Historically, buildings in the 4MRV had utilitarian facades generally lacking ornament, reflecting the functional nature of their intended use. Structures are generally masonry buildings with flat roofs. The following guidelines are intended to encourage new or reused buildings to fit within this context:

1. Building wall materials should reinforce the industrial character of development envisioned and existing within 4MRV. Encouraged building wall materials include: brick, concrete or stone masonry; stucco; and metal and glass systems (for windows, doors, and shopfront conditions). Siding materials can be used for ornamentation, but are not encouraged as a primary building wall material.
2. Street walls, where installed to separate sidewalks from parking areas, should generally be comprised of the same material as the primary building façade. Fences can be metal (including wrought iron, steel or aluminum).
3. Brick masonry should generally be comprised of a standard unit size and height. Brick masonry may be painted.

## BUILDING PLACEMENT AND MASSING

Generally, reuse of existing building stock is anticipated, however limited redevelopment may occur. Where redevelopment occurs, new opportunities arise to add to the existing fabric and rhythm of the streetspace. The following guidelines are intended to encourage new or reused buildings to fit within this context:

1. Private Buildings - Where existing building are reused or existing uses are continued, property owners are encouraged to examine how the entire site, including the building facade, the roof, and parking areas can be utilized to contribute to the vision for the area.
  - New private buildings that are built in areas designated for “Broader Uses” (See pages 3.1 and 3.2) within Subareas C and D should be sited at the back of the sidewalk.
  - New private buildings built in areas that are not designated for “Broader Uses” should consider how best to contribute to the streetspace through building placement, or the creation of open space and/or outdoor seating.

Building height may vary, within the overall 75 foot height limit established in the Zoning Ordinance, but flexibility with respect to future uses should be considered.
2. Public Buildings - Where existing County buildings are reused or existing uses are continued, the County should examine how the entire site, including the building facade, the roof, and parking areas can be utilized to contribute to the vision for the area. New County buildings should be sited in a manner that reinforces the public realm and, where necessary, shields certain public uses from public view. New County buildings should be at least 2 stories in height and either:
  - Be built at the back of the sidewalk and have operable doors and windows facing the street, or
  - Be set back to provide functional public space along the street frontage.



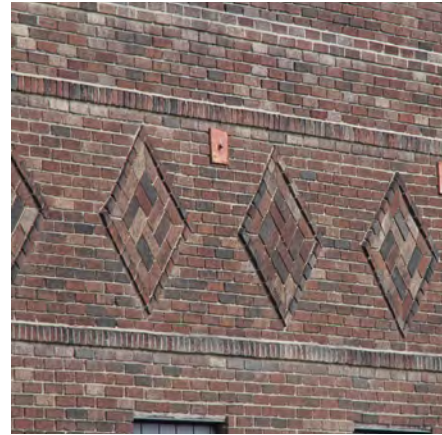


FIGURE 4.4: TYPICAL BUILDING MATERIALS



## PUBLIC ART AND CREATIVE PLACEMAKING

The inclusion of a hub of arts-oriented uses and public art within the 4MRV area is a defining feature that will set this portion of the County apart from other commercial areas.

1. Per Policy Recommendation B.4.e, the County should work with the Arts Commission, the Public Art Committee, Public Art Staff and the community to identify opportunities, per the Public Art Master Plan, to integrate public art within identified parks, public spaces, and other Four Mile Run Valley locations.
2. Murals are encouraged for existing blank building wall facades to provide pedestrian interest and reinforce the unique character for this area. Local artists should be considered for such commissions, per the County's Public Art policy and Guidelines.
3. Area streetscapes are another opportunity for reative placemaking. Examples include the painting of temporary walkway/sidewalk buffers with murals or design features, or the installation of parklets that incorporate art and seating. These improvements can be commissioned, installed and maintained by a local business or arts organization.



FIGURE 4.5: PUBLIC ART EXAMPLES





## PUBLIC ART CONSIDERATIONS

There are many kinds of art installations in the public realm: community-initiated, stand-alone, integrated, temporary or permanent. Often one highly visible, well-publicized and community-based art project can serve as a catalyst to encourage more art activities and installations in a district. The following considerations can set a community on the right path to the best possible outcome when it comes to public art:

1. **Site Selection:** A good place to start is to catalog the locations within the district best suited for an art project or installation. Sites where public art is best displayed include areas of high pedestrian traffic that are visible and broadly accessible. Keep in mind that public art can create a place of congregation and establish a landmark or gateway.
2. **Artist Proposals:** If a community group or organization is willing to facilitate a public art project, they can start by designating, pooling, or raising funds for a proposal process. Considerations within the proposal can include: thematic relationship to the community, its history or goals; representation of the values and culture of community members; how the art will activate or enhance a site; scale of the final piece; any lighting or signage needs around the artwork; and material selection and longevity.
3. **Design and Review Process:** A selection committee made up of community stakeholders and design professionals should meet with the artist or facilitator to discuss ideas and any parameters for the artwork. If a proposal was part of the artist/facilitator selection process, this committee should identify any issues or concerns about the construction, assembly, or installation of the final project.

4. **Temporary Art Projects:** Sometimes the best art speaks to a specific time, activates a space before it transitions to a more permanent use, or creates a special moment in time by lasting only for a season. Temporary art installations can be easier and less costly to implement. They also provide valuable opportunities for emerging artists and new art districts to experiment with different locations, materials, and styles.
5. **Maintenance:** Before a public art piece is installed or completed, a maintenance plan should be in place that considers the responsibilities and methods of funding for ongoing maintenance needs. Generally speaking, routine maintenance of any specific artwork should become the responsibility of the agency that houses the artwork.
6. **Making Space for Local Artists:** Encouraging artists and community engagement in the arts is an important part of any public art strategy. Any agency can begin by coordinating partnerships between local businesses and artists, hosting art exhibits or activities, and commissioning artwork.

The draft update to the Public Art Master Plan highlights several focus areas within Arlington for where public art is a priority. Four Mile Run Valley is one such focus area. The role and incorporation of public art has been woven into both the Four Mile Run valley Area Planning documents. Additionally, there are several other projects and opportunities within the broader Four Mile Run area where public art will or should be incorporated, including: Nauck Town Square; Jennie Dean Park; Short Bridge Park; Drew Park; Nelson Street Pedestrian Bridge (artist on the design team); and the Shirlington Transit Center expansion.

The overall goals for the inclusion of public art in these projects and opportunities are to:

- Support the County's multiple goals for the Four Mile Run corridor, including storm and wastewater management, open space and recreation.
- Enhance the design of infrastructure (such as wastewater management and floodways).
- Enhance the public understanding of infrastructure (such as wastewater management and floodways) and natural systems (such as tributaries and riparian habitat).
- Support urban design, community planning and open space goals for the Four Mile Run Valley, Nauck and Shirlington.
- Ensure that recommendations for public art in the Four Mile Run Valley Area Plan are consistent with the vision, goals and priorities of the Public Art Master Plan.



# GUIDELINES TO REINFORCE THE PEDESTRIAN REALM

An important goal of this Plan is to improve pedestrian safety and comfort. This can be achieved through a combination of streetscape improvements and changes to how buildings address the street.

The vision for Four Mile Run Drive is to maximize on-street parking and walkability. In the near term, this can be done through paint and planters that define a temporarily widened sidewalk space and parking areas. Over time, improved crosswalks and more permanent changes, such as moving curbs and inserting street trees, planters and green infrastructure, can be accomplished.

As some buildings are inhabited by new uses or new development occurs, buildings can become better oriented to the improved streetscape. Facades can open to sidewalks and streetscapes with shaded shopfronts and larger openings; outdoor dining and public art can activate the streetscape; parking can be reorganized to better define public space and access between buildings and sidewalks; and signage and lighting can provide orientation as well as contribute to the district's character.

The following pages describe elements that produce a positive pedestrian environment: building entrances, facade transparency, shopfronts and dining, shading of sidewalks, access to parking, signage and lighting.



**FIGURE 4.6: FOUR MILE RUN DRIVE AT OXFORD STREET, BEFORE-AND-AFTER**

*above:* Mid-term street design improvements, which utilize paint to redefine vehicular lanes and establish a widened, continuous sidewalk with planters to define parking areas; and potential building reuse with facade improvements that are oriented to the improved street. (See Chapter 3 for more detail about street design concepts.)

*left:* Existing conditions

*right, page 4.9:* Implementation of permanent improvements, such as mid-block crossings and the permanent street design changes (moving curbs, and installing trees and green infrastructure).





These conceptual exhibits are for illustrative purposes only. A future design process will fully assess through traffic concerns and lead to a specific design that incorporates appropriate materials and landscaping, and provides technical solutions for loading and deliveries.



The following guidelines can apply to new or reused buildings in the 4MRV area, to enhance walkability and the pedestrian realm and are options to be considered at the time of reinvestment in properties. Property owners are encouraged to consider these design elements as a menu of choices, rather than requirements, with the goal of contributing to the vision and enhancing the public realm on a site-by-site basis.

## PRIMARY ENTRANCES

The primary entrance of a building should directly face and open onto a street/sidewalk or a pedestrian-oriented public space. The public space can include a garden, courtyard, or forecourt; the public space should connect directly to the sidewalk. Primary entrances that open directly onto parking lots are discouraged.

## BUILDING FACADES

### Transparency

All building façades which face a street or public space should meet the minimum transparency guidelines below. The intent of the façade transparency guidelines is to eliminate expanses of blank walls facing the public realm. The percentage of transparency per story is calculated within the area between the finished floor and finished ceiling and is a total percentage of doors and windows along that portion of the façade. Building façades that exceed the minimum transparency guidelines are encouraged.

1. Minimum building façade transparency for ground story (retail): sixty (60) percent
2. Minimum building façade transparency for ground story (uses other than retail): thirty (30) percent
3. Minimum building façade transparency for upper stories: thirty (30) percent

### Treatments

Although existing buildings in this area generally have little or no architectural ornamentation, in keeping with their utilitarian industrial purpose, new and existing building facades can be “dressed up” to create interest by:

1. Developing an interesting paint scheme, or
2. Adding public art or ornamentation.



FIGURE 4.7: BUILDING TRANSPARENCY



## LINER BUILDINGS

The character of some uses of land, such as warehouses and parking structures, may preclude their buildings from meeting the Façade Transparency guidelines. Such buildings can be constructed or retrofitted in a manner that they are separated from adjacent streets (but not alleys) by liner buildings.

1. Liner buildings should be at least fifteen (15) feet in depth; this ensures that the interior area is sufficient to be an actively used space.
2. Liner buildings may be detached from or attached to the primary building.
3. Liner buildings may be used for any purpose allowed on the lot on which they are located except for parking.
4. Liner buildings should meet the Façade Transparency guidelines above.



## PEDESTRIAN-ORIENTED SHOPFRONTS

1. The entrances to shopfronts (or an activating use) could be covered, either by an awning, canopy, second floor balcony, arcade / colonnade, or by being inset into the main body of the building (see page 4.12).
2. Shopfronts should provide interior views for pedestrians on sidewalks. The top of all shopfront window sills should be between one (1) and three (3) feet above the adjacent sidewalk. Shopfront windows should extend up from the sill at least eight (8) feet above the adjacent sidewalk.
3. Shopfront doors should contain at least sixty (60) percent transparent glass; solid doors are not desirable.



FIGURE 4.8: SHOPFRONTS AND DINING

## OUTDOOR DINING

Outdoor dining activates streetscapes. Dining is encouraged to occur in the front or side of buildings. However, a minimum 6' clear sidewalk dimension should be maintained along the front of the building for pedestrian access.



## SHADING OF SHOPFRONTS

Buildings with a shopfront (or activating use) on the ground story may have awnings, balconies, colonnades, or arcades facing the primary streets; these elements are also encouraged for buildings with other active or public ground floor uses. The following design guidance applies:

1. Awnings over ground-story doors or windows should have a depth of at least five (5) feet and a clear height of at least eight (8) feet above grade. Awnings should extend over at least twenty-five (25) percent of the width of the building's façade.
2. Second-story balconies should have a depth of at least 6 feet and a clear height below of at least ten (10) feet above grade. Balconies should extend over at least twenty-five (25) percent of the width of the building's façade. Balconies can have roofs but should be open toward the street.
3. Colonnades and arcades should have a clear width from their support columns to the building's façade of at least eight (8) feet and a clear height above grade of at least ten (10) feet. Support columns should be spaced no farther apart than they are tall. Colonnades or arcades should extend over at least seventy-five (75) percent of the width of the building's façade.



FIGURE 4.9: SHADING APPURTENANCES



## PARKING

Per Policy Recommendation C.2.a, a district-wide approach to parking should be explored for the 4MRV area, with expanded on-street parking resources to support existing and future public and private uses.

1. Curb cuts should be shortened and/or consolidated where possible, to improve pedestrian safety and sidewalk continuity. Parking should be accessed from rear alleys (where they exist - for example, in new development in subarea C or D) and/or from side streets if the lot is located on a corner. If no rear alley or side street exists, then efforts should be made to allow access across neighboring properties, where possible.
2. When access to parking must be directly from the street, driveways should be designed such that pedestrian access and safety are maximized.
3. Off-street parking areas for new development: parking lots or garages should be set back from street sidewalks or public spaces a minimum of twenty (20) feet, except:
  - a. When the parking is located within the building footprint, and at least five feet below grade and screened from pedestrian view; or
  - b. Where constrained sites do not allow a 20' setback, a low wall or fence (4' max height) can be used to separate surface parking lots from pedestrians on area streets or in public spaces.



FIGURE 4.10: PARKING



## PRIVATE SIGNAGE AND LIGHTING

Signage and lighting in the private realm should enhance the character of the public realm, and help to give identity to the streetscape.

1. Building wall signs (including painted signs as well as signage affixed to the wall) should be an integral component of the facade design. Property owners are encouraged to incorporate materials, designs and lighting to accentuate the unique character of the area.
2. Consideration of security and pedestrian comfort shall be prioritized by increasing illumination low to the ground in parking lots, at building entries, and semi-public spaces.



## WAYFINDING, LIGHTING AND FURNITURE

Installation of appropriately-scaled wayfinding signage on public right-of-ways can help to unify a district and encourage pedestrian life. Wayfinding signage that identifies key public areas and unique local designations can be installed and maintained by the County or by a local business or arts organization.

1. It should be consistent in theme and placement, and coordinated with other streetscape furniture (e.g., light posts) to reduce visual clutter in the public realm.
2. Area Plan wayfinding should be coordinated with, and complementary to, the 4MRV Park Master Plan wayfinding measures.



FIGURE 4.11: SIGNAGE AND LIGHTING EXAMPLES

Signage and lighting fixtures within area streets and public spaces can create a unifying scheme or provide interest within the 4MRV district.

1. A combination of pedestrian-scaled street light fixtures (generally not taller than 16 feet) as well as intersection street light fixtures can ensure a well-lit street area and establish a unifying element along the street.
2. The long-term streetspace vision for Four Mile Run Drive (See p. 4.9) should incorporate street furniture that is coordinated with the Jennie Dean Park design process.





FIGURE 4.12: WAYFINDING EXAMPLES







# IMPLEMENTATION

The Four Mile Run Valley Area Plan envisions maintaining the study area's industrial character while encouraging compatible development and enhancing the natural environment. Implementation will involve zoning changes, promotion of arts uses and a variety of capital improvements.

Three follow-up studies are recommended as the first steps in implementation:

- Arts and Industry District Planning
- Land Use and Zoning Analysis
- Parking Analysis and Short-term Implementation

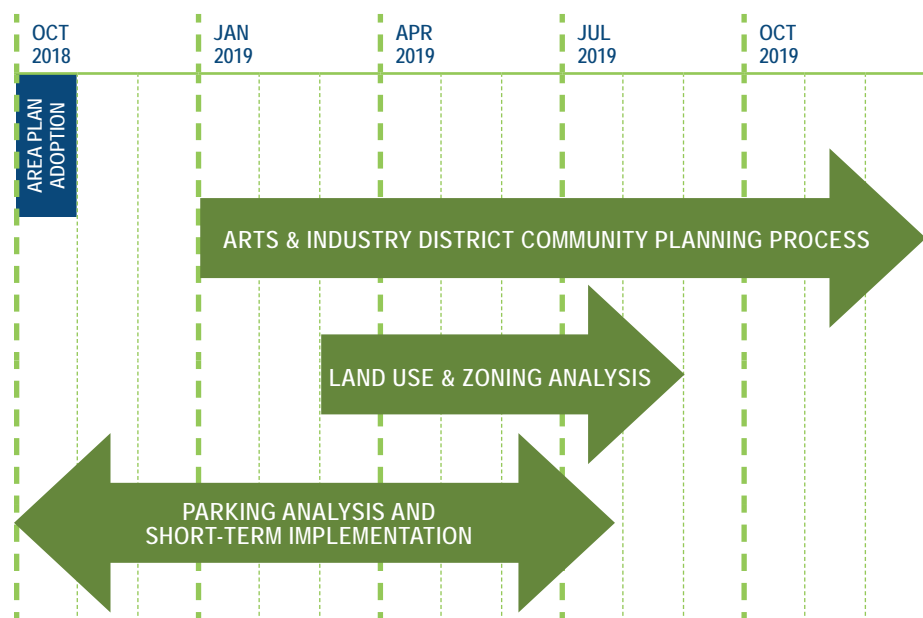


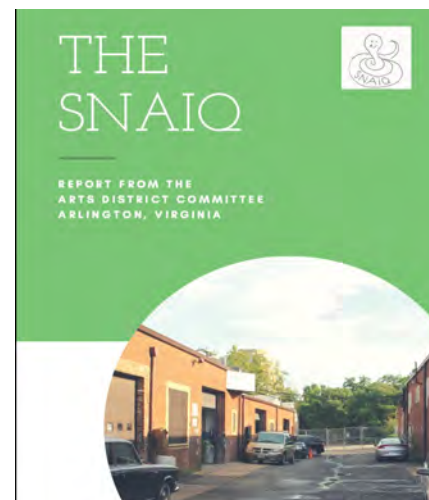
FIGURE 5.1: EARLY IMPLEMENTATION STUDIES

## ARTS AND INDUSTRY DISTRICT PLANNING

The County will undertake a public process to define a vision for the arts and industrial uses within the study area, including consideration of designating an Arts and Industry District. As part of this community discussion, the types of uses, boundaries, governance and tools will be outlined. The two-part process will start with a technical panel, led by County staff with representatives from the Arlington Commission for the Arts and the Economic Development Commission.

A broader community engagement process, led by County staff and a citizen group, will discuss the opportunities and challenges associated with various arts district scenarios developed by the technical panel. This County Manager appointed citizen group; potentially co-led by a technical panel participant from both the Commission for the Arts and the Economic Development Commission, and including appropriate advisory groups and other relevant stakeholders (artists, business owners, property owners and area residents), will ensure that the potential new arts district works in concert with existing and new businesses.

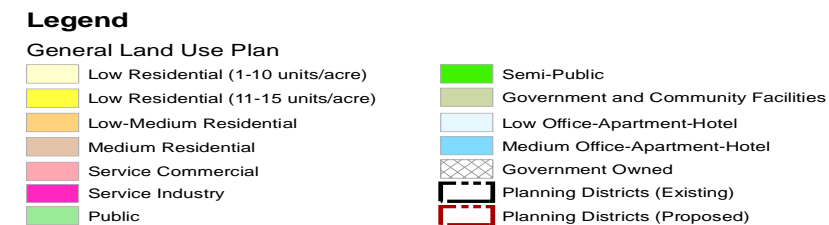
The 4MRV Working Group's Arts District Committee developed a report (below) containing recommendations for a proposed Arts and Industry District, which can inform the upcoming process. Those recommendations include, among other things, ideas about the character of the proposed district, the types and mix of uses to be encouraged, and strategies for growth. The full report can be reviewed on the 4MRV webpage ([www.4mrv.com](http://www.4mrv.com)).





An in-depth study of zoning alternatives is needed to determine how/whether additional uses or flexibility are needed within the zoning categories found within the study area to facilitate implementation of the vision. In conjunction with potential changes to the Zoning Ordinance, it is recommended that the General Land Use Plan be amended to designate the Four Mile Run Valley Planning District. Additional zoning provisions could then be applied within this proposed district in furtherance of the vision for the area.

In conjunction with potential changes to the Zoning Ordinance, it is recommended that the General Land Use Plan be amended to designate the Four Mile Run Valley Planning District. Additional zoning provisions could then be applied within this proposed district in furtherance of the vision for the area.



Consistent with the overall vision to retain industrial uses, this Area Plan recommends that the current zoning throughout the area remain in place. The County will review the list of uses permitted in M-1, M-2, and C-2 zones to determine whether additional uses, consistent with the vision, should be permitted. The Arts and Industry District planning process, described above, will inform this analysis. In addition, potential incentives will be explored, including providing additional flexibility with respect to parking and /or signage requirements, for example.

This Area Plan designates several properties on Shirlington Road or abutting properties with Shirlington Road frontage for “Broader Uses” in line with the community vision developed in the Nauck Village Center Action Plan. The Action Plan showed future mixed-use office, residential, commercial development in buildings of four to eight stories along the Shirlington Road frontage south of 24th Road South.

Mixed-use zoning will likely encourage redevelopment and/or adaptive reuse of existing buildings. While redeveloping properties for mixed-use development along the east side of Shirlington Road and along 24th Road S., it will be important to incorporate building and site designs that buffer those uses from existing industrial uses to prevent or mitigate future use conflicts. These actions could include buildings designed with noise attenuation or locating parking at the rear between any residential units and industrial uses.

Further analysis is needed to refine the parking recommendations, in order to maximize the use of on-street parking. The analysis will develop policies and practices to address parking on a district-wide basis. Local business owners should be included in the detailed planning to assure that truck access is maintained and that the improvements do not negatively impact their operations.

The parking study also will explore the possibility of utilizing existing parking garages in the surrounding areas to support study area uses at off-peak times. Parking meter policies should be rationalized so that the time limits are appropriate to the potential uses, and Four Mile Run Drive parking times should be extended into late evening to accommodate cultural and entertainment activities.



## PUBLIC IMPROVEMENTS

The public improvements outlined in the preceding chapters and identified in the map on page 5.5 will be developed over time. The precise timing of their implementation will depend on the availability of funding and staff resources. The County's overall priorities will determine which transportation, environmental and other capital improvements proceed each year.

The implementation matrix (starting on page 5.6) indicates whether a specific policy or improvement is most likely to occur during the near, mid or long term. The recommended actions or timing indicated herein do not imply a current funding and/or resource commitment by the County Board or the relevant agencies. The actual timing could be sooner or later depending on other factors. Some will depend on private-market decisions.

Some of the priority projects include implementation of the programmed enhancements to the bridges at Walter Reed Drive and Shirlington Road, improvements to Jennie Dean Park, expanding on-street parking, zoning changes to protect industrial uses, and safer at-grade pedestrian and bicycle crossings of Shirlington Road at Four Mile Run.

## IMPLEMENTATION MATRIX

The implementation matrix beginning on page 5.6 identifies recommended actions (policies, studies, public improvements) to implement the Area Plan. Each action item includes timing, identification of responsible agency(ies), and potential funding sources.

## TIMING

Each implementation action indicates the prospective time frame for initiation:

- Ongoing or with redevelopment (O);
- Short term, 1-3 years (ST);
- Mid term, 4-9 years (MT); and
- Long term, 10 years or longer (LT).

## RESPONSIBLE AGENCIES

The matrix identifies the agency or agencies that are expected to be involved in that action. Other agencies may be involved where their perspective and participation would be valuable. The organization expected to take the lead on a specific action is listed first.

### Implementing Agencies:

AED	Arlington Economic Development
CPHD	Department of Community Planning, Housing and Development
DES	Department of Environmental Services
DPR	Department of Parks and Recreation
NOVAParks	Northern Virginia Regional Park Authority
WMATA	Washington Metropolitan Area Transit Authority

## FUNDING SOURCES

Likely funding sources are listed in the implementation matrix for physical improvement projects that require significant funds or other resources. In addition to the Capital Improvement Plan (CIP), potential funding sources include local (General Fund), state, federal and other private funds.



# PUBLIC IMPROVEMENTS

## ENVIRONMENT & OPEN SPACE

- 1 Pursue Four Mile Run buffer improvements and expansion, bank stabilization, invasive species management, and in-stream channel improvements to improve habitat and stability (see policy A2.1)
- 2 Seek opportunities to better manage flooding of Nauck Branch, including pursuing access easements for proper maintenance and repair/improvement (see policy A2.2).
- 3 Pursue Park Master Plan area improvements (see policies A3.2 and A3.3)
- 4 Pursue improvements to Allie S Freed Park, including improved water access/visibility, environmental and cultural interpretation, and an enhanced gateway (see policy A3.5)
- 5 Infuse public art and environmental and cultural interpretation throughout the Four Mile Run Valley area to instill and enhance a sense of place and connection to its history, where possible. Work with local artists and explore local themes such as industrial history or access to natural areas (see policy B1)

## PEDESTRIAN & BICYCLE

- 6 Improve access along the north and south sides of Four Mile Run while providing overlooks and safe, stable water access at key points in order to reconnect with water and nature while accentuating scenic views along the waterway (see policies A3.4 and C3.1)
- 7 Improve pedestrian paths and wayfinding along South Walter Reed Drive, South Oxford Street, and Shirlington Road (see policies A3.4 and C3.1)
- 8 Create potential trail underpasses at South Walter Reed Drive and Shirlington Road to allow for continuous connectivity (see policy A3.4 and C3.2)
- 9 Add pedestrian crossings across Four Mile Run Drive with median refuge islands at Oxford Street, Oakland Street, and Nelson Street (see policy C3.1)
- 10 Consider how to incorporate expanded sidewalk or trail space at the northwest corner of Shirlington Road / Arlington Mill Drive to improve safety (see policy C3.1)

- 11 Improve pedestrian comfort at signalized crossings on Arlington Mill Drive, including improved signage, an extended median through the eastern crosswalk at Randolph Street and a hardened centerline or median for westbound left-turns at Taylor Street (see policy C3.1)
- 12 At unsignalized crossings on Arlington Mill Drive, evaluate stopping sight distance and add advanced warning signs if needed. Make spot improvements and conduct speed study to determine if enhanced crossing treatments are warranted (see policy C3.1)
- 13 Four Mile Run/Shirlington Road intersection: Add new high visibility crossings for pedestrians and bicyclists Long term, study underpass and overpass options to determine costs and feasibility (see policy C3.1 and C3.2)
- 14 Complete pedestrian and bicycle improvements on existing vehicular crossings of Four Mile Run at Walter Reed and Shirlington Road bridges; evaluate utilization and effectiveness of existing bridges including Nelson Street pedestrian bridge to determine whether additional stream crossings are warranted (see policy C3.5)
- 15 Explore potential for flush street design on S Oxford Street and Oakland Street, to create a flexible space that works for cars, parking, walking, biking, public markets, festivals and other events (see policy C3.1)

## STREET & WAYFINDING

- 16 Evaluate design options for Four Mile Run Drive to maximize on-street parking while ensuring safety for pedestrians and maintaining appropriate traffic flow as well as potential for adding green infrastructure and street trees (see policies A.1, A3.4, C2 and C3.1). Short-term, consider interim implementation using paint, bollards and other temporary treatments to pilot street reconfiguration. Monitor multimodal safety, comfort and access during pilot phase.
- 17 Gateways: Consider improving major gateways with directional signage and a range of amenities such as seating, trailheads, signature plantings, bike racks, trash cans, and Arlington Parks welcome signage. Consider improving minor gateways with directional signage, cultural or environmental interpretation opportunities, and trash cans (see policy A3.6)
- 18 Provide locational signage and trail markers at regular intervals along commuter and community trails (see policy A3.6)



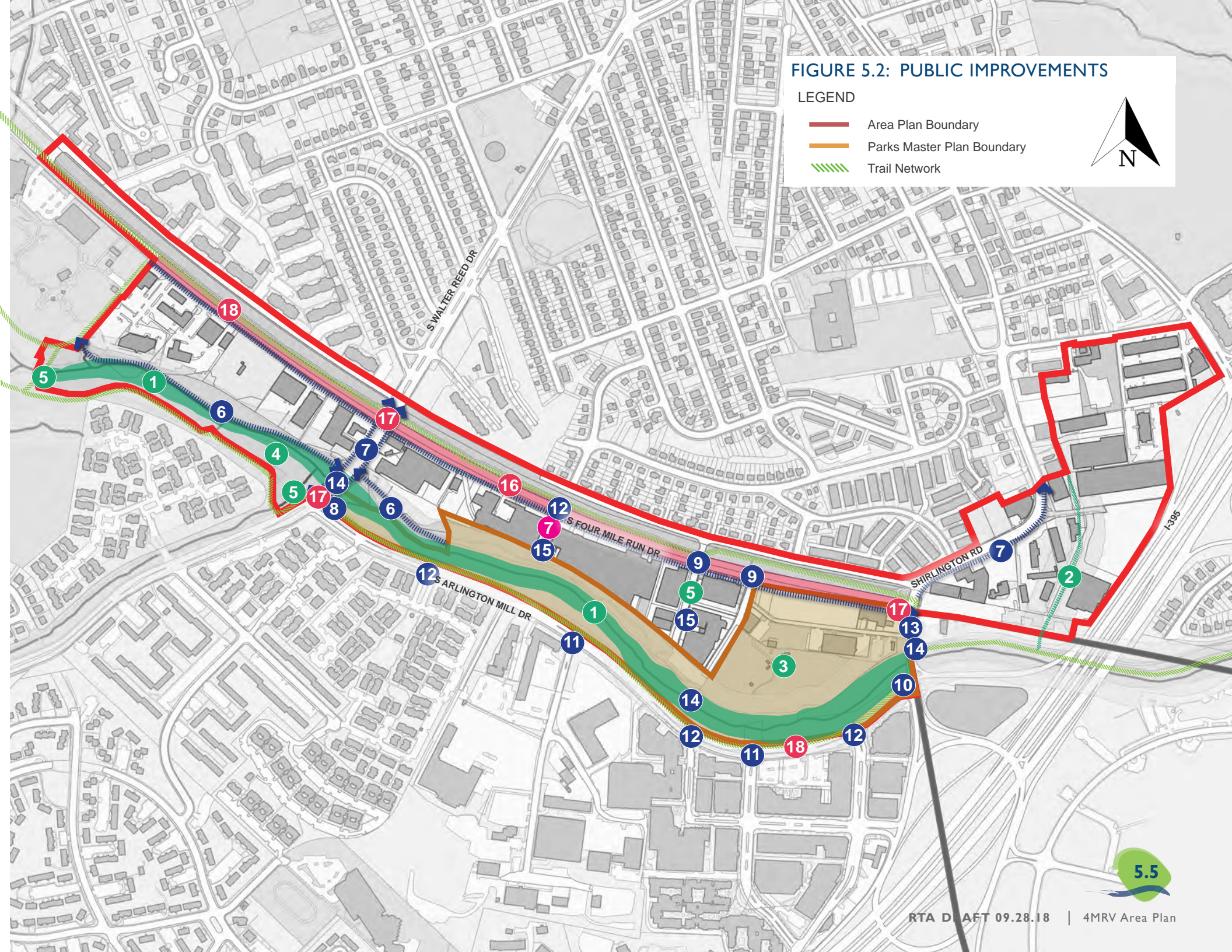
Note: Potential public improvements will be phased over time and implemented as funding is available; see implementation matrix for more information on timing.



FIGURE 5.2: PUBLIC IMPROVEMENTS

LEGEND

- Area Plan Boundary
- Parks Master Plan Boundary
- Trail Network





# IMPLEMENTATION MATRIX

#	Recommended Actions (policies, studies, public improvements)	Timing	Implementing Agency	Potential Funding Source	Page #
INITIAL ACTIONS					
i	Undertake Zoning Analysis to determine how/whether additional uses or flexibility is needed within the zoning categories found within the study area to facilitate implementation of the vision.	ST	CPHD	TBD	5.1
ii	Conduct Arts & Industrial District planning process to define a vision for the Arts & Industrial District, the types of uses, boundaries, governance and tools.	ST	AED	TBD	5.2
iii	Perform further Parking Analysis: address on district-wide basis, maximize on-street parking, explore use of area parking garages	ST	DES	TBD	5.2
POLICY GUIDANCE					
A	ENVIRONMENT/ SUSTAINABILITY/ OPEN SPACE				
A1	Neighborhood Green Infrastructure				
a	Replace extraneous impervious area with vegetation, plant trees, and implement green infrastructure practices such as pervious pavement, bioswales, bioretention systems, and stormwater planters.	ST - LT	DES / DPR	CIP	3.7
b	Support implementation of green design practices in the private realm using design guidelines and incentives where appropriate.	O	DES	PRIVATE / GRANT	3.7
c	Integrate green infrastructure practices with public realm transportation, wayfinding/gateway, open space, and public art improvements. Identify and fund high-profile demonstration projects to build awareness and momentum.	ST - LT	DES	CIP	3.7
d	Encourage public education enhancements, such as interpretive signage, nature walks, and partnerships with neighborhood schools and other institutions.	O	DES	CIP	3.7
e	Implement additional investigation and risk reduction strategies as required to address soil and groundwater contamination from prior land uses.	O	DES	CIP / General Fund	3.7
f	Utilize and encourage green building techniques such as green roofs, rainwater harvesting systems, solar energy panels and other efficient building systems, and use recycled and renewable materials.	O	DES	PRIVATE / CIP	3.7
A2	Stream Restoration and Stabilization				
A2.1	Four Mile Run				
a	Stabilize banks where erosion, scour, and structural failures exist.	O	DES / DPR	CIP	3.8
b	Improve and expand vegetated buffers at top of bank.	O	DES / DPR	CIP	3.8
c	Naturalize stream banks where possible.	O	DES / DPR	CIP	3.8
d	Remove invasive plant species and plant native species.	O	DES / DPR	CIP	3.8
e	Investigate stream habitat and stability improvements for the low-flow stream channel.	O	DES / DPR	CIP	3.8
f	Evaluate best practices to address stormwater and other impacts from and on Shirlington Dog Park and work with adjacent property owners, on a volunteer basis, to implement improvements over time.	O	DES / DPR	PRIVATE / GRANT	3.8
A2.2	Nauck Branch				



**Policy Framework Revisions:** Based on community input and additional staff review, the policy guidance contained in the adopted Policy Framework and shown in the draft Area Plan in Chapter 3 and Chapter 5 has been revised. Policy guidance shown in **ORANGE** is revised wording, while policy guidance shown in **RED** is entirely new language proposed to be adopted as part of this document.



#	Recommended Actions (policies, studies, public improvements)	Timing	Implementing Agency	Potential Funding Source	Page #
a	Seek opportunities to better manage flooding.	O	DES	CIP	3.8
b	Pursue drainage easements, over time, to allow for proper maintenance, repair and/or improvement of the facility.	O	DES	CIP / PRIVATE	3.8
A3	Natural / Open Space Network				
A3.1	Open Space Network				
a	Develop a cohesive open space network with enhanced recreation opportunities that can support health and wellness.	O	DPR	CIP	3.10
b	As part of a corridor-wide public art project: • Integrate natural and cultural resource education and interpretation; and • Work with local artists to incorporate artistic elements.	O	AED	CIP	3.10
A3.2	Park Master Plan Spaces				
a	Jennie Dean Park - Improve and replace existing amenities, while incorporating new spaces and amenities to meet growing recreation demands.	ST	DPR	CIP	3.10
b	Shirlington Park - Improve its function as a casual use space and gateway between Shirlington Village and the arts, recreation, and business uses north of Four Mile Run stream.	MT	DPR	CIP	3.10
c	Shirlington Dog Park - Keep the dog park as it is today, in terms of maintaining its current size and configuration, while providing for its future sustainability by seeking innovative ways to address environmental, operational, safety, and aesthetic conditions (including, but not limited to, stormwater management and shoreline maintenance).	LT	DPR	CIP	3.10
A3.3	Acquisition / Phasing				
a	Acquire additional properties east of Nelson Street, over time, to implement the vision for an expanded Jennie Dean Park.	LT	DPR	CIP	3.10
b	Seek CIP or other funding for future phases of park development (beyond Phase I, Jennie Dean Park).	LT	DPR	N/A	3.10
c	Investigate obtaining public access to the western end of the Shirlington Dog Park from Walter Reed Drive.	ST	DPR / DES	TBD	3.10
A3.4	Access				
a	Improve access along the north and south sides of Four Mile Run while providing overlooks and safe, stable water access at key points in order to reconnect with water and nature while accentuating scenic views along the waterway.	ST - LT	DES / DPR	CIP	3.10
b	Improve sidewalk conditions and intersection accessibility along South Four Mile Run Drive as part of a complete street enhancement.	O	DES	CIP	3.10
c	Improve pedestrian paths, accessibility, and wayfinding along South Walter Reed Drive, South Oxford Street, and Shirlington Road.	O	DES	CIP	3.10
d	Create potential trail underpasses or overpasses at South Walter Reed Drive and Shirlington Road to allow for continuous connectivity.	LT	DES	CIP	3.10
A3.5	Allie S. Freed Park				
a	Conduct stream restoration and stabilization as part of an enhanced riparian buffer.	LT	DPR / DES	CIP	3.12



#	Recommended Actions (policies, studies, public improvements)	Timing	Implementing Agency	Potential Funding Source	Page #
b	Provide water access from Four Mile Run Trail along the lower-elevation southern side of the Run.	LT	DPR	CIP	3.12
c	Provide tree canopy overlooks along the Promenade Trail at the higher-elevation northern side of the Run.	LT	DPR	CIP	3.12
d	Include environmental and cultural interpretation.	LT	DPR / AED	CIP	3.12
e	Create an enhanced gateway at South Walter Reed Drive with park user accommodations, highlighting the connection between the Four Mile Run Trail and the Long Branch Trail.	LT	DPR	CIP	3.12
A3.6	Signage / Wayfinding				
a	Consider improving major gateways with directional signage and a range of amenities such as seating, trailheads, signature plantings, bike racks, trash cans, and Arlington Parks welcome signage.	O	DES	CIP	3.15
b	Consider improving minor gateways with directional signage, cultural or environmental interpretation opportunities, and trash cans.	O	DES	CIP	3.15
c	Provide locational signage and trail markers at regular intervals along commuter and community trails.	O	DES	CIP	3.15
B	DEVELOPMENT FORM / LAND USE				
B1	Development Form and Character				
a	Encourage reuse of existing buildings where possible.	O	CPHD	N/A	3.17
b	Implement Design Guidelines (see Chapter 4) to guide future improvements and new development. The standards should reinforce a high quality pedestrian realm, flexible use and an industrial aesthetic.	O	CPHD	N/A	3.17
c	Employ environmental and cultural interpretation where possible throughout the Four Mile Run Valley area to instill and enhance a sense of place and connection to its history.	O	AED	CIP / PRIVATE	3.17
d	Incorporate public art throughout the Four Mile Run Valley area and consider local history and and environmental concerns as its subject matter.	O	AED	N/A	3.17
e	Permit broader uses, including residential, in limited areas (identified on Figure 3.1) to complement and coordinate with development allowed in the Nauck Revitalization Area along with improved streetscape along Shirlington Road.	O	CPHD	N/A	3.17
f	Examine the Zoning Ordinance to develop additional flexibility (i.e. parking, signage, etc.) to incentivize development in keeping with the vision for the area.	ST	CPHD	N/A	3.17
B2	Land Use				
B2.1	Preserve Existing Industrial Uses				
a	Maintain industrial zoning for all properties that are currently zoned for industrial uses so that industrial land will remain available for small businesses, including both existing businesses and similar operations into the future.	O	CPHD	N/A	3.18
b	While allowing for mixed-use development in portions of Subarea D, through changes on the General Land Use Plan and zoning, incorporate building and site design guidance that buffers those uses from existing industrial uses to prevent or mitigate future use conflicts.	O	CPHD	N/A	3.18
c	Develop ideas to strengthen business retention in the area including: <ul style="list-style-type: none"> <li>Developing an on-street parking design that maximizes the number of available spaces.</li> <li>Providing outreach and technical assistance to assist existing businesses in complying with stormwater management requirements, avoiding any flood risks and incorporation of sustainability measures, e.g., solar electricity.</li> </ul>	ST	DES	CIP	3.18



#	Recommended Actions (policies, studies, public improvements)	Timing	Implementing Agency	Potential Funding Source	Page #
d	Continue to work with the Business Association, using its network as a conduit for Arlington Economic Development to offer 4MRV businesses access to technical assistance where available. Consult with the business association, property owners and business owners on the potential future expansion of arts uses in the area.	O	AED / CPHD	N/A	3.18
B2.2	Public Uses				
a	Sites within Four Mile Run Valley should continue to be considered for public use, within the context of a countywide review process.	O	DES / DPR	N/A	3.18
b	Consolidate and co-locate County uses, where possible.	O	DES	N/A	3.18
B2.3	Guidance for Subareas C and D				
a	Generally, support the continuation of industrial and public uses within these subareas.	O	CPHD	N/A	3.18
b	Reinforce guidance from the Nauck Village Center Plan, with similar heights, density, and use mix, for sites indicated for “Broader Uses” within Subarea D.	O	CPHD	N/A	3.18
c	Encourage a mix of building types, with 4 to 6 stories maximum height.	O	CPHD	N/A	3.18
B3	Building Height				
a	Maintain building height in the majority of the study area at 75’, which is consistent with existing M-1 and M-2 zoning.	O	CPHD	N/A	3.20
b	Allow a future County-owned parcel, immediately adjacent to I-395 and distant from surrounding neighborhoods, to have buildings permitted up to a maximum height of 120’.	LT	DES / CPHD	N/A	3.20
c	Limit height of buildings adjacent to the historic Lomax A.M.E. Church and west of and adjacent to Shirlington Road to 45’.	O	CPHD	N/A	3.20
B4	Arts and Industry District				
a	Work with the Arts Commission and the arts community to focus on the production needs of artists and develop a strategy for expanding arts uses within the study area consistent with Enriching Lives: Arlington Arts and Culture Strategy.	ST	AED	N/A	3.21
b	Explore opportunities to promote the expansion of arts uses within the area, including the evaluation of an Arts and Industry District.	O	AED	N/A	3.21
c	Encourage the introduction of additional arts, maker uses, and new retail uses in the area between Nelson Street and Walter Reed Drive as properties become available.	O	AED / CPHD	N/A	3.21
d	Collaborate with adjoining business and property owners and the business association in developing appropriate street designs for Oakland Street to further the vision for the area.	MT	DES / AED	GENERAL FUND	3.21
e	Work with the Arts Commission, the Public Art Committee, Public Art Staff and the community to identify opportunities, per the Public Art Master Plan, to integrate public art within identified parks, public spaces, and other Four Mile Run Valley locations.	O	AED	CIP / PRIVATE	3.21
f	Work with Virginia Dominion Power, the arts community, and area businesses and residents to explore possible artistic screening options for the substation located on Four Mile Run Drive.	MT	AED / CPHD	N/A	3.21
B5	Guidance for County-Owned Properties within Subarea B				
a	Continue to meet performance, studio, rehearsal, storage and meeting space needs for artists, arts organizations and the County, in the short-to-medium term.	MT	AED	GENERAL FUND	3.22



#	Recommended Actions (policies, studies, public improvements)	Timing	Implementing Agency	Potential Funding Source	Page #
b	Examine how to best utilize the County's land holdings to implement the Plan's vision, consistent with existing County policy, in the long term.	ST	AED / DES / DPR	GENERAL FUND	3.22
<b>C</b>	<b>STREET DESIGN / TRANSPORTATION</b>				
<b>C1</b>	<b>Safety and Traffic Flow Improvements</b>				
a	Complete an in-depth study of the Four Mile Run / Shirlington Road intersection to develop a design that better accommodates east-west bicycle and pedestrian crossings, minimizes vehicular delay, and promotes overall safety for all modes.	MT	DES	CIP / VDOT	3.23
b	Consider intersection design and operations improvements at key locations within the study area to address existing traffic and potential future traffic growth.	MT	DES	CIP	3.23
<b>C2</b>	<b>Four Mile Run Street Design and Parking</b>				
a	Develop policies and practices to address parking on a district-wide basis, utilizing expanded on-street parking resources to support existing and future public and private uses.	O	DES	N/A	3.23
b	Develop and review street design alternatives for Four Mile Run Drive with community stakeholders to maximize on-street parking, while also ensuring safety for pedestrians and maintaining appropriate traffic flow. <ul style="list-style-type: none"> <li>• Implement changes in phases; monitor for effectiveness and safety.</li> <li>• Explore utility pole relocation or replacement as part of long-term streetscape implementation.</li> <li>• Explore continued partnerships with NOVAParks to ensure seamless trail connections and sidewalks on north side of Four Mile Run Drive.</li> </ul>	O	DES / NOVAParks	CIP	3.23
c	Explore the possibility to augment parking resources by utilizing existing parking garages in the surrounding area at off-peak times.	O	DES	N/A	3.23
d	Maximize recreation and/or casual use space within Jennie Dean Park in lieu of providing additional on-site parking, to the greatest extent possible, by utilizing on-street parking resources.	ST	DES / CPHD / DPR		3.23
<b>C3</b>	<b>Pedestrian and Bicycle Improvements</b>				
<b>C3.1</b>	<b>Pedestrian</b>				
a	Widen and improve the pedestrian zone along the south side of Four Mile Run Drive by reconfiguring the roadway.	O	DES	CIP	3.28
b	Make the sidewalks on the south side of Four Mile Run Drive continuous by adding the segment between Nelson Street and Shirlington Road.	ST	DES	CIP	3.28
c	Study pedestrian crossings across Four Mile Run Drive with median refuge islands at Oxford Street, Oakland Street, and Nelson Street.	O	DES	CIP	3.28
d	Study new high visibility crossings for pedestrians and bicyclists at the intersection of Four Mile Run Drive and Shirlington Road.	MT	DES	CIP	3.28
e	Consider how to incorporate expanded sidewalk or trail space at the northwest corner of Shirlington Road / Arlington Mill Drive to improve safety.	ST	DES / DPR	CIP	3.28
f	Explore potential for flush street design on S. Oxford Street and S. Oakland Street, to create a flexible space that works for cars, parking, walking, biking, public markets, festivals and other events.	MT	DES	CIP	3.28
 5.10	Improve curb ramps and intersections along Four Mile Run Drive to provide continuous accessibility for people with disabilities.	O	DES	CIP	3.28



#	Recommended Actions (policies, studies, public improvements)	Timing	Implementing Agency	Potential Funding Source	Page #
h	Consider changes at uncontrolled crossings of Arlington Mill Road to improve safety and comfort for pedestrians crossing the street.	O	DES	CIP	3.28
C3.2	Bicycle				
a(1)	Evaluate the east-west pedestrian and bicycle crossings of Shirlington Road at Four Mile Run Drive: Study options for safer at-grade crossings	ST	DES / NOVAParks	CIP	3.28
a(2)	Evaluate the east-west pedestrian and bicycle crossings of Shirlington Road at Four Mile Run Drive: Study underpass options to determine costs and feasibility.	LT	DES	CIP	
b	Evaluate the feasibility of a Four Mile Run Trail underpass at Walter Reed Drive, considering cost and Four Mile Run stream channel flow and floodplain impacts and constraints.	LT	DES	CIP / STATE / FEDERAL	3.28
c	Ensure that the proposed enhancements to the bridge at Shirlington Road and the enhancements being added to the bridge at Walter Reed Drive will make access to Arlington Mill Drive easier and improve connectivity between the W&OD Trail, Four Mile Run Trail, Jennie Dean Park, and the development along Four Mile Run Drive and in Shirlington.	O	DES	N/A	3.28
C3.3	Stream Crossings				
a	Complete design and construction of the Walter Reed and Shirlington Road bridges.	ST / MT	DES	CIP / STATE	3.28
b	Evaluate the effectiveness of the planned bicycle and pedestrian improvement to the Walter Reed and Shirlington Road bridges, over time, to determine whether additional Four Mile Run stream crossings are warranted.	MT	DES	N/A	3.28
c	Evaluate the utilization of the Nelson Street pedestrian bridge. Determine whether existing or future demand warrants widening or other improvements, such as lighting.	LT	DES	N/A	3.28
C4	Transit				
a	As part of a multimodal approach, consider proposed future changes to transit in the area, including the expansion of the Shirlington Transit Center; the proposed West End Transitway Bus Rapid Transit project being led by the City of Alexandria, which would serve the study area along Arlington Mill Drive; and proposed transit routing and service adjustments, as described in the Arlington County Transit Development Plan, which can add more bus service on the existing routes for reduced wait times between buses.	O	DES	CIP / WMATA / STATE / FEDERAL	3.31
b	Ensure that planned street improvements in the area will accommodate improved transit, including transit access and a comfortable space for bus stops, boarding and alighting.	O	DES	CIP	3.31
c	Improve bus stops/shelters along Four Mile Run Drive to provide greater comfort for patrons.	O	DES	CIP / STATE / FEDERAL	3.31







## APPENDIX A: PARK MASTER PLAN

This Appendix includes a brief summary of Park Master Plan analysis, themes, and concepts that were included as part of the adopted 4MRV Policy Framework.

The Park Master Plan, developed in coordination with the Area Plan, provides a vision for the comprehensive replacement and realignment (exclusively for park purposes) of existing park features and the addition of new park amenities to meet the growing demand for active recreation, cultural resources and natural resource preservation.

The Park Master Plan is a comprehensive Master Plan for Jennie Dean Park, Shirlington Park, the Shirlington Dog Park and other potential park spaces. The Plan is phased and incorporated into the County's Capital Improvement Program (CIP). The Park Master Plan establishes a vision, policies and implementation strategies, including but not limited to, design guidelines detailing the placement, orientation, materials and programming of open space/park amenities. The Master Plan includes recommendations for use, sizes and locations of parks within the study area; park area circulation, multi-modal transportation and parking needs; environmental/floodplain/Resource Protection Area/energy considerations; massing and phasing for potential indoor facilities and cultural amenities; and exploration of opportunities to re-naturalize and integrate the Four Mile Run into the parks.

### PARKS MASTER PLAN PLAN THEMES

During the planning process, several **recurring themes** were heard at major public engagement events and reinforced in discussions with the Working Group. Themes for the Parks area Master Plan include:

- Needs for UNPROGRAMMED SPACE
- INCREASE VISIBILITY into park
- Play structure(s) to ACCOMMODATE BOTH 2-5 AND 5-12 AGE GROUPS
- MOVE THE FIELDS UP TOWARDS 4MR DRIVE away from flood-prone areas while being sensitive to neighborhoods
- MULTI-PURPOSE FACILITIES and layering
- INTEGRATE THE ARTS into park planning
- MULTI-USE ACTIVITY CENTER (either in the park or nearby)
- Link riparian zone and associated restoration to larger SYSTEM OF PARKS AND NATURAL AREAS OF 4MR
- Respect FLOODWAY AND FLOODPLAIN
- CONNECT NEIGHBORHOODS TO RIPARIAN ZONE for environmental education, relaxation and enjoyment
- NEARBY RESIDENTS WITHOUT YARDS DEPEND ON PARK AREAS for their backyard – playground, picnic, walking, etc.
- MORE GRASS OR TREES or just more trees
- MAINTAIN TWO FIELDS at a minimum
- Layer PARKING beneath structured facilities / fields
- ADDRESS SAFETY issues using Crime Prevention Through Environmental Design (CPTED)
- Address NEEDS OF TEENS – more outreach
- MAINTAIN EXISTING SIZE / CONFIGURATION OF DOG PARK





FIGURE A.1: PARK MASTER PLAN STUDY AREA EXISTING CONDITIONS

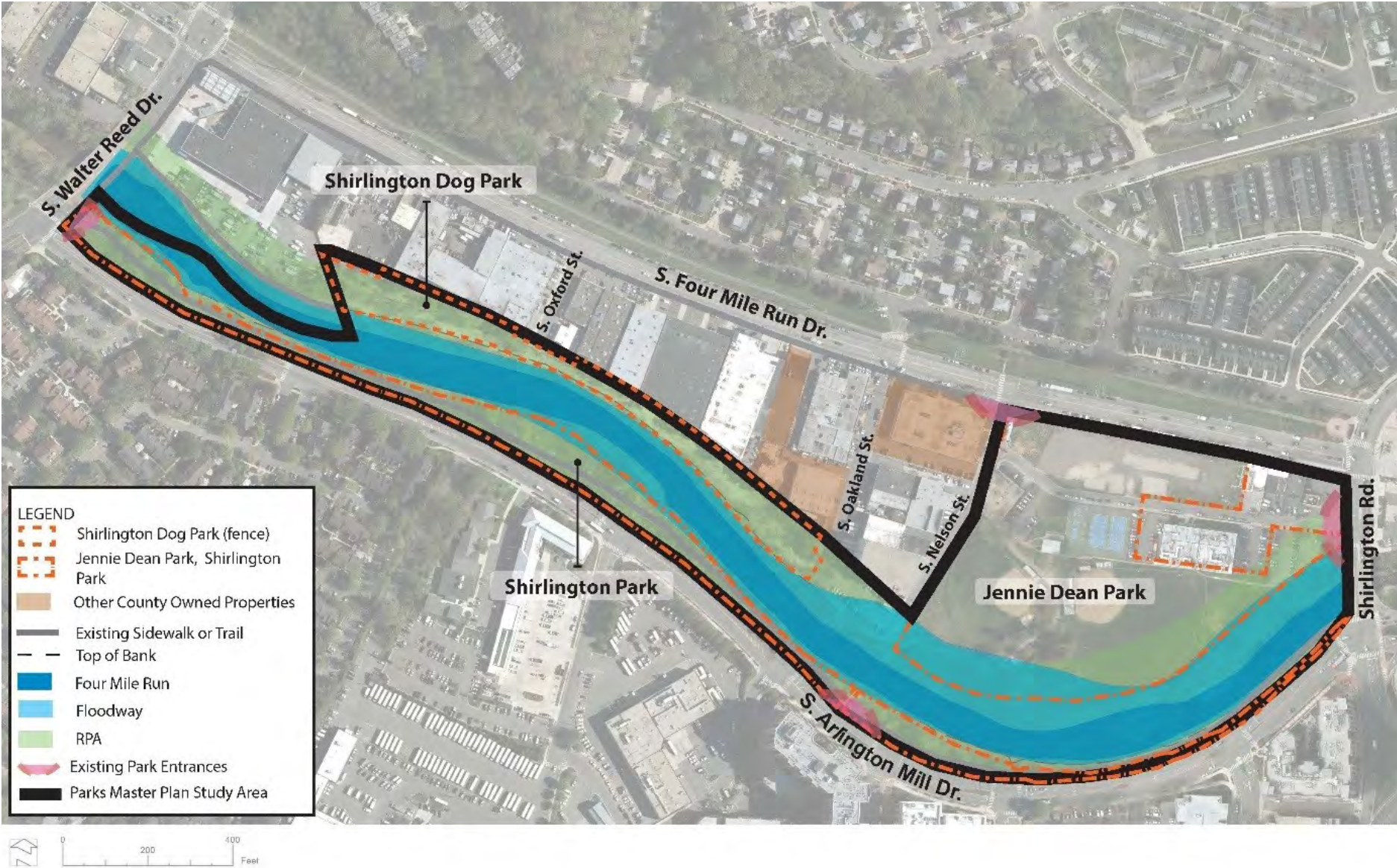
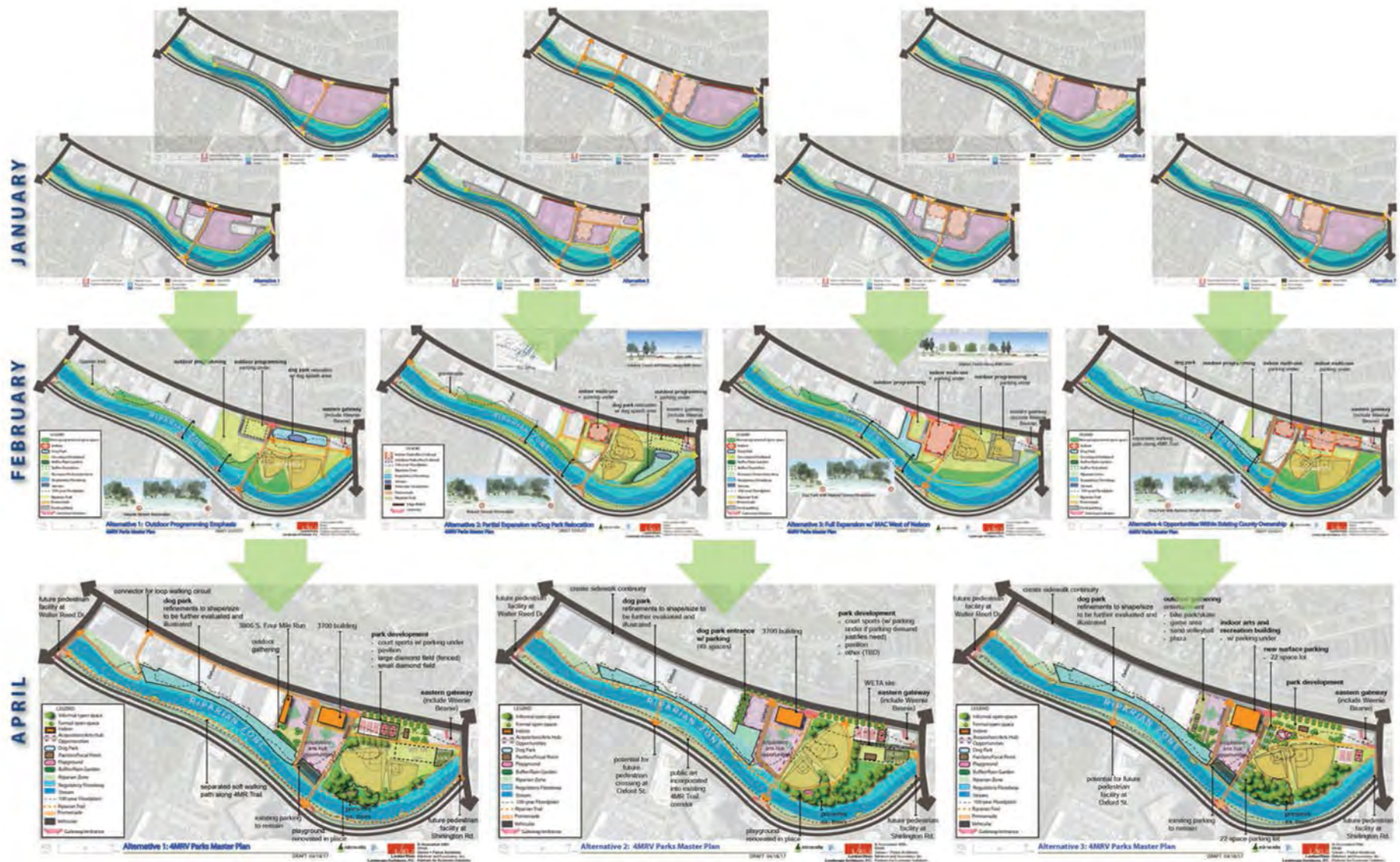




FIGURE A.2: DEVELOPMENT OF PARK MASTER PLAN CONCEPT ALTERNATIVES



# 4MRV PARKS MASTER PLAN

DRAFT 6.28.17

4 mile run valley  
In Association With:  
RK&K  
Grinn + Parker Architects  
Landscape Architects, P.C.  
Partners for Economic Solutions



## PARK MASTER PLANNING STUDY AREA

The 4MRV Park Master Plan (PMP) area is bounded by Four Mile Run Drive between South Nelson Street and Shirlington Road on the north, Shirlington Road on the east, South Arlington Mill Drive on the south and South Walter Reed Drive on the west. The study area includes three (3) parks: Jennie Dean Park, Shirlington Park, and Shirlington Dog Park. Four Mile Run traverses the PMP area from west to east.

Jennie Dean Park (3630 27th Street South): the approximately 12-acre park currently includes two (2) lighted diamond fields for baseball and softball, a lighted basketball court, two (2) lighted tennis courts, a restroom/picnic shelter building with covered space for three picnic tables. The park also includes an open grassy area, a playground and a picnic area among the mature trees adjacent to Four Mile Run.

Shirlington Park (2601 S.Arlington Mill Dr.): the approximately 11-acre total park area (which includes the area of Shirlington Park, Shirlington Dog Park and the stretch of Four Mile Run bisecting both areas) includes a stretch of Four Mile Run stream that bisects the park into two sections: the Shirlington Dog Park to the north and Shirlington Park to the south. Of the 11 acres, 2.3 acres is the total land area associated with Shirlington Park, which includes a shared use path (Four Mile Run Trail) and open space along the southern boundary of Four Mile Run. The path accommodates both pedestrians and bicyclists. The site features fitness stations, bicycle racks, benches, and a Capital Bikeshare Station.

Shirlington Dog Park (2710 S. Oakland St.): the approximately 2.5-acre dog park is adjacent to the northern bank of Four Mile Run and stretches from South Oakland Street to the east to beyond South Oxford Street. This area consists of a large fenced area where dogs can exercise and wander freely. A separately fenced small dog area is located near the main entrance. Amenities include dog water fountains, dog waste facilities, benches, shade trees, and an information kiosk.

Throughout the planning process, key issues have been identified that shaped the development of planning alternatives and the examination of trade-offs that need to be made in developing the Park Master Plan. These issues included:

### FOUR MILE RUN STREAM

- The relationship between recreational uses and the Resource Protection Area (RPA) generally located within 100' feet of the top of bank (See Figure A.1)
- The role that associated riparian areas play in addressing needs for casual use open space and resource education and interpretation.
- Management of invasive species.
- Water quality and suitability for recreational use (especially in summer months).

### 4MR TRAIL/SHIRLINGTON PARK

- Conflict between casual users and high speed bicycle commuting.
- Role of Shirlington Park as a link between Shirlington Village and Jennie Dean Park.

### SHIRLINGTON DOG PARK

- Rooftop drainage washing across the dog park causes erosion of the surface.
- Streambank erosion (approximately eight feet in the last 20 years).
- Visibility from Four Mile Run towards the dog park – cannot see into the dog park through buildings on South Oakland and South Oxford Streets.
- The size of the dog park, the water quality impact from bare soil and dog waste, as well as its heavy use in relation to potential water quality solutions (filtering and buffering taking up usable space).





## JENNIE DEAN PARK

- Accommodating unknown plans for WETA parcel (both short- and long-term).
- Expanding recreational opportunities for changing usage patterns and needs.
- Fencing and use restrictions associated with diamond fields.
- Defining specific areas to meet expanding casual use open space needs.

## PARKING AND CIRCULATION

- Parking demand for the combination of programmed uses and activities (dog park, potential arts district).
- Safe pedestrian access to park areas from the Nauck and Shirlington neighborhoods.
- Coordination of future considerations and plans for South Walter Reed Drive and Shirlington Road to accommodate pedestrian crossing needs.

## PERSONAL SAFETY

- Greater visibility into and out of the park.
- Hidden places along Four Mile Run escarpment and back sides of industrial buildings in dog park.

## JENNIE DEAN PARK ALTERNATIVES (PAGES A.6-A.7)

Following an extensive civic engagement process that began with seven alternatives, three options were developed for Jennie Dean Park to address the issues and trade-offs that must be made to move forward with a recommended concept. Evaluation criteria were developed based upon input provided by the County Board, the Working Group, and from public input gathered at two public workshops and additional outreach methods.

The resulting criteria covered the siting of six design elements with the goal of optimizing the desired comprehensive replacement and realignment of existing park features (exclusively for park purposes) and the addition of new park amenities to meet the growing demand for active and casual use open space recreation, cultural resources and natural resource preservation.

- Diamond fields - addressing orientation, space utilization, proximity to adjoining streets and the RPA, and potential for incorporating a rectangular field overlay.
- Playground and Picnic Shelter/Restroom - addressing potential for shade, proximity away from incompatible adjoining program uses (e.g. dog park and roadway) and close to compatible uses (e.g. restroom).
- Natural Areas/Casual Use Open Space – providing ample trees and whether the area is associated with Four Mile Run or adjacent to Four Mile Run Drive Parking - whether parking is provided using existing or expanded surface lots or through more efficient utilization of on-street parking spaces.
- Athletic Courts - whether expanded opportunities are provided for court sports, proximity to the Resource Protection Area (RPA), and whether the replacement courts need to be phased.
- Environmental/Regulatory/Noise - potential for addressing the RPA, floodplain, and stormwater management needs and requirements, impact on existing mature trees and relationship to adjoining neighborhoods

These three alternatives were further refined and evaluated by a sub-committee of the Four Mile Run Working Group (4MRVWG). The committee developed two concept alternatives that were presented and discussed with the 4MRVWG in April 2018. The recommended concept, supported by a vote of 14-9, is shown on the following pages.





FIGURE A.3: JENNIE DEAN PARK RECOMMENDED CONCEPT – PHASE I



When evaluating the various concept alternatives for Jennie Dean Park, the general trade-offs included having open space near the stream or near South Four Mile Run Drive, locating the diamond fields closer to the roads or closer to the stream, and having the playground and pavilion in a more natural area or closer to the roadway. The Recommended Concept, Phase I (above) is illustrated with the WETA parcel remaining and access to the parcel via 27th Street South provided. The concept places the lighted diamond fields along South Nelson Street, the playground and restrooms along the frontage of Four Mile Run Drive, and a lighted basketball court, lighted tennis court and large picnic shelter in an area just south of the WETA parcel. A soft path north of Four Mile Run is also implemented. The small surface lot on the east of the site is retained to provide nearby parking in addition to the on-street parking along South Nelson Street and South Four Mile Run Drive.



FIGURE A.4: JENNIE DEAN PARK RECOMMENDED CONCEPT – PHASE 2



The Recommended Concept, Phase 2 (above) illustrates Jennie Dean Park if the WETA parcel is acquired as well as other parcels in the northeast portion of the site. This concept shows the final configuration of all site elements including a relocated lighted basketball court within the WETA parcel, two(2) lighted tennis courts south of the WETA parcel, and expanded casual use open space east of the basketball court.

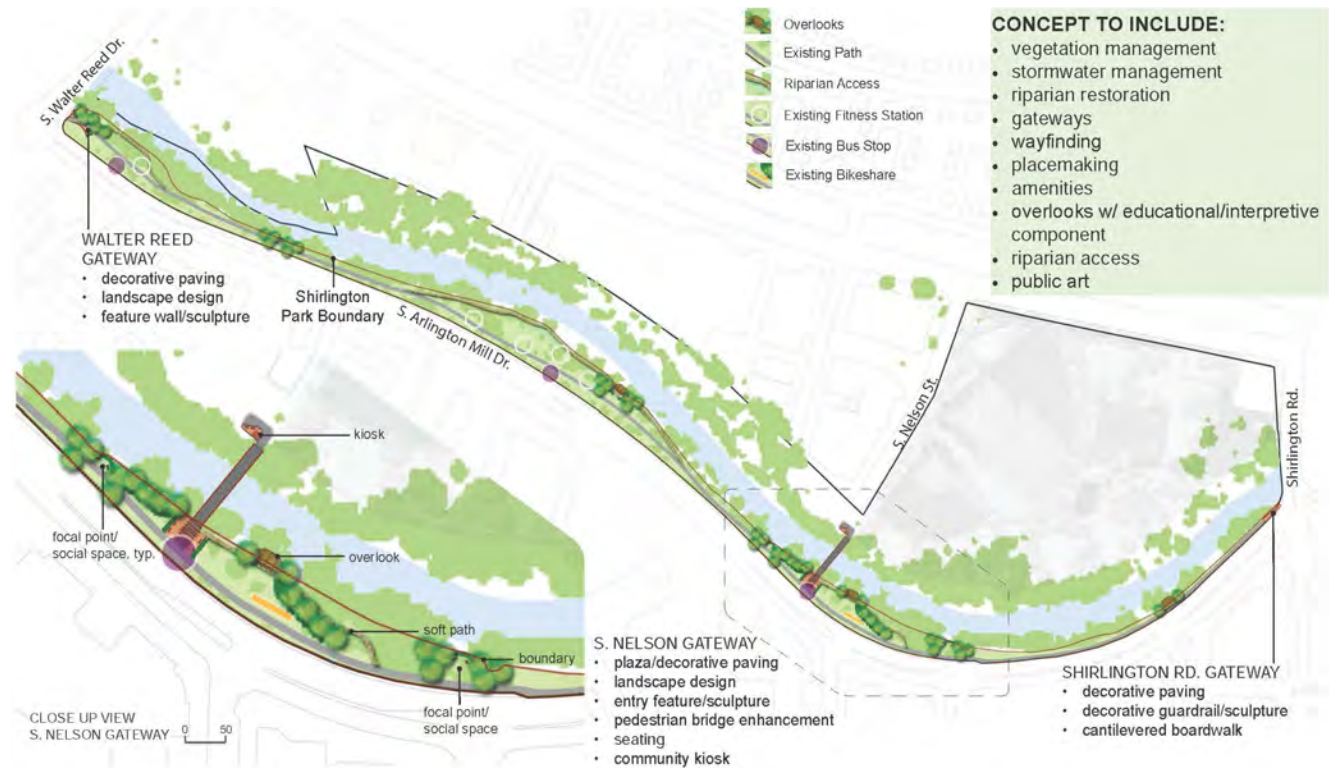


## SHIRLINGTON PARK ALTERNATIVES

Four (4) alternatives were developed for Shirlington Park to address the issues associated with the mix of uses and users along Four Mile Run Trail and to develop the idea of Shirlington Park as a gateway and transition between Shirlington Village and the arts and recreation oriented uses north of Four Mile Run Drive.

Alternatives were arrayed to emphasize arts or nature or a combination of both. All alternatives included vegetation and stormwater management, riparian restoration, incorporation of gateways, wayfinding and placemaking. Four (4) alternatives were evaluated:

- A. Baseline Concept – this concept included all the common elements noted above and concentrated locations of placemaking elements at specific focal points.
- B. Concept with increased emphasis on access to nature – this concept with overlooks provided educational and interpretive opportunities focused on telling the story of Four Mile Run's urbanization and renewal.
- C. Concept with increased emphasis on public art at defined gateways and overlooks.
- D. Concept with a combination of art and nature – this concept would integrate public art with the interpretation of nature (combining the elements of Concepts B and C as described above).



**FIGURE A.5: SHIRLINGTON PARK CONCEPT**

The concept created for Shirlington Park responds to the needs of the park users who use the busy shared use path, as well the ability of the park to link destinations within the 4MRV Parks system to surrounding areas. To minimize crowding along the shared use path and offer respite spaces for natural resource education or interpretation, riparian access paths and overlooks are proposed at key locations along the 4MR. Although Four Mile Run is an urban stream, secondary contact recreation is generally acceptable with common sense precautions. The overlooks create a low-impact solution for park users to have visual access to the water. Predominantly located within an RPA, invasive species management and riparian restoration are proposed along the bank of the 4MR to add value to the habitat over time and assist in filtering stormwater runoff.



## SHIRLINGTON DOG PARK

The 4MRV Working Group formed a separate committee (the Shirlington Dog Park Committee) to address the specific needs of the dog park with the result of working towards maintaining the dog park's current size and configuration, while also providing for its future sustainability by seeking new and innovative ways to address water quality, dog park operations and safety considerations, shoreline access, and other environmental considerations. Improvements to the dog park's aesthetic conditions and immediate adjacent areas should be investigated.

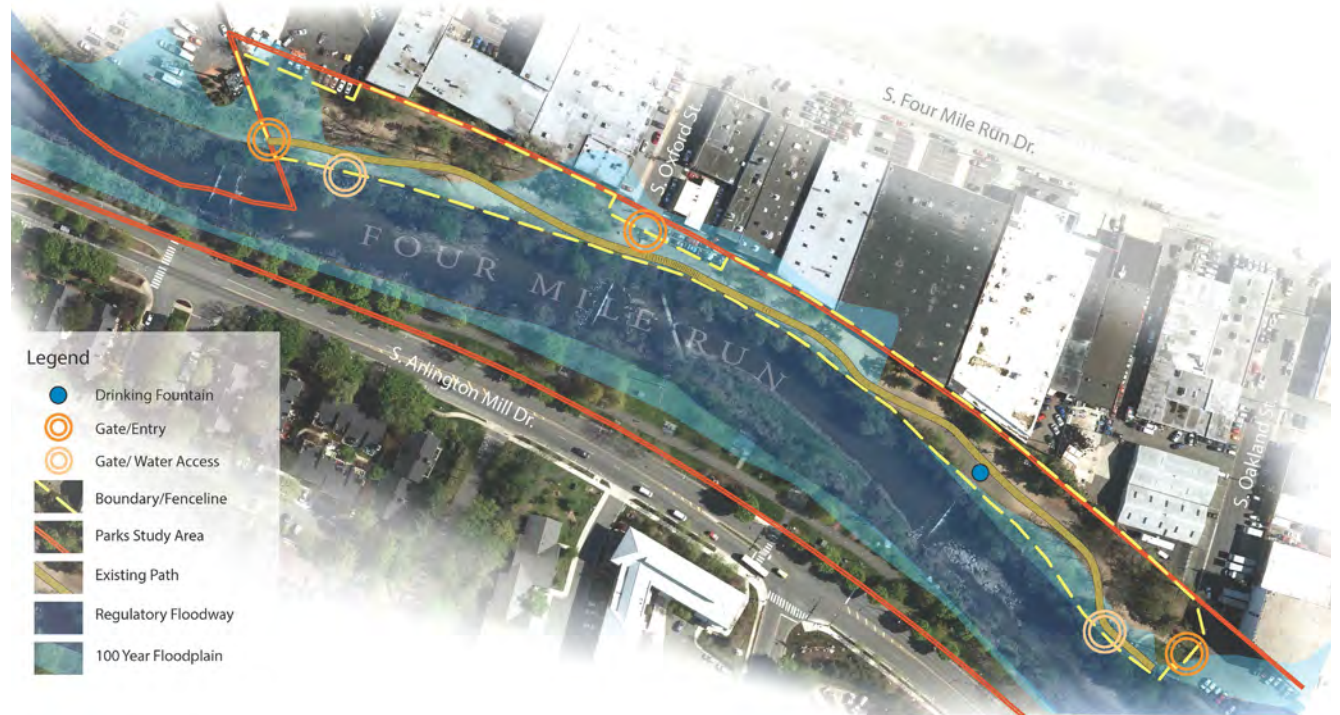


FIGURE A.6: SHIRLINGTON DOG PARK

**Note:**

In an effort to preserve the existing size, configuration, and character of Shirlington Dog Park, the park will remain in its existing condition with improvements over time. The Shirlington Dog Park Committee Final Report to the Four Mile Run Valley Working Group (September 15, 2017) outlines short-term, medium-term, and long-term recommendations for creating minor physical improvements within the park (that may disturb less than 2,500 square feet), programmatic improvements, and considerations should a stormwater management triggering event occur. Recommendations that address erosion and water quality issues within the park include discontinuing mowing along the fence edge to increase vegetative buffers (and stabilize bare soil), increasing plantings along the stream bank, employing techniques to help protect trees, increasing the availability of trash receptacles, improving signage and public education, limiting access to the stream to defined points, and developing a pilot program to address rooftop stormwater.







## APPENDIX B: ENVIRONMENT / SUSTAINABILITY

Appendix B provides additional information about existing conditions for the 4MRV area water resources, as well as green infrastructure, stream restoration, and sustainability concepts; it supplements information found in Chapters 2 and 3 of the Plan document.

### FOUR MILE RUN RIVER GEOMORPHOLOGY

Probably the single most important factor affecting restoration options of Four Mile Run is the run's degree of connection or disconnection to its floodplain. There are many factors that will affect restoration options and are typical of urban streams/rivers, including altered hydrology upstream, delivery of pollutants from upstream sources, and a range of infrastructure constraints (road crossings, sewer crossings, weirs, and storm drainage outfalls). But a major constraint is the confining nature of the run within the study area. Rivers that constrain all flows within a uniform cross-section cannot realize the natural benefits of flows being able to access a floodplain during larger storms above the so-called bankfull elevation. When larger flows are confined to a uniform cross-section, excessive velocities and associated shear stresses translate into damaging conditions to the river's bottom and lower banks.

While the whole run has been modified and most of the banks have been armored with large riprap within the study area, the reach upstream of Walter Reed Drive (Reach 3) appears to have remnant floodplain features, albeit much smaller areas than those that would be considered natural. It appears that the previous erosion control and flood mitigation work of the 1970s and 1980s did not completely reshape the natural channel in this reach along both banks. Downstream of Walter Reed Drive, the entire channel cross-section appears to have been reshaped to a trapezoidal section of sufficient dimensions to carry much of the 100-year flood within the one uniform section.

The river geomorphology that has evolved since the flood management work has resulted in a somewhat more natural system upstream of Walter Reed Drive (some sinuosity of the low flow channel, some pool/riffle/run components, and remnant river banks in some areas). This will afford some different restoration opportunities than the more confined lower reaches.

### RESILIENCY AND CLIMATE CHANGE

In 2013, Arlington County adopted its Community Energy Plan to respond to the increasing impacts of climate change, specifically increases in greenhouse gases. The plan's primary purpose is to guide the County, inclusive of government operations as well as local businesses and residents, in being more energy efficient and making better decisions around energy. Doing so will help reduce energy costs, make energy usage more reliable, and improve the quality of the natural environment.

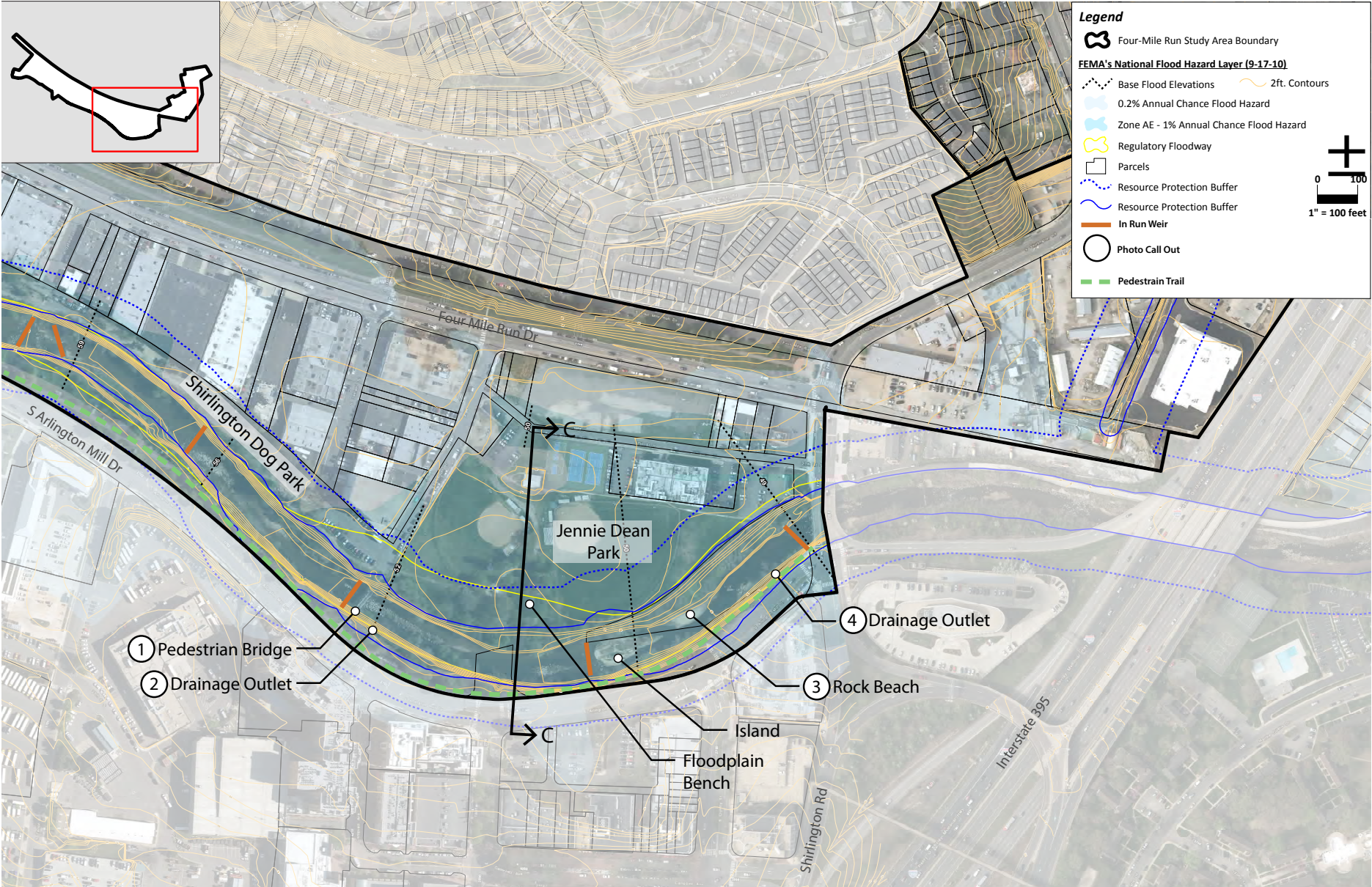
In addition to making smart energy choices, the County can also be more responsive to other indicators of climate change, including impacts on flooding and water quality. Though the study area is located beyond the reach of the Potomac River estuary tidal influence, risk due to hurricane storm surge and associated impacts to property and critical infrastructure remains. These threats will be exacerbated, factoring in predicted sea level rise over time. Increasing temperatures and more frequent and more severe storms also increase demands on infrastructure. Increased runoff frequency and volume can strain the stormwater system and the capacity of Four Mile Run itself. More frequent runoff at a higher velocity from roadways and parking lots into the run can also increase pollutants, erosion, and flooding. As these types of events happen more often, costs of maintenance and repair also rise.

Implementing stormwater best management practices (BMPs), particularly in the form of green infrastructure, can help control and manage runoff and floodwaters. The County has strongly encouraged inclusion of green BMPs into development and redevelopment of the Four Mile Run corridor. The 2014 Stormwater Master Plan lays out the County's approach to use both regulatory strategies and infrastructure improvements to meet pollution reduction goals as well as be prepared for the potential effects of climate change. Adopting the comprehensive new Stormwater Management Ordinance, stream restoration projects, and upgrades to the Water Pollution Control Plant are all cited as achievements. The plan also encourages participating with local, state, regional, and federal agencies in increasing the region's resiliency to the impacts on climate change, particularly on stormwater infrastructure, and continued outreach with the public about the risk of flooding.





FIGURE B.1: FOUR MILE RUN, REACH I



Note: see following page for photos (numbered); See Figure B.4 for cross section



Reach I is adjacent to Jennie Dean Park, between the Shirlington pedestrian bridge and S. Shirlington Road. On the left bank (looking downstream), the active channel slopes away more gradually with a floodplain bench towards Jennie Dean Park. The floodplain and Regulatory Floodway locations are within the park itself. A riprap island exists downstream from the pedestrian bridge, and two weir structures exist with the upstream one appearing to be responsible for the formation of two channel bars creating some meandering through this section during low flow conditions. The right bank is steep (2:1 typical) and armored with riprap, with the top of channel and Four Mile Run Trail tight to S. Four Arlington Mill Drive. Most of this reach provides little accessibility to the water's edge, due to the chain link fence which runs along the top of bank through Jennie Dean Park to the pedestrian bridge and the steep armored slopes along the southern bank. The gentler slopes and vegetated bench located along the edge of the park provides a natural connection to the run and an informal footpath around the chain link fence was observed indicating a desire for greater accessibility through this reach.

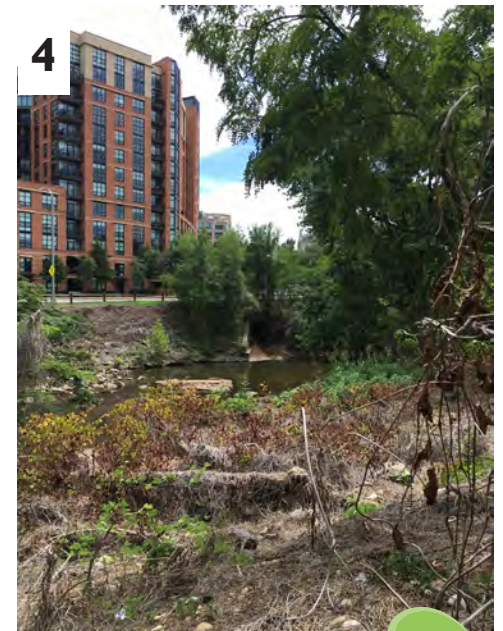
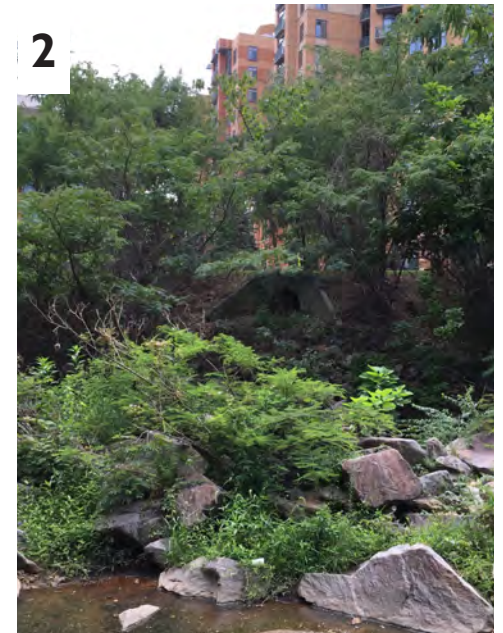
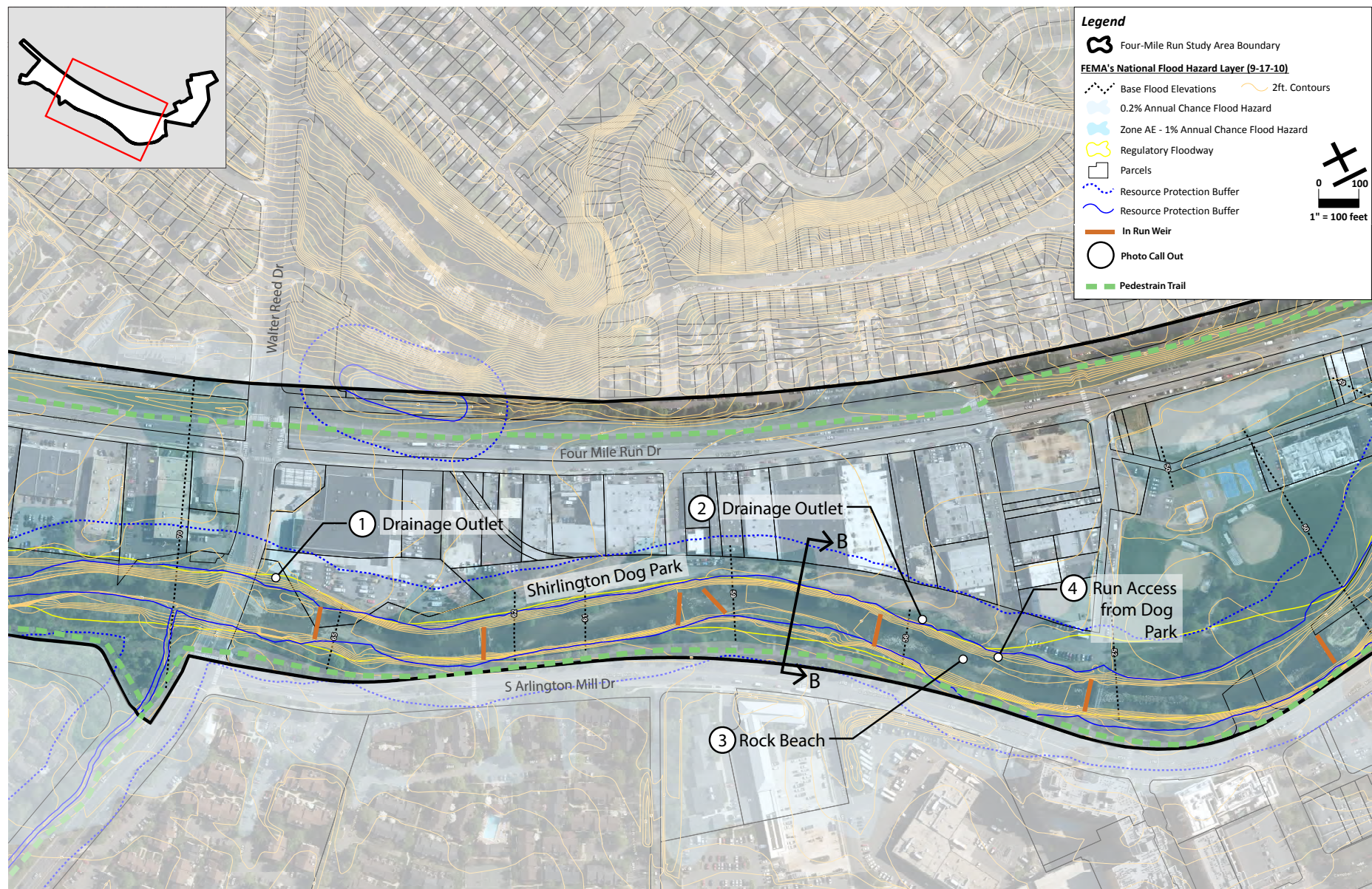




FIGURE B.2: FOUR MILE RUN, REACH 2



Note: see following page for photos (numbered); See Figure B.4 for cross section





Reach 2, between Walter Reed Drive and the Shirlington pedestrian bridge, is the most constrained and channelized stretch of Four Mile Run in the study area. The channel geometry includes a uniform cross-section of steep, armored banks on both sides, with the Regulatory Floodway generally contained within trapezoidal cross section. The steep side slopes result in a more highly engineered, channelized geometry and wider bottom condition, allowing for some natural low-flow meander. Six weir structures provide the only pool/riffle features observed, and several channel bars (both point and medial) of accumulated stones and small boulders exist through the reach; two of these are natural gathering points for human activity near Shirlington Dog Park. Because both banks are armored, minimal erosion and scour conditions exist. Accessibility to the run is limited due to the steep banks on both sides; however, this reach currently provides the only formal public access to the water via stone stairs from the top of bank to “rock beaches” located at the dog park.

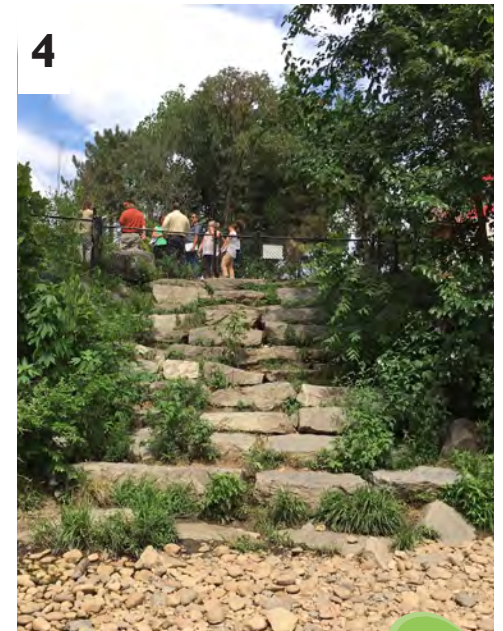
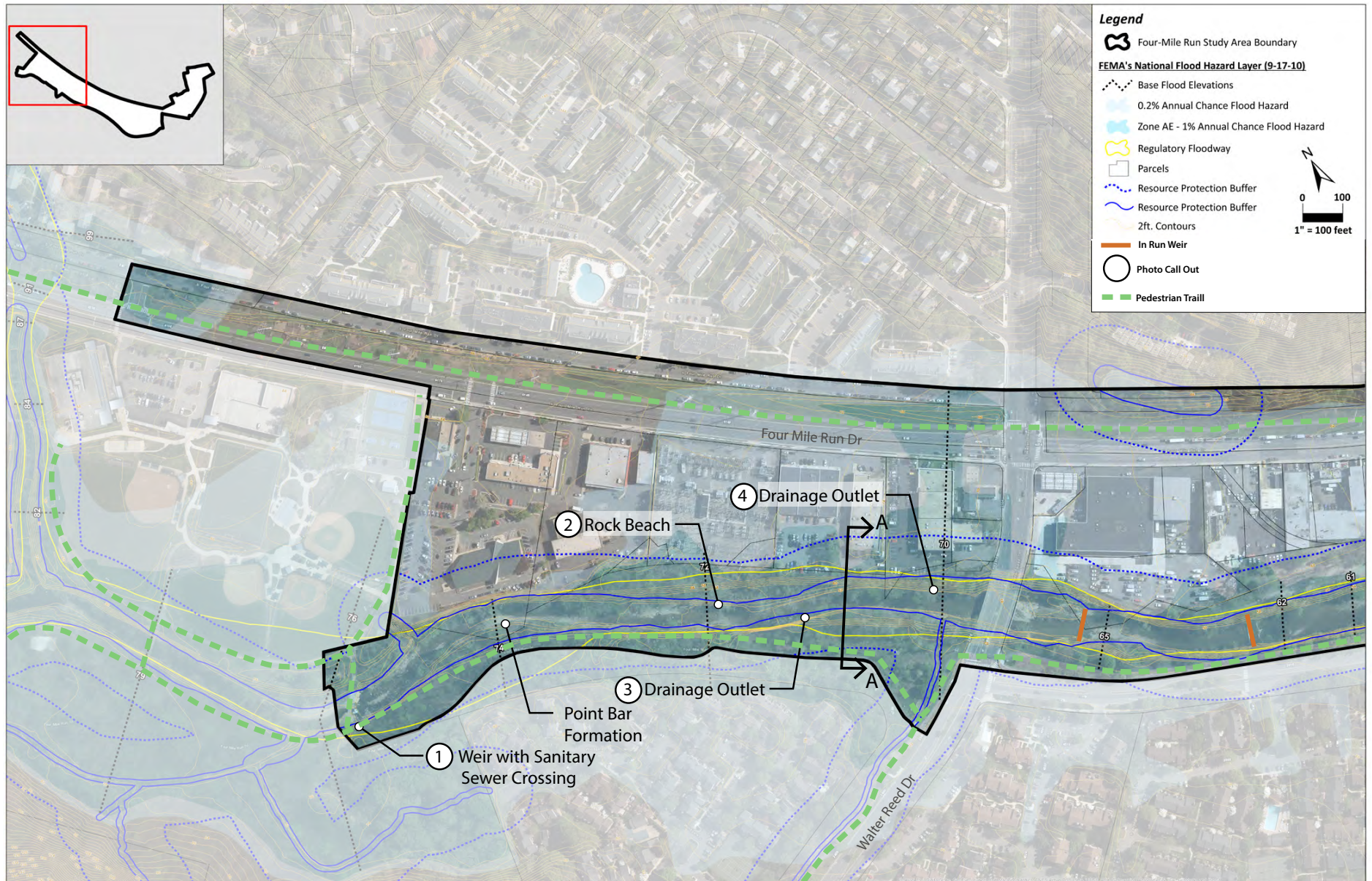




FIGURE B.3: FOUR MILE RUN, REACH 3



Note: see following page for photos (numbered); See Figure B.4 for cross section



Reach 3 between Barcroft Park and Walter Reed Drive has channel geometry that is slightly less constrained and channelized than Reach 2 just downstream. The Regulatory Floodway is generally contained within the top of bank. The left bank (looking downstream) is armored with riprap from the top of the bank to the water's edge and the right slope is generally armored from the top of the bank to a vegetated bench, which then transitions to a steep eroded slope to the water's edge. The right bank condition effectively expands the low-flow width and provides additional floodplain above bankfull elevation. Vegetation and trees have filled in over time on both banks, and erosion and scour at/near the toe of slope is visible along the right bank where armoring is not present. Point bars and riffle pool sequences are visible as the channel is attempting to form its own natural meanders, even within the constrained urban section. This reach provides the greatest accessibility to the run via the meandering bike path located along the top of the south bank. Numerous access points provide a direct connection from the path to the edge of water.

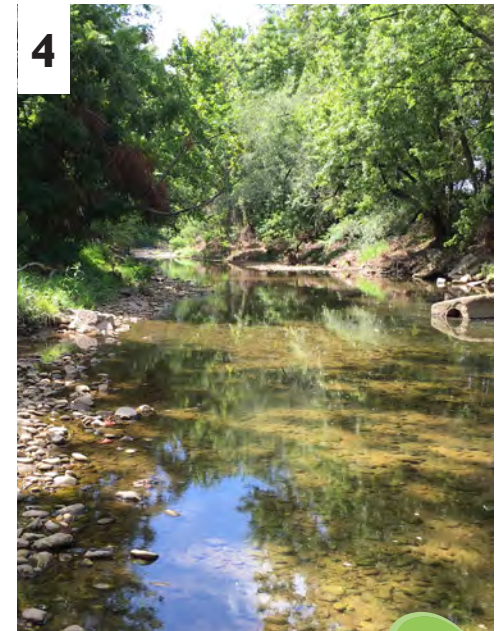
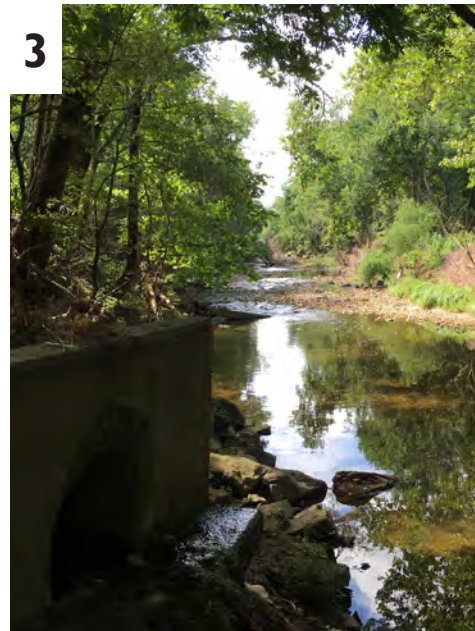
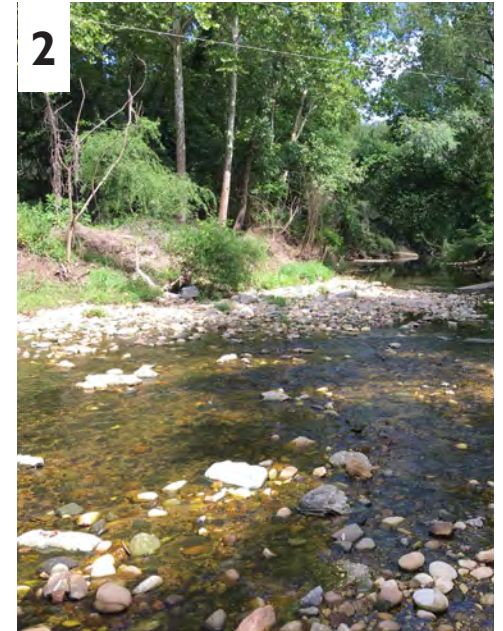
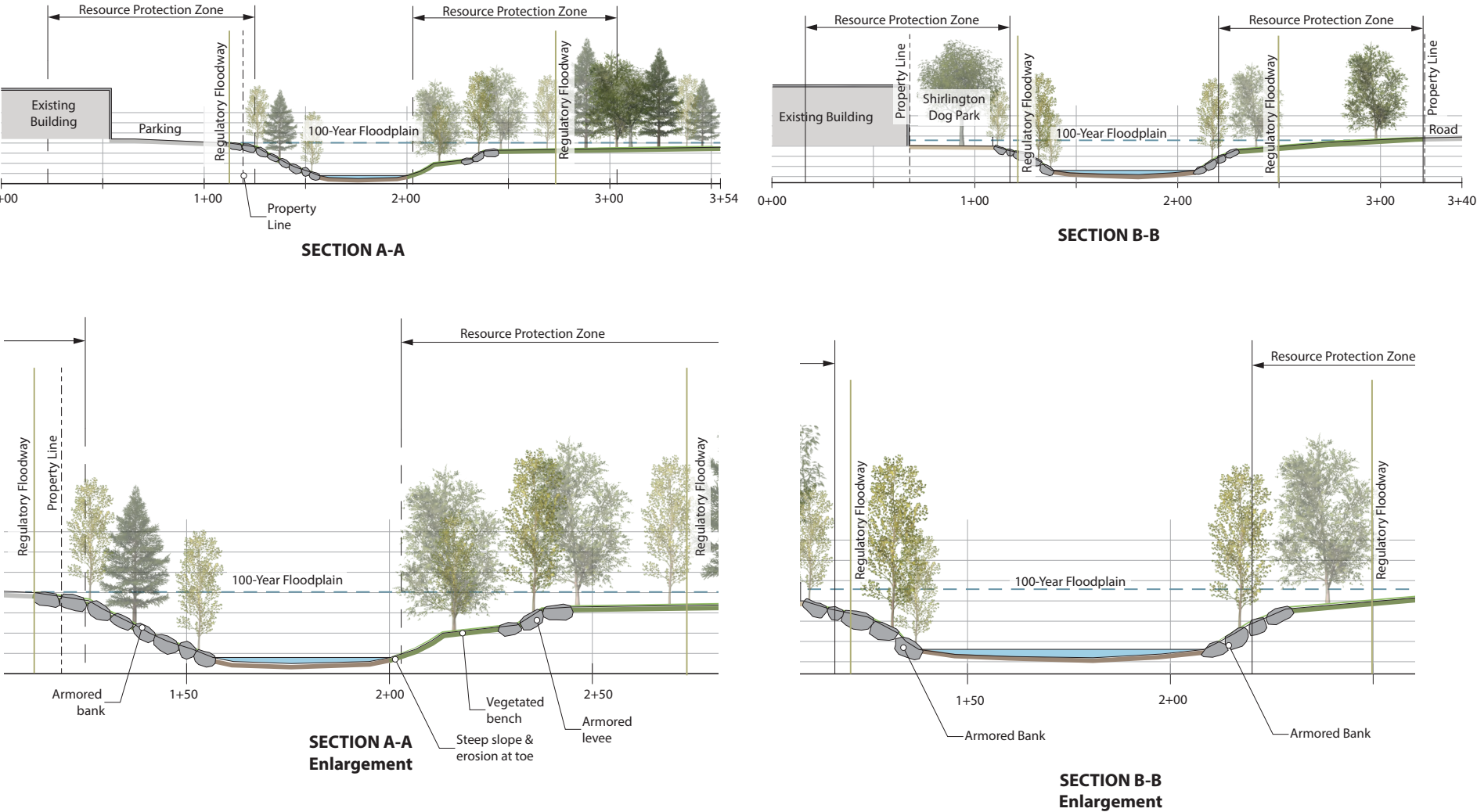




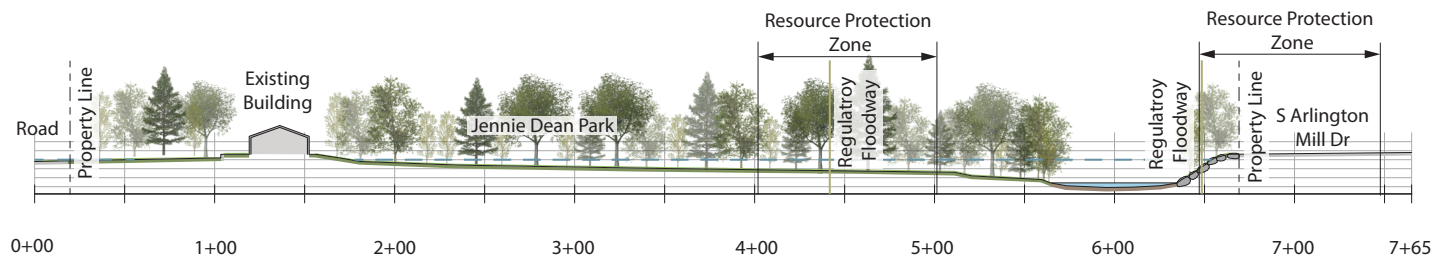
FIGURE B.4: FOUR MILE RUN, EXISTING CONDITIONS CROSS SECTIONS



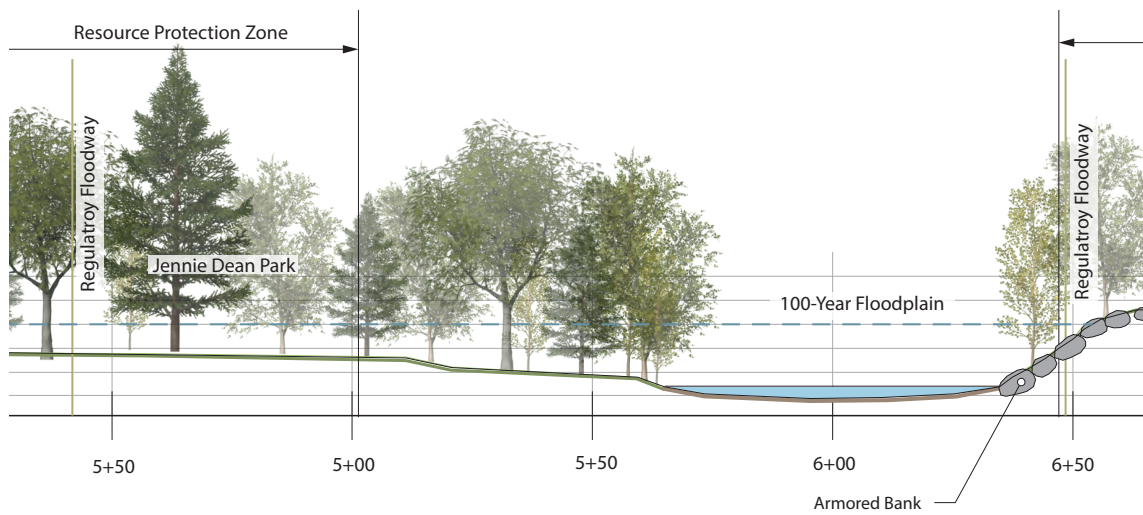
Reach 3: Section A-A

Reach 2: Section B-B





**SECTION C-C**

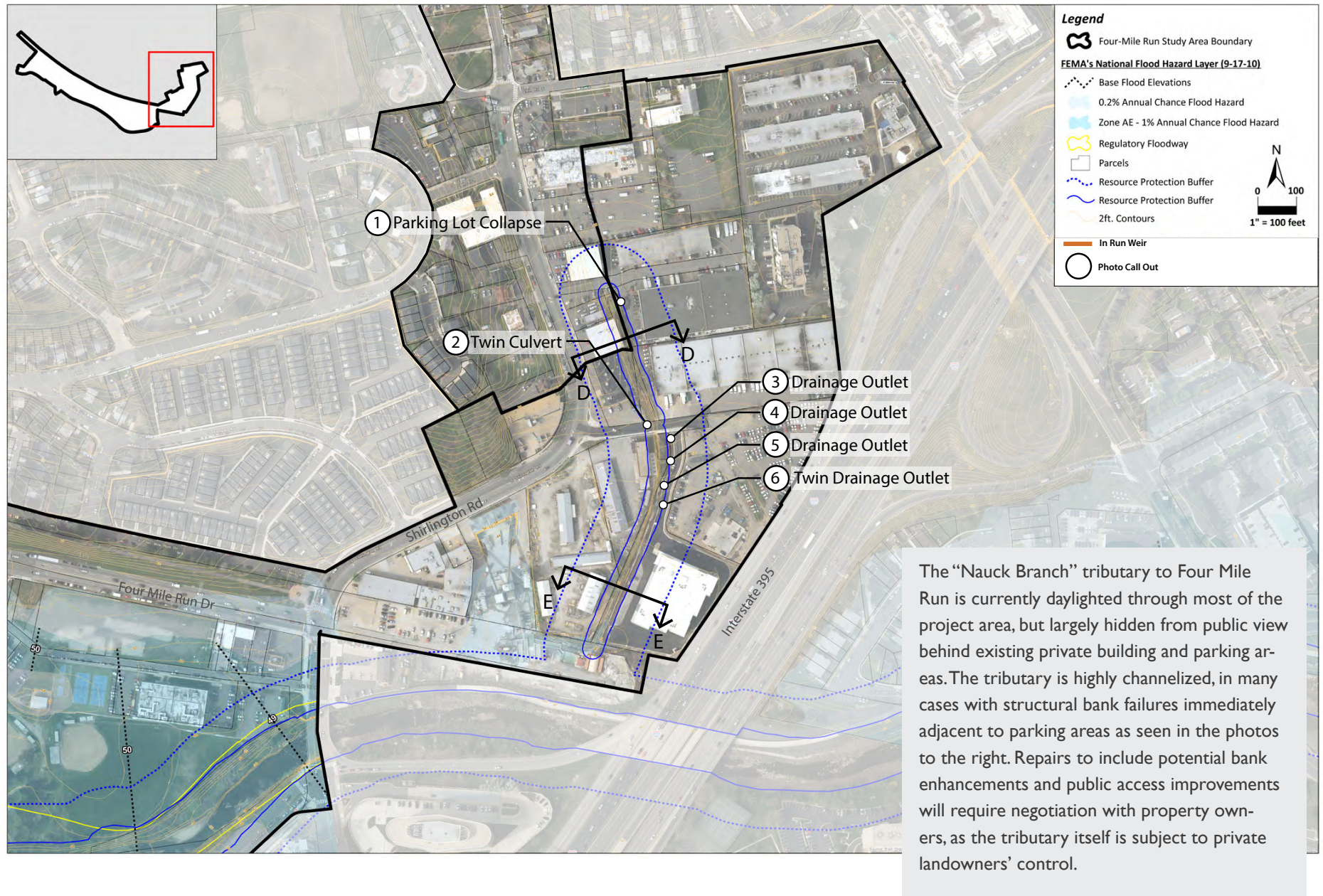


**SECTION C-C  
Enlargement**

Reach I: Section C-C



FIGURE B.5: NAUCK BRANCH



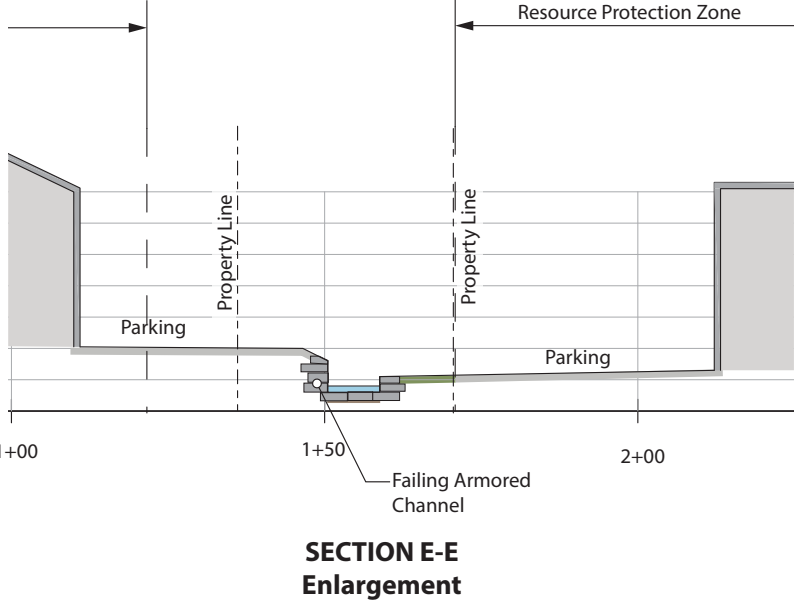
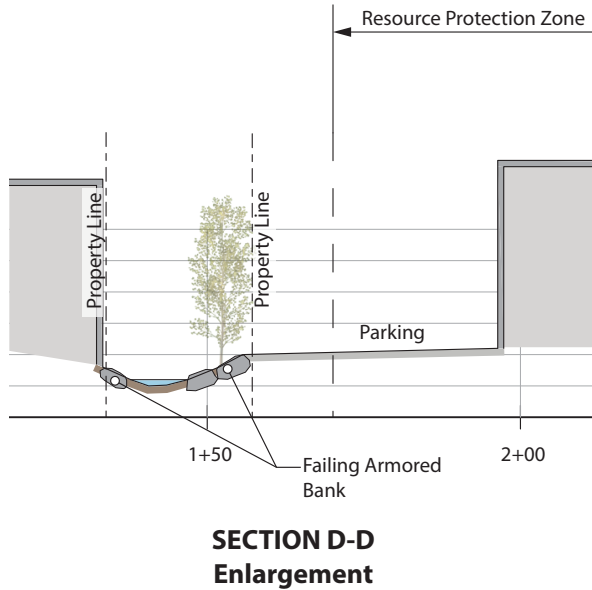
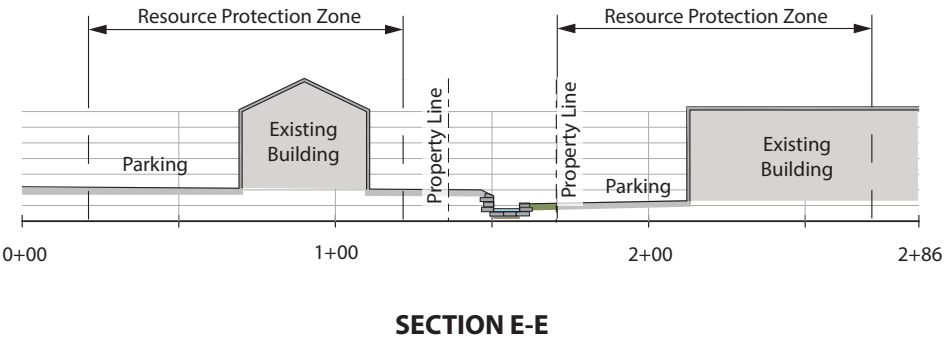
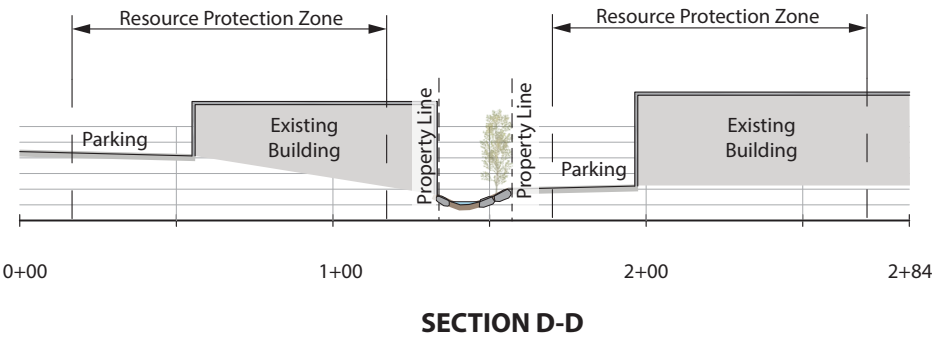
Note: see following page for photos (numbered); See Figure B.6 for cross section







FIGURE B.6: NAUCK BRANCH, EXISTING CONDITIONS CROSS SECTIONS

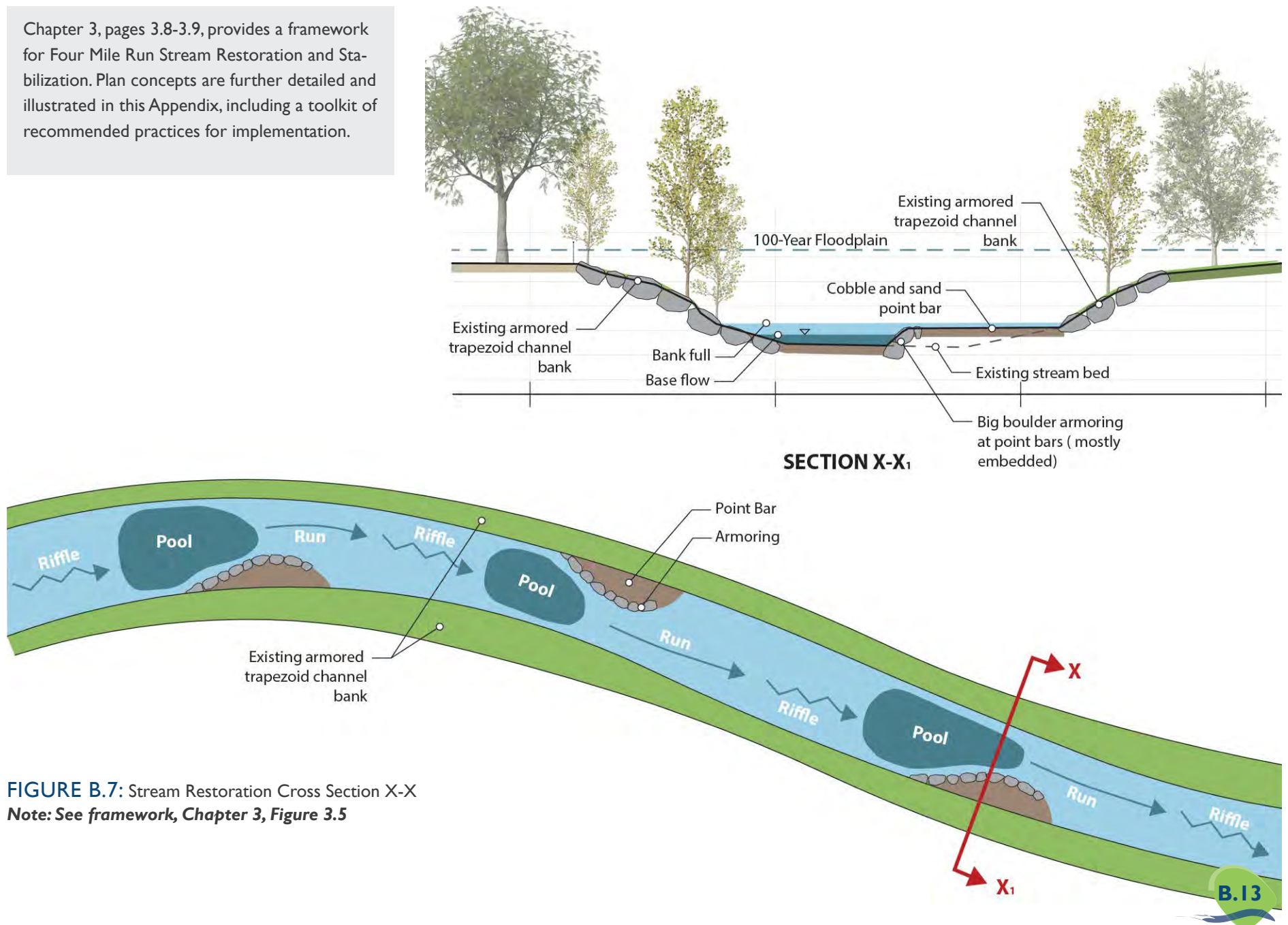


Nauck Branch: Section D-D

Nauck Branch: Section E-E

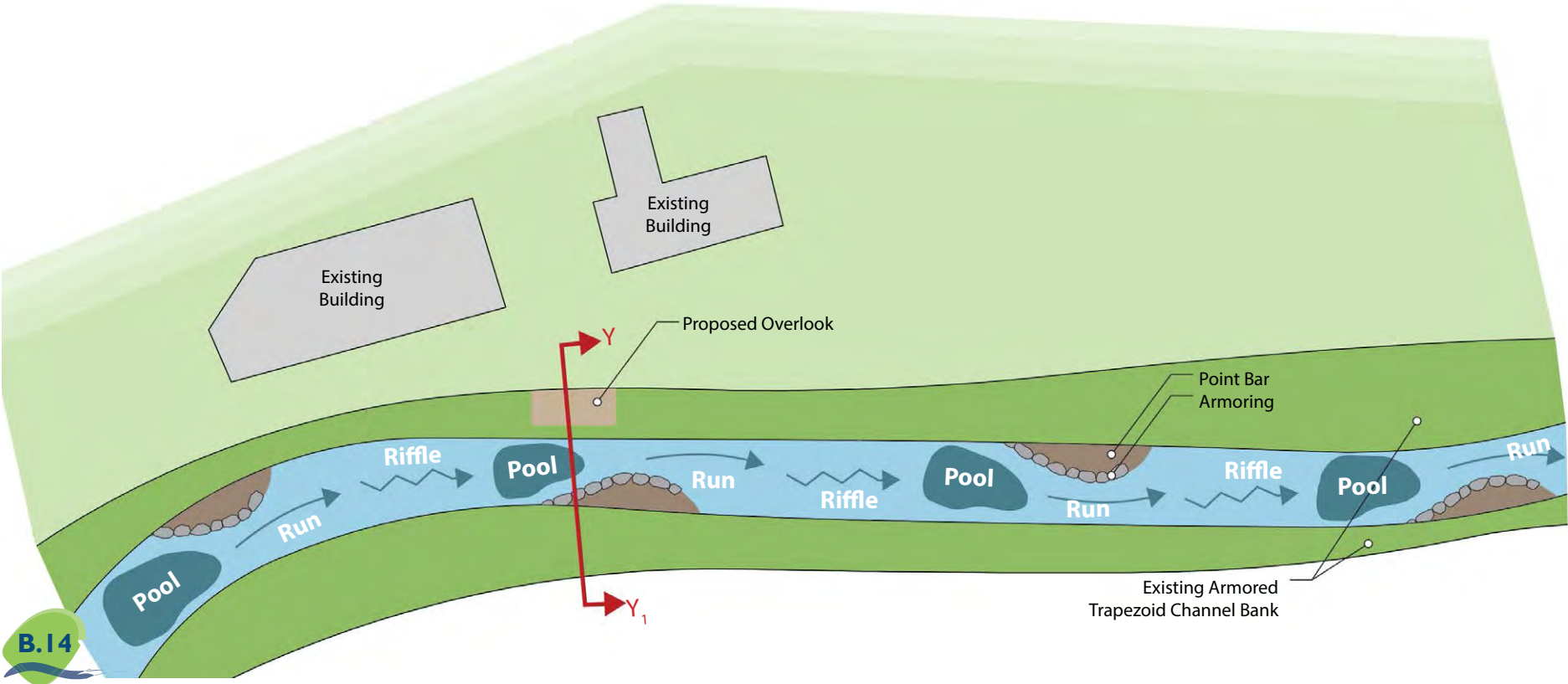
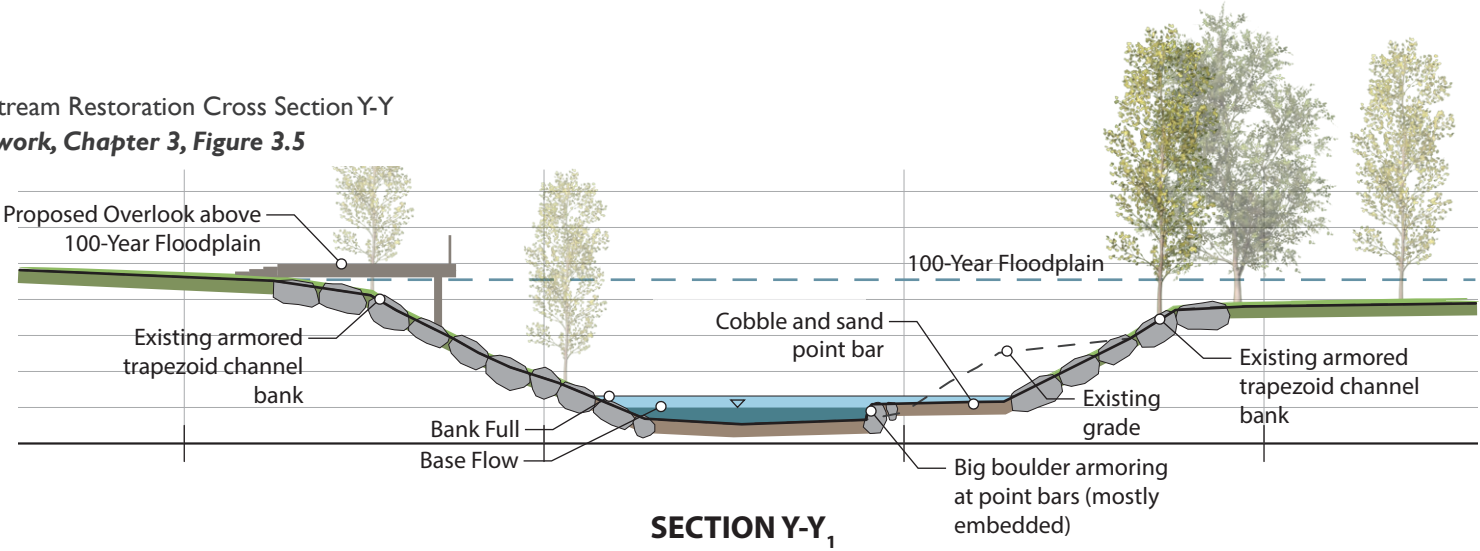


Chapter 3, pages 3.8-3.9, provides a framework for Four Mile Run Stream Restoration and Stabilization. Plan concepts are further detailed and illustrated in this Appendix, including a toolkit of recommended practices for implementation.





**FIGURE B.8:** Stream Restoration Cross Section Y-Y  
*Note: See framework, Chapter 3, Figure 3.5*





## STREAM RESTORATION AND STABILIZATION TOOLKIT

The Four Mile Run and Nauck Branch Stream Restoration and Stabilization Toolkit includes a menu of potential practices to stabilize slopes, improve water quality, add wildlife habitat value, improve drainage function, increase public awareness, and improve aesthetics.

Practice	Description
Structural Bank Stabilization/ Armoring (grey)	Structural bank stabilization, as currently employed throughout the Four Mile Run channel in the study area (rip rap), utilizes large stone, walls, or other hard-armoring practices to stabilize slopes.
Living Shoreline Bank Stabilization (green)	Living shoreline treatments are an alternative to hard-armored solutions, utilizing a variety of structural and organic materials such as wetland plants, vegetation, coir logs, and stone to stabilize shorelines while improving water quality and restoring aquatic and terrestrial habitat.
Buffer Restoration	Restored vegetated buffers slow runoff, filter pollutants and excess nutrients, reduce erosive forces on banks, and provide habitat value.
Invasive Plant Management	Control of non-native species with a tendency to spread will reduce negative impacts to the environment, local economy, and human health.
Trash/Litter Cleanup and Maintenance	In addition to improving aesthetics and sense of stewardship for the area, an enhanced trash/litter cleanup program will improve drainage system function.
Long-term Low Flow Channel Manipulation	Long-term efforts to naturalize the Four Mile Run channel will utilize techniques such as point bars and levee removal to add sinuosity, reduce velocities, add habitat value, and improve aesthetics.



## GREEN INFRASTRUCTURE

Stormwater management infrastructure in the study area generally consists of curb and gutter, catch basin, and underground pipe closed drainage systems with runoff discharge to pipe outfalls in Four Mile Run.

As defined by the Environmental Protection Agency, green infrastructure (GI) uses natural hydrologic features to manage water and provide environmental and community benefits. The term generally refers to site planning and stormwater management practices that mimic nature to infiltrate, evaporate, or harvest and use stormwater runoff as close to its source as possible. The GI approach is based on four fundamental principles:

1. Treat stormwater as a resource rather than a waste product;
2. Preserve and/or recreate natural landscape features;
3. Minimize the effects of impervious cover; and
4. Implement stormwater control measures that rely on natural systems to manage runoff.

In other words, GI emphasizes simple site design techniques and natural stormwater practices to get rainfall filtered and back into the atmosphere and ground as close to where it falls as possible. GI is very often a more cost-effective stormwater management alternative compared to more highly engineered structural practices, and in addition, provides community benefits ranging from traffic calming to increases in aesthetics and property value. A robust maintenance program is needed to ensure GI continues to perform its valuable stormwater management and ecological functions and remains an aesthetic amenity.

GI can be implemented as part of public and private development projects, and at a wide range of scales, in place of or in addition to more traditional stormwater control elements. Common green infrastructure tools, or BMPs, include:

- Bioretention systems, or rain gardens – slightly depressed landscape areas designed to utilize soil and plants to filter runoff, and infiltrate runoff where allowable. Typically systems are designed to manage runoff from frequent, small magnitude storm events, with bypass to larger flood control systems during larger storm events.

- Flow-through planters – usually next to buildings, waterproof structures filled with gravel and planting soil to temporarily store and filter runoff, with excess water drained via a perforated underdrain.
- Selective application of permeable paving surfaces – potentially including permeable bituminous, porous concrete, pavers, bricks, and other surfaces designed to allow infiltration where allowable.
- Green roofs are covered with vegetation and a growing medium installed over a waterproof membrane. Green roofs absorb rainwater, provide insulation, create wildlife habitat, and help to mitigate urban heat island effect and lower urban air temperatures.
- Tree planting – with thirsty root systems functioning as stormwater management machines, urban trees also provide a host of other health, happiness, and value benefits.
- Tree box filters – Street trees can also be planted within tree box filters, which are in-ground tree “containers” designed to receive, naturally filter, and infiltrate runoff from adjacent impervious areas such as streets and/or walks.

The County Stormwater Management Plan identifies seven high priority retrofit projects within its study area. The first green street retrofit was installed by the County on Patrick Henry Street in 2011, including installation of two bioretention areas treating runoff from 0.75 acres of contributing area. Five years later, the system has been generally positively received and is still well-maintained and functioning. Several additional projects have been constructed, and multiple County-led green street retrofit projects are in various stages of design and implementation.



FIGURE B.9: 2011 County green street retrofit, Patrick Henry Street



## GREEN INFRASTRUCTURE TOOLKIT

The Green Infrastructure and Sustainability Toolkit includes a menu of site design techniques and stormwater Best Management Practices (BMPs) to improve environmental impacts consistent with the project vision and Green Infrastructure framework. Design techniques and BMPs must be carefully weighed for their cost-effectiveness, functional benefit, ease of maintenance, and appropriateness to project vision and context. Detailed design should creatively express the Valley's urban design vision and aesthetic language.

Practice	Description
Depaving & Tree Planting	Interventions to replace extraneous impervious surfaces with planted landscape, including tree planting wherever possible.
Bioswale	Linear vegetated landscape elements designed to convey runoff.
Bioretention System	Vegetated landscape depressions designed to collect and filter stormwater runoff.
Tree Filter Pit	Structural tree boxes designed to accept stormwater runoff for irrigation and filtering.
Stormwater Planter	Raised planters designed to accept roof runoff for filtering, with overflow during larger storm events.
Porous Pavement	A range of free-draining alternatives to typical impervious pavement, including pervious concrete, porous asphalt, pavers, and structured grass.
Constructed Wetlands	Constructed systems mimicking natural wetlands, designed to be wet at all times either in saturated soil or standing water.
Underground Chambers	Underground systems such as buried pipes or proprietary chamber structures, designed to temporarily hold a set amount of water while slowly releasing to another location.
Detention Basins	A low-lying area designed to temporarily hold a set amount of water while slowly releasing to another location.



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4 mile run valley