

Appendix E

Open Space and Parks Technical Study

Open Space and Parks Technical Study

Prepared by MIG and Ascent Environmental | June 30, 2015

Introduction

This *Open Space and Parks Technical Study* provides background information, policy and regulatory context, current (2015) programming requirements, and new proposed design concepts related to active and passive recreation, open space, habitat preservation, and sustainability enhancements for the proposed Nishi Gateway project. This report examines potential design and programming strategies for incorporation into the sustainability implementation plans to be developed for this Innovation District.

This report summarizes current (2015) City of Davis goals, policies and standards applicable to the project site. However, the report also recognizes that the Innovation District concept is a new project type for Davis and there will be certain standards that cannot be achieved due to the project's unique density, sustainability and urban form characteristics. This report does identify livability and sustainability tradeoffs for both the quantity and programming of open space and parks for the Nishi Gateway project.

The study is divided into the following three sections:

1. Existing Conditions
2. Base Programming Assumptions
3. Nishi Gateway Open Space and Parks Programming Options

Section I: Existing Conditions

The City of Davis and the University of California, Davis (hereafter referred to as "UC Davis) campus both have an extensive existing network of open space areas, parks, trails, and recreation facilities and programs. These spaces and linkages provide direct community amenities and enhance the overall quality of life for city/university residents, local workers and visitors. The proposed Nishi Gateway project will need to create additional onsite open space and park features to support the new population, while also ensuring that these features complement and connect with the larger city and university systems.

In addition to existing facilities and programs, the City of Davis also has a well established policy and regulatory framework that identifies specific requirements for new open space and parklands. This includes detailed standards for the minimum amount of new greenbelts/open space and parkland required for new development, including the Nishi Gateway project.

The following section summarizes the existing greenbelt, open space, and habitat features on the Nishi Gateway site; the current City of Davis policy context related to open space and parkland design and programming; previous and current site design efforts for the Nishi Gateway site; and existing open space and parkland areas located in the city and on the university campus.

Physical Context

The Nishi Gateway site is bounded by Interstate 80, the Union Pacific railroad tracks, and urban portions of Davis (e.g., the West Olive Drive area). The site has recently been used for dry farming, and was historically used as irrigated farmland. However, there are a few key features of the site that currently provide open space, natural habitat, or recreation. The following is a summary of these major site features, as related to open space and parks. These features are identified on Figure 1: Existing Physical Context.

Existing Greenbelts/Creek Corridor

- Putah Creek: The historic Putah Creek channel, which now functions as a local drainage basin and but is not an active creek, runs through the northeastern portion of the Nishi Gateway site. The drainage and recreation corridor includes a multiuse trail system and functions as a major open space and circulation feature connecting UC Davis, Downtown Davis, and South Davis. In order to connect these areas, the multiuse trail includes underpasses at the railroad tracks and Interstate 80. Connections to the multiuse trail system should be integrated into the Nishi Gateway site design.

Existing Open Space/Habitat

- Open Space: While most of the Nishi Gateway has been disked for agricultural uses in the past, the site currently has some open space areas, in addition to the Putah Creek greenbelt. This includes thin corridors of minimally disturbed land and trees along each border of the site.
- Trees: There are a number of existing trees that have a direct relationship to the Nishi Gateway site, either by their size or proximity. These includes trees located on either the Nishi Gateway site, on Caltrans owned property adjacent to Interstate 80, or on easements controlled by either the City of Davis, Union Pacific Railroad or PG&E. In general, existing trees are identified by the following locations/groupings:
 - *Group of larger trees in the north east portion of the site.* This grouping of larger trees lends to creating a unique open space feature at the entrance to the Nishi Gateway site from West Olive Drive. This area should play a key role in the internal open space network.
 - *Trees within the bike and pedestrian pathway along Putah Creek:* Most of these trees should remain in place and be protected. Some trees may need to be removed, however, in order to extend West Olive Drive onto the Nishi Gateway site. Reducing this impact will be further explored as the detailed site plan is developed.

- *Trees adjacent to the railroad tracks:* These trees are located within the Union Pacific railroad and PG&E easements (approximately 180' running parallel to the railroad tracks on the Nishi Gateway property). Due to easement restrictions, new trees would not be allowed to be planted on this easement. However, existing healthy trees could remain as they provide a beneficial buffer to the railroad tracks. There is also the ability to include surface parking within the easements, and the existing trees can be used to provide some shade for these parking areas.
- *Trees adjacent to I-80:* This area includes trees that are located on both the Nishi Gateway site and Caltrans property. Healthy trees should remain as they provide a beneficial buffer to the freeway. There may be opportunities to expand tree planting on the Nishi Gateway site in order to provide additional freeway buffering, greater carbon sequestration, and increased freeway pollution capture.

Existing Disturbed Area (former agriculture)

The remainder of the Nishi Gateway site can be considered disturbed. This area was formerly used for active agriculture and has limited habitat qualities. This is the primary area where new development is proposed under the Draft Nishi Gateway Site Plan (see Figure 3). However, as the Nishi Gateway Site Plan is refined in the coming months, this area should include new open space and parklands, as well as other sustainability enhancements (e.g., swales, green streets, renewable energy production, etc.).

Current Site Environment

In addition to the specific site features described above, the location of the Nishi Gateway site poses several major constraints and conditions. All future parks and recreation plans for the site need to take the following factors into consideration:

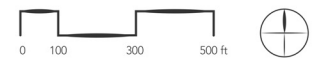
- Physical Connectivity Barriers: The site is bounded by the railroad tracks, Interstate 80, and Putah Creek. While bicycle and pedestrian connectivity to the Putah Creek multiuse trail is easily achievable, connecting the site to the University will be more difficult and would require a new railroad underpass (which is included in the draft Site Plan).
- Freeway Noise: Truck and automobile noise can create an unpleasant environment for both active and passive recreation, and where able, the site plan should buffer park areas from the freeway through the placement of new buildings.
- Freeway Visibility: The site is highly visible from Interstate 80 and is in a prime location to become a distinguishable gateway feature to both the City and University. Special care should be taken to ensure the location, design and programming of open space and recreational uses highlight sustainability, healthy lifestyle and a bike-friendly environment.
- Visual Connections: The placement of onsite open space and parks should enhance visual connections to landmark UC Davis features (e.g., Shrem Museum, Mondavi Center, Arboretum, etc.) and the Putah Creek corridor.



FIGURE 1: EXISTING PHYSICAL CONTEXT

LEGEND

- City Boundary
- Nishi Gateway Site Boundary
- Creek
- Existing Greenbelt
- Existing Open Space / Habitat
- Existing Disturbed Area (Former Agriculture)
- Existing Trees on the Nishi Gateway Site



Policy Context

While the Nishi Gateway site is located in unincorporated Yolo County, the current proposal is for the site to be annexed to the City of Davis via voter approval as part of the entitlement process. As such, the following is a summary of current City of Davis open space, park, recreation, and sustainability policies and regulations. This policy context applies to the amount and design of open space and park features on the Nishi Gateway site.

City of Davis General Plan (2001)

The City of Davis General Plan is the overarching policy document that governs all land use, design, mobility, conservation, environmental, and sustainability decisions made by the City of Davis. The General Plan includes a series of Visions that are broad philosophical statements describing desired end states. This is followed by detailed goals, policies, actions and standards divided into topical chapters, or “elements.” The goals, policies, actions and standards either provide guidance or identify mandatory standards.

City of Davis Beyond Platinum Bicycle Action Plan (2012)

The Beyond Platinum Bicycle Action Plan addresses education, enforcement, encouragement, evaluation/planning, equity and enjoyment throughout the community. The plan is designed to employ new and best practices to continue to advance bicycle programs, policies, and infrastructure and to springboard the future of cycling in Davis through 2020. The plan includes action strategies for receiving Diamond-Level status from the League of American Bicyclists and hosting a Bicycle World’s Fair in 2017.

City of Davis Parks and Recreation Facilities Master Plan (2012)

The City of Davis Parks and Recreation Facilities Master Plan provides an overall framework to guide the provision of parks, recreation and related quality of life services in the community. The plan provides methods and guidelines to achieve the City’s desired level of service for parks and open space. The plan anticipated future development and what open space would be required to meet the City’s desired level of service.

City of Davis Municipal Code (regularly updated)

The Municipal Code is the set of laws that governs City of Davis functions. It covers all aspects of City regulations, including zoning and various development related requirements. It functions as the primarily policy implementation tool for the City.

Summary of Policy and Regulatory Requirements

The following table summarizes current City of Davis policy, standards and regulations related specifically to parks, greenbelts and open space, and agricultural land buffers. For each item, the table identifies the document source and whether or not the item is guidance (e.g., provides direction for City decision making) or mandatory (e.g., a specific standard, law or regulation that must be met).

TABLE 1: CITY OF DAVIS POLICIES, STANDARDS AND REGULATIONS

General Plan: Visions		
Ref.	Text	Applicability
Vision 2	<i>Small Town Character</i> Bullet #1: Maintain Davis as a cohesive, compact, university-oriented city surrounded by and containing farmland, greenbelts, natural habitats and natural resources. (pg 41)	Guidance
Vision 2	<i>Small Town Character</i> Bullet #3: Maintain a strong, vital, pedestrian-oriented and dynamic downtown area. (pg 41)	Guidance
Vision 5	<i>Natural Resource Protection and Restoration</i> Bullet #3: Minimize impacts on Davis' land, water, air and biological resources and seek to enhance and restore Davis' environment, through such projects as wetlands and multi-functional drainage ponds. (pg 42)	Guidance
Vision 6	<i>Distinct Neighborhood Identity</i> Bullet #3: Enhance neighborhoods by supporting schools, retail centers, parks and community facilities that can be the foci and gathering places for each neighborhood. (pg 42)	Guidance
Vision 8	<i>Neighborhood-Oriented Transportation System</i> Bullet #2: Promote alternative transportation modes such as bicycling, walking, public transit and telecommuting. (pg 43)	Guidance
Vision 9	<i>Parks and Open Space Program</i> Bullet #1: Implement an open space program that creates, preserves and enhances open space and wildlife habitat. (pg 43)	Guidance
Vision 9	<i>Parks and Open Space Program</i> Bullet #2: Provide a park system and recreational programs and facilities that meet the diverse needs of Davis citizens, enhance the environment and foster a sense of community. (pg 43)	Guidance
Vision 10	<i>Agriculture</i> Bullet #1: Protect the viability of agriculture and prime agricultural land in and around Davis. (pg 43)	Guidance
Vision 10	<i>Agriculture</i> Bullet #2: Encourage agriculture practices that are not injurious to the city's environment or residents. (pg 43)	Guidance
General Plan: Land Use and Growth Management Element		
Ref.	Text	Applicability
LU L (Parks/Recreation Designation)	L. Allowable Uses: Neighborhood, community and regional parks, golf courses, and other outdoor recreational facilities within urban development. Specific uses include public recreation sites, including golf courses, baseball fields, tot lots and play apparatus, adult playing fields, soccer fields, swimming pools, community center buildings, meeting facilities, libraries, art centers, after school care facilities, art in public places, facilities for night time recreation, trails, benches, interpretive markers, picnic areas, barbecue facilities, water fountains, landscaping and irrigation, city wells, trees for shade and wind protection, visual and sound screens, shade structures (including arbors and trellises) and	Mandatory

	natural habitat areas. (pg 86)	
--	--------------------------------	--

General Plan: Transportation Element		
Ref.	Text	Applicability
TRANS 4.2	b. Work with the University to improve campus-city gateways and connectivity including the open space network. Implement documents/plans that improve connections between the city and campus. (pg 41)	Mandatory
TRANS 4.7	Develop a system of trails around the edge of the city and within the city for recreational use and to allow pedestrians and bicyclists to reach open space and natural areas. (pg 42)	Mandatory
General Plan: Urban Design, Neighborhood Preservation and Community Forest Management Element		
Ref.	Text	Applicability
UD 1.1	h. Pedestrian-oriented design is encouraged in the allocation of space, building size and placement, site enhancement, open space design, connection to pedestrian/bikeways and site amenities. (pg 154) j. New buildings should be integrated with open space to enhance living and working areas. (pg 154)	Guidance
UD 2.4	Create affordable and multi-family residential areas that include innovative designs and on-site open space amenities that are linked with public bicycle/pedestrian ways, neighborhood centers and transit stops. (pg 159)	Mandatory
UD 3.1	a. Parks, shopping centers, schools and other institutional uses should be located on prominent, central sites where they will "belong" to the neighborhood they serve with strong pedestrian connections to these central sites. (pg 161)	Guidance
General Plan: Water Element		
Ref.	Text	Applicability
WATER 3.1	a. Flood retention and detention facilities should be integrated with parks, athletic fields and natural areas. (pg 212)	Guidance
WATER 3.2	a. All new development shall include drainage facilities that are designed to accommodate a minimum of a 10-year recurrence design flow. In addition, all new development shall route the 100-year recurrence event and appropriately mitigate for both the increase in flows from the site due to development, and for runoff volumes which have historically occurred on the site. Storm drainage facilities with open, naturalistic channels are encouraged, where feasible. Such facilities can minimize impacts on the city's system, add to the water table, and provide an open space amenity, although long term maintenance costs must be considered. In addition, properly designed plantings within and adjacent to drainage facilities can serve to treat urban runoff, reducing downstream impacts. (pg 213)	Mandatory
General Plan: Parks, Recreation and Open Space Element		
Ref.	Text	Applicability
POS 1.2	Provide informal areas for people of all ages to interact with natural landscapes, and preserve open space between urban and agricultural uses to provide a physical and visual edge to the City. a. The City's park and open space system shall include opportunities	Mandatory

	<p>for active and passive recreation.</p> <p>d. Incorporate existing habitat areas, including Putah Creek, Dry Slough, and Willow Slough, into the open space network, while maintaining the emphasis on wildlife and habitat preservation in these areas.</p> <p>e. Within urban open space areas, provide habitat elements (e.g. roosting trees, nesting trees, etc.) for birds, such as songbirds, hawks, owls, and for other wildlife as appropriate.</p>	
POS 1.4	<p>Make all parks, greenbelts, open space areas and recreation facilities attractive, safe and easy to maintain.</p> <p>a. Park design and planning should incorporate short- and long distance views as appropriate.</p> <p>b. Wherever possible, new parks should include natural habitat and other "unimproved" areas.</p> <p>c. Parks, greenbelts and recreation facilities should be designed to eliminate hidden and difficult-access areas where security problems would be likely to occur.</p> <p>d. Parks, greenbelts, open space areas and recreation facilities should allow emergency and police vehicles access for routine patrol or medical response.</p> <p>e. Children's play areas and other appropriate park areas should have adequate shade and wind protection provided through landscaping and constructed elements.</p> <p>f. The park system should include multi-functional spaces and facilities to provide for cultural events.</p> <p>g. New parks should be designed and located to minimize noise and activity conflicts with residential areas.</p> <p>i. Include art features designed by local artists in parks where possible.</p> <p>j. Require the review of all projects constructed as part of the Davis open space system by appropriate City departments to ensure that public safety concerns are met. (pg 241)</p>	Mandatory
POS 1.5	<p>Attempt to provide all city residents with convenient access to parks and recreation programs and facilities.</p> <p>a. Parks, recreation facilities and open space areas should be located to be easily accessible by various transportation modes including car, bus, and bicycle. (pg 241)</p>	Guidance
POS 3	<p>Identify and develop linkages, corridors and other connectors to provide an aesthetically pleasing and functional network of parks, open space areas, greenbelts and bike paths throughout the City.</p>	Mandatory

	<p>l. Greenbelt requirements should be calculated separately from park acreage dedication or in-lieu fee payment requirements that are specifically authorized by the Quimby Act (Gov. Code 66477).</p> <p>m. Up to 20 percent of a project's greenbelt requirements may be used towards increasing the size of parks or other open-space within a development.</p> <p>o. Allow flexibility in design of greenbelt/park/open space areas within new development as long as non-auto, internal circulation corridors (for school children, bicycles, pedestrians, etc) are provided and the overall dedication requirement for greenbelt and park facilities is met.</p> <p>p. Encourage provision of open space in excess of minimum neighborhood greenbelt and open space requirements through regulatory concessions. (pg 247)</p>	
POS 4.2	<p>Construct new parks and recreation facilities. (pg 248)</p> <p>a. The equitable location of school sites, greenbelts, bike paths and open spaces throughout the community shall be considered in prioritizing construction of new parks.</p> <p>b. All new shopping centers, research, business or industrial parks, and apartment complexes should include open areas to serve as mini/pocket-parks that may include picnic tables, shade and recreation amenities.</p> <p>c. Each new neighborhood park should be located near the center of the neighborhood that it will serve. (pg 248)</p> <p>d. Develop and follow a prioritized list of planned parks in the parks and recreation facilities Master Plan.</p> <p>e. Study potential development of new parks focusing on underutilized land or existing City-owned land with attention given to the potential impacts on wildlife and other resources.</p> <p>f. Acquire and develop park land to meet the standards for neighborhood and community parks outlined above, with the highest priority for park development in those areas that do not currently meet the distance-from-dwelling standard. (pg 248)</p>	Mandatory
Park Acreage Standard	5 acres per 1,000 residents, based on overall City of Davis population. (pg 237)	Mandatory
Park Acreage Standard	<p>Community parks should be a minimum of 15 net acres; 25 net acres is the preferred size. There should be a community park within 1 ½ miles of all dwelling units.</p> <p>Neighborhood parks should be a minimum of five net acres, and should be within a distance of 3/8 of a mile relative to dwelling units. (pgs 226-227)</p>	Mandatory
POS 5.1	Protect and retain wildlife habitat, agricultural land and open space when planning and maintaining City park lands.	Guidance

	a. Existing natural habitat and other “unimproved” areas should be protected and preserved within parks, in keeping with the master plan approved for each park.	
POS 6	e. Coordinate open space, recreation and child care programs and facilities with other City or school district programs. f. Encourage and support the development and maintenance of recreation and park facilities by the private sector. (Pg 250)	Guidance
POS 6.2	Require dedication of land and/or payment of an in-lieu fee for park and recreational purposes as a condition of approval for subdivisions, as allowed by the Quimby Act (Government Code 66477). (Pg 250) a. Continue to require development project impact fees for residential and commercial projects to finance park and recreation projects.	Mandatory
General Plan: Habitat, Wildlife, and Natural Areas Element		
Ref.	Text	Applicability
HAB 1.1	Heritage oak trees and City-designated signature trees shall be protected. Sensitive biological resources should be protected. Project design shall demonstrate that avoidance of sensitive resources has been integrated into project design. Where avoidance is not feasible, the project proponent shall compensate for the loss or disturbance within Yolo County. The type and amount of compensation shall be determined in conjunction with the appropriate local, state, and/or federal regulatory agency involved. Active recreation facilities should be minimized within natural habitat areas. Recreation or interpretive facilities within natural areas should be designed to be site-sensitive and minimally intrusive. Public access into Sensitive Habitat Areas should be limited. New developments shall incorporate setbacks from creeks and channels. Restoration plans are required for all habitats that are to be restored in new development areas. Storm-retention ponds and drainage ponds that have become wildlife habitats should be restored as habitat. Develop a list of wildlife species that should be encouraged or protected. A map should be developed that indicates the areas where these species should be encouraged or protected. The City shall require a biological survey be prepared by a qualified biologist for proposed development areas that may contain sensitive resources as defined by the City or appropriate state or federal regulatory agencies. The biological study shall be prepared as a requirement of the environmental assessment of a given project	Mandatory

	<p>unless the City’s Planning Director determines, based on previous studies or other evidence, that the site’s current state would preclude the finding of sensitive resources. Agricultural use or plowing of a site does not eliminate the probability of sensitive resources. Such studies, when required, shall include:</p> <ul style="list-style-type: none"> • surveys and mapping of special-status plants and wildlife during the appropriate identification periods; • mapping and quantification of sensitive habitat loss; and • Delineation and quantification of waters of the U.S., including vernal pools, swales, alkali wetlands, seasonal wetlands, and other wetlands shall be done using the current USACE wetland delineation manual. <p>If a biological study of a site determines the presence of sensitive biological resources, the project proponent will retain a qualified biologist, approved by the agency(s) with regulatory responsibility, to monitor construction activities in sensitive biological resource areas.</p> <p>Sensitive biological resources located in or adjacent to the construction area will be protected by placing orange construction barrier fencing, or stakes and flags, including buffer zone (where appropriate and depending on the type of resource). Adjacent resources that may require protection include oak woodland, riparian woodland and scrub vegetation, drainages, vernal pools and swales, other wetlands, native grassland, special-status species populations, and elderberry shrubs. (pgs 284-285)</p>	
--	--	--

General Plan: Hazards Element

Ref.	Text	Applicability
HAZ 1.2	<p>Continue to provide flood control improvements that are sensitive to wildlife habitat and open space preservation.</p> <p>a. When designing new or retrofitted flood control facilities, include wildlife and/or public open space facilities in them to the extent possible. (Pg 323)</p>	Mandatory

Municipal Code: Agricultural Mitigation/Buffer

Ref.	Text	Applicability
Chapter 40A.03.025	<p>The city shall require agricultural mitigation as a condition of approval for any development project that would change the general plan designation or zoning from agricultural land to nonagricultural land and for discretionary land use approvals that would change an agricultural use to a nonagricultural use.</p> <p>The city has determined that effectively locating mitigation lands provides increased protection of agricultural lands threatened with conversion to non-agricultural uses. Requirements and incentives are established in this article to direct mitigation to areas that are under threat of conversion. In recognizing the importance of the location of mitigation, the city has identified two general categories of agricultural mitigation: (1) adjacent mitigation; and (2) remainder</p>	Mandatory

	<p>mitigation. For every applicable development project, the determination as to whether a combination of adjacent and remainder mitigation shall be required or whether only remainder mitigation shall be required shall be based on site specific factors, as specified in this article. Adjacent mitigation is addressed in Section 40A.03.030; remainder mitigation is addressed in Section 40A.03.035.</p> <p>Total mitigation for a development project shall not be less than a ratio of two acres of protected agricultural land for each acre converted from agricultural land to nonagricultural land. Location based factors (credits) for remainder mitigation contained in Section 40A.03.035 may result in ratios greater than 2:1. (Ord. 2300 § 1, 2007)</p>	
--	--	--

Nishi Gateway Site Plan (September – June 2015)

In June 2015, MIG prepared a *Revised Nishi Gateway Site Plan* that built upon previous design work and was further refined through multiple charrettes and discussions with the City of Davis, UC Davis, Yolo County, property owner and the consultant team (including Ascent Environmental, Fehr & Peers, EPS, Cunningham Engineers and the Davis Energy Group). The Revised Site Plan reflects the “Green Loop” open space concept presented to the community during an earlier design and outreach process (shown below). It includes more detail about site design and programming than the earlier concepts, as shown in Table 2. The Revised Nishi Gateway Site Plan is shown on Figure 2.



The above images show the “Green Loop” concept leading to the preferred alternative

TABLE 2: DRAFT NISHI GATEWAY PROGRAM STRATEGY		
Program Elements	Area	Units/Sq. Ft.
Residential: Rental	6.2 acres	65-82 du/net acre
Residential: For Sale	3.6 acres	57-61 du/net acre
Research and Development	5.0 acres	0.75-1.8 FAR
Surface Parking	5.9 acres	-
Retail	-	20,000 sq. ft.
Roads	3.0 acres	-
Creek	3.3 acres	-
Open Space and Parks	15.9 acres	-
Detention	4.0 acres	-
Total	46.9 acres	-



PROGRAM ELEMENTS	AREA	UNITS/SQ. FT.	NET DENSITY/FAR	BIKE PARKING	CAR PARKING
Residential: Rental	6.2 acres	440 units	65-82 du/acre	880	792
Residential: For Sale	3.6 acres	210 units	57-61 du/acre	420	315
Research & Dev.	5.0 acres	325k ft ²	.75-1.8 FAR	650	818
Surface Parking	5.9 acres	-	-	-	-
Retail	-	20k ft ²	-	-	-
Roads	3.0 acres	-	-	-	-
Creek	3.3 acres	-	-	-	-
Open Space & Parks	15.9 acres	-	-	-	-
Detention	4.0 acres	-	-	-	-
TOTAL	46.9 acres	650 units	325k ft² R&D	1,950 bike P	1,925 car P
			20k ft² retail		

FIGURE 2: REVISED SITE PLAN

LEGEND

- City Boundary
- Nishi Property Plan Area
- Creek
- For-Sale Residential
- Rental Residential
- Research & Development
- Surface Parking
- Park/Greenway
- Multituse Trail
- Stormwater Swale
- Solar Panels

DAVIS Nishi Gateway

0 100 300 500 ft

06.17.15

Nearby Existing Park Amenities

The Nishi Gateway site borders both the City of Davis and UC Davis. As such, any new greenbelt/open space and parks envisioned on the site should be designed in context to other existing park facilities and open space features. This will ensure that the Nishi Gateway project has public facilities that meet the needs of new residents and workers, and that these facilities will also be available and accessible to the existing city and university populations. The following is a summary of major existing park facilities and open space features located in either the City of Davis or on the UC Davis campus within a mile or so of the Nishi Gateway site. These features are shown on Figure 3.

City of Davis Facilities

- Civic Center Park: This 10.1-acre park is located at 23 Russell Boulevard and includes a lighted baseball field and barbeque grills, and hosts the annual Davis Turkey Trot.
- Central Park: This nearly two block park (5.8 acres) is located between B and C Streets and 3rd and 5th Streets and functions as Davis' major, centrally-located recreation and community gathering amenity. It includes many unique features such as the US Bicycling Hall of Fame (located at the southwest corner), the Hattie Weber Museum, public restrooms, and a weekly Farmer's Market. The park also contains a human-powered carousel, playground equipment, garden area, and amphitheater.
- Playfields Park: This 16-acre park is located at 2500 Research Park Drive and includes three baseball/softball fields, an all-weather soccer field, a sand volleyball court, batting cages, basketball courts, playground equipment, and a concession stand.
- Toad Hollow Dog Park. This 2.5 acre park is located at 1919 2nd Street and includes fully fenced areas for small and large dogs to play off-leash.

University of California, Davis

- Arboretum: The Arboretum is an approximately 100-acre open space area that runs along the original Putah Creek channel through the campus and provides recreation, semi-natural habitat, storm drainage for the campus, and carbon sequestration and air purification (based on its size and extensive tree habitat) for the campus and surrounding Davis community. The area includes an array of different programming and uses, including a living museum, an outdoor classroom, public garden with over 2,400 species of trees and plants, and several lakes. The various paths of the Arboretum make a walking and running loop that is about 3.5 miles long.
- Quads, Sports Fields, and Open Areas: The campus has several formal outdoor spaces that are near the Nishi Gateway site. These include Vanderhoef Quad, the Main Quad, East Field and the Intramural Field adjacent to A Street. These areas are heavily used by University students and employees and would also be used by residents housed on the Nishi Gateway site.

- Solano Park Community Gardens: This is a community garden maintained by residents of Solano Park Housing (on campus), and portions of the garden may need to be relocated in order to provide vehicle, bike and pedestrian access to Old Davis Road.



Section II: Base Programming Assumptions

As the Nishi Gateway site plan continues to be refined, the project will need to include a minimum amount of new parkland, open space and greenbelts. The goal of the City of Davis is to ensure that the new population created by the project (both residents and employees) has adequate, on-site urban amenities to meet their needs. The following table summarizes base requirements for the Nishi Gateway project based on existing (or in some instances proposed) City of Davis standards. Additional considerations based on preliminary City staff comments on both the Nishi Gateway project and two other proposed Innovation Center project are also addressed.

TABLE 3: BASE PROGRAMMING REQUIREMENTS		
Category	City of Davis Standard	Nishi Gateway Park and Open Space Plan Base Requirements
Parks	<p>The City of Davis requires five acres of parkland per 1,000 persons in new residential development.</p> <p>The City has expressed a desire to consider a similar standard to the proposed Innovation Centers at a ratio of five acres of parkland per 1,000 employees in non-residential developments. The City has suggested in preliminary comments that this non-residential parkland dedication ratio could be applied Nishi Gateway; however, given that Nishi Gateway is a mixed-use project with an existing residential dedication requirement, further consideration and discussions will need to take place in order to determine the exact parkland dedication requirement for the project.</p>	<p>Minimum of 9.3 acres dedicated on-site or through payment of fees in-lieu of land dedication.</p> <p>Assumes 1,860 new residents (1.86 x 5 = 9.3 acres)</p> <p>Potential additional parkland dedication for nonresidential uses, assuming 1,508 new employees (1.5 x 5 acres = 7.5 acres)</p>
Greenbelts and Open Space	<p>The City of Davis requires 10 percent of a total project area be dedicated for greenbelts or open space in new residential development. The City is considering the same standard for the proposed Innovation Center land use.</p>	<p>Minimum of 4.7 acres dedicated on-site</p>
Agricultural Buffer	<p>The City of Davis requires a 150 foot wide buffer be established between urban development and agricultural lands, which cannot be combined with parkland dedication or greenbelt/open space requirements. However, the City generally requires the 100 feet immediately adjacent to agriculture land be limited to agricultural-related activities (not recreation) and may consider the interior 50 feet of the easement for recreation purposes such as a multiuse path, open space/habitat, or other passive recreation.</p>	<p>Not applicable. Interstate 80 forms an approximately 250 foot buffer between the Nishi Gateway site and agricultural lands to the south.</p>

Section III: Nishi Gateway Open Space and Parks Programming Options

Based upon the programming standards described in the previous section, the Nishi Gateway site plan will need to include an appropriate and meaningful amount of greenbelt/open space and dedicated parklands, while recognizing that current standards may need adjustment for higher-density urban infill sites such as the Nishi Gateway project. The following is a summary of the recent (2012) Parks and Recreation Master Plan community needs assessment conducted by the City of Davis, as well as location and programming options that should be considered as the site plan is refined in the coming months.

City of Davis Community Needs Assessment

In 2012 the City of Davis updated the Parks and Recreation Facilities Master Plan, which provides an overall framework to guide the provision of parks, recreation and related quality of life services in the community. As part of the update process, the City conducted a comprehensive community needs assessment to better understand the types of programs and facilities desired and needed by city residents. The community identified the following key concepts during this process:

- Maintain and enhance existing greenbelts, and continue to develop more greenbelts that improve connections to other greenbelts and trails;
- Identify, rehabilitate and strengthen natural areas;
- Look for ways to sensitively integrate technology as a recreational amenity;
- Maintain and increase community gathering areas and plazas in the core city and in other neighborhoods;
- Consider “Complete Streets” concept and how that can work with providing urban open space and strong community connections (note: since the assessment was conducted Complete Streets concepts have become required by State law); and
- Boost health and wellness activities through coordinated programming and facility development.

In addition, the community identified the following as the highest priority facility needs:

1. Neighborhood parks
2. Walking or hiking trails
3. Greenbelts
4. Open space
5. Public swimming pools
6. Sports fields

The community also identified the following as the highest priority recreation activities and programming needs:

1. Biking
2. Walking
3. Recreational swimming
4. Soccer
5. Jogging
6. Dog walking
7. Basketball
8. Tennis

Park Concepts

Given the amount of new residential development envisioned for the Nishi Gateway site, and the desire to create a sustainable and innovative project, there may be a need to differentiate between future public and private parks. Public parks would be located at ground level and have direct connections to the multiuse trail system that is envisioned as part of the “Green Loop” concept. Private parks could be located on the second floor of the larger residential buildings (above podium parking areas). The following is a summary of potential areas to locate public and private parks. These features are shown on Figure 4.

Public Parks and Plazas

There are several areas on the site that would lend themselves to public parks:

- Northern area: There is an opportunity to create a public park between the two for sale residential buildings, encompassing several large oak trees. This park could act as a large green passive activity space for the site. It could include small active uses such as a playground as well as habitat enhancements focused around the larger oak trees. However, this park space has significant existing trees and habitat, and must be treated sensitively to protect these amenities.
- Southern area: One or more public parks could be located in the southern area of the site. The southern portion of the site, where access to the multiuse trail would be available, could include active uses such as a playground or smaller sports amenities. While a retention basin is part of the planned uses for the southernmost portion of the site, localized retention and stormwater treatment may allow the area needed for retention to shrink and allow for more area devoted to active recreation. For purposes of this technical analysis, it is assumed a full retention pond would be needed and active recreation would not be allowed within that area and the area planned for retention would not be counted towards fulfilling the City’s parkland requirements.
- Plaza space: There is also the ability to create a smaller public park or plaza at the center of the larger R&D/office building. This is a narrow area, but could be comprised of permeable pavers and integrated into the bioswale system envisioned for the site. This space can be programmed with informal interaction areas that help spark community and conversation. Also, depending upon its ultimate size, it could include

small active recreation amenities for use by R&D, office, commercial employees and the general public.

Private Outdoor Spaces

Residential buildings could include private outdoor spaces located on the second floor, above the podium parking. These outdoor spaces could include hardscape patios surrounded by vegetation and trees. This would allow for a unique “active green roof” for these buildings and areas where residents can relax, socialize and recreate. These areas should also include edible vegetation so they can act as a community garden for residents.



Greenbelt and Open Space Concepts

There are several ways to integrate and expand greenbelts and open space on the Nishi Gateway site. The following is a summary of these options, which are shown on Figure 5.

Greenbelts and Open Space

The site benefits from already having a portion of the Putah Creek trail system located on the northern portion of the site. All future designs for the Nishi Gateway site should protect this key greenbelt, while also identifying ways to directly connect onsite bicyclists to the multiuse trail. Some upgrades and improvements to the existing creek area and multiuse path are anticipated as part of the park component of the Nishi Gateway project. However, as the area is not new improved park space, a combination of improved park acreage credit with partial in-lieu fees should be calculated. This area may have limited recreation potential considering the steep riparian slopes and the grade changes for the existing bike/pedestrian tunnel. It will also no longer be contiguous open space once the tunnel is constructed.

In addition to the greenbelts, the site can also include open space areas along the borders or within the core of the site. These areas would provide habitat protection and spaces for passive recreation. These areas can also be used for carbon sequestration and stormwater retention. As shown in Figure 5, there are multiple areas where open space can be provided onsite.

Multiuse Trail

The Revised Nishi Gateway Site Plan reflects the “Green Loop” concept presented to the community in 2014. The core of the site should include a separated, Class I multiuse trail that connects UC Davis (via a new undercrossing of the Union Pacific Railroad) with the central Olive Drive extension and eventually to the existing Putah Creek multiuse trail. This connection would allow easy access to the bike trail system as well as more direct access to Downtown Davis and South Davis.

Swales and Natural Drainage Systems

A key stormwater management goal for the Nishi Gateway site is to ensure that new development does not result in new impacts to properties either downstream or upstream. Essentially, a network of swales will be created to transport stormwater through the site to the large retention basin envisioned in the southern portion of the site, as shown on Figure 5. This could include swales along the edges and/or through the central part of the site. Depending upon the size, there is also the possibility of include smaller retention basins along the path of these swales. The specific requirements and design of the swales and retention basin(s) will be determined later in the project.



Internal Recreation Concepts

In addition to outdoor open space and parklands, the larger buildings would lend themselves to including indoor recreation amenities. These amenities could be either private (e.g., available only to tenants and their guests) or publicly accessible (e.g., commercial gyms or yoga studios). The following is a summary of potential programming options for these buildings that will increase the quality of life for both tenants and City of Davis residents.

Internal Bicycle Storage

The Nishi Gateway project is envisioned to be fully integrated into the City of Davis and UC Davis bikeway system. The site is also envisioned to encourage tenants and workers to ride their bikes as a primary means of transportation. Internal, secured bicycle storage should be included within these buildings on the ground floor so they can provide easy access to the multiuse trail. Depending upon the final programming for the residential buildings, the internal bicycle storage should be comprised of large rooms (non-air-conditioned) with racks that allow easy and secure locking of bikes. In addition, the R&D/Office buildings should also include internal bicycle storage as well as additional amenities for bicycle commuters such as showers and lockers.

Gyms

The Nishi Gateway site could include one or more gyms, yoga studios, Pilates rooms or similar facilities within either the residential or R&D/Office buildings. These onsite facilities would be a nice amenity for tenants and workers, and would also reduce off-site trips and make the project more sustainable.

Pool

Depending upon final site design, there is also the possibility of including a swimming pool within or adjacent to the residential buildings. It could be located either within one of the podium parking areas (assuming there is enough space to also meet City of Davis parking requirements) or possibly within a second floor outdoor private park space.

Spas

There is a possibility of including up to three spas within one or more of the residential buildings. They could be located within a second floor outdoor private park space or designed so they are internal to the building.

Sustainability Enhancement Strategies

There is a need to ensure sustainable concepts are included in both the design of new amenities and their long-term maintenance. The following are some methods that can be used to improve sustainability through the reduction of energy and water consumption and reduction of the urban heat island effect on the Nishi Gateway site.

Green Streets Concepts

Green streets are roadways, sidewalks, pathways or other “hardscape” feature that are purposefully design to include features that allow for stormwater to be pre-filtered and captured onsite, either through deep planters or pervious pavers with specific vegetation. Similarly, green street features can help to reduce solar reflectance and heat absorption associated with typical asphalt and concrete hardscape settings, which contribute to reducing the urban heat island effect. There are many opportunities to incorporate green street features into all roadways on the Nishi Gateway site. Specifically, secondary access roads could be constructed with pervious surfaces or pavers since they may not have large truck or bus traffic. The specific types of features and their locations will be determined later in the project.

Water Quality and LID Strategies

There are many opportunities to improve water quality and incorporate Low Impact Development (LID) strategies into the project design. Some strategies that should be considered include extending and enhancing proposed LID features to non-street corridors and maximizing on-site percolation of stormwater and other surface runoff as part of the functional, recreational and educational elements of project site. As previously noted, the goal is to maximize to the full extent possible both volume-based BMPs (bioretention, infiltration features, pervious pavement, water harvesting, etc.) and flow-based BMPs (vegetated swales, storm water planters, rain gardens, etc.) to the exclusion, where possible, of sending water off site in the storm drainage system.

Green Roof and Cool Roof Concepts

The “active green roof” features noted earlier would help to reduce heat gain and improve energy efficiency within the buildings themselves. Green roofs and/or use of “cool roof” materials (e.g., lighter-colored, higher-albedo materials) can help to reduce solar reflectance, which would help to minimize the project’s contribution to the urban heat island effect.

Native and Low Water Landscaping

Incorporating water efficient, drought tolerant and native plants into the landscaping of the Nishi Gateway site will improve sustainability and reduce maintenance costs. A key factor will be developing a plant palette that is tailored to the specific region, include a variety of plant types and sizes, and includes vegetation that has interesting colors and contrasts. A landscaping plan will be developed in a later phase of this project (as part of the zoning and design guidelines package).

Wildlife Habitat Enhancements

As the open space and parks program is further refined, there is an opportunity to improve onsite wildlife habitat. This can be achieved by ensuring parks, greenways and creek areas include native plantings, plant species that support specific wildlife habitat, and limiting the use of irrigated lawn areas (except for active recreation uses). In addition, the project could provide specific habitat features, such as bee and bat boxes, nesting sites for barn owls, etc.

Non-Potable Irrigation System

An additional way to enhance the sustainability of the Nishi Gateway site is to irrigate landscaped areas with non-potable water through a separate “purple-pipe” system (which is a current City requirement). This can be achieved through a number of different options, such as dedicated on-site irrigation wells, treated effluent from the City and/or University’s wastewater treatment facility, reclaiming water onsite (greywater or blackwater), or harvested rainwater (for more information see the *Preliminary Site Water, Sewer and Drainage Infrastructure Concepts Technical Study* prepared by Cunningham Engineering **June 2015**)