

# WILSHIRE BLUE

A Plan for the Wilshire Center Business Improvement District



Tushar Dutta, Nina Lang, Alissa Praggastis, Megan Sieffert  
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## EXECUTIVE SUMMARY

On July 19, 2007, the Wilshire Center Business Improvement District's (BID) Board of Directors approved the Wilshire Center Cool District concept. Part of this plan was to improve the water infrastructure of the BID. The task of designing an innovative stormwater control and collection management system was taken up by the University of Southern California's School of Policy, Planning and Development where students in the Sustainability Studio designed a watershed plan that enhanced the urban experience of the BID while reducing the area's watershed footprint to zero.

A low park to resident ratio, minimal watershed management features, large flooding issues, and a diverse set of socioeconomic cultures characterize the Wilshire Center BID. These features drove the vision of this project:

"To provide a strong physical identity that will connect the diverse cultures of the Wilshire BID to each other as well as their natural environment."

This physical identity would extend from the creation of a unique water-feature in the area, a two-mile daylighted stream leading to a central commercial district. This water management feature would flow from the northeastern corner of the district to the southwestern corner and would connect

two bike paths one along Fourth Street and one along Seventh Street. The purpose in developing this stream would be to create a "blue" identity to complement the strong Koreatown culture of the area, the "blue" identity being based on the area's reduction of storm water impact. A daylighted storm drain would accomplish this reduction by directing storm water to vegetation that would filter storm water before it was returned to the ground water.

This report discusses recommendations for the Wilshire Blue Plan including the existing conditions that inspired this watershed management

strategy; the vision, mission, and goals of the plan; a detailed discussion of the plan; and the methods of implementing this plan. The developing team – Tushar Dutta, Nina Lang, Alissa Praggastis, and Megan Sieffert – offers this plan for sustainable urbanism to the Wilshire Center Cool District as a recommendation for the development of a watershed management plan.



## INTRODUCTION

Over the last century, the share of the population living in urban areas has increased dramatically. While 50 years ago, the United States urban share was 63%, today this percentage has grown to 82%. Urbanization, while having many societal and economic benefits, has impacted many of our country's most spectacular waterways. Municipalities have straightened, rerouted, and lined with concrete the streams in a watershed. Streamside habitat has been removed, covered over or degraded and replaced with impervious land surfaces such as rooftops, sidewalks, streets and parking lots.

Increasing the imperviousness of our land has modified the stormwater runoff patterns. Urbanized watersheds often have decreased infiltration and reduced runoff travel time; a problem that is becoming increasingly significant with regards to flood control and depletion of groundwater resources. Furthermore, runoff that flows across impervious surfaces accumulates and concentrates pollutants from these nonpoint sources and degrades the water quality downstream.

Stormwater runoff can be better managed through the strategies and principles of

low impact development (LID). LID is defined as an ecosystem-based approach to designing a built environment that remains a functioning part of an ecosystem rather than existing apart from it. LID strategies work to decentralize drainage by moving away from the conventional "end of pipe" structural methods and towards strategies implemented throughout the urban landscape.

LID's benefits, however, extend far past stormwater runoff environmental integrity. LID's emphasis on natural vegetation reduces stormwater management costs and benefits the community socially and economically. Improvements to street designs engender new connectivity between districts and vegetation improves existing public places. Furthermore, reconnecting with the natural landscape can improve the pedestrian and bicyclist experience; a vital part of any business district.



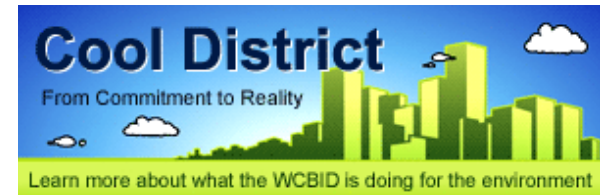
## PROJECT IMPETUS

The Wilshire Center Business Improvement District (BID) was created by the Los Angeles City County in 1995. The WCBID is a merchant based BID that is committed to improving the Wilshire Center socially, economically and environmentally. In 2007, the BID Board of Directors approved the first Cool District in the nation and has made a pledge to reduce the district's greenhouse gases (GHG) by 2% per year over the next 40 years. The Wilshire BID is considering making a similar commitment to improving stormwater runoff. While the BID's plans have addressed some of the short-term answers to stormwater management, the solutions are not extensive. The BID is now contemplating the additional designs that would reduce the watershed footprint to zero.

The USC Spring 2010 Sustainability Planning Studio has been designed around this need. The objective of the studio was to take the existing Wilshire BID cool district plans and further develop the stormwater runoff aspect of sustainability. The intent is to show that implementation of stormwater runoff best management practices (BMPs) will not only improve problems with water quality and flooding but also improve the urban aesthetics and make the Wilshire Center a more walkable, livable and pleasing urban atmosphere. Our goal with this plan is to restore the balance between natural and human systems and reconnect with the physical past. Overtime, urban areas have lost their

physical identity and have become spaces of flows rather than spaces of places. Similarly, as places have become more urbanized, they have increasingly lost their connection with the surrounding natural habitats.

This plan's vision for the future will require decades to come to fruition; however if businesses, citizens, nonprofits and agencies work together, the Wilshire Center can unite and give identity to the district by improving its urban watershed and strengthening its unique historical landmarks.



The following section will describe the guiding principles, mission and vision from which we used to develop our three goals for the area. We will then describe the geographical context and existing conditions of the area, design recommendations and strategies for implementation.



## GUIDING PRINCIPLES, VISION, AND MISSION

### GUIDING PRINCIPLES

#### **DEPENDENCE**

Environmental quality and economic vitality are mutually dependent

#### **UNDERSTANDING**

Community understanding of ecosystem functions promotes cooperation in implementing sustainable infrastructure

#### **PARTNERSHIPS**

Cross sector and interagency partnerships are necessary to achieve sustainability

#### **CAUSALITY**

All decisions directly affect the ecosystem and watershed

#### **IDENTITY**

The Wilshire BID lacks and needs a strong physical identity

### VISION

“Provide a strong physical identity that will connect the diverse cultures of the Wilshire BID to each other as well as their natural environment”

The idea behind the vision is that the BID does not have a strong, unifying, physical identity that complements Koreatown’s strong cultural identity. Korean businesses, office buildings, fast food shops and liquor stores. It is the team’s hope this project for the Wilshire BID will achieve a new “blue” identity through the creation of a unique, water-feature that sustainably restores the function of the watershed, unites the many cultures in the area and leads pedestrians to a central node of sustainability and economic activity.

### MISSION

“Restore the hydrologic function of the watershed through the implementation of LID and enhance the pedestrian and economic vitality by increasing the area’s legibility”

In order to improve the function and quality of the watershed, stormwater management and capture techniques will be implemented throughout the entire BID. Watershed improvements will not only help absorb and filter some of the stormwater runoff, but also enhance the pedestrian experience. In addition, the proposed daylighted storm drain leading to a central commercial node will provide a strong sense of direction and place and serve as a draw for the residents of the area, as well as visitors.

# EXISTING CONDITIONS

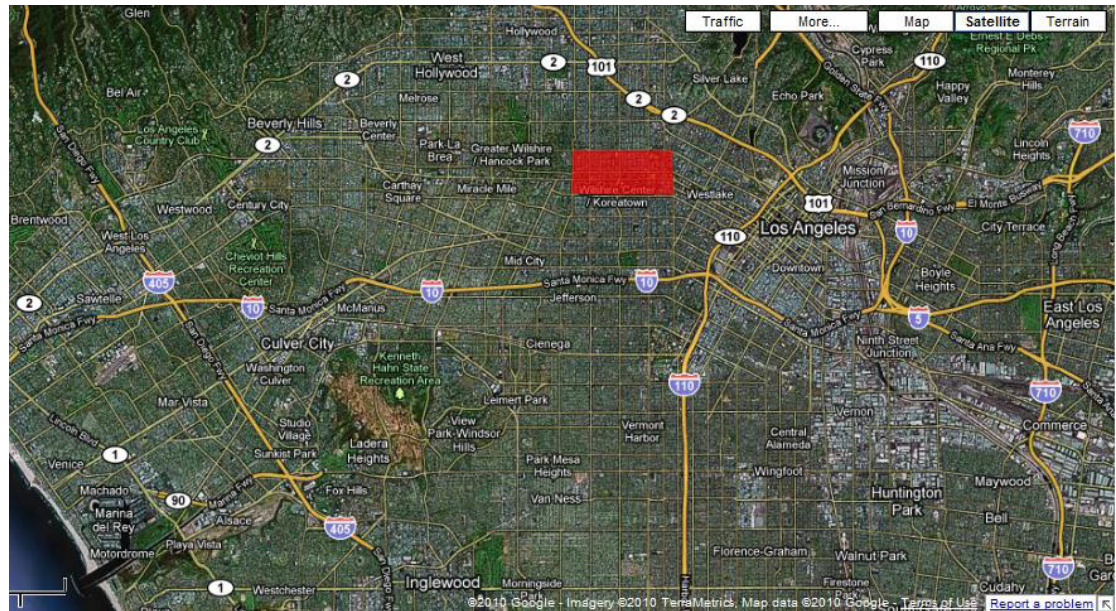


Figure 1: Wilshire Center in context of Los Angeles

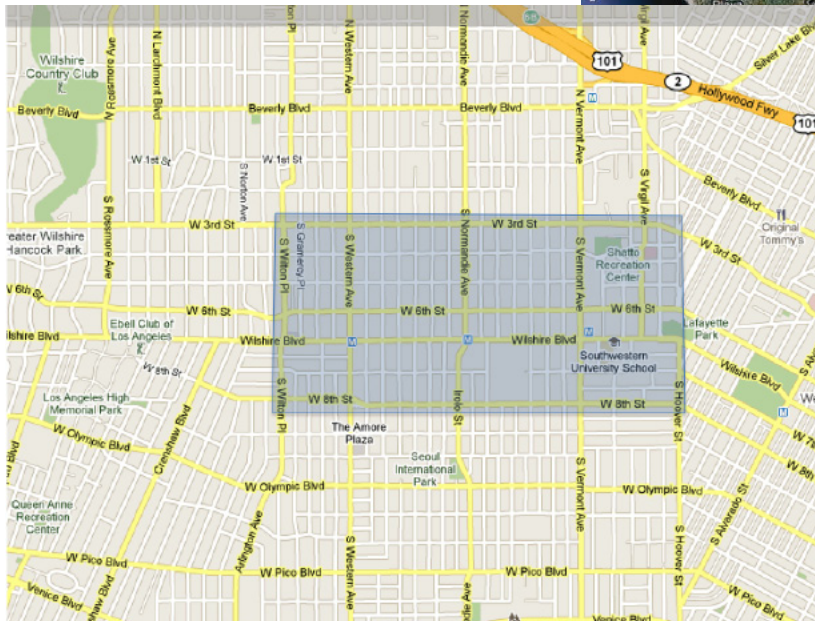


Figure 2: Wilshire Center boundaries

As part of the highest density district in Los Angeles, the Wilshire Center BID is characterized by a diverse urban population. This existing conditions analysis discusses the residential and business demographics of the Wilshire Center BID. This section will highlight the environmental and physical existing conditions. Due to the focus of the project, the social and business demographics that characterize the Wilshire BID will be briefly mentioned in the following section.

## EXISTING ENVIRONMENTAL CONDITIONS

The Ballona Creek Watershed is located in the northwestern portion of Los Angeles Basin (See Figure 3). The Watershed includes areas west of downtown LA, Beverly Hills, Culver City, West Hollywood and parts of Santa Monica and Inglewood. The Watershed has been urbanized by more than 1.6 million people, all of whom have contributed to the degradation of water quality, habitat and open space of Ballona Creek. This section will describe the existing physical and environmental conditions of the Wilshire Center region of Ballona Creek.

## WATER QUALITY AND DRAINAGE

As noted previously, water drains from the Wilshire BID into Ballona Creek located 2 miles to the southwest, which then discharges into the Santa Monica Bay (see Figure 3). Ballona Creek drains a 130 square mile area that is composed of 64% residential, 8% commercial, 4% industrial, and 17% open space land uses. Ballona Creek is listed on the LA Regional Water Quality Control Board's 303(d) list of impaired water bodies.



Figure 3: Location of Ballona Creek Watershed



## EXISTING ENVIRONMENTAL CONDITIONS

### TOPOGRAPHY

The most elevated part of the Wilshire Center BID is in the northeast with an elevation of 250 ft. Moving towards the southwest area of the BID, the topography drops to approximately 200 ft. Topography has implications for stormwater management, as areas found at lower elevations may be more prone to stormwater collection as water flows downhill (See Figure 4)

### STORM WATER DRAINAGE

The location of the stormdrains and inlets are shown in Figure 5. The stormdrains follow the topography of the area with the water flowing from the northeast to the southwest.

However, the storm drain systems have not been able to keep up with the increasing rate of impervious surfaces. As demonstrated by Figure 6, drainage in the area is poor and will need updating as the city continues to urbanize.

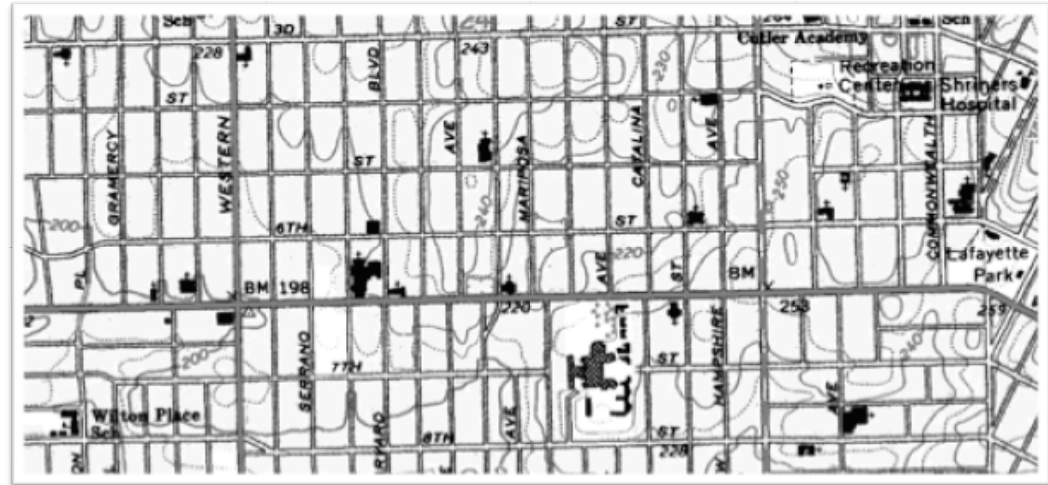


Figure 4: Topographic Map of Wilshire Center

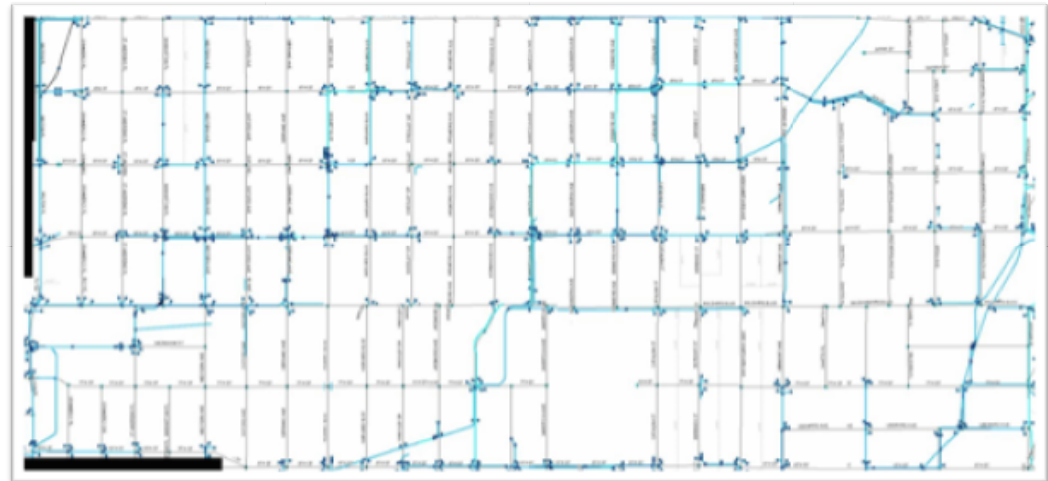


Figure 5: Storm Drain Map of Wilshire Center



Figure 6: Flooding along Western Avenue

## EXISTING ENVIRONMENTAL CONDITIONS

### TREE CANOPY

The Wilshire Center's tree canopy cover is very low. As shown in Los Angeles Tree Canopy Cover Map (Figure 7), the Wilshire Center BID (located in neighborhood district 55), has less than 10% canopy cover.

However, the tree canopy cover is not evenly distributed throughout the district. Much of that cover is located on the north-south streets while the east-west streets are very exposed.

Figure 8: Tree Canopy Map of Wilshire Center

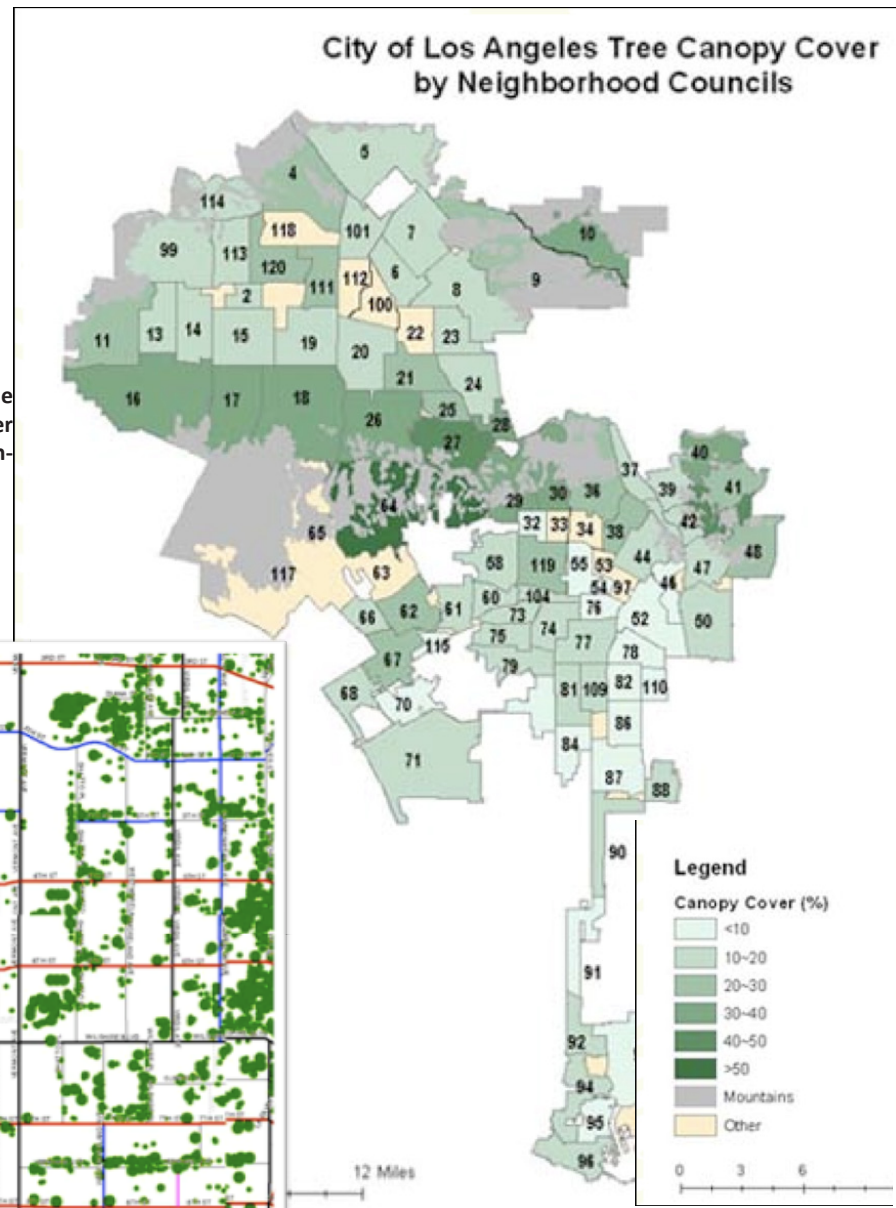
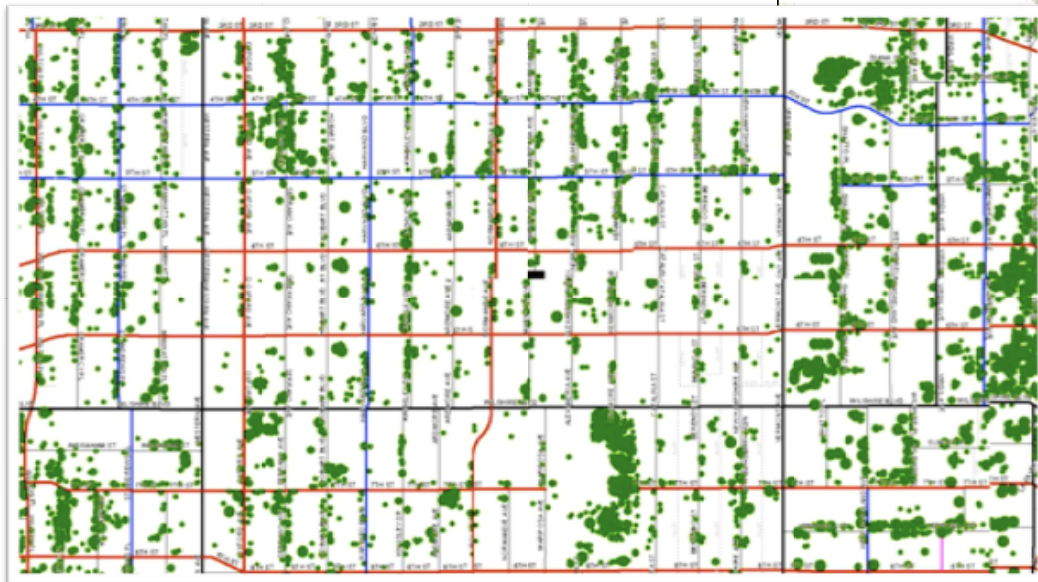


Figure 7: Tree Canopy Cover Map of Los Angeles

## EXISTING SOCIOECONOMIC CONDITIONS

### BUSINESS AND SOCIAL DEMOGRAPHICS

Since the Wilshire BID encompasses three zip codes, 90020, 90010 and 90005, social demographics will focus on the statistics of the Koreatown District, which encompasses the area between Beverly Boulevard on the North, West Olympic Boulevard on the South, Crenshaw Boulevard on the West and South Virgil Avenue on the east.

#### Overall Statistics

The total population of the area is 115,070. The median age is 20 with the highest percentage of residents between the ages of 19 and 34. The average income is \$34,634.

#### Ethnic Distribution

The area is called Koreatown because it holds the highest population of Korean-Asian in Los Angeles, however 53.5% of the residents are Latino.

#### Health Statistics

32.5% of adults that eat fast food at least once per week. 35.1% of adults are minimally active or inactive. 52% of all adults being overweight or obese, resulting in 9.5% of adults with diabetes, 24.8% of adults with hypertension, 26% with high cholesterol, and 190 deaths per 100,000 citizens from coronary heart disease or strokes.

#### Crime Statistics

The Metro Service Planning Area (SPA) is considered the second most unsafe SPA (only exceeded by the South SPA).

24.8% of adults believe their neighborhood is unsafe and only 20.5% percent of parents report that there are safe places to be physically active in their neighborhood.

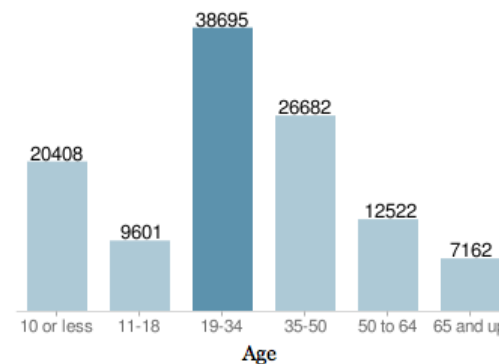


Figure 9: Age Distribution in Koreatown

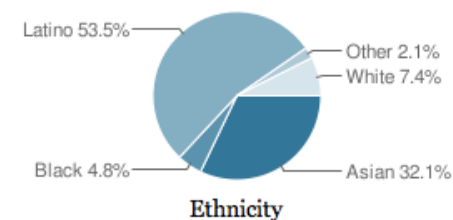


Figure 10: Ethnic Distribution in Koreatown

## EXISTING SOCIOECONOMIC CONDITIONS

### *Commuter Statistics*

To accommodate the high-density area, 43.15% of citizens have only one vehicle available, and 31.13% of residents have no vehicles available. The average travel time to work of 33 minutes and 53% of employed citizens drive to work alone 22.48% take public transportation to work.

### *Public Transportation Access*

Forbes ranked the area as America's 8th most fuel efficient neighborhoods in 2008. Public transportation includes the Purple and Red metro lines and the following bus lines: 710, 720, 728, 754, 757, 920, 207, 20, 204, 206, 534, 481, three DASH routes, and Cityride (a door to door dial-a-ride service for the elderly and disabled).

### *Business Statistics*

The businesses in the area break down as following:

- Retail establishments (12.9%)
- Professional, scientific and technical services (12.83%)
- Health care and social assistance (10.82%)
- Construction (8.86%)
- Food and accommodation services (8.3%)
- Arts, entertainment and recreation establishments (2.21%)

The Koreatown Area has 1,100 nighttime establishments including clubs, restaurants, theatres, coffeehouses, parlors, clubs, spas, karaoke studios, dancehalls and pool halls.

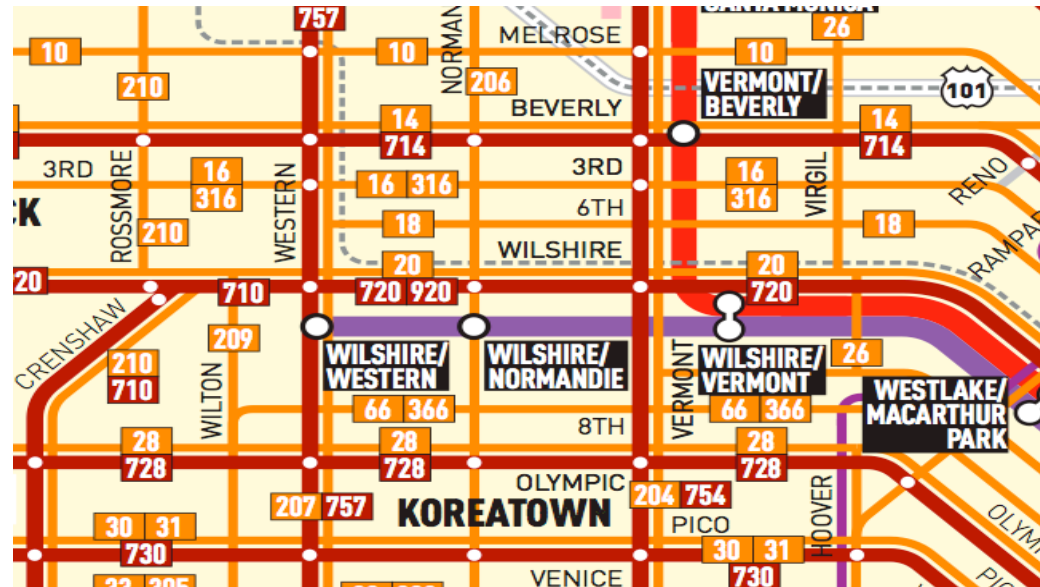


Figure 11: Map of Metro bus and rail stops in Wilshire Center



Figure 12: Fast Food Abundance



Figure 13: Liquor Store Abundance

## ANALYSIS

When analyzing the entire Wilshire Center BID area, it is evident that it currently stands as a dense, busy district of Los Angeles with its mixture of cultural destinations, commercial businesses, and unique residential neighborhoods. However, analysis of the area also reveals physical and psychological impediments that prevent Wilshire Center from truly reaching its highest potential as a vibrant, regional destination. This section will describe the process of analysis that was undertaken in order to develop design recommendations for Wilshire Center by articulating the following characteristics of the area: strengths, weaknesses, projections, opportunities, alternatives, and threats.

<p><b>Strengths</b></p> <ul style="list-style-type: none"> <li>• Central Location in Los Angeles</li> <li>• Existing Commercial Corridors/Centers, Institutions, and Cultural Landmarks</li> <li>• Strong Cultural Identity</li> <li>• Public Transit Richness</li> </ul>	<p><b>Weaknesses</b></p> <ul style="list-style-type: none"> <li>• No Physical Identity</li> <li>• Poor Storm Water Drainage and Management Practices</li> <li>• Poorly Articulated Pathways and Destinations</li> <li>• Overabundance of Parking Lots and Underutilized Parcels</li> </ul>
<p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>• Creation of a Stronger Central Node</li> <li>• Integration of Storm Water Management Techniques</li> <li>• Utilization of Parking Lots and Vacant Parcels for Development</li> </ul>	<p><b>Threats</b></p> <ul style="list-style-type: none"> <li>• Potential Koreatown Backlash</li> <li>• Political and Agency Intersections</li> <li>• Funding Issues</li> <li>• Permits for Reconstruction</li> <li>• Construction Impacts</li> </ul>

## STRENGTHS

### *Central Location*

Wilshire Center is located roughly equidistant to Downtown Los Angeles and Westside Los Angeles, making it regionally accessible. Wilshire Blvd is one of the city's major thoroughfares and is the backbone of Wilshire Center's commercial districts. The district's central location furthers its potential to become a regional destination for a diverse population.

### *Existing Commercial Corridors/Centers, Institutions, and Cultural Landmarks*

Wilshire Center boasts a plethora of regional destinations and landmarks such as the Wiltern Theater, Southwestern University, and high-rise office buildings along Wilshire Blvd. These destinations contribute greatly to the economic and cultural vitality of the area and presents opportunities for complementary development. Some buildings, such as Southwestern University (former Bullocks

department store), the former Ambassador Hotel site, and the Wiltern theater were constructed with unique architectural styles that are symbolic of the early Twentieth Century, such as Art Deco (see Figure 14). Many of the historical buildings of the past have been adapted into newer uses, particularly into businesses that cater to the Korean-American population residing throughout the region.

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### *Diverse Populations*

As described previously, Wilshire Center's residential population is quite diverse in regards to race, with a mix of Anglo, Asian, and Latino residents. This diversity has helped to mold the area as a heterogeneous mix of restaurants, retail stores, and overall culture. Additionally, Wilshire Center is a diverse place in regards to age. The largest age cohort present amongst residents is 19-34 year olds. This population is important since it represents the age group that will be most likely to seek nighttime activities outside the home.



**Figure 15- Transit-oriented development above Wilshire/Vermont Metro Station**

### *Public Transit Richness*

Wilshire Center is an extremely well-connected district of Los Angeles. Wilshire Center boasts three rail transit stops along the Metro Purple Line, many bus transit lines, and major thoroughfares such as Wilshire Blvd and 6th Street. The area's transit-friendliness has served as a catalyst for development. Large transit-oriented development projects at the Wilshire/Western and Wilshire/Vermont Purple Line stations have integrated dense, mixed-use development into the area (see Figure 15).



**Figure 14 - Historic photo of Wilshire Bullocks building, now housed by Southwestern University Law School**

## ANALYSIS

### WEAKNESSES

#### *No Unifying Element*

Santa Monica and Pasadena are characterized as unique geographic areas that have used both public and private resources to create vibrant districts that connect to communities around them and create public spaces where all residents and visitors can shop, eat, relax, or enjoy open space and recreational activities. While Wilshire Center/Koreatown offers residents and outsiders specific, individualized destinations, these destinations prompt patrons and visitors to drive specifically to them and park their cars in non-centralized parking areas. Aside from businesses found in strip mall developments, major destinations are rarely grouped with one another – a visitor is unlikely to stop at several destinations when making a trip to Wilshire Center. As a result, businesses do not function cohesively.

Additionally, a large proportion of businesses in Wilshire Center cater to a Korean population while the residential population reveals a much more diverse population. The homogeneity of the businesses in the area has the ability to alienate key demographic groups that could benefit from increased commercial activity.

The lack of a unifying commercial center in Koreatown is exacerbated by the fact

that Wilshire Center is also an extremely park poor location of Los Angeles. There are few public, outdoor spaces that can be shared by all members of the community. Open spaces provide opportunities to effectively tie together residential and commercial areas since they are accessible to all demographic groups – at the moment, Wilshire Center lacks this unifying element.

#### *Poor Storm Water Management Practices*

Wilshire Center was largely developed without storm water management practices in mind (see Figure 16). Existing exposed concrete surfaces found on streets, sidewalks, and parking lots were not built with storm water permeability in mind. Similarly, vegetation in the area (trees, medians, and sidewalk plants) was not planted with storm water infiltration in mind. As is experienced throughout Los Angeles, storm water flows directly into storm drains rather than back into the ground. Storm water also tends to collect at intersections where most storm drains are located, especially when debris prevents water from flowing through as quickly as possible – as a result, the area floods quite easily.

The presence of underground storm drains in the area is indicative of the fact that original streams in the area were channelized with concrete (as were most of the natural



**Figure 16 - Stormwater runoff from commercial properties on Western Avenue flowing directly onto the pedestrian pathway**

waterways in Los Angeles). Channelized storm drains not only add to the impermeable surfaces found in the area, but they also help divert storm water quickly through to the ocean rather than allowing for infiltration.

#### *Poorly Articulated Pathways and Destinations*

The district's central location also causes circulation to filter in and immediately out of the district, causing it to be more of a corridor area rather than a regional destination. There is little directional signage to direct motorists or transit riders to the destinations found in

## ANALYSIS

the area. There is also a lack of bicycle facilities such as lanes or paths to safely accommodate and encourage bicycle ridership in the area. Similarly, sidewalks in the area are often too narrow or in disrepair, particularly along major corridor such as 8th Street, Wilshire Blvd., 6th Street, and 3rd Street (see Figure 17).

### *Overabundance of Parking Lots and Underutilized Parcels*

Unlike districts such as Santa Monica and Old Town Pasadena whose businesses utilize shared parking structures, Wilshire Center's businesses individually handle their own parking situations.



Figure 17 - Cracked sidewalks along 8th Street



Figure 18 - Vacant lot along 7th Street

## OPPORTUNITIES

### *Use of Architectural and Historical Strengths to Create Destinations*

The unique style and history of Wilshire Center provides opportunities to reconnect



Figure 19 - Unique Art Deco architecture of Wiltern Theater on Wilshire Blvd.



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the area's younger residents to elements of the past (see Figure 19). By playing upon the strengths of the area's architecture and historical buildings, Wilshire Center can look to regain some of the glory that characterized the area in the early Twentieth Century.

### *Integration of Storm Water Management Techniques*

In surveying Wilshire Center, it is evident that both the strengths and weaknesses provide opportunities for improvements in storm water management techniques. While most of the streams that historically ran through the area were eventually channelized for flood control and development purposes, there are opportunities to resurface some of the storm drains to bring a more natural element to the district (known as daylighting). Daylighted streams offer a prime location for storm water infiltration into the groundwater supply. Similarly, while abundant surface parking lots have been noted as a weakness for the area, they offer opportunities for increasing the total pervious surface count in the area. Similarly, sparse vegetation existing along sidewalk medians can be swapped out with new vegetation that effectively absorbs storm water and infiltrate into the ground.

### *Utilization of Surface Parking Lots/Structures and Vacant Lots for Development*

In addition to providing locations for pervious pavement implementation, surface parking lots and structures provide opportunities for new development that can help create new destinations (particularly through assembling lots currently used inefficiently for parking and building new, centralized parking structures large enough to accommodate parking needs for multiple locations).

## THREATS

**There are several constraints, or threats, that may stand in the way of potential development opportunities at the Wilshire/Serrano Opportunity Site. Specifically, these threats include the following:**

### *Potential Koreatown Backlash*

Koreatown's leaders have been known to oppose developments or political decisions that aim to neutralize the Korean identity of the district. Clearly, the creation of a district that unifies the diverse populations found in Wilshire Center will not have a unique Korean characterization, which may upset these same community leaders who are hoping to preserve the district's primarily Korean theme.

### *Political and Agency Intersections*

Gathering support for a development project by a single councilman is difficult enough. Because Wilshire Center includes three Los Angeles Council Districts, garnering political support for any development may potentially prove to be even more challenging. Similarly, for any project to come to fruition, it must garner support and cooperation from a variety of departments within the community and city (i.e. Planning, Engineering, Water and Power).

### *Funding Issues*

In such fragile economic times, garnering support for a development project may not be enough to see it through to fruition. Any project that is undertaken in Wilshire Center would need to be crafted with a funding scheme that draws from several sources and offers a promising return on investment.

### *Permits for Reconstruction*

Similar to the political and agency intersections necessary to make any large scale development happen, permits must be obtained from several different sources.

## ANALYSIS

### *Time Constraints*

The long process of implementing any design recommendations may hinder developers from engaging in complex developments. Time constraints are often dependent on the permitting and licensing processes of various departments of the City of Los Angeles.

### *Construction Impacts*

Wilshire Center is already a congested area in regards to automobile traffic. Any potential development may increase this congestion, particularly with the addition of construction trucks. Because the Wilshire/Serrano site is located near residential areas, neighboring residents may oppose the project due to the potential negative impacts of construction.

## PROJECTIONS

**Based on our analysis of Wilshire Center, we established projections of what may occur in the future if current development practices and storm water management practices are not addressed through interventions.**

### *Further Demographic Disunity*

Many of the commercial developments in Wilshire Center that have helped to create

its place as a regional destination cater to Korean-Americans even though the residential population in the area is quite ethnically diverse. Since Koreatown is a regional destination for members of the Korean-American community, South Korea-based businesses have large interests in the area (particularly since South Korea lifted its ban on foreign investment in 2006). While South Korean business involvement is vital to Wilshire Center's economic vitality, the area still lacks a true unifying location or element that successfully caters to the more diverse residential and business population. Further development geared simply towards the Korean population may not inadvertently add to the area's demographic disunity.

### *More Auto-Oriented Development*

Parking requirements are assessed on a project by project basis. As a result, piecemeal development results in individualized parking assessment rather than an area-wide analysis. Without creating area-wide parking solutions, businesses will be forced to adhere to parking regulations by providing parking on a property by property basis (leaving parking lots or structures to remain vacant during the day or night, particularly for developments that cater to a daytime business population). Piecemeal parking assessment results in an abundance of parking, especially since parking interests

between multiple property owners can be easily combined through cooperative efforts.

### *More Disjointed Development*

Current development in the area is happening in a piecemeal fashion, not necessarily taking into account the disjointed nature of Wilshire Center's residential and business communities. While the development of the Los Angeles Unified School District's Central Learning Center on the Ambassador Hotel site will bring a much needed high school to the area, its development alone cannot fulfill the role of uniting various communities in the area (particularly since schools are largely utilized only on weekdays). While the transit-rich nature of Wilshire Center presents opportunities for transit-oriented development, piecemeal development fails to analyze development on a district-wide level (which is necessary in order to implement interventions that truly look to increase transit ridership).

### *Further Flooding Issues and Storm Water Runoff*

Without interventions that work to capture storm water effectively, existing impervious surfaces will cause storm water to collect on streets and flow directly into storm drains without possibilities for groundwater infiltration. In particular, areas with lower

## ANALYSIS

topography have the most problems with water easily collecting at intersections where drainage and storm drain presence is inadequate. Without interventions that address storm water management, flooding during rainy seasons is easily likely to continue (especially if additional developments add to the total amount of impervious surfaces in the area). Without increasing the presence of pervious surfaces in Wilshire Center, the groundwater table is likely to continue to diminish (which will prove to be a major issue for water availability in Los Angeles).

## ALTERNATIVES

Three alternative sites were chosen based on the following criteria: availability of large, surface parking lots or underutilized parking structures, vacant lots, and proximity to Wilshire Blvd and public transit (rail and bus). The three sites are shown in Figure 20.

### HOOVER OPPORTUNITY SITE

### VIRGIL OPPORTUNITY SITE

### SERRANO OPPORTUNITY SITE

Of the three sites, the Wilshire/Serrano Opportunity Site proved to have the most options for new real estate development that utilizes storm water management remediation and creates connections within the community.



Figure 20: Opportunity Sites

Specifically, the site offers the following features:

*Existing commercial corridor (both along Wilshire Blvd and 6th Street) and ability to integrate residential areas to the north and south*

*Central location between residential and commercial areas*

*Adjacency to ample public transit hubs (both rail and bus transit)*

*Proliferation of inefficient parking structures and vacant lots*

*Vacant lots at 7th/Hobart that are adjacent to a dense commercial district and have been earmarked as potential hotel and park sites*

*Low topography relative to entire BID (more storm water collection)*

*Lower tree canopy and overall green space relative to entire BID*

*Adjacency to Wiltern Theater and historic places of worship along Wilshire Blvd that contribute to the unique Art Deco architectural style reminiscent of the area in the early Twentieth Century*

## DESIGN RECOMMENDATIONS

Subsequent to the existing conditions and analysis done on the Wilshire Center BID site, the team came up with a set of design recommendations based on the guiding principles that shaped the overall mission, vision and goals of the project stipulated earlier.

### GOALS

The design recommendations put forth in this project all center around four main goals:

**GOAL 1: To reduce stormwater runoff**

**GOAL 2: To increase economic vitality**

**GOAL 3: Create a strong physical identity**

**GOAL 4: Increase social and physical connections**

These four goals then have multiple strategies to achieve them and quantifiable objectives in order to evaluate their success.

### MASTER STRATEGY

As stated previously in this report, the mission of this project is to “Restore the hydrologic function of the watershed while enhancing the pedestrian and economic vitality of the area.” In order to restore hydrologic function to the watershed, the total impervious surface are must be reduced. The Wilshire Blue Plan proposes to “daylight” approximately 2 miles of presently covered storm drains along a pathway to a central commercial district. This would improve the district’s legibility and physical identity by providing a unique amenity

that breaks up the monotony of the area’s grid pattern. Daylighted storm drains allow for infiltration which slows down the rate of runoff while also cleansing the water of pollutants. It would also provide residents and visitors with a natural and attractive trail to follow through the area towards a destination at the center. While some portions of the trail go through residential areas, generally the trail will take people through commercial areas where they can window shop or stop and purchase something. This would improve the economic vitality of the BID and provide the area with additional tax revenue, as much of this patronage may not otherwise occur if people don’t get out of their cars and wander through the area.

The daylighted storm drain will culminate in a settling pond in a centrally located park and commercial district. The creation of this central commercial district and park will improve the economic vitality of the area and transform the Wilshire corridor into a destination. A great street is not only a thoroughfare, but a series of places where people can stop, relax and interact. While Wilshire has many individual attractions, it lacks a strong center, indicating an opportunity for the creation of a destination within the BID. This destination would be in the form of a central node of commercial activity directly adjacent to Wilshire Blvd where a plaza and park surrounded by retail establishments would provide visitors and residents a gathering place. Here, they can slow down, enjoy being outside and go shopping or grab something to eat. The commercial district would capitalize

on the existing historical landmarks located on Wilshire Blvd. The proposed plaza is located near the Wiltern Theater and the Wilshire Temple, two prominent examples of the 1920’s Art-Deco Architecture and culture. This theme would be carried into the design of the buildings in the plaza in order to reconnect with our past and accentuate the sense of place.

When coming up with this concept, elements of the “Wizard of Oz” seemed analogous to the ideals and lifestyle we are trying to promote through our designs. The Yellow Brick Road leading to the Emerald City, a green, optimistic, and relaxed place, brought into focus what we are trying to accomplish. The daylighted stream will provide a sustainable pathway towards a vibrant commercial center where people can congregate and reconnect with their natural surroundings. Outdoor dining would be a far more enjoyable experience when it is adjacent to a park in a protected plaza, rather than along the bustling Wilshire Blvd. Therefore, while some pedestrian traffic may be redirected away from Wilshire Blvd. and into the center of the block, the park/plaza would still improve economic vitality as it would increase foot traffic to the area as a whole.

Since this plaza will be located in an area full of parking lots and a vacant lot, concerns over the existing parking deficit may be raised. To address this concern, the team proposes the creation of a “parking district” which will strategically place a total of 4 parking structures adjacent to Wilshire Blvd.

## DESIGN RECOMMENDATIONS

Figure 21: Map of Master Strategy Design



## DESIGN RECOMMENDATIONS

and the proposed park plaza. This will not only replace the current level of parking with additional spaces, but it will also use the space more efficiently, allowing for the utilization of a greater portion of the land for the plaza. The next section will further explore the details of our recommendations that address the four goals previously established.

### **GOAL 1: Reduce stormwater runoff**

#### STRATEGIES:

#### **Daylight two contiguous miles of storm drains that flow through a central plaza and culminates in a settlement pond and park**

*Objective: Restore concrete channel to a more natural state*

A daylighted storm drain would allow runoff to flow into an earthen, vegetated riverbed rather than a cement storm drain. This would slow down the flow of the runoff and allow water to infiltrate back into groundwater table (see Figures 22-24).

*Objective: Improve water quality through exposure to sunlight, air, and soil.*

During infiltration, the water is cleansed of sediments and certain toxins, thereby reducing

the risk of contamination to the groundwater.

#### **Implement permeable pavement**

*Objective: Implement permeable pavement throughout the district using street parking lanes, parking lots and bike lanes.*

Widespread use of permeable pavement will improve the water quality of runoff as it allows water to infiltrate into the ground.

Replacing standard asphalt and concrete with permeable pavement would reduce the total area of imperviousness that contributes to runoff (see Figures 25 and 27).



Daylighting in Freiburg, Germany (Left - Figure 22), Kalamazoo, Michigan (Top Right - Figure 23), and Zurich, Switzerland (Bottom Right - Figure 24)

## DESIGN RECOMMENDATIONS

This strategy will also decrease standing water in parking lots and intersections

### Implement bioswales and vegetative strips

*Objective: Implement bioswales and vegetative strips along roadways and throughout parking lots.*

These features would serve to capture any of the runoff that does not infiltrate into pervious pavement. They would also help to cleanse water of sediments and certain toxins (see Figures 26 and 27).

### Increase tree canopy using native species

*Objective: Double the Wilshire BID's tree canopy cover using native species.*

Using native trees and plants that are adapted to drought-like conditions and seasonal rainfall will help reduce runoff as the trees themselves will absorb some of the precipitation.

Using native species will also negate the need to irrigate the vegetation.

Increased tree canopy coverage also improves the experience for the pedestrian as it breaks up the "heat island effect", shades the sidewalk and improves the aesthetics of the area.

### Provide stormwater education along trail and at the park

*Objective: create signage along pathways to reinforce and create awareness of the goals of the watershed management plan*

Explaining the improvements that have been made and how they work in terms of stormwater management, allows for a deeper understanding of their importance.



Bioswales and Vegetation (Left - Figure 25), Permeable Pavement in Parking Lane (Top - Figure 26), and Permeable Pavement and Bioswales in Surface Parking Lot (Bottom Right - Figure 27)

## DESIGN RECOMMENDATIONS

Seeing the improvements for more than their aesthetic value may lead residents and visitors to support this movement more strongly.

### GOAL 2: Increase Economic Vitality of the B.I.D.

#### STRATEGIES:

##### Create New Vibrant Commercial Center

*Objective: Create a new commercial plaza and park located at the center of the district and the end of the river/bike trails which would serve as a draw to the area for visitors as well as residents (see Figure 28). Restaurants in the plaza would provide outdoor dining, allowing the pedestrian to experience a connection to nature, history, and the watershed while enjoying a leisurely meal.*

A central plaza and commercial district with a unique water feature would serve as a draw to the area rather than travelling through it.

##### Redevelop and Reconfigure Parking Lots

*Objective: Consolidate and convert surface parking lots into attractive parking structures*

In order to reduce impervious area, while still providing adequate parking for office and commercial uses, parking should be consolidated into central locations and structures.



Figure 28: Master Design of New Commercial Center





## DESIGN RECOMMENDATIONS

These parking structures should be designed in artistic and innovative ways, using the ground floor for retail and the roof for gardens or other environmental uses (see Figure 29).

*Objective: Create a Parking District around the proposed Plaza*

Four sites surrounding the plaza have been suggested as possible locations for parking structures. (See Figure 28) These locations were strategically chosen due to proximity to the plaza and Wilshire Blvd. and because they already exist as surface parking lots.

### **GOAL 3: Create a strong physical identity for the area**

#### **STRATEGIES:**

##### **Provide the district with a center**

*Objective: Create a plaza and park at the center of the district*

The plaza/park would help give physical meaning to the unique qualities that have been overlooked in the current undifferentiated urban fabric of Los Angeles.

##### **Create a unique physical feature to improve legibility**

*Objective: Create a path along the daylighted stream that leads to the proposed central plaza and park.*

The daylighted stream will provide a helpful “wayfinder” for the bikers and pedestrians.

##### **Strengthen the historical landmarks to create a stronger identity for the area.**

*Objective: Call out Art Deco Architecture as a historical and unifying identity (see Figure 30).* The Wilshire BID has a number of buildings that have an Art Deco theme from the 1920’s. Over time, the prevalence of this architecture has been lost as parcels were redeveloped, diminishing the historical culture established previously.

The Wiltern Theatre and Wilshire Temple are both examples of Art Deco. Both of these sites are adjacent to the proposed plaza and park, which would complement the Art Deco District the team proposes in the park/plaza.

According to Kevin Lynch, sentimentality is very strong for historic elements in Los Angeles. Calling out the history that is already in place and adding to it through the construction of new Art Deco buildings will encourage a greater sense of place and a deeper connection with the area.



Figure 29: Artistic parking structure in Santa Monica

Figure 30: Langham Apartment Building in Wilshire Center



## DESIGN RECOMMENDATIONS

### **GOAL 4: Increase physical connections throughout the area**

#### STRATEGIES:

#### **Enhance connections with improved pedestrian and bike paths**

*Objective: Construct protected and separate bike paths along 4th street, the daylighted storm drain trail and along 7th street.*

The Wilshire BID is currently a large, auto-oriented site. Improving the bike and pedestrian trails would better connect the people living in the area to the rest of the site, while reducing the dependence on the automobile (see Figure 31 and 32).

*Objective: Enhance preexisting pedestrian walkways.*

Sidewalks will be expanded in some areas and repaved in others to promote and provide a more pleasant pedestrian experience.

In some cases, streets will need to be reconfigured to accommodate the new pedestrian/bike features, such as on 7th street and 4th street.

*Objective: Create signage every block indicating the course of the new pedestrian and bike pathways.*

Directing people along the most pedestrian/bike oriented routes will facilitate more walking and biking throughout the area.

It also delineates a clear path towards the central commercial plaza, an area where pedestrian activity should be directed.



**Figure31: Bike Path along a Waterway**

**Figure32: Protected Bike Path along roadway**



## IMPLEMENTATION

### PHASING

In order for construction impact to be minimized, the proposed project should be implemented in a number of phases, each of which should be a five year period. This section will explain what should happen in each phase:

#### Phase 1 (See Figure 33)

(First Phase improvements seen in pink, light blue and green)

As this is the first phase, most of the focus will be on obtaining development rights for the buildings in pink. In order to create the plaza, daylighted storm drain, and parking structures, the highlighted buildings (most of which are parking lots) will have to be obtained and

demolished. In addition, this phase will see the creation of the park and settling pond on the empty lot on Hobart. Across 7th street in the residential section, the pink shading represents the first phase of conversion to ground-floor retail, with residential units remaining above. At the Northern end of the BID, the street configuration of 4th street will be reorganized to include the bike boulevard, wider sidewalks and vegetation. Auto-traffic will be for local access only during the course of construction and be converted to one-way going East upon its completion. Similarly, the construction of certain sections of the daylighted storm drain will begin, and the street configuration reorganized to accommodate the streambed, wider sidewalks, vegetation and bike paths.

Concurrently, the repaving of parking lots and parking lanes with pervious pavement will begin where feasible and in areas that will not add to the cumulative construction impact.

#### Phase 2 (See Figure 34)

(Second Phase improvements seen in purple and dark blue)

The second phase will see the completion of the daylighted stream, both along its path and where it runs through the plaza. Construction along the path will be done keeping traffic impacts from the construction in mind. On the commercial streets, construction will be done during off-peak hours so as to reduce the impact on rush-hour traffic. On busier

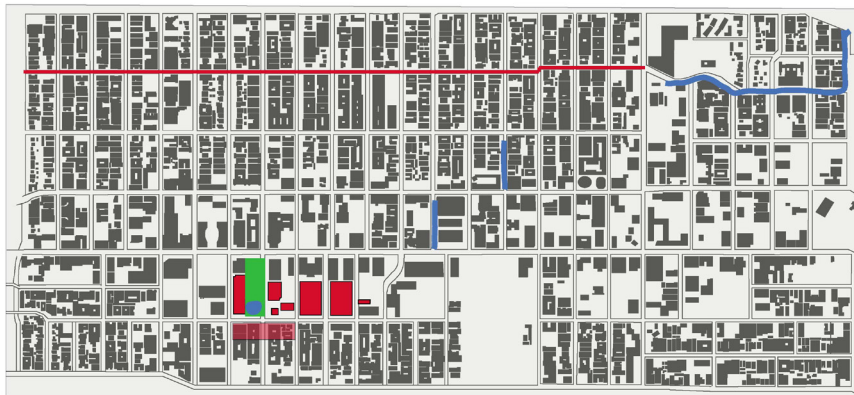


Figure 33: Phase 1



Figure 34: Phase 2

## IMPLEMENTATION

streets, traffic will be allowed to pass in both directions, perhaps allowing one lane in each direction for the duration of the construction. This also applies to the reconfiguration of 7th street, to include much wider sidewalks, vegetation and bike lanes. For the duration of this construction, traffic will be allowed going one direction towards the school, so that people may drive into the area without added difficulty. In addition, this phase will see the construction of the first of two parking structures, both of which will be adjacent to the plaza and park. Lastly, the second phase of ground-floor conversion of residential units to retail will take place in the purple shaded area.

Phase 3 (see Figure 35)  
(Third Phase improvements seen in Orange)

The third phase will see the construction of four buildings with ground floor retail surrounding the plaza. The fifth building, on the other side of the park, will be a hotel with ground-floor retail.

Phase 4 (see Figure 36)  
(Fourth Phase Improvements seen in Red)

The fourth and final phase will see the construction of the two final parking lots across Wilshire. Due to the fact that one of the parking lots will be placed where a small restaurant surrounded by a large surface

lot currently exists. To obtain development rights to this lot, the current lot owner will either be compensated with fair market value or given incentives to be one of the first restaurants to colonize the retail around the plaza. In addition, the concurrent repaving of parking lots, and parking lanes and the overall increase in vegetative strips and tree cover should be completed by the end of this phase.



Figure 35: Phase 3

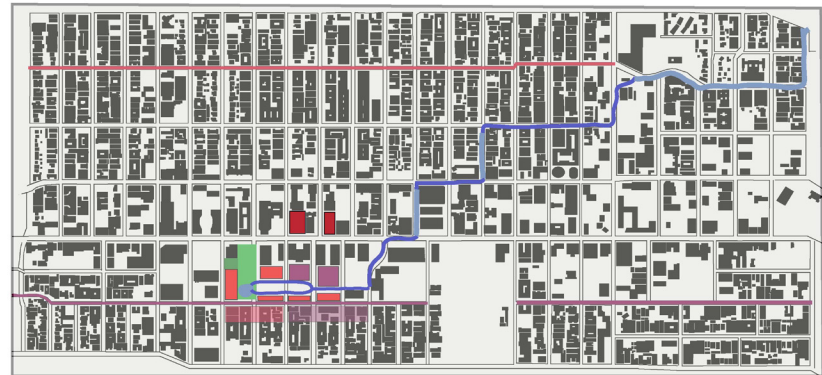


Figure 36: Phase 4

## IMPLEMENTATION

### PLAYERS

All major development decisions made by either private individuals/organizations as well as public agencies (i.e. Public Works, Community Redevelopment Agency) must first gain City Council support. Wilshire Center is situated amongst three different council districts (District 4 – Tom LaBonge, District 10 – Herb J. Wesson, Jr., and District 13 – Eric Garcetti). Design recommendations of the Wilshire Blue Plan will run across these district boundaries and directly affect constituents of all three districts. Because each district and councilman may differ in regards to political values and socioeconomic status, each district and councilman must be lobbied separately. We recommend the formation of a Wilshire Blue Task Force to serve as the governing body for decisions that are made regarding the implementation of the aforementioned design recommendations. The Task Force would include the following players: the field deputies from Council Districts 4, 10, and 13; project managers and planners from the CRA/LA; representatives from the Wilshire Center BID; an engineer from the Los Angeles Department of Public Works; representatives from private real estate owners and developers with real estate interests in the area; a planner from Metro; and representatives of the neighborhood council and other local/cultural groups.

Implementation of the various phases that will go into formally designing and implementing

all design recommendations will require cooperation amongst many players in the public, private, and non-profit sectors. The chart below illustrates the individuals or organizations that

will be instrumental in creating Wilshire Blue; the chart also shows the relationships between the players involved in the same intervention.

INTERVENTION	BUSINESS/ ORGANIZATION	TASK
Daylighting of Stream	LADPW* – Bureau of Engineering	Design of stream path; Construction of daylighted stream
	CRA/LA*	Funding of daylighting with tax-increment financing or other sources
Permeable Pavement	LADPW– Bureau of Engineering	Design and construction of permeable surfaces on parking lanes and bicycle facilities
	Existing Property Owners (Surface Parking Lots)	Funding and implementation of permeable pavement
	CRA/LA	Funding of permeable pavement on public property with tax-increment financing or other sources; Providing incentives to private property owners to implement permeable pavement on parking lots
Vegetation	LADPW – Bureau of Engineering	Design and implementation of vegetative strips and bioswales
	LADPW– Bureau of Street Services	Planting trees on major streets; Clean-up and trimming of street trees on a regular basis
	Wilshire Center BID	General maintenance of street trees and vegetation on sidewalks and medians
	Environmental Non-Profits	Planting and maintenance of street trees in residential areas
	CRA/LA	Funding of vegetation improvements with tax-increment financing or other sources
* LADWP – Los Angeles Department of Water and Power, LADPW – Los Angeles Department of Public Works, CRA/LA - Community Redevelopment Agency of the City of Los Angeles		

IMPLEMENTATION

PLAYERS (cont.)

INTERVENTION	BUSINESS/ ORGANIZATION	TASK
<b>Commercial Center/Mixed-Use District and Park</b>	CRA/LA	Utilize tax-increment funding or other sources in order to develop park and holding pond; Negotiate with private property owners and developers in order to redevelop parking structures and create a shared-parking district; Seek developers interested in creating the mixed-use buildings
	Wilshire Center BID	General maintenance (trash pick-up, cleaning), security, marketing; Work with CRA/LA when negotiating with private developers to strengthen BID influence
	LA DWP*	Controls the supply of electricity and water within the City of Los Angeles – would need to be involved with providing services to new area
	Private Developers	Develop new park, retail buildings, and common areas
	Existing Property Owners	Reconfigure properties to allow for new retail/commercial uses; Work with CRA/LA to revamp parking into common parking structures
<b>Land/Property Acquisition and Development</b>	CRA/LA	<b>Negotiation with existing property owners for acquisition/relocation purposes; Use power of eminent domain when necessary to redevelop properties</b>
<b>Street/Sidewalk Redesign</b>	LADPW – Bureau of Engineering	Engineer actual physical design and schedule of street improvements and implementation of bicycle facilities
	LADPW– Bureau of Street Services	Clean-up and trimming of street trees on a regular basis
	LA Department of City Planning	Implementation of street changes into zoning maps and general plan documents
	LACMTA (Metro) and LADOT*	Potential redistribution of bus stops; Assistance with wayfinding to new commercial center from transit stops
<b>Zoning Changes</b>	LA Department of City Planning	<b>Implementation of zoning changes for individual properties that may be redeveloped/redistributed</b>
<p>* LADWP – Los Angeles Department of Water and Power, LADPW – Los Angeles Department of Public Works, CRA/LA - Community Redevelopment Agency of the City of Los Angeles, LACMTA – Los Angeles County Metropolitan Transportation Authority, LADOT – Los Angeles Department of Transportation</p>		

## IMPLEMENTATION

### BENEFITS

Integrating LID will be important not only for achieving higher environmental standards, but also for municipalities facing more stringent federal and state regulations on water quality. In 1972, the Clean Water Act was passed and was amended in 1987. The amendment required cities to apply for the same kind of NPDES (National Pollutant Discharge Elimination System) permits for municipal pollutant discharges into public waters. Many municipalities nationwide, restricted by tight budgets, are looking to LID to meet environmental compliance. Regulation and cost savings will make implementation of design recommendations more politically feasible.

The implementation of Wilshire Blue's strategies will benefit the area environmentally, economically and socially. Contiguous open space created with the stream daylighting and the park not only benefits the water quality and flood control but also increases recreational opportunities and pedestrian mobility. Furthermore, the plan will increase property values due to the desirability of the lots and their proximity to the river; increase the total number of units developed through consolidation of surface parking lots; and increase

the marketing potential of Koreatown.

The matrix below lists the design recommendation strategies and the benefits across the top. While each strategy was developed to meet the objectives in one area, this matrix shows that strategies can impact multiple goals simultaneously.

	Create Identity	Reduce Storm Water Runoff / Improve Runoff Water Quality	Community Education	Unite Segregated Districts / Enhance Community	Economic Development	Improve pedestrian experience
<b>Environmental Strategies</b>						
Daylight Storm Drains	●	●	●	●	●	●
Bioswales and Vegetative Strips		●				●
Permeable Pavement		●				
Tree Canopy		●			●	●
Retrofit Parking Facilities		●			●	●
Green Roofs		●				
Pocket Parks		●				●
<b>Social/Community Strategies</b>						
Bike Paths and Sidewalk Improvements	●			●		●
Brand/Signage	●		●	●	●	●
<b>Economic Strategies</b>						
Create Mixed-Use Art Deco Corridor	●		●	●	●	●
Diversify Economic Sectors					●	

## IMPLEMENTATION

### FUNDING

Finding sources for funding is often one of the most challenging aspects of urban planning. Fortunately, shifts in perception among federal, state and local public agencies have engendered new financing sources that Wilshire Blue takes advantage of.

#### **Capital Investments**

##### *General Obligation Bonds*

##### **Proposition 84**

Proposition 84 is the Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006 and allocates \$1.525 billion to water quality; \$800 million to flood control and flood subventions; \$500 million to natural educational facilities; and \$580 million to Sustainable Communities/Climate Change. Proposition 84 also gives higher priority to park-poor and low income areas, both of which are problems in Wilshire Center BID.

##### **Proposition O**

Proposition O was passed in 2004 and authorizes the City of Los Angeles to issue general obligation bonds for up to \$500 million for projects that protect public health. This proposition will fund programs that clean up pollution such as bacteria and trash in the City's watersheds, which will

help the City meet the Federal Clean Water Act requirements.

##### **Proposition 40**

Proposition 40 allocates \$2.6 billion in bonds for natural resources conservation, state and local park acquisition and improvement, and historical and cultural resources preservation purposes.

The Stormwater Resource Planning Act, SB 790 Allows cities to get funding from two existing bond funds for projects that reduce or reuse storm water, recharge the groundwater supply, create green spaces and enhance wildlife habitats. SB 790 allows agencies to apply for and draw on funds remaining from prop 50 (water security bond) and prop 84 (the safe drinking water bond)

##### **Impact Fees**

The Quimby Act requires developers to pay an impact fee that goes towards parkland acquisition or improvements. The development of the park site must be within one or two miles of location where the impact fee was collected.

##### *Federal and State Grants/Loans*

##### **EPA/EDA Federal Grants**

Ocean Protection Council (the OPC will initiate a competitive grant process to seek projects

that address polluted runoff in various ways, including encouraging California communities to remove impediments to LID)

##### **CRA-LA**

Koreatown Redevelopment area was created in 1995 to help the area develop economically through the use of Tax Increment Financing. With the redevelopment of commercial and residential buildings between 2003 and 2008, Koreatown's tax revenue increased by 900%. With a larger budget than ever before, Koreatown's CRA can continue to redevelop the area.

##### **Metro**

Metro can provide money for capital improvements for bike and pedestrian transportation

State Water Resources Control Board Section 4 of Assembly Bill 739 stated that funds shall be available "for assistance in implementing low-impact development and other onsite and regional practices, on public and private lands, that seek to maintain predevelopment hydrology for existing and new development and redevelopment projects)



## IMPLEMENTATION

### *Other Cooperative Groups*

Koreatown Immigrant Workers Alliance  
Wilshire Center BID  
Foreign Investment (Particularly South Korea, which had a cap on foreign investment previously. In May 2006, South Korea lifted that regulation and now can freely invest).

### *Funding Policies for Stormwater Runoff and Park Maintenance*

#### **“You Pave You Pay” Stormwater Runoff Service Charge**

Continued maintenance of any stormwater runoff improvement will be vital to the success of this program. We suggest, therefore, that the Wilshire Center BID charge a stormwater service fee. Fees would be based on the percentage of impervious area relative to the size of a parcel, or rather, the intensity of the development on the parcel. For example, light development that has a lower impervious percentage range would incur a smaller fee than very heavy development. The service charge would not only ensure that the Wilshire Center BID has enough funds for maintenance, but would also make residents more aware of stormwater runoff and incentivize them to implement LID on their properties.

### **Parking Garage Revenues**

While the details of what sector would be responsible for the development of the proposed parking garages, some percentage of parking garage revenue determined by the Wilshire Center BID should go into a general fund used to help maintain the LID strategies and Park/Plaza maintenance.

## COSTS

The total cost of the project will include the capital construction costs, operations, maintenance and inspection costs and opportunity costs. The most expensive part of this plan will be the daylighting of the stormdrain, which we approximate to cost \$30 million (1.7 miles of stormdrain x \$2,500 sq ft). The four parking garages will also be a significant investment, which we estimate to cost \$8.5 million (\$17,500 per parking space \* 500 spaces \* 4). In addition, implementing 14 total acres of pervious pavement along bikepaths, parking lanes and parking lots will cost approximately \$4 million.

Building the park/plaza will also be a significant cost that is difficult to put a numerical value on at this time as economic crisis has made

land values hard to estimate. The total park cost will include the market value of the land, the capital cost (including demolition costs, cost of retail buildings, park and vegetation construction costs, and eminent domain), and the land opportunity cost.

The Wilshire Blue Plan will be costly; however, the long term benefits will exceed the initial capital cost. Not only will this plan improve the marketability of the Wilshire Center BID, but it will also increase property values of the land nearby both the daylighted stream and the park. Furthermore, as federal regulations make it increasingly expensive to pollute, the implementation of LID measures to capture and cleanse stormwater runoff will pay off in the long run. Lastly, LID practices will reduce the cost of stormwater maintenance.

APPENDIX

Wilshire Center #4 System Model													
Runoff Coeff. (Cd)	0.8												
Drainage Area (acre)	23.6												
Infiltration Capacity (in/hr)	0												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Mean Rainfall (in)	0.34	1.76	1.66	2.4	2.51	1.98	0.72	0.14	0.03	0.01	0.15	0.31	12.01
Mean Rain Event	1.4	3.1	3.8	4.5	4.6	4.9	2.5	0.6	0.2	0.2	0.4	1	27.2
Runoff Volume (gal)	174,657	904,106	852,736	1,232,872	1,289,378	1,017,119	369,861	71,918	15,411	5,137	77,054	159,246	6,169,495
Notes:													
Climatological information is based on WMO Climatological Normals (CLINO) for the 30-year period 1961- 1990, Los Angeles, CA													
Mean number of precipitation days = Mean number of days with at least 1 mm of precipitation.													

Data was calculated by City of Los Angeles Environmental Engineer, K. Majid Sadeghi.  
 The calculations were made based on these assumptions:

The total will be 47,545 ft<sup>3</sup> (351,833 gallons) using the 80% impervious (the number is between 90% and your 70%, because most parking lots or streets is about 90% impervious). Also the flow rate is about 3.95 cfs.

The total gallons of runoff for the 23.6 acres site using 80% impervious and the estimated annual mean storm runoff volume per year was calculated based on 12.01 in/yr (30 years mean rainfall 1961-1990 Los Angeles) will be 6,169,495 gallons per year. Therefore if you implement and selecting appropriate best management practice (BMPs) for the 23.6 acres to have the following: daylight 2 acres of storm drain; create 4 acres of parkland; 3.6 acres of Vegetated Strips, and 14 acres of pervious pavement then you can infiltrate/retain/reuse about 6,169,495 gallons per year of Stormwater