

ARROYO SECO

The Arroyo Seco flows from its headwaters in the San Gabriel Mountains through the cities of La Canada Flintridge, Pasadena, and South Pasadena, to its confluence with the Los Angeles River near downtown Los Angeles. The upper half of the Arroyo Seco flows within the Angeles National Forest. Devils Gate Dam is located where the Arroyo Seco exits the forest.

The Arroyo Seco flows in a natural state above Devils Gate Dam and is concrete lined the entire length below the dam. The concrete walls of the engineered section have a trapezoidal configuration just upstream of the confluence with the Los Angeles River for about 3 miles then transitions to a vertical configuration where the 110 Freeway intersects Pasadena Avenue. It continues in this form until the Rose Bowl where it transitions back to a trapezoidal channel. For most of its length, the creek flows through and adjacent to parks.

The Arroyo Seco bike path runs adjacent to the creek for about 2-miles starting at East Avenue 43. A major portion of this path descends into the creek bed and runs adjacent to the low-flow channel—allowing direct access to the creek. An unpaved multi-use trail runs adjacent to the creek for about two miles through Lower Arroyo Park. However, as it flows through the Brookside Golf Course no fencing is present and direct access to the creek is possible. A new path section in South Pasadena opened from York to Arroyo Seco Parkway.

POPULATION

- Density2: 23 people/acre (LA County Avg: 13)
- Household Income²: \$46K (LA County Avg: \$54K)
- Community Burden3: Most Burdened 38% of State

KEY ADJACENCIES INCLUDE

- Brookside Golf & Country Club
- Arroyo Park
- Arroyo Seco Golf Course
- Debs Regional Park
- Heritage Square Museum
- Sycamore Grove Park

31 SCHOOLS WITHIN 0.5 MILES

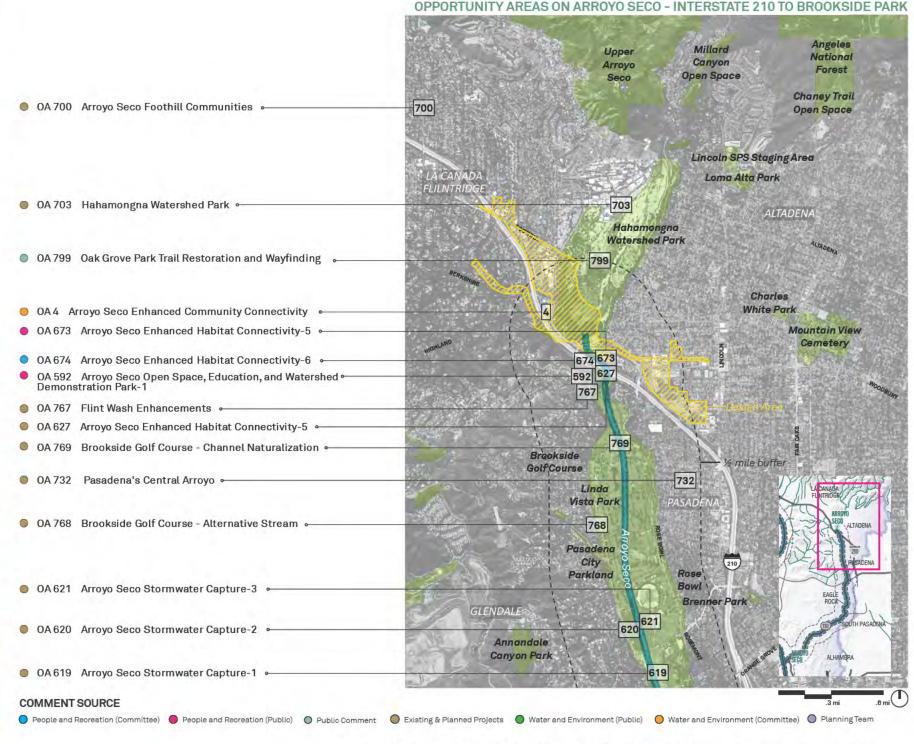
- ² 2010 Census
- 3 State of California, CES 3.0
- 5 2010 Census/LA County Park Assessment

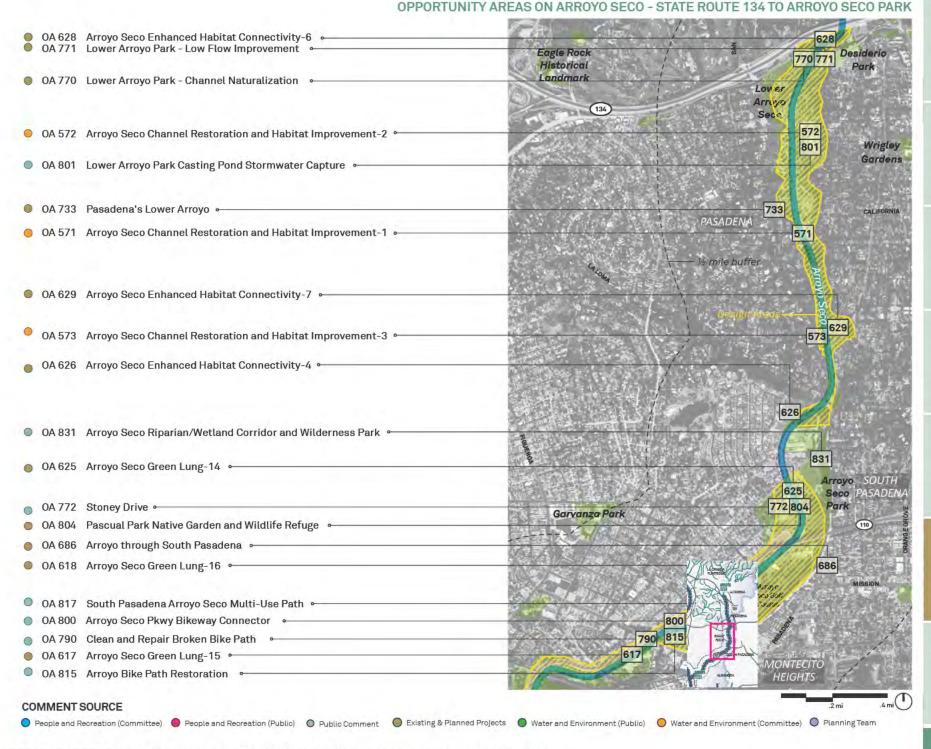
PARK SPACE

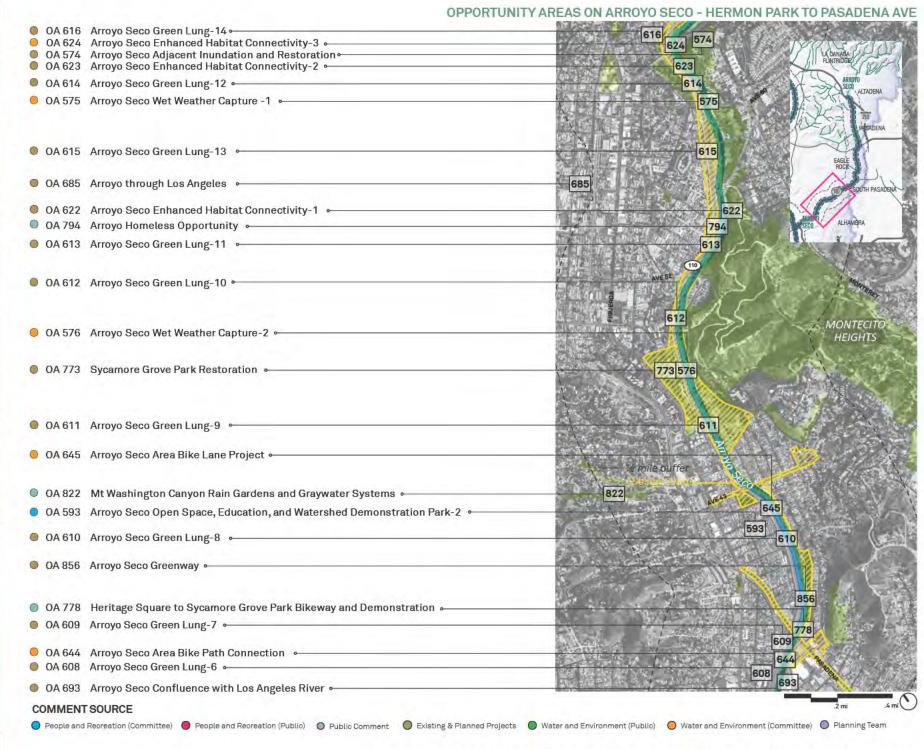
- Park Provision⁵: 9.36 acres per 1,000 people (LA County Avg: 3.3 acres per 1,000 people)
- Most of Arroyo Seco flows through and adjacent to parks

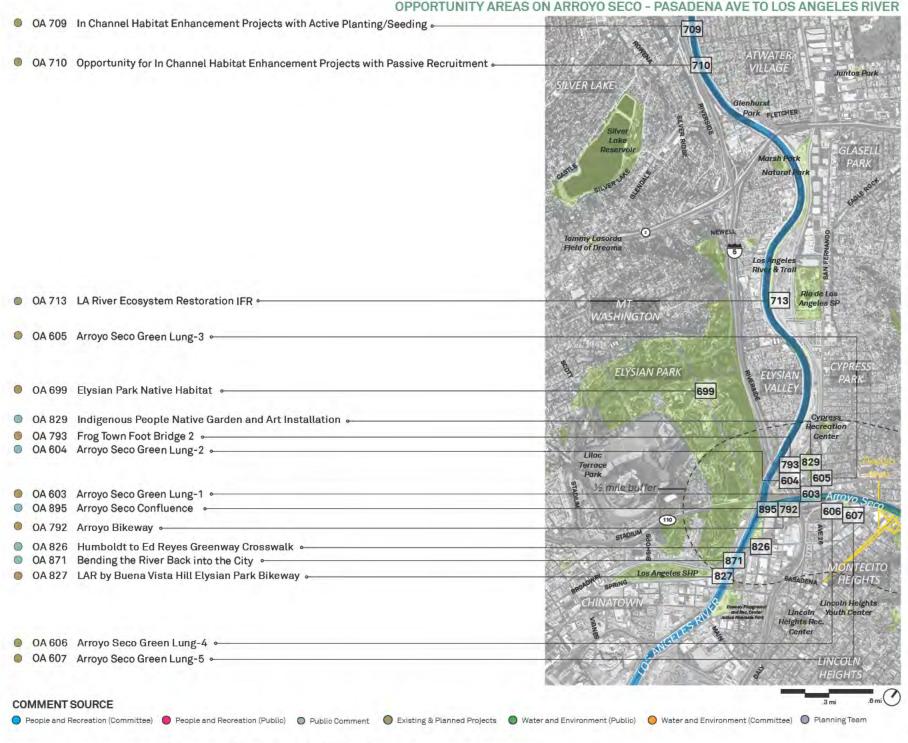
SOME PREVIOUS PLANNING EFFORTS

- One Arroyo Plan (2018)
- Arroyo Seco Watershed Assessment (2010)
- The Arroyo Seco Watershed Management and Restoration Plan (2006)
- The Los Angeles River Revitalization Master Plan (City of Los Angeles) identifies the Arroyo Seco's confluence with the Los Angeles River as an "opportunity area"









Arroyo Seco (in this area)



Hahamonga Park



Flint Canyon Wash

FLINT CANYON CONFLUENCE

Wildlife Corridor

This design area is one of the most important habitat areas in the Arroyo Seco corridor. To improve this habitat, the "Arroyo Seco Watershed Management and Restoration Plan" proposed numerous projects. If chosen, we would recommend studying how these plans could be linked to create a unique ecological system for habitat and passive recreation.

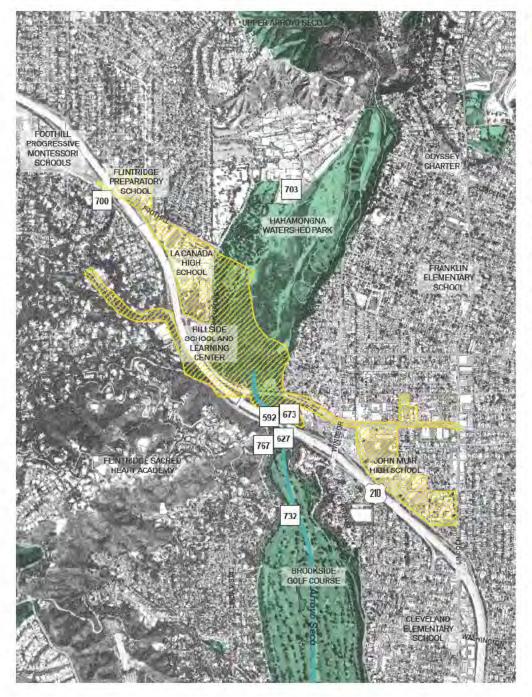
This could include

- ▶ Naturalization of Flint Canyon Wash. The wash is unlined for over ½ mile before it ends at the Arroyo Seco, making it a critical habitat link between Hahamongna, the San Rafael Hills, and San Gabriel Mountains. Although unlined, the channel has been heavily modified from its natural profile and there is an opportunity to modify it and further strengthen its ecological role
- ▶ Infiltration and water treatment of storm drains discharge. Several large storm drains discharge directly into the Hahamongna critical habitat. Tests from DPW have shown high levels of bacterial contamination in this discharge (DPW). To protect and enhance existing habitat, infiltration and water treatment should be installed
- ▶ Connection to schools. There are half a dozen schools within walking distance of this design area. Green streets, bike paths and multi-use trails could simultaneously create additional ecological connections and help bring students to this unique area

HOW DOES IT ALIGN WITH COMMUNITY NEEDS?

▶ Meets existing needs for habitat, ecology, access, education, stormwater management and reduction of pollution impact

Arroyo Seco Design Areas// Flint Canyon Confluence



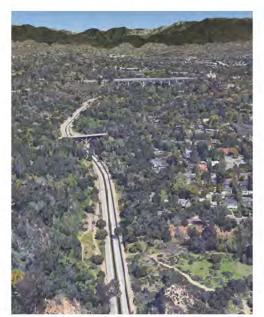


FLINT CANYON CONFLUENCE

OPPORTUNITY AREAS IN THIS DESIGN AREA

- Arroyo Seco Open Space, Education, and Watershed Demonstration Park-1
- Arroyo Seco Enhanced Habitat Connectivity-5
- Arroyo Seco Enhanced Habitat
 Connectivity-5
- 700 Arroyo Seco Foothill Communities
- 703 Hahamongna Watershed Park
- 732 Pasadena's Central Arroyo
- 767 Flint Wash Enhancements





Arroyo Seco (in this area)



Pasadena Casting Club

LOWER ARROYO PARK NATURALIZATION

Restoring the Natural Stream

This design area presently contains some of the best remaining native habitat in the Arroyo Seco south of Devil's Gate Dam. This is also the most feasible place to remove the Arroyo's concrete lining and restore a natural stream channel.

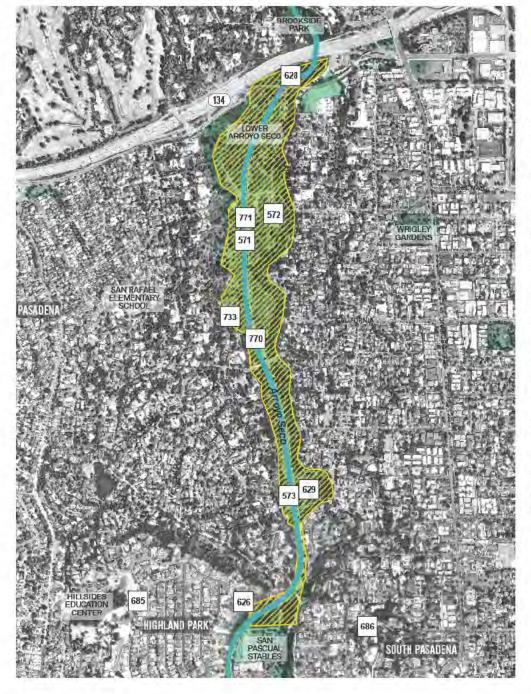
As a long-term goal, the tributary's ecological and hydrological functioning can be restored through re-creation of a continuous riparian habitat corridor within the waterway.

This could include

- ▶ Stormwater infiltration. The the ample open space, coupled with possible Arroyo naturalization, offer the opportunity to infiltrate large volumes of urban runoff generated upstream
- ▶ Develop "treatment terraces" within the channel to treat stormwater flows that "daylight" or surface in the River
- ▶ Public Space. The existing Arroyo Seco Park might be modified to create small terraced pocket parks and native landscaped areas that would allow people to access the waterway

HOW DOES IT ALIGN WITH COMMUNITY NEEDS?

▶ Meets existing needs for access, stormwater management and habitat





LOWER ARROYO PARK

OPPORTUNITY AREAS IN THIS DESIGN AREA

- Arroyo Seco Channel Restoration and Habitat Improvement-1
- Arroyo Seco Channel Restoration and Habitat Improvement-2
- 573 Arroyo Seco Channel Restoration and Habitat Improvement-3
- Arroyo Seco Enhanced Habitat
 Connectivity-4
- 628 Arroyo Seco Enhanced Habitat Connectivity-6
- 629 Arroyo Seco Enhanced Habitat Connectivity-7
- 685 Arroyo through Los Angeles
- 686 Arroyo through South Pasadena
- 733 Pasadena's Lower Arroyo
- 770 Lower Arroyo Park Channel Naturalization
- Lower Arroyo Park Low Flow Improvement
- Lower Arroyo Park Casting Pond Stormwater Capture

Arroyo Seco Design Areas LOWER ARROYO PARK NATURALIZATION (199 ACRES)

IMAGINE!

South of the Ventura Freeway, the Arroyo Seco mimics the original varied riparian landscape that Charles Fletcher Lummis wandered. The naturalized waterways allow surface water to collect and infiltrate in depressed water infiltration gardens, recharging the first flush of storm events and cleaning stormwater that is eventually released into the waterways.

CONTEXT

The 199-acre Lower Arroyo Park design area is in the southern part of Pasadena. The area follows the Arroyo Seco from Highway 134 to about Highway 110. The design area is an existing park.

Around 11,801 people live within ½ mile of the tributary in this area. The average total CalEnviroScreen score is in the 31st percentile for the state, which is lower than some of the other design areas.

RESILIENCY BENEFITS

Analyzing the Lower Arroyo Park Naturalization design area concept through the i-Tree suite of tools, ArcMap 10.7.1, and AutoCAD yielded the following benefits. Please see Appendix F for a full description of the methodology.

The design includes 121 acres of new or enhanced permeable cover

WATER











STORMWATER CAPTURE

10 acre-feet

or 5 Olympic-sized swimming pools



AIR



The design includes 6,839 trees that sequester carbon, and remove pollutants from the air

CARBON SEQUESTRATION

CARBON DIOXIDE AVOIDED

ADDITIONAL POLLUTANT REMOVAL

AIR POLLUTANT REMOVAL

7,239 tons Additional Carbon Sequestration

205 tons Additional Carbon Dioxide Avoided

6 tons Additional Pollutant Removal

ABITAT

The design includes 159 acres of new and enhanced ecological habitat that contribute to the Rim of the Valley Corridor Preservation and 78 acres of additional tree canopy



HABITAT CREATION

65%

the size of the 244-acre Verdugo Mountain Open Space Preserve



TINUMMOS



The design includes 179 acres of new and enhanced open space and 15 miles of new or enhanced community connections

GREEN STREETS

MULTI-MODAL PATH

TRAILS

9.5 miles Green Streets

1.2 miles Multi-modal paths

4.5 miles Trails

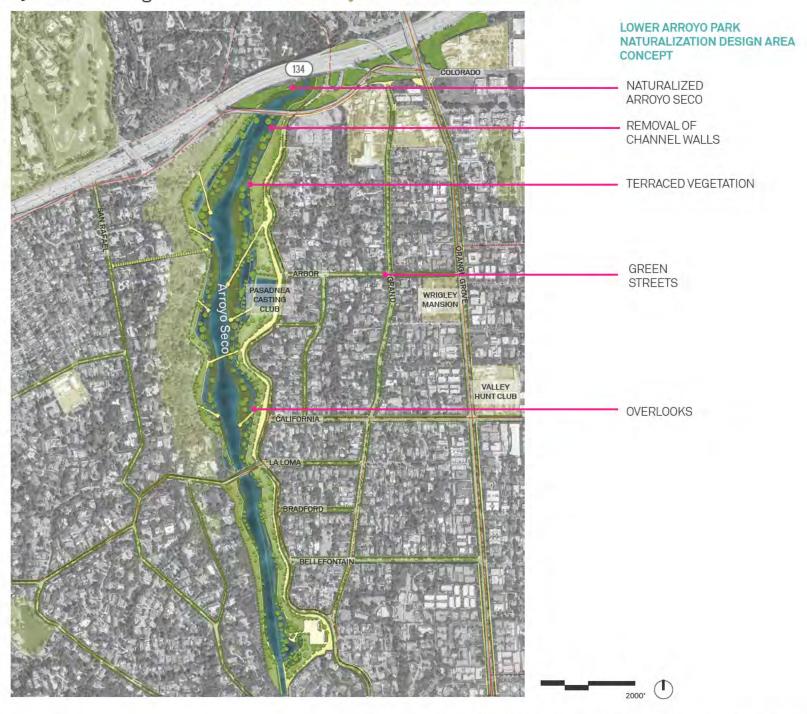


Existing Conditions looking North from Bradford Street

Comprehensive feasibility studies, required jurisdictional coordination, environmental impacts, and other engineering design details, are not part of this plan



Proposed Design looking North from Bradford Street



LOWER ARROYO SECO (ENLARGEMENT)

To allow for stream naturalization, this concept was designed to withstand temporary flooding by enabling stormwater and debris to quickly recede. Techniques include slope stabilization, the use of fast-draining soils, appropriate vegetation, and durable finishes. A gradient of texture surfaces: from gabions, step gabions, smoother stone terraces also help control the flow of water.

The site's design and programming are linked to the spaces ability to withstand the strong forces of water and treat urban runoff from the surrounding catchment zone before is enters the waterways. The focus on habitat creation and the desire to treat water biologically promoted the use of more woodlands and wetlands, frog ponds, meadows, and grassy swales. Overlaid onto this new topography are traditional park amenities and activities: seating, lighting, picnic benches paths for strolling and biking, and bridge from which to watch birds.



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NEXT STEPS

Additional required analyses and next steps for the Lower Arroyo Park Naturalization design area include:

- ► A preliminary engineering report that includes feasibility-level analyses, cost estimates, and coordination
- Geotechnical evaluation for wetlands should be performed,
- Analysis of the expected flows during wet and dry weather
- ➤ Soil remediation analyses to determine extent of possible existing contamination
- Identification of the appropriate water rights for river diversions

- Analysis of the effects of increased water demand from vegetation and wildlife
- ▶ Biological studies for wildlife needs for habitat restoration and preservation areas
- Hydrologic and hydraulic modeling to determine potential for channel naturalization
- ► An Environmental Impact Report/ Statement (EIR/EIS) may need to be completed to assess any potential environmental impacts
- Water quality analysis—including pollutant settling and oxygen demand

- Air quality assessment should be performed
- Study to assess the potential for planting native vegetation to restore the historic habitat and ecological function of the tributary wherever possible while not reducing its ability to manage the flood risk to adjacent communities
- Additional analysis to consider climate change and updated storm return intervals to help understand and prioritize opportunities and improvements

Arroyo Seco (in this area)



Welch Site



Heritage Square Museum

HERITAGE SQUARE

An Urban Community and Ecological Connector

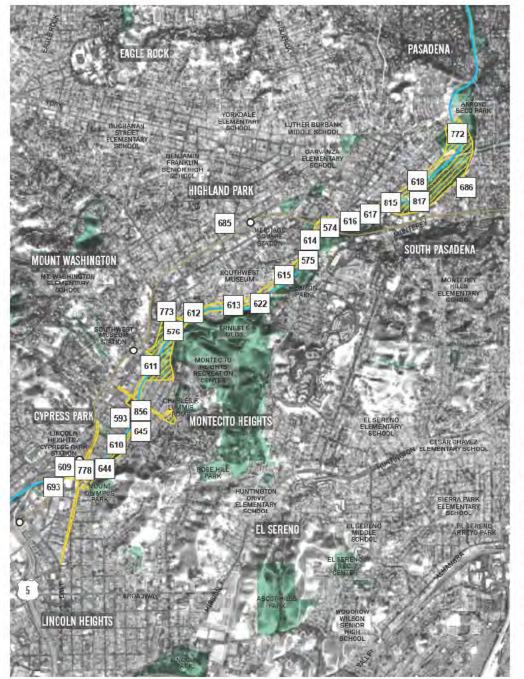
In the park-poor areas at the southern end of the Arroyo Seco, there is an opportunity to create an ecological and cultural destination by connecting the vacant Welch Site and the Sycamore Grove Park, with community institutions such as the Heritage Museum, the Metro Station, the Lummis House, and numerous schools.

This could include

- ▶ Daylighting and restoring an underground stream at Sycamore Grove Park
- ▶ Habitat Restoration at the Welch Site link Ernest E. Debs Park and Elysian Park via the Confluence. Restoration with native plants would provide both forage and cover for resident and transient animals alike
- ► Stormwater gardens could be installed on the Welch Site treat runoff from an industrial/commercial area of the Arroyo Seco

HOW DOES IT ALIGN WITH COMMUNITY NEEDS?

► Meets existing needs for connection, habitat, access, culture, education, stormwater management and reduction of pollution impact





HERITAGE SQUARE

OPPORTUNITY AREAS IN THIS DESIGN AREA

- Arroyo Seco Adjacent Inundation and Restoration
- 625 Arroyo Seco Green Lung-14
- 575 Arroyo Seco Wet Weather Capture -1
- Arroyo Seco Area Bike Path Connection
- 576 Arroyo Seco Wet Weather Capture-2
- Arroyo Seco Area Bike Lane Project
- Arroyo Seco Open Space, Education, & Watershed Demonstration Park-2
- 685 Arroyo through Los Angeles
- 609 Arroyo Seco Green Lung-7
- 686 Arroyo through South Pasadena
- 610 Arroyo Seco Green Lung-8
- Arroyo Seco Confluence with Los Angeles River
- 611 Arroyo Seco Green Lung-9
- 772 Stoney Drive
- 612 Arroyo Seco Green Lung-10
- 773 Sycamore Grove Park Restoration
- 613 Arroyo Seco Green Lung-11
- 778 Heritage Square to Sycamore Grove Park Bikeway and Demonstration
- 614 Arroyo Seco Green Lung-12
- 790 Clean and Repair Broken Bike Path
- 615 Arroyo Seco Green Lung-13
- Arroyo Seco Pkwy Bikeway Connector
- 616 Arroyo Seco Green Lung-14
- Pascual Park Native Garden and Wildlife Refuge
- 617 Arroyo Seco Green Lung-15
- 815 Arroyo Bike Path Restoration
- 618 Arroyo Seco Green Lung-16
- 817 South Pasadena Arroyo Seco Multi-Use Path
- 622 Arroyo Seco Enhanced Habitat Connectivity-1
- 856 Arroyo Seco Greenway





UPPER LA RIVER

Arroyo Seco Design Areas HERITAGE SQUARE (385 ACRES)

IMAGINE!

Sunday, 11am. The Arroyo Seco Heritage Square area is already filled with friends, families, and visitors from all over the country that are setting up picnics at Sycamore Grove and Artesian Park, the riding bikes down the Arroyo Allee, and walking to the latest exhibit at the Southwestern Museum/The area has become known as the best place to experience what Los Angeles was like when she was a young, growing city grounded in an "arroyo culture" and an arts and crafts sensibilities.

CONTEXT

The 385-acre Heritage Square design area follows the Arroyo Seco through neighborhoods in Northeast Los Angeles including Montecito Heights, Mount Washington, Lincoln Heights, and Cypress Park. The design area is flanked by the Arroyo Seco Parkway (110) and Pasadena Avenue. The northerly portion of the design area includes Sycamore Grove Park and the Montecito Heights Recreation Center.

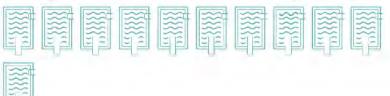
The area is dense with about 34,048 people living within ½ mile of the tributary in this area. The pollution burden in the area is high with the average CalEnviroScreen score being in the 82nd percentile. Pollution comes from the freeways and industrial uses in the area.

RESILIENCY BENEFITS

Analyzing the Heritage Square design area concept through the i-Tree suite of tools, ArcMap 10.7.1, and AutoCAD yielded the following benefits. Please see Appendix F for a full description of the methodology.

The design includes 81.3 acres of new or enhanced permeable cover

WATER



21.7 acre-feet

11

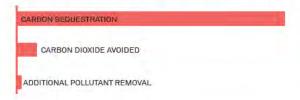
or Olympic-sized swimming pools



AIR



The design includes 8,354 trees that sequester carbon, and remove pollutants from the air



AIR POLLUTANT REMOVAL

8,843 tons Additional Carbon Sequestration

293 tons
Additional Carbon Dioxide Avoided

7 tons Additional Pollutant Removal

HABITAT

The design includes 365 acres of new and enhanced ecological habitat that contribute to the Rim of the Valley Corridor Preservation and 95 acres of additional tree canopy





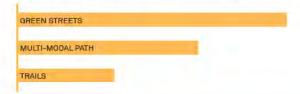
HABITAT CREATION

150%
the size of the 244-acre Verdugo Mountain Open Space Preserve



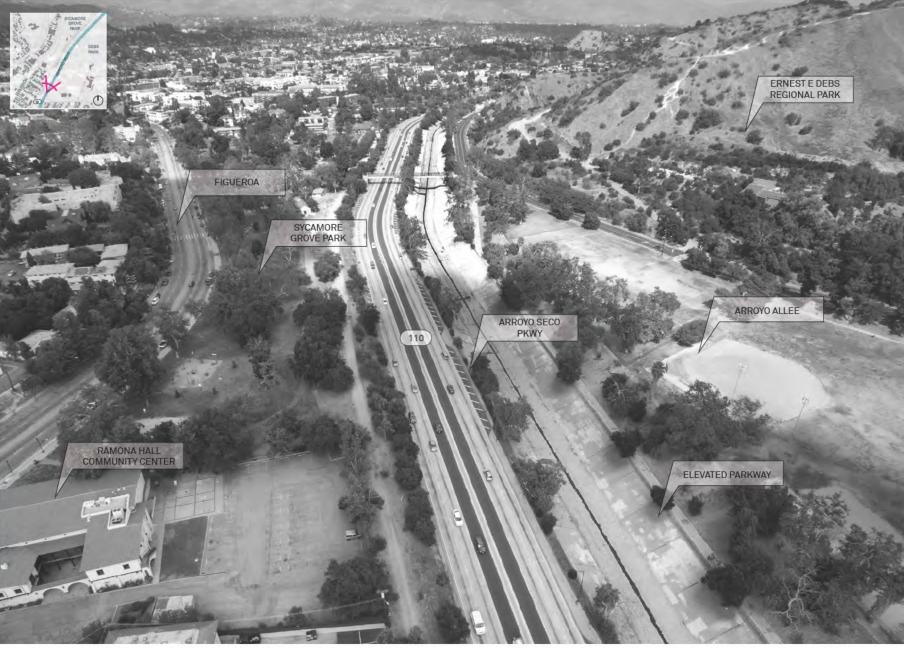


The design includes 153 acres of new and enhanced open space and 20 miles of new or enhanced community connections



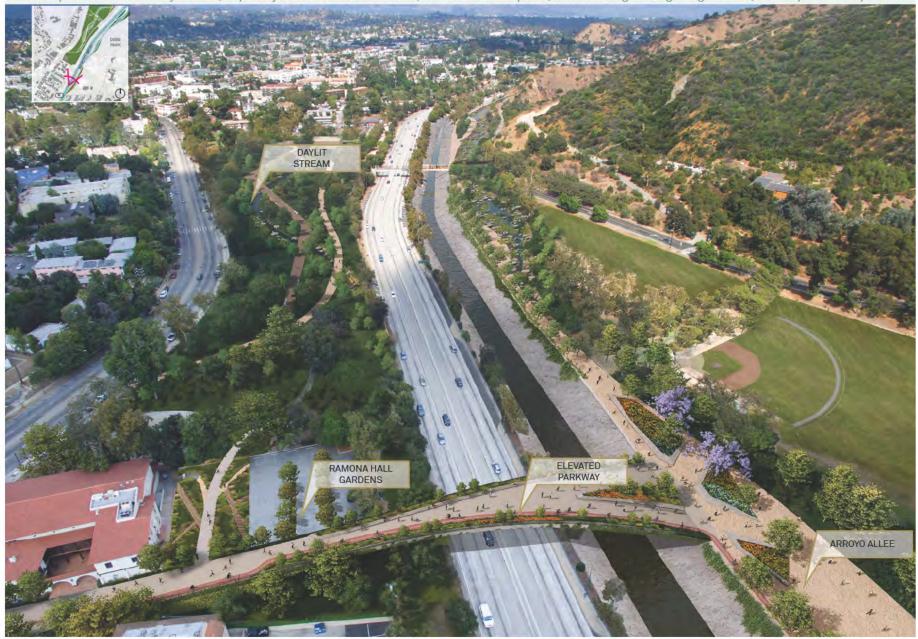
10 miles Green Streets 6 miles

4 miles Trails

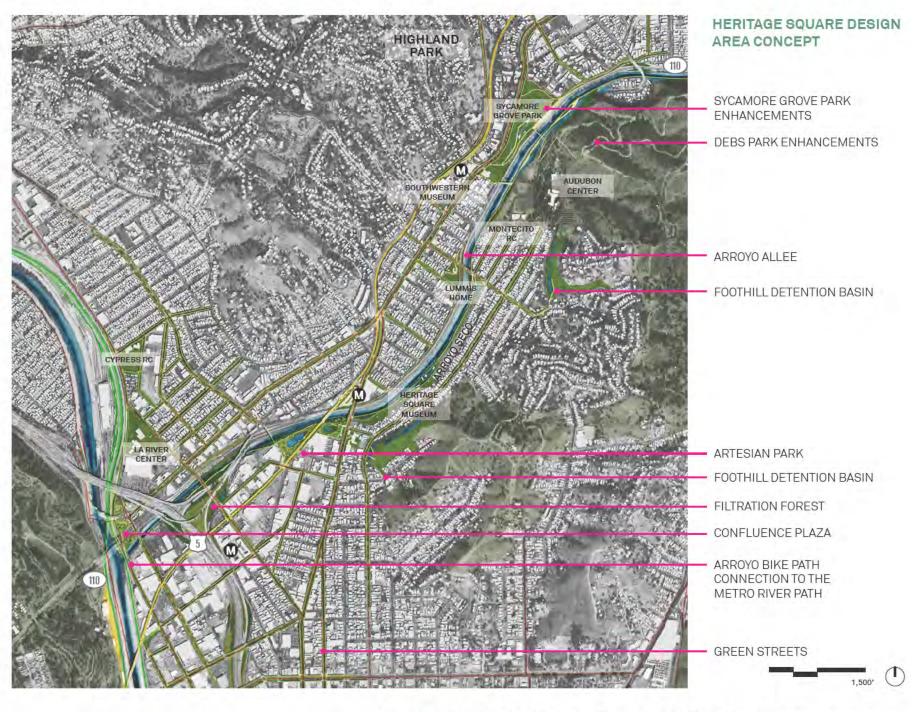


View looking North at the Arroyo Seco near the Montecito Recreation Center

Comprehensive feasibility studies, required jurisdictional coordination, environmental impacts, and other engineering design details, are not part of this plan



View looking North at the Arroyo Seco near the Montecito Recreation Center



SYCAMORE GROVE PARK (ENLARGEMENT)

From its history as a red-light district at the turn of the 20th century, Sycamore Grove Park is now one of the oldest parks in Los Angeles and signals our new relationship to the area's waterways. This design concept is a response to Northeast Trees and others who advocated to daylight the North Branch Creek in this location. Once the Arroyo Seco's largest tributary, the North Branch has become buried within one of the largest and most contaminated storm drains in the watershed. Sycamore Grove Park's design seeks to create an experientially rich experience from its connection to the Southern Western Museum and Debs Park on the east and west side down to the waterway's edge which is deliberately wild in its native plantings.



THE ARROYO ALLEE (ENLARGEMENT)

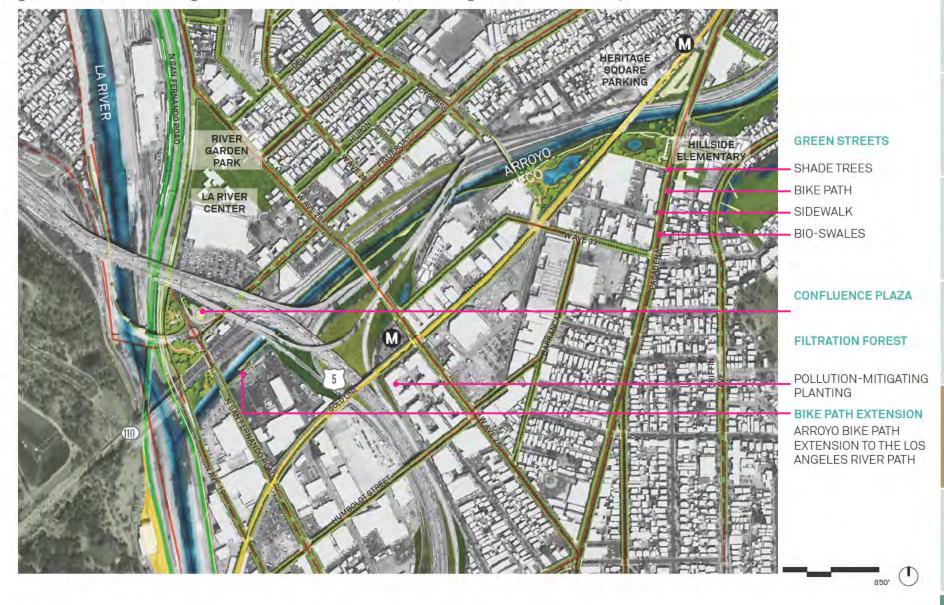
The Arroyo Allee is a linear park along the Southern Arroyo Seco that is designed to engage people with the life and history of the city. Linking the waterway, public transit, and iconic institutions including the Lummis House and Heritage Square, the park uses materials, textures, and planting to create of variety of spaces and texture to engage the mind and the senses. Seating, tall trees, planted borders, play space, public art, and interpretive signage will make the park a comfortable, welcoming, and heterogeneous destination.

The park will also include a series of green and grey infrastructure improvements, such as bio-retention basins, swales, and permeable surfaces intended to slow down and capture stormwater.



THE CONFLUENCE (ENLARGEMENT)

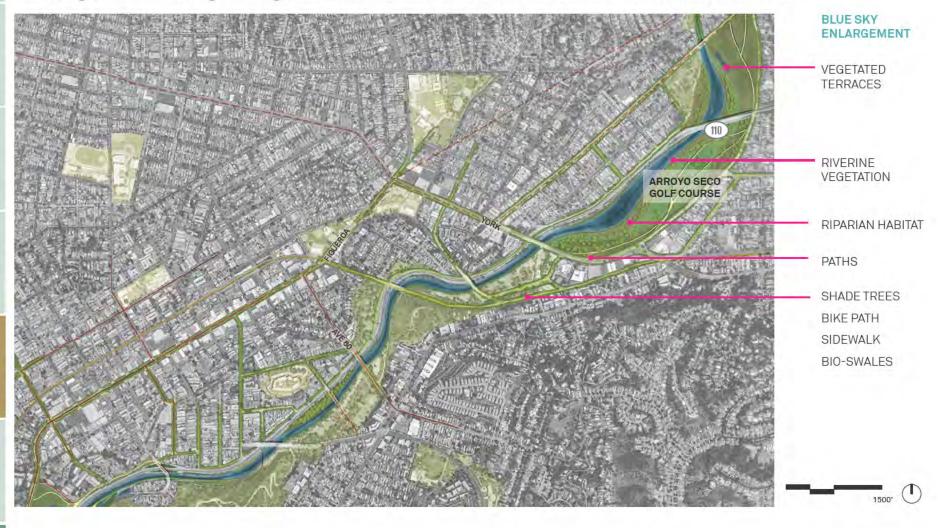
This design area concept includes a network of green streets, parks, and bike paths that connect the tributary environmentally and physically to the Los Angele River. The proposed design will extend the Arroyo Bike Path from Avenue 43 to San Fernando Road where it can connect with the Los Angeles River Path (funded by Metro). It is a resilient, multi-modal, cultural network that grounds the space, increasing the sense that the area is a transportive refuge from the rest of the City.



BLUE SKY (ENLARGEMENT)

Between the 110 parkway and York Boulevard, there is space to widen the Arroyo Seco with rougher planted surfaces and greater area for infiltration. That adjacent golf course acts as both a recreation space and a high-volume plane for the waterway. This design concept gives the Arroyo Seco room to unfurl, widening with "softer" engineered banks, a low-flow channel, and riverine vegetation that will cultivate animal habitat. The system of landscape and pathways helps inundate and disperse the water flow.

The combination of natural water and engineered edges work together to restore bird habitat to the corridor and create a shaded environment for fish spawning. The riparian plant species can withstand periodic inundation associated with storm events. These overlapping systems form a designed ecology for the river, which allow for the co-existence of recreation, flood control, and habitat.



NEXT STEPS

Additional required analyses and next steps for the Heritage Square design area include:

- ► A preliminary engineering report that includes feasibility-level analyses, cost estimates, and coordination
- ► Geotechnical evaluation for wetlands should be performed
- Analysis of the expected flows during wet and dry weather
- Soil remediation analyses to determine extent of possible existing contamination.

- ► Identification of the appropriate water rights for river diversions
- Analysis of the effects of increased water demand from vegetation and wildlife
- Biological studies for wildlife needs for habitat restoration and preservation areas
- Hydrologic and hydraulic modeling to determine potential for channel naturalization
- ► An Environmental Impact Report/ Statement (EIR/EIS) may need to be

- completed to assess any potential environmental impacts
- Water quality analysis—including pollutant settling and oxygen demand
- Air quality assessment should be performed
- ▶ Study to assess the potential for planting native vegetation to restore the historic habitat and ecological function of the waterway wherever possible while still maintaining its primary function for reducing the flood risk to adjacent communities