



DRAFT MASTER PLAN

Gage Canal Multi-Purpose Trail Phase 1

*City of Riverside Parks, Recreation,
& Community Services*

MAY, 2021

PREPARED BY ALTA PLANNING + DESIGN
IN ASSOCIATION WITH
RINCON CONSULTANTS
DIAZ YOURMAN & ASSOCIATES
COAST SURVEYING INC



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Executive Summary



Executive Summary

To be completed for final master
plan

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Introduction



Introduction

Project Description

The Gage Canal Multi-Purpose Trail Phase 1 project is a 2-mile active-transportation and recreational green space trail. The project will create a Class I asphalt concrete (AC) shared use path and an unpaved path within an existing city-owned water utility easement. The trail corridor will be landscaped with native and climate appropriate trees, shrubs, and will feature additional amenities including entry plazas, trailside seating, bicycle racks, interpretive signage, and solar lighting. It will create a continuous off-street multi-purpose trail connection from Palmyrita Avenue to Blaine Street, and will offer local residents both recreational opportunities and a connection to the Box Springs Reserve.



Project corridor with existing bike path pictured facing north between Blaine Street and Watkins Drive.

Project Goals

At its core, this project has three main goals: to reduce vehicle miles driven, reduce energy use from tree shade, and promote carbon sequestration through tree planting. Through these goals, the 2-mile trail will enhance safety, ADA accessibility, and promote a livable community where people can circulate without cars. The project goals will also include:

- Construction of bicycle and pedestrian facilities that provide safe routes for travel between residences, workplaces, commercial centers, and schools.
- Expand and enhance community green spaces and provide sustainable landscaping.
- Provide a recreational trail to disadvantaged and low-income communities in the City of Riverside.
- Expand the city's existing transportation network and provide usable car-less connection between Palmyrita Avenue and Blaine Street.
- Provide opportunities for green infrastructure to capture runoff in a system which mimics the natural environment.
- Provide opportunities for recreation and increase public health benefit.
- Provide connection to Box Springs Reserve and natural hiking trails.
- Create a safe and secure space throughout the trail corridor.

Project History

In 2018, the City of Riverside Parks, Recreation, and Community Services Department conducted city-wide phone and internet surveys, and hosted five focus group meetings and seven community workshops (one in each city ward). In Wards 1 and 2 where the project is located, extension and improvements of trails and bike lanes, and creation of more hiking trails were listed among the top priorities from residents. The surveys in the other wards furnished the same results. The community workshops were advertised to residents

using social media, the internet/web, telephone, emails, community calendars, digital billboards, promotional videos on YouTube, and local government cable television. The project was also presented at a joint Riverside Bicycle Club and City Bicycle Advisory Committee meeting, and was supported unanimously with no objections, but with suggestions for how the improvements could be made for a well-functioning and user friendly trail.

Gage Canal History

The Gage Canal was constructed in 1885 with the purpose of transporting water from the Santa Ana River to citrus groves and citizens of Riverside. The canal was instrumental in the development of the Riverside citrus industry and at the time was the most ambitious irrigation project undertaken in California, nearly doubling the irrigated area in Riverside. As a result of increased urbanization and the declining local citrus industry, by 1959 the city announced its plan to condemn the canal. A battle between canal stakeholders and the city ensued with the result that the canal survives to this day although in a different physical form. So that Gage Canal water could be used for domestic purposes in the City of Riverside, a pipeline was constructed in 1974 from the headworks south to Linden Street, where the city started taking water for domestic use. Today the canal is known as a local historical landmark and is part of school district curriculum so students learn about this important piece of Riverside history.

Project Funding

The Urban Greening Grant Program, funded by the California Natural Resources Agency (CNRA), selects projects that reduce greenhouse gases by sequestering carbon, decreasing energy consumption, and reducing vehicle miles traveled. Projects funded under this program also aim to transform the built environment into places that are more sustainable, enjoyable, and effective in creating healthy and vibrant communities.

The total amount of Urban Greening funding available during the round 3 application period was approximately 19 million dollars. The amount of funds awarded to the City of Riverside for this project totals \$3,708,509.20 and was the largest amount distributed during round 3 of the program.

The project will be required to include a consistent quantity of elements detailed in the grant application such as trees, plants, an unpaved path, bicycle path,

and other amenities and furnishings. As indicated in the grant application, the project will eventually sequester 868 metric tons of CO₂ equivalent (CO₂e).



Project Team and Stakeholders

The Trail project is being spearheaded by the City of Riverside Parks, Recreation, and Community Services Department (PRCSD), and all approvals related to the project will be through the Riverside City Council. Riverside Public Utilities (RPU) owns the Gage Canal right-of-ways in fee; however, the Gage Canal Company operates and maintains the Gage Canal itself. The proposed project will depend on interdepartmental cooperation between PRCSD, Riverside Public Works Department, and RPU.

The team coordinated with key stakeholders who include, but are not limited to the following:

- Riverside Transit Agency (RTA)
- The Gage Canal Company
- University of California (UCR)
- Local businesses, trail advocates, and residents
- Riverside Bicycle Technical Advisory Committee
- Metrolink

Alta Planning + Design is leading the Trail design with support from Rincon Consultants, Diaz Yourman & Associates, and Coast Surveying Inc. Rincon Consultants are providing environmental services, Diaz Yourman & Associates are provide geotechnical engineering services, and Coast Surveying provided supplemental topography.

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Existing Conditions



Existing Conditions

Site Characteristics

Canal Easement Corridor

Maintaining an open canal can be difficult due to accumulation of sand, mud, and plant growth which ultimately reduces the capacity of the canal. This led the Gage Canal Company to begin experimenting with various canal coverings as early as the 1920s. In 1974, so that water could be used for domestic purposes, the Gage Canal Company installed a new pipeline, from the canal headworks to the City of Riverside.

The project site (corridor) follows the existing city-owned water utility easement for the Gage Canal. In this segment of the easement, the canal is subterranean and encased in concrete. On the surface, the corridor is improved with a dirt road that is used for canal maintenance and operations vehicles, while the remaining easement is disturbed but improved. The typical right-of-way (ROW) width of the corridor is 50 feet, except for a narrow section that runs adjacent to Sugarloaf Mountain on the north and west sides where the width decreases to approximately 10-feet.



Project corridor between Columbia Avenue and Palmyrita Avenue.

Physical Character

The linear slope from south to north along the project corridor is primarily gentle with a steeper section where the existing maintenance road intersects an asphalt-paved access road that provides maintenance access from Marlborough Avenue to a water tank in Box Springs Mountain Reserve (Box Springs).

Native plant and animal communities are present adjacent to the project corridor primarily within and around Box Springs. Coastal Sage Scrub is the dominant plant community, although fire damage in Box Springs has diminished it somewhat leading to an increase in coverage by invasive annual grasses. During site reconnaissance *Encelia farinosa* was observed along much of the trail section around Box Springs. Two stands of cholla cactus were observed along the existing corridor near the interface of Box Springs and the residential neighborhood north of Spruce Street. A number of reptile species are present at Box Springs including three rare species: coast horned lizard, orange-throated whiptail, and the red diamond rattlesnake. Sixteen species of mammals including pacific kangaroo rat, mountain lion, and mule deer, along with eighty five species of birds inhabit the reserve.

Topography

Most of the project corridor is fairly level with a gentle linear slope, however, there are more significant slopes between Spruce Street and Marlborough Avenue near the existing water tank maintenance road:

- Blaine Street to Watkins Drive: 0.04% - 2.50%
- Spruce Street to Marlborough Avenue: 0.30% - 13.0%
- Marlborough Avenue to Palmyrita Avenue: 0.05% - 2.50%

Drainage is generally via sheet flow from east to west and higher adjacent elevations generally occur to the east side of the corridor. From Marlborough Avenue north there are manufactured slopes down draining adjacent commercial/industrial properties. There are steep slopes adjacent to the project corridor as it rounds the northwest corner of Box Springs Mountain Reserve. Any proposed drainage across the project site should follow the prevailing cross slope. This cross slope drainage creates opportunities for potential

stormwater capture, treatment, and infiltration using a series of landscaped swales along the edges of the proposed asphalt path and unpaved path where space permits. Strategic tree and shrub planting can also be used to protect the path and trail from stormwater runoff from adjacent steep slopes. In the segments of the project corridor at the south end between Blaine Street and Watkins Drive and at the northern end between Columbia Avenue and Palmyrita Avenue both outside edges are at higher elevation than the center of the corridor creating a center draining condition leading to ponding during wet weather. In these instances it may be possible to mitigate this condition with the installation of landscaped swales in the center of the corridor, where the path and trail run on near the outside edges. Grading along and adjacent to the unpaved path will prevent the concentration of flows that can lead to long-term erosion. Certain areas, mostly around Box Springs and north of Marlborough Avenue have loosely consolidated soil along the western edges of the corridor where runoff has caused sloughing and downcutting of the top of slope. Strategic planting of trees and shrubs along these edges can help stabilize the top of slope and prevent continued erosion.

The cross slopes along the project corridor primarily flow downhill from east to west, although there are some sections that are level to slightly reversed, with the steepest cross slopes occurring in the section from Marlborough Avenue north to Columbia Avenue.

Adjacent topography ranges from nearly level in the

southern residential section, to steep adjacent slopes along the northwest corner of Box Springs. Evidence of ponding was found during site reconnaissance in areas with center draining topography, and there are a few locations where erosion has caused sloughing of the downslope edge of the existing corridor.

Vegetation

The dominant native vegetation of the project area is coastal sage scrub (CSS), a complex of tough, woody, aromatic shrubs typically 1-6 feet tall. Common species of CSS include California buckwheat, brittle-bush, black sage, and white sage. It is estimated that nearly 90% of the existing CSS habitat in Riverside County has been lost due to urbanization, frequent fires, OHV-use, invasive species, and military activity.

Vegetation on and adjacent to the project corridor consists primarily of typical commercial landscaping in the section from Marlborough Avenue north to Palmyrita Avenue, with trees and shrubs such as *Lophostemon confertus* (Brisbane Box) and *Acacia redolens* (Desert Carpet) for example. In the project area around Box Springs, from Marlborough Avenue south to Spruce Street, a mix of native CSS and invasive annual grasses was observed during site reconnaissance. On the southern section of the project corridor from Spruce Street to the southern terminus at Blaine Street, there is virtually no existing vegetation. Adjacent residential vegetation consists of small to medium size trees and hedges such as African sumac, palo verde, and bougainvillea for example.

Another approach would be to use the proposed landscaping to strategically supplement and enhance the remaining CSS habitat in the area. This could be done by using primarily CSS species in tree and plant selections. In a sense this would leverage the project's landscaping toward habitat creation and enhancement, and could provide a strong element of identity. Another opportunity for vegetation on the project is to use fruit trees in strategic locations along the trail such as trailheads or rest areas. The use of fruit trees in the proposed landscape would create a connection to the history of the citrus industry in the region and could be combined with interpretive elements indicating this. Fruit trees could also become part of a larger system of community orchards in Riverside. The organization "Fallen Fruit" has worked to establish "Urban Fruit Trails of Riverside" which is a network of walking trails, populated with fruit trees and planted, tended, and harvested by the public. Lincoln Park was one park



Gage Canal Trail Corridor looking south as it enters the Box Springs Mountain Reserve area



On-street portion of Trail alignment, looking southeast on Watkins Drive south of Spruce Street

location that received a large number of fruit trees as part of this program.

Another opportunity with vegetation is to use the proposed project landscape to sequester carbon. Indeed this is a requirement of the project funding and can be accomplished by planting trees which sequester and store carbon in the process of wood creation. Various species can be proposed to create a carbon sequestration bank as long as the total carbon captured meets or exceeds the project estimate created as part of the grant funding requirement. Finally the proposed project landscape could be visually anchored through the use of 'signature large trees', a repeating large tree such as an oak or sycamore that could create an identity for a section of the trail.

Hydrology

The Santa Ana Watershed drains into the Santa Ana River, the largest river in Southern California. In very broad terms, the Santa Ana Region is a group of connected inland basins and open coastal basins drained by surface streams flowing generally southwestward to the Pacific Ocean. The Santa Ana watershed is an arid region; therefore, there is little natural perennial surface water in the watershed. The occurrence of groundwater in the watershed is highly controlled by the geology of the area, both the configuration of bedrock and by the extensive geological faults. Most groundwater basins are unconfined. However, the variable depth to bedrock, variations in geologic layers, and the presence of faults cause pressure zones where water flows toward the ground surface. In general, groundwater flows the same direction as surface water: from the mountains in the east/north to the Pacific Ocean in the west. There are multiple drainage ditches that can be found along

the surface path of the Gage Canal, which takes water runoff to local storm drain systems and rivers, then down to the ocean.

The Gage Irrigation Canal is basically a gravity flow system with water being distributed in pipelines to individual plots of land below the level of the canal. The canal, however, also supplies water above the line of the canal by pumping water through pipelines to a higher point, allowing water to flow by gravity individual groves for irrigation by open furrow.

Adjacencies

ADJACENT PROPERTIES

The northern section of the Gage Canal Multi-Purpose Trail Phase 1 from Marlborough Avenue to Palmyrita Avenue, passes through the Hunter Industrial Park neighborhood of Riverside. This area consists primarily of industrial and commercial campuses and is known for technology-based firms, clean industries, and research facilities. Through this section, both sides of the trail are bordered by large concrete tilt-up style buildings, associated parking lots and landscaped areas. It passes between 13 industrial complexes for about 3,000 feet. The project offers an opportunity to create an additional active-transportation commuting option for local employees, and an area for recreation before and after work.

The southern section of the Trail from Spruce Street south to Blaine Street passes through a mixed residential zone comprised of single-family homes, multi-family residential complexes, and student housing. 23 single family homes and 3 multi-family complexes border the project corridor for approximately 2,800 feet. There are two neighborhood access points



Gage Canal Trail corridor looking north as it enters Hunter Park Industrial neighborhood



Gage Canal Trail corridor looking north where it lies adjacent to the railroad ROW and single family homes north of Spruce Street

to the corridor via utility easements connecting to Massachusetts Avenue and Canyon Crest Drive respectively. The trail will offer residents an additional active-transportation commuting option, directly linking them with employment centers in Hunter Industrial Park to the north, and creating easy connections to the existing on-street bicycle network to access employment centers in the University District. The Trail will also offer residents opportunities for active recreation, as well as a place to relax. Trailheads and other nodes along the corridor can be enhanced with small landscaped plazas with the potential of seating areas, exercise equipment, and community fruit trees.

RAILROAD RIGHT OF WAY

From Spruce Street north for approximately 2,300-feet the trail corridor runs adjacent to a railroad right-of-way which is located directly to the west. A Riverside County Transportation Commission property is located at the junction of Spruce Street and Watkins Drive. In 2013 the environmental group Friends of Riverside's Hills reached a settlement with the RCTC, which allowed for the completion of the 24-mile commuter rail extension from Riverside to the city of Perris. Discussions regarding this topic are ongoing.

BOX SPRINGS MOUNTAIN RESERVE

The portion of the project corridor from Marlborough Avenue south to Spruce Street runs along the northwestern edge of the Box Springs Mountain Reserve for approximately 3,500 feet. Two main trails

within Box Springs will connect to the proposed Trail, and would allow users to access the miles of trails within the Reserve. Where the Box Springs trails intersect the Trail there is an opportunity for placemaking by creating trail rest stops at these circulation nodes. Wayfinding and interpretive signage would also be appropriate at these intersections.

Transit, Intersections, and Crossings

TRANSIT

Located on the west side of the street on Watkins Drive just 80 feet south of the Spruce Street intersection is a UC Riverside shuttle stop. A Metrolink station is located on Marlborough Avenue, 2000' west of the Gage Canal corridor.

INTERSECTIONS

- **Spruce Street:** Starting from the south end of the plan area, users will first encounter the intersection at Spruce Street and Watkins Drive when traveling north. Users will need to make two crossings to connect up with the next section of trail. Spruce Street in this location is a three lane road and the crossing is 50 feet long. Users will then turn east to cross over an existing pedestrian rail crossing before connecting back to the off-street trail.
- **Marlborough Avenue:** To facilitate a direct connection between the Trail and the Metrolink station, a mid block crossing will be created. Marlborough Avenue in this location is a two lane road with class II bike lanes on both sides of the street and a center median. The proposed crossing will span roughly 43 feet. Users will



Asphalt concrete service road connecting Marlborough Avenue to existing water tank. This is a potential pedestrian and bicycle connection from the Metrolink station.

then travel east or west over an existing pedestrian rail crossing. The rail crossing on the south side of the street is 54 feet across whereas the northern crossing is 37 feet across.

- **Columbia Avenue:** The trail design will implement a mid-block crossing at Columbia Avenue. Columbia avenue is a five lane road with Class II bike lanes. The crossing will span 70 feet.

Connections

DESTINATIONS

The heart of the UC Riverside campus is located approximately half a mile south of the Trail terminus at Blaine Street (and there is a direct Class II connection between the trail and UCR). Another half mile to the west of UCR is University Village, a large outdoor mall, which offers areas to shop and dine. In addition to UC Riverside, this section of the Trail is located close to two other schools. University Heights Middle School is roughly a quarter mile west of the trail. Continuing east across the Metrolink Rail line is Highland Elementary School on Highlander Drive. With no direct connection across the rail track, the school is about 0.4 miles to the trail intersection at Spruce Street. Other nearby destinations include: Riverside Sports Center UCR, Stonehaven Student Housing, and places of employment in the Hunter Industrial Park neighborhood adjacent to northern segment of trail from Marlborough



Gage Canal corridor looking north where it crosses Columbia Avenue.

Avenue to Palmyrita Avenue. The Trail will offer access to Hunter Hobby Park, which is approximately $\frac{3}{4}$ mile west of the Trail on Marlborough Avenue and has playgrounds, sports fields, and picnic areas. An existing Class II bike lane connects the park to the Trail through Marlborough Avenue and Columbia Avenue.

TRANSIT

Located near the halfway point of the northern 'industrial' segment, there is a connection to the Riverside-Hunter Park/UCR Metrolink Station. The trail links UCR and the Metrolink station, creating an important connection for students and faculty commuting to the campus. A transit stop is located on Blaine Street (Riverside transit line 10), with another transit stop located on Watkins Drive just south of Spruce Street adjacent to on-street section of the trail (Riverside transit line 51).

TRAILS

Besides connecting students and residents to Metrolink, the trail forms a direct link to the Box Springs Mountain Reserve trail system. The Box Springs Mountain Reserve covers 3,500 acres of land in the cities of Riverside and Moreno Valley. This will allow trail users easier access to many miles of existing and proposed multi-use trails and scenic views of Riverside and Moreno Valley.

BICYCLE FACILITIES

The Trail is also benefited by the connections to Class II bike lanes that are found on every cross street along the project corridor. These streets include:

- Blaine Street: 6' wide Class II bike lanes
- Watkins Drive: 6' wide Class II bike lanes
- Marlborough Avenue: 5 wide Class II bike lanes
- Columbia Avenue: 5' wide Class II bike lanes
- Palmyrita Avenue: 7' wide Class II bike lanes

Irrigation System Points of Connection

The landscape irrigation system for the Trail corridor will make points of connection (POC) to existing potable water mains within public street ROW where the trail intersects the streets.

Carbon Sequestration

The Urban Greening grant application for this project planned for the planting of 700 trees along the two mile long corridor. These trees would sequester an estimated 868 metric tons of CO₂e. The final number of trees will likely change based on the trail alignment and the species that are chosen to be planted. However, the project team will aim for the same target CO₂ reduction as specified in the grant application.

Stormwater Capture

The City is under the federal Clean Water Act (CWA) which establishes requirements for the discharge of urban runoff from Municipal Separate Storm Sewer System (MS4 permit) under the National Pollutant Discharge Elimination System (NPDES) program. The Santa Ana Regional Water Quality Board (RWQCB) issued Permit No. R8-2010-033 to authorize the discharge of urban runoff from MS4 facilities in Riverside County within the Santa Ana Region MS4 Permit areas. This project will adhere to the Low Impact Development (LID): Guidance and Standards for Transportation Projects for the Santa Ana Region Riverside County Co-Permittees. The guidance establishes minimum LID Principal and Best Management Practices (BMPs) that will treat runoff and address Hydrologic Conditions of Concern.

In lieu of a Water Quality Management Plan (WQMP), the Master Plan will identify minimum required BMP's and address storm water pollution from the proposed improvements. The goal of implementing storm water quality management is to minimize storm water pollutants runoff. Waste material dumped into storm drain inlets can adversely impact surface and ground waters. The pollutants of concern that are expected



Eastern terminus of Marlborough Avenue at its intersection with the Gage Canal corridor.



Beginning of southern section of Trail at Watkins Drive entry point. This is a potential trailhead amenity location.

to be generated from the runoff of impervious areas are typically oil, grease, metals (copper, lead, zinc, chlorinated pesticides), suspended soils, trash and debris.

Land Use

The adjacent land uses vary as one moves north to south down the project corridor, with mixed commercial/light manufacturing uses in the north from approximately Palmyrita Avenue down to Marlborough Avenue, a more naturalized setting between Marlborough Avenue and Spruce Street, and a residential setting between Spruce Street and the southern terminus of the project at Blaine Street. The local climate is semi-arid with hot, dry summers and mild, occasionally wet winters.

Summary of Surveys

Topographic Survey

Existing topographic aerial mapping was provided by the City at 1-foot contours. The design was supplemented by conventional field surveys at eight (8)

locations along the project limits. The existing typical section along the Gage Canal Multi-Use Trail between Blaine Street and Watkins Drive consist of an 8-foot 6-inch asphalt concrete path over native soil and 42-feet of native soil. At Watkins Drive the multi-use trail meets the existing sidewalk and traverses two driveways up to Spruce Street. The multi-use trail crosses Metrolink rights-of-way and continues north up to Columbia Avenue. This segment consists of an existing natural dirt trail with graded native slopes on each side of the trail up to Box Springs. The existing terrain between Columbia Avenue and Palmyrita Avenue mainly consists of natural swales and undeveloped grassland.

Utilities

The design team requested maps and records from utility owners with facilities within the project limits and will field verify the utilities that may be impacted. Based on the records received we determined the horizontal and vertical location, as well as size of existing utilities from available record drawings. Based on this preliminary research the utilities listed in Table 1 are within the project limits.

Geotechnical Survey

Field exploration were performed from February 19 to February 26, 2021, and consisted of performing 12 hand auger borings that were subsequently converted to percolation test wells. The boring/percolation test locations were chosen to provide coverage of the Project site for grading and to collect data for infiltration and agronomic testing. The boring depths, which ranged from approximately 3 to 5 feet below the ground surface (bgs), were selected to extend below the depth of significant influence of the proposed pavement loads and to the likely depths of site infiltration. Details of the field exploration, including sampling and percolation test procedures, and boring logs, are presented in Appendix D.

Soil samples collected from the borings were re-examined in the laboratory to substantiate field classifications. Selected soil samples were tested for moisture content, grain-size distribution, percent passing the No. 200 sieve, Atterberg limits, compaction characteristics, pavement-supporting capacity (R-value), and corrosion potential (pH, electrical resistivity, soluble chlorides, and soluble sulfates). The soil samples tested are identified on the boring logs.

Agronomy

Agronomy testing was performed by Wallace Laboratories and A&L Laboratories on selected soil samples. Tests included standard agricultural suitability, growth studies, and nematode testing. Results of the agronomy testing and recommendations for the Project site are summarized in the reports prepared by Wallace Laboratories and A&L Laboratories that are presented in Appendix D. The soils are overall adequate, and will require standard amendments during planting.

Soil Survey

Based on the findings of our field exploration and laboratory testing, the subsurface conditions along the Project alignment generally consisted of coarse-grained (i.e., sandy) soils with varying fines (i.e., silt, clay) content. Laboratory test results did indicate that some of the soils contained similar amounts of coarse- and fine-grained soils. Trace to few gravel and cobbles were encountered in the bulk samples collected during the field exploration, as was evidence of debris (e.g., concrete, glass, brick) in many of the borings. The hand auger borings performed along the Project segment between Marlborough Avenue and Watkins Drive generally encountered refusal caused by cobbles and

boulders at depths ranging from 3 to 4 feet bgs.

The moisture content of the near-surface soils generally ranged from 3% below to 3% above optimum moisture content. The likely pavement subgrade soils were visually classified as non-expansive. The pavement-supporting capacity of the proposed multi-use path subgrade soils was evaluated using laboratory R-value testing, the results of which indicated R-values ranging from 54 to 73. The saturated permeability calculated from field percolation tests performed in the sandy soils encountered in the upper 3 to 5 feet of the subsurface profile ranged from approximately 0.02 to 6.8 inches per hour (in/hr).

The saturated permeability calculated from field percolation tests performed in the sandy soils encountered in the upper 3 to 5 feet of the subsurface profile ranged from approximately 0.02 to 6.8 inches per hour (in/hr).

Groundwater measurements performed within approximately 1 mile of the Project alignment within the last 20 years (California State Water Resources Control Board, 2021) generally indicate that groundwater is more than 50 feet bgs. Therefore, a design groundwater elevation of 50 feet bgs was selected for the purposes of our analysis.

Environmental Summary

The environmental component for this project will follow the provisions of Senate Bill 288, which provides for a Statutory Exemption from the California Environmental Quality Act (CEQA) for projects like the Gage Canal Trail. The exemption recognizes that transportation projects like trails, transit centers, rights-of-way improvements intended to promote transit, cycling and pedestrian modes that have potential to lower carbon emissions from the transportation system, are exempt from CEQA when certain criteria are met. To support the Notice of Exemption (NOE), biological and cultural resource technical study memos were performed.

The biological technical study will include consideration of legally protected resources (e.g., listed species, waters/streambeds) and any implications (e.g., surveys, avoidance, minimization, mitigation, or permits) that may be required. The cultural resource technical study will offer historic background and management recommendations for the cultural resources within this two-mile stretch of the Gage Canal. The recommended mitigation measures for the Gage Canal Trail will be incorporated in the final plans and specifications.

Table 1.0: Utilities Within the Project Limits

Utility	Contact Information
AT&T Distribution	ATTN: Susan Blackburn (510) 645-2929 ATTSubstructureOCR@att.com
AT&T Transmission	ATTN: Joseph Forkert 22311 Brookhurst Street, Suite 203 Huntington Beach, CA 92646 (714) 963-7964 joef@forkertengineering.com
The Gage Canal Company	ATTN: Ben Alms 7452 Dufferin Avenue Riverside, CA 92504 (951) 780-1333 gage-db@sbcglobal.net
HP Communications Fontana	ATTN: Stacy Allee 8440 Cottonwood Avenue Fontana, CA 92335 (760) 985-2438 stacy.allee@hpcomminc.com
Kinder Morgan Energy Partners	ATTN: Kurtis Johnson 1100 Town and Country Road Orange, CA 92868 (714) 560-4400 Kurtis_johnson@kindermorgan.com
Level 3 Communications/ Century Link	ATTN: Anthony Williams 1025 Eldorado Boulevard Broomfield, CO 80021 (877) 366-8344 Anthony.Williams1@lumen.com
MCI – Verizon	400 International Pkwy Richardson, TX 75081 (972) 729-6322 investigations@verizon.com
Crown Castle Fiber – LA & VEN	ATTN: Nicholas Belinsky 1500 Corporate Drive Canonsburg, PA 15317 (724) 416-2449 nicholas.belinsky@crowncastle.com
Riverside Highland Water Company	ATTN: Craig Gudgeon 12374 Michigan Street Grand Terrace, CA 92313 (909) 825-4128 cgudgeon@rhwco.com
City of Riverside – Water	City of Riverside - Water ATTN: Blake Yamamoto 3750 University Ave., 3rd Fl. Riverside, CA 92501 (951)826-5549 BYamamoto@riversideca.gov

Utility	Contact Information
City of Riverside – Traffic Engineering	ATTN: Nathan Mustafa 3900 Main Street Riverside, CA 92522 (951) 826-5148 NMustafa@riversideca.gov
City of Riverside – Electric	ATTN: Efren Mejia 3900 Main Street 3750 University Ave., 4th Fl. Riverside, CA 92501 (951)826-2182 EMejia@riversideca.gov
City of Riverside – Sewer	ATTN: Thuy Nguyen 3901 Orange Street Riverside, CA 92501 (951) 826-5285 TNNguyen@riversideca.gov
City of Riverside- City Surveyor	ATTN: Curt Stephens cstephens@riversideca.gov
Spectrum - Riverside	ATTN: Rey Lopez 7337 Central Avenue. Riverside, CA 92504 dl-socal-charter-engineering@charter.com
University of California Riverside	ATTN: Mike Mendoza 900 University Avenue, Telephone Bldg. Riverside, CA 92521 (951) 827-1881 michael.mendoza@ucr.edu
SCE Distribution – Desert Region	ATTN: Map Requests 14005 S. Benson Avenue Chino, CA 91710 maprequests@sce.com
SC Gas Riverside - Distribution	ATTN: Geary Ambers 1981 W Lugonia Avenue Redlands, CA 92374 (909) 335-7955 scgseregionredlandsutilityrequest@semprautilities.com
SCG – Transmission	socalgastransmissionutilityrequest@semprautilities.com

Planning Context

City of Riverside Trails Master Plan (2021)

The City of Riverside's recently developed Trails Master Plan (TMP) serves as an update to the Multi-Purpose Recreational Trails Master Plan and Trails Standards document adopted by Council in January 1996, with slight modifications and updates included in the 2003 Parks and Recreation Master Plan update. The TMP identified a series of existing and proposed trail corridors throughout the city. A prioritization process, examining opportunities and constraints and considering public input, identified a group of "top-ranked" proposed trails. The Gage Canal corridor was classified as a top-ranked trail through this process.

The portion of the Trail planned and designed in this document is part of the larger Gage Canal corridor that runs through the City of Riverside and is detailed in the recently updated Riverside Trails Master Plan. The Gage Canal Corridor creates a continuous 13+ mile long trail connection across Riverside. Currently, roughly 1.9 miles of the corridor is constructed whereas 11.7 miles are proposed. This Trail plan will upgrade an existing .5 mile section of trail and create an additional 1.5 miles of existing trail through the corridor.

The Gage Canal corridor, once completed, will form one of the longest continuous trails through Riverside. The completion of other adjoining trail corridors will assist in connecting Gage Canal to other major trail corridors like the Santa Ana River Trail, Victoria Avenue, and 7-mile trail.

The future upgraded and constructed Trail between Blaine Street and Marlborough Avenue will create a vital connection between UC Riverside and adjacent neighborhoods to the Riverside-Hunter Park/UCR Metrolink Station. Besides connecting students and residents to the Metrolink, this trail segment forms a direct link to the Box Springs trail system. This will allow trail users easier access to several miles of multi-use trails and scenic views of Riverside and Moreno Valley. The Trail is also benefited in this area by the connections to Class II bike lanes found on every cross street along the trail segment.

City of Riverside Active Transportation Plan (2021)

The City of Riverside Active Transportation Plan (AT Plan) builds on the city's previous Bicycle Master Plan and Master plan Update from 2007 and 2012. The AT Plan integrates walking, bicycling, and other transportation modes into a single plan that includes policies, infrastructure recommendations, and supporting programs, as well as identifies context specific funding sources, prioritized infrastructure projects, and implementation strategies.

As a means to create a cohesive network of connectivity between transportation and recreation facilities within the city, the AT Plan proposes links to major trail networks identified in the city's Trails Master Plan including Gage Canal.

Riverside County Comprehensive Trails Plan (2018)

The Riverside County Comprehensive Trails Plan establishes three primary goals: 1) the creation of a backbone trail network that is feasible, compatible with other plans, leverages trails within other jurisdictions, and closes gaps in a countywide trail system; 2) provide guidance for the design of trails which are accessible, usable by a variety of users, and connect to major destinations and other trails; and 3) sharing of recommendations for continued management of regional trails. The plan also identifies regional parks and connections to county backbone trails, including the Box Springs to which the Trail forms an important connection.

Riverside General Plan - Parks and Recreation Element (2012)

As part of the Parks and Recreation element of the city's general plan amended in November of 2012, a vision for the future of open space in the city was established. Coined "A Necklace of Open Space", Riverside envisions a "necklace" of parks and open space that exists on and/or defines the edges of the city with connectivity between those spaces and to Riverside's neighborhoods with landscaped parkways and trails accessible to pedestrians and cyclists.

Riverside General Plan - Circulation and Community Mobility Element (2012)

The Circulation and Community Mobility Element of the city's General Plan includes a subsection on walking and biking in Riverside that establishes a vision to "provide an extensive and regionally linked public bicycle, pedestrian and equestrian trails system." This vision is supported by 13 policy objectives that provide guidance for expansion of the city's trail network, including maximizing connections between trails and major activity centers and neighborhoods, linking to the trails of adjacent jurisdictions, and incorporating trails into future development projects.

Bicycle Master Plan (2007, 2012)

Riverside's Bicycle Master Plan, adopted in 2007 and updated in 2012, recommends several Class I Bike Paths such as the completion of the Trail and providing connections to the Santa Ana River Trail. The Bicycle Master Plan also proposes guidelines to encourage trail usage, and calls for coordination with the county to connect city trails with the county's network of regional trails.

Riverside County Box Springs Comprehensive Trails Master Plan (2015)

The Box Springs Trails Master Plan was created to establish a vision for improved trails and increased connectivity within the 3,400 acre reserve. While much of Box Springs is situated outside of the city, a portion of the land falls within Riverside's northwestern border. The plan identifies several opportunities to connect from the city trail network and local destinations to the reserve. One of the areas identified as a "staging area" for the Box Springs trail system is located at the Metrolink station on Marlborough. This plan aims to create that connection.

City, State, Federal Standards and Requirements Influencing Design

The design of the Trail utilizes applicable standards and criteria from the City of Riverside, Caltrans Highway Design Manual, American Public Works Association, and CA MUTCD. These standards form the basis for all improvements, including the horizontal path geometry, cross slope grades, typical pathway sections (including pavement sections), driveways, curb ramps, sidewalk, striping, signs and pavement markers, landscaping, irrigation, and local drainage deficiency improvements. All aspects of the trail will be accessible in accordance with State and Federal Law.

Applicable Codes and Standards

The following lists applicable codes and standards to be used for design specific elements. References to these documents will be provided in the appendices of the Special Provisions during the design phase.

- **City of Riverside Standard Plans for Public Works Construction** – for special provisions and plans for Class I bikeway, landscape, irrigation, driveway, curb ramps, curb and gutter, sidewalk, and signs.
- **Caltrans Standard Plans and Specifications** – for striping and pavement markers standards
- **Caltrans Highway Design Manual (HDM)** – for bikeway design criteria.
- **California Manual on Uniform Traffic Control Devices (CA MUTCD)** – for specifications and requirements for traffic control devices, including their use and placement.
- **Standard Plans and Specifications for Public Works Construction (SPPWC)** – for supplemental improvements not found in the city standards.
- **Americans with Disabilities Act (ADA)** - for all newly planned and constructed buildings, structures, sidewalks, curbs, curb ramps, and other related facilities.
- **City of Riverside Trails Master Plan (2021)** - for soft-surface trail design