City of Rialto

Regular Meeting - Final

Wednesday, August 20, 2025

REGULAR MEETING - 6:00 P.M.

City Council Chambers, 150 S. Palm Ave., Rialto, CA 92376

Planning Commission

Public Participation Procedures

THE PUBLIC WILL HAVE THE OPPORTUNITY TO SPEAK ON ANY ITEM USING THE PODIUM INSIDE THE COUNCIL CHAMBERS.

IF YOU ARE UNABLE TO ATTEND THE MEETING, YOU MAY PROVIDE COMMENTS ON ANY AGENDA ITEM USING ANY OF THE FOLLOWING METHODS:

• IN WRITING VIA MAIL TO: CITY OF RIALTO "ATTN: PLANNING COMMISSION C/O COMMUNITY DEVELOPMENT," 150 S PALM AVE, RIALTO, CA 92376

• IN WRITING VIA EMAIL TO PLANNING@RIALTOCA.GOV AT LEAST TWO (2) HOURS BEFORE THE MEETING.

YOU MAY CALL THE COMMUNITY DEVELOPMENT DEPARTMENT AT (909) 820-2505 DURING REGULAR BUSINESS HOURS OR SEND AN EMAIL TO PLANNING@RIALTOCA.GOV TO FIND OUT WHAT DECISIONS THE PLANNING COMMISSION MADE ON THE AGENDA ITEMS.

Call To Order

Pledge of Allegiance

Roll Call

Chair Jerry Gutierrez, Vice-Chair John Peukert, Artist Gilbert, Dale Estvander, Frank Gonzalez, Two (2) Vacancies

Oral Communications from the Audience on items not on the Agenda

Planning Commission Minutes

PC-25-0567 Minutes from the August 6, 2025 Planning Commission meeting.

Attachments: PC MTG MINS 08.06.2025.docx

Public Hearings

PC-25-0552 ***Conditional Development Permit No. 2024-0011 & Precise Plan of Design No. 2024-0018:*** A request to allow the construction of a 12,000 square foot accessory building for food distribution purposes at an existing church located at 2759 N. Ayala Drive (APN: 1133-361-01) within the Single-Family Residential (R-1A 10,000) zone. This project is categorically exempt pursuant to Section 15303 (New Construction or Conversion of Small Structures) of the California Environmental Quality Act (CEQA).

Attachments:
Exhibit A - Location Map
Exhibit B - Site Plan
Exhibit C - Floor Plan
Exhibit D - Elevations
Exhibit E - Draft Resolution for CDP No. 2024-0011
Exhibit F - Draft Resolution for PPD No. 2024-0018

PC-25-0407 **Master Case No. 2025-0002 (Related Files: Precise Plan of Design No. 2025-0002, Conditional Development Permit No. 2025-0002, and Environmental Assessment Review No. 2025-0001):** A proposal to combine two lots (APNs 0258-041-28 and 0258-041-29) into one 4.04-acre parcel and develop a truck and trailer outdoor storage yard at 2175 South Willow Avenue in the Heavy Industrial (H-IND) zone in the Agua Mansa Specific Plan.

Attachments:
Exhibit A - Location Map.pdf
Exhibit B - Site Plan.pdf
Exhibit C - Elevations.pdf
Exhibit D - Floor Plan.pdf
Exhibit E - Conceptual Landscape Plan.pdf
Exhibit F - 2175 Willow Traffic Scoping and Memorandum Signed 5-2-2025.pdf
Exhibit G - Willow Ave Trailer Parking AQ GHG Memo_Signed.pdf
Exhibit H - Hydrology Report 2175 S Willow_Signed.pdf
Exhibit I - Prelim WQMP - 2175 S Willow_Signed.pdf
Exhibit J - Draft Resolution for CDP No. 2025-0002.docx
Exhibit K Draft Resolution for PPD NO. 2025-0002.docx

Action Items

None.

Community Development Department Comments

Planning Commissioner Reports/Comments

Adjournment

City of Rialto

Legislation Text

File #: PC-25-0567, **Version:** 1, **Agenda #:**

Minutes from the August 6, 2025 Planning Commission meeting.

CITY OF RIALTO

THE REGULAR MEETING MINUTES OF PLANNING COMMISSION

August 6, 2025 - 6:00 p.m.

The regularly scheduled Planning Commission meeting of the City of Rialto was held in the City of Rialto City Council Chambers located at 150 South Palm Avenue, Rialto, California 92376, on August 6, 2025.

This meeting was called by the presiding officer of the City of Rialto Planning Commission in accordance with the provisions of **Government Code §54956** of the State of California.

o0o

CALL TO ORDER

Chair Jerry Gutierrez called the meeting to order at 6:00 p.m.

o0o

PLEDGE OF ALLEGIANCE

Chair Gutierrez led the pledge of allegiance.

o0o

ROLL CALL

Roll Call was taken by Administrative Analyst, Kim Dame.

Present:
Chair Jerry Gutierrez
Vice-Chair John Peukert
Commissioner Dale Estvander
Commissioner Artist Gilbert
Commissioner Frank Gonzalez

Absent:
There are two vacancies.

Staff Present:
Assistant City Attorney, Christy Lopez
Interim Community Development Director, Christina Taylor
Principal Planner, Daniel Casey
Associate Planner, Brian Vazquez
Administrative Analyst, Kim Dame

o0o

ORAL COMMUNICATION

Chair Gutierrez asked if there were any oral communications from the public not on the agenda. Ms. Dame stated there were none.

o0o

PLANNING COMMISSION MEETING MINUTES

Chair Gutierrez announced that the first item on the agenda is Planning Commission Meeting Minutes.

Motion by Commissioner Dale Estvander, seconded by Commissioner Frank Gonzalez to move to approve June 18, 2025, Planning Commission meeting minutes.

All were in favor, *motion carried*, 5-0.

o0o

PUBLIC HEARINGS

Chair Gutierrez stated the next item on the agenda is Conditional Development Permit No. 2025-0012 (File PC-25-0522).

Associate Planner Brian Vazquez presented Conditional Development Permit No. 2024-0022 instead.

Conditional Development Permit No. 2024-0022: A request to allow the placement of a small recycling bin (Clothing Donation Bin) within an existing commercial shopping plaza located at the southwest corner of Foothill Boulevard and Acacia Avenue (APN: 0130-051-51) within the Foothill Mixed-Use Zone (FMUZ) land use district of the Foothill Central Specific Plan.

o0o

Chair Gutierrez opened the Public Hearing.

Chair Gutierrez questioned if there is a law that requires the bins to be legally installed. Assistant City Attorney Christy Lopez advised that the city has no legal obligation. Chair Gutierrez asked what would be done to minimize and/or prevent the overfilling of the donation bin. Daniel Casey confirmed that there are conditions that will require constant maintenance of the bin.

Commissioner Gonzalez inquired who would monitor the maintenance. Mr. Casey clarified that someone would be going out five days a week to check on the bin. Commissioner Gonzalez expressed his concern regarding the homeless people loitering near the bin. Mr. Casey advised that there are conditions that would require having cameras – it would be an ongoing monitoring situation.

The applicant Veselin Dimitrov provided a brief description of the project.

PUBLIC HEARINGS

Ms. Lopez suggested amending the condition of approval number five to reflect the five days a week maintenance.

Commissioner Estvander made a motion to close the Public Hearing. Seconded by Commissioner Gonzalez.

Chair Gutierrez closed the Public Hearing.

o0o

Chair Gutierrez made a motion to approve the Conditional Development Permit No. 2024-0022 with the amended condition. Seconded by Commissioner Estvander.

Vote on the motion:
AYES: 5 (Gutierrez, Peukert, Estvander, Gilbert, Gonzalez)
NOES: 0
ABSTENTION: 0
ABSENT: 0

Motion passes.

o0o

Chair Gutierrez stated the next item on the agenda is Conditional Development Permit No. 2025-0012 (File PC-25-0522).

Associate Planner Brian Vazquez made the presentation.

Conditional Development Permit No. 2025-0012: A request to allow the establishment of a single-price overstock/discount store (Dollar Tree) within an existing 12,212 square foot tenant space located at 1295 West Renaissance Pkwy (APN 0264-152-52) within the Town Center (TC) zone of the Renaissance Specific Plan.

o0o

Chair Gutierrez opened the Public Hearing.

The applicant gave a brief description of the project.

Commissioner Estvander made a motion to close the Public Hearing. Seconded by Commissioner Gonzalez.

Chair Gutierrez closed the Public Hearing.

o0o

PUBLIC HEARINGS

Commissioner Estvander made a motion to approve the Conditional Development Permit No. 2025-0012. Seconded by Vice-Chair John Peukert.

Vote on the motion:
AYES: 5 (Gutierrez, Peukert, Estvander, Gilbert, Gonzalez)
NOES: 0
ABSTENTION: 0
ABSENT: 0

Motion passes.

o0o

COMMUNITY DEVELOPMENT DIRECTOR COMMENTS

Chair Gutierrez stated that the next item on the agenda is Community Development Director comments.

Interim Community Development Director Christina Taylor mentioned that the next Planning Commission meeting would be on August 20, 2025.

Vice-Chair Peukert requested an update regarding the new Planning Commission. Ms. Taylor advised that it would potentially be discussed at the next City Council meeting.

o0o

PLANNING COMMISSIONER COMMENTS

Chair Gutierrez stated the next item on the agenda is Planning Commissioner comments.

Chair Gutierrez gave thanks for the Casa Grande project on the Rialto side being completed.

o0o

Commissioner Estvander made a motion to adjourn the meeting. Seconded by Commissioner Gonzalez.

ADJOURNMENT

The Regular Planning Commission meeting on Wednesday, August 6, 2025, adjourned at 6:29 p.m.

o0o

Minutes prepared by Heidy Gonzalez
Administrative Assistant

Jerry Gutierrez
Chair, Planning Commission

File #: PC-25-0552, **Version:** 1, **Agenda #:**

For the Planning Commission Meeting of August 20, 2025

TO: Honorable Chairman and Planning Commissioners

APPROVAL: Christina Taylor, Interim Community Development Director

REVIEWED BY: Paul Gonzales, Community Development Manager

FROM: Daniel Casey, Principal Planner

Conditional Development Permit No. 2024-0011 & Precise Plan of Design No. 2024-0018: A request to allow the construction of a 12,000 square foot accessory building for food distribution purposes at an existing church located at 2759 N. Ayala Drive (APN: 1133-361-01) within the Single-Family Residential (R-1A 10,000) zone. This project is categorically exempt pursuant to Section 15303 (New Construction or Conversion of Small Structures) of the California Environmental Quality Act (CEQA).

APPLICANT:

Sunrise Church, 2759 Ayala Drive, Rialto, CA 92377

LOCATION:

The project site is located at 2759 N. Ayala Drive (APN: 1133-361-01), which is located at the southeast corner of Riverside Avenue and Ayala Drive (Refer to the attached Location Map (**Exhibit A**)).

BACKGROUND:

Surrounding General Plan Land Use Designations

Location	***General Plan Designation***
Site	Residential 6 (2.1 - 6.0 du/acre)
North	County of San Bernardino
East	School Facility
South	Residential 6 (2.1 - 6.0 du/acre)
West	Residential 6 (2.1 - 6.0 du/acre)

Surrounding Zoning Designations

Location	***Zoning***
Site	Single-Family Residential (R-1A 10,000)
North	County of San Bernardino
East	Single-Family Residential (R-1A 10,000)
South	Single-Family Residential (R-1B)
West	Single-Family Residential (R-1A 10,000)

Site Characteristics
The project site is a trapezoidal-shaped area of land approximately 11.96 acres in size previously approved and developed for a church in 1992 under Conditional Development Permit No. 309. Existing improvements on the church site consist of a sanctuary building, classroom buildings, parking lot containing 635 parking spaces, and landscaping.

Surrounding Area
The project site is bound by an existing segment of Riverside Avenue to the north and an existing segment of Ayala Drive to the west. To the north, south, and west of the project site are existing single-family residential neighborhoods, and to the east is Trapp Elementary School.

ANALYSIS/DISCUSSION:

Project Proposal
The applicant proposes to construct a 12,000 square foot accessory building for food distribution purposes at the existing church site located at 2759 N. Ayala Drive. The accessory building is also referred to as the “Peace Center”.

Entitlement Requirements
Per Section 18.66.060 of the Rialto Municipal Code, the modification and expansion of a church facility requires Planning Commission approval of a Conditional Development Permit, and per Section 18.65.010 of the Rialto Municipal Code, the proposed accessory building requires Planning Commission approval of a Precise Plan of Design.

Site Layout
As shown on the site plan (**Exhibit B**), the Peace Center is proposed to be constructed on the south end of the project site at on an existing grass field south of the parking lot. The building will be setback approximately 240 feet from Ayala Drive, 112 feet from the existing single-family residences to the south, and 77 feet from Trapp Elementary School. Proposed improvements also include two (2) shade canopies, a truck unloading area, a fire lane, and a stormwater basin.

Floor Plan
As proposed on the floor plan (**Exhibit C**), the interior of the Peace Center building will consist of approximately 2,400 square feet of office area at the northwest corner of the building, approximately 4,100 square feet of dry good storage area, approximately 3,100 square feet of staging/processing area, a 477 square foot cooler, a 489 square foot freezer, and an approximately 600 square foot maintenance storage area withing the building.

The building will also include two (2) roll-up doors - one (1) on the north side of the building and one (1) on the east side of the building. The north roll-up door will be used to facilitate distribution of the food packages to the public and the east roll-up door will be used to facilitate deliveries. Shade canopies will be constructed over the exterior of each roll-up door and a reclaimed wood panel fence will be installed on the south side of the delivery door canopy for screening purposes.

Architectural Design
As shown on the elevations (**Exhibit D**), the architectural style and exterior finishes of the Peace Center building will match the existing style and finishes of the church. This includes a beige-colored embossed textured wall finish, wood paneling, blue metal accents, signage, and a pitched roof. The height of the building will be 25 feet at the top the ridge and 17 feet at the eaves.

Operations
The Peace Center will primarily be used to distribute donated food items to the public for free. Food distribution will occur Tuesday through Friday from 9:00 a.m. to 4:00 p.m. every week. Volunteer staff will be present Monday through Friday every week with varying shifts that will only occur between the hours of 8:00 a.m. to 8:00 p.m. No operations will occur on Saturdays or Sundays or during church service hours.

Food deliveries to the site will occur on Mondays and Thursdays only, with two (2) delivery trucks at most on either day. Staff will unload pallets of donated food items from the trucks and move them into the Peace Center building, where the items will then be sorted and stored. Once sorted and stored, staff will prepare food packages for distribution.

On Tuesdays through Fridays, when the Peace Center is open to the public for food distribution, customer vehicles will enter the church site from the southerly driveway on Ayala Drive and queue on -site in the church parking lot. The food packages will be handed to the occupants of the vehicles once they arrive at the canopy on the north side of the Peace Center. Then the customer vehicles will exit the church site via the middle driveway on Ayala Drive. Pedestrian customers will be able to walk up directly to the Peace Center to receive their food package. The large size of the church parking lot will ensure that all vehicles queue on-site and not back up onto any public street.

The proposed operation will include daily prayer and access to shower facilities for the unhoused on Tuesdays every week.

Neighborhood Meeting
On February 13, 2025, Sunrise Church held a Neighborhood Meeting at the church site to introduce the project to the surrounding area. Mailers were sent out to all property owners and residents within 660 feet of the church site. The meeting had seventeen (17) attendees. The proposed Peace Center was generally well received by the attendees.

Land Use Compatibility
The project and its design are consistent with the Single-Family Residential (R-1A 10,000) zone and the Design Guidelines contained within Chapter 18.61 of the Rialto Municipal Code. The church has existed at the location since 1992, and it is compatible with the surrounding residential uses. Food distribution services, such as the proposed project, are often part of a church's mission to serve community needs. The Peace Center will be setback over 100 feet away from the nearest residential

uses, a screen wall will be provided at the loading area, and all vehicle queuing will occur on-site to minimize any impacts and maintain compatibility with the surrounding area.

GENERAL PLAN CONSISTENCY:

The project is consistent with the following goals of the Land Use Element of the Rialto General Plan:

Goal 2-16: Improve the architectural and design quality of development in Rialto.

Goal 2-19: Encourage neighborhood preservation, stabilization, and property maintenance.

ENVIRONMENTAL IMPACT:

California Environmental Quality Act
The project is categorically exempt from the requirements of the California Environmental Quality Act (CEQA). The project qualifies as a Class 3 exemption under CEQA Guidelines Section 15303(e) (New Construction or Conversion of Small Structures), which allows for the construction of accessory structures on previously developed properties, such as the project.

PUBLIC NOTICE:

The City published a public hearing notice for the proposed project in the *San Bernardino Sun* newspaper, posted copies of the public hearing notice outside the Council Chambers, and mailed public hearing notices to all property owners within 660 feet of the project site, as required by State law.

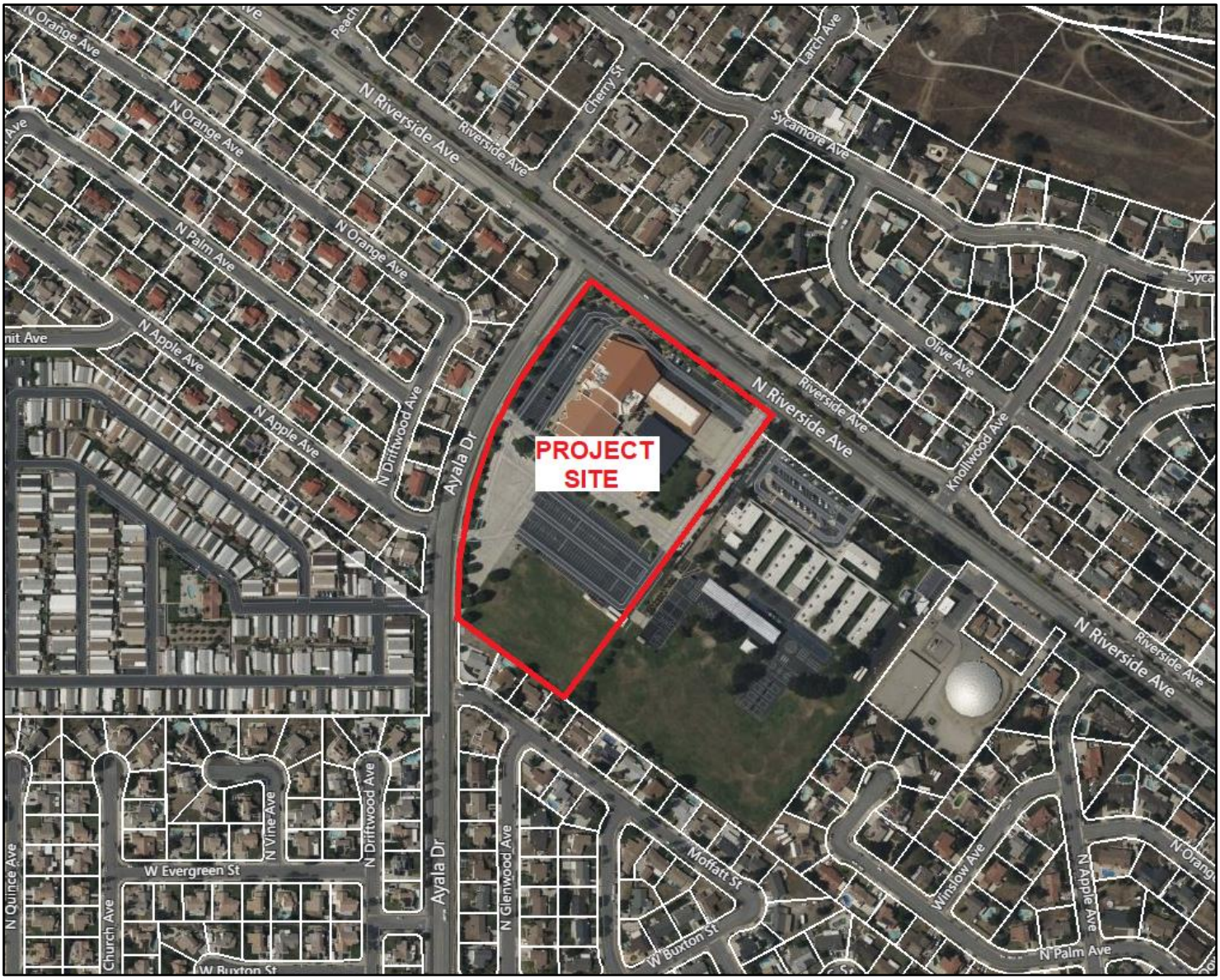
RECOMMENDATION:

The Planning Division recommends the Planning Commission:

1. Determine that the project is categorically exempt from the requirements of the California Environmental Quality Act (CEQA) pursuant to Section 15303(e), New Construction or Conversion of Small Structures, of the CEQA Guidelines and direct Staff to file the Notice of Exemption with County of San Bernardino; and,

2. Adopt the attached Resolution (**Exhibit E**) to approve Conditional Development Permit No. 2024-0011, subject to the findings and conditions therein; and

3. Adopt the attached Resolution (**Exhibit F**) to approve Precise Plan of Design No. 2024-0018, subject to the findings and conditions therein.



Project Location Map

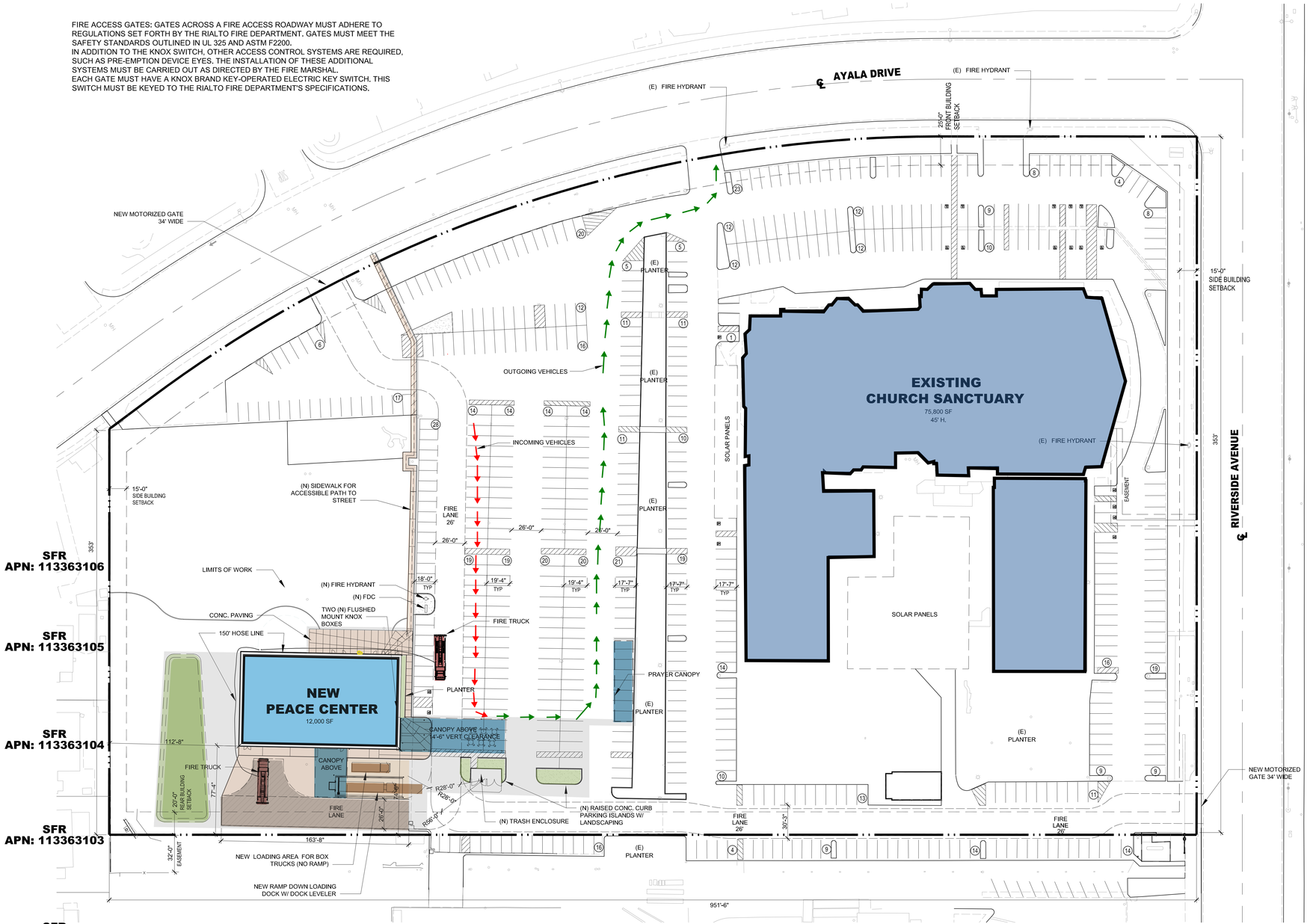
N

SUNRISE CHURCH PEACE CENTER

2759 AYALA DR. RIALTO, CA 92377

PRECISE PLAN OF DESIGN SUBMITTAL 10-09-2024

FIRE ACCESS GATES: GATES ACROSS A FIRE ACCESS ROADWAY MUST ADHERE TO REGULATIONS SET FORTH BY THE RIALTO FIRE DEPARTMENT. GATES MUST MEET THE SAFETY STANDARDS OUTLINED IN UL 325 AND ASTM F2200.
IN ADDITION TO THE KNOX SWITCH, OTHER ACCESS CONTROL SYSTEMS ARE REQUIRED, SUCH AS PRE-EMPTION DEVICE EYES. THE INSTALLATION OF THESE ADDITIONAL SYSTEMS MUST BE CARRIED OUT AS DIRECTED BY THE FIRE MARSHAL.
EACH GATE MUST HAVE A KNOX BRAND KEY-OPERATED ELECTRIC KEY SWITCH. THIS SWITCH MUST BE KEYED TO THE RIALTO FIRE DEPARTMENT'S SPECIFICATIONS.



1 SITE PLAN

SCALE: 1"=40'-0"

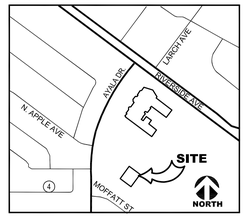
NOTE:

THE INFORMATION CONTAINED IN THIS FILE IS AND SHALL REMAIN THE SOLE AND EXCLUSIVE PROPERTY OF TR DESIGN GROUP AND SHALL NOT BE USED EXCEPT AS AUTHORIZED BY TR DESIGN GROUP. BY USING THIS DRAWING/FILE AND THE INFORMATION CONTAINED THEREON AND BY DISPLAYING THE INFORMATION ON THIS DRAWING/FILE YOU AGREE TO AND ACKNOWLEDGE ALL OF THE FOLLOWING:

FIRE SPRINKLER SYSTEM TO BE INSTALLED THROUGHOUT NEW PROPOSED WAREHOUSE.

VICINITY MAP

NOT TO SCALE



SHEET INDEX

PROJECT DESCRIPTION

THE PROPOSED "PEACE CENTER" PROJECT IS A 12,000 SF WAREHOUSE FACILITY SUPPORTING A FOOD DISTRIBUTION PROGRAM WHERE THE COMMUNITY IS INVITED TO COME TO THE CHURCH, RECEIVE DONATED FOOD TUESDAY THROUGH FRIDAY 9PM - 4PM.THE PROPOSED BUILDING INCLUDES 2,955 SF WAREHOUSE, FREEZER AND REFRIGERATION SPACES, OFFICE/ SUPPORT AREAS AND RESTROOMS. NEW SITE IMPROVEMENTS INCLUDE A RETENTION BASIN FOR WATER QUALITY MANAGEMENT, PLANTERS AND LANDSCAPING, A TRASH ENCLOSURE AND SIDEWALKS. FACILITY WILL INCLUDE AN ESTIMATED AMOUNT OF 10 EMPLOYEES.

PROJECT DATA

PROJECT ADDRESS

2759 N. AYALA DRIVE, RIALTO, CA 92377

PARCEL AREA: 11.96 ACRES

OWNER/ APPLICANT: SUNRISE CHURCH
2759 N. AYALA DR.
RIALTO, CA 92377

REPRESENTATIVE: TR DESIGN GROUP, ARCHITECTURE
2900 ADAMS STREET, STE. A-400
RIVERSIDE, CA 92504
CONTACT: XAVIER ADRIAN
PHONE: 951-742-7179

APN: 1133-361-01-0-000

OCCUPANCY: S2

TYPE OF CONSTRUCTION TYPE VB

EXISTING & PROPOSED ZONE/LAND USE
EXISTING: SFR (R-1A-10,000)
PROPOSED: SFR (R-1A-10,000)

BUILDING SETBACKS

FRONT YARD: 25'
SIDE YARD: 15'
REAR YARD: 20'

TOTAL BUILDING AREA

EXISTING BUILDING:	~75,800 SF
NEW BUILDING	12,000 SF
TOTAL	87,800 SF

LOT COVERAGE:

EXISTING	75,800 SF/518,997 SF	= 13%
PROPOSED BUILDING	12,000 SF/ 518,997 SF	= 2%
TOTAL	87,800 SF/518,997 SF	= 15%

PARKING ANALYSIS:

	PARKING REQT	REQD.	PROVIDED
CHURCH	1/4 SEATS/ 1/3 STUD. & 1/2 STAFF.	552	635
WAREHOUSE	1/1,000 SF	10	635
NOTE: WARE USE AND CHURCH SERVICES WILL NOT TAKE PLACE AT ON THE SAME DAY			
	TOTAL PARKING PROVIDED	562	635

ACCESSIBLE PARKING ANALYSIS:

PROVIDED PARKING	REQ. A.P.	REQD.	PROVIDED A.P.	DIFFERENCE
640	1 PER 25	26	20	-6

UTILITIES

WATER: WEST VALLEY WATER DISTRICT	(909) 857-1804
SEWER: RIALTO WATER SERVICE	(909) 820-2546
ELECTRICITY: SOUTHERN CALIFORNIA EDISON	(800) 655-4555
SCHOOLS: RIALTO UNIFIED SCHOOL DISTRICT	(909) 820-7700
INT/ PHONE: SPECTRUM	(855) 243-8892
WASTE: BURRTEC DISPOSAL	(909) 877-1596

TR DESIGN GROUP ARCHITECTURE
951.742.7179
2900 ADAMS STREET STUDIO A-400 RIVERSIDE, CA 92504
www.trdesigngroup.com
MADE IN THE U.S.A.

APPLICANT:

SUNRISE CHURCH

SUNRISE CHURCH
2759 N. AYALA DR.
RIALTO, CA 92377

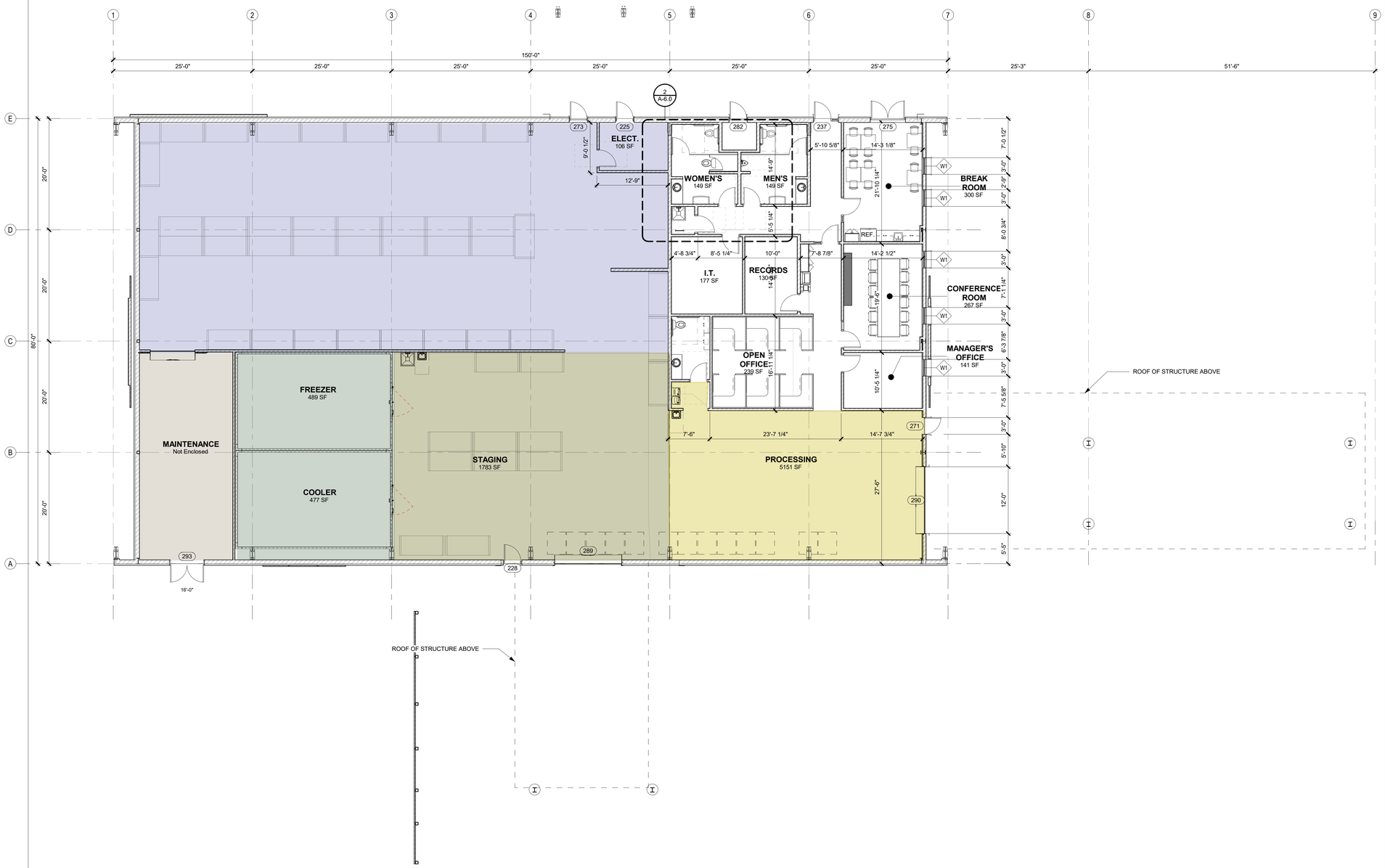
PROJECT:

PEACE CENTER
2759 N. AYALA DR.
RIALTO, CA 92377

CONCEPTUAL SITE PLAN

DATE: 7/9/2025
JOB #: 23-052

CDP-1



FLOOR PLAN

SCALE 1/8" = 1'-0"

NORTH

KEYNOTES

GENERAL NOTES

1. ALL EXTERIOR WALLS SHALL BE 2"X6" WOOD STUDS- SEE STRUCT. PLANS
2. ALL INTERIOR WALL TO BE WOOD STUD WALLS- SEE WALL LEGEND BELOW
3. EXTERIOR FINISH TO BE STUCCO, LAP SIDING, BOARD OR BATTEN SIDING OR HORIZONTAL RECLAIMED WOOD SIDING WHERE OCCURS- SEE EXTERIOR ELEVATIONS
4. INSULATE ALL EXTERIOR STUD WALL WITH R-19 BATTS INSULATION
5. ALL GYP. BD. WALL CORNERS SHALL BE BULLNOSED
6. PROVIDE 5/8" TYPE "X" GYP. BD. THROUGH OUT. U.N.O
7. ALL EXTERIOR DIMENSIONS ARE TO FACE OF STUD, MASONRY, OR CENTER OF OPENING U.N.O.
8. ALL INTERIOR DIMENSIONS ARE TO FINISH OF WALL & CENTER OF OPENING. U.N.O
9. ADA COUNTERTOPS TO BE A MINIMUM OF 36" INCHES WIDE & 28"-34" HIGH
10. PROVIDE FLASHING AT ALL EXTERIOR DOOR, WINDOWS AND OTHER EXTERIOR OPENINGS.
11. ALL DOORS MUST HAVE A SWEEP PERIOD OF 3 SECONDS TO CLOSE FROM 70° OPEN TO 3° FROM THE LATCH. OPENING FORCE SHALL NOT BE MORE THAN 8.5 LBS FOR EXTERIOR DOORS.
12. ALL EXTERIOR DOORS MUST HAVE NO MORE THAN 8.5 LBS OPENING FORCE. ALL INTERIOR DOORS MUST HAVE NO MORE THAN 5 LBS OPENING FORCE.
13. THE UNLATCHING OF ANY DOOR OR LEAF SHALL NOT REQUIRE MORE THAN ONE OPERATION.
14. ALL EXTERIOR CONCRETE SHALL BE EXPOSED WEATHER SEALED.
15. SPRINKLER SYSTEM IS A DESIGN/BUILD SYSTEM BY SPRINKLER CONT. SUBMIT PLANS AND SHOP DRAWINGS TO THE FIRE DEPT. FOR APPROVAL. HEADS SHALL BE CONCEALED FULLY RECESSED.

NEW BUILDING AREA

NAME	AREA
Building Area	4887 SF
TOTAL	4887 SF

WALL LEGEND

- CONCRETE PLATFORM WALLS - SEE STRUCTURAL DWGS.
- WOOD STUD WALLS- SEE WALL TYPES AND STRUCTURAL DWGS.
- EXTERIOR BLDG WALLS. SEE WALL TYPES AND STRUCTURAL DWGS.

DESIGN GROUP ARCHITECTURE
951.742.7179
2900 ADAMS STREET STUDIO A-400 RIVERSIDE, CA 92504
www.trdesigngroup.com
MADE IN THE U.S.A.

CONSULTANT:

APPLICANT:

SUNRISE CHURCH

SUNRISE CHURCH
2759 AYALA DRIVE
RIALTO, CA 92377

PROJECT:

SUNRISE CHURCH

PEACE CENTER
2759 AYALA DRIVE
RIALTO, CA 92377

FLOOR PLAN

REV. NO.	REVISION DESCRIPTION	DATE	BY

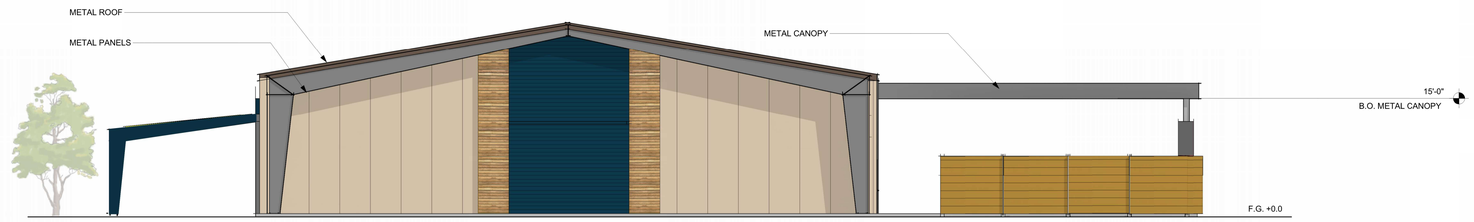
PRINTED: 10/9/2024

DRAWN: JO
JOB#: 23-052
DATE: 08/20/24
SCALE: As indicated

SHEET NO.
A-1.1

SOUTH ELEVATION

SCALE 1/8" = 1'-0"

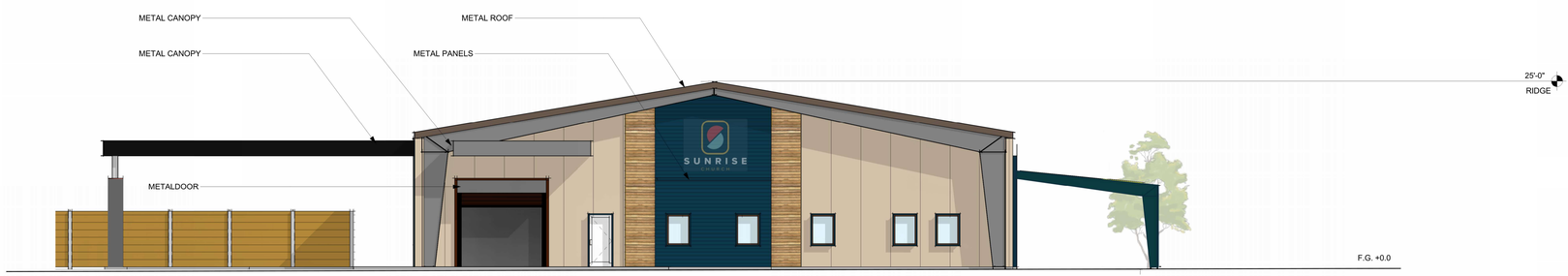


WEST ELEVATION

SCALE 1/8" = 1'-0"

NORTH ELEVATION

SCALE 1/8" = 1'-0"



EAST ELEVATION

SCALE 1/8" = 1'-0"

DESIGN GROUP
ARCHITECTURE
951.742.7179
2900 ADAMS STREET
STUDIO A-400
RIVERSIDE, CA 92504
www.trdesigngroup.com

MADE IN THE USA

APPLICANT:

SUNRISE CHURCH

SUNRISE CHURCH
2759 AYALA DRIVE
RIALTO, CA 92377

PROJECT:

PEACE CENTER
2759 AYALA DRIVE
RIALTO, CA 92377

APPROVAL STAMP

SET REVIEWED BY DATE

APPROVED BY DATE

ELEVATIONS

SCALE: 1/8" = 1'-0"
JOB #: 23-052
DATE: 02/21/20

CS-4

RESOLUTION NO. 2025-XX

A RESOLUTION OF THE PLANNING COMMISSION OF THE CITY OF RIALTO, CALIFORNIA, APPROVING CONDITIONAL DEVELOPMENT PERMIT NO. 2024-0011 ALLOWING THE CONSTRUCTION OF A 12,000 SQUARE FOOT ACCESSORY BUILDING FOR FOOD DISTRIBUTION PURPOSES AT AN EXISTING CHURCH LOCATED AT 2759 N. AYALA DRIVE (APN: 1133-361-01) WITHIN THE SINGLE-FAMILY RESIDENTIAL (R-1A 10,000) ZONE.

WHEREAS, the applicant, Sunrise Church, proposes to construct a 12,000 square foot accessory building for food distribution purposes at an existing church ("Project") located at 2759 N. Ayala Drive (APN: 1133-361-01) within the Single-Family Residential (R-1A 10,000) zone ("Site"); and

WHEREAS, Pursuant to Section 18.66.060 of the Rialto Municipal Code, the Project requires a Conditional Development Permit, and the applicant has agreed to apply for Conditional Development Permit No. 2023-0025 ("CDP No. 2024-0011"); and

WHEREAS, in conjunction with the Project, the applicant has applied for Precise Plan of Design No. 2024-0018 to allow the construction of a 12,000 square foot accessory building for food distribution purposes on the Site ("PPD No. 2024-0018"); and

WHEREAS, on August 20, 2025, the Planning Commission of the City of Rialto conducted a duly noticed public hearing, as required by law, on CDP No. 2024-0011 and PPD No. 2024-0018, took testimony, at which time it received input from staff, the city attorney, and the applicant; heard public testimony; discussed the proposed CDP No. 2024-0011 and PPD No. 2024-0018; and closed the public hearing; and

WHEREAS, all legal prerequisites to the adoption of this Resolution have occurred.

NOW, THEREFORE, BE IT RESOLVED by the Planning Commission of the City of Rialto as follows:

SECTION 1. The Planning Commission hereby specifically finds that all of the facts set forth in the recitals above of this Resolution are true and correct and incorporated herein.

SECTION 2. Based on substantial evidence presented to the Planning Commission during the public hearing conducted with regard to CDP No. 2024-0011, including written staff reports, verbal testimony, site plans, other documents, and the conditions of approval stated herein, the Planning Commission hereby determines that CDP No. 2024-0011 satisfies the requirements of Section 18.66.020 of the Rialto Municipal Code pertaining to the findings which must be made precedent to granting a conditional development permit. The findings are as follows:

1. The proposed use is deemed essential or desirable to provide a service or facility which will contribute to the convenience or general well-being of the neighborhood or community; and

This finding is supported by the following facts:

The applicant proposes to construct a 12,000 square foot accessory building at an existing church. The accessory building will be used to distribute donated food items to the public for free. The Project will provide food and essentials to those in need, including any residents of Rialto. Feeding the community will contribute to its well-being.

2. The proposed use will not be detrimental or injurious to health, safety, or general welfare of persons residing or working in the vicinity; and

This finding is supported by the following facts:

The Site is bound by an existing segment of Riverside Avenue to the north and an existing segment of Ayala Drive to the west. To the north, south, and west of the project site are existing single-family residential neighborhoods, and to the east is Trapp Elementary School. The Project is consistent with the underlying Single-Family Residential (R-1A 10,000) zone. The church on the Site has been in existence since 1992 and it is compatible with the surrounding residential uses. Food distribution services, such as the Project, are often part of a church's mission to serve community needs. The proposed building will be setback over 100 feet away from the nearest residential uses, a screen wall will be provided at the loading area, and all vehicle queuing will occur on-site to minimize any impacts and maintain compatibility with the surrounding area. In addition, the Project has been reviewed by the City staff for compliance with all health, safety, and design requirements to ensure the project will significantly enhance the infrastructure and aesthetics of the local community.

3. The site for the proposed use is adequate in size, shape, topography, accessibility and other physical characteristics to accommodate the proposed use in a manner compatible with existing land uses; and

This finding is supported by the following facts:

The Site consists of a trapezoidal-shaped area of land approximately 11.96 acres in size and adjacent to two (2) public streets. The Site was previously developed into a church in 1992. The Site will continue to be accessible from existing driveways connected to Riverside Avenue and Ayala Drive. In addition, the development has existing lighting and accessible pathways leading to the public right-of-way and ample parking.

4. The site has adequate access to those utilities and other services required for the proposed use; and

This finding is supported by the following facts:

The Site has adequate access to all utilities and services required through main water, electric, sewer, and other utility lines that are already hooked up to the Site.

5. The proposed use will be arranged, designed, constructed, and maintained so as it will not be injurious to property or improvements in the vicinity or otherwise be inharmonious with the General Plan and its objectives, or any zoning ordinances; and

This finding is supported by the following facts:

The Project is consistent with the underlying Single-Family Residential (R-1A 10,000) zone and the surrounding residential uses. The Project will feature a high-quality building exterior designed in compliance with the City's Design Guidelines. The proposed building will be setback over 100 feet away from the nearest residential uses, a screen wall will be provided at the loading area, and all vehicle queuing will occur on-site to minimize any impacts and maintain compatibility with the surrounding area.

6. Any potential adverse effects upon the surrounding properties will be minimized to every extent practical and any remaining adverse effects shall be outweighed by the benefits conferred upon the community or neighborhood as a whole.

This finding is supported by the following facts:

The Project's effects will be minimized through the implementation of the Conditions of Approval contained herein, and through the implementation of Conditions of Approval imposed by the Planning Commission on the Precise Plan of Design, such as enhanced landscaping and enhanced architectural features. The Project will meet the development criteria of the Single-Family Residential (R-1A 10,000) zone and Chapter 18.61 (Design Guidelines) of the Rialto Municipal Code. The project is consistent with the Single-Family Residential (R-1A 10,000) zone and the surrounding uses. The proposed building will be setback over 100 feet away from the nearest residential uses, a screen wall will be provided at the loading area, and all vehicle queuing will occur on-site to minimize any impacts and maintain compatibility with the surrounding area. Therefore, any potential adverse effects are outweighed by the benefits conferred upon the community and neighborhood as a whole.

SECTION 3. The Project is categorically exempt from the requirements of the California Environmental Quality Act (CEQA), pursuant to Section 15303(e), New Construction or Conversion of Small Structures. The Project proposes the construction of an accessory building for food distribution purposes at an existing church, and, therefore, qualifies for this exemption. The Planning Commission directs the Planning Division to file the necessary documentation with the Clerk of the Board of Supervisors for San Bernardino County.

SECTION 4. CDP No. 2024-0011 is granted to Sunrise Church in accordance with the plans and application on file with the Planning Division, subject to the following conditions:

1. The applicant is granted CDP No. 2024-0011 allowing the construction of a 12,000 square foot accessory building for food distribution purposes at an existing church located at 2759 N. Ayala Drive (APN: 1133-361-01) within the Single-Family Residential (R-1A 10,000) zone, as shown on the plans attached as Exhibit A and as approved by the Planning Commission. If the Conditions of Approval specified herein are not satisfied or otherwise completed, the project shall be subject to revocation.

2. City inspectors shall have access to the site to reasonably inspect the site during normal working hours to assure compliance with these conditions and other codes.

3. The applicant shall indemnify, protect, defend, and hold harmless, the City of Rialto, and/or any of its officials, officers, employees, agents, departments, agencies, and instrumentalities thereof (collectively, the "City Parties"), from any and all claims, demands, law suits, writs of mandamus, and other actions and proceedings (whether legal, equitable, declaratory, administrative or adjudicatory in nature), and alternative dispute resolutions procedures (including, but not limited to arbitrations, mediations, and other such procedures), (collectively "Actions"), brought against the City, and/or any of its officials, officers, employees, agents, departments, agencies, and instrumentalities thereof, that challenge, attack, or seek to modify, set aside, void, or annul, the any action of, or any permit or approval issued by, the City and/or any of its officials, officers, employees, agents, departments, agencies, and instrumentalities thereof (including actions approved by the voters of the City), for or concerning the Project (collectively, the "Entitlements"), whether such Actions are brought under the California Environmental Quality Act, the Planning and Zoning Law, the Subdivision Map Act, Code of Civil Procedure Chapter 1085 or 1094.5, the California Public Records Act, or any other state, federal, or local statute, law, ordinance, rule, regulation, or any decision of a court of competent jurisdiction. This condition to indemnify, protect, defend, and hold the City harmless shall include, but not be limited to (i) damages, fees and/or costs awarded against the City, if any, and (ii) cost of suit, attorneys' fees and other costs, liabilities and expenses incurred in connection with such proceeding whether incurred by applicant, Property owner, or the City and/or other parties initiating or bringing such proceeding (collectively, subparts (i) and (ii) are the "Damages"). Notwithstanding anything to the contrary contained herein, the

Applicant shall not be liable to the City Parties under this indemnity to the extent the Damages incurred by any of the City Parties in such Action(s) are a result of the City Parties' fraud, intentional misconduct or gross negligence in connection with issuing the Entitlements. The applicant shall execute an agreement to indemnify, protect, defend, and hold the City harmless as stated herein within five (5) days of approval of CDP No. 2024-0011.

4. In accordance with the provisions of Government Code Section 66020(d)(1), the imposition of fees, dedications, reservations, or exactions for this Project, if any, are subject to protest by the applicant at the time of approval or conditional approval of the Project or within 90 days after the date of the imposition of the fees, dedications, reservations, or exactions imposed on the Project.

5. Approval of CDP No. 2024-0011 will not become effective until the applicant has signed a statement acknowledging awareness and acceptance of the required conditions of approval contained herein.

6. The applicant shall ensure that all inbound traffic that requires temporary queuing or staging be done on-site. Inbound traffic shall not queue or stage on any public street at any time. Activities on-site shall not operate in such a manner that would impact traffic lanes, cause back up (queuing or staging) of vehicles into the public-right-of-way, or create any unsafe conditions. Fire and Police access and passage around vehicles queuing or staging on-site shall be provided at all times and activities shall not block access or passage for disabled persons or emergency response vehicles.

7. In the event any operation on the Site is found to be objectionable or incompatible with the character of the City and its environs due to excessive noise, excessive traffic, loitering, or other undesirable characteristics including, but not strictly limited to, uses which are or have become offensive to neighboring property or the goals and objectives of the Single-Family Residential (R-1A 10,000) zone and/or the City's General Plan, the applicant shall address the issues within forty-eight (48) hours of being notified by the City.

8. If the applicant fails to comply with any of the conditions of approval placed upon CDP No. 2024-0011 or PPD No. 2024-0018, the Planning Commission may initiate proceedings to revoke the conditional development permit in accordance with the provisions of Sections 18.66.070 through 18.66.090, inclusive, of the Rialto Municipal Code. CDP No. 2024-0011 may be revoked, suspended or modified in accordance with Section 18.66.070 of the Zoning Ordinance at the discretion of the Planning Commission if:

    a) The use for which such approval was granted has ceased to exist, been subsequently modified, or has been suspended for six (6) months or more;

    b) Any of the express conditions or terms of such permit are violated;

c) The use for which such approval was granted becomes or is found to be objectionable or incompatible with the character of the City and its environs due to excessive noise, excessive traffic, or other undesirable characteristics including, but not strictly limited to uses which are or have become offensive to neighboring property or the goals and objectives of the Single-Family Residential (R-1A 10,000) zone and the City's General Plan.

SECTION 5. The Chairman of the Planning Commission shall sign the passage and adoption of this resolution and thereupon the same shall take effect and be in force.

PASSED, APPROVED AND ADOPTED this 20th day of August, 2025.

_____

JERRY GUTIERREZ, CHAIR
CITY OF RIALTO PLANNING COMMISSION

STATE OF CALIFORNIA)
COUNTY OF SAN BERNARDINO) ss
CITY OF RIALTO)

I, Heidy Gonzalez, Administrative Assistant of the City of Rialto, do hereby certify that the foregoing Resolution No. ____ was duly passed and adopted at a regular meeting of the Planning Commission of the City of Rialto held on the ___th day of ____, 2025.

Upon motion of Planning Commissioner_____., seconded by Planning Commissioner ____, the foregoing Resolution No. ____was duly passed and adopted.

Vote on the motion:

AYES:

NOES:

ABSENT:

IN WITNESS WHEREOF, I have hereunto set my hand and the Official Seal of the City of Rialto this __th day of ___, 2025.

_____

HEIDY GONZALEZ, ADMINISTRATIVE ANALYST

Exhibit “A”

Project Plans

RESOLUTION NO. 2025-XX

A RESOLUTION OF THE PLANNING COMMISSION OF THE CITY OF RIALTO, CALIFORNIA, APPROVING PRECISE PLAN OF DESIGN NO. 2024-0018 ALLOWING THE CONSTRUCTION OF A 12,000 SQUARE FOOT ACCESSORY BUILDING FOR FOOD DISTRIBUTION PURPOSES AT AN EXISTING CHURCH LOCATED AT 2759 N. AYALA DRIVE (APN: 1133-361-01) WITHIN THE SINGLE-FAMILY RESIDENTIAL (R-1A 10,000) ZONE.

WHEREAS, the applicant, Sunrise Church, proposes to construct a 12,000 square foot accessory building for food distribution purposes at an existing church ("Project") located at 2759 N. Ayala Drive (APN: 1133-361-01) within the Single-Family Residential (R-1A 10,000) zone ("Site"); and

WHEREAS, Pursuant to Chapter 18.65 (Precise Plan of Design) of the Rialto Municipal Code, the Project requires a Precise Plan of Design, and the applicant has agreed to apply for Precise Plan of Design No. 2024-0018 ("PPD No. 2024-0018"); and

WHEREAS, in conjunction with the Project, the applicant has applied for Conditional Development Permit No. 2024-0011, in accordance with Section 18.66.060 of the Rialto Municipal Code, to allow the construction of a 12,000 square foot accessory building for food distribution purposes on the Site ("CDP No. 2024-0011"); and

WHEREAS, on August 20, 2025, the Planning Commission of the City of Rialto conducted a duly noticed public hearing, as required by law, on PPD No. 2024-0018 and CDP No. 2024-0011, took testimony, at which time it received input from staff, the city attorney, and the applicant; heard public testimony; discussed the proposed PPD No. 2024-0018 and CDP No. 2024-0011; and closed the public hearing; and

WHEREAS, all legal prerequisites to the adoption of this Resolution have occurred.

NOW, THEREFORE, BE IT RESOLVED by the Planning Commission of the City of Rialto as follows:

SECTION 1. The Planning Commission hereby specifically finds that all of the facts set forth in the recitals above of this Resolution are true and correct and incorporated herein.

SECTION 2. Based on substantial evidence presented to the Planning Commission during the public hearing conducted with regard to PPD No. 2024-0018, including written staff reports, verbal testimony, site plans, other documents, and the conditions of approval stated herein, the Planning Commission hereby determines that PPD No. 2024-0018 satisfies the requirements of Section 18.65.020E of the Rialto Municipal Code pertaining to the findings which must be made precedent to granting a Precise Plan of Design. The findings are as follows:

1. The proposed development is in compliance with all city ordinances and regulations, unless in accordance with an approved variance; and

This finding is supported by the following facts:

The Project, as conditioned herein, will comply with all City ordinances and regulations, including those within Chapter 18.61 (Design Guidelines) of the Rialto Municipal Code. The Site has a zoning designation of Single-Family Residential (R-1A 10,000). The R-1A zone allows for the modification of church uses, as proposed by the Project. Additionally, the Project meets all of the required development standards of the R-1A zone including, but not limited to, required building setbacks, building height, etc.

2. The site is physically suitable for the proposed development, and the proposed development will be arranged, designed, constructed, and maintained so that it will not be unreasonably detrimental or injurious to property, improvements, or the health, safety or general welfare of the general public in the vicinity, or otherwise be inharmonious with the city's general plan and its objectives, zoning ordinances or any applicable specific plan and its objectives; and

This finding is supported by the following facts:

The Site consists of a trapezoidal-shaped area of land approximately 11.96 acres in size and adjacent to two (2) public streets. The Site has adequate access to all utilities and services required through main water, electric, sewer, and other utility lines that are already hooked up to the Site as part of the proposed Project.

The Site is bound by an existing segment of Riverside Avenue to the north and an existing segment of Ayala Drive to the west. To the north, south, and west of the project site are existing single-family residential neighborhoods, and to the east is Trapp Elementary School. The Project is consistent with the underlying Single-Family Residential (R-1A 10,000) zone. The church on the Site has been in existence since 1992 and it is compatible with the surrounding residential uses. Food distribution services, such as the Project, are often part of a church's mission to serve community needs. The proposed building will be setback over 100 feet away from the nearest residential uses, a screen wall will be provided at the loading area, and all vehicle queuing will occur on-site to minimize any impacts and maintain compatibility with the surrounding area. In addition, the Project has been

reviewed by the City staff for compliance with all health, safety, and design requirements to ensure the project will significantly enhance the infrastructure and aesthetics of the local community.

3. The proposed development will not unreasonably interfere with the use or enjoyment of neighboring property rights or endanger the peace, health, safety or welfare of the general public; and

This finding is supported by the following facts:

The Project's effects will be minimized through the implementation of the Conditions of Approval contained herein, such as enhanced architectural features and additional landscaping. To the north of the Site is the SR-210 Freeway, to the east and south are existing single-family residences, and to the west is an existing water reservoir tank facility. The Project is consistent with the underlying Single-Family Residential (R-1A 10,000) zone and the surrounding residential uses. The church on the Site has been in existence since 1992 and it is compatible with the surrounding residential uses. The proposed building will be setback over 100 feet away from the nearest residential uses, a screen wall will be provided at the loading area, and all vehicle queuing will occur on-site to minimize any impacts and maintain compatibility with the surrounding area.

4. The proposed development will not substantially interfere with the orderly or planned development of the City of Rialto.

This finding is supported by the following facts:

The Project is consistent with the underlying Single-Family Residential (R-1A 10,000) zone and is a logical expansion to the existing church use. The design of the Project will ensure a continuation of the improvements, access, and enhanced aesthetics prevalent in the area. The City staff have reviewed the design of the Project to ensure compliance with all health, safety, and design requirements to ensure the Project will enhance the infrastructure and aesthetics of the local community.

SECTION 3. The Project is categorically exempt from the requirements of the California Environmental Quality Act (CEQA), pursuant to Section 15303(e), New Construction or Conversion of Small Structures. The Project proposes the construction of an accessory building for food distribution purposes at an existing church, and, therefore, qualifies for this exemption. The Planning Commission directs the Planning Division to file the necessary documentation with the Clerk of the Board of Supervisors for San Bernardino County.

SECTION 4. PPD No. 2024-0018 is granted to Sunrise Church in accordance with the plans and application on file with the Planning Division, subject to the following conditions:

1. The applicant is granted PPD No. 2024-0018 allowing the development of a 12,000 square foot accessory building for food distribution purposes at an existing church located at 2759 N. Ayala Drive (APN: 1133-361-01) within the Single-Family Residential (R-1A 10,000) zone, subject to the Conditions of Approval contained herein.

2. The approval of PPD No. 2024-0018 is granted for a two (2) year period from the date of approval. Approval of PPD No. 2024-0018 will not become effective until the applicant has signed a Statement of Acceptance acknowledging awareness and acceptance of the required Conditions of Approval contained herein. Any request for an extension shall be reviewed by the Community Development Director and shall be based on the progress that has taken place toward the development of the project.

3. The development associated with PPD No. 2024-0018 shall conform to the site plan, floor plan, and elevations attached hereto as Exhibit A, except as may be required to be modified based on the Conditions of Approval contained herein.

4. The development associated with PPD No. 2024-0018 shall comply with all Conditions of Approval contained within CDP No. 2024-0011.

5. The development associated with PPD No. 2024-0018 shall comply with all applicable sections of the Rialto Municipal Code and all other applicable State and local laws and ordinances.

6. City inspectors shall have access to the site to reasonably inspect the site during normal working hours to assure compliance with these conditions and other codes.

7. The applicant shall indemnify, protect, defend, and hold harmless, the City of Rialto, and/or any of its officials, officers, employees, agents, departments, agencies, and instrumentalities thereof (collectively, the "City Parties"), from any and all claims, demands, law suits, writs of mandamus, and other actions and proceedings (whether legal, equitable, declaratory, administrative or adjudicatory in nature), and alternative dispute resolutions procedures (including, but not limited to arbitrations, mediations, and other such procedures), (collectively "Actions"), brought against the City, and/or any of its officials, officers, employees, agents, departments, agencies, and instrumentalities thereof, that challenge, attack, or seek to modify, set aside, void, or annul, the any action of, or any permit or approval issued by, the City and/or any of its officials, officers, employees, agents, departments, agencies, and instrumentalities thereof (including actions approved by the voters of the City), for or concerning the Project (collectively, the "Entitlements"), whether such Actions are brought under the California Environmental Quality Act, the Planning and Zoning Law, the Subdivision Map Act, Code of Civil Procedure Chapter 1085 or 1094.5, the California Public Records Act, or any other state, federal, or local statute, law, ordinance, rule, regulation, or any decision of a court of competent jurisdiction. This condition to indemnify,

protect, defend, and hold the City harmless shall include, but not be limited to (i) damages, fees and/or costs awarded against the City, if any, and (ii) cost of suit, attorneys' fees and other costs, liabilities and expenses incurred in connection with such proceeding whether incurred by applicant, Property owner, or the City and/or other parties initiating or bringing such proceeding (collectively, subparts (i) and (ii) are the "Damages"). Notwithstanding anything to the contrary contained herein, the Applicant shall not be liable to the City Parties under this indemnity to the extent the Damages incurred by any of the City Parties in such Action(s) are a result of the City Parties' fraud, intentional misconduct or gross negligence in connection with issuing the Entitlements. The applicant shall execute an agreement to indemnify, protect, defend, and hold the City harmless as stated herein within five (5) days of approval of PPD No. 2024-0018.

8. In accordance with the provisions of Government Code Section 66020(d)(1), the imposition of fees, dedications, reservations, or exactions for this Project, if any, are subject to protest by the applicant at the time of approval or conditional approval of the Project or within 90 days after the date of the imposition of the fees, dedications, reservations, or exactions imposed on the Project.

9. In order to provide enhanced building design in accordance with Chapter 18.61 (Design Guidelines) of the Rialto Municipal Code, the applicant shall route all drainage downspouts through the interior of the building. The internal downspouts shall be identified within the formal building plan check submittal prior to the issuance of building permits.

10. The applicant shall submit a formal Landscape Plan to the Planning Division for all new on-site landscape planters, prior to the issuance of building permits. The submittal shall include three (3) sets of planting and irrigation plans, a completed Landscape Plan Review application, and the applicable review fee.

11. All planting and irrigation shall be installed on-site in accordance with the approved landscape plans and permit prior to the issuance of a Certificate of Occupancy. The installation of the planting and irrigation shall be certified in writing by the landscape architect responsible for preparing the landscape plans prior to the issuance of a Certificate of Occupancy.

12. All non-glass doors shall be painted to match the color of the adjacent wall, prior to the issuance of a Certificate of Occupancy.

13. The applicant shall comply with all conditions of approval for PPD No. 2024-0018 to the satisfaction of the City Engineer, prior to the issuance of a Certificate of Occupancy.

14. The applicant shall pay all applicable development impact fees in accordance with the current City of Rialto fee ordinance, prior to the issuance of any building permit related to the Project.

15. The project shall submit civil engineering design plans, reports and/or documents, prepared by a registered/licensed civil engineer, for review and approval by the City Engineer per the current submittal requirements, prior to the indicated threshold or as required by the City Engineer.

    The first submittal shall consist of, but is not limited to the following:

    a. PRECISE GRADE W/ EROSION CONTROL PLAN (prior to grading permit issuance)

    b. FINAL DRAINAGE STUDY (prior to grading plan approval)

    c. FINAL WQMP (prior to grading plan approval)

    d. AS-BUILT/RECORD DRAWINGS for all plans (prior to occupancy approval)

16. Upon approval of any improvement plan by the City Engineer, the improvement plan shall be provided to the City in digital format, consisting of a DWG (AutoCAD drawing file), DXF (AutoCAD ASCII drawing exchange file), and PDF (Adobe Acrobat) formats. Variation of the type and format of the digital data to be submitted to the City may be authorized, upon prior approval by the City Engineer.

17. Any street cuts for utilities shall be repaired in accordance with City Standard SC-231 within 72 hours of completion of the utility work; and any interim trench repairs shall consist of compacted backfill to the bottom of the pavement structural section followed by placement of standard base course material in accordance with the Standard Specifications for Public Work Construction ("Greenbook"). The base course material shall be placed the full height of the structural section to be flush with the existing pavement surface and provide a smooth pavement surface until permanent cap paving occurs using an acceptable surface course material.

18. Any utility trenches or other excavations within existing asphalt concrete pavement of off-site streets required by the proposed development shall be backfilled and repaired in accordance with City of Rialto Standard Drawings. The developer shall be responsible for removing, grinding, paving and/or overlaying existing asphalt concrete pavement of off-site streets as required by and at the discretion of the City Engineer, including pavement repairs in addition to pavement repairs made by utility companies for utilities installed for the benefit of the proposed development (i.e., Fontana Water Company, Southern California Edison, Southern California Gas Company, Time Warner, Verizon, etc.). Multiple excavations, trenches, and other street cuts within existing asphalt concrete pavement of off-site streets required by the proposed development may require complete grinding and asphalt concrete overlay of the affected off-site streets, at the discretion of the City Engineer. The pavement condition of the existing off-site streets shall be returned to a condition equal to or better than what existed prior to construction of the proposed development.

19. Any improvements/dry utility improvement construction within the public right-of-way requires a City of Rialto Encroachment Permit.

20. In accordance with City Ordinance No. 1589, adopted to preserve newly paved streets, all street and/or trench cuts in street newly paved or slurry will be subject to moratorium street repair standards as referenced in Section 11.04.145 of the Rialto Municipal Code. Contact the Public Works Department for a list of streets subject to the moratorium.

21. The minimum pavement section for all on-site pavements shall be 3 inches asphalt concrete pavement over 4 inches crushed aggregate base with a minimum subgrade of 24 inches at 95% relative compaction, or equal. If an alternative pavement section is proposed, the proposed pavement section shall be designed by a California registered Geotechnical Engineer using "R" values from the project site and submitted to the City Engineer for approval.

22. All damaged, destroyed, or modified pavement legends, traffic control devices, signing, striping, and streetlights, associated with the proposed development shall be replaced as required by the City Engineer prior to issuance of a Certificate of Occupancy.

23. Construction signing, lighting, and barricading shall be provided during all phases of construction as required by City Standards or as directed by the City Engineer. As a minimum, all construction signing, lighting and barricading shall be in accordance with Part 6 Temporary Traffic Control of the 2014 California Manual on Uniform Traffic Control Devices, or subsequent editions in force at the time of construction.

24. Development of the site is subject to the requirements of the National Pollution Discharge Elimination System (NPDES) Permit for the City of Rialto, issued by the Santa Ana Regional Water Quality Control Board, Board Order No. R8-2010-0036. Pursuant to the NPDES Permit, the developer shall ensure development of the site incorporates post-construction Best Management Practices (BMPs) in accordance with the Model Water Quality Management Plan (WQMP) approved for use for the Santa Ana River Watershed. The developer is advised that applicable Site Design BMPs will be required to be incorporated into the final site design, pursuant to a site specific WQMP submitted to the City Engineer for review and approval.

25. Prior to grading plan approval, submit a final hydrology study to determine the volume of increased stormwater runoff due to development of the site, and to determine required stormwater runoff mitigation measures for the proposed development. All stormwater runoff passing through the site shall be accepted and conveyed across the property in a manner acceptable to the City Engineer. For all stormwater runoff falling on the site, on-site retention or other facilities approved by the City Engineer shall be required to contain the increased stormwater runoff generated by the development of the property. Hydrology studies shall be prepared in accordance with the San Bernardino County Hydrology Manual and Rialto drainage criteria. Final retention basin sizing and other stormwater runoff mitigation measures shall be determined upon review and approval of the hydrology study by the City Engineer and may require redesign or changes to site

configuration or layout consistent with the findings of the final hydrology study. The volume of increased stormwater runoff to retain on-site shall be determined by comparing the existing pre-developed condition and proposed developed condition, using the 100-year frequency storm.

26. Prior to grading plan approval, direct release of on-site nuisance water or stormwater runoff shall not be permitted to the adjacent public streets. Provisions for the interception of nuisance water from entering adjacent public streets from the project site shall be provided through the use of a minor storm drain system that collects and conveys nuisance water to landscape or parkway areas, and in only a stormwater runoff condition, pass runoff directly to the streets through parkway or under sidewalk drains.

27. Prior to grading plan approval, a geotechnical/soils report prepared by a California registered Geotechnical Engineer shall be required for and incorporated as an integral part of the grading plan for the proposed development. The geotechnical report shall include a section on infiltration testing. A digital copy (PDF) of the Geotechnical/Soils Report shall be submitted to the Engineering Division with the first submittal of the precise grading plan.

28. Prior to grading plan approval, submit a Final Water Quality Management Plan identifying site-specific Best Management Practices (BMPs) in accordance with the Model Water Quality Management Plan (WQMP) approved for use for the Santa Ana River Watershed. The site specific WQMP shall be submitted to the City Engineer for review and approval with the precise grading plan.

29. Prior to issuance of grading permit or on-site construction permit, submit a precise grading plan prepared by a California registered civil engineer to the Engineering Division for review and approval by the City Engineer. The plan shall conform to the requirements of the California Building Code for review and approval. The precise grading plans may show sewer and water lateral connections to the public sewer and water lines within the public right of way.

30. Prior to commencing with any grading, the required erosion and dust control measures shall be in place. In addition, the following shall be included if not already identified:

    a. Tan-colored perimeter screened fencing

    b. Contractor information signage including contact information along [Street Name] and [Street Name]

    c. Post dust control signage with the following verbiage: Project Name, WDID No., IF YOU SEE DUST COMING FROM THIS PROJECT CALL: NAME (XXX) XXX-XXX, If you do not receive a response, Please call the AQMD at 1-800-CUT-SMOG.

Prior to issuance of encroachment permit or off-site construction permit, all public improvement plans must be submitted and approved by the City Engineer.

31. Prior to issuance of building permit, the precise grading plans shall be approved by the City Engineer.

32. Prior to issuance of building permit, submit a rough grade certification, engineered fill certification and compaction report pad elevation certifications for all building pads in conformance with the approved precise grading plan, to the Engineering Division Trenching for footings or construction of any building foundation is not allowed until the certifications have been submitted for review and approval by the City Engineer.

33. Prior to occupancy approval, submit a WQMP Certification that demonstrates that all structural BMPs have been constructed and installed in conformance with approved plans and specifications, and as identified in the approved WQMP.

34. Prior to occupancy approval, replace any existing non-compliant, damaged, or unsatisfactory sidewalk along the project frontage to the satisfaction of the city engineer.

35. Prior to occupancy approval, a WQMP Maintenance Agreement shall be required, obligating the property owner(s) to appropriate operation and maintenance obligations of on-site BMPs constructed pursuant to the approved WQMP. Prior to occupancy approval, submit a Precise/Final Grade Certification that demonstrates all grading is in conformance with the approved precise grading plan, to the Engineering Division.

36. Prior to occupancy approval, the applicant shall submit a Precise/Final Grade Certification that demonstrates all grading is in conformance with the approved precise grading plan, to the Engineering Division.

37. Prior to occupancy approval, the applicant shall submit as-built plans or record drawings to the Engineering Division for review and approval by the City Engineer.

38. The applicant shall submit full architectural and structural plans with all mechanical, electrical, and plumbing plans, structural calculations, truss calculations and layout, rough grading plans approved by Engineering Services Department, Water Quality Management Plan, Erosion Control Plan, Stormwater Pollution Prevention Plan, and Title 24 Energy Calculations to the Building Division for plan check and review, prior to the issuance of building permits.

39. The applicant shall provide a Scope of Work on the title page of the architectural plan set. The Scope of Work shall call out all work to be permitted (ex. Main structure, perimeter walls, trash enclosure, etc.).

40. The applicant shall design the structures in accordance with the 2022 California Building Code, 2022 California Mechanical Code, 2022 California Plumbing Code, and the 2022 California Electrical Code, 2022 Residential Code and the 2022 California Green Buildings Standards adopted by the State of California, unless plans are submitted after City adoption of a new code cycle (year).

41. The applicant shall design the structure to withstand ultimate wind speed of 130 miles per hour, exposure C and seismic zone D.

42. The applicant shall obtain an Electrical Permit from the Building Division for any temporary electrical power required during construction. No temporary electrical power will be granted to a project unless one of the following items is in place and approved by the Building Division: (A) Installation of a construction trailer, or, (B) Security fencing around the area where the electrical power will be located.

43. The applicant shall install any required temporary construction trailer on private property. No trailers are allowed to be located within the public right-of-way. The trailer shall be removed prior to the issuance of a Certificate of Occupancy.

44. The applicant shall design and construct accessible paths of travel from the building's accessible entrances to the public right-of-way, accessible parking, and the trash enclosure. Paths of travel shall incorporate (but not limited to) exterior stairs, landings, walks and sidewalks, pedestrian ramps, curb ramps, warning curbs, detectable warning, signage, gates, lifts and walking surface materials, as necessary. The accessible route(s) of travel shall be the most practical direct route between accessible building entrances, site facilities, accessible parking, public sidewalks, and the accessible entrance(s) to the site, California Building Code, (CBC) Chapter 11, Sec, 11A and 11B.

45. Prior to issuance of a Building Permit all of the following must be in place on the Site: a portable toilet with hand wash station, all BMP's, fencing and signage on each adjacent street saying "If there is any dust or debris coming from this site please contact (superintendent number here) or the AQMD if the problem is not being resolved" or something similar to this.

46. The applicant shall provide temporary toilet facilities for the construction workers. The toilet facilities shall always be maintained in a sanitary condition. The construction toilet facilities of the non-sewer type shall conform to ANSI ZA.3.

47. The applicant shall underground all on site utilities to the new proposed structures, prior to the issuance of a Certificate of Occupancy, unless prior approval has been obtained by the utility company or the City.

48. Prior to issuance of Building Permits, site grading final and pad certifications shall be submitted to the Building Division and Engineering Division, which include elevation, orientation, and compaction. The certifications are required to be signed by the engineer of record.

49. The applicant shall provide proof of payment to the Rialto Unified School District for all required school fees, prior to the issuance of a building permit.

50. Site facilities such as parking open or covered, recreation facilities, and trash dumpster areas, and common use areas shall be accessible per the California Building Code, Chapter 11.

51. The applicant shall place a copy of the Conditions of Approval herein on within the building plan check submittal set and include the PPD number on the right bottom corner cover page in 20 point bold, prior to the issuance of a building permit.

52. The applicant shall ensure that a minimum of 65% of all construction and demo debris shall be recycled using an approved City of Rialto recycling facility during construction. Copies of receipts for recycling shall be provided to the City Inspector and a copy shall be placed in the office of the construction site.

53. Prior to issuance of Building Permits, on site water service shall be installed and approved by the responsible agency. On site fire hydrants shall be approved by the Fire Department. No flammable materials will be allowed on the site until the fire hydrants are established and approved.

54. The applicant shall comply with all applicable requirements of the California Fire Code and Chapter 15.28 (Fire Code) of the Rialto Municipal Code.

55. Private residential, public residential, commercial, and industrial fire access roads shall provide an access roadway with a minimum unobstructed width of 26 ft. wide and a minimum 14'6" vertical clearance. Additional width requirements may be applied to individual projects as determined by the Fire Marshal.

56. Roadways shall be extended to within one hundred and fifty feet (150) feet of all portions of the exterior walls as measured by an approved path of travel. An approved turnaround shall be provided when the roadway exceeds one hundred and fifty (150) feet as directed by Rialto Fire Department. Fire Department turn around requirements shall be installed as directed, pursuant to the California Fire Code, Appendix D and as amended in Ordinance No. 1691.

57. A hazardous materials inventory and disclosure shall be provided with a complete listing of SDS sheets, storage locations, how they are stored, and types of containers. A technical report and opinion prepared by an approved consultant shall be submitted for review and approval prior to or as part of the submission for a building permit. Operational permits may be required and must be applied for prior to certificate occupancy. Application and permits shall be made to San Bernardino County Fire Department Hazardous Materials Divisions CUPA for CUPA compliance. Compliance with disclosure and requirements placed on the project for the CUPA shall be complied with prior to certificate of occupancy.

58. The building has the potential for storage of combustible stock more than 6 ft. in height (rubber tires and/or group A plastics) or commodity storage 12 ft. in height and greater than 500 square feet, meeting the requirements of high-piled combustible storage as

defined in Chapter 32 of the California Fire Code. Significant modifications to the structure, including but not limited to, smoke and heat vents or mechanical ventilation, draft curtains, special access doors, upgraded sprinkler systems and hose connection requirements must be achieved in compliance with the California Fire Code Chapter 32 and other applicable Chapters and NFPA 13 requirements should such storage occur. Minimum design densities for fire sprinkler systems within spec. buildings without a known tenant shall be 0.33/3000. If high-piled combustible storage is proposed then plans, specifications, and a technical opinion and report shall be submitted from an approved consultant with the construction drawings for rack systems to ensure fire protection requirements. High piled combustible storage requires an annual operational permit pursuant to the California Fire Code Chapter 1 that requires appropriate fees to be paid prior to issuance and renewal.

59. To determine the acceptability of technologies, processes, products, facilities, materials and uses attending the design, operation or use of a building or premises subject to inspection by the fire code official, the fire code official is authorized to require the owner or agent to provide, without charge to the jurisdiction, a technical opinion and report. The opinion and report shall be prepared by a qualified engineer, specialist, laboratory, or fire safety specialty organization acceptable to the fire code official and shall analyze the fire safety properties of design, operation or use of the building or premises and the facilities and appurtenances situated thereon, to recommend necessary changes. The fire code official is authorized to require design submittals to be prepared by, and bear the stamp of, a registered design professional.

60. Rialto Fire Department at time of plan or permit submission will charge certain fees for plan review and inspections. Fees will be determined at time of plan review and/or inspections.

61. Rialto Fire Department at time of operational permit application will charge certain fees for permit issuance which will have, at a minimum, annual fees charged. Failure to pay required annual fees will be cause to issue a "Cease and Desist" order for the system, use or operation permitted.

62. The proposed project shall comply with the applicable codes and standards of Title 24, Part 1-12.

63. The proposed project shall pay all applicable development impact fees, pursuant to the City of Rialto Ordinances adopted at the time of permit issuance and that are amended from time to time.

64. The required fire flow shall be 1500 GPM for a 2-hour duration at 20 PSI residual operating pressure pursuant to the California Fire Code Appendix B. Documentation is required from the local water purveyor or an approved third party verifying that the system can meet the required fire flow prior to conditions of approval being established. If a third party is being used, they must be approved by the Fire Marshal. If the system is not capable of meeting the required fire flow documentation shall be provided showing financial

arrangements have been made and water system improvement plans have been submitted and approved by Rialto Fire Department and the local water purveyor to upgrade the existing water system prior to release of building permits.

65. The minimum number of fire hydrants required, as well as the location and spacing of fire hydrants, shall comply with CFC Appendix C and NFPA 24. Fire hydrants shall be located no more than 400 feet from all portions of the exterior of the building/facility along an approved route on a fire apparatus access road, unless otherwise approved by the Fire Department. Fire hydrants shall be at least 40 feet from the building it is serving. The maximum average spacing of the hydrants shall be 500 feet with the maximum distance from any point on the street or road frontage to a hydrant of 250 feet. These dimensions are subject to change based upon the final calculated fire flow determined at building plan submittal. The size and number of outlets required for the approved fire hydrants are 4" x 2 ½" x 2 ½". Reference CFC 507.5, CFC Appendix C and NFPA 24 7.2.3.

66. Fire apparatus access roads shall be designed and maintained to support the imposed loads of fire apparatus at 75,000 pounds and shall be surfaced to provide all weather driving capabilities. All weather driving capabilities include pavement, concrete, or other approved products or materials as approved by the fire code official. Turf bloc, ritter rings, turf paver and other similar products shall not be used for fire department access surfacing.

67. All fire apparatus access roadways must be maintained unobstructed and drivable by fire apparatus throughout the construction process. Access roadways shall be hard surfaced (paved/concrete) and capable of holding an imposed load of 75,000 pounds including in adverse weather conditions.

68. All required fire apparatus access roads, fire lanes, fire department turn- around and entry/exit drives shall have a minimum 26 ft. Turning radius for fire apparatus depending on size, location and type of project. Site plans shall provide a fire department turning radius template along the fire access roadway or within a detail confirming that the radius meets Rialto Fire Department requirements. The minimum required turning radius of a fire apparatus access road is 56 feet outside radius and 28 feet inside radius. These apply to fire apparatus access road near new trash enclosure.

69. Fire Apparatus Access roads (all roads in project) shall be usable (paved), accessible and fire hydrant(s) shall be capable of flowing required GPM and shall be tested/accepted by Rialto Fire Dept. prior to dropping any lumber for construction.

70. Loading zones are required adjacent to loading doors and shall be designated on the Development Site or Plot Plan and shall be marked on the appropriate ground surface. Loading zones shall not interfere with required Fire Lanes or emergency ingress/egress capabilities.

71. Roadway design features (speed humps, bumps, speed control dips, etc.) which may interfere, or delay emergency apparatus responses shall not be installed or allowed to remain on the emergency access roadways if installed after the project's completion.

72. Any gate or barrier across a fire access roadway, whether manual or automatic, must meet the Rialto Fire Department requirements and have specific plans and permits approved prior to installation. Gates serving multi-family, assembly, educational, hazardous, institutional, or storage structures must be automatic and meet UL 325 and ASTM F2200 standards. Knox brand key-operated electric key switch keyed to Rialto Fire Department specification are required. The Knox switch shall override all gate functions and open the gate. Other access control systems, such as pre-emption device eyes, are required and must be installed as directed by the Fire Marshal. All fire access gates shall be required to meet minimum dimensions and shall be identified on plans. (See gate on the on Riverside Avenue and any new gates across fire apparatus access road)

73. Water improvement plans shall be approved by Rialto Fire Department. The Developer shall furnish Rialto Fire Department with three (3) copies of the water improvement plans designed by a Registered Engineer and/or Licensed Contractor. On-site private fire service mains shall have a minimum of eight (8) inch water mains with six (6) inch laterals and risers. Larger pipes maybe required to meet required fire flow requirements. Fire hydrants shall provide one 4" port and 2- 2 ½ ports and must be an approved fire hydrant type. The private fire hydrant system must be reviewed, approved, permitted and installed, tested, and accepted, prior to combustible construction.

74. Fire hydrant water mains that supply two (2) or more fire hydrants shall be looped to provide adequate supply.

75. The existing fire hydrant system is insufficient to provide the required fire flow. This system is required to be upgraded to meet the required fire flow as identified above.

76. Prior to combustibles being brought to the site, the developer shall provide written certification from the local water purveyor, dated within the last thirty days, that:

    A. All public fire hydrants or water purveyor connections required for the project have been installed, tested, and approved; and

    B. Are permanently connected to the public water main system; and

    C. Are capable of supplying the required fire flow as required by Rialto Fire Department.

77. Fire hydrants shall be painted (yellow for public and red for private on-site FH's) per Rialto Fire Department and the local water purveyor standards and be maintained free of obstructions. Blue reflective raised pavement markers shall be installed on the pavement at approved locations marking each fire hydrant location.

78. Public and private water utility mains must provide the level of reliability/redundancy determined necessary by Rialto Fire Department and the local water purveyor.

79. If any fire hydrant is taken "OUT OF SERVICE" – Rialto Fire Department shall be notified immediately and the hydrant marked, bagged, or otherwise identified as OUT OF SERVICE as directed by the Fire Marshal.

80. All flammable vegetation shall be removed from each building site with slopes less than 15% at a minimum distance of thirty (30) feet from all structures or to the property line, whichever is less.

81. Fire lane designations shall be required for all fire access roadways as determined by Rialto Fire Department. Posted signs which state "FIRE LANE, NO PARKING CVC 22500.1" shall be installed every 50 feet along the fire lanes. Curbs shall be painted red and stenciled with white letters indicating the same on the face and top of any curb as directed by Rialto Fire Department. All Fire lanes shall be marked and identified prior to any Certificate of Occupancy being issued.

82. Prior to Fire Department clearance for occupancy, an automatic fire sprinkler system shall be installed. The system shall comply with NFPA #13 Standards for Automatic Fire Sprinkler Systems. Plans will be accepted only electronically and shall include fire sprinkler piping plans and details, hydraulic calculations, and material specifications sheets for all equipment used in the system and shall be submitted per the policy of Rialto Fire Department for electronic submission. These shall be submitted by a State of California Licensed C-16 Contractor for review, approval, and permits must be issued prior to commencing work.

83. Prior to Fire Department Clearance for occupancy, and automatic fire alarm system shall be installed. The system shall comply with NFPA #72 standard for Fire Alarm Systems. Plans and specifications must only be submitted electronically with material specifications sheets for all equipment used in the system and California State Fire Marshal listings (not expired) shall be submitted by a State of California Licensed C-7 and/or C-10 Contractor for review, approval, and permits must be issued prior to commencing work.

84. Prior to final inspection or occupancy, hand portable fire extinguishers are required to be installed as directed by Rialto Fire Department. The size, location, and markings shall be illustrated on the floor plan of the construction documents. Prior to installation the client is directed to request a fire inspection to confirm the locations of the fire extinguishers due to field changes with business systems that could conflict with the construction documents.

85. Permanent commercial/industrial three-dimensional street numbers, minimum 12 inches in height with a ½ inch stroke, shall be provided on the address side of the building at the highest point and furthest projection of the structure and on both corners (left and right) of the building facing the street that it is addressed to. The address shall be illuminated

and visible from the street and shall not be obstructed in any manner including landscaping. Roof mounted addressing for aerial support shall be provided for flat roofs or as directed by the fire code official and shall be a minimum of 3-feet in height, face the street in which it is addressed, be contrasting in color and durable enough for the weather conditions in which it will be exposed.

86. A fire department operational permit is required for certain specific operations regulated by the California Fire Code. The permit is issued after application has been made to Rialto Fire Department and full compliance of the requirements for the operation has been adhered to. An annual fee is charged to the applicant for review and inspection of such permits on an annual basis. Some permits require additional inspections and permit compliance that may require additional fees to be paid semi-annually.

87. Provide plans in a PDF file for pre-fire planning use by the fire department. Information shall include locations of all exits, stairwells and roof access. Also, the location of fire hydrants, fire department connections, post indicator valves, backflow prevention, gas meters, electrical panels, water, fire sprinkler risers and standpipe valves and shutoffs, elevator and electrical equipment rooms, fire alarm panels, and remote annunciators. The symbols used for the pre-fire plan must be obtained from Rialto Fire Department. This plan is required to be submitted prior to any type of certificate of occupancy.

88. The applicant shall install Knox boxes immediately adjacent to the main entrance to the building and at least one (1) rear entrance to facilitate the entry of safety personnel. The Knox boxes shall be installed in such a manner as to be alarmed, resist vandalism, removal, or destruction by hand, and be fully recessed into the building. The Knox boxes shall be equipped with the appropriate keys, for each required location, prior to the first day of business. The Knox-Box placement shall be shown on the formal building plan review submittal prior to the issuance of a building permit.

89. The applicant or General Contractor shall identify each contractor and subcontractor hired to work at the job site on a Contractor Sublist form and return it to the Business License Division with a Business License application and the Business License tax fee based on the Contractors tax rate for each contractor.

SECTION 5. The Chairman of the Planning Commission shall sign the passage and adoption of this resolution and thereupon the same shall take effect and be in force.

PASSED, APPROVED AND ADOPTED this 20th day of August, 2025.

_____

JERRY GUTIERREZ, CHAIR
CITY OF RIALTO PLANNING COMMISSION

STATE OF CALIFORNIA)
COUNTY OF SAN BERNARDINO) ss
CITY OF RIALTO)

I, Heidy Gonzalez, Administrative Assistant of the City of Rialto, do hereby certify that the foregoing Resolution No. ____ was duly passed and adopted at a regular meeting of the Planning Commission of the City of Rialto held on the ___th day of ____, 2025.

Upon motion of Planning Commissioner_____., seconded by Planning Commissioner ____, the foregoing Resolution No. ____was duly passed and adopted.

Vote on the motion:

AYES:

NOES:

ABSENT:

IN WITNESS WHEREOF, I have hereunto set my hand and the Official Seal of the City of Rialto this __th day of ___, 2025.

_____

HEIDY GONZALEZ, ADMINISTRATIVE ASSISTANT

Exhibit “A”

Project Plans

File #: PC-25-0407, **Version:** 1, **Agenda #:**

For the Planning Commission Meeting of August 20, 2025

TO: Honorable Chairman and Planning Commissioners

APPROVAL: Christina Taylor, Interim Community Development Director

REVIEWED BY: Paul Gonzales, Community Development Manager

FROM: Jason Costa, Associate Planner

Master Case No. 2025-0002 (Related Files: Precise Plan of Design No. 2025-0002, Conditional Development Permit No. 2025-0002, and Environmental Assessment Review No. 2025-0001): A proposal to combine two lots (APNs 0258-041-28 and 0258-041-29) into one 4.04-acre parcel and develop a truck and trailer outdoor storage yard at 2175 South Willow Avenue in the Heavy Industrial (H-IND) zone in the Agua Mansa Specific Plan.

APPLICANT:

Outour Storage Investments, LLC 800 Brickell Avenue, Suite 904, Miami, FL, 33131.

LOCATION:

The project site consists of two (2) parcels (Assessor's Parcel Numbers 0258-041-28 and 0258-041-29) located at 2175 South Willow Avenue (Location Map (**Exhibit A**)).

BACKGROUND:

On June 18, 2025, the Planning Commission continued the project to a future meeting on a date uncertain to allow the traffic consultant additional time to review and finalize the traffic impact analysis.

Surrounding General Plan Land Use Designations

Location	***General Plan Designation***
Site	General Industrial with a Specific Plan Overlay (Agua Mansa SP)
North	General Industrial with a Specific Plan Overlay (Agua Mansa SP)
East	General Industrial with a Specific Plan Overlay (Agua Mansa SP)
South	General Industrial with a Specific Plan Overlay (Agua Mansa SP)
West	General Industrial with a Specific Plan Overlay (Agua Mansa SP)

Surrounding Zoning Designations

Location	***Zoning***
Site	Heavy Industrial (H-IND) in the Agua Mansa Specific Plan
North	Heavy Industrial (H-IND) in the Agua Mansa Specific Plan
East	Heavy Industrial (H-IND) in the Agua Mansa Specific Plan
South	Heavy Industrial (H-IND) in the Agua Mansa Specific Plan
West	Heavy Industrial (H-IND) in the Agua Mansa Specific Plan

Site Characteristics
The project site consists of two parcels totaling 4.04 acres. Parcel one (APN 0258-041-28) is a 1.55-acre parcel and the second parcel (APN 0258-041-29) is approximately 2.49-acres. The parcels are on the east side of South Willow Avenue approximately 400 feet south of West Slover Avenue. The site has an existing 5,800 square-foot building. The site has been partially paved. The property was previously occupied by a horse carriage manufacturer.

Surrounding Area
The project site is situated in the Heavy Industrial (H-IND) Zone of the Agua Mansa Specific Plan (AMSP) and it is surrounded by industrial uses. The surrounding properties to the north, south, east, and west are all also zoned H-IND in the AMSP.

ANALYSIS/DISCUSSION:

Project Proposal
The applicant has proposed to develop an outdoor storage yard for trucks and trailers. Site improvements will accommodate the proposed use and include improvements to the existing building.

Entitlement Requirements
The following entitlements are required for the applicant's proposal:

- Conditional Development Permit: Per Chapter 18.104 (Outdoor Storage Uses) and Section 18.66.030BB of the Rialto Municipal Code, the development and operation of an outdoor storage use requires the approval of a Conditional Development Permit.

- Precise Plan of Design: Per Section 18.65.010 of the Rialto Municipal Code, the design of the proposed development and the related site improvements (e.g., building exterior, screen walls, landscaping, etc.) requires the approval of a Precise Plan of Design.

Site Design
As illustrated on the site plan (**Exhibit B**), the development will include, paved parking for semi-trailers, paved employee and guest parking, street improvements, screening, and landscaping.

The applicant will refurbish the existing 5,800 square-foot building near the southwest corner of the project site. A new fourteen (14) foot-high, 251 foot-long, tan-colored split-face CMU block wall is also

proposed that will screen the property and the office structure from view from the public right-of-way (South Willow Avenue). The wall will be located along the front of the property for 207 linear feet and 44 linear feet along the north perimeter. To the south, the project's wall will meet the screening wall of the property to the south.

The project will include three ingress and egress points to South Willow Avenue. The screening wall will form the north and south side perimeter walls for a 39-foot-wide 75-foot-long main driveway and truck stacking lane. This driveway will include an 8-foot-high louvered swinging gate. A second driveway and a pedestrian gate, both with louvered gates, will be south of the main driveway.

Building Design
The building is an existing 5,800 square-foot one-story metal building. This will be repainted and refurbished **(Exhibit C)**. The building is located near the southwest area of the property. The front door faces west towards South Willow Avenue. The building is 19 feet and six inches high, and it is 100 feet long east to west and 58 feet wide north to south.

The proposed floor plan **(Exhibit D)** will be divided into two separate areas. The first will be a 1,300 square-foot office area consisting of six workstations, a break area, an office and two restrooms. The second area will be an approximate 4,500 square foot area for truck yard related uses. The office area is along the south side of the building.

Parking
The development will have fourteen (14) automobile parking spaces, including two (2) ADA accessible parking spaces. This quantity meets the minimum parking requirement as shown in the parking calculation chart below and as required by Table 13 (Off-Street Parking Requirements) of the Agua Mansa Specific Plan, which requires one (1) parking space for every 300 square feet of office space gross floor area and one (1) parking space for every 500 square-feet of manufacturing/processing (ancillary maintenance) space.

Type of Use	***Floor Area (square feet)***	***Parking Ratio***	***Number of spaces required***
Offices Manufacturing/Processing	1,500 4,300	1 / 300 1 / 500	5 9
Total Required / Total Provided			**14 / 14**

Landscaping
The landscape coverage for the project is 10.8 percent. This includes landscaped setbacks between 30 and 75 feet-wide along South Willow Avenue, as well as the planters around the interior perimeter of the project site. All the landscape planters will feature a variety of trees spaced every thirty (30) linear feet and have an abundant amount of shrubs and groundcover (**Exhibit E**).

Operations
The site is designed to be a semi-truck and trailer parking facility. The tenant has not yet been determined.

Traffic
A Traffic Impact Analysis Scoping Agreement (TIASA) was completed to assess the project's potential impacts to local streets and intersections (**Exhibit F**). The TIASA estimates that the project will generate up to 85 net new daily vehicle trips. The TIASA concluded that the project would generate less than significant traffic amounts. All nearby intersections and roadway segments will continue to operate under their current Level of Service (LOS).

Land Use Compatibility
The project is consistent with the Heavy Industrial (H-IND) zone of the Agua Mansa Specific Plan, Chapter 18.61 (Design Guidelines) of the Rialto Municipal Code, and Chapter 18.104 (Outdoor Storage Uses) of the Rialto Municipal Code. The site is completely surrounded by other industrial and trucking uses. These properties are not expected to be negatively impacted. The project is anticipated to be an improvement to the surrounding area. Aesthetically, the site will be enhanced with new street improvements, new landscaping, and a screen wall that complies with the City's Design Guidelines.

GENERAL PLAN CONSISTENCY:

The General Plan land use designation of the site is General Industrial with a Specific Plan. According to Chapter 2 (Managing Our Land Supply) of the Rialto General Plan, outdoor storage yards for industrial purposes, such as the project, are consistent with the General Industrial designation. Furthermore, the project is consistent with the following goals and policies of the Land Use Element and Economic Development Element of the Rialto General Plan:

Goal 2-22: Promote commercial and/or industrial development that is well designed, people-oriented, environmentally sustainable, sensitive to the needs of the visitor or resident, and functionally efficient for its purpose.

- Policy 2-22.3: Require that landscape plantings be incorporated into commercial and industrial projects to define and emphasize entrances, inclusive of those areas along the front of a building facing a parking lot.

- Policy 2-22.7: Require outdoor storage areas, where permitted, to be screened from public view.

Goal 3-1: Strengthen and diversify the economic base and employment opportunities and maintain a positive business climate.

- Policy 3-1.2: Encourage a variety of businesses to locate in Rialto, including retail, high technology, professional services, clean industries, logistics-based businesses, and restaurants/entertainment uses to promote the development of a diversified local economy.

- Policy 3-1.4: Encourage the consolidation of smaller lots of industrial and commercial areas to attract larger industrial businesses or commercial projects.

ENVIRONMENTAL IMPACT:

California Environmental Quality Act
The project is categorically exempt from the requirements of the California Environmental Quality Act (CEQA). The project qualifies as a Class 32 exemption under CEQA Guidelines Section 15332 - In-Fill Development Projects - as the project is consistent with the Rialto General Plan, the Agua Mansa Specific Plan, and the Heavy Industrial (H-IND) zoning designation and the project occurs on a site less than 5.0 acres. The site was previously developed and heavily disturbed having been used as a horse carriage manufacturer. The project site is surrounded by H-IND zoned heavy industrial development and uses. To the north is a steel welding and truck and trailer service repair. To the south is a semi-truck fuel station. To the southeast is a hazardous materials company. To the east is a truck and trailer storage use facility. To the west, across South Willow Avenue is a cross-dock warehouse facility. The project site has no value as habitat for threatened or endangered species, the project will not result in any significant effects relating to traffic, noise, air quality, or water quality, and the project site can be adequately served by all required utilities and public services.

The applicant provided three reports to substantiate the CEQA exemption. The first is “Willow Avenue Trailer Parking Project - Air Quality and Greenhouse Gas Emissions Analysis” **(Exhibit G).** The second is “Hydrology Report: Truck Parking Facility 217 S Willow Ave Bloomington, CA92316” **(Exhibit H).** The third is a **“**Preliminary Water Quality Management Plan for 217 S Willow Avenue Rialto, CA” **(Exhibit I).** The reports provide evidence that the project will not result in a significant impact as it relates to air quality, greenhouse gases, or water pollution. As previously mentioned, the project’s TIASA provides evidence that the project will not result in a significant impact as it relates to traffic.

PUBLIC NOTICE:

The City published a public hearing notice for the proposed project in the *San Bernardino Sun* newspaper, posted copies of the public hearing notice outside the Council Chambers and the project site, and mailed public hearing notices to all property owners within 660 feet of the project site.

RECOMMENDATION:

The Planning Division recommends that the Planning Commission:

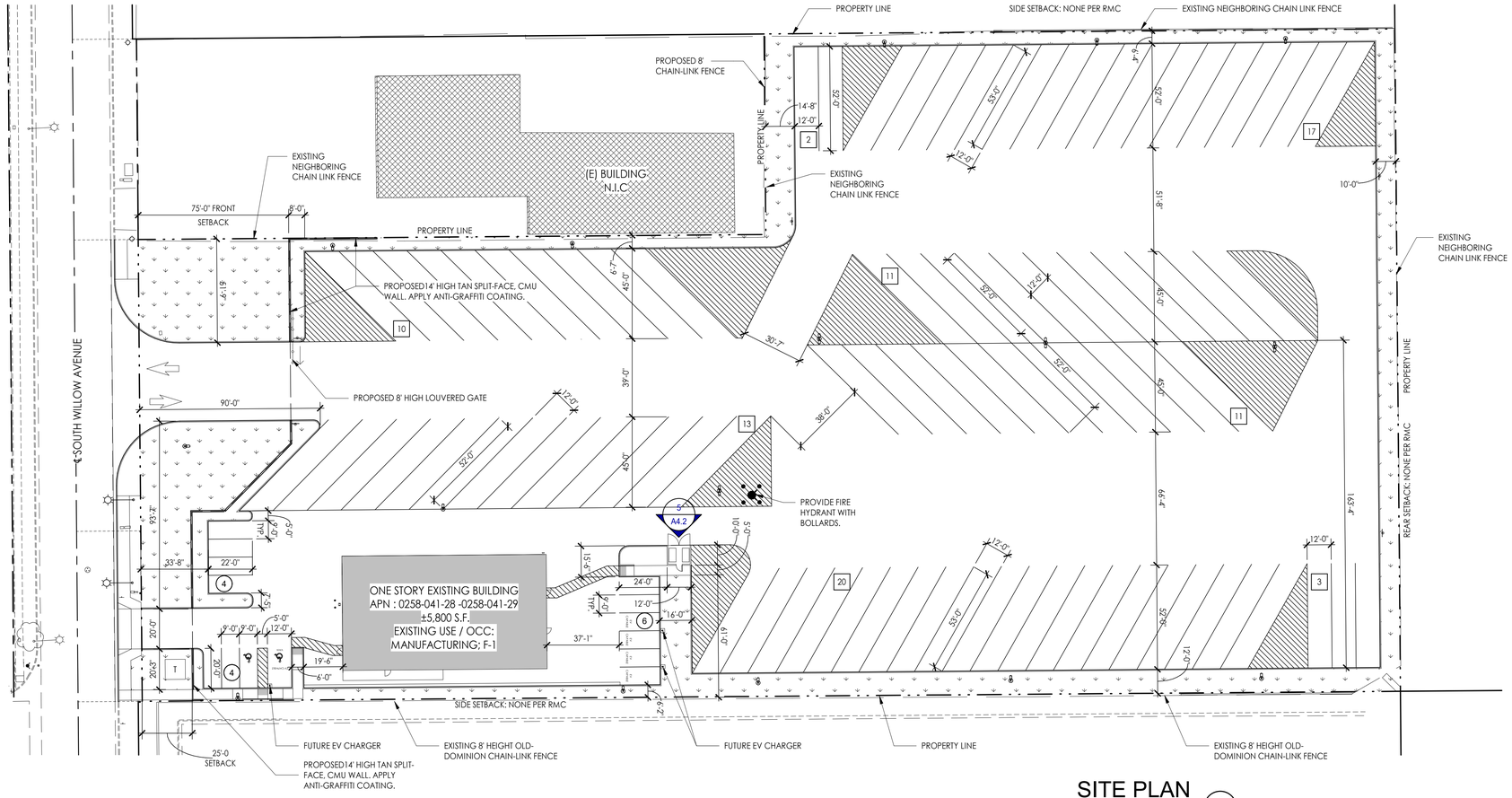
1. Find that the project is categorically exempt per CEQA; and,

2. Adopt Resolution No. _____, which approves Conditional Development Permit No. 2025-0002 based upon the findings and subject to the conditions therein; and,

3. Adopt Resolution No. _____, which approves Precise Plan of Design No. 2025-0002 based upon the findings and subject to the conditions therein.

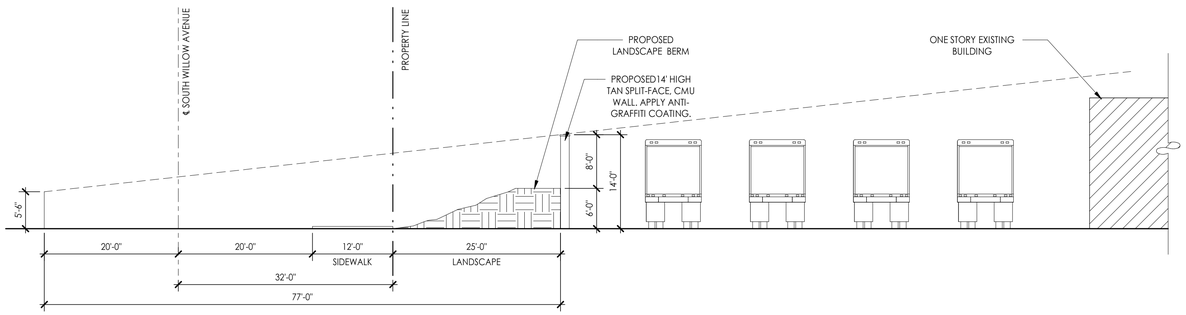
Project Location Map

N



SITE PLAN

1/32" = 1'-0" (1)



LINE OF SIGHT

3/32" = 1'-0" (2)

1/32"=1'-0"

0 8' 16' 32' 64' 128'

LEGEND

- PROPERTY LINE.
- CENTER LINE OF STREET
- PROPERTY ENTRANCE / EXIT
- LANDSCAPE AND IRRIGATION AREA
- INDICATES ADJACENT EXISTING BUILDINGS
- (#) PARKING COUNT
- [#] TRAILER PARKING COUNT
- T TRANSFORMER WITH CONCRETE PAD.
- 14' HIGH CMU WALL
- FIRE HYDRANT

SITE DATA

TOTAL LOT AREA: ± 175,959 S.F. = ± 4.04 ACRE

LOT PARCEL 1 (28): 1.55 AC.
LOT PARCEL 2 (29): 2.49 AC.

BUILDING AREA: ± 5,800 S.F. = ± 0.13 ACRE

LANDSCAPE AREA: ± 22,258 SF. > 10% OF TOTAL AREA

PARKING SUMMARY

PARKING REQUIREMENTS (PER AGUA MANSA INDUSTRIAL CORRIDOR):

OFFICE: 1 STALL PER/ 300 SF.
MANUFACTURING / PROCESSING: 1 STALL PER/ 500 SF.

PARKING CALCULATIONS:

OFFICE: 1,325 SF. / 300 SF. = 4.41 STALLS
MANUFACTURING / PROCESSING: 4,475 / 500 SF = 8.95 STALLS

TOTAL PARKING REQUIRED:	13.36 ≈ 14 STALLS
TOTAL PARKING PROVIDED:	**14 STALLS**

REQUIRED ACCESSIBLE STALLS PER CBC TABLE 11B-208.2:	1 STALLS
VAN ACCESSIBLE PER CBC 11B-208.2.4:	1 STALLS
STANDARD ACCESSIBLE:	0 STALLS

REQUIRED EV STALLS:
PER CALIFORNIA GREEN BUILDING CODE 2022, TABLE 5.106.5.3.1 EV CAPABLE SPACES:

TOTAL NUMBER OF ACTUAL PARKING SPACES:	14 STALLS
NUMBER OF REQUIRED EV CAPABLE SPACES:	04 STALLS
NUMBER OF PROVIDED EV CAPABLE SPACES:	**05 STALLS**

PROVIDED PARKING STALLS	**14 STALLS**
STANDARD PARKING	8 STALLS
STANDARD ACCESSIBLE	1 STALL
VAN ACCESSIBLE - EV CAPABLE	1 STALL
STANDARD EV CAPABLE	4 STALLS

TRAILER STALLS

TRAILER STALLS: 12'X45'	45
TRAILER STALLS: 12'X52'	42
TOTAL TRAILER STALLS PROVIDED:	**87 STALLS**

SECURITY NOTE:

1. ALL OUTDOOR STORAGE USES SHALL BE SECURED AND INCORPORATE SECURITY CAMERAS THAT ARE CONNECTED TO THE CITY'S ENFORCEMENT SYSTEM TO THE SATISFACTION OF THE POLICE CHIEF.

2. ALL OUTDOOR STORAGE USES SHALL BE ILLUMINATED ENTIRELY EVERY NIGHT, FROM DUSK UNTIL DAWN, WITH A MINIMUM OF ONE FOOT CANDLE ACROSS THE SITE. LIGHT FIXTURES SHALL BE ARRANGED OR SHIELD SO AS NOT TO SPILL LIGHT ONTO NEIGHBORING PROPERTIES.

3. SECURITY CAMERAS TO BE INSTALLED AND INTEGRATED WITH POLICE DEPARTMENT PRIOR PROCEEDING WITH THE BUSINESS LICENSE.

GATE NOTE:

1- ANY GATE OR BARRIER ACROSS A FIRE ACCESS ROADWAY, WHETHER MANUAL OR AUTOMATIC, MUST MEET THE RIALTO FIRE DEPARTMENT REQUIREMENTS.

2- FOR AUTOMATIC GATES, KNOX BRAND KEY-OPERATED ELECTRIC KEY SWITCH KEYED TO RIALTO FIRE DEPARTMENT SPECIFICATION ARE REQUIRED.

3- THE KNOX SWITCH SHALL OVERRIDE ALL GATE FUNCTIONS AND OPEN THE GATE. OTHER ACCESS CONTROL SYSTEMS, SUCH AS PRE-EMPTION DEVICE EYES, ARE REQUIRED AND MUST BE INSTALLED AS DIRECTED BY THE FIRE MARSHAL.

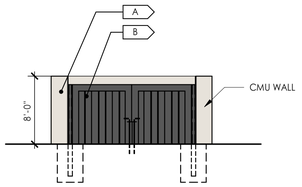
N

SITE PLAN
2175 S WILLOW AVE
2175 S WILLOW AVE,
BLOOMINGTON, CA 92316

We Architects Group
Architecture, Interior Design, Planning
26449 RANCHO PKWY. S., LAKE FOREST, CA. 92630
(949) 994-9966
www.WeArchitectsGroup.com

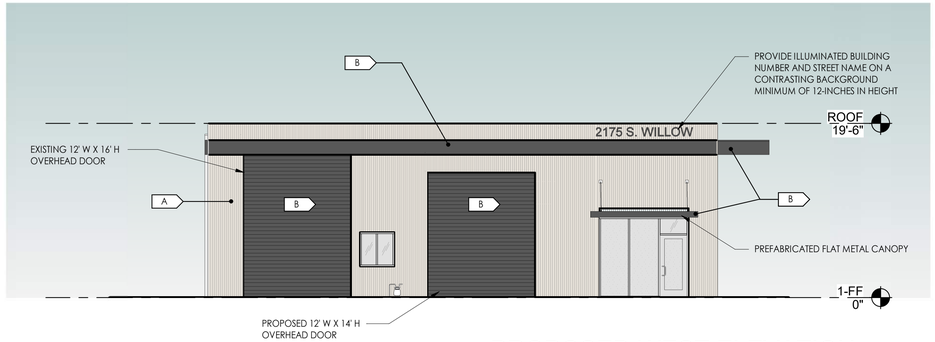
PROJECT NUMBER: 24-059
DATE: 06/02/2025

A1.1



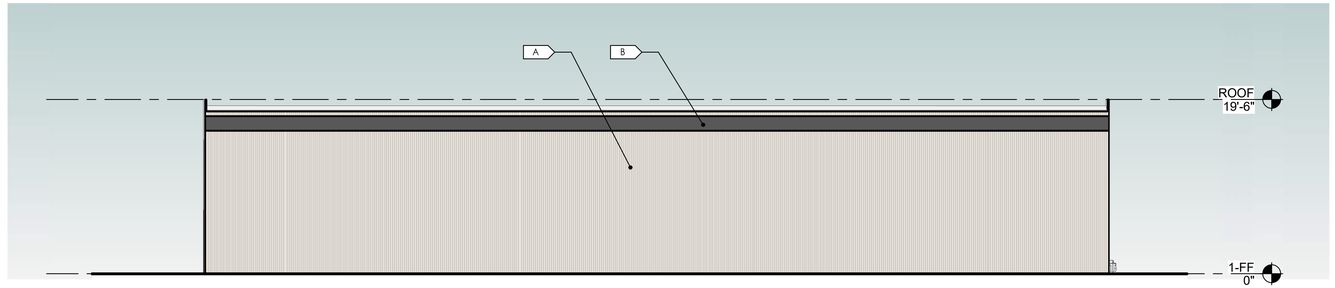
TRASH ENCLOSURE 5

1/8" = 1'-0"



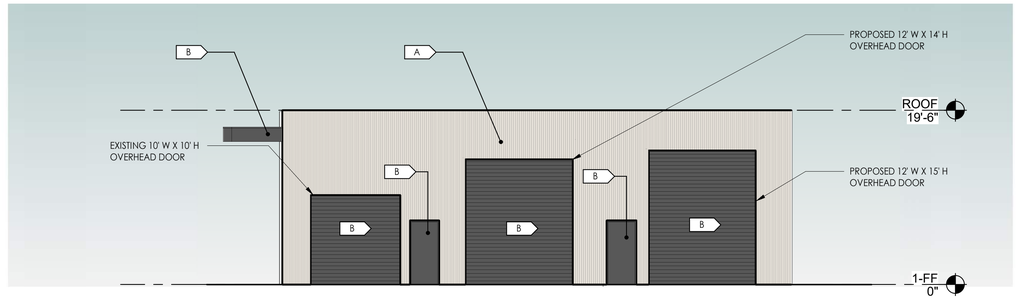
PROPOSED WEST ELEVATION 1

1/8" = 1'-0"



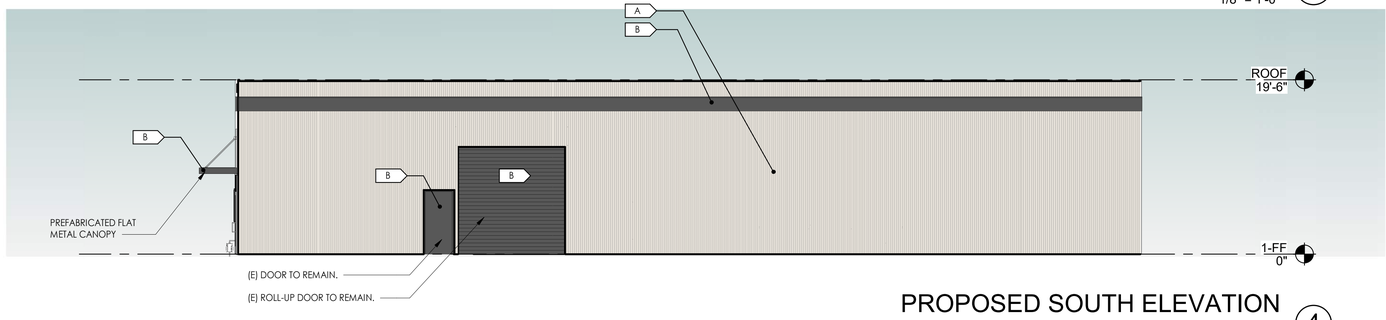
PROPOSED NORTH ELEVATION 2

1/8" = 1'-0"



PROPOSED EAST ELEVATION 3

1/8" = 1'-0"



PROPOSED SOUTH ELEVATION 4

1/8" = 1'-0"

1/8"=1'-0"

0 4' 8' 16' 32'

LEGEND

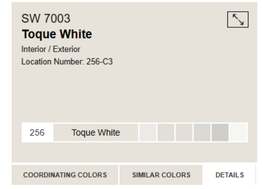
COLORS:

A — MATERIAL: BODY OF BUILDING
PRIMARY COLOR: SHERWIN WILLIAMS SW 7003 "TOQUE WHITE"

B — MATERIAL: ROLL-UP DOOR, SIDE CANOPY, TOP EYEBROW/ COPING & NEW FRONT ENTRY CANOPY
SECONDARY COLOR: SHERWIN WILLIAMS SW 7674 "PEPPERCORN"

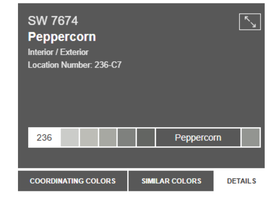
MATERIAL BOARD

- CORRUGATED METAL PANELS



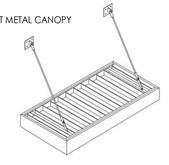
- PRIMARY COLOR: SHERWIN WILLIAMS SW 7003 "TOQUE WHITE"

- ROLL- UP DOOR



- SECONDARY COLOR: SHERWIN WILLIAMS SW 7674 "PEPPERCORN"

- PREFABRICATED FLAT METAL CANOPY



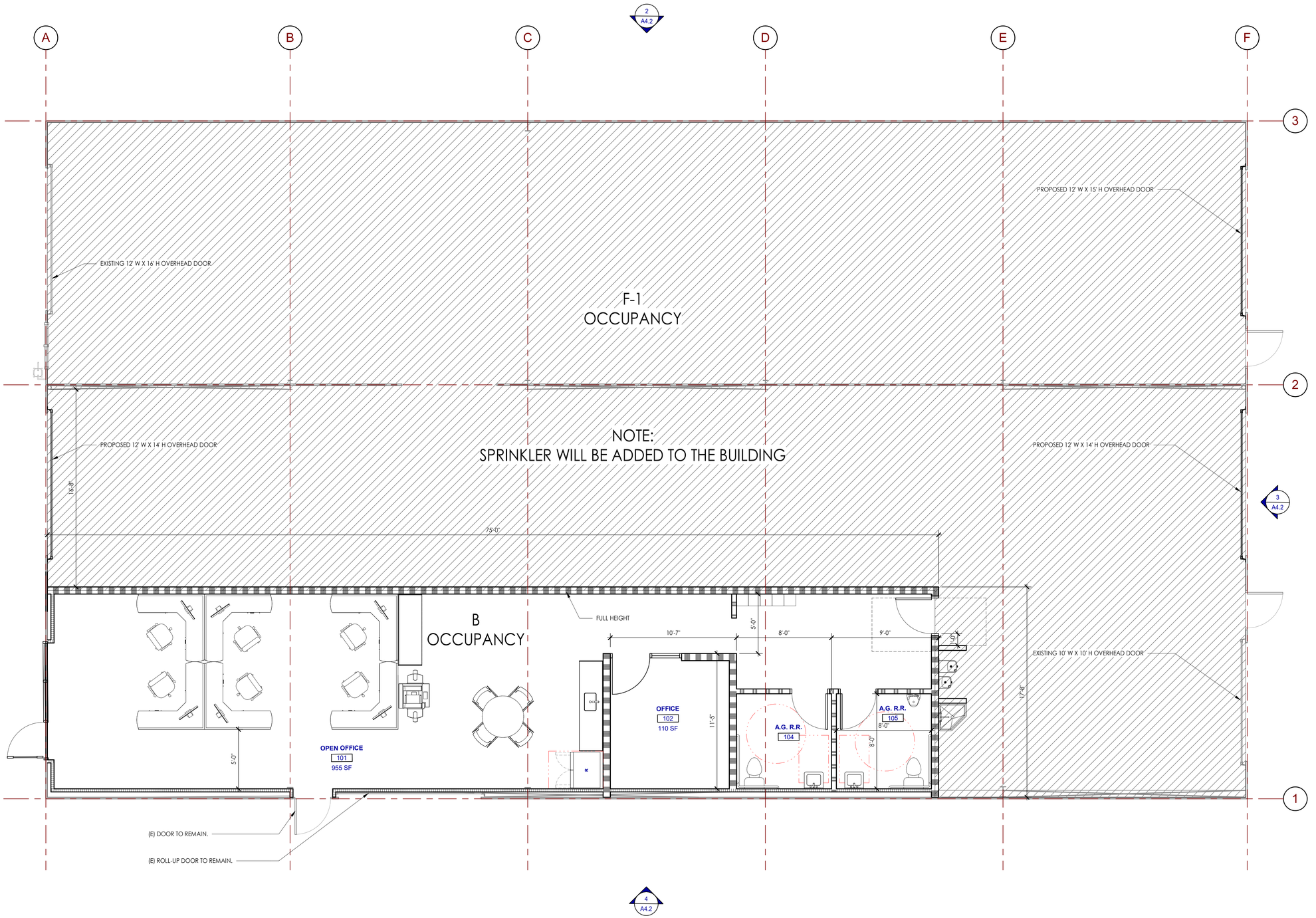
PROPOSED EXTERIOR ELEVATIONS

2175 S WILLOW AVE
2175 S WILLOW AVE,
BLOOMINGTON, CA 92316

We Architects Group
Architecture, Interior Design, Planning
26449 RANCHO PKWY. S., LAKE FOREST, CA. 92630
(949) 994-9966
www.WeArchitectsGroup.com

PROJECT NUMBER: 24-059
DATE: 06/02/2025

A4.2



RESTROOM SUMMARY

CPC SECTION 422 TABLE 422.1:

OFFICE (B):	1,300 S.F. /	150	=	8.6
MANUFACTURING (F-1):	4,430 S.F. /	500	=	8.86
TOTAL:				17.46 = 18
				9 MEN
				9 WOMEN

TOTAL REQUIRED:
BASED ON MOST RESTRICTIVE - B OCCUPANCY

MEN:	TOILET: 1	LAVATORIES:	1
WOMEN:	TOILET: 1	LAVATORIES:	1
DRINKING FOUNTAIN:	1	URINALS:	1
SERVICE SINK:	1		

TOTAL PROVIDED:

ALL GENDER:	TOILET: 2	LAVATORIES:	2
DRINKING FOUNTAIN:	1	URINALS:	1
SERVICE SINK:	1		

LEGENDS

INDICATES AREA OF OCCUPANCY CLASSIFICATION F-1

INDICATES AREA OF OCCUPANCY CLASSIFICATION B

1/4"=1'-0"

0 2' 4' 8' 16'

N

PROPOSED FLOOR PLAN

2175 S WILLOW AVE
2175 S WILLOW AVE,
BLOOMINGTON, CA 92316

We Architects Group
Architecture, Interior Design, Planning
26449 RANCHO PKWY. S., LAKE FOREST, CA. 92630
(949) 994-9966
www.WeArchitectsGroup.com

PROJECT NUMBER: 24-059
DATE: 06/02/2025

A2.1

PLANTING LEGEND

TREES

SYMBOL	TREE NAME	QTY.	WUCOLS
	NEW STREET TREE ALONG SOUTH WILLOW AVENUE PLATANUS A. 'BLOODGOOD', LONDON PLANE TREE 24" BOX SIZE.	8	M
	PARKING LOT SHADE TREE OLEA WILSONII, OLIVE TREE 24" BOX SIZE. STANDARD TRUNK.	5	L
	TRISTANIA CONFERTA, BRISBANE BOX 15 GAL. SIZE.	54	M

SHRUBS - SHRUBS SHALL BE CHOSEN FROM THE FOLLOWING:

SYMBOL	SHRUB NAME	WUCOLS
	WESTRINGIA F. 'WYNABIE GEM', COAST ROSEMARY 5 GAL. SIZE	L
	LEUCOPHYLLUM F. 'GREEN CLOUD', TEXAS RANGER 5 GAL. SIZE	L
	LIGUSTRUM TEXANUM, TEXAS PRIVET 5 GAL. SIZE	M
	OLEA E. 'LITTLE OLLIE', DWARF FRUITLESS OLIVE 5 GAL. SIZE	L
	MELALEUCA NESOPHYLLA, PINK MMELALEUCA 5 GAL. SIZE	L
	HETEROMELES ARBUTIFOLIA, TOYON 5 GAL. SIZE	L

GROUND COVER AND SHRUB MASSES

SYMBOL	GROUND COVER/SHRUB MASS NAME	WUCOLS
	AGAVE TRUNCATA, ARTICHOKE AGAVE 5 GAL. SIZE @ 24" O.C.	L
	LANTANA CAMARA 'DWARF GOLD', DWARF LANTANA 1 GAL. SIZE @ 30" O.C.	L
	MUHLENBERGIA RIGENS, DEER GRASS 1 GAL. SIZE @ 42" O.C.	M
	HESPERALOE PARVIFLORA, RED YUCCA 1 GAL. SIZE @ 36" O.C.	L
	DIANELLA TASMANICA 'VARIEGATA', WHITE STRIPED TASMAN FLAX LILY 1 GAL. SIZE @ 24" O.C.	M
	MUHLENBERGIA C. 'REGAL MIST', REGAL MIST PINK MUHLY 1 GAL. SIZE @ 36" O.C.	L
	ROSMARINUS O. 'PROSTRATUS', CREEPING ROSEMARY 1 GAL. SIZE @30" O.C.	L
	SALVIA CLEVELANDII, CLEVELAND SAGE 5 GAL. SIZE @ 42" O.C.	L
	AGAVE 'BLUE FLAME', BLUE FLAME AGAVE 5 GAL. SIZE 36" O.C.	L
	SENNA ARTEMISIOIDES, FEATHER CASSIA 5 GAL. SIZE @ 36" O.C.	L
	DIETES BICOLOR, FORTNIGHT LILY 1 GAL. SIZE @ 24" O.C.	M

DESIGN KEY NOTES:

1. NEW STREET TREE PER LEGEND.
2. 3" LAYER OF CRUSHED ROCK OVER WEED FILTER FABRIC.
3. PARKING LOT SHADE TREE PER LEGEND.
4. SCREEN SHRUB ALONG PROPERTY LINE PER PLANTING LEGEND.
5. DROUGHT TOLERANT GROUND COVER AND SHRUB PLANTING LEGEND.
6. ALL TREES LOCATED 5' OR LESS TO CURB, WALKWAY OR WALL SHALL BE INSTALLED WITH DEEP ROOT BARRIER PANELS. 18" MIN. DEPTH X 10' WIDE PANEL.

REFERENCE KEY NOTES:

- A. TRANSFORMER PER CIVIL PLANS.
- B. TRASH ENCLOSURE PER ARCH. DWGS.
- C. STREET LIGHTS PER CIVIL PLANS.
- D. EXISTING CHAIN LINK FENCE PER ARCH. PLANS.
- E. 14' HIGH CMU WALL PER ARCH. PLANS.
- F. 8' WROUGHT IRON GATE PER ARCH. PLANS.

WUCOLS PLANT FACTOR

THIS PROJECT IS LOCATED IN 'WUCOLS' REGION '4-SOUTH INLAND VALLEY'.

H = HIGH WATER NEEDS
M = MODERATE WATER NEEDS
L = LOW WATER NEEDS
VL= VERY LOW WATER NEEDS

CONCEPTUAL PLAN NOTE:

THIS IS A CONCEPTUAL LANDSCAPE PLAN. IT IS BASED ON PRELIMINARY INFORMATION WHICH IS NOT FULLY VERIFIED AND MAY BE INCOMPLETE. IT IS MEANT AS A COMPARATIVE AID IN EXAMINING ALTERNATE DEVELOPMENT STRATEGIES AND ANY QUANTITIES INDICATED ARE SUBJECT TO REVISION AS MORE RELIABLE INFORMATION BECOMES AVAILABLE.

IRRIGATION NOTE:

THE PROJECT WILL BE EQUIPPED WITH A LOW FLOW IRRIGATION SYSTEM CONSISTING OF ET WEATHER BASED SMART CONTROLLER, LOW FLOW ROTORS, BUBBLER AND/ OR DRIP SYSTEMS USED THROUGHOUT. THE IRRIGATION WATER EFFICIENCY WILL MEET OR SURPASS THE CURRENT STATE MANDATED AB-1881 WATER ORDINANCE.

GENERAL NOTES:

- ROCK RIP-RAP MATERIAL SHALL BE INSTALLED WHERE DRAIN LINES CONNECT TO INFILTRATION AREAS.
- ALL UTILITY EQUIPMENT SUCH AS BACKFLOW UNITS, FIRE DETECTOR CHECKS, FIRE CHECK VALVE, AND AIR CONDITIONING UNITS WILL BE SCREENED WITH EVERGREEN PLANT MATERIAL ONCE FINAL LOCATIONS HAVE BEEN DETERMINED.

NOTE: APPLY A 3" MIN. LAYER OF MULCH TOP DRESSING WITHIN ALL PLANTING AREAS. A SAMPLE IS REQUIRED PRIOR TO APPLICATION.

NORTH

0 20' 40' 60'

SCALE: 1" = 20'-0"

CONCEPTUAL LANDSCAPE PLAN
2175 S. WILLOW AVE.

CITY OF RIALTO, CA

JUNE 3, 2025

L-1

RODARTE LANDSCAPE ARCHITECTURE

DONLON BUILDERS

Exhibit A

SCOPING AGREEMENT FOR TRAFFIC IMPACT ANALYSIS

This following form shall be used to acknowledge preliminary approval of the scope for the traffic impact analysis (TIA) of the following project. The TIA must follow the City of Rialto Traffic Impact Analysis – Report Guidelines and Requirements, adopted by the City Council on 2024.

City of Rialto

Traffic Impact Analysis

Scoping Agreement

Case No. MC2025-0002 PPD2025-0002 CDP2025-0002 EAR2025-0001

Related Cases -

SP No. _____

EIR No. _____

GPA No. _____

ZC No. _____

Project Name: 2175 S Willow Avenue Truck and Trailer Storage Yard

Project Address: 2175 S Willow Avenue, Bloomington, CA, 92316

Project Description: Modification and consolidation of an existing 4.04-acre site that currently serves as two truck trailer storage sites into one site. An existing 5,800-square-foot maintenance and office building will remain in place.

	Consultant	Developer
Name:	Kimley Horn and Associates, Inc	Andrei Danshes
Address:	3801 University Ave, Suite 300, Riverside, CA 92501	800 Brickell Ave, Suite 904, Miami, FL 33131
Telephone:	(951) 543-9868	(301) 633- 9555
Fax:		

1. Trip Generation Source: ITE Trip Generation Manual, 11th Edition (2021)

Existing GP Land Use General Industrial Proposed Land Use _____

Current Zoning: H-IND - Heavy Industrial Proposed Zoning: _____

Total Daily Project Trips: 17 - See Attachment B - Trip Generation Table

	Current Trip Generation			Proposed Trip Generation		
	In	Out	Total	In	Out	Total
AM Trips	3	3	6	9	6	15
PM Trips	3	4	7	6	9	15

Internal Trip Allowance Yes (No) (_____ % Trip Discount)

Pass-By Trip Allowance Yes (No) (_____ % Trip Discount)

For appropriate land uses, a pass-by trip discount may be allowed not to exceed 25%. Discount trips shall be indicated on a report figure for intersections and access locations.

2. Trip Geographic Distribution: N N/A % S % E % W %

(Detailed exhibits of trip distribution must be attached with Trucks as a separate exhibit)

3. Background Growth Traffic

Project Completion Year: _____ Annual Background Growth Rate: N/A %

Other Phase Years _____

Other area projects to be considered: N/A

(Contact Planning for Lists. Correlate projects to exhibit map and also indicate which projects have been included in study area forecasts for existing + background growth + project + cumulative)

Model/Forecast methodology: _____

4. Study Intersections: (NOTE: Subject to revision after other projects, trip generation and distribution are determined, or comments from other agencies received.)

1. N/A
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

5. Study Roadway Segments: (NOTE: Subject to revision after other projects, trip generation and distribution are determined, or comments from other agencies received.)

1. N/A
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

6. Other Jurisdictional Impacts

Is this project within any other Agency's Sphere of Influence or within one-mile of another jurisdictional boundary?

N/A YES
_____ NO

If so, name of Jurisdiction: _____

7. Site Plan (please attach 11" x 17" legible copy) See Attachment A - Site Plan

8. Specific issues to be addressed in the Study (in addition to the standard analysis described in the Guideline) (to be filled out by the City of Rialto Public Works Department) (NOTE: If the traffic study states that "a traffic signal is warranted" (or "a traffic signal appears to be warranted," or similar statement) at an existing un-signalized intersection under existing conditions, 8-hour approach traffic volume information must be submitted in addition to the peak hourly turning movement counts for that intersection.)

N/A

9. Existing Conditions

Traffic count data must be new or within one year. Provide traffic count dates if using other than new counts.

Date of counts: N/A

10. Active Transportation and Public Transportation

Identify available Active Transportation and Public Transportation currently serving the site.

N/A

Does the project conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decreases the performance or safety of such facilities?

Yes _____ No_____

NOTE Fees are due and must be submitted with, or prior to submittal of this form. The City will not process the Scoping Agreement prior to the receipt of the processing fee.

Fees Paid: _____ Date _____

Scoping Agreement Submittal date _____

Scoping Agreement Resubmittal date _____

07/21/2025

Applicant/Engineer: Jacob Glaze P.E Date

Land Use Concurrence:

1.23.25

Development Services Department Date

Approved by:

Michael Lloyd 7/21/2025

Public Works Department Date

NOTE:

The Applicant/Engineer acknowledges that the Scoping Agreement is intended to assist in the preparation of any required TIA. It is preliminary in nature and the City does not have sufficient data to determine the ultimate conditions that may be imposed for the project. It does not provide nor limit the requirements imposed on the Project but is intended only to provide initial input into the parameters for review of the traffic generated by the Project and the initial areas to be considered and studied. Subsequent changes to scope of required analysis to be included in the TIA may be required by the Transportation Commission, Planning Commission, and/or the City Council upon Public Works Director/City Engineer review and approval.

FOR CITY STAFF USE ONLY:

TIA NEEDED: ___ YES _X_ NO

INITIALS_MDL____

VMT Analysis Project Scoping Form

This scoping form shall be submitted to the City of Rialto to assist in identifying infrastructure improvements that may be required to support traffic from the proposed project.

Project Identification:

Case Number:	MC2025-0002
Related Cases:	
SP No.	
EIR No.	
GPA No.	
CZ No.	
Project Name:	2175 S Willow Avenue Truck and Trailer Storage Yard
Project Address:	2175 S Willow Avenue, Bloomington, CA, 92316
Project Opening Year:	
Project Description:	Modification and consolidation of an existing 4.04-acre site that currently serves as two truck trailer storage sites into one site. An existing 5,800-square-foot maintenance and office building will remain in place.

	Consultant:	Developer:
Name:	Kimley Horn and Associates, Inc	Andrei Danshes
Address:	3801 University Ave, Suite 300, Riverside, CA 92501	800 Brickell Ave, Suite 904, Miami, FL 33131
Telephone:	(951) 543-9868	(301) 633- 9555
Fax/Email:		

Trip Generation Information:

Trip Generation Data Source: ITE Trip Generation Manual, 11th Edition (2021)

Current General Plan Land Use: General Industrial

Proposed General Plan Land Use:

Current Zoning: H-IND Heavy Industrial

Proposed Zoning:

	Existing Trip Generation			Proposed Trip Generation		
	In	Out	Total	In	Out	Total
AM Trips	3	3	6	9	6	15
PM Trips	3	4	7	6	9	15

Trip Internalization: ☐ Yes ☑ No (_____% Trip Discount)

Pass-By Allowance: ☐ Yes ☑ No (_____% Trip Discount)

Potential Screening Checks

Is the project screened from VMT assessment? ☑ Yes ☐ No

VMT screening justification: Per Attachment B, the proposed project would generate a total of 117 daily trips before Passenger Car Equivalents (PCE) are applied. Per City of Rialto VMT Guidelines, a project's VMT impact based on trip generation is relative to the trips generated before application of PCE. Therefore, after subtracting the daily trip generation associated with the existing use (32 daily trips) the net project trip generation relative to VMT is 85 daily trips. As the City's threshold for a significant VMT impact is 110 daily trips, the project would not constitute a significant impact on the basis of VMT.

VMT Scoping

For projects that are not screened, identify the following:

- Travel Demand Forecasting Model Used N/A
- Attach SBCTA Screening VMT Assessment output or describe why it is not appropriate for use
- Attach proposed Model Land Use Inputs and Assumed Conversion Factors (attach)

Approved by:

Michael Lloyd 7/21/2025

Public Works Department Date

NOTE:

The Applicant/Engineer acknowledges that the Scoping Agreement is intended to assist in the preparation of any required TIA. It is preliminary in nature and the City does not have sufficient data to determine the ultimate conditions that may be imposed for the project. It does not provide nor limit the requirements imposed on the Project but is intended only to provide initial input into the parameters for review of the traffic generated by the Project and the initial areas to be considered and studied. Subsequent changes to scope of required analysis to be included in the TIA may be required by the Transportation Commission, Planning Commission, and/or the City Council upon Public Works Director/City Engineer review and approval

FOR CITY STAFF USE ONLY:

VMT ANALYSIS NEEDED: ___YES _X_NO

INITIALS MDL

Kimley»Horn

July 21, 2025

Michael Lloyd, PE, TE, QSD/P
Senior Engineer/Senior Project Manager - Transtech
13367 Benson Avenue
Chino, CA 91710

Subject: ***Level of Service (LOS) and Vehicle Miles Traveled (VMT) Screening Memorandum for the 2175 S. Willow Avenue Warehouse Project in the City of Rialto***

Dear Mr. Lloyd:

Kimley-Horn and Associates, Inc. has prepared a Level of Service (LOS) and Vehicle Miles Traveled (VMT) memorandum for the proposed 2175 S. Willow Avenue Project as part of the traffic study scoping process. This memorandum is based on the City of Rialto *Traffic Impact Analysis Guidelines for Vehicle Miles Traveled (VMT) and Level of Service (LOS) Assessment* (December 2024).

PROJECT DESCRIPTION

The project site is located at 2175 S. Willow Avenue in the City of Rialto. The project site is bounded by S. Willow Avenue to the west and industrial uses to the north, south, and east. The project will involve the modification of an existing 4.04-acre site that currently serves two truck trailer storage sites. The proposed plan would consolidate the site into one uniform site. An existing 5,800-square-foot maintenance and office building will remain in place. However, it should be noted the existing truck trailer storage site was not properly entitled with the City. The most recent entitled land use on record is a horse carriage rental/storage facility. Per discussion with City staff, the entitled horse carriage facility will be used as the basis for existing trip generation.

The site is zoned as H-IND Heavy Industrial. A copy of the project site plan is provided on **Attachment A**. Vehicular access to the project site would be provided via two full-movement driveways on S. Willow Avenue.

TRIP GENERATION

The trips expected to be generated by the warehouse component of the project were calculated using trip generation rates published in the Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition (2021). Trip rates are based on the following land use (LU) category:

- LU 150 – Warehousing

The trips expected to be generated by the truck parking component of the project were calculated using trip generation rates in the EPD Solutions *Truck Trailer Parking Trip Generation Study* (March 2023) for the following land use:

- Outdoor Shipping Container Storage

Although the proposed project site is currently occupied as a truck trailer storage site, per request from City staff the previously mentioned horse carriage facility was utilized as the existing land use for the purpose of trip generation calculation, in order to be consistent with the most recent land use category on record at the site. As ITE Trip Generation Manual, 11th Edition (2021) does not provide trip rates for this particular use, data collection was required to generate existing trip generation estimates. Traffic count worksheets are provided on **Attachment C.**

Driveway ingress and egress counts were collected at two existing horse carriage facilities in the Rialto area. The counts were collected in 15-minute increments for 24 consecutive hours on 2 separate weekdays at each location. The selected locations were:

- Dream Catchers Carriages – 17564 Santa Ana Avenue, Bloomington, CA 92316
- Cindy Cinderella Carriages – 5665 46th Street, Riverside, CA 92509

In order to determine existing trip generation, daily and peak hour (AM and PM volumes) were identified for each site on each day. The peak hour volumes for each day were determined by taking the highest-volume consecutive hour, while the daily volumes were determined by summing all volumes over the 24-hour period. The 4 total days of daily and peak hour data were averaged, to determine a representative existing daily, AM, and PM peak hour trip generation estimate for the horse carriage facility.

Trip generation estimates are provided on **Attachment B.** The proposed project is estimated to generate a net 190 trips on a daily basis, with 9 trips in the AM peak hour, and 8 trips in the PM peak hour.

LEVEL OF SERVICE (LOS) SCREENING

Based on City of Rialto guidelines, certain types of projects are exempt from Traffic Impact Analysis (TIA) preparation based on their size, nature, or location. City guidelines present the following criteria:

> "Any proposed use which can demonstrate, based on the most current Trip Generation Manual published by the Institute of Transportation Engineers (ITE), or other approved trip generation data, that there will be less than 50 vehicle trips during peak hours and no other operational concerns exist."

Based on the project trip generation in Attachment B, the proposed project will not exceed the 50-trip threshold established by the City. Therefore, the project would be exempt from LOS analysis.

CEQA VEHICLE MILES TRAVELED (VMT) SCREENING

Senate Bill 743 (SB 743) was approved by California legislature in September 2013. SB 743 requires changes to California Environmental Quality Act (CEQA), specifically directing the Governor's Office of Planning and Research (OPR) to develop alternative metrics to the use of vehicular "Level of Service" (LOS) for evaluating transportation projects. OPR has prepared a technical advisory ("OPR Technical Advisory") for evaluating transportation impacts in CEQA and has recommended that Vehicle Miles Traveled (VMT) replace LOS as the primary measure of transportation impacts. The Natural Resources Agency has adopted updates to CEQA Guidelines to incorporate SB 743 that requires VMT for the purposes of determining a significant transportation impact under CEQA.

The City of Rialto *Traffic Impact Analysis Guidelines for Vehicle Miles Traveled (VMT) and Level of Service Assessment* (LOS) (TIA Guidelines October 2021) provides details on appropriate screening thresholds that can be used to identify when a proposed land use project is anticipated to result in a less-than-significant impact without conducting a more detailed level analysis. Screening thresholds are broken down into the following three criteria:

1. Transit Priority Area (TPA) Screening
2. Low VMT Area Screening
3. Project Type Screening

Land development projects that meet one or more of the above screening thresholds may be presumed to create a less-than-significant impact on transportation and circulation. The screening thresholds were reviewed and evaluated for this project.

Transit Priority Area (TPA) Screening

A project located within a TPA as determined by the San Bernardino Transportation Analysis (SBTAM) VMT Screening would be considered to have a less-than-significant transportation impact. Based on the SBCTA VMT Screening Tool, the proposed project is not located within a TPA.

The Transit Priority Area threshold is not met.

Low VMT Generating Area

A project located within a low VMT generating area as determined by the SBCTA VMT Screening Tool and the City's TIA guidelines would be considered to have a less-than-significant transportation impact. Based on the SBCTA VMT Screening Tool and the City's TIA guidelines, the proposed project is not located within a low VMT generating area. Results of the SBCTA VMT Screening Tool are provided in **Attachment D**.

The Low VMT Generating Area threshold is not met.

Project Type Screening

The City's TIA Guidelines identify that the following project types would be presumed to have a less-than-significant VMT impact:

- Local-serving K-12 schools
- Local parks
- Day care centers
- Local-serving retail uses less than 50,000 square feet, including:
    - Gas stations
    - Banks
    - Restaurants
    - Shopping Center
- Local-serving hotels (e.g. non-destination hotels)
- Student housing projects on or adjacent to college campuses
- Local-serving assembly uses (places of worship, community organizations)
- Community institutions (Public libraries, fire stations, local government)
- Local-serving community colleges that are consistent with the assumptions noted in the RTP/SCS Affordable or supportive housing
- Assisted living facilities
- Senior housing as defined by the U.S. Department of Housing and Urban Development (HUD)
- Projects generating less than 110 daily vehicle trips
    - This generally corresponds to the following "typical" development potentials:
        - 11 single family housing units
        - 16 multi-family, condominiums, or townhouse housing units
        - 10,000 sq. ft. of office
        - 15,000 sq. ft. of light industrial
        - 63,000 sq. ft. of warehousing
        - 79,000 sq. ft. of high cube transload and short-term storage warehouse

Per Attachment B, the project is expected to generate a total of 117 daily trips before Passenger Car Equivalents (PCE) are applied. Per City of Rialto VMT Guidelines, a project's VMT impact based on trip generation is relative to the trips generated before application of PCE. Therefore, after subtracting the daily trip generation associated with the existing use (32 daily trips) the net project trip generation relative to VMT is 85 daily trips. As the City's threshold for a significant VMT impact is 110 daily trips, the project would not constitute a significant impact on the basis of VMT.

The Project Type Screening threshold is met.

FINDINGS AND CONCLUSIONS

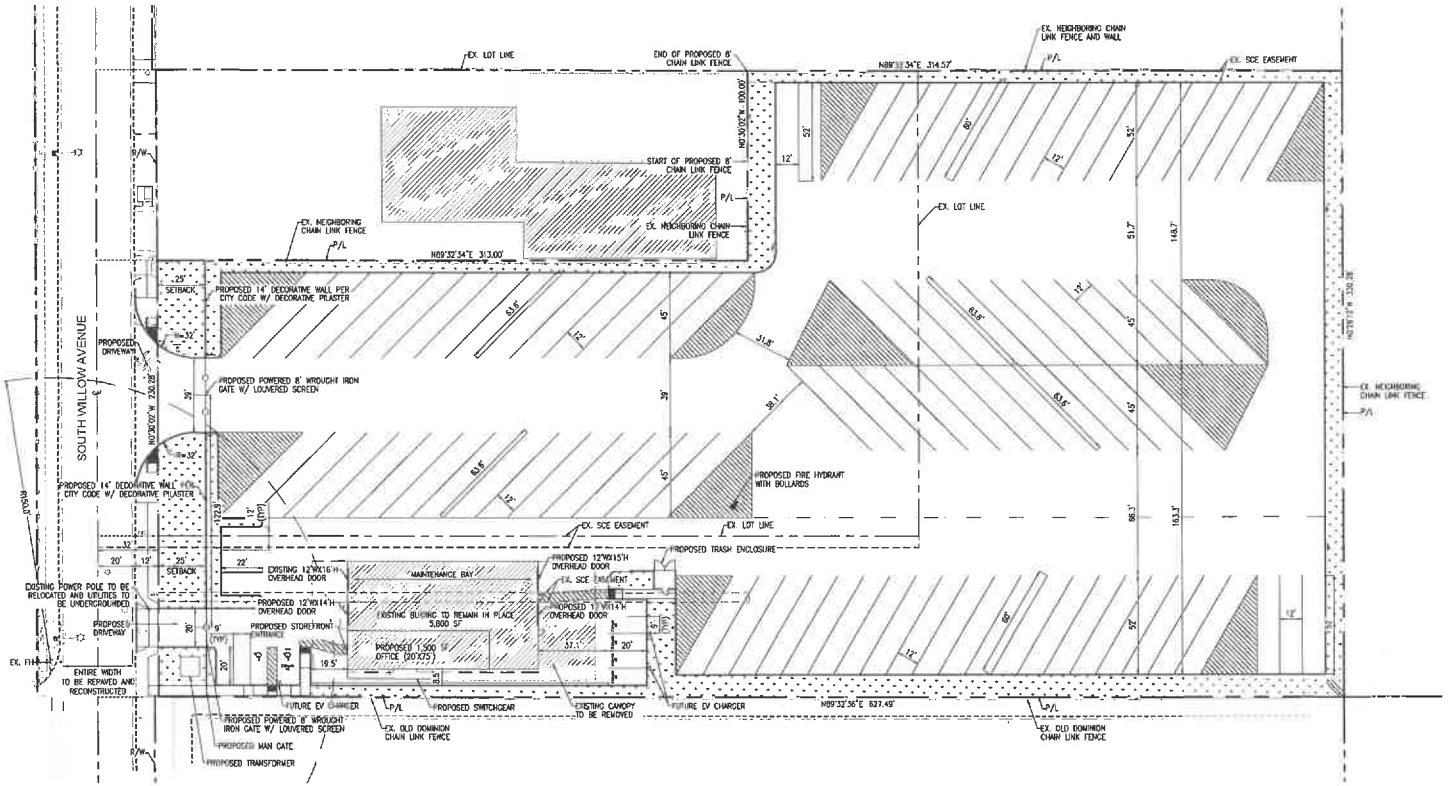
Based on the City of Rialto Traffic Impact Analysis Guidelines VMT and LOS (December 2024), the project would be screened out of LOS and VMT analysis.

Please call me if you have any questions or comments.
Sincerely,

KIMLEY-HORN AND ASSOCIATES, INC.

Jacob Glaze, P.E.
P.E. No. 87934

Attachment A



LEGEND

- PROPERTY LINE
- ROAD CENTER LINE
- SETBACK
- PROPOSED LANDSCAPING
- PROPOSED 'NO PARKING – FIRE LANE' SIGN

PROJECT TEAM

DEVELOPER/OWNER
OUTDOR STORAGE INVESTMENTS
C/O ANDREI DANSHES
800 BRICKELL AVE, SUITE 904
MIAMI, FL 33131
(301) 633-9555

CIVIL ENGINEER
KIMLEY-HORN & ASSOCIATES
C/O JACOB GLAZE, P.E.
1100 W. TOWN AND COUNTRY ROAD, SUITE 700
ORANGE, CA 92868
(714) 705-1374

ARCHITECT
WE ARCHITECTS GROUP
C/O SIA SHIRAZI, ASSOC. AIA
28449 RANCHO PKWY S.
LAKE FOREST, CA 92630
(949) 994-9933

DATA SUMMARY

APN:	0258-041-28-0000, 0258-041-29-0000	
ZONING DISTRICT:	AQUA MANSA SPECIFIC PLAN M-2 GENERAL MANUFACTURING	
LAND USE:	HIGH INDUSTRIAL (H IND)	
FLOOD ZONE:	ZONE X – AREA OF MINIMAL FLOOD HAZARD	
SITE COVERAGE		
TOTAL SITE AREA:	±175,959 S.F. (4.04 AC)	100.0%
BUILDING AREA:	5,801 S.F. (0.13 AC)	3.3%
IMPERVIOUS AREA:	151,197 S.F. (3.47 AC)	85.9%
LANDSCAPE AREA:	18,962 S.F. (0.43 AC)	10.8%
REQ. LANDSCAPE AREA:		10.0%
SETBACK		
FRONT:	25'	
REAR:	0'-0"	
SIDE (E):	0'-0"	
SIDE (W):	0'-0"	

PARKING SUMMARY TABLE

STALL TYPE	SIZE	PROPOSED			REQUIRED
REGULAR STALLS	9'X20'	REGULAR STALLS	3 STALLS	12 STALLS	11 STALLS
		ADA STALLS	2 STALLS		
		EV CAPABLE STALLS	5 STALLS		
	12'X22'	REGULAR STALLS	3 STALLS		
TRAILER STALLS	12'X45'	–	50 STALLS	92 STALLS	–
	12'X52'	–	42 STALLS		–
TOTAL PARKING:				104 STALLS	–

PARKING INFORMATION NOTES:
* PARKING REQUIREMENT IS 1 STALL FOR EVERY 250 SF OF GROSS FLOOR AREA OF OFFICE SPACE AND 1,000 SF GROSS FLOOR AREA UP TO 10,000 SF FOR WAREHOUSE OR STORAGE ESTABLISHMENTS
* BUILDING GROSS FLOOR AREA IS ESTIMATED TO BE APPROXIMATELY 5,800 SF. PROPOSED OFFICE AREA IS APPROXIMATELY 1,500 SF.
* TRAILER STALL LENGTH IS SHOWN AS THE VERTICAL DIMENSION AND NOT THE ACTUAL PARKING STALL LENGTH.

NORTH

GRAPHIC SCALE IN FEET
0 15 30 60

SCALE: 1" = 30'
WHEN PRINTED AT FULL SIZE
24"X36"

UNDERGROUND SERVICE DIG ALERT
CALL: TOLL FREE 811 OR 1-800-422-4133
TWO WORKING DAYS BEFORE YOU DIG

MARK	REVISIONS	APPR.	DATE

DESIGNED BY:_____ DRAWN BY:_____ CHECKED BY:_____

SEAL-DESIGN ENGINEER

PREPARED UNDER THE SUPERVISION OF:
(ENGINEER'S NAME, RCE xxxxx, CITY, xx/xx/xxxx) DATE
RECOMMENDED FOR APPROVAL BY CITY PLAN CHECKER:
NAME OF CITY PLAN CHECKER RCE XXXXX DATE
APPROVED BY:
CITY ENGINEER, RCE DATE

Kimley»Horn

1100 TOWN & COUNTRY ROAD, SUITE 700, ORANGE, CALIFORNIA 92868
PHONE: 714-939-1000 FAX: 714-939-9418
WWW.KIMLEY-HORN.COM

BENCH MARK: B.M. No. 005-88 ELEVATION= 1079.127
DESCRIPTION:
CITY OF RIALTO BRASS DISC SET IN NORTH END PCC DROP INLET 1 FOOT EAST OF CURB 23 FEET EAST OF THE CENTERLINE OF LILAC AVENUE, 71 FEET NORTH OF THE CENTERLINE OF VALLEY BOULEVARD

CITY OF RIALTO
2175 S WILLOW AVE
CONCEPTUAL SITE PLAN

C2.0
OF C4.0 SHEETS

FOR: DONLON BUILDERS
PPD No. 2025-0002
PLAN No. _____

ATTACHMENT B
SUMMARY OF PROJECT TRIP GENERATION
BLOOMINGTON WAREHOUSE PROJECT

ITE Land Use	ITE Code	Unit	Trip Generation Rates						
			Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Warehousing[1]	150	KSF	1.710	0.131	0.039	0.170	0.050	0.130	0.180
Outdoor Shipping Container Storage[2]	N/A	ACRE	30.700	1.110	0.860	1.970	0.960	1.110	2.070

EXISTING USE

Project Land Use	Quantity	Unit	Trip Generation Estimates						
			Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Horse Carriage Services [4]	N/A	N/A	32	3	3	6	3	4	7
Existing Project Trips Subtotal			32	3	3	6	3	4	7

PROPOSED USE

Project Land Use	Quantity	Unit	Trip Generation Estimates						
			Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Warehousing	5.800	KSF	10	1	0	1	0	1	1
Outdoor Shipping Container Storage[2]	3.470	ACRE	107	4	3	7	3	4	7
Proposed Project Trips Subtotal			117	5	3	8	3	5	8
Passenger Vehicles	35.77%		42	2	1	3	1	2	3
Trucks	64.22%		75	3	2	5	2	3	5

Passenger Car Equivalents (PCE)

Vehicle Type	Vehicle Mix [3]	Daily Vehicles	PCE Factor	Daily	AM Peak Hour			PM Peak Hour		
					In	Out	Total	In	Out	Total
Passenger Vehicles	35.77%	42	1.0	42	2	1	3	1	2	3
2-Axle Trucks	11.09%	13	1.5	19	1	0	1	0	1	1
3-Axle Trucks	21.84%	25	2.0	51	2	1	3	1	2	3
4+ Axle Trucks	31.29%	37	3.0	110	5	3	8	3	5	8
Total Truck PCE Trips				180	8	5	12	5	8	12
Total Project PCE Trips				**222**	**9**	**6**	**15**	**6**	**9**	**15**
Total Net PCE Trip Generation				**190**	**6**	**3**	**9**	**3**	**5**	**8**

[1] Source: Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition

[2] Trip rates from the EPD Solutions *Truck Trailer Parking Trip Generation Study* (March 2023)

[3] Truck mix percentages from the SCAQMD *High-Cube Warehouse Vehicle Trip Generation Analysis* (2016)

[4] Trip rates calcualted using data collected for two full days from two sites with similar land use (June 2025)

PCE = Passenger Car Equivalent

KSF = Thousand Square Feet

ATTACHMENT C

24 Hour Driveway Counts

LOCATION: 17564 Santa Ana Avenue
Dream Catchers Carriages
CITY: County of San Bernardino

DATE: 6/25/2025
DAY: Wednesday

AM PERIOD			
Time	Entering	Exiting	TOTAL
0:00	0	0	**0**
0:15	0	0	**0**
0:30	0	0	**0**
0:45	0	0	**0**
1:00	0	0	**0**
1:15	0	0	**0**
1:30	0	0	**0**
1:45	0	0	**0**
2:00	0	0	**0**
2:15	0	0	**0**
2:30	0	0	**0**
2:45	0	0	**0**
3:00	0	0	**0**
3:15	0	0	**0**
3:30	0	0	**0**
3:45	0	0	**0**
4:00	0	0	**0**
4:15	0	0	**0**
4:30	0	0	**0**
4:45	0	0	**0**
5:00	0	0	**0**
5:15	0	0	**0**
5:30	0	0	**0**
5:45	0	0	**0**
6:00	0	0	**0**
6:15	0	0	**0**
6:30	0	0	**0**
6:45	0	0	**0**
7:00	0	0	**0**
7:15	0	0	**0**
7:30	0	0	**0**
7:45	0	0	**0**
8:00	0	0	**0**
8:15	1	0	**1**
8:30	0	0	**0**
8:45	1	0	**1**
9:00	0	0	**0**
9:15	1	4	**5**
9:30	1	0	**1**
9:45	0	0	**0**
10:00	1	0	**1**
10:15	1	0	**1**
10:30	0	0	**0**
10:45	0	1	**1**
11:00	0	0	**0**
11:15	0	0	**0**
11:30	0	0	**0**
11:45	1	0	**1**
AM TOTAL	7	5	**12**

PM PERIOD			
Time	Entering	Exiting	TOTAL
12:00	1	2	**3**
12:15	0	0	**0**
12:30	2	1	**3**
12:45	1	0	**1**
13:00	0	1	**1**
13:15	0	0	**0**
13:30	0	0	**0**
13:45	0	1	**1**
14:00	0	1	**1**
14:15	0	0	**0**
14:30	1	0	**1**
14:45	1	0	**1**
15:00	0	1	**1**
15:15	1	1	**2**
15:30	0	0	**0**
15:45	1	0	**1**
16:00	1	0	**1**
16:15	0	0	**0**
16:30	1	0	**1**
16:45	0	1	**1**
17:00	2	0	**2**
17:15	2	2	**4**
17:30	1	0	**1**
17:45	0	2	**2**
18:00	1	0	**1**
18:15	1	1	**2**
18:30	1	2	**3**
18:45	0	0	**0**
19:00	0	2	**2**
19:15	0	0	**0**
19:30	0	1	**1**
19:45	0	1	**1**
20:00	0	0	**0**
20:15	1	2	**3**
20:30	0	1	**1**
20:45	0	0	**0**
21:00	0	0	**0**
21:15	0	0	**0**
21:30	0	0	**0**
21:45	0	0	**0**
22:00	0	0	**0**
22:15	0	0	**0**
22:30	0	0	**0**
22:45	0	0	**0**
23:00	0	0	**0**
23:15	0	0	**0**
23:30	0	0	**0**
23:45	0	0	**0**
PM TOTAL	19	23	**42**

24 HOUR TOTAL	**26**	**28**	**54**

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
951-268-6268

AM PEAK PERIOD

Time	Entering	Exiting	TOTAL
0:00			
0:15			
0:30			
0:45	0	0	0
1:00	0	0	0
1:15	0	0	0
1:30	0	0	0
1:45	0	0	0
2:00	0	0	0
2:15	0	0	0
2:30	0	0	0
2:45	0	0	0
3:00	0	0	0
3:15	0	0	0
3:30	0	0	0
3:45	0	0	0
4:00	0	0	0
4:15	0	0	0
4:30	0	0	0
4:45	0	0	0
5:00	0	0	0
5:15	0	0	0
5:30	0	0	0
5:45	0	0	0
6:00	0	0	0
6:15	0	0	0
6:30	0	0	0
6:45	0	0	0
7:00	0	0	0
7:15	0	0	0
7:30	0	0	0
7:45	0	0	0
8:00	0	0	0
8:15	1	0	1
8:30	1	0	1
8:45	2	0	2
9:00	2	0	2
9:15	2	4	6
9:30	3	4	7
9:45	2	4	6
10:00	3	4	7
10:15	3	0	3
10:30	2	0	2
10:45	2	1	3
11:00	1	1	2
11:15	0	1	1
11:30	0	1	1
11:45	1	0	1
PEAK HOUR	3	4	7

PM PEAK PERIOD

Time	Entering	Exiting	TOTAL
12:00			
12:15			
12:30			
12:45	4	3	7
13:00	3	2	5
13:15	3	2	5
13:30	1	1	2
13:45	0	2	2
14:00	0	2	2
14:15	0	2	2
14:30	1	2	3
14:45	2	1	3
15:00	2	1	3
15:15	3	2	5
15:30	2	2	4
15:45	2	2	4
16:00	3	1	4
16:15	2	0	2
16:30	3	0	3
16:45	2	1	3
17:00	3	1	4
17:15	5	3	8
17:30	5	3	8
17:45	5	4	9
18:00	4	4	8
18:15	3	3	6
18:30	3	5	8
18:45	3	3	6
19:00	2	5	7
19:15	1	4	5
19:30	0	3	3
19:45	0	4	4
20:00	0	2	2
20:15	1	4	5
20:30	1	4	5
20:45	1	3	4
21:00	1	3	4
21:15	0	1	1
21:30	0	0	0
21:45	0	0	0
22:00	0	0	0
22:15	0	0	0
22:30	0	0	0
22:45	0	0	0
23:00	0	0	0
23:15	0	0	0
23:30	0	0	0
23:45	0	0	0
PEAK HOUR	5	5	9

24 Hour Driveway Counts

LOCATION: 17564 Santa Ana Avenue
Dream Catchers Carriages
CITY: County of San Bernardino

DATE: 6/26/2025
DAY: Thursday

AM PERIOD				PM PERIOD			
Time	Entering	Exiting	TOTAL	Time	Entering	Exiting	TOTAL
0:00	0	0	**0**	12:00	0	0	**0**
0:15	0	0	**0**	12:15	2	0	**2**
0:30	0	0	**0**	12:30	0	1	**1**
0:45	0	0	**0**	12:45	0	0	**0**
1:00	0	0	**0**	13:00	0	0	**0**
1:15	0	0	**0**	13:15	1	0	**1**
1:30	0	0	**0**	13:30	2	0	**2**
1:45	0	0	**0**	13:45	2	4	**6**
2:00	0	0	**0**	14:00	1	0	**1**
2:15	0	0	**0**	14:15	2	1	**3**
2:30	0	0	**0**	14:30	0	3	**3**
2:45	0	0	**0**	14:45	1	1	**2**
3:00	0	0	**0**	15:00	2	0	**2**
3:15	0	0	**0**	15:15	0	1	**1**
3:30	0	0	**0**	15:30	0	0	**0**
3:45	0	0	**0**	15:45	0	1	**1**
4:00	0	0	**0**	16:00	0	1	**1**
4:15	0	1	**1**	16:15	0	0	**0**
4:30	0	0	**0**	16:30	0	0	**0**
4:45	0	0	**0**	16:45	0	0	**0**
5:00	0	0	**0**	17:00	1	0	**1**
5:15	0	0	**0**	17:15	0	0	**0**
5:30	0	0	**0**	17:30	0	0	**0**
5:45	0	0	**0**	17:45	0	0	**0**
6:00	0	0	**0**	18:00	2	1	**3**
6:15	0	0	**0**	18:15	0	0	**0**
6:30	0	0	**0**	18:30	0	0	**0**
6:45	0	0	**0**	18:45	1	0	**1**
7:00	0	0	**0**	19:00	0	1	**1**
7:15	0	0	**0**	19:15	1	1	**2**
7:30	0	1	**1**	19:30	1	0	**1**
7:45	0	0	**0**	19:45	0	1	**1**
8:00	0	0	**0**	20:00	0	0	**0**
8:15	0	0	**0**	20:15	1	0	**1**
8:30	0	0	**0**	20:30	1	1	**2**
8:45	1	0	**1**	20:45	0	0	**0**
9:00	0	1	**1**	21:00	0	0	**0**
9:15	0	0	**0**	21:15	1	0	**1**
9:30	0	0	**0**	21:30	0	0	**0**
9:45	2	0	**2**	21:45	1	2	**3**
10:00	0	0	**0**	22:00	0	0	**0**
10:15	0	2	**2**	22:15	0	2	**2**
10:30	0	0	**0**	22:30	0	0	**0**
10:45	0	0	**0**	22:45	0	0	**0**
11:00	1	0	**1**	23:00	0	0	**0**
11:15	0	0	**0**	23:15	0	0	**0**
11:30	0	0	**0**	23:30	0	0	**0**
11:45	0	1	**1**	23:45	0	0	**0**
AM TOTAL	4	6	**10**	PM TOTAL	23	22	**45**
				24 HOUR TOTAL	**27**	**28**	**55**

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
951-268-6268

AM PEAK PERIOD

Time	Entering	Exiting	TOTAL
0:00			
0:15			
0:30			
0:45	0	0	0
1:00	0	0	0
1:15	0	0	0
1:30	0	0	0
1:45	0	0	0
2:00	0	0	0
2:15	0	0	0
2:30	0	0	0
2:45	0	0	0
3:00	0	0	0
3:15	0	0	0
3:30	0	0	0
3:45	0	0	0
4:00	0	0	0
4:15	0	1	1
4:30	0	1	1
4:45	0	1	1
5:00	0	1	1
5:15	0	0	0
5:30	0	0	0
5:45	0	0	0
6:00	0	0	0
6:15	0	0	0
6:30	0	0	0
6:45	0	0	0
7:00	0	0	0
7:15	0	0	0
7:30	0	1	1
7:45	0	1	1
8:00	0	1	1
8:15	0	1	1
8:30	0	0	0
8:45	1	0	1
9:00	1	1	2
9:15	1	1	2
9:30	1	1	2
9:45	2	1	3
10:00	2	0	2
10:15	2	2	4
10:30	2	2	4
10:45	0	2	2
11:00	1	2	3
11:15	1	0	1
11:30	1	0	1
11:45	1	1	2
Peak Hour	2	2	4

PM PEAK PERIOD

Time	Entering	Exiting	TOTAL
12:00			
12:15			
12:30			
12:45	2	1	3
13:00	2	1	3
13:15	1	1	2
13:30	3	0	3
13:45	5	4	9
14:00	6	4	10
14:15	7	5	12
14:30	5	8	13
14:45	4	5	9
15:00	5	5	10
15:15	3	5	8
15:30	3	2	5
15:45	2	2	4
16:00	0	3	3
16:15	0	2	2
16:30	0	2	2
16:45	0	1	1
17:00	1	0	1
17:15	1	0	1
17:30	1	0	1
17:45	1	0	1
18:00	2	1	3
18:15	2	1	3
18:30	2	1	3
18:45	3	1	4
19:00	1	1	2
19:15	2	2	4
19:30	3	2	5
19:45	2	3	5
20:00	2	2	4
20:15	2	1	3
20:30	2	2	4
20:45	2	1	3
21:00	2	1	3
21:15	2	1	3
21:30	1	0	1
21:45	2	2	4
22:00	2	2	4
22:15	1	4	5
22:30	1	4	5
22:45	0	2	2
23:00	0	2	2
23:15	0	0	0
23:30	0	0	0
23:45	0	0	0
Peak Hour	7	8	13

24 Hour Driveway Counts

LOCATION: 4665 46th Street
Cindy Cinerella Carriages
CITY: Jurupa Valley

DATE: 6/25/2025
DAY: Wednesday

AM PERIOD

Time	Entering	Exiting	TOTAL
0:00	0	0	**0**
0:15	0	0	**0**
0:30	0	0	**0**
0:45	0	0	**0**
1:00	0	0	**0**
1:15	0	0	**0**
1:30	0	0	**0**
1:45	0	0	**0**
2:00	0	0	**0**
2:15	0	0	**0**
2:30	0	0	**0**
2:45	0	0	**0**
3:00	0	0	**0**
3:15	0	0	**0**
3:30	0	0	**0**
3:45	0	0	**0**
4:00	0	0	**0**
4:15	0	0	**0**
4:30	0	0	**0**
4:45	0	0	**0**
5:00	0	0	**0**
5:15	0	0	**0**
5:30	0	0	**0**
5:45	0	0	**0**
6:00	0	0	**0**
6:15	0	0	**0**
6:30	0	0	**0**
6:45	0	0	**0**
7:00	0	0	**0**
7:15	0	0	**0**
7:30	0	0	**0**
7:45	0	0	**0**
8:00	0	0	**0**
8:15	0	0	**0**
8:30	0	0	**0**
8:45	2	0	**2**
9:00	0	0	**0**
9:15	1	0	**1**
9:30	0	1	**1**
9:45	1	1	**2**
10:00	1	0	**1**
10:15	0	0	**0**
10:30	0	1	**1**
10:45	0	0	**0**
11:00	0	0	**0**
11:15	0	0	**0**
11:30	0	0	**0**
11:45	0	0	**0**
AM TOTAL	5	3	**8**

PM PERIOD

Time	Entering	Exiting	TOTAL
12:00	0	1	**1**
12:15	0	1	**1**
12:30	0	0	**0**
12:45	0	0	**0**
13:00	0	0	**0**
13:15	0	0	**0**
13:30	0	0	**0**
13:45	0	0	**0**
14:00	0	0	**0**
14:15	0	0	**0**
14:30	0	0	**0**
14:45	0	0	**0**
15:00	0	0	**0**
15:15	0	0	**0**
15:30	0	0	**0**
15:45	0	0	**0**
16:00	0	0	**0**
16:15	0	0	**0**
16:30	0	0	**0**
16:45	0	0	**0**
17:00	0	0	**0**
17:15	0	0	**0**
17:30	0	0	**0**
17:45	0	0	**0**
18:00	0	0	**0**
18:15	0	0	**0**
18:30	0	0	**0**
18:45	0	0	**0**
19:00	0	0	**0**
19:15	0	0	**0**
19:30	0	0	**0**
19:45	0	0	**0**
20:00	0	0	**0**
20:15	0	0	**0**
20:30	0	0	**0**
20:45	0	0	**0**
21:00	0	0	**0**
21:15	0	0	**0**
21:30	0	0	**0**
21:45	0	0	**0**
22:00	0	0	**0**
22:15	0	0	**0**
22:30	0	0	**0**
22:45	0	0	**0**
23:00	0	0	**0**
23:15	0	0	**0**
23:30	0	0	**0**
23:45	0	0	**0**
PM TOTAL	0	2	**2**
24 HOUR TOTAL	**5**	**5**	**10**

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
951-268-6268

AM PEAK PERIOD

Time	Entering	Exiting	TOTAL
0:00			
0:15			
0:30			
0:45	0	0	0
1:00	0	0	0
1:15	0	0	0
1:30	0	0	0
1:45	0	0	0
2:00	0	0	0
2:15	0	0	0
2:30	0	0	0
2:45	0	0	0
3:00	0	0	0
3:15	0	0	0
3:30	0	0	0
3:45	0	0	0
4:00	0	0	0
4:15	0	0	0
4:30	0	0	0
4:45	0	0	0
5:00	0	0	0
5:15	0	0	0
5:30	0	0	0
5:45	0	0	0
6:00	0	0	0
6:15	0	0	0
6:30	0	0	0
6:45	0	0	0
7:00	0	0	0
7:15	0	0	0
7:30	0	0	0
7:45	0	0	0
8:00	0	0	0
8:15	0	0	0
8:30	0	0	0
8:45	2	0	2
9:00	2	0	2
9:15	3	0	3
9:30	3	1	4
9:45	2	2	4
10:00	3	2	5
10:15	2	2	4
10:30	2	2	4
10:45	1	1	2
11:00	0	1	1
11:15	0	1	1
11:30	0	0	0
11:45	0	0	0
Peak Hour	3	2	5

PM PEAK PERIOD

Time	Entering	Exiting	TOTAL
12:00			
12:15			
12:30			
12:45	0	2	2
13:00	0	1	1
13:15	0	0	0
13:30	0	0	0
13:45	0	0	0
14:00	0	0	0
14:15	0	0	0
14:30	0	0	0
14:45	0	0	0
15:00	0	0	0
15:15	0	0	0
15:30	0	0	0
15:45	0	0	0
16:00	0	0	0
16:15	0	0	0
16:30	0	0	0
16:45	0	0	0
17:00	0	0	0
17:15	0	0	0
17:30	0	0	0
17:45	0	0	0
18:00	0	0	0
18:15	0	0	0
18:30	0	0	0
18:45	0	0	0
19:00	0	0	0
19:15	0	0	0
19:30	0	0	0
19:45	0	0	0
20:00	0	0	0
20:15	0	0	0
20:30	0	0	0
20:45	0	0	0
21:00	0	0	0
21:15	0	0	0
21:30	0	0	0
21:45	0	0	0
22:00	0	0	0
22:15	0	0	0
22:30	0	0	0
22:45	0	0	0
23:00	0	0	0
23:15	0	0	0
23:30	0	0	0
23:45	0	0	0
Peak Hour	0	2	2

24 Hour Driveway Counts

LOCATION: 4665 46th Street
Cindy Cinerella Carriages
CITY: Jurupa Valley

DATE: 6/26/2025
DAY: Thursday

AM PERIOD			
Time	Entering	Exiting	TOTAL
0:00	0	0	0
0:15	0	0	0
0:30	0	0	0
0:45	0	0	0
1:00	0	0	0
1:15	0	0	0
1:30	0	0	0
1:45	0	0	0
2:00	0	0	0
2:15	0	0	0
2:30	0	0	0
2:45	0	0	0
3:00	0	0	0
3:15	0	0	0
3:30	0	0	0
3:45	0	0	0
4:00	0	0	0
4:15	0	0	0
4:30	0	0	0
4:45	0	0	0
5:00	0	0	0
5:15	0	0	0
5:30	0	0	0
5:45	0	0	0
6:00	0	0	0
6:15	0	0	0
6:30	0	0	0
6:45	0	0	0
7:00	0	0	0
7:15	1	0	1
7:30	0	0	0
7:45	0	0	0
8:00	0	1	1
8:15	0	0	0
8:30	0	0	0
8:45	0	0	0
9:00	0	0	0
9:15	0	0	0
9:30	0	0	0
9:45	0	0	0
10:00	0	0	0
10:15	0	0	0
10:30	0	0	0
10:45	0	0	0
11:00	1	1	2
11:15	1	1	2
11:30	0	0	0
11:45	0	0	0
AM TOTAL	3	3	6

PM PERIOD			
Time	Entering	Exiting	TOTAL
12:00	0	0	0
12:15	0	0	0
12:30	0	0	0
12:45	0	0	0
13:00	0	0	0
13:15	0	0	0
13:30	0	0	0
13:45	0	0	0
14:00	0	0	0
14:15	0	0	0
14:30	1	0	1
14:45	0	1	1
15:00	0	0	0
15:15	0	0	0
15:30	0	0	0
15:45	0	0	0
16:00	0	1	1
16:15	0	0	0
16:30	0	0	0
16:45	0	0	0
17:00	0	0	0
17:15	0	0	0
17:30	1	0	1
17:45	0	0	0
18:00	0	0	0
18:15	0	0	0
18:30	0	0	0
18:45	0	0	0
19:00	0	0	0
19:15	0	0	0
19:30	0	0	0
19:45	0	0	0
20:00	0	0	0
20:15	0	0	0
20:30	0	0	0
20:45	0	0	0
21:00	0	0	0
21:15	0	0	0
21:30	0	0	0
21:45	0	0	0
22:00	0	0	0
22:15	0	0	0
22:30	0	0	0
22:45	0	0	0
23:00	0	0	0
23:15	0	0	0
23:30	0	0	0
23:45	0	0	0
PM TOTAL	2	2	4
24 HOUR TOTAL	5	5	10

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
951-268-6268

AM PEAK PERIOD

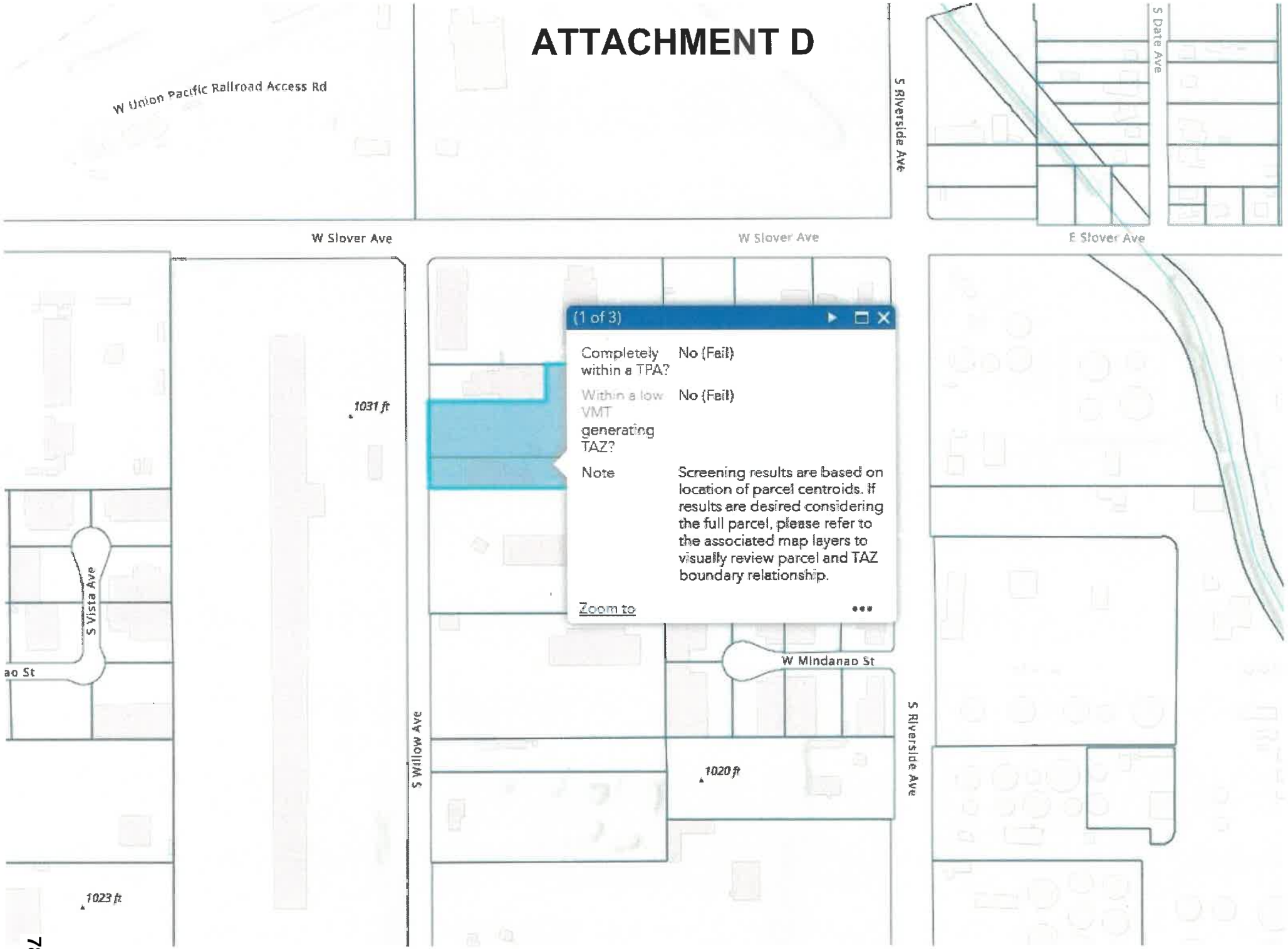
Time	Entering	Exiting	TOTAL
0:00			
0:15			
0:30			
0:45	0	0	0
1:00	0	0	0
1:15	0	0	0
1:30	0	0	0
1:45	0	0	0
2:00	0	0	0
2:15	0	0	0
2:30	0	0	0
2:45	0	0	0
3:00	0	0	0
3:15	0	0	0
3:30	0	0	0
3:45	0	0	0
4:00	0	0	0
4:15	0	0	0
4:30	0	0	0
4:45	0	0	0
5:00	0	0	0
5:15	0	0	0
5:30	0	0	0
5:45	0	0	0
6:00	0	0	0
6:15	0	0	0
6:30	0	0	0
6:45	0	0	0
7:00	0	0	0
7:15	1	0	1
7:30	1	0	1
7:45	1	0	1
8:00	1	1	2
8:15	0	1	1
8:30	0	1	1
8:45	0	1	1
9:00	0	0	0
9:15	0	0	0
9:30	0	0	0
9:45	0	0	0
10:00	0	0	0
10:15	0	0	0
10:30	0	0	0
10:45	0	0	0
11:00	1	1	2
11:15	2	2	4
11:30	2	2	4
11:45	2	2	4
Peak Hour	2	2	4

PM PEAK PERIOD

Time	Entering	Exiting	TOTAL
12:00			
12:15			
12:30			
12:45	0	0	0
13:00	0	0	0
13:15	0	0	0
13:30	0	0	0
13:45	0	0	0
14:00	0	0	0
14:15	0	0	0
14:30	1	0	1
14:45	1	1	2
15:00	1	1	2
15:15	1	1	2
15:30	0	1	1
15:45	0	0	0
16:00	0	1	1
16:15	0	1	1
16:30	0	1	1
16:45	0	1	1
17:00	0	0	0
17:15	0	0	0
17:30	1	0	1
17:45	1	0	1
18:00	1	0	1
18:15	1	0	1
18:30	0	0	0
18:45	0	0	0
19:00	0	0	0
19:15	0	0	0
19:30	0	0	0
19:45	0	0	0
20:00	0	0	0
20:15	0	0	0
20:30	0	0	0
20:45	0	0	0
21:00	0	0	0
21:15	0	0	0
21:30	0	0	0
21:45	0	0	0
22:00	0	0	0
22:15	0	0	0
22:30	0	0	0
22:45	0	0	0
23:00	0	0	0
23:15	0	0	0
23:30	0	0	0
23:45	0	0	0
Peak Hour	1	1	2

Horse Carriage Ride Services Trip Generation Rates								
		AM PEAK PERIOD			PM PEAK PERIOD			Daily
		IN	OUT	TOTAL	IN	OUT	TOTAL	
Jurupa Valley	25-Jun	3	2	5	0	2	2	10
	26-Jun	2	2	4	1	1	2	10
San Bernardino	25-Jun	3	4	7	5	5	9	54
	26-Jun	2	2	4	7	8	13	55
Average		2.5	2.5	5	3.25	4	6.5	32.25
		3	3	6	3	4	7	32

ATTACHMENT D




W Union Pacific Railroad Access Rd
S Riverside Ave
S Date Ave
W Slover Ave
W Slover Ave
E Slover Ave
(2 of 3)
Assessor Parcel Number (APN) 025804129
Traffic Analysis Zone (TAZ) 53749301
TAZ VMT 46.3
Jurisdiction VMT 28.5
% Difference 62.67%
VMT Metric OD VMT Per Service Population
Threshold 28.5
Zoom to
1031 ft
S Vista Ave
St
S Willow Ave
W Mindanao St
S Riverside Ave
1020 ft
1023 ft


W Union Pacific Railroad Access Rd
S Riverside Ave
Date Ave
W Slover Ave
W Slover Ave
E Slover Ave
(3 of 3)
Assessor Parcel Number (APN) 025804128
Traffic Analysis Zone (TAZ) 53749301
TAZ VMT 46.3
Jurisdiction VMT 28.5
% Difference 62.67%
VMT Metric OD VMT Per Service Population
Threshold 28.5
Zoom to
1031 ft
S Vista Ave
W Mindanao St
S Willow Ave
1020 ft
S Riverside Ave
1023 ft

Kimley»Horn

MEMORANDUM

To:	Daniel Casey, City of Rialto
From:	Alex Pohlman, Kimley-Horn and Associates, Inc.
Date:	December 2, 2024
Subject:	Willow Avenue Trailer Parking Project – Air Quality and Greenhouse Gas Emissions Analysis

Purpose

The purpose of this memorandum is to evaluate the air quality and greenhouse gas (GHG) emissions associated with construction and operation of the proposed Willow Avenue Trailer Parking Project (Project), located in Rialto, California.

Project Location

The Project site is a 4.04-acre site located at 2175 South Willow Avenue, Rialto, California 92316. The Project site is currently developed with trailer storage and repair services on APN 0258-041-28 and APN 0258-041-29. The Project site is surrounded by industrial and other similar uses; refer to **Exhibit 1: Local Vicinity Map.** The site is zoned as M-2 General Manufacturing within the Agua Mansa Specific Plan. The nearest sensitive receptors are located approximately 1,400 feet (0.27-mile) to the northeast on South Date Avenue.

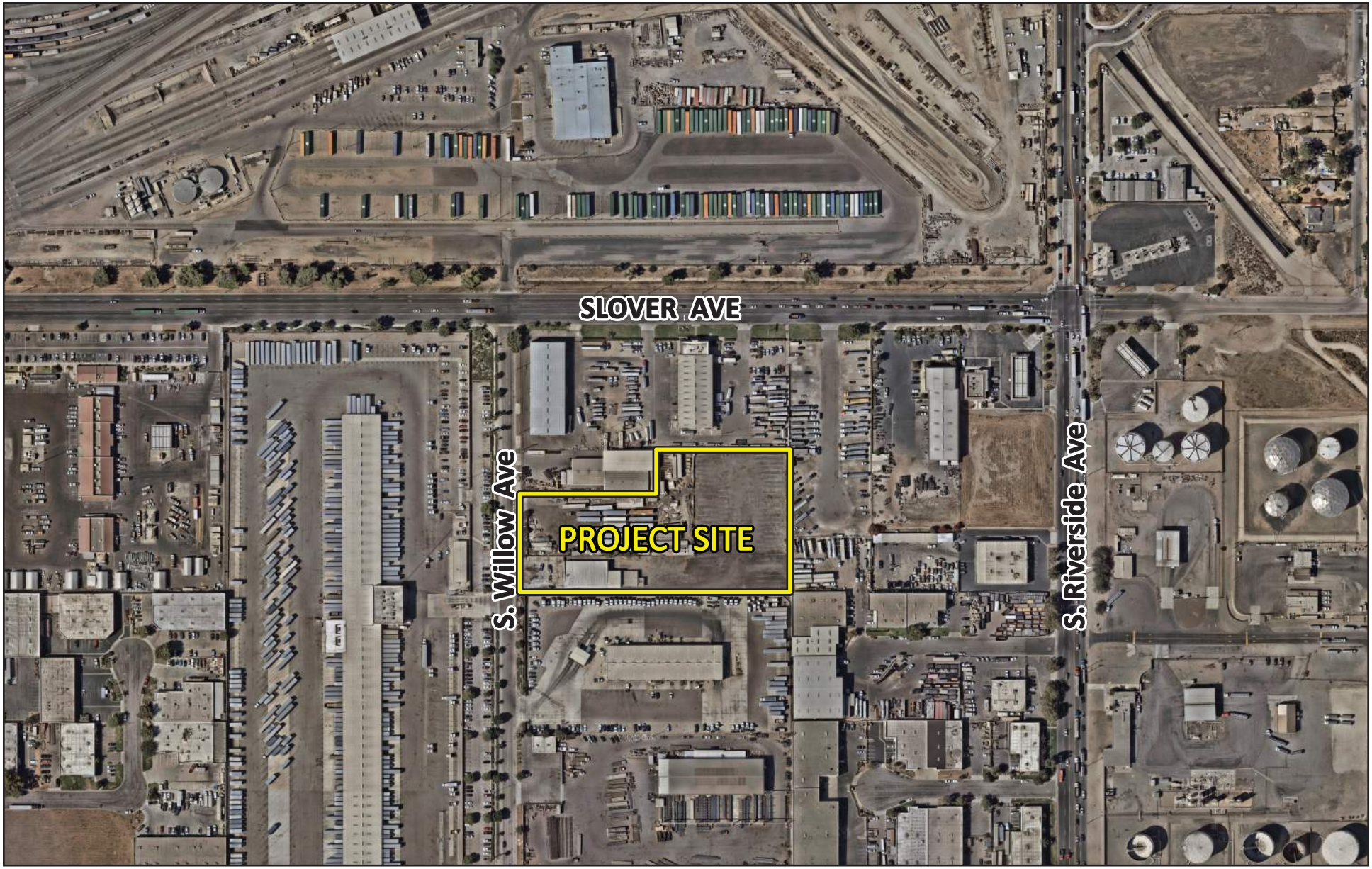
Project Description

The Project involves the modification of the existing 4.04-acre site that currently serves two truck trailer storage sites. The proposed plan would consolidate the site into one land use. An existing 5,800-square-foot office building would remain in place. The Project proposes 141 truck/trailer parking stalls, refer to **Exhibit 2: Preliminary Site Plan**. Additional improvements would include a fourteen-foot wall along the South Willow Avenue frontage and two gates. The proposed traffic operations would not be altered from the current uses.[1]

[1] Kimley-Horn and Associates. *Level of Service (LOS) and Vehicle Miles Traveled (VMT) Screening Memorandum for the 2175 S. Willow Avenue Warehouse Project in the City of Rialto*. November 2024. Page 4.

Construction Schedule

Project construction is anticipated to begin November 2025 and continue for approximately 6 months. Project construction would include: (1) demolition, (2) site preparation, (3) grading, (4) building construction, (5) paving, and (6) architectural coating. Demolition activities are anticipated to generate 100 tons of building materials and 2,000 tons of pavement materials, to be disposed of three miles away at Recycled Aggregate Materials Company (RAMCO) Rialto (located at 250 E. Santa Ana Ave, Bloomington, CA 92316).

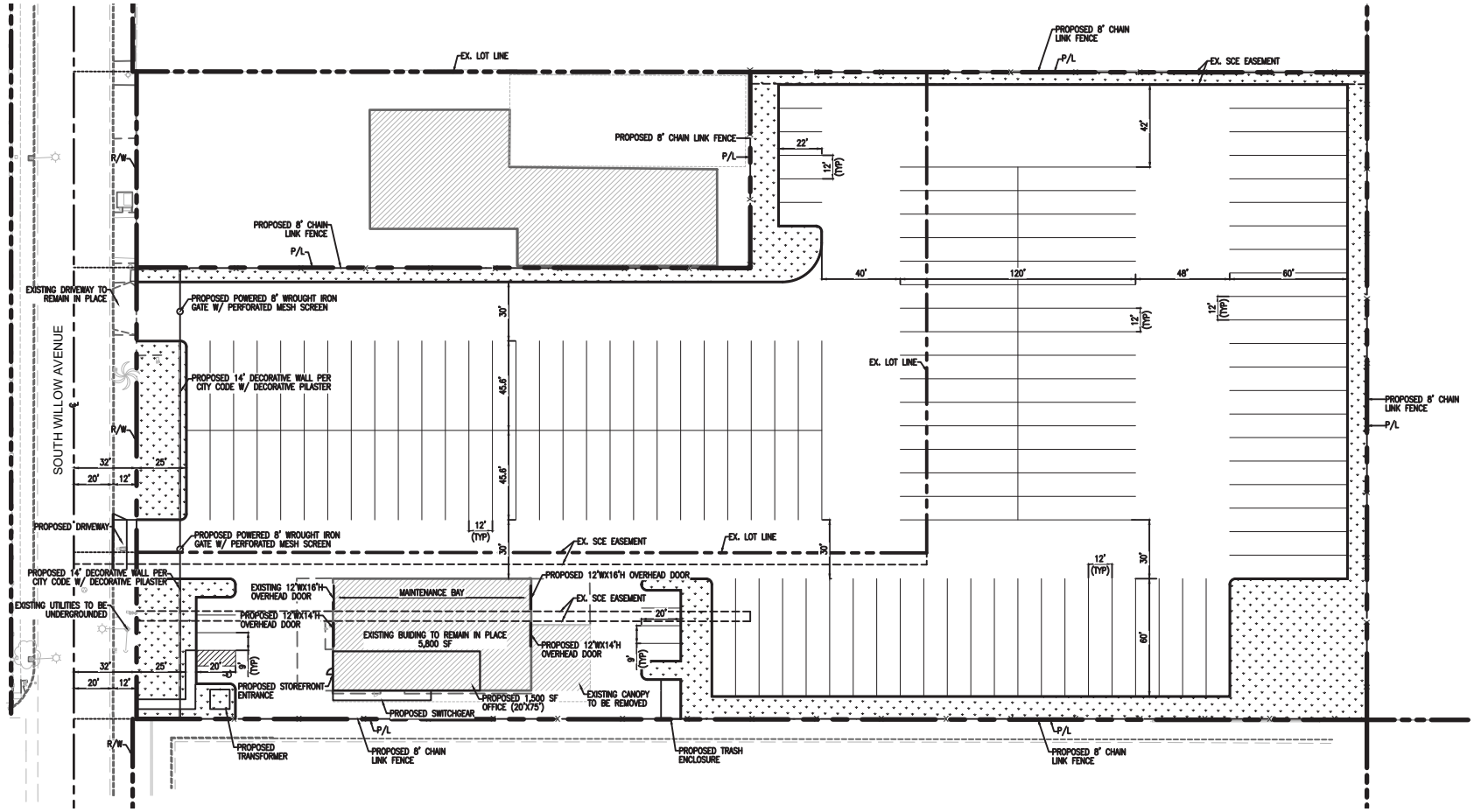


Source: Nearmap

EXHIBIT 1: Local Vicinity Map
Willow Avenue Trailer Parking Project

Not to Scale

Kimley»Horn
Expect More. Experience Better.



PARKING SUMMARY TABLE

STALL TYPE	SIZE	PROPOSED			REQUIRED
REGULAR STALLS	9'X20'	REGULAR STALLS	7 STALLS	14 STALLS	6 STALLS
		ADA STALLS	1 STALL		
	12'X22'	–	6 STALLS		
TRAILER STALLS	12'X45.6'	–	–	55 STALLS	–
	12'X60'	–	–	72 STALLS	–
TOTAL PARKING:				141 STALLS	–

LEGEND

- PROPERTY LINE
- ROAD CENTER LINE
- PROPOSED LANDSCAPING

Source: Kimley-Horn

EXHIBIT 2: Conceptual Site Plan
Willow Avenue Trailer Parking Project

Not to Scale

Kimley»Horn
Expect More. Experience Better.

Air Quality Background

The Project site is located in the South Coast Air Basin (Basin) which includes parts of San Bernardino, Los Angeles, and Riverside counties and all of Orange County. The South Coast Air Quality Management District (SCAQMD) and the California Air Resources Board (CARB) manage air quality within the Basin.

As part of its enforcement responsibilities, the United States Environmental Protection Agency (U.S. EPA) requires each state with nonattainment areas to prepare and submit air quality attainment plans (State Implementation Plans). The primary purpose of an air quality attainment plan is to bring an area that does not attain the National Ambient Air Quality Standards (NAAQS) and the California Ambient Air Quality Standards (CAAQS) in accordance with the Federal Clean Air Act and the California Clean Air Act. Air quality attainment plans outline emissions limits and control measures to achieve and maintain the CAAQS and NAAQS by the earliest practical date. In addition, air quality plans are developed to ensure that an area maintains a healthful level of air quality based on the NAAQS and the CAAQS. The Air Quality Management Plan (AQMP) for the Basin is prepared by SCAQMD and the Southern California Association of Governments (SCAG). The AQMP provides policies and control measures that reduce emissions to attain both NAAQS and CAAQS.

South Coast Air Quality Management District Thresholds

Mass Emissions Thresholds

The SCAQMD significance criteria may be relied upon to make the above determinations. According to the SCAQMD, an air quality impact is considered significant if a proposed project would violate any ambient air quality standard, contribute substantially to an existing or projected air quality violation, or expose sensitive receptors to substantial pollutant concentrations. The SCAQMD has established thresholds of significance for air quality during project construction and operations, as shown in **Table 1: South Coast Air Quality Management District Emissions Thresholds**.

Table 1: South Coast Air Quality Management District Emissions Thresholds

Pollutant	Average Daily Emissions (pounds/day)	
	Construction	Operations
Reactive Organic Gases (ROG)	75	55
Carbon Monoxide (CO)	550	550
Nitrogen Oxides (NO_X)	100	55
Sulfur Oxides (SO_X)	150	150
Coarse Particulates (PM_{10})	150	150
Fine Particulates ($PM_{2.5}$)	55	55

Source: South Coast Air Quality Management District, *South Coast AQMD Air Quality Significance Thresholds,* March 2023.

Localized Significance Thresholds

The SCAQMD has developed localized significance thresholds (LSTs) for emissions of nitrogen oxides (NO_X), carbon monoxide (CO), particulate matter 10 microns in diameter or less (PM_{10}), and particulate matter 2.5 microns in diameter or less ($PM_{2.5}$) generated at new development sites (off-site mobile source emissions are not included in the LST analysis). LSTs represent the maximum emissions that can be generated at a project site without expecting to cause or substantially contribute to an exceedance of the most stringent NAAQS or CAAQS. LSTs are based on the ambient concentrations of that pollutant within the Project source receptor area (SRA), as demarcated by the SCAQMD, and the distance to the nearest sensitive receptor. LST analysis for construction is applicable for all projects that disturb 5.0 acres or less on a single day.

The Project is located within SCAQMD SRA 34 (Central San Bernardino Valley). **Table 2: Localized Significance Thresholds** shows the LSTs for a 1-acre, 2-acre, and 5-acre project site in SRA 34 with sensitive receptors located within 25 meters. LSTs associated with all acreage categories are provided in **Table 2** for informational purposes. **Table 2** shows that the LSTs increase as acreages increase. It should be noted that LSTs are screening thresholds and are therefore conservative. The construction LST acreage is determined based on daily acreage disturbed. The operational LST acreage is based on the total area of the Project site.

Table 2: Localized Significance Thresholds

Project Size	Pollutant (Construction/Operations)			
	NO_X – lbs./day	CO – lbs./day	PM_{10} – lbs./day	$PM_{2.5}$ – lbs./day
1 Acre	118/118	667/667	4/1	3/1
2 Acres	170/170	972/972	7/2	4/1
5 Acres	270/270	1,577/1,577	13/4	8/2

NO_X = Nitrogen Oxides; CO = Carbon Monoxide; PM_{10} = Particulate Matter 10 microns in diameter or less; $PM_{2.5}$ = Particulate Matter 2.5 microns in diameter or less

Source: South Coast Air Quality Management District, *Localized Significance Threshold Methodology,* July 2008.

Air Quality Impacts

Threshold (a) Conflict with or obstruct implementation of the applicable air quality plan.

According to the SCAQMD, a project is consistent with the AQMP if it would not result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations or delay timely attainment of the NAAQS or CAAQS or the interim emission reductions specified in the AQMP.

Pursuant to the Federal Clean Air Act, the SCAQMD is required to reduce criteria pollutant emissions for which the Basin is in non-attainment of the NAAQS (e.g., ozone and $PM_{2.5}$). The SCAQMD's 2022 AQMP contains a comprehensive list of pollution control strategies directed at

reducing emissions and achieving the NAAQS. NO_X and Reactive Organic Gases (ROG) are precursor emissions that form ozone in the atmosphere in the presence of sunlight where the pollutants undergo complex chemical reactions.

The SCAQMD's California Environmental Quality Act (CEQA) Handbook, identifies two key indicators of consistency with the AQMP:

1. Whether a project will result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations or delay timely attainment of air quality standards or the interim emission reductions specified in the AQMP.

2. Whether a project will exceed the assumptions in the AQMP based on the year of project buildout and phase.

The violations to which Consistency Criterion No. 1 refers are CAAQS and NAAQS. As shown in **Table 3** and **Table 4** below, the Project would not exceed the SCAQMD's construction or operational thresholds and would therefore not violate any CAAQS or NAAQS. Thus, the Project would be consistent with the first criterion.

Concerning Consistency Criterion No. 2, the AQMP contains air pollutant reduction strategies based on SCAG's latest growth forecasts, and SCAG's growth forecasts were defined in consultation with local governments and with reference to local general plans. The proposed Project is consistent with the current industrial land use designation and development density presented in the General Plan and therefore would not exceed the population or job growth projections used by the SCAQMD to develop the AQMP. Thus, no impact would occur, as the Project is also consistent with both the first and second criterion. As the Project is consistent with the SCAQMD consistency criteria, the Project would not conflict with or obstruct the implementation of the AQMP.

Mitigation Measures: No mitigation is required.

Level of Significance: Less than significant impact.

Threshold (b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or State ambient air quality standard.

Construction Emissions

Project construction would generate short-term emissions of criteria air pollutants. The criteria pollutants of primary concern within the Project area include O_3-precursor pollutants (i.e., ROG and NO_X), PM_{10}, and $PM_{2.5}$. Construction-generated emissions are short-term and of temporary duration, lasting only as long as construction activities occur, but would be considered a

significant air quality impact if the volume of pollutants generated exceeds the SCAQMD's thresholds of significance.

Project construction would result in the temporary generation of emissions resulting from site demolition, site preparation, grading, motor vehicle exhaust associated with construction equipment and worker trips, and the movement of construction equipment. Emissions of airborne particulate matter are largely dependent on the amount of ground disturbance associated with grading activities as well as weather conditions and the appropriate application of water.

The duration of Project construction activities is estimated to be approximately 6 months, beginning November 2025 and completed April 2026.[2] Project construction-generated emissions were calculated using California Emissions Estimator Model version 2022 (CalEEMod), which is designed to model emissions for land use development projects, based on typical construction requirements. See **Appendix A: Air Quality and GHG Data** for more information regarding the construction assumptions used in this analysis. Predicted maximum daily construction-generated emissions for the proposed Project are identified in **Table 3: Project Construction Emissions**.

Table 3: Project Construction Emissions

Construction Year	Emissions (pounds per day)[1]					
	ROG	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
2025	3.39	31.73	31.20	0.05	9.26	5.25
2026	1.71	15.04	18.25	0.03	3.60	1.98
SCAQMD Threshold	*75*	*100*	*550*	*150*	*150*	*55*
Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**	**No**

ROG = Reactive Organic Gases; NO_X = Nitrogen Oxides; CO = Carbon Monoxide; SO_2 = Sulfur Dioxide; PM_{10} = Particulate Matter 10 microns in diameter or less; $PM_{2.5}$ = Particulate Matter 2.5 microns in diameter or less

1. SCAQMD Rule 403 Fugitive Dust applied. The Rule 403 reduction/credits include the following: properly maintain mobile and other construction equipment; replace ground cover in disturbed areas quickly; water exposed surfaces three times daily; water all haul roads twice daily; and limit speeds on unpaved roads to 15 miles per hour. Reductions percentages from the SCAQMD CEQA Handbook (Tables XI-A through XI-E) were applied. No mitigation was applied to construction equipment.

Source: CalEEMod version 2022. Refer to Appendix A for model outputs.

[2] The exact date construction would commence is not known at the time of this analysis. Therefore, construction was modeled to commence in November 2025. However, emissions in future years (i.e., due to a later construction start date) would be lower due to phased-in emissions standards, inspection and maintenance requirements, and fleet turnover. As such, construction impacts would be less than those analyzed due to the use of more energy-efficient and cleaner burning construction vehicle fleet mix, pursuant to state regulations that require vehicle fleet operators to phase-in less polluting heavy-duty equipment. As a result, Project-related construction air quality impacts would be lower than the impacts disclosed herein. For emissions modeling purposes, conservatively analyzing the emissions using an earlier construction start date (i.e., November 2025), provides for a worst-case analysis and full disclosure of potential air quality impacts, as required by CEQA.

Table 3 shows that construction pollutant emissions would remain below their respective thresholds with implementation of SCAQMD Rule 403 (required for all projects). The Project would also be required to comply with SCAQMD Rules 402 and 1113, which prohibit nuisances and limit VOC content in paints, respectively. Due to limitations in the CalEEMod program SCAQMD Rule 403 emission reductions are listed under mitigation in the Appendix A model output files, however because these measures are required, they are not considered mitigation under CEQA. As shown above, all criteria pollutant emissions would be below their respective thresholds and impacts would be less than significant.

Operational Emissions

The Project proposes to consolidate two truck trailer storage sites into one location. The Project would also use an existing 5,800 square-foot building for maintenance activities. As noted in the traffic memo, the Project would not generate a net increase in traffic, as a result the operational emissions do not include emissions from mobile sources. In addition, operational emissions do not include emissions associated with the existing 5,800 square-foot building as these emissions are not new. Operational emissions for the Project are associated with parking lot area sources (such as the use of landscape maintenance equipment, consumer products, and architectural coatings).

Table 4: Project Operational Emissions summarizes the operational emissions attributable to the Project. As shown in **Table 4**, the Project's emissions would not exceed SCAQMD thresholds. Therefore, regional operational emissions would result in a less than significant long-term regional air quality impact.

Table 4: Project Operational Emissions

Source	Emissions (pounds per day)[1]					
	ROG	**NO_X**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
Mobile	0.00	0.00	0.00	0.00	0.00	0.00
Area	0.02	0.00	0.00	0.00	0.00	0.00
Energy	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
SCAQMD Threshold	*55*	*55*	*550*	*150*	*150*	*55*
Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**	**No**

Source: CalEEMod version 2022. Refer to **Appendix A** for model outputs.

Mitigation Measures: No mitigation is required.

Level of Significance: Less than significant impact.

Threshold (c) Expose sensitive receptors to substantial pollutant concentrations.

The State CEQA Guidelines indicate that a potentially significant impact could occur if a project would expose sensitive receptors to substantial pollutant concentrations. To identify impacts to sensitive receptors, the SCAQMD recommends addressing LSTs for construction and operations. LSTs were developed in response to SCAQMD Governing Boards' Environmental Justice Enhancement Initiative (I-4). The SCAQMD provided the *Final Localized Significance Threshold Methodology* (dated June 2003 [revised 2008]) for guidance. The LST methodology assists lead agencies in analyzing localized impacts associated with Project-specific emissions.

Localized Construction Impacts

The nearest sensitive receptors to the Project site are residential uses located approximately 1,400 feet (427 meters) to the northeast on South Date Avenue. To identify impacts to sensitive receptors, the SCAQMD recommends addressing Localized Significance Thresholds (LSTs) for construction. LSTs were developed in response to SCAQMD Governing Boards' Environmental Justice Enhancement Initiative (I-4). The SCAQMD provided the *Final Localized Significance Threshold Methodology* (dated June 2003 [revised 2008]) for guidance. The LST methodology assists lead agencies in analyzing localized impacts associated with project-specific level proposed projects.

Since CalEEMod calculates construction emissions based on the number of equipment hours and the maximum daily soil disturbance activity possible for each piece of equipment, **Table 5: Equipment-Specific Grading Rates** is used to determine the maximum daily disturbed acreage for comparison to LSTs. For this Project, the appropriate source receptor area (SRA) for the localized significance thresholds is the Central San Bernardino Valley (SRA 34) area since this area includes the Project site. LSTs apply to NO_X, CO, PM_{10}, and $PM_{2.5}$. The SCAQMD produced look-up tables for projects that disturb areas less than or equal to 5 acres in size. Based on the daily equipment modeled in CalEEMod, Project construction is anticipated to disturb approximately 3.5 acres in a single day.

Table 5: Equipment-Specific Grading Rates

Construction Phase	Equipment Type	Equipment Quantity	Acres Graded per 8-Hour Day	Operating Hours per Day	Acres Graded per Day
Site Preparation	Tractor	4	0.5	8	2
	Graders	0	0.5	8	0
	Dozers	3	0.5	8	1.5
	Scrapers	0	1	8	0
				Total Acres Graded per Day	**3.5**

Source: CalEEMod version 2022.

The SCAQMD's methodology indicates that "off-site mobile emissions from the Project should not be included in the emissions compared to LSTs." Therefore, for purposes of the construction LST analysis, only emissions included in the CalEEMod "on-site" emissions outputs were considered. LST thresholds are provided for distances to sensitive receptors of 25, 50, 100, 200, and 500 meters. As the nearest sensitive uses is located 427 meters from the Project site, the LST values for 472 meters was interpolated from the values associated with the 200-meter and 500-meter distances.

Table 6: Localized Significance of Construction Emissions presents the results of localized emissions during each construction phase. **Table 6** shows that the emissions of these pollutants on the peak day of construction would not result in significant concentrations of pollutants at nearby sensitive receptors. Therefore, significant impacts would not occur concerning LSTs during construction activities.

Table 6: Localized Significance of Construction Emissions

Source/Activity	Emissions (pounds per day)[1,2]			
	NO_X	CO	PM_{10}	$PM_{2.5}$
Demolition (2025)	22.20	19.92	3.16	1.18
Site Preparation (2025)	31.64	30.18	9.03	5.20
Grading (2025)	16.27	17.91	3.48	2.00
Grading (2026)	14.97	17.44	3.41	1.93
Building Construction (2026)	9.85	19.97	0.38	0.35
Paving (2026)	6.23	8.81	0.26	0.24
Architectural Coating (2026)	0.86	1.13	0.02	0.02
Maximum Daily Emissions	*31.64*	*30.18*	*9.03*	*5.20*
SCAQMD Localized Significance Threshold (3.5 acres at 427 meters)	658	21,099	187	92
Threshold Exceeded?	No	No	No	No

NO_X = Nitrogen Oxides; CO = Carbon Monoxide; PM_{10} = Particulate Matter 10 microns in diameter or less; $PM_{2.5}$ = Particulate Matter 2.5 microns in diameter or less

1. CalEEMod version 2022. Worst-case seasonal maximum daily emissions are reported.
2. SCAQMD Rule 403 Fugitive Dust applied for construction emissions. The Rule 403 reduction/credits include the following: properly maintain mobile and other construction equipment; replace ground cover in disturbed areas quickly; water exposed surfaces three times daily; water all haul roads twice daily; and limit speeds on unpaved roads to 15 miles per hour. Reductions percentages from the SCAQMD CEQA Handbook (Tables XI-A through XI-E) were applied. No mitigation was applied to construction equipment.

Source: CalEEMod version 2022. Refer to **Appendix A** for model outputs.

Localized Operational Impacts

According to the SCAQMD localized significance threshold methodology, LSTs apply to on-site sources of NO_X, CO, PM_{10}, and $PM_{2.5}$. As shown in **Table 4**, Project operations would only

generate ROG which is not included in the LST analysis. Therefore, the Project would not result in an operational LST impact.

Carbon Monoxide Hotspots

An analysis of CO "hot spots" is needed to determine whether the change in the level of service (LOS) of an intersection resulting from the Project would have the potential to result in exceedances of the CAAQS or NAAQS. It has long been recognized that CO exceedances are caused by vehicular emissions, primarily when vehicles are idling at intersections. Vehicle emissions standards have become increasingly stringent in the last 30 years. Currently, the CO standard in California is a maximum of 3.4 grams per mile for passenger cars (requirements for certain vehicles are more stringent). With the turnover of older vehicles, introduction of cleaner fuels, and implementation of control technology on industrial facilities, CO concentrations have steadily declined. Accordingly, with the steadily decreasing CO emissions from vehicles, even very busy intersections do not result in exceedances of the CO standard.

The Basin was re-designated as attainment in 2007 and is no longer addressed in the SCAQMD's AQMP. The 2003 AQMP is the most recent version that addresses CO concentrations. As part of the SCAQMD *CO Hotspot Analysis*, the Wilshire Boulevard and Veteran Avenue intersection, one of the most congested intersections in Southern California with an average daily traffic (ADT) volume of approximately 100,000 vehicles per day, was modeled for CO concentrations. This modeling effort identified a CO concentration high of 4.6 ppm, which is well below the 35-ppm federal standard.

As noted previously, the Project would not generate a net increase in traffic. As a result, the Project would not generate a new CO hot spot.

Mitigation Measures: No mitigation is required.

Level of Significance: Less than significant impact.

Threshold (d) Create objectionable odors affecting a substantial number of people.

Construction

Odors that could be generated by construction activities are required to follow SCAQMD Rule 402 to prevent odor nuisances on sensitive land uses. SCAQMD Rule 402, Nuisance, states:

> *A person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property.*

During construction, emissions from construction equipment, such as diesel exhaust, and volatile organic compounds from architectural coatings and paving activities may generate odors. However, these odors would be temporary, are not expected to affect a substantial number of people, and would disperse rapidly. Therefore, impacts related to odors associated with the Project's construction-related activities would be less than significant.

Operations

The SCAQMD *CEQA Air Quality Handbook* identifies certain land uses as sources of odors. These land uses include agriculture (farming and livestock), wastewater treatment plants, food processing plants, chemical plants, composting facilities, refineries, landfills, dairies, and fiberglass molding. The Project would not include any of the land uses that have been identified by the SCAQMD as odor sources. Therefore, the Project operations would not create objectionable odors.

Mitigation Measures: No mitigation is required.

Level of Significance: Less than significant impact.

Greenhouse Gas Emission Background

Global climate change refers to changes in average climatic conditions on Earth as a whole, including temperature, wind patterns and precipitation. Global temperatures are moderated by naturally occurring atmospheric gases, including water vapor, carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O), as well as hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). These "greenhouse" gases (GHGs) allow solar radiation (sunlight) into the Earth's atmosphere but prevent radiative heat from escaping, thus warming the Earth's atmosphere. GHGs are emitted by both natural processes and human activities. Concentrations of GHG have increased in the atmosphere since the industrial revolution. Human activities that generate GHG emissions include combustion of fossil fuels (CO_2 and N_2O); natural gas generated from landfills, fermentation of manure and cattle farming (CH_4); and industrial processes such as nylon and nitric acid production (N_2O).

GHGs have varying global warming potential (GWP). The GWP is the potential of a gas or aerosol to trap heat in the atmosphere; it is the "cumulative radiative forcing effect of a gas over a specified time horizon resulting from the emission of a unit mass of gas relative to a reference gas." The reference gas for GWP is CO_2; therefore, CO_2 has a GWP factor of 1. The other main GHGs that have been attributed to human activity include CH_4, which has a GWP factor of 28, and N_2O, which has a GWP factor of 298. When accounting for GHGs, all types of GHG emissions

are expressed in terms of CO_2 equivalents (CO_2e)[3] and are typically quantified in metric tons (MT) or million metric tons (MMT).

The City of Rialto has not adopted a numerical threshold for determining the significance of GHG emissions; however, the City has discretion to select an appropriate significance criterion used by other agencies, based on substantial evidence. Specifically, the City has selected the 3,000 $MTCO_2e$ per year interim threshold recommended by SCAQMD staff for residential and commercial sector projects against which to compare Project-related GHG emissions. The City has selected this value as a significance criterion which has been supported by substantial evidence.

The 3,000 $MTCO_2e$ per year threshold is based on a 90 percent emission "capture" rate methodology. Prior to its use by the SCAQMD, the 90 percent emissions capture approach was one of the options evaluated by the California Air Pollution Control Officers Association (CAPCOA), in their *CEQA & Climate Change* white paper, to reduce emission levels by 80 percent below 1990 levels by 2050. A GHG significance threshold based on a 90 percent emission capture rate is appropriate to address the long-term adverse impacts associated with global climate change because medium and large projects will be required to implement measures to reduce GHG emissions, while small projects, which are generally infill development projects that are not the focus of the State's GHG reduction targets, are allowed to proceed.

The City understands that the 3,000 $MTCO_2e$ per year threshold for residential/commercial uses was proposed by SCAQMD over a decade ago and was adopted as an interim policy; however, no permanent, superseding policy or threshold has since been adopted. The 3,000 $MTCO_2e$ per year threshold was developed and recommended by SCAQMD, an expert agency, based on substantial evidence as provided in the Draft Guidance Document – Interim CEQA Greenhouse Gas Significance Threshold document[4] and subsequent Working Group meetings 1 through 15.[5] SCAQMD has not withdrawn its support of the interim threshold and all documentation supporting the interim threshold remains on the SCAQMD website on a page that provides guidance to CEQA practitioners for air quality analysis. Further, as stated by SCAQMD, this threshold "uses the Executive Order S-3-05 goal [80 percent below 1990 levels by 2050] as the basis for deriving the screening level." Lastly, this threshold has been used for hundreds, if not thousands of GHG analyses performed for projects located within the SCAQMD

---

[3] Carbon dioxide equivalent (CO_2e) means the number of metric tons of CO_2 emissions with the same global warming potential as one metric ton of another GHG.

[4] SCAQMD. *Draft Guidance Document – Interim CEQA Greenhouse Gas Significance Threshold* (page 3-13) https://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/ghgattachmente.pdf

[5] SCAQMD. GHG CEQA Significance Thresholds. https://www.aqmd.gov/home/rules-compliance/ceqa/air-quality-analysis-handbook/ghg-significance-thresholds

jurisdiction. Thus, if Project-related GHG emissions do not exceed the 3,000 $MTCO_2e$ per year threshold, then Project-related GHG emissions would have a less-than-significant impact.

Greenhouse Gas Impacts

The Project would include direct and indirect GHG emissions from construction and operations. Construction is considered a direct source since these emissions occur at the site. Direct operational-related GHG emissions for the proposed Project would include emissions from area and mobile sources, while indirect emissions are from energy consumption, water demand, and solid waste.

Threshold (a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.

Construction GHG Emissions

Construction of the Project would result in direct GHG emissions from construction equipment, the transport of materials, and construction workers to and from the Project site. Construction GHG emissions are typically summed and amortized over the lifetime of the Project (assumed to be 30 years), then added to the operational emissions. Total GHG emissions generated during all phases of construction were combined and are presented in **Table 7: Construction-Related Greenhouse Gas Emissions**. The CalEEMod outputs are contained within **Appendix A**. As shown in **Table 7**, the Project total construction would result in 138 $MTCO_2e$ (approximately 4.6 $MTCO_2e$/year when amortized over 30 years).

Table 7: Construction-Related Greenhouse Gas Emissions

Category	$MTCO_2e$
Total Construction Emissions	138
30-Year Amortized Construction	4.6

Source CalEEMod version 2022. Refer to **Appendix A** for model outputs.

Long-Term Operational Greenhouse Gas Emissions

Operational or long-term emissions would occur over the proposed Project's life. Operational GHG emissions would result from indirect sources, such as off-site generation of electrical power, the energy required to convey water to the Project site and wastewater from the Project site. The Project's total operational GHG emissions and net emissions are summarized in **Table 8: Project Greenhouse Gas Emissions**. As shown, the Project would generate approximately 28.9 $MTCO_2e$/year. The project would not result in an increase in GHG emissions that exceed the

SCAQMD's screening threshold of 3,000 $MTCO_2e$/yr. Therefore, Project-related GHG emissions would be less than significant.

Table 8: Project Greenhouse Gas Emissions	
Emissions Source	**$MTCO_2e$ per Year**
Construction Amortized over 30 Years	4.6
Mobile	0.0
Area	0.0
Energy	24.3
Water	0.3
Waste	0.0
Refrigeration	0.0
Total Project Emissions	**28.9**
SCAQMD Project Threshold	3,000
Threshold Exceeded?	**No**
Source: CalEEMod version 2022. Refer to **Appendix A** for model data outputs.	

Table 8 shows that the proposed Project would not exceed the SCAQMD GHG threshold of 3,000 $MTCO_2e$ per year. Project-related GHG emissions would be less than significant, and no mitigation is required.

Mitigation Measures: No mitigation is required.

Level of Significance: Less than significant impact.

Threshold (b) Conflict with an applicable plan, policy, or regulation of an agency adopted for the purpose of reducing GHG emissions?

Consistency with the City of Rialto Climate Adaptation Plan

The Rialto Climate Adaptation Plan outlines goals to reduce energy consumption and GHG emissions to become a more sustainable community. The proposed Project would be required to comply with all building codes in effect at the time of construction which include energy conservation measures mandated by Title 24 of the California Building Standards Code – Energy Efficiency Standards and the California Green Building Standards. Because Title 24 standards require energy conservation features in new construction (e.g., high-efficiency lighting, high-efficiency heating, ventilating, and air-conditioning [HVAC] systems, thermal insulation, double-glazed windows, water-conserving plumbing fixtures), these standards indirectly regulate and reduce GHG emissions. California's Building Energy Efficiency Standards are updated on an approximately three-year cycle. The most recent 2022 standards went into effect January 1, 2023.

Further, the Project would comply with the City's General Plan policies and State Building Code provisions designed to reduce GHG emissions. The proposed Project would also comply with all SCAQMD applicable rules and regulations during construction and operation and would not interfere with the State's AB 32 goals.

Consistency with the 2022 CARB Scoping Plan

Adopted December 15, 2022, CARB's 2022 Scoping Plan for Achieving Carbon Neutrality (2022 Scoping Plan) sets a path to achieve targets for carbon neutrality and reduce anthropogenic GHG emissions by 85 percent below 1990 levels by 2045 in accordance with AB 1279. To achieve the targets of AB 1279, the 2022 Scoping Plan relies on existing and emerging fossil fuel alternatives and clean technologies, as well as carbon capture and storage. Specifically, the 2022 Scoping Plan focuses on zero-emission transportation; phasing out use of fossil gas use for heating homes and buildings; reducing chemical and refrigerants with high GWP; providing communities with sustainable options for walking, biking, and public transit; displacement of fossil-fuel fired electrical generation through use of renewable energy alternatives (e.g., solar arrays and wind turbines); and scaling up new options such as green hydrogen. The 2022 Scoping Plan sets one of the most aggressive approaches to reach carbon neutrality in the world. Unlike the 2017 Scoping Plan, CARB no longer includes a numeric per capita threshold and instead advocates for compliance with a local GHG reduction strategy (i.e., Climate Action Plan) consistent with CEQA Guidelines section 15183.5.

The key elements of the 2022 CARB Scoping Plan focus on transportation. Specifically, the 2022 Scoping Plan aims to rapidly move towards zero-emission (ZE) transportation (i.e., electrifying cars, buses, trains, and trucks), which constitutes California's single largest source of GHGs. The regulations that impact the transportation sector are adopted and enforced by CARB on vehicle manufacturers and are outside the jurisdiction and control of local governments. The 2022 Scoping Plan accelerates development of new regulations as well as amendments to strengthen regulations and programs already in place. Statewide strategies to reduce GHG emissions in the latest 2022 Scoping Plan include:

- Implementing SB 100 (achieve 100 percent clean electricity by 2045);
- Achieving 100 percent zero emission vehicle sales in 2035 through Advanced Clean Cars II; and
- Implementing the Advanced Clean Fleets regulation to deploy zero-emission vehicle (ZEV) buses and trucks.

Additional transportation policies include the Off-Road Zero-Emission Targeted Manufacturer rule, Clean Off-Road Fleet Recognition Program, In-use Off-Road Diesel-Fueled Fleets Regulation, Clean Off-Road Fleet Recognition Program, and Amendments to the In-use Off-Road Diesel-Fueled Fleets Regulation. The 2022 Scoping Plan would continue to implement SB 375.

GHGs would be further reduced through the Cap-and-Trade Program carbon pricing and SB 905. SB 905 requires CARB to create the Carbon Capture, Removal, Utilization, and Storage Program to evaluate, demonstrate, and regulate carbon dioxide removal projects and technology.

The Project would not impede the State's progress towards carbon neutrality by 2045 under the 2022 Scoping Plan. The Project would be required to comply with applicable current and future regulatory requirements promulgated through the 2022 Scoping Plan.

SCAG RTP/SCS Consistency

On April 4, 2024, the Southern California Association of Governments (SCAG) Regional Council adopted Connect SoCal (2024-2050 Regional Transportation Plan/ Sustainable Communities Strategy [RTP/SCS]). The RTP/SCS is a long-range visioning plan that balances future mobility and housing needs with economic, environmental, and public health goals. The RTP/SCS embodies a collective vision for the region's future and is developed with input from local governments, county transportation commissions, tribal governments, nonprofit organizations, businesses, and local stakeholders in the counties of Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura. Under Senate Bill (SB) 375, SCAG's 2024 RTP/SCS establishes GHG emissions goals to reduce GHG emissions in the region by eight percent from 2005 levels by 2020 and by 2035. SCAG's 2020 RTP/SCS establishes GHG emissions goals for automobiles and light-duty trucks for 2020 and 2035 as well as an overall GHG target for the Project region consistent with both the target date of AB 32 and the post-2020 GHG reduction goals of Executive Orders 5-03-05 and B-30-15.

The RTP/SCS contains over 4,000 transportation Projects, ranging from highway improvements, railroad grade separations, bicycle lanes, new transit hubs and replacement bridges. These future investments were included in county plans developed by the six county transportation commissions and seek to reduce traffic bottlenecks, improve the efficiency of the region's network, and expand mobility choices for everyone. The RTP/SCS is an important planning document for the region, allowing Project sponsors to qualify for federal funding.

The plan accounts for operations and maintenance costs to ensure reliability, longevity, and cost effectiveness. The RTP/SCS is also supported by a combination of transportation and land use strategies that help the region achieve state GHG emissions reduction goals and Federal Clean Air Act (FCAA) requirements, preserve open space areas, improve public health and roadway safety, support our vital goods movement industry, and utilize resources more efficiently. GHG emissions resulting from development-related mobile sources are the most potent source of emissions, and therefore Project comparison to the RTP/SCS is an appropriate indicator of whether the Project would inhibit the post-2020 GHG reduction goals promulgated by the State. The Project's consistency with the RTP/SCS goals is analyzed in detail in **Table 9: Regional Transportation Plan/Sustainable Communities Strategy Consistency**.

Table 9: Regional Transportation Plan/Sustainable Communities Strategy Consistency			
SCAG Goals		**Compliance**	
GOAL 1:	Encourage regional economic prosperity and global competitiveness.	N/A:	This is not a Project-specific policy. Therefore Goal 1 is not applicable.
GOAL 2:	Improve mobility, accessibility, reliability, and travel safety for people and goods.	N/A:	The Project is not a transportation improvement Project; therefore Goal 2 is not applicable.
GOAL 3:	Enhance the preservation, security, and resilience of the regional transportation system.	N/A:	As the proposed Project is not a transportation improvement Project, Goal 3 is not applicable.
GOAL 4:	Increase person and goods movement and travel choices within the transportation system.	N/A:	As the proposed Project is not a transportation improvement Project, Goal 4 is not applicable. However, the Project includes a use that would support goods movement.
GOAL 5:	Reduce greenhouse gas emissions and improve air quality.	Consistent:	The Project is located within an urban area in proximity to existing truck routes and freeways. Location of the Project within a developed area would reduce trip lengths, which would reduce GHG and air quality emissions.
GOAL 6:	Support healthy and equitable communities.	Consistent:	The Project does not exceed regional or localized thresholds for criteria pollutants. Based on the Friant Ranch decision, projects that do not exceed the SCAQMD's LSTs would not violate any air quality standards or contribute substantially to an existing or projected air quality violation and result in no criteria pollutant health impacts.
GOAL 7:	Adapt to a changing climate and support an integrated regional development pattern and transportation network.	N/A:	This is not a Project-specific policy. Therefore Goal 7 is not applicable.
GOAL 8:	Leverage new transportation technologies and data-driven solutions that result in more efficient travel.	N/A:	As the proposed Project is not a transportation improvement Project, Goal 8 is not applicable.
GOAL 9:	Encourage development of diverse housing types in areas that are supported by multiple transportation options.	N/A:	As the proposed Project is not a housing development Project, Goal 9 is not applicable.

Table 9: Regional Transportation Plan/Sustainable Communities Strategy Consistency	
SCAG Goals	**Compliance**
GOAL 10: Promote conservation of natural and agricultural lands and restoration of habitats.	N/A: The Project is not located on agricultural lands. Therefore Goal 10 is not applicable.
Source: Southern California Association of Governments, *Connect SoCal (2020 - 2045 Regional Transportation Plan/Sustainable Communities Strategy,* 2020.	

Compliance with applicable State standards would ensure consistency with State and regional GHG reduction planning efforts. The goals stated in the RTP/SCS were used to determine consistency with the planning existing efforts. As shown in **Table 9**, the proposed Project would be consistent with the stated goals of the RTP/SCS. Therefore, the proposed Project would not result in any significant impacts or interfere with SCAG's ability to achieve the region's post-2020 mobile source GHG reduction targets.

Conclusion

The proposed Project would be consistent with the Rialto Climate Adaptation Plan, the CARB Scoping Plan, and SCAG's RTP/SCS, and would be required to comply with existing regulations, including applicable measures from the City's General Plan. The Project does not conflict with the applicable plans that are discussed above and therefore, with respect to this particular threshold, the Project does not have a significant impact.

Mitigation Measures: No mitigation is required.

Level of Significance: Less than significant impact.

Appendix A

Air Quality and GHG Data

Rialto – Willow Ave Truck Parking
CalEEMod Assumptions

Land Use

Land Use	Size	Metric
Parking Lot	4.04	Acre

Construction

Schedule

Phase Name	Start Date	End Date	Workdays
Demolition	11/3/2025	12/1/2025	20
Site Preparation	12/2/2025	12/9/2025	5
Grading	12/10/2025	1/15/2026	27
Building Construction	1/16/2026	3/2/2026	32
Paving	4/2/2026	4/30/2026	21
Architectural Coating	3/3/2026	4/1/2026	22

Equipment

Construction Phase	Equipment	Number per Day	Hours Per Day
Demolition	Excavators	3	6
	Rubber Tired Dozers	2	8
	Concrete/Industrial Saws	1	8
Site Preparation	Rubber Tired Dozers	3	8
	Tractors/Loaders/Backhoes	4	8
Grading	Excavators	1	8
	Graders	1	8
	Rubber Tired Dozers	1	8
	Tractors/Loaders/Backhoes	3	8
Building Construction	Cranes	1	7
	Forklifts	3	8
	Generator Set	1	8
	Tractors/Loaders/Backhoes	3	7
	Welders	1	8
Paving	Cement and Mortar Mixers	2	6
	Pavers	1	8
	Paving Equipment	2	6
	Rollers	2	6
	Tractors/Loaders/Backhoes	1	8
Architectural Coating	Air Compressors	1	6

Demolition

Phase	Amount (Tons)
Demolition	2,100
Tons = Tons of Debris	

Operations

Vehicle Data

Land Use	Size	Metric	Trip Rate	Daily Trip Generation
Parking Lot	4.04	Acres	0	0
According to Traffic Memo the project is not expected to generate a net increase in traffic, therefore no new trips were modeled in CalEEMod.				

Rialto - Willow Ave Truck Parking Detailed Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Rialto - Willow Ave Truck Parking
Construction Start Date	11/3/2025
Operational Year	2026
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.20
Precipitation (days)	14.2
Location	34.06174456340668, -117.37384280754998
County	San Bernardino-South Coast
City	Rialto
Air District	South Coast AQMD
Air Basin	South Coast
TAZ	5341
EDFZ	10
Electric Utility	Southern California Edison
Gas Utility	Southern California Gas
App Version	2022.1.1.29

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Parking Lot	4.04	Acre	4.04	0.00	22,258	0.00	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

Sector	#	Measure Title
Construction	C-10-A	Water Exposed Surfaces
Construction	C-11	Limit Vehicle Speeds on Unpaved Roads

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.27	6.31	10.3	0.01	0.26	0.26	0.52	0.24	0.06	0.30	—	1,626	1,626	0.07	0.02	0.94	1,635
Mit.	1.27	6.31	10.3	0.01	0.26	0.26	0.52	0.24	0.06	0.30	—	1,626	1,626	0.07	0.02	0.94	1,635
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	3.39	31.7	31.2	0.05	1.37	19.9	21.3	1.26	10.2	11.4	—	5,521	5,521	0.23	0.09	0.04	5,542
Mit.	3.39	31.7	31.2	0.05	1.37	7.89	9.26	1.26	3.99	5.25	—	5,521	5,521	0.23	0.09	0.04	5,542
% Reduced	—	—	—	—	—	60%	56%	—	61%	54%	—	—	—	—	—	—	—
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.29	2.40	2.41	< 0.005	0.10	0.72	0.82	0.09	0.31	0.40	—	427	427	0.02	0.01	0.05	430
Mit.	0.29	2.40	2.41	< 0.005	0.10	0.37	0.47	0.09	0.14	0.23	—	427	427	0.02	0.01	0.05	430
% Reduced	—	—	—	—	—	48%	43%	—	56%	43%	—	—	—	—	—	—	—

Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.05	0.44	0.44	< 0.005	0.02	0.13	0.15	0.02	0.06	0.07	—	70.7	70.7	< 0.005	< 0.005	0.01	71.1
Mit.	0.05	0.44	0.44	< 0.005	0.02	0.07	0.09	0.02	0.02	0.04	—	70.7	70.7	< 0.005	< 0.005	0.01	71.1
% Reduced	—	—	—	—	—	48%	43%	—	56%	43%	—	—	—	—	—	—	—
Exceeds (Daily Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	75.0	100	550	150	—	—	150	—	—	55.0	—	—	—	—	—	—	—
Unmit.	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	—
Mit.	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	—
Exceeds (Average Daily)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	75.0	100	550	150	—	—	150	—	—	55.0	—	—	—	—	—	—	—
Unmit.	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	—
Mit.	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	—

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	1.27	6.31	10.3	0.01	0.26	0.26	0.52	0.24	0.06	0.30	—	1,626	1,626	0.07	0.02	0.94	1,635
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	3.39	31.7	31.2	0.05	1.37	19.9	21.3	1.26	10.2	11.4	—	5,521	5,521	0.23	0.09	0.04	5,542

2026	1.71	15.0	18.3	0.03	0.65	7.28	7.92	0.59	3.47	4.07	—	3,150	3,150	0.12	0.03	0.02	3,162
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	0.26	2.40	2.41	< 0.005	0.10	0.72	0.82	0.09	0.31	0.40	—	427	427	0.02	0.01	0.05	430
2026	0.29	1.72	2.32	< 0.005	0.07	0.23	0.30	0.06	0.11	0.17	—	403	403	0.02	< 0.005	0.03	405
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	0.05	0.44	0.44	< 0.005	0.02	0.13	0.15	0.02	0.06	0.07	—	70.7	70.7	< 0.005	< 0.005	0.01	71.1
2026	0.05	0.31	0.42	< 0.005	0.01	0.04	0.05	0.01	0.02	0.03	—	66.8	66.8	< 0.005	< 0.005	0.01	67.0

2.3. Construction Emissions by Year, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	1.27	6.31	10.3	0.01	0.26	0.26	0.52	0.24	0.06	0.30	—	1,626	1,626	0.07	0.02	0.94	1,635
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	3.39	31.7	31.2	0.05	1.37	7.89	9.26	1.26	3.99	5.25	—	5,521	5,521	0.23	0.09	0.04	5,542
2026	1.71	15.0	18.3	0.03	0.65	2.96	3.60	0.59	1.38	1.98	—	3,150	3,150	0.12	0.03	0.02	3,162
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	0.26	2.40	2.41	< 0.005	0.10	0.37	0.47	0.09	0.14	0.23	—	427	427	0.02	0.01	0.05	430
2026	0.29	1.72	2.32	< 0.005	0.07	0.10	0.17	0.06	0.04	0.11	—	403	403	0.02	< 0.005	0.03	405
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	0.05	0.44	0.44	< 0.005	0.02	0.07	0.09	0.02	0.02	0.04	—	70.7	70.7	< 0.005	< 0.005	0.01	71.1
2026	0.05	0.31	0.42	< 0.005	0.01	0.02	0.03	0.01	0.01	0.02	—	66.8	66.8	< 0.005	< 0.005	0.01	67.0

2.4. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	148	148	0.01	< 0.005	0.00	149
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	148	148	0.01	< 0.005	0.00	149
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	148	148	0.01	< 0.005	0.00	149
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	< 0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24.5	24.5	< 0.005	< 0.005	0.00	24.6
Exceeds (Daily Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	55.0	55.0	550	150	—	—	150	—	—	55.0	—	—	—	—	—	—	—
Unmit.	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	—
Exceeds (Average Daily)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	55.0	55.0	550	150	—	—	150	—	—	55.0	—	—	—	—	—	—	—
Unmit.	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	—

2.5. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Area	0.02	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Energy	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	146	146	0.01	< 0.005	—	147
Water	—	—	—	—	—	—	—	—	—	—	0.00	1.80	1.80	< 0.005	< 0.005	—	1.81
Waste	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	148	148	0.01	< 0.005	0.00	149
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Area	0.02	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	146	146	0.01	< 0.005	—	147
Water	—	—	—	—	—	—	—	—	—	—	0.00	1.80	1.80	< 0.005	< 0.005	—	1.81
Waste	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	148	148	0.01	< 0.005	0.00	149
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Area	0.02	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Energy	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	146	146	0.01	< 0.005	—	147
Water	—	—	—	—	—	—	—	—	—	—	0.00	1.80	1.80	< 0.005	< 0.005	—	1.81
Waste	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	148	148	0.01	< 0.005	0.00	149
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Area	< 0.005	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Energy	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	24.2	24.2	< 0.005	< 0.005	—	24.3

Water	—	—	—	—	—	—	—	—	—	—	0.00	0.30	0.30	< 0.005	< 0.005	—	0.30
Waste	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	< 0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24.5	24.5	< 0.005	< 0.005	0.00	24.6

2.6. Operations Emissions by Sector, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Area	0.02	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Energy	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	146	146	0.01	< 0.005	—	147
Water	—	—	—	—	—	—	—	—	—	—	0.00	1.80	1.80	< 0.005	< 0.005	—	1.81
Waste	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	148	148	0.01	< 0.005	0.00	149
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Area	0.02	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	146	146	0.01	< 0.005	—	147
Water	—	—	—	—	—	—	—	—	—	—	0.00	1.80	1.80	< 0.005	< 0.005	—	1.81
Waste	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	148	148	0.01	< 0.005	0.00	149
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Area	0.02	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Energy	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	146	146	0.01	< 0.005	—	147

Water	—	—	—	—	—	—	—	—	—	—	0.00	1.80	1.80	< 0.005	< 0.005	—	1.81
Waste	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	148	148	0.01	< 0.005	0.00	149
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Area	< 0.005	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Energy	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	24.2	24.2	< 0.005	< 0.005	—	24.3
Water	—	—	—	—	—	—	—	—	—	—	0.00	0.30	0.30	< 0.005	< 0.005	—	0.30
Waste	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	< 0.005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24.5	24.5	< 0.005	< 0.005	0.00	24.6

3. Construction Emissions Details

3.1. Demolition (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.40	22.2	19.9	0.03	0.92	—	0.92	0.84	—	0.84	—	3,425	3,425	0.14	0.03	—	3,437
Demolition	—	—	—	—	—	2.25	2.25	—	0.34	0.34	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.13	1.22	1.09	< 0.005	0.05	—	0.05	0.05	—	0.05	—	188	188	0.01	< 0.005	—	188
Demolition	—	—	—	—	—	0.12	0.12	—	0.02	0.02	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.22	0.20	< 0.005	0.01	—	0.01	0.01	—	0.01	—	31.1	31.1	< 0.005	< 0.005	—	31.2
Demolition	—	—	—	—	—	0.02	0.02	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.07	0.88	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	194	194	0.01	0.01	0.02	196
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.02	0.66	0.45	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	312	312	0.05	0.05	0.01	329
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.05	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	10.8	10.8	< 0.005	< 0.005	0.02	10.9
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	0.04	0.02	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	17.1	17.1	< 0.005	< 0.005	0.01	18.0
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.78	1.78	< 0.005	< 0.005	< 0.005	1.81
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	2.83	2.83	< 0.005	< 0.005	< 0.005	2.98

3.2. Demolition (2025) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.40	22.2	19.9	0.03	0.92	—	0.92	0.84	—	0.84	—	3,425	3,425	0.14	0.03	—	3,437
Demolition	—	—	—	—	—	2.25	2.25	—	0.34	0.34	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.13	1.22	1.09	< 0.005	0.05	—	0.05	0.05	—	0.05	—	188	188	0.01	< 0.005	—	188
Demolition	—	—	—	—	—	0.12	0.12	—	0.02	0.02	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.22	0.20	< 0.005	0.01	—	0.01	0.01	—	0.01	—	31.1	31.1	< 0.005	< 0.005	—	31.2
Demolition	—	—	—	—	—	0.02	0.02	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.07	0.88	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	194	194	0.01	0.01	0.02	196
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.02	0.66	0.45	< 0.005	< 0.005	0.07	0.08	< 0.005	0.02	0.02	—	312	312	0.05	0.05	0.01	329
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.05	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	10.8	10.8	< 0.005	< 0.005	0.02	10.9
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	0.04	0.02	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	17.1	17.1	< 0.005	< 0.005	0.01	18.0
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.78	1.78	< 0.005	< 0.005	< 0.005	1.81
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	2.83	2.83	< 0.005	< 0.005	< 0.005	2.98

3.3. Site Preparation (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.31	31.6	30.2	0.05	1.37	—	1.37	1.26	—	1.26	—	5,295	5,295	0.21	0.04	—	5,314

Dust From Material Movement	—	—	—	—	—	19.7	19.7	—	10.1	10.1	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.43	0.41	< 0.005	0.02	—	0.02	0.02	—	0.02	—	72.5	72.5	< 0.005	< 0.005	—	72.8
Dust From Material Movement	—	—	—	—	—	0.27	0.27	—	0.14	0.14	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.08	0.08	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	12.0	12.0	< 0.005	< 0.005	—	12.1
Dust From Material Movement	—	—	—	—	—	0.05	0.05	—	0.03	0.03	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.08	1.03	0.00	0.00	0.23	0.23	0.00	0.05	0.05	—	226	226	0.01	0.01	0.02	229
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	3.14	3.14	< 0.005	< 0.005	0.01	3.19
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.52	0.52	< 0.005	< 0.005	< 0.005	0.53
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.4. Site Preparation (2025) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.31	31.6	30.2	0.05	1.37	—	1.37	1.26	—	1.26	—	5,295	5,295	0.21	0.04	—	5,314
Dust From Material Movement	—	—	—	—	—	7.67	7.67	—	3.94	3.94	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.43	0.41	< 0.005	0.02	—	0.02	0.02	—	0.02	—	72.5	72.5	< 0.005	< 0.005	—	72.8

Dust From Material Movement	—	—	—	—	—	0.11	0.11	—	0.05	0.05	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.08	0.08	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	12.0	12.0	< 0.005	< 0.005	—	12.1
Dust From Material Movement	—	—	—	—	—	0.02	0.02	—	0.01	0.01	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.08	0.08	1.03	0.00	0.00	0.23	0.23	0.00	0.05	0.05	—	226	226	0.01	0.01	0.02	229
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	3.14	3.14	< 0.005	< 0.005	0.01	3.19
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.52	0.52	< 0.005	< 0.005	< 0.005	0.53
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.0

3.5. Grading (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.74	16.3	17.9	0.03	0.72	—	0.72	0.66	—	0.66	—	2,959	2,959	0.12	0.02	—	2,970
Dust From Material Movement	—	—	—	—	—	7.08	7.08	—	3.42	3.42	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.08	0.70	0.77	< 0.005	0.03	—	0.03	0.03	—	0.03	—	127	127	0.01	< 0.005	—	128
Dust From Material Movement	—	—	—	—	—	0.30	0.30	—	0.15	0.15	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.13	0.14	< 0.005	0.01	—	0.01	0.01	—	0.01	—	21.1	21.1	< 0.005	< 0.005	—	21.2
Dust From Material Movement	—	—	—	—	—	0.06	0.06	—	0.03	0.03	—	—	—	—	—	—	—

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.07	0.88	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	194	194	0.01	0.01	0.02	196
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	8.46	8.46	< 0.005	< 0.005	0.01	8.58
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.40	1.40	< 0.005	< 0.005	< 0.005	1.42
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.6. Grading (2025) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	1.74	16.3	17.9	0.03	0.72	—	0.72	0.66	—	0.66	—	2,959	2,959	0.12	0.02	—	2,970
Dust From Material Movement	—	—	—	—	—	2.76	2.76	—	1.34	1.34	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.08	0.70	0.77	< 0.005	0.03	—	0.03	0.03	—	0.03	—	127	127	0.01	< 0.005	—	128
Dust From Material Movement	—	—	—	—	—	0.12	0.12	—	0.06	0.06	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.13	0.14	< 0.005	0.01	—	0.01	0.01	—	0.01	—	21.1	21.1	< 0.005	< 0.005	—	21.2
Dust From Material Movement	—	—	—	—	—	0.02	0.02	—	0.01	0.01	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.07	0.88	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	194	194	0.01	0.01	0.02	196
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	8.46	8.46	< 0.005	< 0.005	0.01	8.58
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.40	1.40	< 0.005	< 0.005	< 0.005	1.42
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.7. Grading (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.65	15.0	17.4	0.03	0.65	—	0.65	0.59	—	0.59	—	2,960	2,960	0.12	0.02	—	2,970
Dust From Material Movement	—	—	—	—	—	7.08	7.08	—	3.42	3.42	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.05	0.44	0.51	< 0.005	0.02	—	0.02	0.02	—	0.02	—	86.9	86.9	< 0.005	< 0.005	—	87.2
Dust From Material Movement	—	—	—	—	—	0.21	0.21	—	0.10	0.10	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.08	0.09	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	14.4	14.4	< 0.005	< 0.005	—	14.4
Dust From Material Movement	—	—	—	—	—	0.04	0.04	—	0.02	0.02	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.07	0.82	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	190	190	< 0.005	0.01	0.02	192
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	5.65	5.65	< 0.005	< 0.005	0.01	5.73
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.94	0.94	< 0.005	< 0.005	< 0.005	0.95

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.8. Grading (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.65	15.0	17.4	0.03	0.65	—	0.65	0.59	—	0.59	—	2,960	2,960	0.12	0.02	—	2,970
Dust From Material Movement	—	—	—	—	—	2.76	2.76	—	1.34	1.34	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.44	0.51	< 0.005	0.02	—	0.02	0.02	—	0.02	—	86.9	86.9	< 0.005	< 0.005	—	87.2
Dust From Material Movement	—	—	—	—	—	0.08	0.08	—	0.04	0.04	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.08	0.09	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	14.4	14.4	< 0.005	< 0.005	—	14.4

Dust From Material Movement	—	—	—	—	—	0.01	0.01	—	0.01	0.01	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.07	0.82	0.00	0.00	0.20	0.20	0.00	0.05	0.05	—	190	190	< 0.005	0.01	0.02	192
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	5.65	5.65	< 0.005	< 0.005	0.01	5.73
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.94	0.94	< 0.005	< 0.005	< 0.005	0.95
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.9. Building Construction (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.07	9.85	13.0	0.02	0.38	—	0.38	0.35	—	0.35	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.09	0.86	1.14	< 0.005	0.03	—	0.03	0.03	—	0.03	—	210	210	0.01	< 0.005	—	211
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.16	0.21	< 0.005	0.01	—	0.01	0.01	—	0.01	—	34.8	34.8	< 0.005	< 0.005	—	34.9
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.10. Building Construction (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.07	9.85	13.0	0.02	0.38	—	0.38	0.35	—	0.35	—	2,397	2,397	0.10	0.02	—	2,405
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.09	0.86	1.14	< 0.005	0.03	—	0.03	0.03	—	0.03	—	210	210	0.01	< 0.005	—	211
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.16	0.21	< 0.005	0.01	—	0.01	0.01	—	0.01	—	34.8	34.8	< 0.005	< 0.005	—	34.9
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.11. Paving (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.68	6.23	8.81	0.01	0.26	—	0.26	0.24	—	0.24	—	1,350	1,350	0.05	0.01	—	1,355
Paving	0.50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.36	0.51	< 0.005	0.01	—	0.01	0.01	—	0.01	—	77.7	77.7	< 0.005	< 0.005	—	77.9
Paving	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.07	0.09	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	12.9	12.9	< 0.005	< 0.005	—	12.9
Paving	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.08	1.44	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	276	276	0.01	0.01	0.94	280
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	0.01	0.07	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	14.8	14.8	< 0.005	< 0.005	0.02	15.0
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	2.45	2.45	< 0.005	< 0.005	< 0.005	2.48
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.12. Paving (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.68	6.23	8.81	0.01	0.26	—	0.26	0.24	—	0.24	—	1,350	1,350	0.05	0.01	—	1,355
Paving	0.50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.36	0.51	< 0.005	0.01	—	0.01	0.01	—	0.01	—	77.7	77.7	< 0.005	< 0.005	—	77.9
Paving	0.03	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.07	0.09	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	12.9	12.9	< 0.005	< 0.005	—	12.9
Paving	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.08	1.44	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	276	276	0.01	0.01	0.94	280
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	0.01	0.07	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	14.8	14.8	< 0.005	< 0.005	0.02	15.0
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	2.45	2.45	< 0.005	< 0.005	< 0.005	2.48
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.13. Architectural Coating (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.12	0.86	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134

Architect Coatings	1.11	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.12	0.86	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	1.11	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.05	0.07	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	8.05	8.05	< 0.005	< 0.005	—	8.07
Architectural Coatings	0.07	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.33	1.33	< 0.005	< 0.005	—	1.34
Architectural Coatings	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

3.14. Architectural Coating (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.12	0.86	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	1.11	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.12	0.86	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	1.11	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.05	0.07	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	8.05	8.05	< 0.005	< 0.005	—	8.07
Architectural Coatings	0.07	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.33	1.33	< 0.005	< 0.005	—	1.34
Architectural Coatings	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

4.1.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	146	146	0.01	< 0.005	—	147
Total	—	—	—	—	—	—	—	—	—	—	—	146	146	0.01	< 0.005	—	147
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	146	146	0.01	< 0.005	—	147
Total	—	—	—	—	—	—	—	—	—	—	—	146	146	0.01	< 0.005	—	147
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	24.2	24.2	< 0.005	< 0.005	—	24.3
Total	—	—	—	—	—	—	—	—	—	—	—	24.2	24.2	< 0.005	< 0.005	—	24.3

4.2.2. Electricity Emissions By Land Use - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	146	146	0.01	< 0.005	—	147

Total	—	—	—	—	—	—	—	—	—	—	—	146	146	0.01	< 0.005	—	147
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	146	146	0.01	< 0.005	—	147
Total	—	—	—	—	—	—	—	—	—	—	—	146	146	0.01	< 0.005	—	147
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Parking Lot	—	—	—	—	—	—	—	—	—	—	—	24.2	24.2	< 0.005	< 0.005	—	24.3
Total	—	—	—	—	—	—	—	—	—	—	—	24.2	24.2	< 0.005	< 0.005	—	24.3

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Parking Lot	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Parking Lot	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Parking Lot	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00

4.2.4. Natural Gas Emissions By Land Use - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Parking Lot	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Parking Lot	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Parking Lot	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00

4.3. Area Emissions by Source

4.3.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Architect Coatings	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.02	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	0.02	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	< 0.005	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00

4.3.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.02	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	0.02	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	< 0.005	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	1.80	1.80	< 0.005	< 0.005	—	1.81
Total	—	—	—	—	—	—	—	—	—	—	0.00	1.80	1.80	< 0.005	< 0.005	—	1.81
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	1.80	1.80	< 0.005	< 0.005	—	1.81
Total	—	—	—	—	—	—	—	—	—	—	0.00	1.80	1.80	< 0.005	< 0.005	—	1.81
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.30	0.30	< 0.005	< 0.005	—	0.30
Total	—	—	—	—	—	—	—	—	—	—	0.00	0.30	0.30	< 0.005	< 0.005	—	0.30

4.4.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	1.80	1.80	< 0.005	< 0.005	—	1.81

Total	—	—	—	—	—	—	—	—	—	—	0.00	1.80	1.80	< 0.005	< 0.005	—	1.81
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	1.80	1.80	< 0.005	< 0.005	—	1.81
Total	—	—	—	—	—	—	—	—	—	—	0.00	1.80	1.80	< 0.005	< 0.005	—	1.81
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.30	0.30	< 0.005	< 0.005	—	0.30
Total	—	—	—	—	—	—	—	—	—	—	0.00	0.30	0.30	< 0.005	< 0.005	—	0.30

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00

Total	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00

4.5.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Parking Lot	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.6.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.7.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.8.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.9.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Remove	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.4. Soil Carbon Accumulation By Vegetation Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.5. Above and Belowground Carbon Accumulation by Land Use Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.6. Avoided and Sequestered Emissions by Species - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Demolition	Demolition	11/3/2025	12/1/2025	5.00	20.0	—
Site Preparation	Site Preparation	12/2/2025	12/9/2025	5.00	5.00	—
Grading	Grading	12/10/2025	1/15/2026	5.00	27.0	—
Building Construction	Building Construction	1/16/2026	3/2/2026	5.00	32.0	Infrastructure improvements
Paving	Paving	4/2/2026	4/30/2026	5.00	21.0	—
Architectural Coating	Architectural Coating	3/3/2026	4/1/2026	5.00	22.0	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Demolition	Concrete/Industrial Saws	Diesel	Average	1.00	8.00	33.0	0.73
Demolition	Excavators	Diesel	Average	3.00	8.00	36.0	0.38
Demolition	Rubber Tired Dozers	Diesel	Average	2.00	8.00	367	0.40

Site Preparation	Rubber Tired Dozers	Diesel	Average	3.00	8.00	367	0.40
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	4.00	8.00	84.0	0.37
Grading	Excavators	Diesel	Average	1.00	8.00	36.0	0.38
Grading	Graders	Diesel	Average	1.00	8.00	148	0.41
Grading	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Grading	Tractors/Loaders/Backhoes	Diesel	Average	3.00	8.00	84.0	0.37
Building Construction	Cranes	Diesel	Average	1.00	7.00	367	0.29
Building Construction	Forklifts	Diesel	Average	3.00	8.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	3.00	7.00	84.0	0.37
Building Construction	Welders	Diesel	Average	1.00	8.00	46.0	0.45
Paving	Cement and Mortar Mixers	Diesel	Average	2.00	6.00	10.0	0.56
Paving	Pavers	Diesel	Average	1.00	8.00	81.0	0.42
Paving	Paving Equipment	Diesel	Average	2.00	6.00	89.0	0.36
Paving	Rollers	Diesel	Average	2.00	6.00	36.0	0.38
Paving	Tractors/Loaders/Backhoes	Diesel	Average	1.00	8.00	84.0	0.37
Architectural Coating	Air Compressors	Diesel	Average	1.00	6.00	37.0	0.48

5.2.2. Mitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Demolition	Concrete/Industrial Saws	Diesel	Average	1.00	8.00	33.0	0.73
Demolition	Excavators	Diesel	Average	3.00	8.00	36.0	0.38
Demolition	Rubber Tired Dozers	Diesel	Average	2.00	8.00	367	0.40
Site Preparation	Rubber Tired Dozers	Diesel	Average	3.00	8.00	367	0.40

Site Preparation	Tractors/Loaders/Back	Diesel	Average	4.00	8.00	84.0	0.37
Grading	Excavators	Diesel	Average	1.00	8.00	36.0	0.38
Grading	Graders	Diesel	Average	1.00	8.00	148	0.41
Grading	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Grading	Tractors/Loaders/Back hoes	Diesel	Average	3.00	8.00	84.0	0.37
Building Construction	Cranes	Diesel	Average	1.00	7.00	367	0.29
Building Construction	Forklifts	Diesel	Average	3.00	8.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Building Construction	Tractors/Loaders/Back hoes	Diesel	Average	3.00	7.00	84.0	0.37
Building Construction	Welders	Diesel	Average	1.00	8.00	46.0	0.45
Paving	Cement and Mortar Mixers	Diesel	Average	2.00	6.00	10.0	0.56
Paving	Pavers	Diesel	Average	1.00	8.00	81.0	0.42
Paving	Paving Equipment	Diesel	Average	2.00	6.00	89.0	0.36
Paving	Rollers	Diesel	Average	2.00	6.00	36.0	0.38
Paving	Tractors/Loaders/Back hoes	Diesel	Average	1.00	8.00	84.0	0.37
Architectural Coating	Air Compressors	Diesel	Average	1.00	6.00	37.0	0.48

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Demolition	—	—	—	—
Demolition	Worker	15.0	18.5	LDA,LDT1,LDT2
Demolition	Vendor	—	10.2	HHDT,MHDT
Demolition	Hauling	26.3	3.00	HHDT
Demolition	Onsite truck	—	—	HHDT

Site Preparation	—	—	—	—
Site Preparation	Worker	17.5	18.5	LDA,LDT1,LDT2
Site Preparation	Vendor	—	10.2	HHDT,MHDT
Site Preparation	Hauling	0.00	20.0	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—
Grading	Worker	15.0	18.5	LDA,LDT1,LDT2
Grading	Vendor	—	10.2	HHDT,MHDT
Grading	Hauling	0.00	20.0	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	0.00	18.5	LDA,LDT1,LDT2
Building Construction	Vendor	0.00	10.2	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	20.0	18.5	LDA,LDT1,LDT2
Paving	Vendor	—	10.2	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	0.00	18.5	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	10.2	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	—	—	HHDT

5.3.2. Mitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix

Demolition	—	—	—	—
Demolition	Worker	15.0	18.5	LDA,LDT1,LDT2
Demolition	Vendor	—	10.2	HHDT,MHDT
Demolition	Hauling	26.3	3.00	HHDT
Demolition	Onsite truck	—	—	HHDT
Site Preparation	—	—	—	—
Site Preparation	Worker	17.5	18.5	LDA,LDT1,LDT2
Site Preparation	Vendor	—	10.2	HHDT,MHDT
Site Preparation	Hauling	0.00	20.0	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—
Grading	Worker	15.0	18.5	LDA,LDT1,LDT2
Grading	Vendor	—	10.2	HHDT,MHDT
Grading	Hauling	0.00	20.0	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	0.00	18.5	LDA,LDT1,LDT2
Building Construction	Vendor	0.00	10.2	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	20.0	18.5	LDA,LDT1,LDT2
Paving	Vendor	—	10.2	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	0.00	18.5	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	10.2	HHDT,MHDT

Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
Architectural Coating	0.00	0.00	0.00	0.00	10,559

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (Cubic Yards)	Material Exported (Cubic Yards)	Acres Graded (acres)	Material Demolished (Ton of Debris)	Acres Paved (acres)
Demolition	0.00	0.00	0.00	2,100	—
Site Preparation	0.00	0.00	7.50	0.00	—
Grading	0.00	0.00	27.0	0.00	—
Paving	0.00	0.00	0.00	0.00	4.04

5.6.2. Construction Earthmoving Control Strategies

Non-applicable. No control strategies activated by user.

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Parking Lot	4.04	100%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2025	0.00	349	0.03	< 0.005
2026	0.00	346	0.03	< 0.005

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5.9.2. Mitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

5.10.1.2. Mitigated

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
0	0.00	0.00	0.00	10,559

5.10.3. Landscape Equipment

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	250

5.10.4. Landscape Equipment - Mitigated

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	250

5.11. Operational Energy Consumption

5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Parking Lot	154,161	346	0.0330	0.0040	0.00

5.11.2. Mitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Parking Lot	154,161	346	0.0330	0.0040	0.00

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Parking Lot	0.00	357,444

5.12.2. Mitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Parking Lot	0.00	357,444

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Parking Lot	0.00	—

5.13.2. Mitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Parking Lot	0.00	—

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced

5.14.2. Mitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

5.15.2. Mitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

Equipment Type	Fuel Type	Number per Day	Hours per Day	Hours per Year	Horsepower	Load Factor

5.16.2. Process Boilers

Equipment Type	Fuel Type	Number	Boiler Rating (MMBtu/hr)	Daily Heat Input (MMBtu/day)	Annual Heat Input (MMBtu/yr)

5.17. User Defined

Equipment Type	Fuel Type

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

5.18.2.2. Mitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	27.3	annual days of extreme heat
Extreme Precipitation	2.45	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	0.00	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	3	0	0	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	0	0	N/A
Wildfire	1	0	0	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	0	0	0	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	3	1	1	3
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	1	1	2
Wildfire	1	1	1	2
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A

Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	1	1	1	2

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	97.6
AQ-PM	89.4
AQ-DPM	55.0
Drinking Water	96.5
Lead Risk Housing	45.8
Pesticides	0.00
Toxic Releases	66.0
Traffic	84.2
Effect Indicators	—
CleanUp Sites	96.0
Groundwater	98.5
Haz Waste Facilities/Generators	99.1
Impaired Water Bodies	12.5
Solid Waste	99.7

Sensitive Population	—
Asthma	78.5
Cardio-vascular	84.3
Low Birth Weights	75.6
Socioeconomic Factor Indicators	—
Education	85.9
Housing	28.2
Linguistic	69.8
Poverty	60.8
Unemployment	25.2

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	21.01886308
Employed	36.37880149
Median HI	37.44385987
Education	—
Bachelor's or higher	18.61927371
High school enrollment	100
Preschool enrollment	54.67727448
Transportation	—
Auto Access	81.29090209
Active commuting	4.234569485
Social	—
2-parent households	37.46952393
Voting	27.79417426

Neighborhood	—
Alcohol availability	61.83754652
Park access	2.194276915
Retail density	20.45425382
Supermarket access	46.58026434
Tree canopy	6.582830746
Housing	—
Homeownership	77.71076607
Housing habitability	73.74566919
Low-inc homeowner severe housing cost burden	47.09354549
Low-inc renter severe housing cost burden	94.37957141
Uncrowded housing	14.98780957
Health Outcomes	—
Insured adults	9.367380983
Arthritis	38.0
Asthma ER Admissions	36.9
High Blood Pressure	68.0
Cancer (excluding skin)	68.9
Asthma	9.8
Coronary Heart Disease	43.7
Chronic Obstructive Pulmonary Disease	12.3
Diagnosed Diabetes	36.9
Life Expectancy at Birth	24.4
Cognitively Disabled	36.6
Physically Disabled	57.4
Heart Attack ER Admissions	36.4
Mental Health Not Good	13.8
Chronic Kidney Disease	45.1

174

Obesity	23.4
Pedestrian Injuries	80.3
Physical Health Not Good	19.5
Stroke	39.4
Health Risk Behaviors	—
Binge Drinking	36.9
Current Smoker	15.0
No Leisure Time for Physical Activity	31.5
Climate Change Exposures	—
Wildfire Risk	30.9
SLR Inundation Area	0.0
Children	48.8
Elderly	81.3
English Speaking	30.9
Foreign-born	66.5
Outdoor Workers	10.7
Climate Change Adaptive Capacity	—
Impervious Surface Cover	80.4
Traffic Density	83.0
Traffic Access	23.0
Other Indices	—
Hardship	81.5
Other Decision Support	—
2016 Voting	48.5

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	96.0

Healthy Places Index Score for Project Location (b)	25.0
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	Yes
Project Located in a Low-Income Community (Assembly Bill 1550)	Yes
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Construction: Construction Phases	Defalut construction schedule updated to match schedule provided by contractor.
Construction: Trips and VMT	demolition material will be recycled at RAMCO site in Rialto, located 3 miles from the Project.
Construction: Architectural Coatings	Default values changed to be consistent with SCAQMD Rule 1113 which requires VOC to 50 g/L or less.
Operations: Vehicle Data	According to "Level of Service (LOS) and Vehicle Miles Traveled (VMT) Screening Memorandum for the 2175 S. Willow Avenue Warehouse Project in the City of Rialto" the project is not expected to generate a net increase in traffic. Therefore no new trips have been modeled in CalEEMod.
Operations: Architectural Coatings	SCAQMD Rule 1113 requires VOC emissions to be 50 g/L or less

Hydrology Report

Truck Parking Facility
2175 S Willow Ave Bloomington, CA 92316
APNs: 0258-041-28-0000, 0258-041-29-0000

December 2024

PREPARED FOR:

Donlon Builders
2681 Saturn St.
Brea, CA 92821
(714) 528-0800

PREPARED BY:

Kimley»Horn

1100 Town and Country Rd, Suite 700
Orange, CA 92868
(714) 939-1030

Certification by Engineer

Jacob Glaze, P.E.

8/12/2025
Date

Contents

Appendices

References

Hydrology Manual. County of San Bernardino, August 1986.

100.0 Introduction

Kimley-Horn and Associates has been retained to prepare a Hydrology Report for the proposed truck parking facility project in Rialto, California. The purpose of this report is to demonstrate analysis of the hydrologic and hydraulic conditions associated with the development of the project site. To do so, the following is the scope of this report:

- Discuss potential for hydromodification downstream of the site.
- Discuss the pre-development discharge patterns and points.
- Discuss the post-development discharge patterns and points.
- Determine the pre-development flow rates for the 2-year, 10-year, and 100-year event.
- Determine the pre-development volumes for the 2-year, 10-year, and 100-year event.
- Determine the post-development unmitigated flow rates for the 2-year, 10-year, and 100-year event.
- Determine the post-development volumes for the 2-year, 10-year, and 100-year event.
- Analyze the required post-development onsite mitigation for up to the 100-year event.
- Determine the design of the infiltration/detention basin to ensure that the volume and flow rate requirements are met.

Even though this report discusses stormwater, this report is not a Stormwater Pollution Prevention Plan (SWPPP), a Groundwater Study, a Geotechnical Report, nor a Water Quality Management Plan (WQMP). Each of these reports discuss separate aspects of stormwater. However, portions of the Geotechnical Report are utilized and referenced for the purpose of this report. Similarly, the stormwater mitigation requirements of the WQMP are considered for sizing the BMPs used for this project.

100.1 Project Description

The project site is located 2175 S Willow Ave and is bounded by an existing welding business to the North, an industrial truck parking facility to the East, a truck fuel station to the South, and Willow Avenue to the West. The entire project site measures approximately 4.04 acres and is intended to be developed into a new industrial property.

The existing project site is a developed truck repair facility with existing paved parking areas and existing building. The soils have a hydrologic soil group classification of "A", and the topography along the project site shows that runoff within the site primarily drains towards the southeast of the site where it will enter the public storm drain system.

The proposed site is considered an industrial development and intends to develop approximately 4.04 acres including site paving, site utilities, parking areas, landscaping, and a new driveway. Stormwater runoff will be collected by nearby catch basins and conveyed to a hydrodynamic separator for pre-treatment before entering an *Underground 96" Contech CMP Infiltration System* where it will infiltrate into the soil. Excess runoff will enter a bubbler system to be routed offsite where it will match existing conditions and enter into an existing concrete channel on the adjacent property and ultimately enter the public storm drain system. Refer to the Post-Development Exhibit in Appendix G for more information.

Due to the existing curb and gutter along South Willow Avenue and the existing topography, no offsite run-on is anticipated to enter the project site.

100.2 Methodology

100.2.1 Background

The type of soil and soil conditions are major factors affecting infiltration and storm water runoff as a result. The San Bernardino County Stormwater Facility Mapping Tool has classified soil into general hydrologic soil groups for comparing infiltration and runoff rates. Each group is based on properties that influence runoff, such as water infiltration rate, texture, natural discharge, and moisture condition. The runoff potential is based on the amount of runoff at the end of a long duration storm that occurs after wetting and swelling of the soil not protected by vegetation. Using the United States Department of Agriculture Natural Resources Conservation Service Web Soil Survey online tool, the hydrologic soil group classification for the area was determined to be A. Soil type A is defined as soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

In addition, based on the Percolation/Infiltration Testing prepared by Sladden Engineering dated November 2024, the site is suitable for infiltration with a measured average infiltration rate of 16.71 in/hr. Using a factor of safety of 3.5, the design infiltration rate for this project was computed to be 4.78 in/hr. Since the proposed underground infiltration system will have a maximum ponding depth of 8', the BMPs will be able to completely drawdown within 48 hours.

For the hydrologic analysis, the Rational Method and Unit Hydrograph Method was used to solve for the time of concentration, flow rates, and volumes following methodology described in the San Bernardino County Hydrology Manual, and the AES Engineering Software was used to compute the data. Utilizing precipitation data from NOAA Atlas 14 along with the proposed site characteristics, the rational method was used to compute the time of concentrations and peak flow rates generated from the existing and proposed 2-year, 10-year, and 100-year storm events. The time of concentration was then used to solve for the Synthetic Unit Hydrograph of the site which returned the total volume generated for the 24-hour duration of the 2-year, 10-year, and 100-year storm events.

Since the project is a redevelopment that increases the amount of pervious area onsite, the peak flows generated from the proposed project will be lower than existing conditions and peak flow attenuation will not be required. As a result, the proposed basin for this project will be strictly for water quality purposes, and a basin routing analysis is not performed for this project. Since the basin will not be utilized for detention purposes, the basins will not be required to drawdown within 24 hours, and instead will be required to infiltrate within 48 hours.

Antecedent moisture conditions (AMC) I, II, and III were used to calculate the peak flows and volumes for the 2-year, 10-year, and 100-year storm events respectively based on the hydrology manual. In addition, since the project is not located within a location that is HCOC Exempt, hydromodification will be a concern and calculations comparing the pre-development and post-development conditions for a 2-year storm event were performed. Note that for hydromodification analysis the 2-year storm event corresponds to the natural conditions prior to any development. Refer to the WQMP for hydromodification calculations. This hydrology report uses current existing conditions for all pre-development calculations.

100.2.2 Design Methodology

To prevent potential adverse impacts downstream of the site, the project proposes to retain at minimum the difference in stormwater runoff volume for the 100-year storm between post-development and pre-development conditions. In addition, to meet water quality requirements, the project is required to retain both the Design Capture Volume (DCV) and the hydromodification volume onsite. Therefore, the required retention volume for this project is taken to be the greater between the DCV, hydromodification volume, and the difference in runoff between the post-development and pre-development conditions. Refer to the WQMP for more information regarding the water quality retention requirements.

For hydraulic purposes, the storm drain system, and inlets will be designed to be able to accommodate the design storm of a 100-year storm event, and calculations will be performed during Final Engineering.

100.2.3 Calculations Performed

Below is a summary of the calculations that were performed for hydrological and hydraulic analysis. Refer to Appendices H and I for the Rational Method and Unit Hydrograph calculations respectively.

1. Rational Method
    a. 2-year storm event for pre-development and post-development conditions
    b. 10-year storm event for pre-development and post-development conditions
    c. 100-year storm event for pre-development and post-development conditions
        i. Used to determine peak flows and time of concentration.

2. Unit Hydrograph
    a. 2-year storm event for pre-development and post-development conditions
    b. 10-year storm event for pre-development and post-development conditions
    c. 100-year storm event for pre-development and post-development conditions
        i. Used to determine volume differences.

100.3 Drainage Characteristics

The site is in Zone X per the Federal Emergency Management Administration (FEMA) Flood Insurance Rate Maps (FIRM) map numbers 060071C8686J, dated May 08, 2024. For reference, see the FIRMette in Appendix B.

Flood Zone X is defined by FEMA as areas determined to be outside the 0.2% annual chance floodplain.

100.3.1 Pre-development (Existing) Condition

Under the existing conditions, the project site primarily drains towards the eastern side of the lot where it will enter an existing concrete channel on the adjacent property to later enter the public storm drain and ultimately discharge into the Santa Ana River. The existing conditions of the project site is an existing truck repair and parking facility. Under existing conditions, the project site was considered a single drainage area (DA A). See the Pre-Development Hydrology Exhibit in Appendix G for more information.

Table 1 shows a summary of the pre-development (existing) flows and volumes for the project site. See the Pre-Development Hydrology Exhibit in Appendix G for more information, Appendix H for the Rational Method Calculations, and Appendix I for the Unit Hydrograph Calculations.

Table 1: Pre-development (Existing) Flows and Volumes (Refer to Pre-Development Exhibit)

Area Description	Area (acres)	Q_2 (cfs)	V_2 (cf)	Q_{10} (cfs)	V_{10} (cf)	Q_{100} (cfs)	V_{100} (cf)
A	4.04	5.55	36,508	9.01	58,444	14.45	91,319

100.3.2 Post-development Condition

Runoff from the proposed site will be collected by nearby catch basins and conveyed to a hydrodynamic separator for pre-treatment before entering the *Underground 96" Contech Infiltration System* where it will infiltrate into the soil. Excess runoff will be routed to a bubbler system where it will discharge offsite and match existing conditions by entering a concrete channel on the adjacent property and ultimately discharge into the Santa Ana River.

Table 2 shows a summary of the post-development flows. For more information, refer to the Post Development Hydrology Exhibit in Appendix G, the Rational Method Calculations in Appendix H, and the Unit Hydrograph Calculations in Appendix I.

Table 2: Onsite Post-development Flows

Area Description	Area (acres)	Q_2 (cfs)	V_2 (cf)	Q_{10} (cfs)	V_{10} (cf)	Q_{100} (cfs)	V_{100} (cf)
DA 1	4.04	5.40	32,256	8.77	51,274	14.08	81,880

For retention purposes, the project proposes to retain the greater between the DCV, hydromodification volume, and the difference between the post- and pre- development volume for the 100-year storm event. The project proposes to utilize an underground infiltration chamber to retain the required volume. See the below table for a summary of the required retention volume.

Table 3: Retention Requirement

Area Description	DCV (CF)	Hydromodification Volume (CF)	Δ100-Year (CF)	Retention Requirement (CF)	Retention Provided (CF)
A	15,384	23,999	-9,439	23,999	25,093

Since the project is a redevelopment that increases the amount of pervious area onsite, the peak flows generated from the proposed project will be lower than existing conditions and peak flow attenuation will not be required. As a result, the proposed basin for this project will be strictly for water quality purposes, and a basin routing analysis is not performed for this project. Since the basin will not be utilized for detention purposes, the basins will not be required to drawdown within 24 hours, and instead will be required to infiltrate within 48 hours.

100.4 Hydraulic Analysis

The calculated peak flows from the analyses discussed above will be used to size the onsite drainage devices such as the pipes and catch basins. Sizing calculations will be performed and included in the Final Hydrology Report.

100.5 Conclusion

In conclusion, the following was covered in this report:

- The potential for hydromodification downstream of the site was discussed.
- The pre-development discharge patterns and points were analyzed.
- The post-development discharge patterns and points were analyzed.
- The pre-development flow rates for the 2-year, 10-year, and 100-year events were determined.
- The pre-development volumes for the 2-year, 10-year, and 100-year events were determined.
- The post-development unmitigated flows for the 2-year, 10-year, and 100-year events were determined.
- The post-development volumes for the 2-year, 10-year, and 100-year events were determined.
- The required stormwater mitigation was analyzed.
- The infiltration/detention basin was designed to ensure that the volume requirements are met.

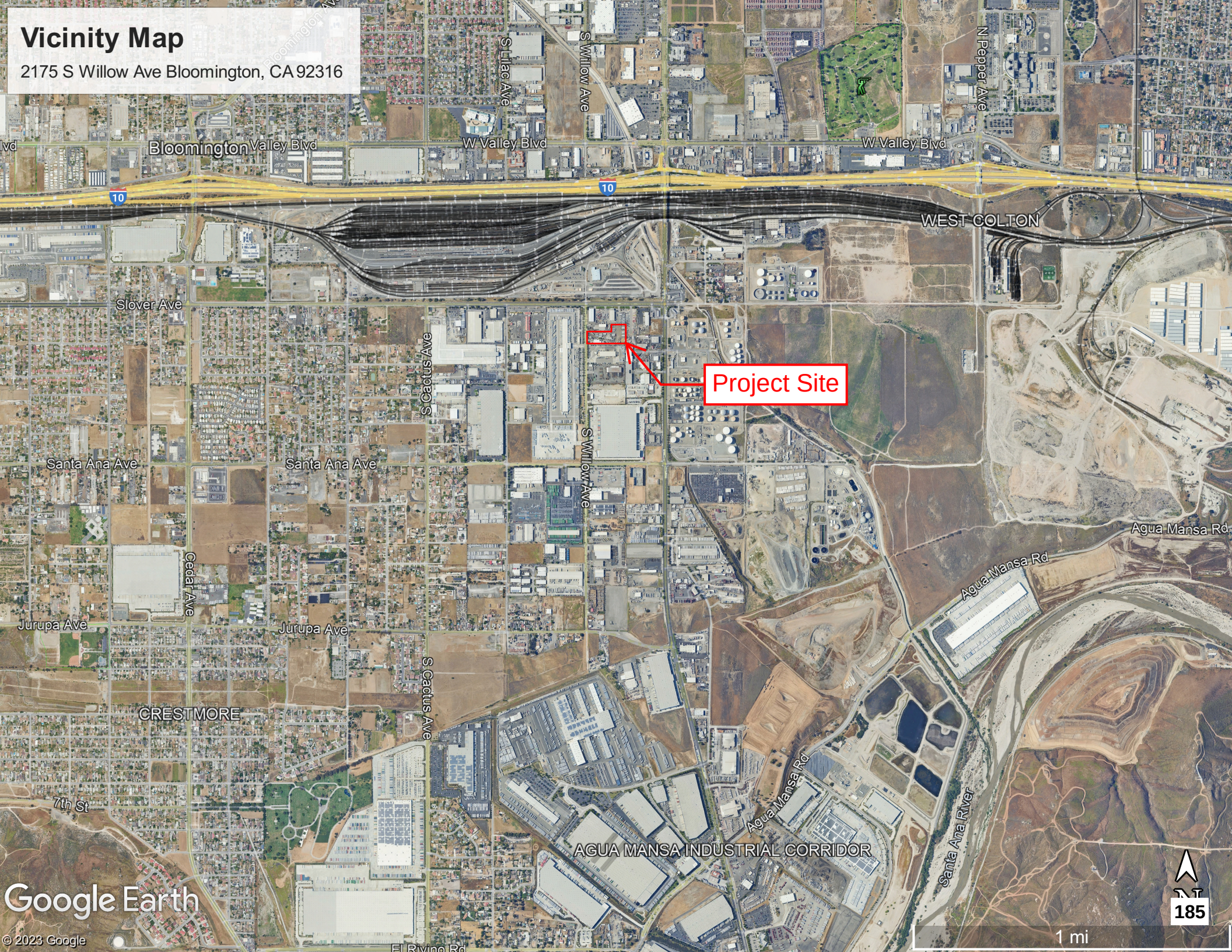
As discussed in the contents of this report, the development is not expected to cause a significant impact to downstream systems for storms up to the 100-year storm.

Appendix A

Vicinity Map

Vicinity Map

2175 S Willow Ave Bloomington, CA 92316



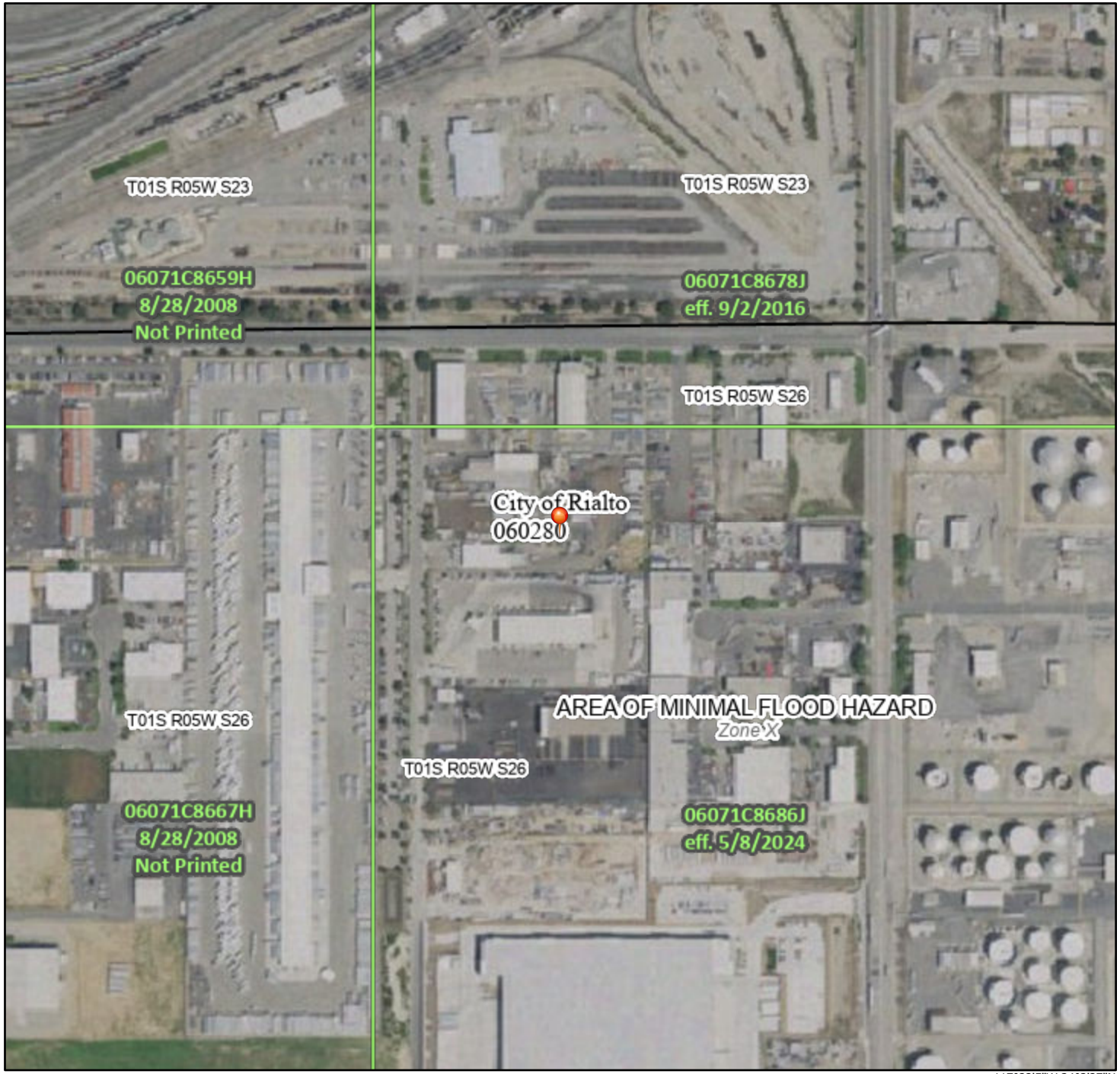
Appendix B

FIRM Map

National Flood Hazard Layer FIRMette

FEMA

117°22'42"W 34°3'57"N



117°22'5"W 34°3'27"N

Feet

0 250 500 1,000 1,500 2,000

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 11/20/2024 at 8:00 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Appendix C

Construction Plans

Appendix D

Hydrology Manual and Other Reference Material

Appendix E

NOAA Rainfall Data

NOAA Atlas 14, Volume 6, Version 2
Location name: Bloomington, California, USA*
Latitude: 34.0617°, Longitude: -117.3731°
Elevation: 1023 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	1.30 (1.08-1.57)	1.67 (1.39-2.03)	2.17 (1.80-2.65)	2.59 (2.14-3.18)	3.17 (2.52-4.02)	3.62 (2.82-4.70)	4.08 (3.10-5.44)	4.57 (3.37-6.28)	5.27 (3.72-7.52)	5.81 (3.96-8.62)
10-min	0.924 (0.774-1.12)	1.20 (0.996-1.45)	1.56 (1.29-1.90)	1.86 (1.53-2.28)	2.27 (1.81-2.89)	2.59 (2.02-3.37)	2.93 (2.22-3.90)	3.28 (2.42-4.49)	3.77 (2.66-5.39)	4.16 (2.84-6.17)
15-min	0.748 (0.624-0.904)	0.964 (0.804-1.17)	1.26 (1.04-1.53)	1.50 (1.23-1.84)	1.83 (1.46-2.32)	2.09 (1.63-2.72)	2.36 (1.79-3.14)	2.64 (1.95-3.62)	3.04 (2.15-4.35)	3.36 (2.29-4.98)
30-min	0.558 (0.464-0.676)	0.720 (0.600-0.874)	0.936 (0.778-1.14)	1.12 (0.918-1.37)	1.36 (1.08-1.73)	1.56 (1.21-2.02)	1.76 (1.34-2.34)	1.97 (1.45-2.70)	2.27 (1.60-3.24)	2.50 (1.71-3.71)
60-min	0.403 (0.336-0.489)	0.521 (0.434-0.633)	0.678 (0.563-0.825)	0.808 (0.665-0.992)	0.987 (0.785-1.26)	1.13 (0.878-1.46)	1.27 (0.966-1.70)	1.43 (1.05-1.96)	1.64 (1.16-2.35)	1.81 (1.24-2.69)
2-hr	0.292 (0.244-0.354)	0.375 (0.312-0.455)	0.483 (0.401-0.589)	0.573 (0.471-0.703)	0.695 (0.552-0.883)	0.790 (0.614-1.03)	0.887 (0.673-1.18)	0.989 (0.729-1.36)	1.13 (0.797-1.62)	1.24 (0.845-1.84)
3-hr	0.241 (0.201-0.293)	0.309 (0.257-0.375)	0.397 (0.330-0.483)	0.469 (0.386-0.576)	0.568 (0.451-0.722)	0.644 (0.501-0.837)	0.722 (0.548-0.962)	0.803 (0.592-1.10)	0.915 (0.646-1.31)	1.00 (0.683-1.49)
6-hr	0.170 (0.141-0.206)	0.217 (0.181-0.264)	0.279 (0.232-0.340)	0.330 (0.271-0.405)	0.398 (0.316-0.506)	0.451 (0.351-0.586)	0.504 (0.382-0.672)	0.560 (0.412-0.768)	0.635 (0.448-0.909)	0.695 (0.473-1.03)
12-hr	0.112 (0.093-0.136)	0.144 (0.120-0.175)	0.186 (0.154-0.226)	0.219 (0.180-0.269)	0.265 (0.210-0.337)	0.300 (0.233-0.389)	0.335 (0.254-0.446)	0.371 (0.273-0.509)	0.421 (0.297-0.602)	0.459 (0.313-0.681)
24-hr	0.075 (0.066-0.087)	0.097 (0.086-0.112)	0.126 (0.111-0.146)	0.149 (0.131-0.174)	0.181 (0.153-0.218)	0.205 (0.170-0.252)	0.230 (0.186-0.289)	0.255 (0.201-0.330)	0.288 (0.218-0.389)	0.315 (0.230-0.439)
2-day	0.045 (0.040-0.052)	0.060 (0.053-0.069)	0.079 (0.070-0.091)	0.094 (0.083-0.110)	0.115 (0.098-0.139)	0.132 (0.109-0.162)	0.148 (0.120-0.187)	0.165 (0.130-0.214)	0.188 (0.142-0.254)	0.207 (0.151-0.288)
3-day	0.032 (0.028-0.037)	0.043 (0.038-0.050)	0.058 (0.051-0.067)	0.070 (0.061-0.081)	0.086 (0.073-0.104)	0.099 (0.082-0.122)	0.112 (0.091-0.141)	0.126 (0.099-0.163)	0.144 (0.109-0.195)	0.159 (0.116-0.222)
4-day	0.026 (0.023-0.030)	0.035 (0.031-0.041)	0.047 (0.042-0.055)	0.057 (0.050-0.067)	0.071 (0.060-0.086)	0.082 (0.068-0.101)	0.093 (0.076-0.118)	0.105 (0.083-0.136)	0.121 (0.092-0.164)	0.134 (0.098-0.187)
7-day	0.017 (0.015-0.019)	0.023 (0.020-0.027)	0.031 (0.028-0.036)	0.038 (0.033-0.045)	0.048 (0.040-0.058)	0.055 (0.046-0.068)	0.063 (0.051-0.079)	0.071 (0.056-0.092)	0.082 (0.062-0.111)	0.091 (0.067-0.127)
10-day	0.013 (0.011-0.015)	0.017 (0.015-0.020)	0.024 (0.021-0.028)	0.029 (0.026-0.034)	0.037 (0.031-0.044)	0.043 (0.035-0.053)	0.049 (0.039-0.061)	0.055 (0.043-0.071)	0.064 (0.048-0.086)	0.071 (0.052-0.099)
20-day	0.007 (0.007-0.009)	0.010 (0.009-0.012)	0.015 (0.013-0.017)	0.018 (0.016-0.021)	0.023 (0.019-0.027)	0.026 (0.022-0.033)	0.030 (0.024-0.038)	0.034 (0.027-0.045)	0.040 (0.030-0.054)	0.045 (0.033-0.063)
30-day	0.006 (0.005-0.007)	0.008 (0.007-0.010)	0.011 (0.010-0.013)	0.014 (0.012-0.017)	0.018 (0.015-0.022)	0.021 (0.017-0.026)	0.024 (0.019-0.030)	0.027 (0.022-0.036)	0.032 (0.024-0.044)	0.036 (0.026-0.050)
45-day	0.005 (0.004-0.005)	0.006 (0.006-0.007)	0.009 (0.008-0.010)	0.011 (0.010-0.013)	0.014 (0.012-0.017)	0.016 (0.014-0.020)	0.019 (0.015-0.024)	0.022 (0.017-0.028)	0.025 (0.019-0.034)	0.029 (0.021-0.040)
60-day	0.004 (0.003-0.005)	0.005 (0.005-0.006)	0.008 (0.007-0.009)	0.009 (0.008-0.011)	0.012 (0.010-0.015)	0.014 (0.012-0.017)	0.016 (0.013-0.021)	0.019 (0.014-0.024)	0.022 (0.016-0.030)	0.025 (0.018-0.034)

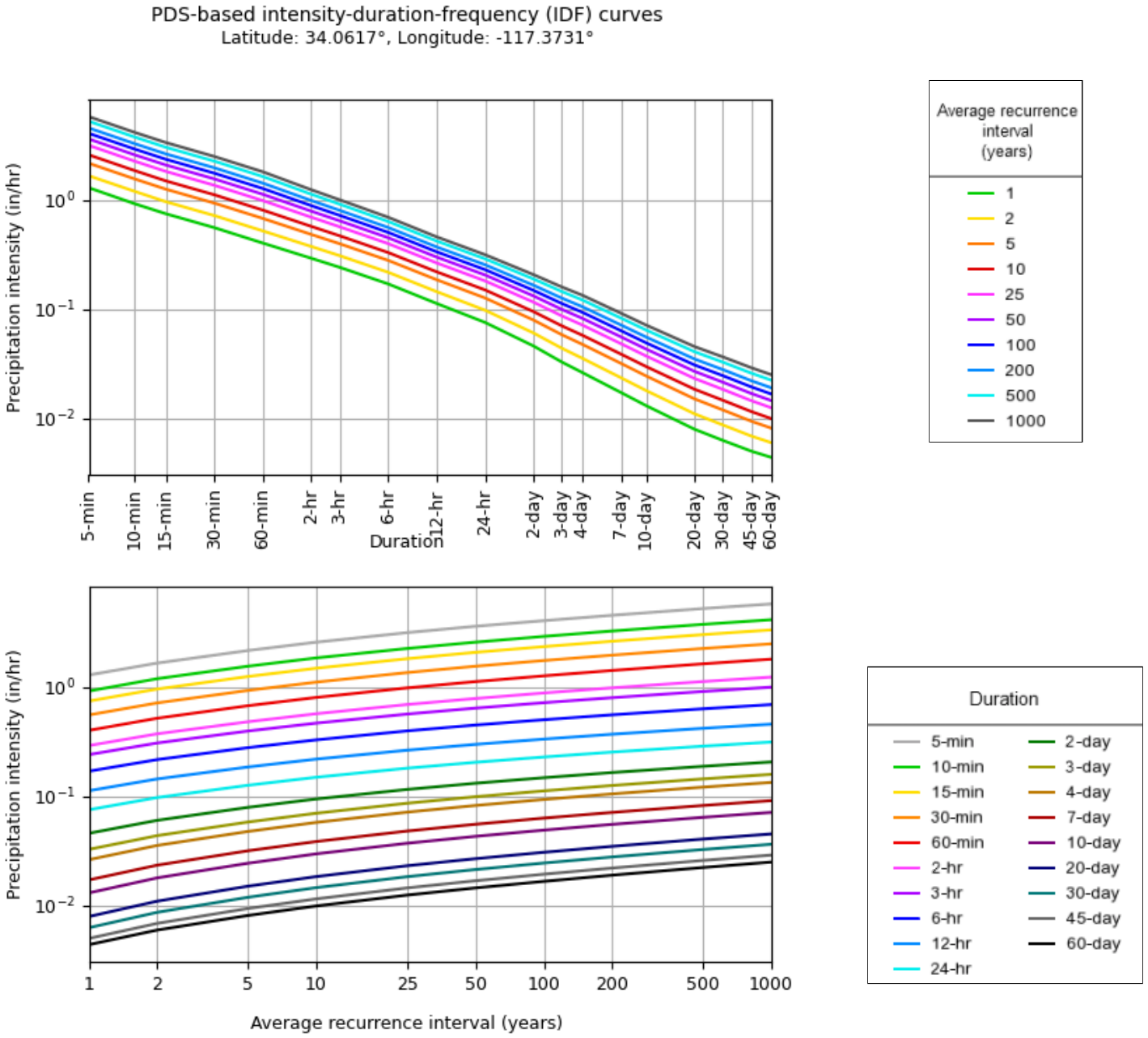
[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

Back to Top

PF graphical



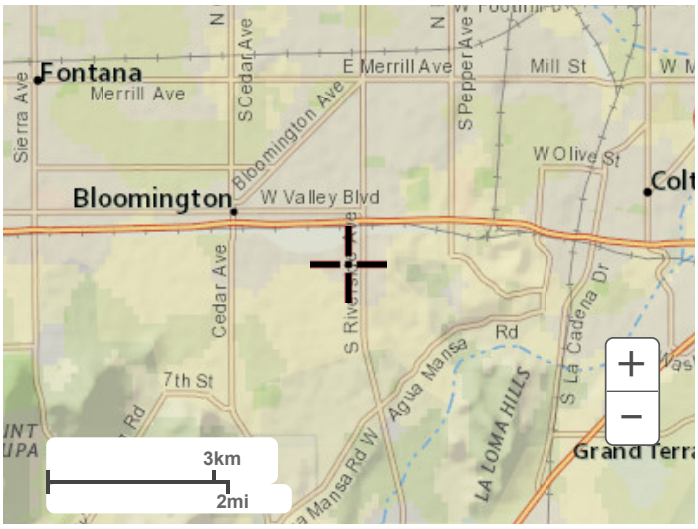
NOAA Atlas 14, Volume 6, Version 2

Created (GMT): Wed Nov 13 22:56:48 2024

Back to Top

Maps & aerials

Small scale terrain



Large scale terrain

Large scale map

Large scale aerial

Back to Top

US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

NOAA Atlas 14, Volume 6, Version 2
Location name: Bloomington, California, USA*
Latitude: 34.0617°, Longitude: -117.3731°
Elevation: 1023 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.108 (0.090-0.131)	0.139 (0.116-0.169)	0.181 (0.150-0.221)	0.216 (0.178-0.265)	0.264 (0.210-0.335)	0.302 (0.235-0.392)	0.340 (0.258-0.453)	0.381 (0.281-0.523)	0.439 (0.310-0.627)	0.484 (0.330-0.718)
10-min	0.154 (0.129-0.187)	0.200 (0.166-0.242)	0.260 (0.215-0.316)	0.310 (0.255-0.380)	0.378 (0.301-0.481)	0.432 (0.336-0.561)	0.488 (0.370-0.650)	0.547 (0.403-0.749)	0.629 (0.444-0.899)	0.694 (0.473-1.03)
15-min	0.187 (0.156-0.226)	0.241 (0.201-0.293)	0.314 (0.261-0.382)	0.374 (0.308-0.460)	0.457 (0.364-0.581)	0.523 (0.407-0.679)	0.590 (0.448-0.786)	0.661 (0.487-0.906)	0.760 (0.537-1.09)	0.840 (0.572-1.24)
30-min	0.279 (0.232-0.338)	0.360 (0.300-0.437)	0.468 (0.389-0.570)	0.558 (0.459-0.685)	0.682 (0.542-0.867)	0.780 (0.606-1.01)	0.880 (0.668-1.17)	0.986 (0.727-1.35)	1.13 (0.800-1.62)	1.25 (0.853-1.86)
60-min	0.403 (0.336-0.489)	0.521 (0.434-0.633)	0.678 (0.563-0.825)	0.808 (0.665-0.992)	0.987 (0.785-1.26)	1.13 (0.878-1.46)	1.27 (0.966-1.70)	1.43 (1.05-1.96)	1.64 (1.16-2.35)	1.81 (1.24-2.69)
2-hr	0.585 (0.488-0.709)	0.750 (0.624-0.911)	0.967 (0.803-1.18)	1.15 (0.943-1.41)	1.39 (1.10-1.77)	1.58 (1.23-2.05)	1.78 (1.35-2.36)	1.98 (1.46-2.71)	2.26 (1.60-3.23)	2.48 (1.69-3.68)
3-hr	0.726 (0.605-0.880)	0.928 (0.772-1.13)	1.19 (0.991-1.45)	1.41 (1.16-1.73)	1.71 (1.36-2.17)	1.94 (1.51-2.51)	2.17 (1.65-2.89)	2.41 (1.78-3.31)	2.75 (1.94-3.93)	3.02 (2.05-4.47)
6-hr	1.02 (0.850-1.24)	1.30 (1.08-1.58)	1.68 (1.39-2.04)	1.98 (1.63-2.43)	2.39 (1.90-3.03)	2.70 (2.10-3.51)	3.02 (2.29-4.03)	3.35 (2.47-4.60)	3.81 (2.69-5.45)	4.16 (2.84-6.17)
12-hr	1.36 (1.13-1.65)	1.74 (1.45-2.12)	2.24 (1.86-2.73)	2.65 (2.18-3.25)	3.20 (2.54-4.06)	3.62 (2.81-4.70)	4.04 (3.06-5.38)	4.48 (3.30-6.14)	5.07 (3.58-7.26)	5.54 (3.77-8.21)
24-hr	1.81 (1.60-2.09)	2.35 (2.08-2.71)	3.04 (2.68-3.52)	3.60 (3.15-4.20)	4.36 (3.69-5.25)	4.93 (4.09-6.07)	5.52 (4.47-6.95)	6.12 (4.82-7.93)	6.94 (5.25-9.35)	7.57 (5.54-10.6)
2-day	2.21 (1.95-2.54)	2.90 (2.57-3.35)	3.81 (3.36-4.41)	4.56 (3.98-5.31)	5.56 (4.71-6.71)	6.34 (5.26-7.80)	7.14 (5.78-8.99)	7.95 (6.27-10.3)	9.07 (6.86-12.2)	9.94 (7.27-13.9)
3-day	2.36 (2.09-2.72)	3.15 (2.79-3.64)	4.20 (3.70-4.86)	5.06 (4.42-5.90)	6.24 (5.28-7.52)	7.16 (5.94-8.80)	8.10 (6.56-10.2)	9.08 (7.16-11.8)	10.4 (7.89-14.1)	11.5 (8.40-16.0)
4-day	2.53 (2.24-2.92)	3.42 (3.02-3.94)	4.59 (4.04-5.31)	5.56 (4.86-6.48)	6.89 (5.84-8.30)	7.94 (6.58-9.76)	9.01 (7.30-11.4)	10.1 (7.99-13.1)	11.7 (8.84-15.8)	12.9 (9.45-18.0)
7-day	2.89 (2.56-3.33)	3.94 (3.49-4.55)	5.34 (4.71-6.18)	6.50 (5.68-7.58)	8.10 (6.86-9.76)	9.35 (7.76-11.5)	10.6 (8.62-13.4)	12.0 (9.46-15.5)	13.9 (10.5-18.7)	15.4 (11.3-21.5)
10-day	3.14 (2.78-3.62)	4.31 (3.81-4.97)	5.86 (5.17-6.79)	7.15 (6.26-8.34)	8.94 (7.57-10.8)	10.3 (8.58-12.7)	11.8 (9.56-14.9)	13.3 (10.5-17.3)	15.5 (11.7-20.8)	17.2 (12.5-23.9)
20-day	3.81 (3.37-4.39)	5.27 (4.66-6.09)	7.23 (6.37-8.36)	8.86 (7.75-10.3)	11.1 (9.42-13.4)	12.9 (10.7-15.9)	14.8 (12.0-18.6)	16.8 (13.2-21.7)	19.5 (14.8-26.4)	21.8 (15.9-30.4)
30-day	4.52 (4.00-5.21)	6.26 (5.53-7.22)	8.59 (7.57-9.94)	10.5 (9.22-12.3)	13.3 (11.2-16.0)	15.4 (12.8-19.0)	17.7 (14.3-22.3)	20.1 (15.9-26.0)	23.5 (17.8-31.7)	26.3 (19.2-36.7)
45-day	5.40 (4.78-6.22)	7.43 (6.57-8.57)	10.2 (8.96-11.8)	12.5 (10.9-14.5)	15.7 (13.3-18.9)	18.2 (15.1-22.4)	21.0 (17.0-26.4)	23.9 (18.8-30.9)	28.0 (21.2-37.8)	31.4 (23.0-43.8)
60-day	6.31 (5.59-7.28)	8.60 (7.61-9.93)	11.7 (10.3-13.5)	14.3 (12.5-16.7)	18.0 (15.2-21.7)	20.9 (17.3-25.7)	24.0 (19.5-30.3)	27.4 (21.6-35.4)	32.2 (24.3-43.4)	36.1 (26.4-50.4)

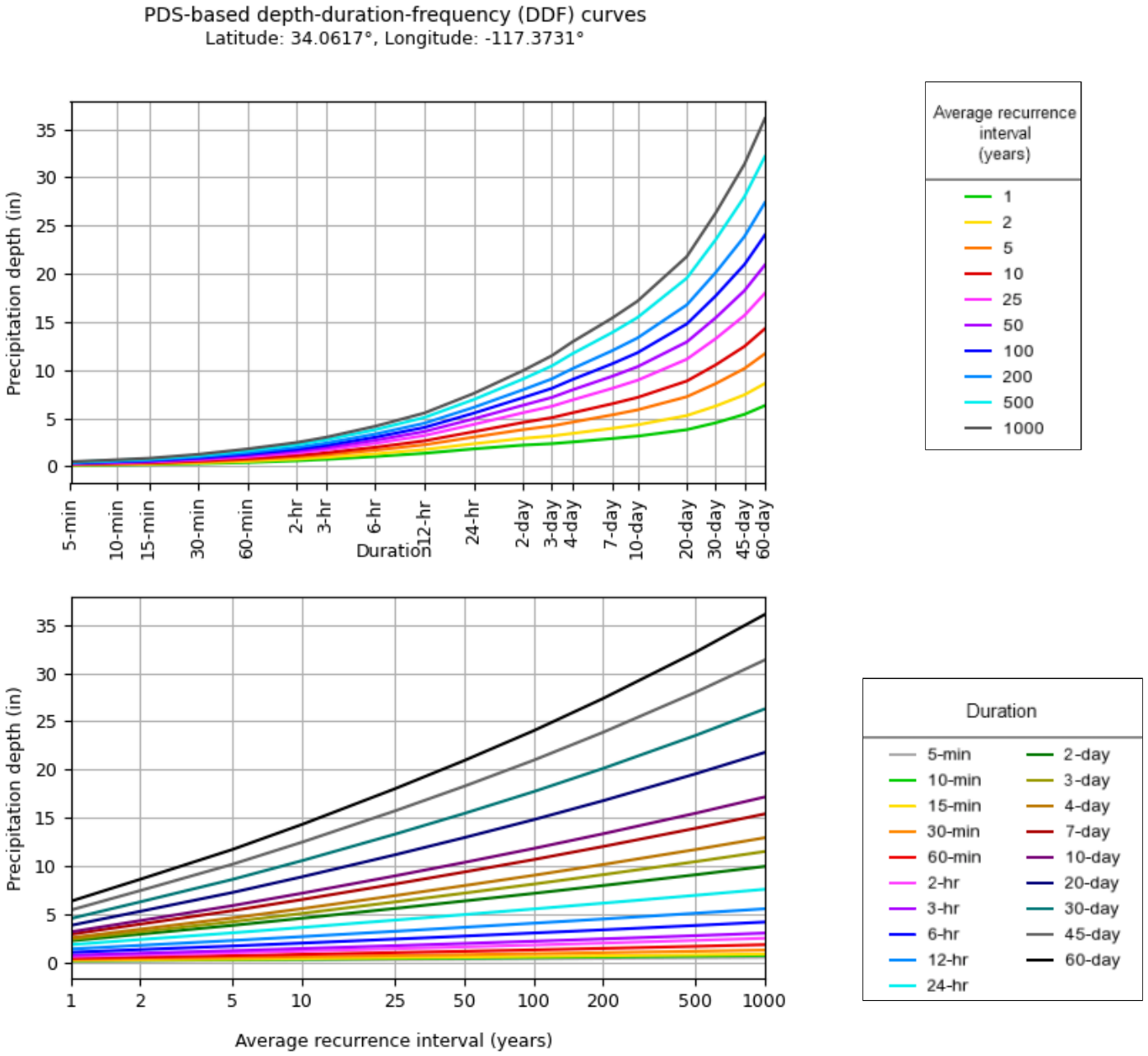
[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

Back to Top

PF graphical



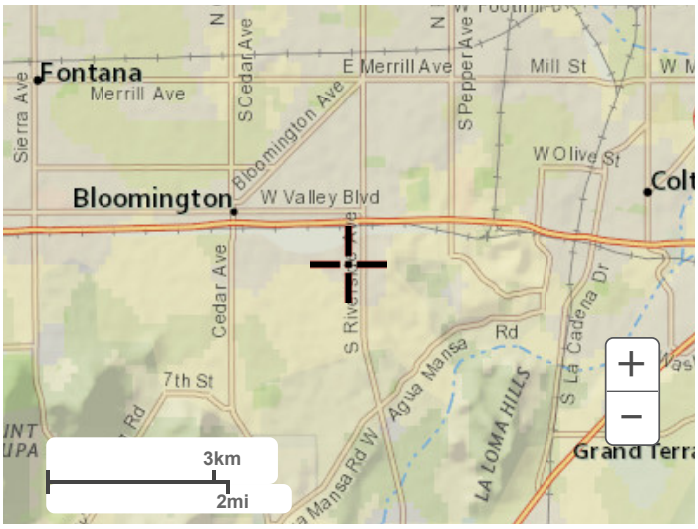
NOAA Atlas 14, Volume 6, Version 2

Created (GMT): Wed Nov 13 23:01:13 2024

Back to Top

Maps & aerials

Small scale terrain



Large scale terrain

Large scale map

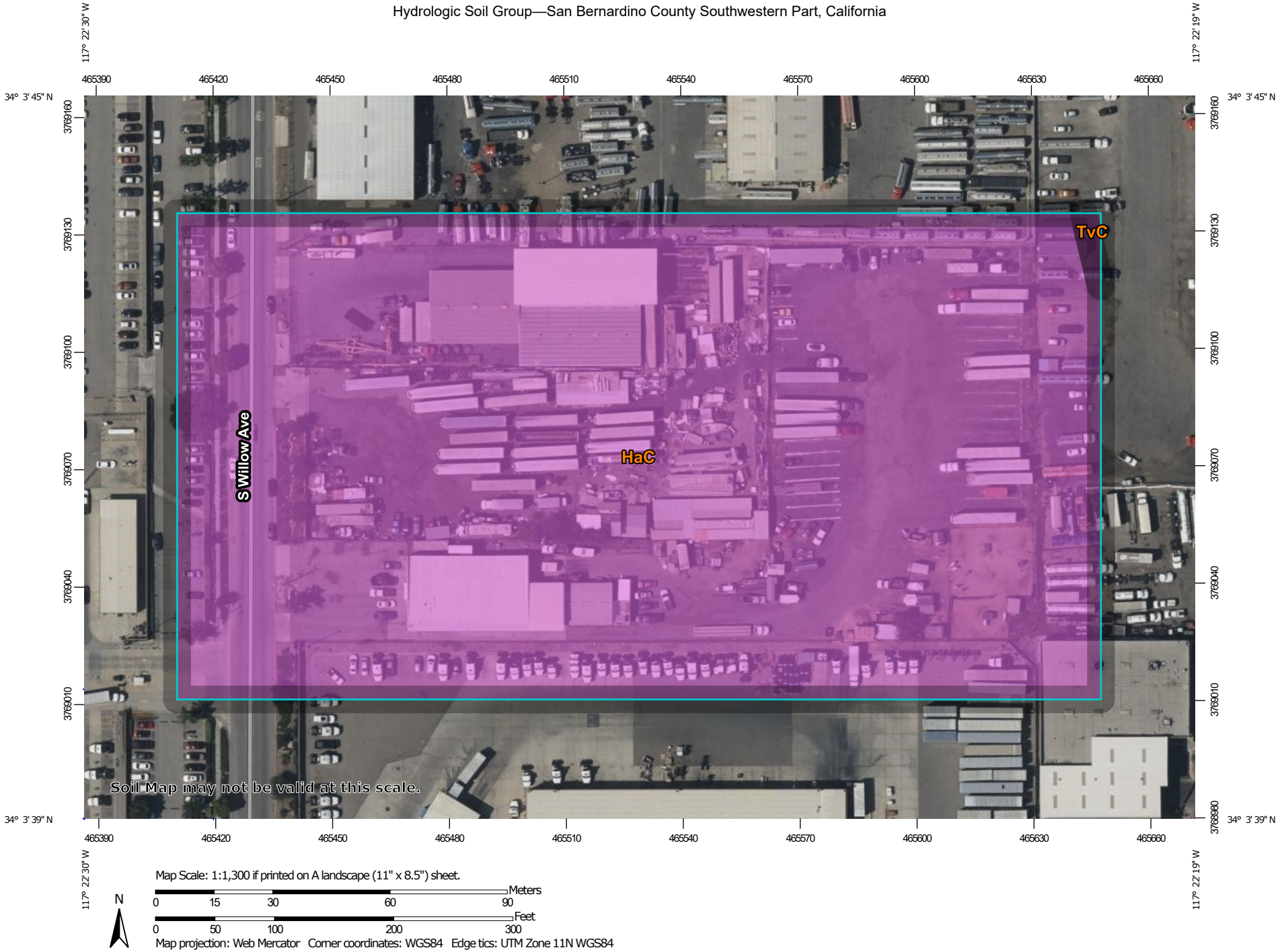
Large scale aerial

Back to Top

US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Appendix F

Soils Reports


117° 22' 30" W
117° 22' 19" W
34° 3' 45" N
34° 3' 39" N
465390
465420
465450
465480
465510
465540
465570
465600
465630
465660
3769160
3769130
3769100
3769070
3769040
3769010
3768980
S Willow Ave
HaC
TvC
Soil Map may not be valid at this scale.
Map Scale: 1:1,300 if printed on A landscape (11" x 8.5") sheet.
N
Meters
0 15 30 60 90
Feet
0 50 100 200 300
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Lines

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Points

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: San Bernardino County Southwestern Part, California
Survey Area Data: Version 16, Aug 30, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 17, 2022—Jun 12, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
HaC	Hanford coarse sandy loam, 2 to 9 percent slopes	A	7.3	99.9%
TvC	Tujunga gravelly loamy sand, 0 to 9 percent slopes	A	0.0	0.1%
Totals for Area of Interest			**7.3**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Sladden Engineering

45090 Golf Center Parkway, Suite F, Indio, CA. 92201 (760) 863-0713 Fax (760) 863-0847
6782 Stanton Avenue, Suite C, Buena Park, CA. 90621 (714) 523-0952 Fax (714) 523-1369
450 Egan Avenue, Beaumont, CA. 92223 (951) 845-7743 Fax (951) 845-8863
www.SladdenEngineering.com

November 14, 2024
(Revised November 18, 2024)

Project No. 444-24084
24-11-067

Outour Storage Acquisitions, LLC
800 Brickell Avenue, Suite 904
Miami, Florida 33131

Project: Proposed Truckyard/ IOS Facility
2175 South Willow Avenue
Rialto, California

Subject: Percolation/Infiltration Testing for On-Site Stormwater Management

In accordance with your request, we have performed percolation testing on the subject site to evaluate the infiltration potential of the near surface soil to assist in storm water management system design. It is our understanding that on-site stormwater retention including infiltration is planned for the proposed project.

Percolation testing was performed within two (2) test holes excavated on the site. Testing was performed at a depth of approximately 10 feet below the existing ground surface. The approximate locations of the test holes are presented on the attached Exploration Location Plan (Figure 3). Testing was performed by placing water within the test bores and recording the drop in the water surface with time. Testing was performed in general accordance with the *United States Bureau of Reclamation (BOR) Procedure 7300-89 (1999)*. Test results are summarized in the following table.

PERCOLATION TEST RESULTS

Test No.	Depth (Ft)	USCS	Percolation Rate (in/hr)	Infiltration Rate (in/hr)
BH-7/P-1	10.00	SM	109.50	17.01
BH-3/P-2	10.00	SM	107.25	16.42

The percolation rates determined represent the ultimate field rates that do not include a safety factor. The corresponding infiltration rates were calculated using the Porchet Method. An appropriate safety factor should be incorporated into retention/infiltration system design. Testing indicates a rapid infiltration rate within the test holes which is consistent with the highly permeable native sandy soil encountered below a depth of approximately 5 feet. Infiltration systems should extend through the silty surface soil into the sandy native soil.

Groundwater was not encountered within our exploratory boreholes. Based upon our review of groundwater levels within the vicinity of the site[1], it is our opinion that groundwater should not be a controlling factor in stormwater retention/infiltration system design.

If you have any questions regarding this memo or the testing summarized herein, please contact the undersigned.

Respectfully submitted,
SLADDEN ENGINEERING

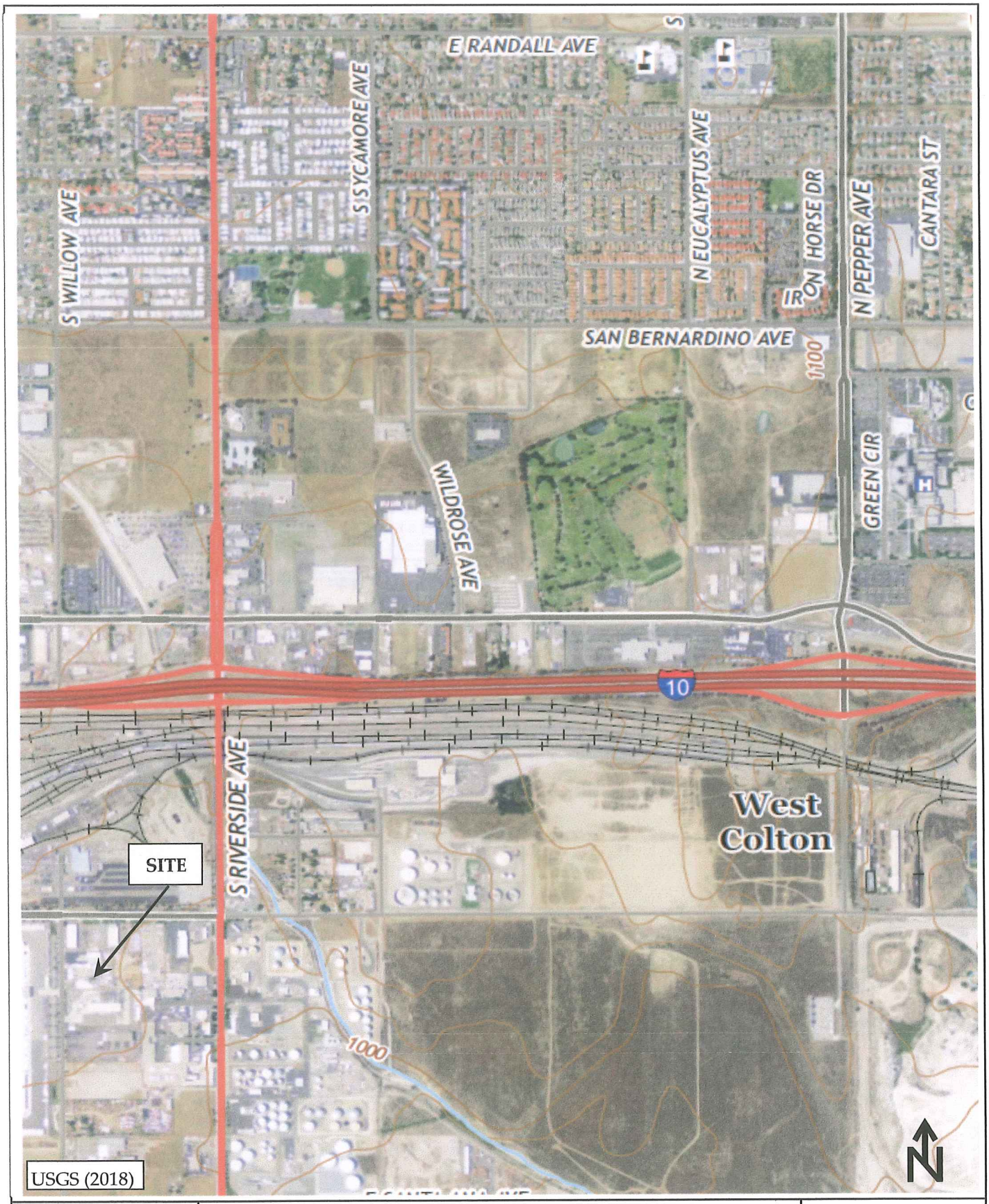
Brett L. Anderson
Principal Engineer

REGISTERED PROFESSIONAL ENGINEER
BRETT L. ANDERSON
No. C45389
CIVIL ENGINEERING
STATE OF CALIFORNIA

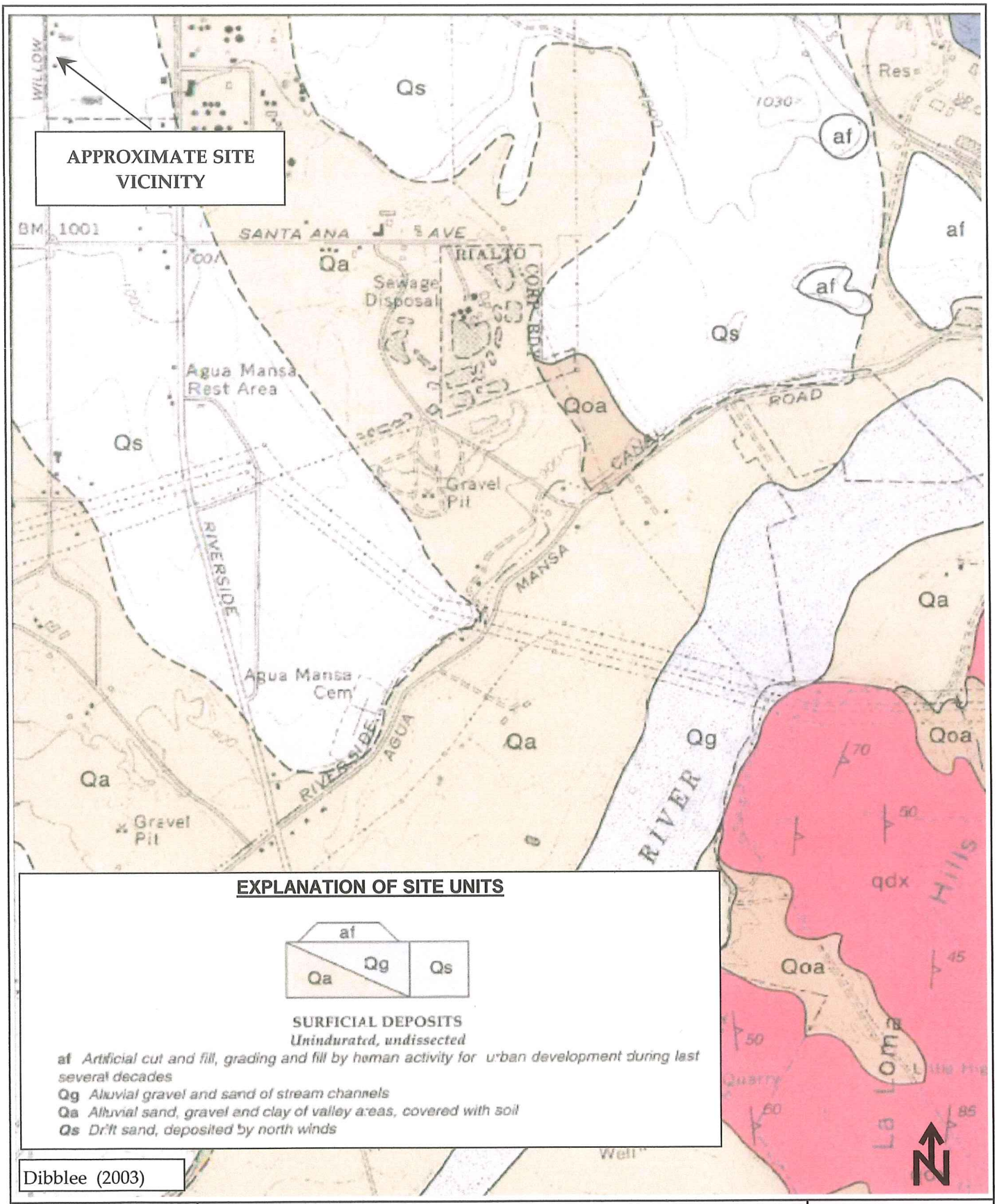
Copies: PDF/Addressee

[1] California Department of Water Resources, 2024, Water Data Library; available at: http://wdl.water.ca.gov/waterdatalibrary/

SITE LOCATION MAP
REGIONAL GEOLOGIC MAP
EXPLORATION LOCATION PLAN



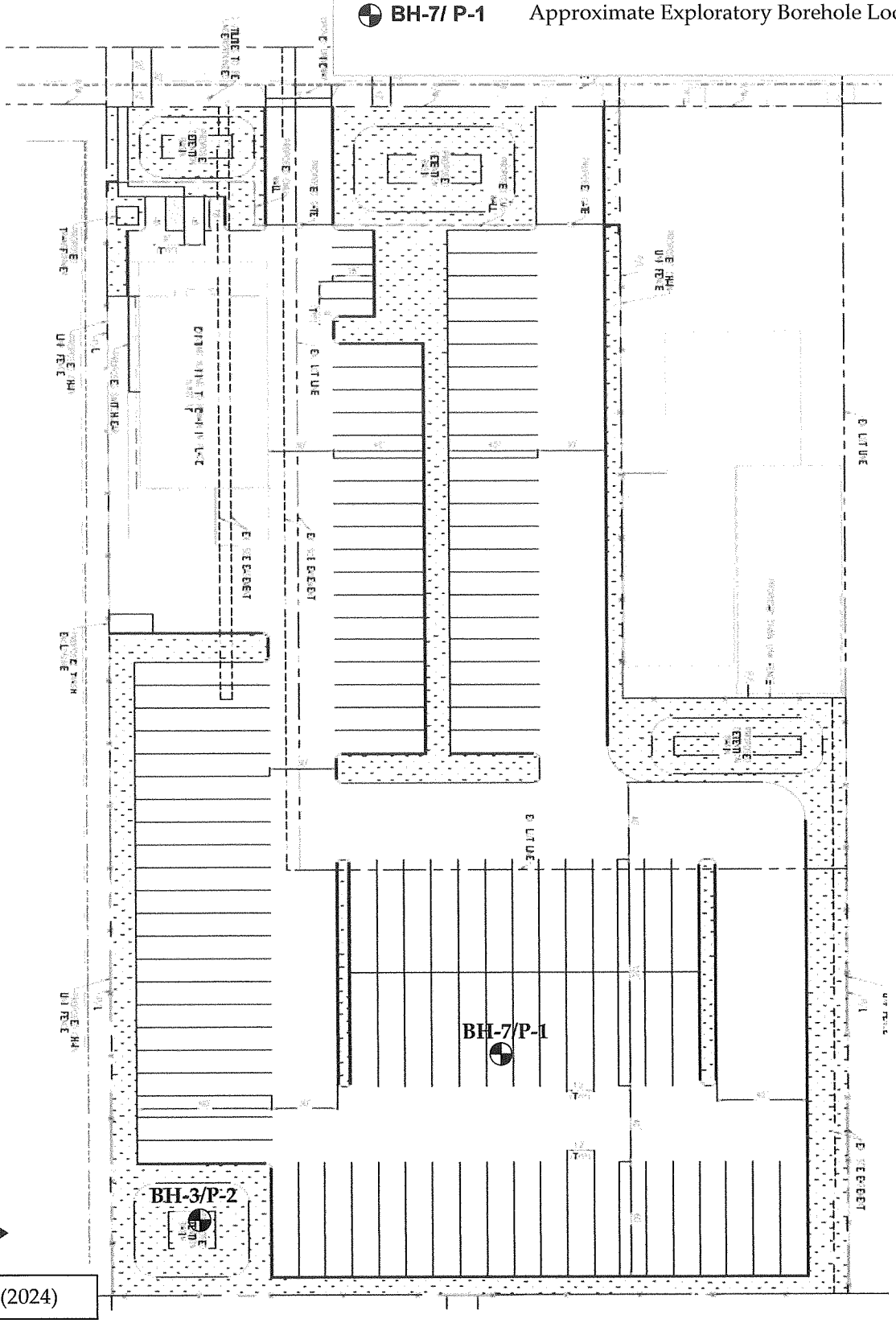
Sladden Engineering	SITE LOCATION MAP		FIGURE 1
	Project Number:	444-24084	
	Report Number:	24-11-067	
	Date:	November 18, 2024	



Sladden Engineering	REGIONAL GEOLOGIC MAP	FIGURE 2
	Project Number: 444-24084	
	Report Number: 24-11-067	
	Date: November 18, 2024	

LEGEND

BH-7/ P-1 Approximate Exploratory Borehole Location/



Kimley Horn (2024)

Sladden Engineering

EXPLORATION LOCATION PLAN

FIGURE 3

Project Number:	444-24084
Report Number:	24-11-067
Date:	November 18, 2024

BORELOGS

SLADDEN ENGINEERING

BORE LOG

Drill Rig:	Mobil B-61	Date Drilled:	11/18/2024
Elevation:	1020 Feet (MSL)	Boring No:	BH-7/P-1

Sample	Blow Counts	Bulk Sample	Expansion Index	% Minus #200	% Moisture	Density, pcf	Depth (Feet)	Graphic Lithology	Description
							0–4		Sandy Silt/ Silty Sand (ML/SM); yellowish brown, slightly moist, low plasticity with trace gravel (Fill).
							4–10		Silty Sand (SM); yellowish brown, slightly moist, fine- to coarse-grained with coarse gravel (Qs).
							10–50		Terminated at ~10.0 Feet bgs. No Bedrock Encountered. No Groundwater or Seepage Encountered. Borehole Cased with Perforated Pipe for Percolation Testing.

Completion Notes:

PROPOSED TRUCK YARD/ IOS FACILITY
2175 SOUTH WILLOW AVENUE, RIALTO

Project No: 444-24084
Report No: 24-11-067

SLADDEN ENGINEERING

BORE LOG

Drill Rig:	Mobil B-61	Date Drilled:	11/13/2024
Elevation:	1020 Feet (MSL)	Boring No:	BH-3/P-2

Sample	Blow Counts	Bulk Sample	Expansion Index	% Minus #200	% Moisture	Density, pcf	Depth (Feet)	Graphic Lithology	Description
							0–4		Sandy Silt/ Silty Sand (ML/SM); yellowish brown, slightly moist, low plasticity with trace gravel (Fill).
							4–10		Silty Sand (SM); yellowish brown, slightly moist, fine- to coarse-grained with coarse gravel (Qs).
							10–50		Terminated at ~10.0 Feet bgs. No Bedrock Encountered. No Groundwater or Seepage Encountered. Borehole Cased with Perforated Pipe for Percolation Testing.

Completion Notes:

PROPOSED TRUCK YARD/ IOS FACILITY
2175 SOUTH WILLOW AVENUE, RIALTO

Project No: 444-24084
Report No: 24-11-067

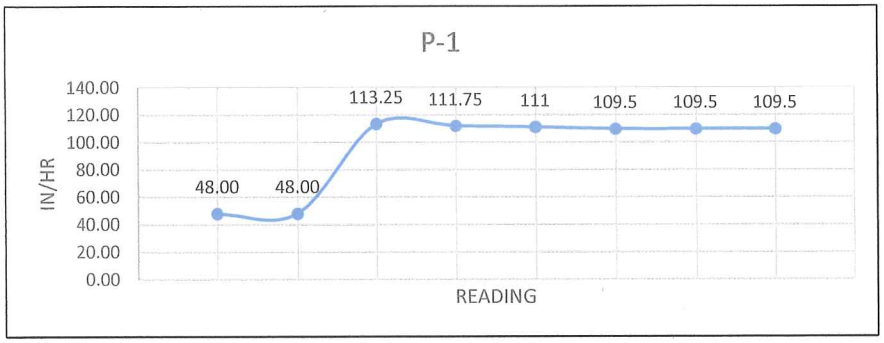
STORMWATER TESTING DATA SHEETS

STORMWATER PERCOLATION SHEET (LESS THAN 10 FT)

Project:	2175 South Willow Ave., Rialto	Depth (ft):	10.00
Job No. :	444-24084	USCS Soil Class:	SM
Date:	4/18/2024	Sandy Soil:	J.M.
Test Hole #:	P-1	Tested By:	J.M.

READING	TIME (min)	DEPTH (ft)	INITIAL W (in)	FINAL W (in)	ΔW (in)	IN/HR
A	25.00	10.00	20	0	20	48.00
B	25.00	10.00	20	0	20	48.00

READING	TIME (min)	DEPTH (ft)	INITIAL W (in)	FINAL W (in)	ΔW (in)	IN/HR
1	10.00	10.00	20	1 1/8	18 7/8	113.25
2	10.00	10.00	20	1 3/8	18 5/8	111.75
3	10.00	10.00	20	1 4/8	18 4/8	111
4	10.00	10.00	20	1 6/8	18 2/8	109.5
5	10.00	10.00	20	1 6/8	18 2/8	109.5
6	10.00	10.00	20	1 6/8	18 2/8	109.5



PERCOLATION RATE CONVERSION (PORCHET METHOD)

$$I_{t=} \quad \frac{\Delta H\ 60\ R}{\Delta t(r+2H_{avg})}$$

Δt =	10.00
D_f =	118.25
r =	4.00
D_0 =	100
D_t =	120.00
H_0 =	20
H_f =	1.75
ΔH =	18.25
H_{avg} =	10.88

Δt (minutes)
D_f (Final Depth to water)
r (hole radius in inches)
D_0 (Initial Depth to water)
D_t (Total Depth of test hole)
H_0 (initial height of water at selected time interval)

$$H_0 = D_t - D_0$$

H_f (final height of water at the selected time interval)

$$H_f = D_t - D_f$$

ΔH (change in head over the time interval)

$$\Delta H = H_0 - H_f$$

H_{avg} (average head height over the time interval)

$$H_{avg} = (H_0 + H_f)/2$$

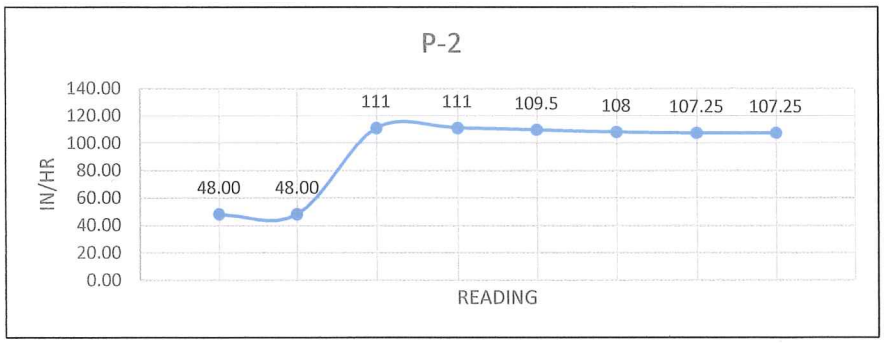
Field Rate: 109.5 in/hr
Infiltration Rate: 17.01 in/hr

STORMWATER PERCOLATION SHEET (LESS THAN 10 FT)

Project:	2175 South Willow Ave., Rialto	Depth (ft):	10.00
Job No. :	444-24084	USCS Soil Class:	SM
Date:	4/18/2024	Sandy Soil:	J.M.
Test Hole #:	P-2	Tested By:	J.M.

READING	TIME (min)	DEPTH (ft)	INITIAL W (in)	FINAL W (in)	ΔW (in)	IN/HR
A	25.00	10.00	20	0	20	48.00
B	25.00	10.00	20	0	20	48.00

READING	TIME (min)	DEPTH (ft)	INITIAL W (in)	FINAL W (in)	ΔW (in)	IN/HR
1	10.00	10.00	20	1 4/8	18 4/8	111
2	10.00	10.00	20	1 4/8	18 4/8	111
3	10.00	10.00	20	1 6/8	18 2/8	109.5
4	10.00	10.00	20	2	18	108
5	10.00	10.00	20	2 1/8	17 7/8	107.25
6	10.00	10.00	20	2 1/8	17 7/8	107.25



PERCOLATION RATE CONVERSION (PORCHET METHOD)

$$I_{t=} \quad \frac{\Delta H\ 60\ R}{\Delta t(r+2H_{avg})}$$

Δt =	10.00
D_f =	117.88
r =	4.00
D_0 =	100
D_t =	120.00
H_0 =	20
H_f =	2.125
ΔH =	17.88
H_{avg} =	11.06

Δt (minutes)

D_f (Final Depth to water)

r (hole radius in inches)

D_0 (Initial Depth to water)

D_t (Total Depth of test hole)

H_0 (initial height of water at selected time interval)

$$H_0 = D_t - D_0$$

H_f (final height of water at the selected time interval)

$$H_f = D_t - D_f$$

ΔH (change in head over the time interval)

$$\Delta H = H_0 - H_f$$

H_{avg} (average head height over the time interval)

$$H_{avg} = (H_0 + H_f)/2$$

Field Rate: 107.25 in/hr

Infiltration Rate: 16.42 in/hr

Appendix G

Hydrology Exhibits

CITY OF RIALTO

PRE-DEVELOPMENT HYDROLOGY EXHIBIT

FOR

2175 S WILLOW AVE.

HYDROLOGY INFORMATION

SITE AREA:	4.04 ACRES	
SOIL TYPE:	A	(NRCS WEB SOIL SURVEY)
IMPERVIOUS:	100%	(PER CALCULATIONS)
ISOHYETALS:	0.521 INCH	(2-YEAR, 1-HR STORM EVENT)
	1.27 INCH	(100-YEAR, 1-HR STORM EVENT)
CURVE NUMBER	67	(SOIL GROUP A)
FREQUENCY:	2-YEAR	(FOR STORMWATER QUALITY)
	100-YEAR	(FOR STORM DRAIN DESIGN)
METHOD:	SAN BERNARDINO COUNTY HYDROLOGY MANUAL	

LEGEND:

- DRAINAGE AREA BOUNDARY
- FLOW PATH
- PROPOSED FLOW DIRECTION ARROW
- X / X.XX — DRAINAGE AREA DESIGNATION / AREA (AC)
- 1.1 — STREAM #
- 1 — NODE

HYDROLOGY SUMMARY					
DRAINAGE AREA NO.	TRIBUTARY AREA (SF)	TRIBUTARY AREA (AC)	IMPERVIOUS RATIO	Q_{100} (CFS)	V_{100} (CF)
A	175,959	4.04	1.00	14.45	91,319

PREPARED BY:

Kimley»Horn

1100 W TOWN AND COUNTRY ROAD,SUITE 700,
ORANGE, CA 92868
PHONE: 714-939-1030 FAX: 714-938-9488
WWW.KIMLEY-HORN.COM

2175 S WILLOW AVE

PRE-DEVELOPMENT HYDROLOGY EXHIBIT

OUTOUR

CITY OF RIALTO

DATE: DEC 2024

SHEET 1 OF 1

CITY OF RIALTO

POST-DEVELOPMENT HYDROLOGY EXHIBIT

FOR

2175 S WILLOW AVE.

HYDROLOGY INFORMATION

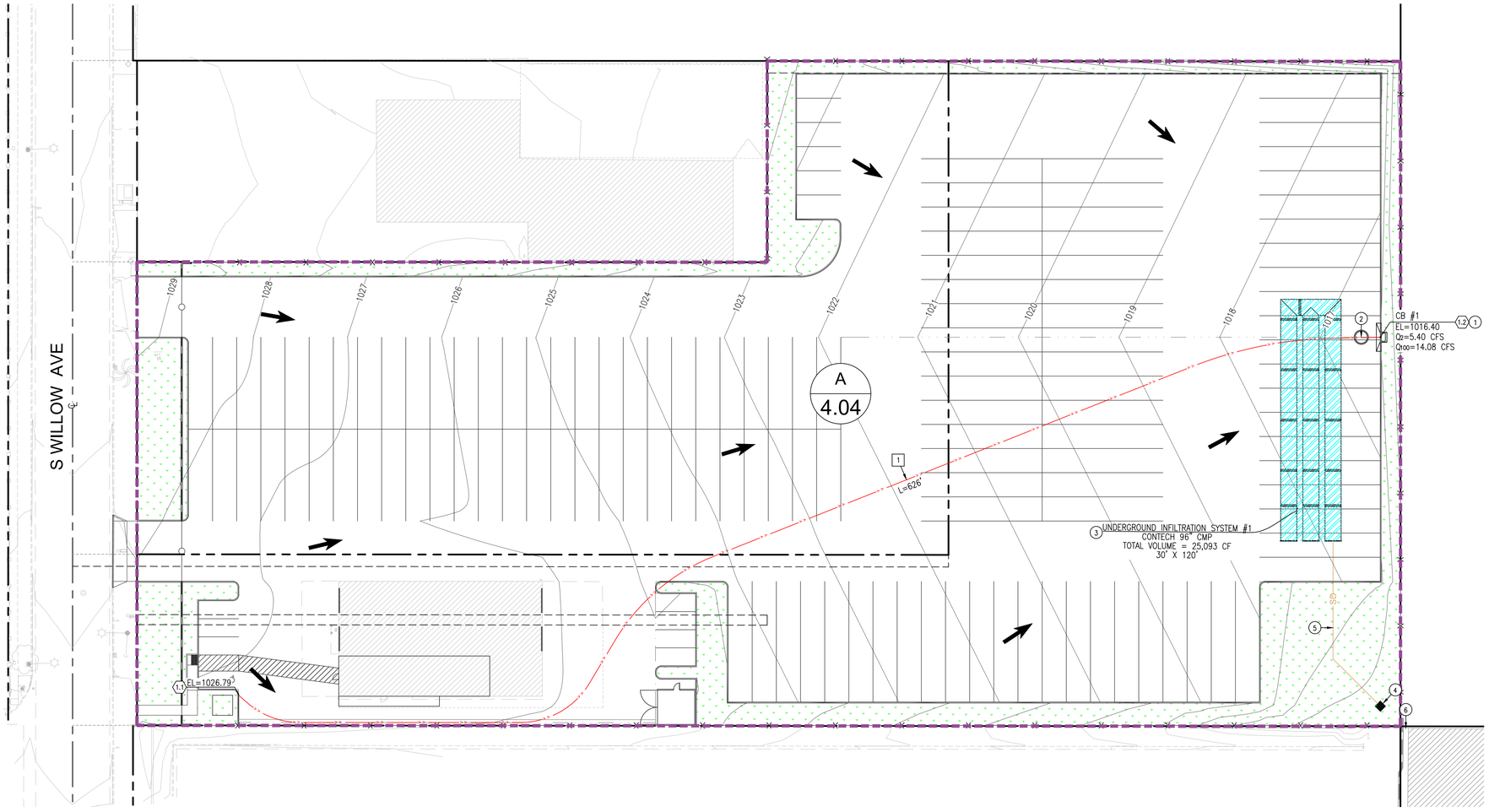
SITE AREA:	4.04 ACRES	
SOIL TYPE:	A	(NRCS WEB SOIL SURVEY)
IMPERVIOUS:	87%	(PER CALCULATIONS)
ISOHYETALS:	0.521 INCH	(2-YEAR, 1-HR STORM EVENT)
	1.27 INCH	(100-YEAR, 1-HR STORM EVENT)
CURVE NUMBER	32	(SOIL GROUP A)
FREQUENCY:	2-YEAR	(FOR STORMWATER QUALITY)
	100-YEAR	(FOR STORM DRAIN DESIGN)
METHOD:	SAN BERNARDINO COUNTY HYDROLOGY MANUAL	

LEGEND:

- DRAINAGE AREA BOUNDARY
- FLOW PATH
- PROPOSED STORM DRAIN PIPE
- PROPOSED FLOW DIRECTION ARROW
- X / X.XX — DRAINAGE AREA DESIGNATION / AREA (AC)
- 1.1 — STREAM #
- 1 — NODE

DRAINAGE NOTES:

1. PROPOSED CATCH BASIN WITH FILTER INSERT
2. PROPOSED BMP – HYDRODYNAMIC SEPARATOR
3. PROPOSED BMP – UNDERGROUND INFILTRATION BASIN
4. PROPOSED BUBBLER SYSTEM
5. PROPOSED STORM DRAIN PIPE PRIVATE MAINTAINED
6. EXISTING CONCRETE CHANNEL



HYDROLOGY SUMMARY							
DRAINAGE AREA NO.	TRIBUTARY AREA (SF)	TRIBUTARY AREA (AC)	IMPERVIOUS RATIO	Q_{100} (CFS)	V_{100} (CF)	RETENTION REQUIRED (CF)	RETENTION PROVIDED (CF)
A	175,959	4.04	0.87	14.08	81,880	23,999	25,093

NORTH

GRAPHIC SCALE IN FEET
0 15 30 60

SCALE: 1" = 30'
WHEN PRINTED AT FULL SIZE 24"X36"

PREPARED BY:
Kimley»Horn

1100 W TOWN AND COUNTRY ROAD,SUITE 700,
ORANGE, CA 92868
PHONE: 714-939-1030 FAX: 714-938-9488
WWW.KIMLEY-HORN.COM

2175 S WILLOW AVE
POST-DEVELOPMENT HYDROLOGY EXHIBIT
OUTOUR

CITY OF RIALTO

DATE: DEC 2024
SHEET
1
OF 1

Appendix H

Rational Method Analysis

Appendix H.I

Rational Method Analysis
Pre-Development Conditions
2-Year Storm

```
**************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
         (c) Copyright 1983-2016 Advanced Engineering Software (aes)
             Ver. 23.0  Release Date: 07/01/2016  License ID 1499

                          Analysis prepared by:




 ************************ DESCRIPTION OF STUDY ************************
* 2175 S WILLOW                                                      *
* RATIONAL METHOD                                                    *
* PRE-DEVELOPMENT CONDITIONS, 2-YEAR, DA A                           *
 **********************************************************************

  FILE NAME: RAT2PR.DAT
  TIME/DATE OF STUDY: 13:33 11/15/2024
==========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =    2.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  12.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 0.5210

  *ANTECEDENT MOISTURE CONDITION (AMC) I ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

**************************************************************************
  FLOW PROCESS FROM NODE      1.00 TO NODE      1.10 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   655.11
  ELEVATION DATA: UPSTREAM(FEET) =   1029.41  DOWNSTREAM(FEET) =   1014.70

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.693
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.660
  SUBAREA Tc AND LOSS RATE DATA(AMC  I ):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  COMMERCIAL                 A        4.04      1.33     0.100    17    8.69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  1.33
```

```
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
  SUBAREA RUNOFF(CFS) =      5.55
  TOTAL AREA(ACRES) =      4.04   PEAK FLOW RATE(CFS) =      5.55
================================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        4.0  TC(MIN.) =      8.69
  EFFECTIVE AREA(ACRES) =      4.04  AREA-AVERAGED Fm(INCH/HR)=  0.13
  AREA-AVERAGED Fp(INCH/HR) =  1.33  AREA-AVERAGED Ap = 0.100
  PEAK FLOW RATE(CFS)   =       5.55
================================================================================
================================================================================
  END OF RATIONAL METHOD ANALYSIS
```

Appendix H.II

Rational Method Analysis
Pre-Development Conditions
10-Year Storm

```
**************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
         (c) Copyright 1983-2016 Advanced Engineering Software (aes)
             Ver. 23.0  Release Date: 07/01/2016  License ID 1499

                          Analysis prepared by:




 ************************ DESCRIPTION OF STUDY ************************
* 2175 S WILLOW                                                      *
* RATIONAL METHOD                                                    *
* PRE-DEVELOPMENT CONDITIONS, 10-YEAR, DA A                          *
 **********************************************************************

  FILE NAME: RAT100PR.DAT
  TIME/DATE OF STUDY: 12:23 11/15/2024
==========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   10.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  12.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 0.8080

  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

**************************************************************************
  FLOW PROCESS FROM NODE      1.00 TO NODE      1.10 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   655.11
  ELEVATION DATA: UPSTREAM(FEET) =   1029.41  DOWNSTREAM(FEET) =   1014.70

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.693
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.575
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  COMMERCIAL                 A        4.04      0.98     0.100    32    8.69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
```

```
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
  SUBAREA RUNOFF(CFS) =      9.01
  TOTAL AREA(ACRES) =      4.04   PEAK FLOW RATE(CFS) =      9.01
================================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        4.0  TC(MIN.) =      8.69
  EFFECTIVE AREA(ACRES) =      4.04  AREA-AVERAGED Fm(INCH/HR)=  0.10
  AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap = 0.100
  PEAK FLOW RATE(CFS)   =       9.01
================================================================================
================================================================================
  END OF RATIONAL METHOD ANALYSIS
```

Appendix H.III

Rational Method Analysis
Pre-Development Conditions
100-Year Storm

```
**************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
         (c) Copyright 1983-2016 Advanced Engineering Software (aes)
             Ver. 23.0  Release Date: 07/01/2016  License ID 1499

                          Analysis prepared by:




 ************************ DESCRIPTION OF STUDY ************************
* 2175 S WILLOW                                                      *
* RATIONAL METHOD                                                    *
* PRE-DEVELOPMENT CONDITIONS, 100-YEAR, DA A                         *
 **********************************************************************

  FILE NAME: RAT100PR.DAT
  TIME/DATE OF STUDY: 11:31 11/15/2024
==========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  12.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 1.2700

  *ANTECEDENT MOISTURE CONDITION (AMC) III ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

**************************************************************************
  FLOW PROCESS FROM NODE      1.00 TO NODE      1.10 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   655.11
  ELEVATION DATA: UPSTREAM(FEET) =   1029.41  DOWNSTREAM(FEET) =   1014.70

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.693
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.048
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  COMMERCIAL                 A        4.04      0.74     0.100    52    8.69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
```

```
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
  SUBAREA RUNOFF(CFS) =     14.45
  TOTAL AREA(ACRES) =      4.04   PEAK FLOW RATE(CFS) =     14.45
================================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        4.0  TC(MIN.) =      8.69
  EFFECTIVE AREA(ACRES) =      4.04  AREA-AVERAGED Fm(INCH/HR)=  0.07
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap = 0.100
  PEAK FLOW RATE(CFS)   =      14.45
================================================================================
================================================================================
  END OF RATIONAL METHOD ANALYSIS
```

Appendix H.IV

Rational Method Analysis
Post-Development Conditions
2-Year Storm

```
**************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
         (c) Copyright 1983-2016 Advanced Engineering Software (aes)
             Ver. 23.0  Release Date: 07/01/2016  License ID 1499

                          Analysis prepared by:




 ************************ DESCRIPTION OF STUDY ************************
* 2175 S WILLOW                                                       *
* RATIONAL METHOD                                                     *
* POST DEVELOPMENT CONDITIONS, 2-YEAR, DA A                           *
 **********************************************************************

  FILE NAME: RAT2PO.DAT
  TIME/DATE OF STUDY: 17:41 12/03/2024
==========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =    2.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  12.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 0.5210

  *ANTECEDENT MOISTURE CONDITION (AMC) I ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

**************************************************************************
  FLOW PROCESS FROM NODE      1.10 TO NODE      1.20 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   626.20
  ELEVATION DATA: UPSTREAM(FEET) =   1026.79  DOWNSTREAM(FEET) =   1016.40

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.069
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.619
  SUBAREA Tc AND LOSS RATE DATA(AMC  I ):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  COMMERCIAL                 A        4.04      1.33     0.100    17    9.07
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  1.33
```

```
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
  SUBAREA RUNOFF(CFS) =      5.40
  TOTAL AREA(ACRES) =      4.04   PEAK FLOW RATE(CFS) =      5.40
================================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        4.0  TC(MIN.) =      9.07
  EFFECTIVE AREA(ACRES) =      4.04  AREA-AVERAGED Fm(INCH/HR)=  0.13
  AREA-AVERAGED Fp(INCH/HR) =  1.33  AREA-AVERAGED Ap = 0.100
  PEAK FLOW RATE(CFS)   =       5.40
================================================================================
================================================================================
  END OF RATIONAL METHOD ANALYSIS
```

Appendix H.V

Rational Method Analysis
Post-Development Conditions
10-Year Storm

```
**************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
         (c) Copyright 1983-2016 Advanced Engineering Software (aes)
             Ver. 23.0  Release Date: 07/01/2016  License ID 1499

                          Analysis prepared by:




 ************************ DESCRIPTION OF STUDY ************************
* 2175 S WILLOW                                                       *
* RATIONAL METHOD                                                     *
* POST DEVELOPMENT CONDITIONS, 10-YEAR, DA A                          *
 **********************************************************************

  FILE NAME: RAT10PO.DAT
  TIME/DATE OF STUDY: 17:35 12/03/2024
==========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   10.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  12.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 0.8080

  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

**************************************************************************
  FLOW PROCESS FROM NODE      1.10 TO NODE      1.20 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   626.20
  ELEVATION DATA: UPSTREAM(FEET) =   1026.79  DOWNSTREAM(FEET) =   1016.40

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.069
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.510
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  COMMERCIAL                 A        4.04      0.98     0.100    32    9.07
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
```

```
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
  SUBAREA RUNOFF(CFS) =      8.77
  TOTAL AREA(ACRES) =      4.04   PEAK FLOW RATE(CFS) =      8.77
================================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        4.0  TC(MIN.) =      9.07
  EFFECTIVE AREA(ACRES) =      4.04  AREA-AVERAGED Fm(INCH/HR)=  0.10
  AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap = 0.100
  PEAK FLOW RATE(CFS)   =       8.77
================================================================================
================================================================================
  END OF RATIONAL METHOD ANALYSIS
```

Appendix H.VI

Rational Method Analysis
Post-Development Conditions
100-Year Storm

```
**************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
         (c) Copyright 1983-2016 Advanced Engineering Software (aes)
             Ver. 23.0  Release Date: 07/01/2016  License ID 1499

                          Analysis prepared by:




 ************************ DESCRIPTION OF STUDY ************************
* 2175 S WILLOW                                                       *
* RATIONAL METHOD                                                     *
* POST DEVELOPMENT CONDITIONS, 100-YEAR, DA A                         *
 **********************************************************************

  FILE NAME: RAT100PO.DAT
  TIME/DATE OF STUDY: 17:30 12/03/2024
==========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  12.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 1.2700

  *ANTECEDENT MOISTURE CONDITION (AMC) III ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

**************************************************************************
  FLOW PROCESS FROM NODE      1.10 TO NODE      1.20 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   626.20
  ELEVATION DATA: UPSTREAM(FEET) =   1026.79  DOWNSTREAM(FEET) =   1016.40

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.069
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.946
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  COMMERCIAL                 A        4.04      0.74     0.100    52    9.07
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
```

```
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
  SUBAREA RUNOFF(CFS) =     14.08
  TOTAL AREA(ACRES) =      4.04   PEAK FLOW RATE(CFS) =     14.08
================================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        4.0  TC(MIN.) =      9.07
  EFFECTIVE AREA(ACRES) =      4.04  AREA-AVERAGED Fm(INCH/HR)=  0.07
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap = 0.100
  PEAK FLOW RATE(CFS)   =      14.08
================================================================================
================================================================================
  END OF RATIONAL METHOD ANALYSIS
```

Appendix I

Synthetic Unit Hydrograph Method Analysis

Appendix I.I

Synthetic Unit Hydrograph Method Analysis
Pre-Development Conditions
2-Year Storm

```
******************************************************************************
                     SMALL AREA UNIT HYDROGRAPH MODEL
==============================================================================
         (C) Copyright 1989-2016 Advanced Engineering Software (aes)
             Ver. 23.0  Release Date: 07/01/2016  License ID 1499

                              Analysis prepared by:




******************************************************************************
------------------------------------------------------------------------------

 Problem Descriptions:
  2175 S WILLOW
  UNIT HYDROGRAPH
  PRE-DEVELOPMENT CONDITIONS, 2-YEAR, DA A
------------------------------------------------------------------------------


    RATIONAL METHOD CALIBRATION COEFFICIENT = 1.07
    TOTAL CATCHMENT AREA(ACRES) =    4.04
    SOIL-LOSS RATE, Fm,(INCH/HR) =  0.000
    LOW LOSS FRACTION = 0.097
    TIME OF CONCENTRATION(MIN.) =  8.69
    SMALL AREA PEAK Q COMPUTED USING PEAK FLOW RATE FORMULA
    USER SPECIFIED RAINFALL VALUES ARE USED
    RETURN FREQUENCY(YEARS) =   2
       5-MINUTE POINT RAINFALL VALUE(INCHES) =  0.14
      30-MINUTE POINT RAINFALL VALUE(INCHES) =  0.36
       1-HOUR   POINT RAINFALL VALUE(INCHES) =  0.52
       3-HOUR   POINT RAINFALL VALUE(INCHES) =  0.93
       6-HOUR   POINT RAINFALL VALUE(INCHES) =  1.30
      24-HOUR   POINT RAINFALL VALUE(INCHES) =  2.35

------------------------------------------------------------------------------

    TOTAL CATCHMENT   RUNOFF  VOLUME(ACRE-FEET) =     0.84
    TOTAL CATCHMENT SOIL-LOSS VOLUME(ACRE-FEET) =    -0.05

******************************************************************************
  TIME     VOLUME       Q    0.        2.5       5.0       7.5      10.0
 (HOURS)    (AF)      (CFS)
------------------------------------------------------------------------------
  0.07      0.0000      0.00  Q         .         .         .         .
  0.21      0.0011      0.18  Q         .         .         .         .
  0.36      0.0033      0.18  Q         .         .         .         .
  0.50      0.0054      0.18  Q         .         .         .         .
  0.65      0.0076      0.18  Q         .         .         .         .
  0.79      0.0098      0.18  Q         .         .         .         .
  0.94      0.0121      0.19  Q         .         .         .         .
  1.08      0.0143      0.19  Q         .         .         .         .
  1.23      0.0165      0.19  Q         .         .         .         .
  1.37      0.0188      0.19  Q         .         .         .         .
  1.52      0.0211      0.19  Q         .         .         .         .
  1.66      0.0233      0.19  Q         .         .         .         .
  1.81      0.0256      0.19  Q         .         .         .         .
  1.95      0.0279      0.19  Q         .         .         .         .
  2.10      0.0303      0.19  Q         .         .         .         .
  2.24      0.0326      0.20  Q         .         .         .         .
  2.39      0.0349      0.20  Q         .         .         .         .
  2.53      0.0373      0.20  Q         .         .         .         .
  2.68      0.0397      0.20  Q         .         .         .         .
  2.82      0.0421      0.20  Q         .         .         .         .
  2.97      0.0445      0.20  Q         .         .         .         .
```

3.11	0.0469	0.20	Q	.	.	.	.
3.25	0.0493	0.20	Q	.	.	.	.
3.40	0.0518	0.21	Q	.	.	.	.
3.54	0.0543	0.21	Q	.	.	.	.
3.69	0.0567	0.21	Q	.	.	.	.
3.83	0.0592	0.21	Q	.	.	.	.
3.98	0.0618	0.21	Q	.	.	.	.
4.12	0.0643	0.21	Q	.	.	.	.
4.27	0.0669	0.21	Q	.	.	.	.
4.41	0.0694	0.22	Q	.	.	.	.
4.56	0.0720	0.22	Q	.	.	.	.
4.70	0.0746	0.22	Q	.	.	.	.
4.85	0.0773	0.22	Q	.	.	.	.
4.99	0.0799	0.22	Q	.	.	.	.
5.14	0.0826	0.22	Q	.	.	.	.
5.28	0.0853	0.23	Q	.	.	.	.
5.43	0.0880	0.23	Q	.	.	.	.
5.57	0.0907	0.23	Q	.	.	.	.
5.72	0.0934	0.23	Q	.	.	.	.
5.86	0.0962	0.23	Q	.	.	.	.
6.01	0.0990	0.23	Q	.	.	.	.
6.15	0.1018	0.24	Q	.	.	.	.
6.30	0.1047	0.24	Q	.	.	.	.
6.44	0.1075	0.24	Q	.	.	.	.
6.59	0.1104	0.24	Q	.	.	.	.
6.73	0.1134	0.24	Q	.	.	.	.
6.88	0.1163	0.25	Q	.	.	.	.
7.02	0.1193	0.25	Q	.	.	.	.
7.17	0.1223	0.25	.Q	.	.	.	.
7.31	0.1253	0.25	.Q	.	.	.	.
7.45	0.1283	0.26	.Q	.	.	.	.
7.60	0.1314	0.26	.Q	.	.	.	.
7.74	0.1345	0.26	.Q	.	.	.	.
7.89	0.1377	0.26	.Q	.	.	.	.
8.03	0.1408	0.27	.Q	.	.	.	.
8.18	0.1441	0.27	.Q	.	.	.	.
8.32	0.1473	0.27	.Q	.	.	.	.
8.47	0.1506	0.27	.Q	.	.	.	.
8.61	0.1539	0.28	.Q	.	.	.	.
8.76	0.1572	0.28	.Q	.	.	.	.
8.90	0.1606	0.29	.Q	.	.	.	.
9.05	0.1640	0.29	.Q	.	.	.	.
9.19	0.1675	0.29	.Q	.	.	.	.
9.34	0.1710	0.29	.Q	.	.	.	.
9.48	0.1746	0.30	.Q	.	.	.	.
9.63	0.1782	0.30	.Q	.	.	.	.
9.77	0.1818	0.31	.Q	.	.	.	.
9.92	0.1855	0.31	.Q	.	.	.	.
10.06	0.1892	0.32	.Q	.	.	.	.
10.21	0.1930	0.32	.Q	.	.	.	.
10.35	0.1969	0.32	.Q	.	.	.	.
10.50	0.2008	0.33	.Q	.	.	.	.
10.64	0.2047	0.33	.Q	.	.	.	.
10.79	0.2087	0.34	.Q	.	.	.	.
10.93	0.2128	0.34	.Q	.	.	.	.
11.08	0.2170	0.35	.Q	.	.	.	.
11.22	0.2212	0.36	.Q	.	.	.	.
11.37	0.2255	0.36	.Q	.	.	.	.
11.51	0.2298	0.37	.Q	.	.	.	.
11.65	0.2343	0.37	.Q	.	.	.	.
11.80	0.2388	0.38	.Q	.	.	.	.
11.94	0.2434	0.39	.Q	.	.	.	.
12.09	0.2483	0.42	.Q	.	.	.	.
12.23	0.2536	0.46	.Q	.	.	.	.
12.38	0.2591	0.47	.Q	.	.	.	.
12.52	0.2648	0.48	.Q	.	.	.	.
12.67	0.2706	0.49	.Q	.	.	.	.
12.81	0.2766	0.50	.Q	.	.	.	.
12.96	0.2826	0.51	. Q	.	.	.	.

```
13.10     0.2888     0.52  . Q       .         .         .         .
13.25     0.2952     0.54  . Q       .         .         .         .
13.39     0.3017     0.55  . Q       .         .         .         .
13.54     0.3084     0.57  . Q       .         .         .         .
13.68     0.3154     0.58  . Q       .         .         .         .
13.83     0.3225     0.61  . Q       .         .         .         .
13.97     0.3298     0.62  . Q       .         .         .         .
14.12     0.3377     0.69  . Q       .         .         .         .
14.26     0.3461     0.72  . Q       .         .         .         .
14.41     0.3550     0.76  .  Q      .         .         .         .
14.55     0.3642     0.78  .  Q      .         .         .         .
14.70     0.3739     0.83  .  Q      .         .         .         .
14.84     0.3840     0.86  .  Q      .         .         .         .
14.99     0.3947     0.93  .  Q      .         .         .         .
15.13     0.4060     0.97  .  Q      .         .         .         .
15.28     0.4182     1.07  .   Q     .         .         .         .
15.42     0.4314     1.14  .   Q     .         .         .         .
15.57     0.4462     1.33  .    Q    .         .         .         .
15.71     0.4629     1.47  .    Q    .         .         .         .
15.86     0.4832     1.93  .      Q  .         .         .         .
16.00     0.5095     2.47  .        Q.         .         .         .
16.14     0.5575     5.55  .         .         . Q       .         .
16.29     0.6006     1.65  .     Q   .         .         .         .
16.43     0.6178     1.23  .   Q     .         .         .         .
16.58     0.6313     1.01  .   Q     .         .         .         .
16.72     0.6427     0.89  .  Q      .         .         .         .
16.87     0.6528     0.80  .  Q      .         .         .         .
17.01     0.6621     0.74  . Q       .         .         .         .
17.16     0.6703     0.64  . Q       .         .         .         .
17.30     0.6777     0.60  . Q       .         .         .         .
17.45     0.6846     0.56  . Q       .         .         .         .
17.59     0.6911     0.53  . Q       .         .         .         .
17.74     0.6973     0.51  . Q       .         .         .         .
17.88     0.7033     0.48  .Q        .         .         .         .
18.03     0.7090     0.47  .Q        .         .         .         .
18.17     0.7141     0.39  .Q        .         .         .         .
18.32     0.7187     0.38  .Q        .         .         .         .
18.46     0.7232     0.36  .Q        .         .         .         .
18.61     0.7274     0.35  .Q        .         .         .         .
18.75     0.7316     0.34  .Q        .         .         .         .
18.90     0.7356     0.33  .Q        .         .         .         .
19.04     0.7395     0.32  .Q        .         .         .         .
19.19     0.7433     0.31  .Q        .         .         .         .
19.33     0.7470     0.30  .Q        .         .         .         .
19.48     0.7506     0.30  .Q        .         .         .         .
19.62     0.7541     0.29  .Q        .         .         .         .
19.77     0.7575     0.28  .Q        .         .         .         .
19.91     0.7609     0.28  .Q        .         .         .         .
20.06     0.7642     0.27  .Q        .         .         .         .
20.20     0.7674     0.27  .Q        .         .         .         .
20.34     0.7705     0.26  .Q        .         .         .         .
20.49     0.7736     0.25  .Q        .         .         .         .
20.63     0.7766     0.25  .Q        .         .         .         .
20.78     0.7796     0.25  Q         .         .         .         .
20.92     0.7825     0.24  Q         .         .         .         .
21.07     0.7854     0.24  Q         .         .         .         .
21.21     0.7882     0.23  Q         .         .         .         .
21.36     0.7910     0.23  Q         .         .         .         .
21.50     0.7937     0.23  Q         .         .         .         .
21.65     0.7964     0.22  Q         .         .         .         .
21.79     0.7990     0.22  Q         .         .         .         .
21.94     0.8016     0.22  Q         .         .         .         .
22.08     0.8042     0.21  Q         .         .         .         .
22.23     0.8067     0.21  Q         .         .         .         .
22.37     0.8092     0.21  Q         .         .         .         .
22.52     0.8117     0.20  Q         .         .         .         .
22.66     0.8141     0.20  Q         .         .         .         .
22.81     0.8166     0.20  Q         .         .         .         .
22.95     0.8189     0.20  Q         .         .         .         .
```

```
  23.10      0.8213      0.20  Q         .         .         .         .
  23.24      0.8236      0.19  Q         .         .         .         .
  23.39      0.8259      0.19  Q         .         .         .         .
  23.53      0.8282      0.19  Q         .         .         .         .
  23.68      0.8304      0.19  Q         .         .         .         .
  23.82      0.8326      0.18  Q         .         .         .         .
  23.97      0.8348      0.18  Q         .         .         .         .
  24.11      0.8370      0.18  Q         .         .         .         .
  24.26      0.8381      0.00  Q         .         .         .         .
 ----------------------------------------------------------------------------
-------------------------------------------------------------------------------
    TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
    (Note: 100% of Peak Flow Rate estimate assumed to have
    an instantaneous time duration)

    Percentile of Estimated                Duration
        Peak Flow Rate                     (minutes)
    ======================                 =========
               0%                           1442.5
              10%                            243.3
              20%                             69.5
              30%                             26.1
              40%                             17.4
              50%                              8.7
              60%                              8.7
              70%                              8.7
              80%                              8.7
              90%                              8.7
```

Appendix I.II

Synthetic Unit Hydrograph Method Analysis
Pre-Development Conditions
10-Year Storm

```
******************************************************************************
                     SMALL AREA UNIT HYDROGRAPH MODEL
==============================================================================
         (C) Copyright 1989-2016 Advanced Engineering Software (aes)
             Ver. 23.0  Release Date: 07/01/2016  License ID 1499

                           Analysis prepared by:




******************************************************************************
------------------------------------------------------------------------------

 Problem Descriptions:
  2175 S WILLOW
  UNIT HYDROGRPAH
  PRE-DEVELOPMENT CONDITIONS, 10-YEAR, DA A
------------------------------------------------------------------------------


    RATIONAL METHOD CALIBRATION COEFFICIENT = 1.12
    TOTAL CATCHMENT AREA(ACRES) =    4.04
    SOIL-LOSS RATE, Fm,(INCH/HR) =  0.000
    LOW LOSS FRACTION = 0.065
    TIME OF CONCENTRATION(MIN.) =  8.69
    SMALL AREA PEAK Q COMPUTED USING PEAK FLOW RATE FORMULA
    USER SPECIFIED RAINFALL VALUES ARE USED
    RETURN FREQUENCY(YEARS) =  10
       5-MINUTE POINT RAINFALL VALUE(INCHES) =  0.22
      30-MINUTE POINT RAINFALL VALUE(INCHES) =  0.56
       1-HOUR   POINT RAINFALL VALUE(INCHES) =  0.81
       3-HOUR   POINT RAINFALL VALUE(INCHES) =  1.41
       6-HOUR   POINT RAINFALL VALUE(INCHES) =  1.98
      24-HOUR   POINT RAINFALL VALUE(INCHES) =  3.60

------------------------------------------------------------------------------

    TOTAL CATCHMENT   RUNOFF  VOLUME(ACRE-FEET) =     1.34
    TOTAL CATCHMENT SOIL-LOSS VOLUME(ACRE-FEET) =    -0.13

******************************************************************************
  TIME     VOLUME       Q    0.        2.5       5.0       7.5      10.0
 (HOURS)    (AF)      (CFS)
------------------------------------------------------------------------------
  0.07      0.0000      0.00  Q         .         .         .         .
  0.21      0.0018      0.29  .Q        .         .         .         .
  0.36      0.0053      0.29  .Q        .         .         .         .
  0.50      0.0088      0.30  .Q        .         .         .         .
  0.65      0.0123      0.30  .Q        .         .         .         .
  0.79      0.0159      0.30  .Q        .         .         .         .
  0.94      0.0195      0.30  .Q        .         .         .         .
  1.08      0.0231      0.30  .Q        .         .         .         .
  1.23      0.0267      0.30  .Q        .         .         .         .
  1.37      0.0304      0.31  .Q        .         .         .         .
  1.52      0.0340      0.31  .Q        .         .         .         .
  1.66      0.0377      0.31  .Q        .         .         .         .
  1.81      0.0414      0.31  .Q        .         .         .         .
  1.95      0.0451      0.31  .Q        .         .         .         .
  2.10      0.0489      0.31  .Q        .         .         .         .
  2.24      0.0527      0.32  .Q        .         .         .         .
  2.39      0.0565      0.32  .Q        .         .         .         .
  2.53      0.0603      0.32  .Q        .         .         .         .
  2.68      0.0641      0.32  .Q        .         .         .         .
  2.82      0.0680      0.32  .Q        .         .         .         .
  2.97      0.0719      0.33  .Q        .         .         .         .
```

3.11	0.0758	0.33	.Q	.	.	.	.
3.25	0.0797	0.33	.Q	.	.	.	.
3.40	0.0837	0.33	.Q	.	.	.	.
3.54	0.0877	0.33	.Q	.	.	.	.
3.69	0.0917	0.34	.Q	.	.	.	.
3.83	0.0957	0.34	.Q	.	.	.	.
3.98	0.0998	0.34	.Q	.	.	.	.
4.12	0.1039	0.34	.Q	.	.	.	.
4.27	0.1080	0.35	.Q	.	.	.	.
4.41	0.1122	0.35	.Q	.	.	.	.
4.56	0.1163	0.35	.Q	.	.	.	.
4.70	0.1206	0.35	.Q	.	.	.	.
4.85	0.1248	0.36	.Q	.	.	.	.
4.99	0.1291	0.36	.Q	.	.	.	.
5.14	0.1334	0.36	.Q	.	.	.	.
5.28	0.1377	0.36	.Q	.	.	.	.
5.43	0.1421	0.37	.Q	.	.	.	.
5.57	0.1465	0.37	.Q	.	.	.	.
5.72	0.1509	0.37	.Q	.	.	.	.
5.86	0.1554	0.37	.Q	.	.	.	.
6.01	0.1599	0.38	.Q	.	.	.	.
6.15	0.1645	0.38	.Q	.	.	.	.
6.30	0.1691	0.39	.Q	.	.	.	.
6.44	0.1737	0.39	.Q	.	.	.	.
6.59	0.1783	0.39	.Q	.	.	.	.
6.73	0.1830	0.39	.Q	.	.	.	.
6.88	0.1878	0.40	.Q	.	.	.	.
7.02	0.1926	0.40	.Q	.	.	.	.
7.17	0.1974	0.41	.Q	.	.	.	.
7.31	0.2023	0.41	.Q	.	.	.	.
7.45	0.2072	0.41	.Q	.	.	.	.
7.60	0.2122	0.42	.Q	.	.	.	.
7.74	0.2172	0.42	.Q	.	.	.	.
7.89	0.2223	0.42	.Q	.	.	.	.
8.03	0.2274	0.43	.Q	.	.	.	.
8.18	0.2326	0.43	.Q	.	.	.	.
8.32	0.2378	0.44	.Q	.	.	.	.
8.47	0.2431	0.44	.Q	.	.	.	.
8.61	0.2484	0.45	.Q	.	.	.	.
8.76	0.2538	0.45	.Q	.	.	.	.
8.90	0.2592	0.46	.Q	.	.	.	.
9.05	0.2648	0.46	.Q	.	.	.	.
9.19	0.2703	0.47	.Q	.	.	.	.
9.34	0.2760	0.47	.Q	.	.	.	.
9.48	0.2817	0.48	.Q	.	.	.	.
9.63	0.2875	0.49	.Q	.	.	.	.
9.77	0.2934	0.49	.Q	.	.	.	.
9.92	0.2993	0.50	.Q	.	.	.	.
10.06	0.3053	0.51	. Q	.	.	.	.
10.21	0.3114	0.51	. Q	.	.	.	.
10.35	0.3176	0.52	. Q	.	.	.	.
10.50	0.3239	0.53	. Q	.	.	.	.
10.64	0.3303	0.54	. Q	.	.	.	.
10.79	0.3367	0.54	. Q	.	.	.	.
10.93	0.3433	0.55	. Q	.	.	.	.
11.08	0.3500	0.56	. Q	.	.	.	.
11.22	0.3568	0.57	. Q	.	.	.	.
11.37	0.3637	0.58	. Q	.	.	.	.
11.51	0.3707	0.59	. Q	.	.	.	.
11.65	0.3778	0.60	. Q	.	.	.	.
11.80	0.3851	0.62	. Q	.	.	.	.
11.94	0.3925	0.62	. Q	.	.	.	.
12.09	0.4003	0.68	. Q	.	.	.	.
12.23	0.4088	0.74	. Q	.	.	.	.
12.38	0.4177	0.76	. Q	.	.	.	.
12.52	0.4268	0.77	. Q	.	.	.	.
12.67	0.4361	0.79	. Q	.	.	.	.
12.81	0.4456	0.80	. Q	.	.	.	.
12.96	0.4554	0.82	. Q	.	.	.	.

```
13.10     0.4653     0.84  .  Q     .        .        .        .
13.25     0.4755     0.87  .  Q     .        .        .        .
13.39     0.4860     0.88  .  Q     .        .        .        .
13.54     0.4967     0.91  .  Q     .        .        .        .
13.68     0.5078     0.93  .  Q     .        .        .        .
13.83     0.5192     0.97  .  Q     .        .        .        .
13.97     0.5310     0.99  .  Q     .        .        .        .
14.12     0.5433     1.07  .   Q    .        .        .        .
14.26     0.5563     1.11  .   Q    .        .        .        .
14.41     0.5699     1.17  .   Q    .        .        .        .
14.55     0.5841     1.20  .   Q    .        .        .        .
14.70     0.5989     1.28  .    Q   .        .        .        .
14.84     0.6145     1.33  .    Q   .        .        .        .
14.99     0.6311     1.44  .    Q   .        .        .        .
15.13     0.6486     1.50  .     Q  .        .        .        .
15.28     0.6676     1.67  .     Q  .        .        .        .
15.42     0.6882     1.77  .      Q .        .        .        .
15.57     0.7117     2.16  .       Q.        .        .        .
15.71     0.7389     2.38  .        .Q       .        .        .
15.86     0.7718     3.11  .         .   Q    .        .        .
16.00     0.8143     4.00  .         .      Q .        .        .
16.14     0.8921     9.01  .         .        .        .     Q  .
16.29     0.9620     2.67  .        Q         .        .        .
16.43     0.9899     1.99  .      Q  .        .        .        .
16.58     1.0112     1.58  .     Q   .        .        .        .
16.72     1.0289     1.38  .    Q    .        .        .        .
16.87     1.0446     1.24  .   Q     .        .        .        .
17.01     1.0588     1.14  .   Q     .        .        .        .
17.16     1.0717     1.02  .   Q     .        .        .        .
17.30     1.0834     0.95  .  Q      .        .        .        .
17.45     1.0945     0.90  .  Q      .        .        .        .
17.59     1.1050     0.85  .  Q      .        .        .        .
17.74     1.1149     0.81  .  Q      .        .        .        .
17.88     1.1244     0.78  .  Q      .        .        .        .
18.03     1.1336     0.75  . Q       .        .        .        .
18.17     1.1418     0.63  . Q       .        .        .        .
18.32     1.1492     0.61  . Q       .        .        .        .
18.46     1.1564     0.59  . Q       .        .        .        .
18.61     1.1633     0.57  . Q       .        .        .        .
18.75     1.1700     0.55  . Q       .        .        .        .
18.90     1.1764     0.53  . Q       .        .        .        .
19.04     1.1827     0.52  . Q       .        .        .        .
19.19     1.1888     0.50  . Q       .        .        .        .
19.33     1.1948     0.49  .Q        .        .        .        .
19.48     1.2005     0.48  .Q        .        .        .        .
19.62     1.2062     0.47  .Q        .        .        .        .
19.77     1.2117     0.46  .Q        .        .        .        .
19.91     1.2171     0.45  .Q        .        .        .        .
20.06     1.2224     0.44  .Q        .        .        .        .
20.20     1.2276     0.43  .Q        .        .        .        .
20.34     1.2326     0.42  .Q        .        .        .        .
20.49     1.2376     0.41  .Q        .        .        .        .
20.63     1.2425     0.40  .Q        .        .        .        .
20.78     1.2473     0.40  .Q        .        .        .        .
20.92     1.2520     0.39  .Q        .        .        .        .
21.07     1.2566     0.38  .Q        .        .        .        .
21.21     1.2611     0.38  .Q        .        .        .        .
21.36     1.2656     0.37  .Q        .        .        .        .
21.50     1.2700     0.37  .Q        .        .        .        .
21.65     1.2744     0.36  .Q        .        .        .        .
21.79     1.2786     0.35  .Q        .        .        .        .
21.94     1.2828     0.35  .Q        .        .        .        .
22.08     1.2870     0.34  .Q        .        .        .        .
22.23     1.2911     0.34  .Q        .        .        .        .
22.37     1.2951     0.34  .Q        .        .        .        .
22.52     1.2991     0.33  .Q        .        .        .        .
22.66     1.3031     0.33  .Q        .        .        .        .
22.81     1.3069     0.32  .Q        .        .        .        .
22.95     1.3108     0.32  .Q        .        .        .        .
```

```
  23.10      1.3146      0.32  .Q        .         .         .         .
  23.24      1.3183      0.31  .Q        .         .         .         .
  23.39      1.3220      0.31  .Q        .         .         .         .
  23.53      1.3257      0.30  .Q        .         .         .         .
  23.68      1.3293      0.30  .Q        .         .         .         .
  23.82      1.3329      0.30  .Q        .         .         .         .
  23.97      1.3365      0.29  .Q        .         .         .         .
  24.11      1.3400      0.29  .Q        .         .         .         .
  24.26      1.3417      0.00  Q         .         .         .         .
 ----------------------------------------------------------------------------
----------------------------------------------------------------------------
    TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
    (Note: 100% of Peak Flow Rate estimate assumed to have
    an instantaneous time duration)

    Percentile of Estimated                Duration
        Peak Flow Rate                     (minutes)
    ======================                 =========
               0%                           1442.5
              10%                            234.6
              20%                             60.8
              30%                             26.1
              40%                             17.4
              50%                              8.7
              60%                              8.7
              70%                              8.7
              80%                              8.7
              90%                              8.7
```

Appendix I.III

Synthetic Unit Hydrograph Method Analysis
Pre-Development Conditions
100-Year Storm

```
******************************************************************************
                     SMALL AREA UNIT HYDROGRAPH MODEL
==============================================================================
         (C) Copyright 1989-2016 Advanced Engineering Software (aes)
             Ver. 23.0  Release Date: 07/01/2016  License ID 1499

                              Analysis prepared by:




******************************************************************************
------------------------------------------------------------------------------

 Problem Descriptions:
  2175 S WILLOW
  UNIT HYDROGRAPH
  PRE-DEVELOPMENT CONDITIONS, 100-YEAR, DA A
------------------------------------------------------------------------------


    RATIONAL METHOD CALIBRATION COEFFICIENT = 1.14
    TOTAL CATCHMENT AREA(ACRES) =    4.04
    SOIL-LOSS RATE, Fm,(INCH/HR) =  0.000
    LOW LOSS FRACTION = 0.043
    TIME OF CONCENTRATION(MIN.) =  8.69
    SMALL AREA PEAK Q COMPUTED USING PEAK FLOW RATE FORMULA
    USER SPECIFIED RAINFALL VALUES ARE USED
    RETURN FREQUENCY(YEARS) = 100
       5-MINUTE POINT RAINFALL VALUE(INCHES) =  0.34
      30-MINUTE POINT RAINFALL VALUE(INCHES) =  0.88
       1-HOUR   POINT RAINFALL VALUE(INCHES) =  1.27
       3-HOUR   POINT RAINFALL VALUE(INCHES) =  2.17
       6-HOUR   POINT RAINFALL VALUE(INCHES) =  3.02
      24-HOUR   POINT RAINFALL VALUE(INCHES) =  5.52

------------------------------------------------------------------------------

    TOTAL CATCHMENT   RUNOFF  VOLUME(ACRE-FEET) =     2.09
    TOTAL CATCHMENT SOIL-LOSS VOLUME(ACRE-FEET) =    -0.24

******************************************************************************
  TIME     VOLUME       Q    0.        5.0      10.0      15.0      20.0
 (HOURS)    (AF)      (CFS)
------------------------------------------------------------------------------
  0.07      0.0000      0.00  Q         .         .         .         .
  0.21      0.0028      0.46  Q         .         .         .         .
  0.36      0.0083      0.46  Q         .         .         .         .
  0.50      0.0138      0.47  Q         .         .         .         .
  0.65      0.0194      0.47  Q         .         .         .         .
  0.79      0.0250      0.47  Q         .         .         .         .
  0.94      0.0307      0.47  Q         .         .         .         .
  1.08      0.0364      0.48  Q         .         .         .         .
  1.23      0.0421      0.48  Q         .         .         .         .
  1.37      0.0478      0.48  Q         .         .         .         .
  1.52      0.0536      0.48  Q         .         .         .         .
  1.66      0.0594      0.49  Q         .         .         .         .
  1.81      0.0652      0.49  Q         .         .         .         .
  1.95      0.0711      0.49  Q         .         .         .         .
  2.10      0.0770      0.49  Q         .         .         .         .
  2.24      0.0829      0.50  Q         .         .         .         .
  2.39      0.0889      0.50  .Q        .         .         .         .
  2.53      0.0949      0.50  .Q        .         .         .         .
  2.68      0.1010      0.51  .Q        .         .         .         .
  2.82      0.1070      0.51  .Q        .         .         .         .
  2.97      0.1132      0.51  .Q        .         .         .         .
```

3.11	0.1193	0.52	.Q	.	.	.	.
3.25	0.1255	0.52	.Q	.	.	.	.
3.40	0.1318	0.52	.Q	.	.	.	.
3.54	0.1380	0.53	.Q	.	.	.	.
3.69	0.1444	0.53	.Q	.	.	.	.
3.83	0.1507	0.53	.Q	.	.	.	.
3.98	0.1571	0.54	.Q	.	.	.	.
4.12	0.1636	0.54	.Q	.	.	.	.
4.27	0.1700	0.54	.Q	.	.	.	.
4.41	0.1766	0.55	.Q	.	.	.	.
4.56	0.1832	0.55	.Q	.	.	.	.
4.70	0.1898	0.55	.Q	.	.	.	.
4.85	0.1965	0.56	.Q	.	.	.	.
4.99	0.2032	0.56	.Q	.	.	.	.
5.14	0.2100	0.57	.Q	.	.	.	.
5.28	0.2168	0.57	.Q	.	.	.	.
5.43	0.2237	0.58	.Q	.	.	.	.
5.57	0.2306	0.58	.Q	.	.	.	.
5.72	0.2376	0.59	.Q	.	.	.	.
5.86	0.2446	0.59	.Q	.	.	.	.
6.01	0.2517	0.60	.Q	.	.	.	.
6.15	0.2588	0.60	.Q	.	.	.	.
6.30	0.2661	0.61	.Q	.	.	.	.
6.44	0.2733	0.61	.Q	.	.	.	.
6.59	0.2807	0.62	.Q	.	.	.	.
6.73	0.2880	0.62	.Q	.	.	.	.
6.88	0.2955	0.63	.Q	.	.	.	.
7.02	0.3030	0.63	.Q	.	.	.	.
7.17	0.3106	0.64	.Q	.	.	.	.
7.31	0.3183	0.64	.Q	.	.	.	.
7.45	0.3260	0.65	.Q	.	.	.	.
7.60	0.3338	0.65	.Q	.	.	.	.
7.74	0.3417	0.66	.Q	.	.	.	.
7.89	0.3497	0.67	.Q	.	.	.	.
8.03	0.3577	0.68	.Q	.	.	.	.
8.18	0.3658	0.68	.Q	.	.	.	.
8.32	0.3741	0.69	.Q	.	.	.	.
8.47	0.3823	0.70	.Q	.	.	.	.
8.61	0.3907	0.71	.Q	.	.	.	.
8.76	0.3992	0.71	.Q	.	.	.	.
8.90	0.4078	0.72	.Q	.	.	.	.
9.05	0.4164	0.73	.Q	.	.	.	.
9.19	0.4252	0.74	.Q	.	.	.	.
9.34	0.4341	0.74	.Q	.	.	.	.
9.48	0.4431	0.76	.Q	.	.	.	.
9.63	0.4521	0.76	.Q	.	.	.	.
9.77	0.4614	0.78	.Q	.	.	.	.
9.92	0.4707	0.78	.Q	.	.	.	.
10.06	0.4801	0.80	.Q	.	.	.	.
10.21	0.4897	0.80	.Q	.	.	.	.
10.35	0.4994	0.82	.Q	.	.	.	.
10.50	0.5093	0.83	.Q	.	.	.	.
10.64	0.5193	0.84	.Q	.	.	.	.
10.79	0.5294	0.85	.Q	.	.	.	.
10.93	0.5397	0.87	.Q	.	.	.	.
11.08	0.5502	0.88	.Q	.	.	.	.
11.22	0.5608	0.90	.Q	.	.	.	.
11.37	0.5716	0.91	.Q	.	.	.	.
11.51	0.5826	0.93	.Q	.	.	.	.
11.65	0.5938	0.94	.Q	.	.	.	.
11.80	0.6052	0.97	.Q	.	.	.	.
11.94	0.6169	0.98	.Q	.	.	.	.
12.09	0.6290	1.05	. Q	.	.	.	.
12.23	0.6419	1.11	. Q	.	.	.	.
12.38	0.6554	1.14	. Q	.	.	.	.
12.52	0.6692	1.16	. Q	.	.	.	.
12.67	0.6833	1.19	. Q	.	.	.	.
12.81	0.6977	1.21	. Q	.	.	.	.
12.96	0.7124	1.25	. Q	.	.	.	.

```
13.10     0.7275     1.27  . Q       .         .         .         .
13.25     0.7430     1.32  . Q       .         .         .         .
13.39     0.7589     1.34  . Q       .         .         .         .
13.54     0.7752     1.39  . Q       .         .         .         .
13.68     0.7921     1.42  . Q       .         .         .         .
13.83     0.8094     1.48  . Q       .         .         .         .
13.97     0.8274     1.52  .  Q      .         .         .         .
14.12     0.8461     1.62  .  Q      .         .         .         .
14.26     0.8658     1.67  .  Q      .         .         .         .
14.41     0.8863     1.76  .  Q      .         .         .         .
14.55     0.9078     1.82  .  Q      .         .         .         .
14.70     0.9303     1.94  .  Q      .         .         .         .
14.84     0.9540     2.02  .   Q     .         .         .         .
14.99     0.9792     2.19  .   Q     .         .         .         .
15.13     1.0060     2.29  .   Q     .         .         .         .
15.28     1.0350     2.56  .    Q    .         .         .         .
15.42     1.0666     2.73  .    Q    .         .         .         .
15.57     1.1035     3.44  .     Q   .         .         .         .
15.71     1.1467     3.78  .      Q  .         .         .         .
15.86     1.1993     5.01  .         Q         .         .         .
16.00     1.2677     6.42  .         . Q       .         .         .
16.14     1.3926    14.44  .         .         .         .       Q .
16.29     1.5045     4.26  .       Q .         .         .         .
16.43     1.5489     3.15  .     Q   .         .         .         .
16.58     1.5822     2.41  .   Q     .         .         .         .
16.72     1.6092     2.10  .   Q     .         .         .         .
16.87     1.6330     1.88  .  Q      .         .         .         .
17.01     1.6545     1.72  .  Q      .         .         .         .
17.16     1.6741     1.55  .  Q      .         .         .         .
17.30     1.6920     1.45  . Q       .         .         .         .
17.45     1.7089     1.36  . Q       .         .         .         .
17.59     1.7248     1.29  . Q       .         .         .         .
17.74     1.7399     1.23  . Q       .         .         .         .
17.88     1.7543     1.18  . Q       .         .         .         .
18.03     1.7681     1.13  . Q       .         .         .         .
18.17     1.7808     0.99  .Q        .         .         .         .
18.32     1.7924     0.95  .Q        .         .         .         .
18.46     1.8036     0.92  .Q        .         .         .         .
18.61     1.8144     0.89  .Q        .         .         .         .
18.75     1.8249     0.86  .Q        .         .         .         .
18.90     1.8351     0.83  .Q        .         .         .         .
19.04     1.8449     0.81  .Q        .         .         .         .
19.19     1.8545     0.79  .Q        .         .         .         .
19.33     1.8638     0.77  .Q        .         .         .         .
19.48     1.8729     0.75  .Q        .         .         .         .
19.62     1.8818     0.73  .Q        .         .         .         .
19.77     1.8905     0.72  .Q        .         .         .         .
19.91     1.8989     0.70  .Q        .         .         .         .
20.06     1.9072     0.69  .Q        .         .         .         .
20.20     1.9153     0.67  .Q        .         .         .         .
20.34     1.9233     0.66  .Q        .         .         .         .
20.49     1.9311     0.65  .Q        .         .         .         .
20.63     1.9388     0.63  .Q        .         .         .         .
20.78     1.9463     0.62  .Q        .         .         .         .
20.92     1.9537     0.61  .Q        .         .         .         .
21.07     1.9610     0.60  .Q        .         .         .         .
21.21     1.9681     0.59  .Q        .         .         .         .
21.36     1.9752     0.58  .Q        .         .         .         .
21.50     1.9821     0.57  .Q        .         .         .         .
21.65     1.9889     0.57  .Q        .         .         .         .
21.79     1.9956     0.56  .Q        .         .         .         .
21.94     2.0023     0.55  .Q        .         .         .         .
22.08     2.0088     0.54  .Q        .         .         .         .
22.23     2.0152     0.53  .Q        .         .         .         .
22.37     2.0216     0.53  .Q        .         .         .         .
22.52     2.0279     0.52  .Q        .         .         .         .
22.66     2.0341     0.51  .Q        .         .         .         .
22.81     2.0402     0.51  .Q        .         .         .         .
22.95     2.0462     0.50  .Q        .         .         .         .
```

23.10	2.0522	0.50	Q	.	.	.	.
23.24	2.0581	0.49	Q	.	.	.	.
23.39	2.0640	0.48	Q	.	.	.	.
23.53	2.0697	0.48	Q	.	.	.	.
23.68	2.0754	0.47	Q	.	.	.	.
23.82	2.0811	0.47	Q	.	.	.	.
23.97	2.0867	0.46	Q	.	.	.	.
24.11	2.0922	0.46	Q	.	.	.	.
24.26	2.0949	0.00	Q	.	.	.	.

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
(Note: 100% of Peak Flow Rate estimate assumed to have
an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1442.5
10%	217.2
20%	60.8
30%	26.1
40%	17.4
50%	8.7
60%	8.7
70%	8.7
80%	8.7
90%	8.7

Appendix I.IV

Synthetic Unit Hydrograph Method Analysis
Post-Development Conditions
2-Year Storm

```
******************************************************************************
                     SMALL AREA UNIT HYDROGRAPH MODEL
==============================================================================
         (C) Copyright 1989-2016 Advanced Engineering Software (aes)
             Ver. 23.0  Release Date: 07/01/2016  License ID 1499

                           Analysis prepared by:




******************************************************************************
------------------------------------------------------------------------------

 Problem Descriptions:
  2175 S WILLOW
  UNIT HYDROGRAPH
  POST DEVELOPMENT CONDITIONS
------------------------------------------------------------------------------


    RATIONAL METHOD CALIBRATION COEFFICIENT = 1.18
    TOTAL CATCHMENT AREA(ACRES) =    4.04
    SOIL-LOSS RATE, Fm,(INCH/HR) =  0.130
    LOW LOSS FRACTION = 0.211
    TIME OF CONCENTRATION(MIN.) =  9.07
    SMALL AREA PEAK Q COMPUTED USING PEAK FLOW RATE FORMULA
    USER SPECIFIED RAINFALL VALUES ARE USED
    RETURN FREQUENCY(YEARS) =   2
       5-MINUTE POINT RAINFALL VALUE(INCHES) =  0.14
      30-MINUTE POINT RAINFALL VALUE(INCHES) =  0.36
       1-HOUR   POINT RAINFALL VALUE(INCHES) =  0.52
       3-HOUR   POINT RAINFALL VALUE(INCHES) =  0.93
       6-HOUR   POINT RAINFALL VALUE(INCHES) =  1.30
      24-HOUR   POINT RAINFALL VALUE(INCHES) =  2.35

------------------------------------------------------------------------------

    TOTAL CATCHMENT   RUNOFF  VOLUME(ACRE-FEET) =     0.74
    TOTAL CATCHMENT SOIL-LOSS VOLUME(ACRE-FEET) =     0.05

******************************************************************************
  TIME     VOLUME       Q    0.        2.5       5.0       7.5      10.0
 (HOURS)    (AF)      (CFS)
------------------------------------------------------------------------------
  0.13      0.0008      0.16  Q         .         .         .         .
  0.28      0.0028      0.16  Q         .         .         .         .
  0.43      0.0048      0.16  Q         .         .         .         .
  0.58      0.0068      0.16  Q         .         .         .         .
  0.73      0.0088      0.16  Q         .         .         .         .
  0.88      0.0108      0.16  Q         .         .         .         .
  1.03      0.0128      0.16  Q         .         .         .         .
  1.19      0.0149      0.16  Q         .         .         .         .
  1.34      0.0169      0.17  Q         .         .         .         .
  1.49      0.0190      0.17  Q         .         .         .         .
  1.64      0.0211      0.17  Q         .         .         .         .
  1.79      0.0232      0.17  Q         .         .         .         .
  1.94      0.0253      0.17  Q         .         .         .         .
  2.09      0.0274      0.17  Q         .         .         .         .
  2.24      0.0295      0.17  Q         .         .         .         .
  2.40      0.0317      0.17  Q         .         .         .         .
  2.55      0.0338      0.17  Q         .         .         .         .
  2.70      0.0360      0.17  Q         .         .         .         .
  2.85      0.0382      0.18  Q         .         .         .         .
  3.00      0.0404      0.18  Q         .         .         .         .
  3.15      0.0426      0.18  Q         .         .         .         .
```

3.30	0.0448	0.18	Q	.	.	.	.
3.45	0.0471	0.18	Q	.	.	.	.
3.60	0.0493	0.18	Q	.	.	.	.
3.76	0.0516	0.18	Q	.	.	.	.
3.91	0.0539	0.18	Q	.	.	.	.
4.06	0.0562	0.19	Q	.	.	.	.
4.21	0.0585	0.19	Q	.	.	.	.
4.36	0.0609	0.19	Q	.	.	.	.
4.51	0.0632	0.19	Q	.	.	.	.
4.66	0.0656	0.19	Q	.	.	.	.
4.81	0.0680	0.19	Q	.	.	.	.
4.96	0.0704	0.19	Q	.	.	.	.
5.12	0.0728	0.20	Q	.	.	.	.
5.27	0.0753	0.20	Q	.	.	.	.
5.42	0.0777	0.20	Q	.	.	.	.
5.57	0.0802	0.20	Q	.	.	.	.
5.72	0.0827	0.20	Q	.	.	.	.
5.87	0.0853	0.20	Q	.	.	.	.
6.02	0.0878	0.20	Q	.	.	.	.
6.17	0.0904	0.21	Q	.	.	.	.
6.33	0.0930	0.21	Q	.	.	.	.
6.48	0.0956	0.21	Q	.	.	.	.
6.63	0.0982	0.21	Q	.	.	.	.
6.78	0.1009	0.21	Q	.	.	.	.
6.93	0.1036	0.22	Q	.	.	.	.
7.08	0.1063	0.22	Q	.	.	.	.
7.23	0.1091	0.22	Q	.	.	.	.
7.38	0.1118	0.22	Q	.	.	.	.
7.53	0.1146	0.22	Q	.	.	.	.
7.69	0.1175	0.23	Q	.	.	.	.
7.84	0.1203	0.23	Q	.	.	.	.
7.99	0.1232	0.23	Q	.	.	.	.
8.14	0.1261	0.23	Q	.	.	.	.
8.29	0.1291	0.24	Q	.	.	.	.
8.44	0.1320	0.24	Q	.	.	.	.
8.59	0.1351	0.24	Q	.	.	.	.
8.74	0.1381	0.25	Q	.	.	.	.
8.90	0.1412	0.25	Q	.	.	.	.
9.05	0.1443	0.25	.Q	.	.	.	.
9.20	0.1475	0.26	.Q	.	.	.	.
9.35	0.1507	0.26	.Q	.	.	.	.
9.50	0.1539	0.26	.Q	.	.	.	.
9.65	0.1572	0.26	.Q	.	.	.	.
9.80	0.1605	0.27	.Q	.	.	.	.
9.95	0.1639	0.27	.Q	.	.	.	.
10.10	0.1673	0.28	.Q	.	.	.	.
10.26	0.1708	0.28	.Q	.	.	.	.
10.41	0.1743	0.28	.Q	.	.	.	.
10.56	0.1779	0.29	.Q	.	.	.	.
10.71	0.1815	0.29	.Q	.	.	.	.
10.86	0.1852	0.30	.Q	.	.	.	.
11.01	0.1890	0.30	.Q	.	.	.	.
11.16	0.1928	0.31	.Q	.	.	.	.
11.31	0.1967	0.31	.Q	.	.	.	.
11.47	0.2007	0.32	.Q	.	.	.	.
11.62	0.2047	0.33	.Q	.	.	.	.
11.77	0.2088	0.33	.Q	.	.	.	.
11.92	0.2130	0.34	.Q	.	.	.	.
12.07	0.2173	0.34	.Q	.	.	.	.
12.22	0.2219	0.40	.Q	.	.	.	.
12.37	0.2270	0.41	.Q	.	.	.	.
12.52	0.2322	0.42	.Q	.	.	.	.
12.67	0.2375	0.43	.Q	.	.	.	.
12.83	0.2429	0.44	.Q	.	.	.	.
12.98	0.2484	0.45	.Q	.	.	.	.
13.13	0.2541	0.46	.Q	.	.	.	.
13.28	0.2600	0.47	.Q	.	.	.	.
13.43	0.2659	0.49	.Q	.	.	.	.
13.58	0.2721	0.50	.Q	.	.	.	.

```
13.73     0.2785     0.52  . Q       .         .         .         .
13.88     0.2850     0.53  . Q       .         .         .         .
14.03     0.2919     0.56  . Q       .         .         .         .
14.19     0.2991     0.61  . Q       .         .         .         .
14.34     0.3070     0.65  . Q       .         .         .         .
14.49     0.3153     0.67  . Q       .         .         .         .
14.64     0.3239     0.71  . Q       .         .         .         .
14.79     0.3329     0.74  . Q       .         .         .         .
14.94     0.3425     0.79  .  Q      .         .         .         .
15.09     0.3526     0.83  .  Q      .         .         .         .
15.24     0.3635     0.92  .  Q      .         .         .         .
15.40     0.3753     0.97  .  Q      .         .         .         .
15.55     0.3885     1.14  .   Q     .         .         .         .
15.70     0.4035     1.26  .    Q    .         .         .         .
15.85     0.4217     1.65  .     Q   .         .         .         .
16.00     0.4452     2.12  .       Q .         .         .         .
16.15     0.4922     5.41  .         .         .Q        .         .
16.30     0.5348     1.41  .    Q    .         .         .         .
16.45     0.5502     1.05  .   Q     .         .         .         .
16.60     0.5621     0.87  .  Q      .         .         .         .
16.76     0.5723     0.76  .  Q      .         .         .         .
16.91     0.5814     0.69  . Q       .         .         .         .
17.06     0.5897     0.63  . Q       .         .         .         .
17.21     0.5970     0.54  . Q       .         .         .         .
17.36     0.6036     0.51  . Q       .         .         .         .
17.51     0.6098     0.48  .Q        .         .         .         .
17.66     0.6156     0.45  .Q        .         .         .         .
17.81     0.6212     0.43  .Q        .         .         .         .
17.97     0.6265     0.41  .Q        .         .         .         .
18.12     0.6314     0.38  .Q        .         .         .         .
18.27     0.6359     0.34  .Q        .         .         .         .
18.42     0.6400     0.32  .Q        .         .         .         .
18.57     0.6440     0.31  .Q        .         .         .         .
18.72     0.6478     0.30  .Q        .         .         .         .
18.87     0.6515     0.29  .Q        .         .         .         .
19.02     0.6551     0.28  .Q        .         .         .         .
19.17     0.6586     0.27  .Q        .         .         .         .
19.33     0.6619     0.27  .Q        .         .         .         .
19.48     0.6652     0.26  .Q        .         .         .         .
19.63     0.6684     0.25  .Q        .         .         .         .
19.78     0.6716     0.25  Q         .         .         .         .
19.93     0.6746     0.24  Q         .         .         .         .
20.08     0.6776     0.24  Q         .         .         .         .
20.23     0.6805     0.23  Q         .         .         .         .
20.38     0.6834     0.23  Q         .         .         .         .
20.53     0.6862     0.22  Q         .         .         .         .
20.69     0.6889     0.22  Q         .         .         .         .
20.84     0.6916     0.21  Q         .         .         .         .
20.99     0.6942     0.21  Q         .         .         .         .
21.14     0.6968     0.21  Q         .         .         .         .
21.29     0.6994     0.20  Q         .         .         .         .
21.44     0.7019     0.20  Q         .         .         .         .
21.59     0.7044     0.20  Q         .         .         .         .
21.74     0.7068     0.19  Q         .         .         .         .
21.90     0.7092     0.19  Q         .         .         .         .
22.05     0.7115     0.19  Q         .         .         .         .
22.20     0.7139     0.18  Q         .         .         .         .
22.35     0.7162     0.18  Q         .         .         .         .
22.50     0.7184     0.18  Q         .         .         .         .
22.65     0.7206     0.18  Q         .         .         .         .
22.80     0.7228     0.17  Q         .         .         .         .
22.95     0.7250     0.17  Q         .         .         .         .
23.10     0.7272     0.17  Q         .         .         .         .
23.26     0.7293     0.17  Q         .         .         .         .
23.41     0.7314     0.17  Q         .         .         .         .
23.56     0.7334     0.16  Q         .         .         .         .
23.71     0.7355     0.16  Q         .         .         .         .
23.86     0.7375     0.16  Q         .         .         .         .
24.01     0.7395     0.16  Q         .         .         .         .
```

```
  24.16      0.7405      0.00  Q         .         .         .         .
 ------------------------------------------------------------------------------
-------------------------------------------------------------------------------
    TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
    (Note: 100% of Peak Flow Rate estimate assumed to have
    an instantaneous time duration)

    Percentile of Estimated                Duration
        Peak Flow Rate                     (minutes)
    ======================                 =========
               0%                           1442.1
              10%                            199.5
              20%                             54.4
              30%                             27.2
              40%                              9.1
              50%                              9.1
              60%                              9.1
              70%                              9.1
              80%                              9.1
              90%                              9.1
```

Appendix I.V

Synthetic Unit Hydrograph Method Analysis
Post-Development Conditions
10-Year Storm

```
******************************************************************************
                     SMALL AREA UNIT HYDROGRAPH MODEL
==============================================================================
         (C) Copyright 1989-2016 Advanced Engineering Software (aes)
             Ver. 23.0  Release Date: 07/01/2016  License ID 1499

                           Analysis prepared by:




******************************************************************************
------------------------------------------------------------------------------

 Problem Descriptions:
  2175 S WILLOW
  UNIT HYDROGRAPH
  POST DEVELOPMENT CONDITIONS, 10-YEAR, DA A
------------------------------------------------------------------------------


    RATIONAL METHOD CALIBRATION COEFFICIENT = 1.18
    TOTAL CATCHMENT AREA(ACRES) =    4.04
    SOIL-LOSS RATE, Fm,(INCH/HR) =  0.123
    LOW LOSS FRACTION = 0.183
    TIME OF CONCENTRATION(MIN.) =  9.07
    SMALL AREA PEAK Q COMPUTED USING PEAK FLOW RATE FORMULA
    USER SPECIFIED RAINFALL VALUES ARE USED
    RETURN FREQUENCY(YEARS) =  10
       5-MINUTE POINT RAINFALL VALUE(INCHES) =  0.22
      30-MINUTE POINT RAINFALL VALUE(INCHES) =  0.56
       1-HOUR   POINT RAINFALL VALUE(INCHES) =  0.81
       3-HOUR   POINT RAINFALL VALUE(INCHES) =  1.41
       6-HOUR   POINT RAINFALL VALUE(INCHES) =  1.98
      24-HOUR   POINT RAINFALL VALUE(INCHES) =  3.60

------------------------------------------------------------------------------

    TOTAL CATCHMENT   RUNOFF  VOLUME(ACRE-FEET) =     1.18
    TOTAL CATCHMENT SOIL-LOSS VOLUME(ACRE-FEET) =     0.03

******************************************************************************
  TIME     VOLUME       Q    0.        2.5       5.0       7.5      10.0
 (HOURS)    (AF)      (CFS)
------------------------------------------------------------------------------
  0.13      0.0013      0.25  .Q        .         .         .         .
  0.28      0.0045      0.25  .Q        .         .         .         .
  0.43      0.0077      0.26  .Q        .         .         .         .
  0.58      0.0109      0.26  .Q        .         .         .         .
  0.73      0.0141      0.26  .Q        .         .         .         .
  0.88      0.0173      0.26  .Q        .         .         .         .
  1.03      0.0206      0.26  .Q        .         .         .         .
  1.19      0.0238      0.26  .Q        .         .         .         .
  1.34      0.0271      0.26  .Q        .         .         .         .
  1.49      0.0304      0.27  .Q        .         .         .         .
  1.64      0.0337      0.27  .Q        .         .         .         .
  1.79      0.0371      0.27  .Q        .         .         .         .
  1.94      0.0405      0.27  .Q        .         .         .         .
  2.09      0.0438      0.27  .Q        .         .         .         .
  2.24      0.0472      0.27  .Q        .         .         .         .
  2.40      0.0507      0.27  .Q        .         .         .         .
  2.55      0.0541      0.28  .Q        .         .         .         .
  2.70      0.0576      0.28  .Q        .         .         .         .
  2.85      0.0611      0.28  .Q        .         .         .         .
  3.00      0.0646      0.28  .Q        .         .         .         .
  3.15      0.0681      0.28  .Q        .         .         .         .
```

3.30	0.0717	0.29	.Q	.	.	.	.
3.45	0.0753	0.29	.Q	.	.	.	.
3.60	0.0789	0.29	.Q	.	.	.	.
3.76	0.0825	0.29	.Q	.	.	.	.
3.91	0.0862	0.29	.Q	.	.	.	.
4.06	0.0899	0.30	.Q	.	.	.	.
4.21	0.0936	0.30	.Q	.	.	.	.
4.36	0.0973	0.30	.Q	.	.	.	.
4.51	0.1011	0.30	.Q	.	.	.	.
4.66	0.1049	0.31	.Q	.	.	.	.
4.81	0.1087	0.31	.Q	.	.	.	.
4.96	0.1126	0.31	.Q	.	.	.	.
5.12	0.1165	0.31	.Q	.	.	.	.
5.27	0.1204	0.31	.Q	.	.	.	.
5.42	0.1243	0.32	.Q	.	.	.	.
5.57	0.1283	0.32	.Q	.	.	.	.
5.72	0.1323	0.32	.Q	.	.	.	.
5.87	0.1364	0.33	.Q	.	.	.	.
6.02	0.1404	0.33	.Q	.	.	.	.
6.17	0.1445	0.33	.Q	.	.	.	.
6.33	0.1487	0.33	.Q	.	.	.	.
6.48	0.1529	0.34	.Q	.	.	.	.
6.63	0.1571	0.34	.Q	.	.	.	.
6.78	0.1613	0.34	.Q	.	.	.	.
6.93	0.1656	0.35	.Q	.	.	.	.
7.08	0.1700	0.35	.Q	.	.	.	.
7.23	0.1744	0.35	.Q	.	.	.	.
7.38	0.1788	0.36	.Q	.	.	.	.
7.53	0.1833	0.36	.Q	.	.	.	.
7.69	0.1878	0.36	.Q	.	.	.	.
7.84	0.1923	0.37	.Q	.	.	.	.
7.99	0.1969	0.37	.Q	.	.	.	.
8.14	0.2016	0.37	.Q	.	.	.	.
8.29	0.2063	0.38	.Q	.	.	.	.
8.44	0.2111	0.38	.Q	.	.	.	.
8.59	0.2159	0.39	.Q	.	.	.	.
8.74	0.2207	0.39	.Q	.	.	.	.
8.90	0.2256	0.40	.Q	.	.	.	.
9.05	0.2306	0.40	.Q	.	.	.	.
9.20	0.2357	0.41	.Q	.	.	.	.
9.35	0.2408	0.41	.Q	.	.	.	.
9.50	0.2459	0.42	.Q	.	.	.	.
9.65	0.2512	0.42	.Q	.	.	.	.
9.80	0.2565	0.43	.Q	.	.	.	.
9.95	0.2619	0.43	.Q	.	.	.	.
10.10	0.2673	0.44	.Q	.	.	.	.
10.26	0.2729	0.45	.Q	.	.	.	.
10.41	0.2785	0.45	.Q	.	.	.	.
10.56	0.2842	0.46	.Q	.	.	.	.
10.71	0.2900	0.47	.Q	.	.	.	.
10.86	0.2959	0.47	.Q	.	.	.	.
11.01	0.3018	0.48	.Q	.	.	.	.
11.16	0.3079	0.49	.Q	.	.	.	.
11.31	0.3141	0.50	. Q	.	.	.	.
11.47	0.3204	0.51	. Q	.	.	.	.
11.62	0.3268	0.52	. Q	.	.	.	.
11.77	0.3334	0.53	. Q	.	.	.	.
11.92	0.3400	0.54	. Q	.	.	.	.
12.07	0.3468	0.55	. Q	.	.	.	.
12.22	0.3543	0.64	. Q	.	.	.	.
12.37	0.3623	0.65	. Q	.	.	.	.
12.52	0.3705	0.67	. Q	.	.	.	.
12.67	0.3789	0.68	. Q	.	.	.	.
12.83	0.3875	0.70	. Q	.	.	.	.
12.98	0.3963	0.71	. Q	.	.	.	.
13.13	0.4053	0.73	. Q	.	.	.	.
13.28	0.4146	0.75	. Q	.	.	.	.
13.43	0.4241	0.77	. Q	.	.	.	.
13.58	0.4339	0.79	. Q	.	.	.	.

```
13.73     0.4439     0.82  .  Q     .        .        .        .
13.88     0.4543     0.84  .  Q     .        .        .        .
14.03     0.4651     0.88  .  Q     .        .        .        .
14.19     0.4765     0.93  .  Q     .        .        .        .
14.34     0.4885     0.99  .  Q     .        .        .        .
14.49     0.5010     1.02  .   Q    .        .        .        .
14.64     0.5141     1.08  .   Q    .        .        .        .
14.79     0.5279     1.12  .   Q    .        .        .        .
14.94     0.5425     1.22  .   Q    .        .        .        .
15.09     0.5581     1.27  .    Q   .        .        .        .
15.24     0.5748     1.41  .    Q   .        .        .        .
15.40     0.5930     1.50  .     Q  .        .        .        .
15.55     0.6139     1.84  .      Q .        .        .        .
15.70     0.6380     2.02  .       Q.        .        .        .
15.85     0.6671     2.65  .        Q        .        .        .
16.00     0.7059     3.56  .         .  Q    .        .        .
16.15     0.7829     8.76  .         .       .        .    Q   .
16.30     0.8517     2.26  .        Q.       .        .        .
16.45     0.8763     1.66  .     Q   .       .        .        .
16.60     0.8950     1.34  .    Q    .       .        .        .
16.76     0.9107     1.17  .   Q     .       .        .        .
16.91     0.9245     1.05  .   Q     .       .        .        .
17.06     0.9371     0.96  .  Q      .       .        .        .
17.21     0.9485     0.86  .  Q      .       .        .        .
17.36     0.9589     0.81  .  Q      .       .        .        .
17.51     0.9687     0.76  .  Q      .       .        .        .
17.66     0.9779     0.72  . Q       .       .        .        .
17.81     0.9867     0.69  . Q       .       .        .        .
17.97     0.9951     0.66  . Q       .       .        .        .
18.12     1.0030     0.61  . Q       .       .        .        .
18.27     1.0102     0.53  . Q       .       .        .        .
18.42     1.0167     0.51  . Q       .       .        .        .
18.57     1.0230     0.50  .Q        .       .        .        .
18.72     1.0291     0.48  .Q        .       .        .        .
18.87     1.0350     0.46  .Q        .       .        .        .
19.02     1.0407     0.45  .Q        .       .        .        .
19.17     1.0462     0.44  .Q        .       .        .        .
19.33     1.0516     0.42  .Q        .       .        .        .
19.48     1.0569     0.41  .Q        .       .        .        .
19.63     1.0620     0.40  .Q        .       .        .        .
19.78     1.0669     0.39  .Q        .       .        .        .
19.93     1.0718     0.39  .Q        .       .        .        .
20.08     1.0766     0.38  .Q        .       .        .        .
20.23     1.0812     0.37  .Q        .       .        .        .
20.38     1.0858     0.36  .Q        .       .        .        .
20.53     1.0902     0.35  .Q        .       .        .        .
20.69     1.0946     0.35  .Q        .       .        .        .
20.84     1.0989     0.34  .Q        .       .        .        .
20.99     1.1031     0.33  .Q        .       .        .        .
21.14     1.1073     0.33  .Q        .       .        .        .
21.29     1.1114     0.32  .Q        .       .        .        .
21.44     1.1154     0.32  .Q        .       .        .        .
21.59     1.1193     0.31  .Q        .       .        .        .
21.74     1.1232     0.31  .Q        .       .        .        .
21.90     1.1270     0.30  .Q        .       .        .        .
22.05     1.1308     0.30  .Q        .       .        .        .
22.20     1.1345     0.30  .Q        .       .        .        .
22.35     1.1382     0.29  .Q        .       .        .        .
22.50     1.1418     0.29  .Q        .       .        .        .
22.65     1.1454     0.28  .Q        .       .        .        .
22.80     1.1489     0.28  .Q        .       .        .        .
22.95     1.1523     0.28  .Q        .       .        .        .
23.10     1.1558     0.27  .Q        .       .        .        .
23.26     1.1592     0.27  .Q        .       .        .        .
23.41     1.1625     0.27  .Q        .       .        .        .
23.56     1.1658     0.26  .Q        .       .        .        .
23.71     1.1691     0.26  .Q        .       .        .        .
23.86     1.1723     0.26  .Q        .       .        .        .
24.01     1.1755     0.25  .Q        .       .        .        .
```

```
  24.16      1.1771      0.00  Q         .         .         .         .
 ------------------------------------------------------------------------------
-------------------------------------------------------------------------------
    TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
    (Note: 100% of Peak Flow Rate estimate assumed to have
    an instantaneous time duration)

    Percentile of Estimated                Duration
        Peak Flow Rate                     (minutes)
    ======================                 =========
               0%                           1442.1
              10%                            190.5
              20%                             54.4
              30%                             27.2
              40%                             18.1
              50%                              9.1
              60%                              9.1
              70%                              9.1
              80%                              9.1
              90%                              9.1
```

Appendix I.VI

Synthetic Unit Hydrograph Method Analysis
Post-Development Conditions
100-Year Storm

```
******************************************************************************
                     SMALL AREA UNIT HYDROGRAPH MODEL
==============================================================================
         (C) Copyright 1989-2016 Advanced Engineering Software (aes)
             Ver. 23.0  Release Date: 07/01/2016  License ID 1499

                          Analysis prepared by:




******************************************************************************
------------------------------------------------------------------------------

 Problem Descriptions:
  2175 S WILLOW
  UNIT HYDROGRAPH
  POST DEVELOPMENT CONDITIONS, 100-YEAR, DA A
------------------------------------------------------------------------------


    RATIONAL METHOD CALIBRATION COEFFICIENT = 1.16
    TOTAL CATCHMENT AREA(ACRES) =    4.04
    SOIL-LOSS RATE, Fm,(INCH/HR) =  0.093
    LOW LOSS FRACTION = 0.140
    TIME OF CONCENTRATION(MIN.) =  9.07
    SMALL AREA PEAK Q COMPUTED USING PEAK FLOW RATE FORMULA
    USER SPECIFIED RAINFALL VALUES ARE USED
    RETURN FREQUENCY(YEARS) = 100
       5-MINUTE POINT RAINFALL VALUE(INCHES) =  0.34
      30-MINUTE POINT RAINFALL VALUE(INCHES) =  0.88
       1-HOUR   POINT RAINFALL VALUE(INCHES) =  1.27
       3-HOUR   POINT RAINFALL VALUE(INCHES) =  2.17
       6-HOUR   POINT RAINFALL VALUE(INCHES) =  3.02
      24-HOUR   POINT RAINFALL VALUE(INCHES) =  5.52

------------------------------------------------------------------------------

    TOTAL CATCHMENT   RUNOFF  VOLUME(ACRE-FEET) =     1.88
    TOTAL CATCHMENT SOIL-LOSS VOLUME(ACRE-FEET) =    -0.02

******************************************************************************
  TIME     VOLUME       Q    0.        5.0      10.0      15.0      20.0
 (HOURS)    (AF)      (CFS)
------------------------------------------------------------------------------
  0.13      0.0021      0.41  Q         .         .         .         .
  0.28      0.0072      0.41  Q         .         .         .         .
  0.43      0.0123      0.41  Q         .         .         .         .
  0.58      0.0174      0.41  Q         .         .         .         .
  0.73      0.0226      0.41  Q         .         .         .         .
  0.88      0.0278      0.42  Q         .         .         .         .
  1.03      0.0330      0.42  Q         .         .         .         .
  1.19      0.0382      0.42  Q         .         .         .         .
  1.34      0.0435      0.42  Q         .         .         .         .
  1.49      0.0488      0.43  Q         .         .         .         .
  1.64      0.0541      0.43  Q         .         .         .         .
  1.79      0.0595      0.43  Q         .         .         .         .
  1.94      0.0649      0.43  Q         .         .         .         .
  2.09      0.0703      0.44  Q         .         .         .         .
  2.24      0.0758      0.44  Q         .         .         .         .
  2.40      0.0813      0.44  Q         .         .         .         .
  2.55      0.0868      0.44  Q         .         .         .         .
  2.70      0.0924      0.45  Q         .         .         .         .
  2.85      0.0980      0.45  Q         .         .         .         .
  3.00      0.1037      0.45  Q         .         .         .         .
  3.15      0.1093      0.46  Q         .         .         .         .
```

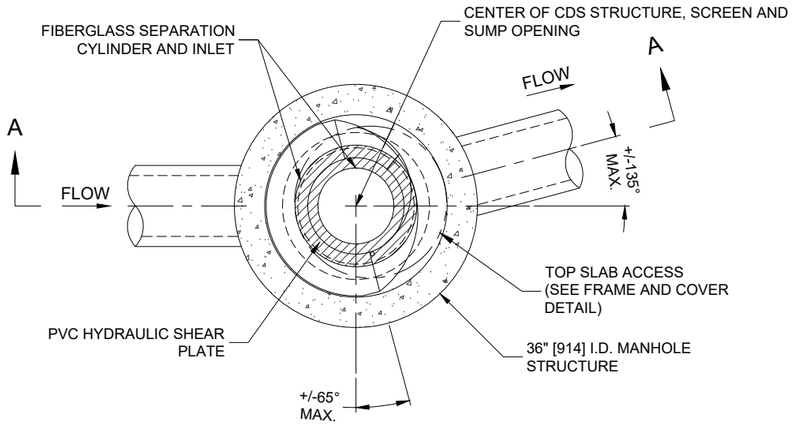
3.30	0.1150	0.46	Q	.	.	.	.
3.45	0.1208	0.46	Q	.	.	.	.
3.60	0.1266	0.46	Q	.	.	.	.
3.76	0.1324	0.47	Q	.	.	.	.
3.91	0.1383	0.47	Q	.	.	.	.
4.06	0.1442	0.48	Q	.	.	.	.
4.21	0.1501	0.48	Q	.	.	.	.
4.36	0.1561	0.48	Q	.	.	.	.
4.51	0.1622	0.48	Q	.	.	.	.
4.66	0.1683	0.49	Q	.	.	.	.
4.81	0.1744	0.49	Q	.	.	.	.
4.96	0.1806	0.50	Q	.	.	.	.
5.12	0.1868	0.50	Q	.	.	.	.
5.27	0.1931	0.50	.Q	.	.	.	.
5.42	0.1994	0.51	.Q	.	.	.	.
5.57	0.2058	0.51	.Q	.	.	.	.
5.72	0.2122	0.52	.Q	.	.	.	.
5.87	0.2187	0.52	.Q	.	.	.	.
6.02	0.2252	0.52	.Q	.	.	.	.
6.17	0.2318	0.53	.Q	.	.	.	.
6.33	0.2384	0.53	.Q	.	.	.	.
6.48	0.2451	0.54	.Q	.	.	.	.
6.63	0.2519	0.54	.Q	.	.	.	.
6.78	0.2587	0.55	.Q	.	.	.	.
6.93	0.2656	0.55	.Q	.	.	.	.
7.08	0.2726	0.56	.Q	.	.	.	.
7.23	0.2796	0.56	.Q	.	.	.	.
7.38	0.2867	0.57	.Q	.	.	.	.
7.53	0.2938	0.57	.Q	.	.	.	.
7.69	0.3010	0.58	.Q	.	.	.	.
7.84	0.3083	0.59	.Q	.	.	.	.
7.99	0.3157	0.59	.Q	.	.	.	.
8.14	0.3232	0.60	.Q	.	.	.	.
8.29	0.3307	0.61	.Q	.	.	.	.
8.44	0.3383	0.61	.Q	.	.	.	.
8.59	0.3460	0.62	.Q	.	.	.	.
8.74	0.3538	0.63	.Q	.	.	.	.
8.90	0.3617	0.64	.Q	.	.	.	.
9.05	0.3696	0.64	.Q	.	.	.	.
9.20	0.3777	0.65	.Q	.	.	.	.
9.35	0.3859	0.66	.Q	.	.	.	.
9.50	0.3941	0.67	.Q	.	.	.	.
9.65	0.4025	0.67	.Q	.	.	.	.
9.80	0.4110	0.69	.Q	.	.	.	.
9.95	0.4196	0.69	.Q	.	.	.	.
10.10	0.4283	0.70	.Q	.	.	.	.
10.26	0.4372	0.71	.Q	.	.	.	.
10.41	0.4462	0.73	.Q	.	.	.	.
10.56	0.4553	0.73	.Q	.	.	.	.
10.71	0.4645	0.75	.Q	.	.	.	.
10.86	0.4739	0.76	.Q	.	.	.	.
11.01	0.4835	0.77	.Q	.	.	.	.
11.16	0.4932	0.78	.Q	.	.	.	.
11.31	0.5031	0.80	.Q	.	.	.	.
11.47	0.5132	0.81	.Q	.	.	.	.
11.62	0.5234	0.83	.Q	.	.	.	.
11.77	0.5339	0.84	.Q	.	.	.	.
11.92	0.5445	0.86	.Q	.	.	.	.
12.07	0.5554	0.88	.Q	.	.	.	.
12.22	0.5670	0.99	.Q	.	.	.	.
12.37	0.5794	1.00	. Q	.	.	.	.
12.52	0.5921	1.03	. Q	.	.	.	.
12.67	0.6051	1.05	. Q	.	.	.	.
12.83	0.6183	1.08	. Q	.	.	.	.
12.98	0.6319	1.10	. Q	.	.	.	.
13.13	0.6459	1.13	. Q	.	.	.	.
13.28	0.6602	1.16	. Q	.	.	.	.
13.43	0.6749	1.20	. Q	.	.	.	.
13.58	0.6900	1.22	. Q	.	.	.	.

```
13.73     0.7056     1.28  . Q       .         .         .         .
13.88     0.7218     1.31  . Q       .         .         .         .
14.03     0.7385     1.37  . Q       .         .         .         .
14.19     0.7561     1.44  . Q       .         .         .         .
14.34     0.7745     1.52  .  Q      .         .         .         .
14.49     0.7939     1.57  .  Q      .         .         .         .
14.64     0.8141     1.68  .  Q      .         .         .         .
14.79     0.8355     1.74  .  Q      .         .         .         .
14.94     0.8581     1.89  .  Q      .         .         .         .
15.09     0.8823     1.98  .  Q      .         .         .         .
15.24     0.9084     2.20  .   Q     .         .         .         .
15.40     0.9369     2.35  .   Q     .         .         .         .
15.55     0.9704     3.02  .     Q   .         .         .         .
15.70     1.0102     3.36  .     Q   .         .         .         .
15.85     1.0599     4.60  .        Q.         .         .         .
16.00     1.1262     6.02  .         . Q       .         .         .
16.15     1.2518    14.08  .         .         .       Q .         .
16.30     1.3638     3.84  .      Q  .         .         .         .
16.45     1.4044     2.66  .    Q    .         .         .         .
16.60     1.4340     2.08  .   Q     .         .         .         .
16.76     1.4583     1.81  .  Q      .         .         .         .
16.91     1.4798     1.62  .  Q      .         .         .         .
17.06     1.4991     1.48  . Q       .         .         .         .
17.21     1.5167     1.34  . Q       .         .         .         .
17.36     1.5329     1.25  . Q       .         .         .         .
17.51     1.5481     1.18  . Q       .         .         .         .
17.66     1.5624     1.11  . Q       .         .         .         .
17.81     1.5760     1.06  . Q       .         .         .         .
17.97     1.5889     1.01  . Q       .         .         .         .
18.12     1.6012     0.95  .Q        .         .         .         .
18.27     1.6124     0.85  .Q        .         .         .         .
18.42     1.6229     0.82  .Q        .         .         .         .
18.57     1.6330     0.79  .Q        .         .         .         .
18.72     1.6427     0.76  .Q        .         .         .         .
18.87     1.6521     0.74  .Q        .         .         .         .
19.02     1.6612     0.72  .Q        .         .         .         .
19.17     1.6701     0.70  .Q        .         .         .         .
19.33     1.6787     0.68  .Q        .         .         .         .
19.48     1.6870     0.66  .Q        .         .         .         .
19.63     1.6952     0.65  .Q        .         .         .         .
19.78     1.7032     0.63  .Q        .         .         .         .
19.93     1.7110     0.62  .Q        .         .         .         .
20.08     1.7186     0.60  .Q        .         .         .         .
20.23     1.7260     0.59  .Q        .         .         .         .
20.38     1.7333     0.58  .Q        .         .         .         .
20.53     1.7405     0.57  .Q        .         .         .         .
20.69     1.7475     0.56  .Q        .         .         .         .
20.84     1.7544     0.55  .Q        .         .         .         .
20.99     1.7612     0.54  .Q        .         .         .         .
21.14     1.7678     0.53  .Q        .         .         .         .
21.29     1.7743     0.52  .Q        .         .         .         .
21.44     1.7808     0.51  .Q        .         .         .         .
21.59     1.7871     0.50  .Q        .         .         .         .
21.74     1.7933     0.49  Q         .         .         .         .
21.90     1.7994     0.49  Q         .         .         .         .
22.05     1.8055     0.48  Q         .         .         .         .
22.20     1.8114     0.47  Q         .         .         .         .
22.35     1.8173     0.47  Q         .         .         .         .
22.50     1.8231     0.46  Q         .         .         .         .
22.65     1.8288     0.45  Q         .         .         .         .
22.80     1.8344     0.45  Q         .         .         .         .
22.95     1.8400     0.44  Q         .         .         .         .
23.10     1.8455     0.44  Q         .         .         .         .
23.26     1.8509     0.43  Q         .         .         .         .
23.41     1.8563     0.43  Q         .         .         .         .
23.56     1.8616     0.42  Q         .         .         .         .
23.71     1.8669     0.42  Q         .         .         .         .
23.86     1.8720     0.41  Q         .         .         .         .
24.01     1.8772     0.41  Q         .         .         .         .
```

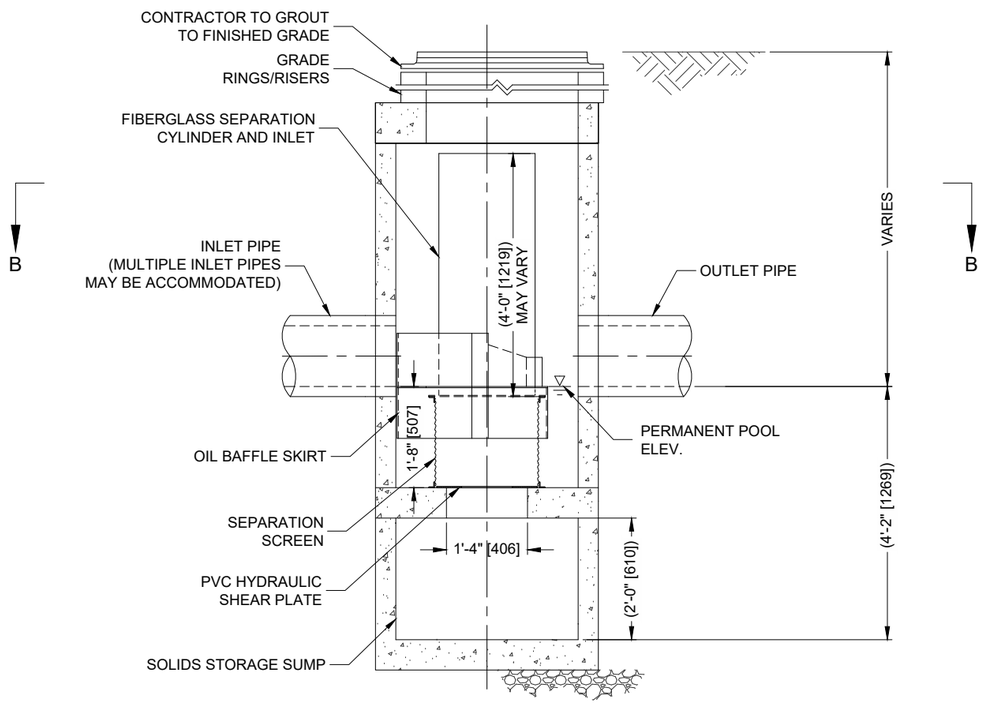
```
  24.16      1.8797      0.00  Q         .         .         .         .
 ------------------------------------------------------------------------------
-------------------------------------------------------------------------------
    TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
    (Note: 100% of Peak Flow Rate estimate assumed to have
    an instantaneous time duration)

    Percentile of Estimated               Duration
        Peak Flow Rate                    (minutes)
    ======================                =========
               0%                          1442.1
              10%                           181.4
              20%                            54.4
              30%                            27.2
              40%                            18.1
              50%                             9.1
              60%                             9.1
              70%                             9.1
              80%                             9.1
              90%                             9.1
```

Appendix J

BMP Analysis



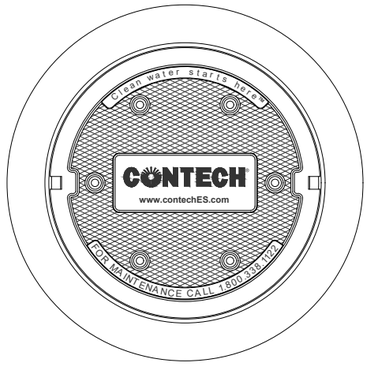
PLAN VIEW B-B
N.T.S.



ELEVATION A-A
N.T.S.

CDS1515-3-C DESIGN NOTES

THE STANDARD CDS1515-3-C CONFIGURATION IS SHOWN. ALTERNATE CONFIGURATIONS ARE AVAILABLE AND ARE LISTED BELOW. SOME CONFIGURATIONS MAY BE COMBINED TO SUIT SITE REQUIREMENTS.



FRAME AND COVER
(DIAMETER VARIES)
N.T.S.

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID	
WATER QUALITY FLOW RATE (CFS OR L/s)	*
PEAK FLOW RATE (CFS OR L/s)	*
RETURN PERIOD OF PEAK FLOW (YRS)	*
SCREEN APERTURE (2400 OR 4700)	*

PIPE DATA:	I.E.	MATERIAL	DIAMETER
INLET PIPE 1	*	*	*
INLET PIPE 2	*	*	*
OUTLET PIPE	*	*	*

RIM ELEVATION	*

ANTI-FLOTATION BALLAST	WIDTH	HEIGHT
	*	*

NOTES/SPECIAL REQUIREMENTS:

* PER ENGINEER OF RECORD

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR SITE SPECIFIC DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.ContechES.com
3. CDS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
4. STRUCTURE SHALL MEET AASHTO HS20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 2', AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 AND BE CAST WITH THE CONTECH LOGO..
5. IF REQUIRED, PVC HYDRAULIC SHEAR PLATE IS PLACED ON SHELF AT BOTTOM OF SCREEN CYLINDER. REMOVE AND REPLACE AS NECESSARY DURING MAINTENANCE CLEANING.
6. CDS STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-478 AND AASHTO LOAD FACTOR DESIGN METHOD.

INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CDS MANHOLE STRUCTURE.
C. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT INLET AND OUTLET PIPE(S). MATCH PIPE INVERTS WITH ELEVATIONS SHOWN. ALL PIPE CENTERLINES TO MATCH PIPE OPENING CENTERLINES.
E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

CONTECH ENGINEERED SOLUTIONS LLC
www.contechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

CDS1515-3-C
ONLINE CDS
STANDARD DETAIL

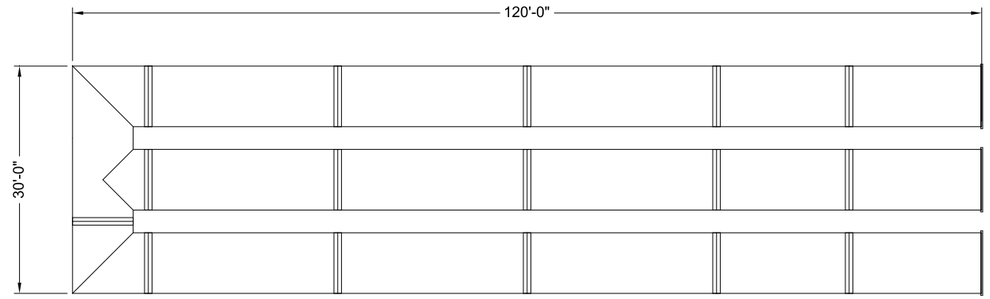
PROJECT SUMMARY

CALCULATION DETAILS
- LOADING = HS20/HS25
- APPROX. LINEAR FOOTAGE = 366 LF

STORAGE SUMMARY
- STORAGE VOLUME REQUIRED = 25,000 CF
- PIPE STORAGE VOLUME = 18,397 CF
- BACKFILL STORAGE VOLUME = 6,696 CF
- TOTAL STORAGE PROVIDED = 25,093 CF

PIPE DETAILS
- DIAMETER = 96"
- CORRUGATION = 5x1
- GAGE = 16
- COATING = ALT2
- WALL TYPE = SOLID
- BARREL SPACING = 36"

BACKFILL DETAILS
- WIDTH AT ENDS = 12"
- ABOVE PIPE = 6"
- WIDTH AT SIDES = 12"
- BELOW PIPE = 6"



NOTES

- ALL RISER AND STUB DIMENSIONS ARE TO CENTERLINE. ALL ELEVATIONS, DIMENSIONS, AND LOCATIONS OF RISERS AND INLETS, SHALL BE VERIFIED BY THE ENGINEER OF RECORD PRIOR TO RELEASING FOR FABRICATION.
- ALL FITTINGS AND REINFORCEMENT COMPLY WITH ASTM A998.
- ALL RISERS AND STUBS ARE $2\frac{2}{3}$" x $\frac{1}{2}$" CORRUGATION AND 16 GAGE UNLESS OTHERWISE NOTED.
- RISERS TO BE FIELD TRIMMED TO GRADE.
- QUANTITY OF PIPE SHOWN DOES NOT PROVIDE EXTRA PIPE FOR CONNECTING THE SYSTEM TO EXISTING PIPE OR DRAINAGE STRUCTURES. OUR SYSTEM AS DETAILED PROVIDES NOMINAL INLET AND/OR OUTLET PIPE STUB FOR CONNECTION TO EXISTING DRAINAGE FACILITIES. IF ADDITIONAL PIPE IS NEEDED IT IS THE RESPONSIBILITY OF THE CONTRACTOR.
- BAND TYPE TO BE DETERMINED UPON FINAL DESIGN.
- THE PROJECT SUMMARY IS REFLECTIVE OF THE DYODS DESIGN, QUANTITIES ARE APPROX. AND SHOULD BE VERIFIED UPON FINAL DESIGN AND APPROVAL. FOR EXAMPLE, TOTAL EXCAVATION DOES NOT CONSIDER ALL VARIABLES SUCH AS SHORING AND ONLY ACCOUNTS FOR MATERIAL WITHIN THE ESTIMATED EXCAVATION FOOTPRINT.
- THESE DRAWINGS ARE FOR CONCEPTUAL PURPOSES AND DO NOT REFLECT ANY LOCAL PREFERENCES OR REGULATIONS. PLEASE CONTACT YOUR LOCAL CONTECH REP FOR MODIFICATIONS.

ASSEMBLY
SCALE: 1" = 20'

DATE	REVISION DESCRIPTION	BY

CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

CONTECH CMP DETENTION SYSTEMS
CONTECH **DYODS** DRAWING

DYO63472 2175 S Willow
Basin #1
West Covina, CA
DETENTION SYSTEM

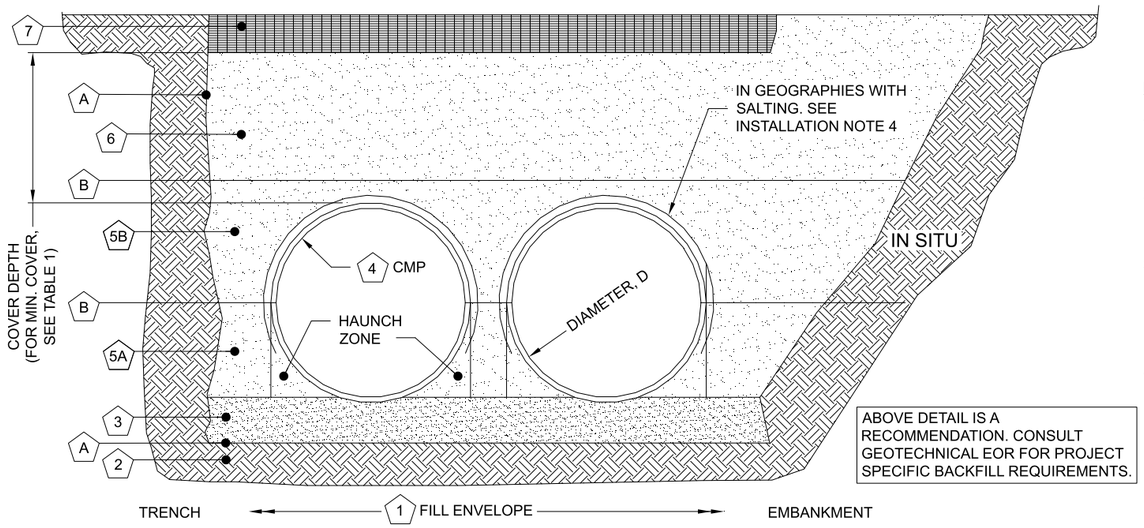
PROJECT No.:	SEQ. No.:	DATE:
45078	63472	11/22/2024
DESIGNED: DYO	DRAWN: DYO	
CHECKED: DYO	APPROVED: DYO	
SHEET NO.: 1		

C:\EXPORTS\TEMPLATES\CMP_V10.DWG 10/18/2019 10:02 AM

TABLE 1:

DIAMETER, D	MIN. COVER	CORR. PROFILE
6"-10"	12"	1 1/2" x 1/4"
12"-48"	12"	2 2/3" x 1/2"
>48"-96"	12"	3" x 1", 5" x 1"
>96"	D/8	3" x 1", 5" x 1"

- STRUCTURAL BACKFILL MUST EXTEND TO LIMITS OF THE TABLE
- TOTAL HEIGHT OF COMPACTED COVER FOR CONVENTIONAL HIGHWAY LOADS IS MEASURED FROM TOP OF PIPE TO BOTTOM OF FLEXIBLE PAVEMENT OR TOP OF RIGID PAVEMENT
- ULTRAFLO ALSO AVAILABLE FOR SIZES 18" - 120" WITH 3/4"x 3/4"x 7 1/2" CORRUGATION



MINIMUM WIDTH DEPENDS ON SITE CONDITIONS AND ENGINEERING JUDGEMENT

INSTALLATION NOTES

1. WHEN PLACING THE FIRST LIFTS OF BACKFILL IT IS IMPORTANT TO MAKE SURE THAT THE BACKFILL IS PROPERLY COMPACTED UNDER AND AROUND THE PIPE HAUNCHES.
2. OTHER ALTERNATE BACKFILL MATERIAL MAY BE ALLOWED DEPENDING ON SITE SPECIFIC CONDITIONS, AS APPROVED BY SITE ENGINEER.
3. BACKFILL USING CONTROLLED LOW-STRENGTH MATERIAL (CLSM, "FLASH FILL" OR "FLOWABLE FILL") MAY BE USED WHEN THE SPACING BETWEEN THE PIPES WILL NOT ALLOW FOR PLACEMENT AND ADEQUATE COMPACTION OF THE BACKFILL. CONTACT CONTECH FOR FURTHER EVALUATION.
4. IF SALTING AGENTS FOR SNOW AND ICE REMOVAL ARE USED ON OR NEAR THE PROJECT, A GEOMEMBRANE BARRIER IS RECOMMENDED OVER THE UPPER HALF OF THE PIPE. THE GEOMEMBRANE LINER IS INTENDED TO HELP PROTECT THE SYSTEM FROM THE POTENTIAL ADVERSE EFFECTS THAT MAY RESULT FROM A CHANGE IN THE SURROUNDING ENVIRONMENT OVER A PERIOD OF TIME. PLEASE REFER TO THE CORRUGATED METAL PIPE DETENTION DESIGN GUIDE FOR ADDITIONAL INFORMATION.

TABLE 2: SOLID STANDARD

CMP DETENTION AND CMP DRAINAGE STANDARD BACKFILL SPECIFICATIONS

	MATERIAL LOCATION	MATERIAL SPECIFICATION	DESCRIPTION	
1	FILL ENVELOPE WIDTH	PER ENGINEER OF RECORD	MINIMUM TRENCH WIDTH MUST ALLOW ROOM FOR PROPER COMPACTION OF HAUNCH MATERIALS UNDER THE PIPE. THE SUGGESTED MINIMUM TRENCH WIDTH, OR EOR RECOMMENDATION: PIPE ≤ 12": D + 16" PIPE > 12": 1.5D + 12"	MINIMUM EMBANKMENT WIDTH (IN FEET) FOR INITIAL FILL ENVELOPE: PIPE < 24": 3.0D PIPE 24" - 144": D + 4'0" PIPE > 144": D + 10'0"
2	FOUNDATION	**AASHTO 26.5.2** OR PER ENGINEER OF RECORD	PRIOR TO PLACING THE BEDDING, THE FOUNDATION MUST BE CONSTRUCTED TO A UNIFORM AND STABLE GRADE. IN THE EVENT THAT UNSUITABLE FOUNDATION MATERIALS ARE ENCOUNTERED DURING EXCAVATION, THEY SHALL BE REMOVED AND FOUNDATION BROUGHT BACK TO GRADE WITH A FILL MATERIAL APPROVED BY THE ENGINEER OF RECORD.	
3	BEDDING	**AASHTO M 43: 3, 357, 4, 467, 5, 56, 57** (APPROVED REGIONAL EQUIVALENTS INCLUDE CA-7)	ENGINEER OF RECORD TO DETERMINE IF BEDDING IS REQUIRED. PIPE MAY BE PLACED ON THE TRENCH BOTTOM OF A RELATIVELY LOOSE, NATIVE SUITABLE WELL GRADED GRANULAR MATERIAL THAT IS ROUGHLY SHAPED TO FIT THE BOTTOM OF THE PIPE, 2" MIN DEPTH. THE BEDDING MATERIAL MAY BE SUITABLE FOUNDATION SOILS CONFORMING TO AASHTO SOIL CLASSIFICATIONS A1, A2, OR A3 WITH MAXIMUM PARTICLE SIZE OF 3" PER AASHTO 26.3.8.1	
4	CORRUGATED METAL PIPE			
5A	CRITICAL BACKFILL	**AASHTO M 145: A-1, A-2, A-3** *	HAUNCH ZONE MATERIAL SHALL BE HAND SHOVELED OR SHOVEL SLICED INTO PLACE TO ALLOW FOR PROPER COMPACTION WITHOUT SOFT SPOTS. BACKFILL SHALL BE PLACED IN 8" +/- LOOSE LIFTS AND COMPACTED TO 90% STANDARD PROCTOR PER AASHTO T 99. BACKFILL SHALL BE PLACED SUCH THAT THERE IS NO MORE THAN A THREE LIFT (24") DIFFERENTIAL BETWEEN ANY OF THE PIPES AT ANY TIME DURING THE BACKFILL PROCESS. THE BACKFILL SHOULD BE ADVANCED ALONG THE LENGTH OF THE SYSTEM TO AVOID DIFFERENTIAL LOADING. WELL GRADED GRANULAR MATERIAL WHICH MAY CONTAIN SMALL AMOUNTS OF SILT OR CLAY AND MAXIMUM PARTICLE SIZE OF 3" (PER AASHTO 26.3.8.1 AND 12.4-1.3).	
5B	BACKFILL	**AASHTO M 145: A-1, A-2, A-3**		
6	COVER MATERIAL	UP TO MIN. COVER - SEE 5A AND 5B ABOVE ABOVE MIN. COVER - PER ENGINEER OF RECORD	COVER MATERIAL MAY INCLUDE NON-BITUMINOUS, GRANULAR ROAD BASE MATERIAL WITHIN MIN COVER LIMITS	
7	RIGID OR FLEXIBLE PAVEMENT (IF APPLICABLE)	PER ENGINEER OF RECORD	FLEXIBLE PAVEMENT SHOULD NOT BE COUNTED AS PART OF THE FILL HEIGHT OVER THE CMP. FINAL BACKFILL MATERIAL SELECTION AND COMPACTION REQUIREMENTS SHALL FOLLOW THE PROJECT PLANS AND SPECIFICATIONS PER THE ENGINEER OF RECORD.	
A	OPTIONAL SIDE GEOTEXTILE	NONE	GEOTEXTILE LAYER IS RECOMMENDED ON SIDES OF EXCAVATION TO PREVENT SOIL MIGRATION.	
B	OPTIONAL GEOTEXTILE BETWEEN LAYERS	NONE	IF SOIL TYPES DIFFER AT ANY POINT ABOVE PIPE INVERT, A GEOTEXTILE LAYER IS RECOMMENDED TO BE PLACED BETWEEN THE LAYERS TO PREVENT SOIL MIGRATION.	

NOTES:
- FOR MULTIPLE BARREL INSTALLATIONS, THE RECOMMENDED STANDARD SPACING BETWEEN PARALLEL PIPE RUNS SHALL BE THE PIPE DIAMETER /2 BUT NO LESS THAN 12" FOR DIAMETERS <72". FOR 72" AND LARGER DIAMETERS, THE MINIMUM SPACING IS 36". CONTACT YOUR CONTECH REPRESENTATIVE FOR NONSTANDARD SPACING.

* APPROVED REGIONAL EQUIVALENTS FOR SECTION 5A INCLUDE CA-7, CODOT #67, MIDOT 2G, 34G, OR 21AA STONE OR GRAVEL; #8; #57; MIDOT 6A, 2G, 3G, 34G.

MANUFACTURER RECOMMENDED BACKFILL

NOT TO SCALE

DATE	REVISION DESCRIPTION	BY

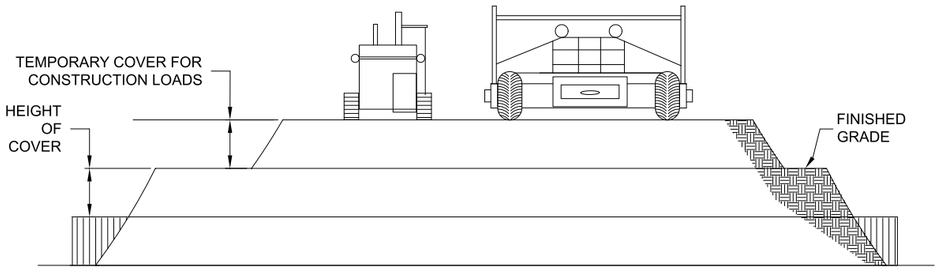
CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

CONTECH CMP DETENTION SYSTEMS
CONTECH DYODS DRAWING

DYO63472 2175 S Willow
Basin #1
West Covina, CA
DETENTION SYSTEM

PROJECT No.:	SEQ. No.:	DATE:
45078	63472	11/22/2024
DESIGNED: DYO	DRAWN: DYO	
CHECKED: DYO	APPROVED: DYO	
SHEET NO.:		

C:\EXPORTS\TEMPLATES\CMP_V10.DWG 10/18/2019 10:02 AM



CONSTRUCTION LOADS

FOR TEMPORARY CONSTRUCTION VEHICLE LOADS, AN EXTRA AMOUNT OF COMPACTED COVER MAY BE REQUIRED OVER THE TOP OF THE PIPE. THE HEIGHT-OF-COVER SHALL MEET THE MINIMUM REQUIREMENTS SHOWN IN THE TABLE BELOW. THE USE OF HEAVY CONSTRUCTION EQUIPMENT NECESSITATES GREATER PROTECTION FOR THE PIPE THAN FINISHED GRADE COVER MINIMUMS FOR NORMAL HIGHWAY TRAFFIC.

PIPE SPAN, INCHES	AXLE LOADS (kips)			
	18-50	50-75	75-110	110-150
	MINIMUM COVER (FT)			
12-42	2.0	2.5	3.0	3.0
48-72	3.0	3.0	3.5	4.0
78-120	3.0	3.5	4.0	4.0
126-144	3.5	4.0	4.5	4.5

*MINIMUM COVER MAY VARY, DEPENDING ON LOCAL CONDITIONS. THE CONTRACTOR MUST PROVIDE THE ADDITIONAL COVER REQUIRED TO AVOID DAMAGE TO THE PIPE. MINIMUM COVER IS MEASURED FROM THE TOP OF THE PIPE TO THE TOP OF THE MAINTAINED CONSTRUCTION ROADWAY SURFACE.

CONSTRUCTION LOADING DIAGRAM

SCALE: N.T.S.

SPECIFICATION FOR DESIGNED DETENTION SYSTEM:

SCOPE
THIS SPECIFICATION COVERS THE MANUFACTURE AND INSTALLATION OF THE DESIGNED DETENTION SYSTEM DETAILED IN THE PROJECT PLANS.

MATERIAL
THE MATERIAL SHALL CONFORM TO THE APPLICABLE REQUIREMENTS LISTED BELOW:

ALUMINIZED TYPE 2 STEEL COILS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-274 OR ASTM A-92.

THE GALVANIZED STEEL COILS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-218 OR ASTM A-929.

THE POLYMER COATED STEEL COILS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-246 OR ASTM A-742.

THE ALUMINUM COILS SHALL CONFORM TO THE APPLICABLE OF AASHTO M-197 OR ASTM B-744.

CONSTRUCTION LOADS
CONSTRUCTION LOADS MAY BE HIGHER THAN FINAL LOADS. FOLLOW THE MANUFACTURER'S OR NCSPA GUIDELINES.

PIPE
THE PIPE SHALL BE MANUFACTURED IN ACCORDANCE TO THE APPLICABLE REQUIREMENTS LISTED BELOW:

ALUMINIZED TYPE 2: AASHTO M-36 OR ASTM A-760

GALVANIZED: AASHTO M-36 OR ASTM A-760

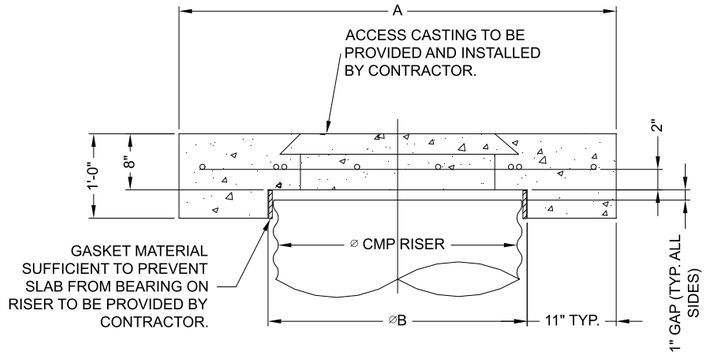
APPLICABLE POLYMER COATED: AASHTO M-245 OR ASTM A-762

ALUMINUM: AASHTO M-196 OR ASTM B-745

APPLICABLE
HANDLING AND ASSEMBLY
SHALL BE IN ACCORDANCE WITH NCSP'S (NATIONAL CORRUGATED STEEL PIPE ASSOCIATION) FOR ALUMINIZED TYPE 2, GALVANIZED OR POLYMER COATED STEEL. SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS FOR ALUMINUM PIPE.
REQUIREMENTS
INSTALLATION
SHALL BE IN ACCORDANCE WITH AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SECTION 26, DIVISION II DIVISION II OR ASTM A-798 (FOR ALUMINIZED TYPE 2, GALVANIZED OR POLYMER COATED STEEL) OR ASTM B-788 (FOR ALUMINUM PIPE) AND IN CONFORMANCE WITH THE PROJECT PLANS AND SPECIFICATIONS. IF THERE ARE ANY INCONSISTENCIES OR CONFLICTS THE CONTRACTOR SHOULD DISCUSS AND RESOLVE WITH THE SITE ENGINEER.

IT IS ALWAYS THE RESPONSIBILITY OF THE CONTRACTOR TO FOLLOW OSHA GUIDELINES FOR SAFE PRACTICES.

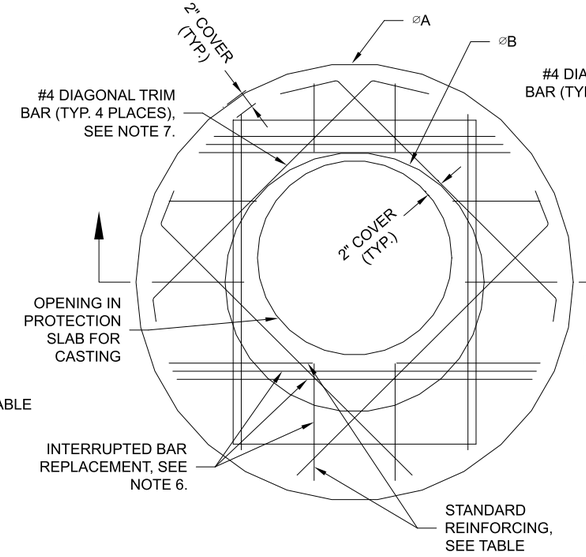
NOTE:
THESE DRAWINGS ARE FOR CONCEPTUAL PURPOSES AND DO NOT REFLECT ANY LOCAL PREFERENCES OR REGULATIONS. PLEASE CONTACT YOUR LOCAL CONTECH REP FOR MODIFICATIONS.



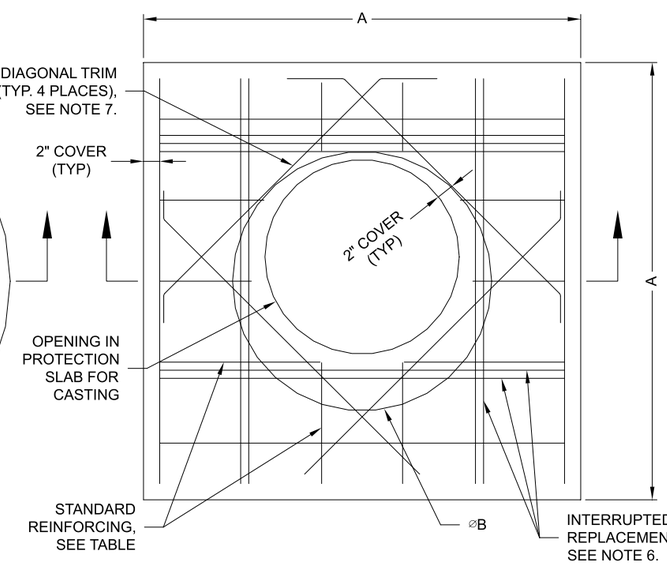
SECTION VIEW

REINFORCING TABLE				
⌀ CMP RISER	A	⌀ B	REINFORCING	**BEARING PRESSURE (PSF)
24"	⌀ 4' 4'X4'	26"	#5 @ 12" OCEW #5 @ 12" OCEW	2,410 1,780
30"	⌀ 4'-6" 4'-6" X 4'-6"	32"	#5 @ 12" OCEW #5 @ 12" OCEW	2,120 1,530
36"	⌀ 5' 5' X 5'	38"	#5 @ 10" OCEW #5 @ 10" OCEW	1,890 1,350
42"	⌀ 5'-6" 5'-6" X 5'-6"	44"	#5 @ 10" OCEW #5 @ 9" OCEW	1,720 1,210
48"	⌀ 6' 6' X 6'	50"	#5 @ 9" OCEW #5 @ 8" OCEW	1,600 1,100

** ASSUMED SOIL BEARING CAPACITY



ROUND OPTION PLAN VIEW



SQUARE OPTION PLAN VIEW

NOTES:

1. DESIGN IN ACCORDANCE WITH AASHTO, 17th EDITION.
2. DESIGN LOAD HS25.
3. EARTH COVER = 1' MAX.
4. CONCRETE STRENGTH = 3,500 psi
5. REINFORCING STEEL = ASTM A615, GRADE 60.
6. PROVIDE ADDITIONAL REINFORCING AROUND OPENINGS EQUAL TO THE BARS INTERRUPTED, HALF EACH SIDE. ADDITIONAL BARS TO BE IN THE SAME PLANE.
7. TRIM OPENING WITH DIAGONAL #4 BARS, EXTEND BARS A MINIMUM OF 12" BEYOND OPENING, BEND BARS AS REQUIRED TO MAINTAIN BAR COVER.
8. PROTECTION SLAB AND ALL MATERIALS TO BE PROVIDED AND INSTALLED BY CONTRACTOR.
9. DETAIL DESIGN BY DELTA ENGINEERING, BINGHAMTON, NY.

MANHOLE CAP DETAIL

SCALE: N.T.S.

DATE	REVISION DESCRIPTION	BY

CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

CONTECH CMP DETENTION SYSTEMS
CONTECH **DYODS** DRAWING

DYO63472 2175 S Willow
Basin #1
West Covina, CA
DETENTION SYSTEM

PROJECT No.:	SEQ. No.:	DATE:
45078	63472	11/22/2024
DESIGNED: DYO	DRAWN: DYO	
CHECKED: DYO	APPROVED: DYO	
SHEET NO.: 1		

C:\EXPORTS\TEMPLATES\CMP_V10.DWG 10/18/2019 10:02 AM

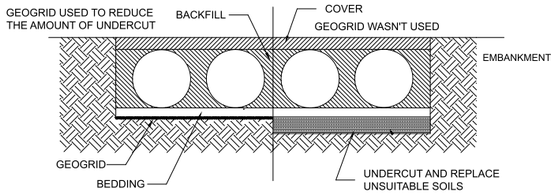
CMP DETENTION INSTALLATION GUIDE

PROPER INSTALLATION OF A FLEXIBLE UNDERGROUND DETENTION SYSTEM WILL ENSURE LONG-TERM PERFORMANCE. THE CONFIGURATION OF THESE SYSTEMS OFTEN REQUIRES SPECIAL CONSTRUCTION PRACTICES THAT DIFFER FROM CONVENTIONAL FLEXIBLE PIPE CONSTRUCTION. CONTECH ENGINEERED SOLUTIONS STRONGLY SUGGESTS SCHEDULING A PRE-CONSTRUCTION MEETING WITH YOUR LOCAL SALES ENGINEER TO DETERMINE IF ADDITIONAL MEASURES, NOT COVERED IN THIS GUIDE, ARE APPROPRIATE FOR YOUR SITE.

FOUNDATION

CONSTRUCT A FOUNDATION THAT CAN SUPPORT THE DESIGN LOADING APPLIED BY THE PIPE AND ADJACENT BACKFILL WEIGHT AS WELL AS MAINTAIN ITS INTEGRITY DURING CONSTRUCTION.

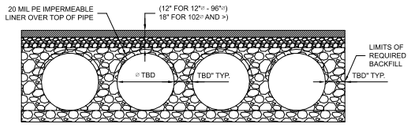
IF SOFT OR UNSUITABLE SOILS ARE ENCOUNTERED, REMOVE THE POOR SOILS DOWN TO A SUITABLE DEPTH AND THEN BUILD UP TO THE APPROPRIATE ELEVATION WITH A COMPETENT BACKFILL MATERIAL. THE STRUCTURAL FILL MATERIAL GRADATION SHOULD NOT ALLOW THE MIGRATION OF FINES, WHICH CAN CAUSE SETTLEMENT OF THE DETENTION SYSTEM OR PAVEMENT ABOVE. IF THE STRUCTURAL FILL MATERIAL IS NOT COMPATIBLE WITH THE UNDERLYING SOILS AN ENGINEERING FABRIC SHOULD BE USED AS A SEPARATOR. IN SOME CASES, USING A STIFF REINFORCING GEOGRID REDUCES OVER EXCAVATION AND REPLACEMENT FILL QUANTITIES.



GRADE THE FOUNDATION SUBGRADE TO A UNIFORM OR SLIGHTLY SLOPING GRADE. IF THE SUBGRADE IS CLAY OR RELATIVELY NON-POROUS AND THE CONSTRUCTION SEQUENCE WILL LAST FOR AN EXTENDED PERIOD OF TIME, IT IS BEST TO SLOPE THE GRADE TO ONE END OF THE SYSTEM. THIS WILL ALLOW EXCESS WATER TO DRAIN QUICKLY, PREVENTING SATURATION OF THE SUBGRADE.

GEOMEMBRANE BARRIER

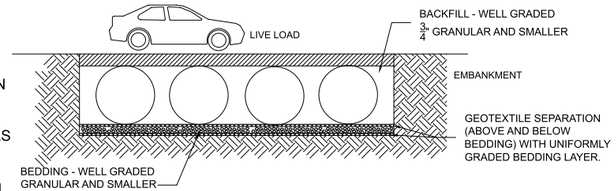
THE RESISTIVITY OF A PROJECT SITE MAY CHANGE OVER TIME DUE TO THE USE OF VARIOUS SALTING, DE-ICING, AND AGRICULTURAL AGENTS APPLIED ON OR NEAR THE AREA. TO MITIGATE THE POTENTIAL IMPACT OF THESE AGENTS, AN HDPE MEMBRANE LINER WILL BE INSTALLED ON THE CROWN OF EACH PIPE, CREATING AN IMPERMEABLE BARRIER. THIS MEASURE IS DESIGNED TO PROTECT THE SYSTEM FROM ENVIRONMENTAL CHANGES THAT COULD LEAD TO PREMATURE CORROSION AND REDUCE THE OVERALL SERVICE LIFE.



IN-SITU TRENCH WALL

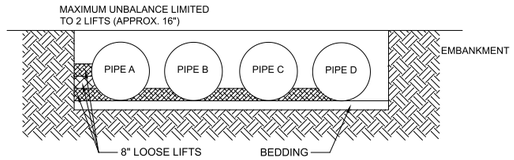
IF EXCAVATION IS REQUIRED, THE TRENCH WALL NEEDS TO BE CAPABLE OF SUPPORTING THE LOAD THAT THE PIPE SHEDS AS THE SYSTEM IS LOADED. IF SOILS ARE NOT CAPABLE OF SUPPORTING THESE LOADS, THE PIPE CAN DEFLECT. PERFORM A SIMPLE SOIL PRESSURE CHECK USING THE APPLIED LOADS TO DETERMINE THE LIMITS OF EXCAVATION BEYOND THE SPRING LINE OF THE OUTER MOST PIPES.

IN MOST CASES THE REQUIREMENTS FOR A SAFE WORK ENVIRONMENT AND PROPER BACKFILL PLACEMENT AND COMPACTION TAKE CARE OF THIS CONCERN.



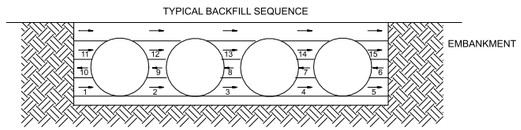
BACKFILL PLACEMENT

MATERIAL SHALL BE WORKED INTO THE PIPE HAUNCHES BY MEANS OF SHOVEL-SLICING, RODDING, AIR TAMPER, VIBRATORY ROD, OR OTHER EFFECTIVE METHODS.

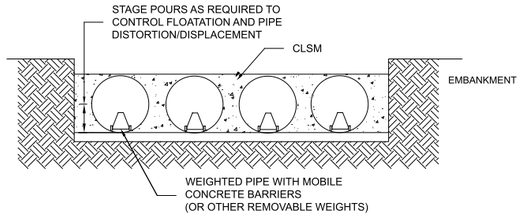


IF AASHTO T99 PROCEDURES ARE DETERMINED INFEASIBLE BY THE GEOTECHNICAL ENGINEER OF RECORD, COMPACTION IS CONSIDERED ADEQUATE WHEN NO FURTHER YIELDING OF THE MATERIAL IS OBSERVED UNDER THE COMPACTOR, OR UNDER FOOT, AND THE GEOTECHNICAL ENGINEER OF RECORD (OR REPRESENTATIVE THEREOF) IS SATISFIED WITH THE LEVEL OF COMPACTION.

FOR LARGE SYSTEMS, CONVEYOR SYSTEMS, BACKHOES WITH LONG REACHES OR DRAGLINES WITH STONE BUCKETS MAY BE USED TO PLACE BACKFILL. ONCE MINIMUM COVER FOR CONSTRUCTION LOADING ACROSS THE ENTIRE WIDTH OF THE SYSTEM IS REACHED, ADVANCE THE EQUIPMENT TO THE END OF THE RECENTLY PLACED FILL, AND BEGIN THE SEQUENCE AGAIN UNTIL THE SYSTEM IS COMPLETELY BACKFILLED. THIS TYPE OF CONSTRUCTION SEQUENCE PROVIDES ROOM FOR STOCKPILED BACKFILL DIRECTLY BEHIND THE BACKHOE, AS WELL AS THE MOVEMENT OF CONSTRUCTION TRAFFIC. MATERIAL STOCKPILES ON TOP OF THE BACKFILLED DETENTION SYSTEM SHOULD BE LIMITED TO 8- TO 10-FEET HIGH AND MUST PROVIDE BALANCED LOADING ACROSS ALL BARRELS. TO DETERMINE THE PROPER COVER OVER THE PIPES TO ALLOW THE MOVEMENT OF CONSTRUCTION EQUIPMENT SEE TABLE 1, OR CONTACT YOUR LOCAL CONTECH SALES ENGINEER.



WHEN FLOWABLE FILL IS USED, YOU MUST PREVENT PIPE FLOATATION. TYPICALLY, SMALL LIFTS ARE PLACED BETWEEN THE PIPES AND THEN ALLOWED TO SET-UP PRIOR TO THE PLACEMENT OF THE NEXT LIFT. THE ALLOWABLE THICKNESS OF THE CLSM LIFT IS A FUNCTION OF A PROPER BALANCE BETWEEN THE UPLIFT FORCE OF THE CLSM, THE OPPOSING WEIGHT OF THE PIPE, AND THE EFFECT OF OTHER RESTRAINING MEASURES. THE PIPE CAN CARRY LIMITED FLUID PRESSURE WITHOUT PIPE DISTORTION OR DISPLACEMENT, WHICH ALSO AFFECTS THE CLSM LIFT THICKNESS. YOUR LOCAL CONTECH SALES ENGINEER CAN HELP DETERMINE THE PROPER LIFT THICKNESS.

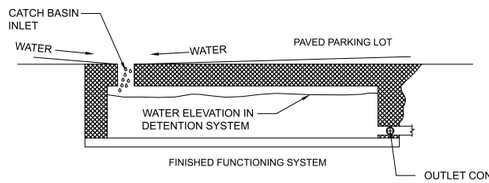


CONSTRUCTION LOADING

TYPICALLY, THE MINIMUM COVER SPECIFIED FOR A PROJECT ASSUMES H-20 LIVE LOAD. BECAUSE CONSTRUCTION LOADS OFTEN EXCEED DESIGN LIVE LOADS, INCREASED TEMPORARY MINIMUM COVER REQUIREMENTS ARE NECESSARY. SINCE CONSTRUCTION EQUIPMENT VARIES FROM JOB TO JOB, IT IS BEST TO ADDRESS EQUIPMENT SPECIFIC MINIMUM COVER REQUIREMENTS WITH YOUR LOCAL CONTECH SALES ENGINEER DURING YOUR PRE-CONSTRUCTION MEETING.

ADDITIONAL CONSIDERATIONS

BECAUSE MOST SYSTEMS ARE CONSTRUCTED BELOW-GRADE, RAINFALL CAN RAPIDLY FILL THE EXCAVATION; POTENTIALLY CAUSING FLOATATION AND MOVEMENT OF THE PREVIOUSLY PLACED PIPES. TO HELP MITIGATE POTENTIAL PROBLEMS, IT IS BEST TO START THE INSTALLATION AT THE DOWNSTREAM END WITH THE OUTLET ALREADY CONSTRUCTED TO ALLOW A ROUTE FOR THE WATER TO ESCAPE. TEMPORARY DIVERSION MEASURES MAY BE REQUIRED FOR HIGH FLOWS DUE TO THE RESTRICTED NATURE OF THE OUTLET PIPE.



CMP DETENTION SYSTEM INSPECTION AND MAINTENANCE

UNDERGROUND STORMWATER DETENTION AND INFILTRATION SYSTEMS MUST BE INSPECTED AND MAINTAINED AT REGULAR INTERVALS FOR PURPOSES OF PERFORMANCE AND LONGEVITY.

INSPECTION

INSPECTION IS THE KEY TO EFFECTIVE MAINTENANCE OF CMP DETENTION SYSTEMS AND IS EASILY PERFORMED. CONTECH RECOMMENDS ONGOING, ANNUAL INSPECTIONS. SITES WITH HIGH TRASH LOAD OR SMALL OUTLET CONTROL ORIFICES MAY NEED MORE FREQUENT INSPECTIONS. THE RATE AT WHICH THE SYSTEM COLLECTS POLLUTANTS WILL DEPEND MORE ON SITE SPECIFIC ACTIVITIES RATHER THAN THE SIZE OR CONFIGURATION OF THE SYSTEM.

INSPECTIONS SHOULD BE PERFORMED MORE OFTEN IN EQUIPMENT WASHDOWN AREAS, IN CLIMATES WHERE SANDING AND/OR SALTING OPERATIONS TAKE PLACE, AND IN OTHER VARIOUS INSTANCES IN WHICH ONE WOULD EXPECT HIGHER ACCUMULATIONS OF SEDIMENT OR ABRASIVE/ CORROSIVE CONDITIONS. A RECORD OF EACH INSPECTION IS TO BE MAINTAINED FOR THE LIFE OF THE SYSTEM

MAINTENANCE

CMP DETENTION SYSTEMS SHOULD BE CLEANED WHEN AN INSPECTION REVEALS ACCUMULATED SEDIMENT OR TRASH IS CLOGGING THE DISCHARGE ORIFICE.

ACCUMULATED SEDIMENT AND TRASH CAN TYPICALLY BE EVACUATED THROUGH THE MANHOLE OVER THE OUTLET ORIFICE. IF MAINTENANCE IS NOT PERFORMED AS RECOMMENDED, SEDIMENT AND TRASH MAY ACCUMULATE IN FRONT OF THE OUTLET ORIFICE. MANHOLE COVERS SHOULD BE SECURELY SEATED FOLLOWING CLEANING ACTIVITIES. CONTECH SUGGESTS THAT ALL SYSTEMS BE DESIGNED WITH AN ACCESS/INSPECTION MANHOLE SITUATED AT OR NEAR THE INLET AND THE OUTLET ORIFICE. SHOULD IT BE NECESSARY TO GET INSIDE THE SYSTEM TO PERFORM MAINTENANCE ACTIVITIES, ALL APPROPRIATE PRECAUTIONS REGARDING CONFINED SPACE ENTRY AND OSHA REGULATIONS SHOULD BE FOLLOWED.

ANNUAL INSPECTIONS ARE BEST PRACTICE FOR ALL UNDERGROUND SYSTEMS. DURING THIS INSPECTION, IF EVIDENCE OF SALTING/DE-ICING AGENTS IS OBSERVED WITHIN THE SYSTEM, IT IS BEST PRACTICE FOR THE SYSTEM TO BE RINSED, INCLUDING ABOVE THE SPRING LINE SOON AFTER THE SPRING THAW AS PART OF THE MAINTENANCE PROGRAM FOR THE SYSTEM.

MAINTAINING AN UNDERGROUND DETENTION OR INFILTRATION SYSTEM IS EASIEST WHEN THERE IS NO FLOW ENTERING THE SYSTEM. FOR THIS REASON, IT IS A GOOD IDEA TO SCHEDULE THE CLEANOUT DURING DRY WEATHER.

THE FOREGOING INSPECTION AND MAINTENANCE EFFORTS HELP ENSURE UNDERGROUND PIPE SYSTEMS USED FOR STORMWATER STORAGE CONTINUE TO FUNCTION AS INTENDED BY IDENTIFYING RECOMMENDED REGULAR INSPECTION AND MAINTENANCE PRACTICES. INSPECTION AND MAINTENANCE RELATED TO THE STRUCTURAL INTEGRITY OF THE PIPE OR THE SOUNDNESS OF PIPE JOINT CONNECTIONS IS BEYOND THE SCOPE OF THIS GUIDE.

DATE	REVISION DESCRIPTION	BY

CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

CONTECH CMP DETENTION SYSTEMS
CONTECH DYODS DRAWING

DYO63472 2175 S Willow
Basin #1
West Covina, CA
DETENTION SYSTEM

PROJECT No.:	SEQ. No.:	DATE:
45078	63472	11/22/2024
DESIGNED: DYO	DRAWN: DYO	
CHECKED: DYO	APPROVED: DYO	
SHEET NO.: 1		

Appendix K

Hydraulic Analysis

Water Quality Management Plan

For:

2175 S Willow Avenue Rialto, CA

APN: 0258-041-28-0000, 0258-041-29-0000

Prepared for:

Donlon Builders

2681 Saturn St.

Brea, CA 9821

(714) 528-0800

Prepared by:

Kimley-Horn and Associates, Inc.

1100 Town and Country Road, Suite 700

Orange, CA 92868

(714) 939-1030

Submittal Date: 11/25/2024

Revision Date:

Approval Date:

Project Owner's Certification

This Water Quality Management Plan (WQMP) has been prepared for Donlon Builders by Kimley-Horn and Associates. The WQMP is intended to comply with the requirements of the City of Rialto and the NPDES Areawide Stormwater Program requiring the preparation of a WQMP. The undersigned, while it owns the subject property, is responsible for the implementation of the provisions of this plan and will ensure that this plan is amended as appropriate to reflect up-to-date conditions on the site consistent with San Bernardino County's Municipal Storm Water Management Program and the intent of the NPDES Permit for San Bernardino County and the incorporated cities of San Bernardino County within the Santa Ana Region. Once the undersigned transfers its interest in the property, its successors in interest and the city/county shall be notified of the transfer. The new owner will be informed of its responsibility under this WQMP. A copy of the approved WQMP shall be available on the subject site in perpetuity.

"I certify under a penalty of law that the provisions (implementation, operation, maintenance, and funding) of the WQMP have been accepted and that the plan will be transferred to future successors."

Project Data			
Permit/Application Number(s):		Grading Permit Number(s):	
Tract/Parcel Map Number(s):		Building Permit Number(s):	
CUP, SUP, and/or APN (Specify Lot Numbers if Portions of Tract):			APN: 0258-041-28-0000, 0258-041-29-0000

Owner's Signature			
Owner Name:			
Title			
Company	Outour Storage		
Address			
Email			
Telephone #			
Signature		Date	

Preparer's Certification

Project Data			
Permit/Application Number(s):		Grading Permit Number(s):	
Tract/Parcel Map Number(s):		Building Permit Number(s):	
CUP, SUP, and/or APN (Specify Lot Numbers if Portions of Tract):			APN: 0258-041-28-0000, 0258-041-29-0000

"The selection, sizing and design of stormwater treatment and other stormwater quality and quantity control measures in this plan were prepared under my oversight and meet the requirements of Regional Water Quality Control Board Order No. R8-2010-0036."

Engineer: Jacob Glaze		PE Stamp Below
Title	Civil Engineer	
Company	Kimley-Horn and Associates	
Address	1100 Town & Country Rd, Suite 700 Orange, CA 92868	
Email	jacob.glaze@kimley-horn.com	
Telephone #	(714) 939-1030	
Signature		
Date	8/12/2025	

Table of Contents

Forms

Section 1 Discretionary Permit(s)

Form 1-1 Project Information					
Project Name					
Project Owner Contact Name:					
Mailing Address:		E-mail Address:		Telephone:	
Permit/Application Number(s):		Tract/Parcel Map Number(s): Parcel Map No. 4711, P.M. 43/84		APN: 0258-041-28-0000, 0258-041-29-0000	
Additional Information/ Comments:					
Description of Project:	The project site is located on 2175 S Willow Ave and is bounded by S Willow Ave to the west, and industrial businesses to the north, east, and south. The entire project site measures approximately 4.04 acres. The existing project site consists of developed land with asphalt paving, parking areas, and two existing buildings. The soils have a hydrologic soil group classification of "A", and the topography along the project shows that runoff within the site primarily drains to the eastern property line. Runoff leaves the property to enter an existing concrete channel on the adjacent property before ultimately discharging into the Santa Ana River. The proposed site is considered an industrial redevelopment and intends to develop approximately 4.04 acres into a truck repair and parking facility. One of the existing buildings is to remain. The site will be repaved with new asphalt and proposed new parking areas, sidewalk, trash enclosure, and landscape areas. Runoff will sheet flow to a catch basin where it will be routed to a hydrodynamic separator for pre-treatment and be conveyed to an underground infiltration system. Excess runoff from the site will match existing conditions and enter the concrete channel on the adjacent property before discharging into Santa Ana River.				
Provide summary of Conceptual WQMP conditions (if previously submitted and approved). Attach complete copy.	N/A				

Section 2 Project Description

2.1 Project Information

This section of the WQMP should provide the information listed below. The information provided for Conceptual/ Preliminary WQMP should give sufficient detail to identify the major proposed site design and LID BMPs and other anticipated water quality features that impact site planning. Final Project WQMP must specifically identify all BMP incorporated into the final site design and provide other detailed information as described herein.

The purpose of this information is to help determine the applicable development category, pollutants of concern, watershed description, and long term maintenance responsibilities for the project, and any applicable water quality credits. This information will be used in conjunction with the information in Section 3, Site Description, to establish the performance criteria and to select the LID BMP or other BMP for the project or other alternative programs that the project will participate in, which are described in Section 4.

Form 2.1-1 Description of Proposed Project

1 Development Category (Select all that apply):

☒ Significant re-development involving the addition or replacement of 5,000 ft² or more of impervious surface on an already developed site	☐ New development involving the creation of 10,000 ft² or more of impervious surface collectively over entire site	☐ Automotive repair shops with standard industrial classification (SIC) codes 5013, 5014, 5541, 7532- 7534, 7536-7539	☐ Restaurants (with SIC code 5812) where the land area of development is 5,000 ft² or more
☐ Hillside developments of 5,000 ft² or more which are located on areas with known erosive soil conditions or where the natural slope is 25 percent or more	☐ Developments of 2,500 ft² of impervious surface or more adjacent to (within 200 ft) or discharging directly into environmentally sensitive areas or waterbodies listed on the CWA Section 303(d) list of impaired waters.	☒ Parking lots of 5,000 ft² or more exposed to storm water	☐ Retail gasoline outlets that are either 5,000 ft² or more, or have a projected average daily traffic of 100 or more vehicles per day

☐ Non-Priority / Non-Category Project *May require source control LID BMPs and other LIP requirements. Please consult with local jurisdiction on specific requirements*.

2 Project Area (ft2):	175,959	**3** Number of Dwelling Units:	N/A	**4** SIC Code:	7699

5 Is Project going to be phased? Yes ☐ No ☒ *If yes, ensure that the WQMP evaluates each phase as a distinct DA, requiring LID BMPs to address runoff at time of completion.*

6 Does Project include roads? Yes ☐ No ☒ *If yes, ensure that applicable requirements for transportation projects are addressed (see Appendix A of TGD for WQMP)*

2.2 Property Ownership/Management

Describe the ownership/management of all portions of the project and site. State whether any infrastructure will transfer to public agencies (City, County, Caltrans, etc.) after project completion. State if a homeowners or property owners association will be formed and be responsible for the long-term maintenance of project stormwater facilities. Describe any lot-level stormwater features that will be the responsibility of individual property owners.

Form 2.2-1 Property Ownership/Management

Describe property ownership/management responsible for long-term maintenance of WQMP stormwater facilities:

The property owner (Owner), Outour Storage, will be responsible for the long-term operations and maintenance of all WQMP stormwater facilities within the project site. The point of contact of the Owner is Outour Storage, with full contact information located under Section 1 of this WQMP.

The Owner will also be responsible for the implementation, long-term operations and maintenance, and funding of the WQMP stormwater facilities described hereon, and will amend this WQMP as needed to reflect any changes to the hydrologic conditions of the property. In addition, the Owner accepts full responsibility for the interim operation and maintenance of the WQMP stormwater facilities.

This WQMP will be reviewed with the facility operator, facility supervisors, employees, maintenance and service contractors, or any other party (or parties) having responsibility for implementing portions of this WQMP. At least one copy of this WQMP will be maintained at the project site or project office in perpetuity.

No onsite public facilities will be installed for this development but connection to existing public utilities will require the following publicly maintained offsite facilities:

Water

Sanitary Sewer

2.3 Potential Stormwater Pollutants

Determine and describe expected stormwater pollutants of concern based on land uses and site activities (refer to Table 3-3 in the TGD for WQMP).

Form 2.3-1 Pollutants of Concern

Pollutant	Please check: E=Expected, N=Not Expected		Additional Information and Comments
Pathogens (Bacterial / Virus)	E ☒	N ☐	Pavement Runoff
Nutrients - Phosphorous	E ☒	N ☐	Primary sources of nutrients are fertilizers and eroded soils
Nutrients - Nitrogen	E ☒	N ☐	Primary source of nutrients are fertilizers and eroded soils
Noxious Aquatic Plants	E ☒	N ☐	Source: Landscaping exists on site
Sediment	E ☒	N ☐	Source: Construction and grading at landscaped areas
Metals	E ☒	N ☐	Source: Brake pad dust and tire tread wear from vehicle traffic
Oil and Grease	E ☒	N ☐	Source: Vehicular Traffic
Trash/Debris	E ☒	N ☐	Public waste, and general waste products on landscape
Pesticides / Herbicides	E ☒	N ☐	At landscape areas only
Organic Compounds	E ☒	N ☐	At landscape areas only
Other:	E ☐	N ☐	
Other:	E ☐	N ☐	
Other:	E ☐	N ☐	
Other:	E ☐	N ☐	
Other:	E ☐	N ☐	

2.4 Water Quality Credits

A water quality credit program is applicable for certain types of development projects if it is not feasible to meet the requirements for on-site LID. Proponents for eligible projects, as described below, can apply for water quality credits that would reduce project obligations for selecting and sizing other treatment BMP or participating in other alternative compliance programs. Refer to Section 6.2 in the TGD for WQMP to determine if water quality credits are applicable for the project.

Form 2.4-1 Water Quality Credits

1 Project Types that Qualify for Water Quality Credits: N/A			
☐ Redevelopment projects that reduce the overall impervious footprint of the project site. [Credit = % impervious reduced]	Higher density development projects ☐ Vertical density [20%] ☐ 7 units/ acre [5%]	☐ Mixed use development, (combination of residential, commercial, industrial, office, institutional, or other land uses which incorporate design principles that demonstrate environmental benefits not realized through single use projects) [20%]	☐ Brownfield redevelopment (redevelop real property complicated by presence or potential of hazardous contaminants) [25%]
☐ Redevelopment projects in established historic district, historic preservation area, or similar significant core city center areas [10%]	☐ Transit-oriented developments (mixed use residential or commercial area designed to maximize access to public transportation) [20%]	☐ In-fill projects (conversion of empty lots & other underused spaces < 5 acres, substantially surrounded by urban land uses, into more beneficially used spaces, such as residential or commercial areas) [10%]	☐ Live-Work developments (variety of developments designed to support residential and vocational needs) [20%]
2 Total Credit % *(Total all credit percentages up to a maximum allowable credit of 50 percent)*			
Description of Water Quality Credit Eligibility (if applicable)			

Section 3 Site and Watershed Description

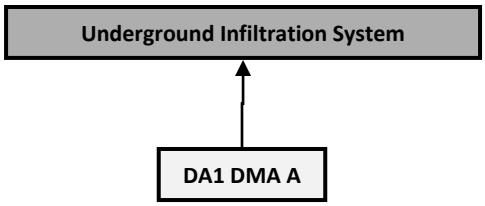
Describe the project site conditions that will facilitate the selection of BMP through an analysis of the physical conditions and limitations of the site and its receiving waters. Identify distinct drainage areas (DA) that collect flow from a portion of the site and describe how runoff from each DA (and sub-watershed DMAs) is conveyed to the site outlet(s). Refer to Section 3.2 in the TGD for WQMP. The form below is provided as an example. Then complete Forms 3.2 and 3.3 for each DA on the project site. ***If the project has more than one drainage area for stormwater management, then complete additional versions of these forms for each DA / outlet.***

Form 3-1 Site Location and Hydrologic Features

Site coordinates *take GPS measurement at approximate center of site*	Latitude 34° 3' 42.4332'N	Longitude 117° 22' 24.636"	Thomas Bros Map page 605

1 San Bernardino County climatic region: ☒ Valley ☐ Mountain

2 Does the site have more than one drainage area (DA): Yes☐ No☒ *If no, proceed to Form 3-2. If yes, then use this form to show a conceptual schematic describing DMAs and hydrologic feature connecting DMAs to the site outlet(s). An example is provided below that can be modified for proposed project or a drawing clearly showing DMA and flow routing may be attached*



Conveyance	Briefly describe on-site drainage features to convey runoff that is not retained within a DMA
DA1 DMA A to Underground Infiltration System	Stormwater runoff sheet flows to the center of the eastern property line and enters into a nearby catch basin where it is conveyed to an underground infiltration system for treatment.

Form 3-2 Existing Hydrologic Characteristics for Drainage Area 1

For Drainage Area 1's sub-watershed DMA, provide the following characteristics	DMA A	DMA B	DMA C	DMA D
1 DMA drainage area (ft^2)	175,959			
2 Existing site impervious area (ft^2)	175,959			
3 Antecedent moisture condition *For desert areas, use http://www.sbcounty.gov/dpw/floodcontrol/pdf/20100412_map.pdf*	II			
4 Hydrologic soil group *Refer to Watershed Mapping Tool – http://permitrack.sbcounty.gov/wap/*	A			
5 Longest flowpath length (ft)	655			
6 Longest flowpath slope (ft/ft)	2.2			
7 Current land cover type(s) *Select from Fig C-3 of Hydrology Manual*	Poor Grass			
8 Pre-developed pervious area condition: *Based on the extent of wet season vegetated cover good >75%; Fair 50-75%; Poor <50% Attach photos of site to support rating*	Poor			

Form 3-3 Watershed Description for Drainage Area

Receiving waters *Refer to Watershed Mapping Tool -* *http://permitrack.sbcounty.gov/wap/* *See 'Drainage Facilities" link at this website*	Santa Ana River Reach 4 thru 1
Applicable TMDLs *Refer to Local Implementation Plan*	**Santa Ana River, Reach 4** Indicator bacteria **Santa Ana River, Reach 3** Nitrate and pathogens **Santa Ana River, Reach 1 and 2** None **Prado Basin** pH
303(d) listed impairments *Refer to Local Implementation Plan and Watershed Mapping Tool –* *http://permitrack.sbcounty.gov/wap/ and State Water Resources Control Board website – http://www.waterboards.ca.gov/santaana/water_issues/programs/tmdl/index.shtml*	**Santa Ana River, Reach 4** Pathogens (Bacterial Indicators/Virus) **Santa Ana River, Reach 3** Pathogens (Bacterial Indicators/Virus), Metals, Indicator Bacteria, Copper and Lead **Santa Ana River, Reach 1 and 2** None **Prado Basin** pH
Environmentally Sensitive Areas (ESA) *Refer to Watershed Mapping Tool –* *http://permitrack.sbcounty.gov/wap/*	The project is not within an ESA
Unlined Downstream Water Bodies *Refer to Watershed Mapping Tool –* *http://permitrack.sbcounty.gov/wap/*	Santa Ana River
Hydrologic Conditions of Concern	☒ Yes *Complete Hydrologic Conditions of Concern (HCOC) Assessment. Include Forms 4.2-2 through Form 4.2-5 and Hydromodification BMP Form 4.3-10 in submittal* ☐ No
Watershed–based BMP included in a RWQCB approved WAP	☐ Yes *Attach verification of regional BMP evaluation criteria in WAP* • *More Effective than On-site LID* • *Remaining Capacity for Project DCV* • *Upstream of any Water of the US* • *Operational at Project Completion* • *Long-Term Maintenance Plan* ☒ No

Section 4 Best Management Practices (BMP)

4.1 Source Control BMP

4.1.1 Pollution Prevention

Non-structural and structural source control BMP are required to be incorporated into all new development and significant redevelopment projects. Form 4.1-1 and 4.1-2 are used to describe specific source control BMPs used in the WQMP or to explain why a certain BMP is not applicable. Table 7-3 of the TGD for WQMP provides a list of applicable source control BMP for projects with specific types of potential pollutant sources or activities. The source control BMP in this table must be implemented for projects with these specific types of potential pollutant sources or activities.

The preparers of this WQMP have reviewed the source control BMP requirements for new development and significant redevelopment projects. The preparers have also reviewed the specific BMP required for project as specified in Forms 4.1-1 and 4.1-2. All applicable non-structural and structural source control BMP shall be implemented in the project.

Form 4.1-1 Non-Structural Source Control BMPs

Identifier	Name	Check One		Describe BMP Implementation OR, if not applicable, state reason
		Included	Not Applicable	
N1	Education of Property Owners, Tenants and Occupants on Stormwater BMPs	☒	☐	The developer will provide educated pamphlets published by California State Regional Water Quality Control Boards – Santa Ana Region, or other appropriate sources.
N2	Activity Restrictions	☒	☐	The types of activities allowed within the project will be limited to those allowed by the City of Rialto codes, regulations, and ordinances.
N3	Landscape Management BMPs	☒	☐	Landscape plans will be consistent with the City of Rialto requirements for water conservation vegetation. Utilizing programmable irrigation systems, and/or rain shut off sensors.
N4	BMP Maintenance	☒	☐	Per Owner's Certification and Management Agreement.
N5	Title 22 CCR Compliance (How development will comply)	☒	☐	Project will comply with Title 22 CCR.
N6	Local Water Quality Ordinances	☒	☐	Owners to abide by the State, County, and Local Water Ordinances, provide with the educational material and pamphlets.
N7	Spill Contingency Plan	☒	☐	Any spill of chemical shall be properly cleaned up and the waste properly disposed of per all State, County, and Local requirements. See SC-11.
N8	Underground Storage Tank Compliance	☐	☒	No storage tanks to be allowed for this project.
N9	Hazardous Materials Disclosure Compliance	☐	☒	No hazardous materials to be allowed for this project.

Form 4.1-1 Non-Structural Source Control BMPs

Identifier	Name	Check One		Describe BMP Implementation OR, if not applicable, state reason
		Included	Not Applicable	
N10	Uniform Fire Code Implementation	☒	☐	As required per San Bernardino County/City of Rialto Fire Department.
N11	Litter/Debris Control Program	☒	☐	Private parking lot will be maintained by the Owner/Tenants. Public streets will be maintained by the City of Rialto.
N12	Employee Training	☒	☐	Provide ongoing educational material.
N13	Housekeeping of Loading Docks	☐	☒	Project does not feature any loading docks.
N14	Catch Basin Inspection Program	☒	☐	Inspection by property owner and per Maintenance Agreement.
N15	Vacuum Sweeping of Private Streets and Parking Lots	☒	☐	Parking lots, drive aisles, and storage areas of the project sire shall be vacuum swept and cleared monthly by the owner's contractor.
N16	Other Non-structural Measures for Public Agency Projects	☐	☒	Not a public agency.
N17	Comply with all other applicable NPDES permits	☒	☐	As required.

Form 4.1-2 Structural Source Control BMPs

Identifier	Name	Check One		Describe BMP Implementation OR, If not applicable, state reason
		Included	Not Applicable	
S1	Provide storm drain system stencilling and signage (CASQA New Development BMP Handbook SD-13)	☒	☐	SD stenciling will be provided by the developer and maintained only for on-site private storm drains.
S2	Design and construct outdoor material storage areas to reduce pollution introduction (CASQA New Development BMP Handbook SD-34)	☐	☒	Not featured per this project.
S3	Design and construct trash and waste storage areas to reduce pollution introduction (CASQA New Development BMP Handbook SD-32)	☒	☐	Trash bins have permanent covers inside the trash enclosure.
S4	Use efficient irrigation systems & landscape design, water conservation, smart controllers, and source control (Statewide Model Landscape Ordinance; CASQA New Development BMP Handbook SD-12)	☒	☐	Landscape to be designed per state guidelines.
S5	Finish grade of landscaped areas at a minimum of 1-2 inches below top of curb, sidewalk, or pavement	☒	☐	Landscape shall comply with depressed grading requirements by finish grading to a minimum of 1” below pavement grades or top of curb.
S6	Protect slopes and channels and provide energy dissipation (CASQA New Development BMP Handbook SD-10)	☐	☒	Not featured per this project.
S7	Covered dock areas (CASQA New Development BMP Handbook SD-31)	☐	☒	Not featured per this project.
S8	Covered maintenance bays with spill containment plans (CASQA New Development BMP Handbook SD-31)	☐	☒	Not featured per this project.
S9	Vehicle wash areas with spill containment plans (CASQA New Development BMP Handbook SD-33)	☐	☒	Not featured per this project.
S10	Covered outdoor processing areas (CASQA New Development BMP Handbook SD-36)	☐	☒	Not featured per this project.

Form 4.1-2 Structural Source Control BMPs

Identifier	Name	Check One		Describe BMP Implementation OR, If not applicable, state reason
		Included	Not Applicable	
S11	Equipment wash areas with spill containment plans (CASQA New Development BMP Handbook SD-33)	☐	☒	Not featured per this project.
S12	Fueling areas (CASQA New Development BMP Handbook SD-30)	☐	☒	Not featured per this project.
S13	Hillside landscaping (CASQA New Development BMP Handbook SD-10)	☐	☒	Not featured per this project.
S14	Wash water control for food preparation areas	☐	☒	Not featured per this project.
S15	Community car wash racks (CASQA New Development BMP Handbook SD-33)	☐	☒	Not featured per this project.

4.1.2 Preventative LID Site Design Practices

Site design practices associated with new LID requirements in the MS4 Permit should be considered in the earliest phases of a project. Preventative site design practices can result in smaller DCV for LID BMP and hydromodification control BMP by reducing runoff generation. Describe site design and drainage plan including:

- A narrative of site design practices utilized or rationale for not using practices
- A narrative of how site plan incorporates preventive site design practices
- Include an attached Site Plan layout which shows how preventative site design practices are included in WQMP

Refer to Section 5.2 of the TGD for WQMP for more details.

Form 4.1-3 Preventative LID Site Design Practices Checklist

Site Design Practices *If yes, explain how preventative site design practice is addressed in project site plan. If no, other LID BMPs must be selected to meet targets*
Minimize impervious areas: Yes ☒ No ☐ Explanation: This is addressed in the project site plan through the optimized design of the proposed hardscape, which will allow for maximum area of propose landscaping within the property.
Maximize natural infiltration capacity: Yes ☒ No ☐ Explanation: Proposed landscape areas maximize the natural infiltration capacity.
Preserve existing drainage patterns and time of concentration: Yes ☒ No ☐ Explanation: Some alterations were made to site drainage patterns but general path still follows existing pattern.
Disconnect impervious areas: Yes ☒ No ☐ Explanation: Proposed landscaping at the perimeter of the site.
Protect existing vegetation and sensitive areas: Yes ☐ No ☒ Explanation: This site does not have sensitive areas or existing vegetation.
Re-vegetate disturbed areas: Yes ☒ No ☐ Explanation: Any areas that are disturbed will be stabilized prior to project completion.
Minimize unnecessary compaction in stormwater retention/infiltration basin/trench areas: Yes ☒ No ☐ Explanation: Compaction surrounding the retention/infiltration basin will be avoided per Geotechnical Report specifications.
Utilize vegetated drainage swales in place of underground piping or imperviously lined swales: Yes ☐ No ☒ Explanation: Utilization of vegetated drainage swales is not feasible for the proposed development due to the proposed site plan and grading.
Stake off areas that will be used for landscaping to minimize compaction during construction : Yes ☒ No ☐ Explanation: Landscaping areas will be staked off after rough grading has been completed to prevent excessive compaction.

4.2 Project Performance Criteria

The purpose of this section of the Project WQMP is to establish targets for post-development hydrology based on performance criteria specified in the MS4 Permit. These targets include runoff volume for water quality control (referred to as LID design capture volume), and runoff volume, time of concentration, and peak runoff for protection of any downstream waterbody segments with a HCOC. ***If the project has more than one outlet for stormwater runoff, then complete additional versions of these forms for each DA / outlet.***

Methods applied in the following forms include:

- For LID BMP Design Capture Volume (DCV), the San Bernardino County Stormwater Program requires use of the P_6 method (MS4 Permit Section XI.D.6a.ii) – Form 4.2-1
- For HCOC pre- and post-development hydrologic calculation, the San Bernardino County Stormwater Program requires the use of the Rational Method (San Bernardino County Hydrology Manual Section D). Forms 4.2-2 through Form 4.2-5 calculate hydrologic variables including runoff volume, time of concentration, and peak runoff from the project site pre- and post-development using the Hydrology Manual Rational Method approach. For projects greater than 640 acres (1.0 mi²), the Rational Method and these forms should not be used. For such projects, the Unit Hydrograph Method (San Bernardino County Hydrology Manual Section E) shall be applied for hydrologic calculations for HCOC performance criteria.

Refer to Section 4 in the TGD for WQMP for detailed guidance and instructions.

Form 4.2-1 LID BMP Performance Criteria for Design Capture Volume (DA 1)

1 Project area DA 1 (ft^2): 175,959	**2** Imperviousness after applying preventative site design practices (Imp%): 0.90	**3** Runoff Coefficient (Rc): 0.69 *$R_c = 0.858(Imp\%)^{\wedge 3}-0.78(Imp\%)^{\wedge 2}+0.774(Imp\%)+0.04$*
4 Determine 1-hour rainfall depth for a 2-year return period $P_{2yr\text{-}1hr}$ (in): 0.521 *http://hdsc.nws.noaa.gov/hdsc/pfds/sa/sca_pfds.html*		
5 Compute P_6, Mean 6-hr Precipitation (inches): 0.771 *P_6 = Item 4 *C_1, where C_1 is a function of site climatic region specified in Form 3-1 Item 1 (Valley = 1.4807; Mountain = 1.909; Desert = 1.2371)*		
6 Drawdown Rate *Use 48 hours as the default condition. Selection and use of the 24 hour drawdown time condition is subject to approval by the local jurisdiction. The necessary BMP footprint is a function of drawdown time. While shorter drawdown times reduce the performance criteria for LID BMP design capture volume, the depth of water that can be stored is also reduced.*		24-hrs ☐ 48-hrs ☒
7 Compute design capture volume, DCV (ft^3): 15,384 *DCV = 1/12 * [Item 1* Item 3 *Item 5 * C_2], where C_2 is a function of drawdown rate (24-hr = 1.582; 48-hr = 1.963)* *Compute separate DCV for each outlet from the project site per schematic drawn in Form 3-1 Item 2*		

Form 4.2-2 Summary of HCOC Assessment (DA 1)

Does project have the potential to cause or contribute to an HCOC in a downstream channel: Yes ☒ No ☐

Go to: *http://permitrack.sbcounty.gov/wap/*

If "Yes", then complete HCOC assessment of site hydrology for 2yr storm event using Forms 4.2-3 through 4.2-5 and insert results below

(Forms 4.2-3 through 4.2-5 may be replaced by computer software analysis based on the San Bernardino County Hydrology Manual)

If "No," then proceed to Section 4.3 Project Conformance Analysis

Condition	Runoff Volume (ft^3)	Time of Concentration (min)	Peak Runoff (cfs)
Pre-developed	**1** 7,170 *Form 4.2-3 Item 12*	**2** 15.01 *Form 4.2-4 Item 13*	**3** 2.18 *Form 4.2-5 Item 10*
Post-developed	**4** 32,809 *Form 4.2-3 Item 13*	**5** 9.07 *Form 4.2-4 Item 14*	**6** 5.53 *Form 4.2-5 Item 14*
Difference	**7** *25,639* *Item 4 – Item 1*	**8** *5.94* *Item 2 – Item 5*	**9** *3.35* *Item 6 – Item 3*
Difference (as % of pre-developed)	**10** *358%* *Item 7 / Item 1*	**11** *39.6%* *Item 8 / Item 2*	**12** 117% *Item 9 / Item 3*

HCOC Calculation Summary Table

	$TC_{2\text{-}YR}$ (min)	$Q_{2\text{-}YR}$ (cfs)	$V_{2\text{-}YR}$ (cf)
Pre-Development	15.01	2.18	7,170
Post-Development	9.07	5.53	32,809
HCOC Requirement (0.95*Post-Pre)	5.19 *(Additional time that must be provided)*	3.07 *(Amount of runoff to mitigate)*	23,999 *(Required Retention)*

4.3 Project Conformance Analysis

Complete the following forms for each project site DA to document that the proposed LID BMPs conform to the project DCV developed to meet performance criteria specified in the MS4 Permit (WQMP Template Section 4.2). For the LID DCV, the forms are ordered according to hierarchy of BMP selection as required by the MS4 Permit (see Section 5.3.1 in the TGD for WQMP). The forms compute the following for on-site LID BMP:

- Site Design and Hydrologic Source Controls (Form 4.3-2)
- Retention and Infiltration (Form 4.3-3)
- Harvested and Use (Form 4.3-4) or
- Biotreatment (Form 4.3-5).

At the end of each form, additional fields facilitate the determination of the extent of mitigation provided by the specific BMP category, allowing for use of the next category of BMP in the hierarchy, if necessary.

The first step in the analysis, using Section 5.3.2.1 of the TGD for WQMP, is to complete Forms 4.3-1 and 4.3-3) to determine if retention and infiltration BMPs are infeasible for the project. For each feasibility criterion in Form 4.3-1, if the answer is "Yes," provide all study findings that includes relevant calculations, maps, data sources, etc. used to make the determination of infeasibility.

Next, complete Forms 4.3-2 and 4.3-4 to determine the feasibility of applicable HSC and harvest and use BMPs, and, if their implementation is feasible, the extent of mitigation of the DCV.

If no site constraints exist that would limit the type of BMP to be implemented in a DA, evaluate the use of combinations of LID BMPs, including all applicable HSC BMPs to maximize on-site retention of the DCV. If no combination of BMP can mitigate the entire DCV, implement the single BMP type, or combination of BMP types, that maximizes on-site retention of the DCV within the minimum effective area.

If the combination of LID HSC, retention and infiltration, and harvest and use BMPs are unable to mitigate the entire DCV, then biotreatment BMPs may be implemented by the project proponent. If biotreatment BMPs are used, then they must be sized to provide sufficient capacity for effective treatment of the remainder of the volume-based performance criteria that cannot be achieved with LID BMPs (TGD for WQMP Section 5.4.4.2). **Under no circumstances shall any portion of the DCV be released from the site without effective mitigation and/or treatment**.

Form 4.3-1 Infiltration BMP Feasibility (DA 1)

Feasibility Criterion – Complete evaluation for each DA on the Project Site

[1] Would infiltration BMP pose significant risk for groundwater related concerns? Yes ☐ No ☒
Refer to Section 5.3.2.1 of the TGD for WQMP

If Yes, Provide basis: (attach)

[2] Would installation of infiltration BMP significantly increase the risk of geotechnical hazards? Yes ☐ No ☒
(Yes, if the answer to any of the following questions is yes, as established by a geotechnical expert):

- The location is less than 50 feet away from slopes steeper than 15 percent
- The location is less than eight feet from building foundations or an alternative setback.
- A study certified by a geotechnical professional or an available watershed study determines that stormwater infiltration would result in significantly increased risks of geotechnical hazards.

If Yes, Provide basis: (attach)

[3] Would infiltration of runoff on a Project site violate downstream water rights? Yes ☐ No ☒

If Yes, Provide basis: (attach)

[4] Is proposed infiltration facility located on hydrologic soil group (HSG) D soils or does the site geotechnical investigation indicate presence of soil characteristics, which support categorization as D soils? Yes ☐ No ☒

If Yes, Provide basis: (attach)

[5] Is the design infiltration rate, after accounting for safety factor of 2.0, below proposed facility less than 0.3 in/hr (accounting for soil amendments)? Yes ☐ No ☒

If Yes, Provide basis: (attach)

[6] Would on-site infiltration or reduction of runoff over pre-developed conditions be partially or fully inconsistent with watershed management strategies as defined in the WAP, or impair beneficial uses? Yes ☐ No ☒
See Section 3.5 of the TGD for WQMP and WAP

If Yes, Provide basis: (attach)

[7] Any answer from Item 1 through Item 3 is "Yes": Yes ☐ No ☒
If yes, infiltration of any volume is not feasible onsite. Proceed to Form 4.3-4, Harvest and Use BMP. If no, then proceed to Item 8 below.

[8] Any answer from Item 4 through Item 6 is "Yes": Yes ☐ No ☒
If yes, infiltration is permissible but is not required to be considered. Proceed to Form 4.3-2, Hydrologic Source Control BMP. If no, then proceed to Item 9, below.

[9] All answers to Item 1 through Item 6 are "No":
Infiltration of the full DCV is potentially feasible, LID infiltration BMP must be designed to infiltrate the full DCV to the MEP. Proceed to Form 4.3-2, Hydrologic Source Control BMP.

4.3.1 Site Design Hydrologic Source Control BMP

Section XI.E. of the Permit emphasizes the use of LID preventative measures; and the use of LID HSC BMPs reduces the portion of the DCV that must be addressed in downstream BMPs. Therefore, all applicable HSC shall be provided except where they are mutually exclusive with each other, or with other BMPs. Mutual exclusivity may result from overlapping BMP footprints such that either would be potentially feasible by itself, but both could not be implemented. Please note that while there are no numeric standards regarding the use of HSC, if a project cannot feasibly meet BMP sizing requirements or cannot fully address HCOCs, feasibility of all applicable HSC must be part of demonstrating that the BMP system has been designed to retain the maximum feasible portion of the DCV. Complete Form 4.3-2 to identify and calculate estimated retention volume from implementing site design HSC BMP. Refer to Section 5.4.1 in the TGD for more detailed guidance.

Form 4.3-2 Site Design Hydrologic Source Control BMPs (DA 1)

1 Implementation of Impervious Area Dispersion BMP (i.e. routing runoff from impervious to pervious areas), excluding impervious areas planned for routing to on-lot infiltration BMP: Yes ☐ No ☒ *If yes, complete Items 2-5; If no, proceed to Item 6*	DA DMA BMP Type	DA DMA BMP Type	DA DMA BMP Type *(Use additional forms for more BMPs)*
2 Total impervious area draining to pervious area (ft^2)			
3 Ratio of pervious area receiving runoff to impervious area			
4 Retention volume achieved from impervious area dispersion (ft^3) *V = Item2 * Item 3 * (0.5/12), assuming retention of 0.5 inches of runoff*			
5 Sum of retention volume achieved from impervious area dispersion (ft^3):	$V_{retention}$ *=Sum of Item 4 for all BMPs*		
6 Implementation of Localized On-lot Infiltration BMPs (e.g. on-lot rain gardens): Yes ☐ No ☒ *If yes, complete Items 7-13 for aggregate of all on-lot infiltration BMP in each DA; If no, proceed to Item 14*	DA DMA BMP Type	DA DMA BMP Type	DA DMA BMP Type *(Use additional forms for more BMPs)*
7 Ponding surface area (ft^2)			
8 Ponding depth (ft)			
9 Surface area of amended soil/gravel (ft^2)			
10 Average depth of amended soil/gravel (ft)			
11 Average porosity of amended soil/gravel			
12 Retention volume achieved from on-lot infiltration (ft^3) $V_{retention}$ *= (Item 7 *Item 8) + (Item 9 * Item 10 * Item 11)*			
13 Runoff volume retention from on-lot infiltration (ft^3):	$V_{retention}$ *=Sum of Item 12 for all BMPs*		

Form 4.3-2 Site Design Hydrologic Source Control BMPs (DA 1)

Form 4.3-2 cont. Site Design Hydrologic Source Control BMPs (DA 1)

14 Implementation of evapotranspiration BMP (green, brown, or blue roofs): Yes ☐ No ☒ *If yes, complete Items 15-20. If no, proceed to Item 21*	DA DMA BMP Type	DA DMA BMP Type	DA DMA BMP Type *(Use additional forms for more BMPs)*
15 Rooftop area planned for ET BMP (ft^2)			
16 Average wet season ET demand (in/day) *Use local values, typical ~ 0.1*			
17 Daily ET demand (ft^3/day) *Item 15 * (Item 16 / 12)*			
18 Drawdown time (hrs) *Copy Item 6 in Form 4.2-1*			
19 Retention Volume (ft^3) $V_{retention}$ *= Item 17 * (Item 18 / 24)*			
20 Runoff volume retention from evapotranspiration BMPs (ft^3):	$V_{retention}$ *=Sum of Item 19 for all BMPs*		
21 Implementation of Street Trees: Yes ☐ No ☒ *If yes, complete Items 22-25. If no, proceed to Item 26*	DA DMA BMP Type	DA DMA BMP Type	DA DMA BMP Type *(Use additional forms for more BMPs)*
22 Number of Street Trees			
23 Average canopy cover over impervious area (ft^2)			
24 Runoff volume retention from street trees (ft^3) $V_{retention}$ *= Item 22 * Item 23 * (0.05/12) assume runoff retention of 0.05 inches*			
25 Runoff volume retention from street tree BMPs (ft^3):	$V_{retention}$ *= Sum of Item 24 for all BMPs*		
26 Implementation of residential rain barrel/cisterns: Yes ☐ No ☐ *If yes, complete Items 27-29; If no, proceed to Item 30*	DA DMA BMP Type	DA DMA BMP Type	DA DMA BMP Type *(Use additional forms for more BMPs)*
27 Number of rain barrels/cisterns			
28 Runoff volume retention from rain barrels/cisterns (ft^3) $V_{retention}$ *= Item 27 * 3*			
29 Runoff volume retention from residential rain barrels/Cisterns (ft3):	$V_{retention}$ *=Sum of Item 28 for all BMPs*		
30 Total Retention Volume from Site Design Hydrologic Source Control BMPs:	*Sum of Items 5, 13, 20, 25 and 29*		

4.3.2 Infiltration BMPs

Use Form 4.3-3 to compute on-site retention of runoff from proposed retention and infiltration BMPs. Volume retention estimates are sensitive to the percolation rate used, which determines the amount of runoff that can be infiltrated within the specified drawdown time. The infiltration safety factor reduces field measured percolation to account for potential inaccuracy associated with field measurements, declining BMP performance over time, and compaction during construction. Appendix D of the TGD for WQMP provides guidance on estimating an appropriate safety factor to use in Form 4.3-3.

If site constraints limit the use of BMPs to a single type and implementation of retention and infiltration BMPs mitigate no more than 40% of the DCV, then they are considered infeasible and the Project Proponent may evaluate the effectiveness of BMPs lower in the LID hierarchy of use (Section 5.5.1 of the TGD for WQMP)

If implementation of infiltrations BMPs is feasible as determined using Form 4.3-1, then LID infiltration BMPs shall be implemented to the MEP (section 4.1 of the TGD for WQMP).

Form 4.3-3 Infiltration LID BMP - including underground BMPs (DA 1)

1 Remaining LID DCV not met by site design HSC BMP (ft^3): 15,384 *V_{unmet} = Form 4.2-1 Item 7 - Form 4.3-2 Item 30*

BMP Type *Use columns to the right to compute runoff volume retention from proposed infiltration BMP (select BMP from Table 5-4 in TGD for WQMP) - Use additional forms for more BMPs*	DA A DMA 1 BMP Type	DA DMA BMP Type	DA DMA BMP Type *(Use additional forms for more BMPs)*
2 Infiltration rate of underlying soils (in/hr) *See Section 5.4.2 and Appendix D of the TGD for WQMP for minimum requirements for assessment methods*	16.7		
3 Infiltration safety factor *See TGD Section 5.4.2 and Appendix D*	3.5		
4 Design percolation rate (in/hr) *P_{design} = Item 2 / Item 3*	4.8		
5 Ponded water drawdown time (hr) *Copy Item 6 in Form 4.2-1*	48		
6 Maximum ponding depth (ft) *BMP specific, see Table 5-4 of the TGD for WQMP for BMP design details*	9		
7 Ponding Depth (ft) *d_{BMP} = Minimum of (1/12*Item 4*Item 5) or Item 6*	9		
8 Infiltrating surface area, SA_{BMP} (ft^2) *the lesser of the area needed for infiltration of full DCV or minimum space requirements from Table 5.7 of the TGD for WQMP*	3,600		
9 Amended soil depth, d_{media} (ft) *Only included in certain BMP types, see Table 5-4 in the TGD for WQMP for reference to BMP design details*	N/A		
10 Amended soil porosity	N/A		
11 Gravel depth, d_{media} (ft) *Only included in certain BMP types, see Table 5-4 of the TGD for WQMP for BMP design details*	1		
12 Gravel porosity	0.40		
13 Duration of storm as basin is filling (hrs) *Typical ~ 3hrs*	N/A		
14 Above Ground Retention Volume (ft^3) *$V_{retention}$ = Item 8 * [Item7 + (Item 9 * Item 10) + (Item 11 * Item 12) + (Item 13 * (Item 4 / 12))]*	N/A		
15 Underground Retention Volume (ft^3) *Volume determined using manufacturer's specifications and calculations*	25,093		

16 Total Retention Volume from LID Infiltration BMPs: 25,093 *(Sum of Items 14 and 15 for all infiltration BMP included in plan)*

17 Fraction of DCV achieved with infiltration BMP: 163% *Retention% = Item 16 / Form 4.2-1 Item 7*

18 Is full LID DCV retained onsite with combination of hydrologic source control and LID retention/infiltration BMPs? Yes ☒ No ☐

If yes, demonstrate conformance using Form 4.3-10; If no, then reduce Item 3, Factor of Safety to 2.0 and increase Item 8, Infiltrating Surface Area, such that the portion of the site area used for retention and infiltration BMPs equals or exceeds the minimum effective area thresholds (Table 5-7 of the TGD for WQMP) for the applicable category of development and repeat all above calculations.

4.3.3 Harvest and Use BMP

Harvest and use BMP may be considered if the full LID DCV cannot be met by maximizing infiltration BMPs. Use Form 4.3-4 to compute on-site retention of runoff from proposed harvest and use BMPs.

Volume retention estimates for harvest and use BMPs are sensitive to the on-site demand for captured stormwater. Since irrigation water demand is low in the wet season, when most rainfall events occur in San Bernardino County, the volume of water that can be used within a specified drawdown period is relatively low. The bottom portion of Form 4.3-4 facilitates the necessary computations to show infeasibility if a minimum incremental benefit of 40 percent of the LID DCV would not be achievable with MEP implementation of on-site harvest and use of stormwater (Section 5.5.4 of the TGD for WQMP).

Form 4.3-4 Harvest and Use BMPs (DA 1)

1 Remaining LID DCV not met by site design HSC or infiltration BMP (ft^3): *V_{unmet} = Form 4.2-1 Item 7 - Form 4.3-2 Item 30 – Form 4.3-3 Item 16*			
BMP Type(s) *Compute runoff volume retention from proposed harvest and use BMP (Select BMPs from Table 5-4 of the TGD for WQMP) - Use additional forms for more BMPs*	DA DMA BMP Type	DA DMA BMP Type	DA DMA BMP Type *(Use additional forms for more BMPs)*
2 Describe cistern or runoff			
3 Storage volume for propos *cistern*			
4 Landscaped area planned for use of harvested stormwater (ft^2)			
5 Average wet season daily irrigation demand (in/day) Use local values, typical ~ 0.1 in/day			
6 Daily water demand (ft^3/day) *Item 4 * (Item 5 / 12)*			
7 Drawdown time (hrs) *Copy Item 6 from Form 4.2-1*			
8 Retention Volume (ft^3) *$V_{retention}$ = Minimum of (Item 3) or (Item 6 * (Item 7 / 24))*			
9 Total Retention Volume (ft^3) from Harvest and Use BMP *Sum of Item 8 for all harvest and use BMP included in plan*			
10 Is the full DCV retained with a combination of LID HSC, retention and infiltration, and harvest & use BMPs? Yes ☐ No ☐ *If yes, demonstrate conformance using Form 4.3-10. If no, then re-evaluate combinations of all LID BMP and optimize their implementation such that the maximum portion of the DCV is retained on-site (using a single BMP type or combination of BMP types). If the full DCV cannot be mitigated after this optimization process, proceed to Section 4.3.4.*			

Not Applicable

4.3.4 Biotreatment BMP

Biotreatment BMPs may be considered if the full LID DCV cannot be met by maximizing retention and infiltration, and harvest and use BMPs. A key consideration when using biotreatment BMP is the effectiveness of the proposed BMP in addressing the pollutants of concern for the project (see Table 5-5 of the TGD for WQMP).

Use Form 4.3-5 to summarize the potential for volume based and/or flow based biotreatment options to biotreat the remaining unmet LID DCV w. Biotreatment computations are included as follows:

- Use Form 4.3-6 to compute biotreatment in small volume based biotreatment BMP (e.g. bioretention w/underdrains);
- Use Form 4.3-7 to compute biotreatment in large volume based biotreatment BMP (e.g. constructed wetlands);
- Use Form 4.3-8 to compute sizing criteria for flow-based biotreatment BMP (e.g. bioswales)

Form 4.3-5 Selection and Evaluation of Biotreatment BMP (DA 1)

1 Remaining LID DCV not met by site design HSC, infiltration, or harvest and use BMP for potential biotreatment (ft^3): *Form 4.2-1 Item 7 - Form 4.3-2 Item 30 – Form 4.3-3 Item 16- Form 4.3-4 Item 9*	List pollutants of concern *Copy from Form 2.3-1.*	
2 Biotreatment BMP Selected *(Select biotreatment BMP(s) necessary to ensure all pollutants of concern are addressed through Unit Operations and Processes, described in Table 5-5 of the TGD for WQMP)*	☐ Constructed wetlands ☐ Wet extended detention ☐ Dry extended detention	☐ Vegetated filter strip ☐ Proprietary biotreatment
3 Volume biotreated in volume based biotreatment BMP (ft^3): *Form 4.3-6 Item 15 + Form 4.3-7 Item 13*	**4** Compute remaining LID DCV with implementation of volume based biotreatment BMP (ft^3): *Item 1 – Item 3*	**5** Remaining fraction of LID DCV for sizing flow based biotreatment BMP: % *Item 4 / Item 1*
6 Flow-based biotreatment BMP capacity provided (cfs): *Use Figure 5-2 of the TGD for WQMP to determine flow capacity required to provide biotreatment of remaining percentage of unmet LID DCV (Item 5), for the project's precipitation zone (Form 3-1 Item 1)*		

7 Metrics for MEP determination:

- Provided a WQMP with the portion of site area used for suite of LID BMP equal to minimum thresholds in Table 5-7 of the TGD for WQMP for the proposed category of development: ☐ *If maximized on-site retention BMPs is feasible for partial capture, then LID BMP implementation must be optimized to retain and infiltrate the maximum portion of the DCV possible within the prescribed minimum effective area. The remaining portion of the DCV shall then be mitigated using biotreatment BMP.*

Not Applicable

Form 4.3-6 Volume Based Biotreatment (DA 1) – Bioretention and Planter Boxes with Underdrains

Biotreatment BMP Type *(Bioretention w/underdrain, planter box w/underdrain, other comparable BMP)*	DA DMA BMP Type	DA DMA BMP Type	DA DMA BMP Type *(Use additional forms for more BMPs)*
1 Pollutants addressed with BMP *List all pollutant of concern that will be effectively reduced through specific Unit Operations and Processes described in Table 5-5 of the TGD for WQMP*			
2 Amended soil infiltration rate *Typical ~ 5.0*			
3 Amended soil infiltration safety factor *Typical ~ 2.0*			
4 Amended soil design percolation rate (in/hr) P_{design} *= Item 2 / Item 3*			
5 Ponded water drawdown time (hr) *Copy Item 6 from Form 4.2-1*			
6 Maximum ponding depth (ft) *see Table 5-6 of the TGD for WQMP for reference to BMP design details*			
7 Ponding Depth (ft) d_{BMP} *= Minimu Item 6*			
8 Amended soil surface area (ft^2)			
9 Amended soil depth (ft) *see Table 5-6 of the TGD for WQMP for reference to BMP design details*			
10 Amended soil porosity, *n*			
11 Gravel depth (ft) *see Table 5-6 of the TGD for WQMP for reference to BMP design details*			
12 Gravel porosity, *n*			
13 Duration of storm as basin is filling (hrs) *Typical ~ 3hrs*			
14 Biotreated Volume (ft^3) $V_{biotreated}$ *= Item 8 * [(Item 7/2) + (Item 9 * Item 10) +(Item 11 * Item 12) + (Item 13 * (Item 4 / 12))]*			
15 Total biotreated volume from bioretention and/or planter box with underdrains BMP: *Sum of Item 14 for all volume-based BMPs included in this form*			

Not Applicable

Form 4.3-7 Volume Based Biotreatment (DA 1) – Constructed Wetlands and Extended Detention

Biotreatment BMP Type *Constructed wetlands, extended wet detention, extended dry detention, or other comparable proprietary BMP. If BMP includes multiple modules (e.g. forebay and main basin), provide separate estimates for storage and pollutants treated in each module.*	DA DMA BMP Type		DA DMA BMP Type *(Use additional forms for more BMPs)*	
	Forebay	Basin	Forebay	Basin
1 Pollutants addressed with BMP forebay and basin *List all pollutant of concern that will be effectively reduced through specific Unit Operations and Processes described in Table 5-5 of the TGD for WQMP*				
2 Bottom width (ft)				
3 Bottom length (ft)				
4 Bottom area (ft^2) A_{bottom} = *Item 2 * Item 3*				
5 Side slope (ft/ft)				
6 Depth of storage (ft)				
7 Water surface area (ft^2) $A_{surface}$ =*(Item 2 + (2 * Item 5 * Item 6)) * (Item 3 + (2 * Item 5 * Item 6))*				
8 Storage volume (ft^3) *For BMP with a forebay, ensure fraction of total storage is within ranges specified in BMP specific fact sheets, see Table 5-6 of the TGD for WQMP for reference to BMP design details* V =*Item 6 / 3 * [Item 4 + Item 7 + (Item 4 * Item 7)^0.5]*				
9 Drawdown Time (hrs) *Copy Item 6 from Form 2.1*				
10 Outflow rate (cfs) Q_{BMP} = *(Item* $8_{forebay}$ *+ Item* 8_{basin}*) / (Item 9 * 3600)*				
11 Duration of design storm event (hrs)				
12 Biotreated Volume (ft^3) $V_{biotreated}$ = *(Item* $8_{forebay}$ *+ Item* 8_{basin}*) +(Item 10 * Item 11 * 3600)*				
13 Total biotreated volume from constructed wetlands, extended dry detention, or extended wet detention : *(Sum of Item 12 for all BMP included in plan)*				

Not Applicable

Form 4.3-8 Flow Based Biotreatment (DA 1)

Biotreatment BMP Type *Vegetated swale, vegetated filter strip, or other comparable proprietary BMP*	DA DMA BMP Type	DA DMA BMP Type	DA DMA BMP Type *(Use additional forms for more BMPs)*
1 Pollutants addressed with BMP *List all pollutant of concern that will be effectively reduced through specific Unit Operations and Processes described in TGD Table 5-5*			
2 Flow depth for water quality treatment (ft) *BMP specific, see Table 5-6 of the TGD for WQMP for reference to BMP design details*			
3 Bed slope (ft/ft) *BMP specific, see Table 5-6 of the T design details*			
4 Manning's roughness coefficie			
5 Bottom width (ft) b_w *= (Form 4.3-5 Item 6 * Item 4) / (1.49 * Item 2^1.67 * Item 3^0.5)*			
6 Side Slope (ft/ft) *BMP specific, see Table 5-6 of the TGD for WQMP for reference to BMP design details*			
7 Cross sectional area (ft^2) *A = (Item 5 * Item 2) + (Item 6 * Item 2^2)*			
8 Water quality flow velocity (ft/sec) *V = Form 4.3-5 Item 6 / Item 7*			
9 Hydraulic residence time (min) *Pollutant specific, see Table 5-6 of the TGD for WQMP for reference to BMP design details*			
10 Length of flow based BMP (ft) *L = Item 8 * Item 9 * 60*			
11 Water surface area at water quality flow depth (ft^2) SA_{top} *= (Item 5 + (2 * Item 2 * Item 6)) * Item 10*			

Not Applicable

4.3.5 Conformance Summary

Complete Form 4.3-9 to demonstrate how on-site LID DCV is met with proposed site design hydrologic source control, infiltration, harvest and use, and/or biotreatment BMP. The bottom line of the form is used to describe the basis for infeasibility determination for on-site LID BMP to achieve full LID DCV, and provides methods for computing remaining volume to be addressed in an alternative compliance plan. If the project has more than one outlet, then complete additional versions of this form for each outlet.

Form 4.3-9 Conformance Summary and Alternative Compliance Volume Estimate (DA 1)

1 Total LID DCV for the Project DA-1 (ft^3): 15,384 *Copy Item 7 in Form 4.2-1*

2 On-site retention with site design hydrologic source control LID BMP (ft^3): 0 *Copy Item 30 in Form 4.3-2*

3 On-site retention with LID infiltration BMP (ft^3): 25,093 *Copy Item 16 in Form 4.3-3*

4 On-site retention with LID harvest and use BMP (ft^3): 0 *Copy Item 9 in Form 4.3-4*

5 On-site biotreatment with volume based biotreatment BMP (ft^3): 0 *Copy Item 3 in Form 4.3-5*

6 Flow capacity provided by flow based biotreatment BMP (cfs): 0 *Copy Item 6 in Form 4.3-5*

7 LID BMP performance criteria are achieved if answer to any of the following is "Yes":

- Full retention of LID DCV with site design HSC, infiltration, or harvest and use BMP: Yes ☒ No ☐
  If yes, sum of Items 2, 3, and 4 is greater than Item 1
- Combination of on-site retention BMPs for a portion of the LID DCV and volume-based biotreatment BMP that address all pollutants of concern for the remaining LID DCV: Yes ☐ No ☐
  If yes, a) sum of Items 2, 3, 4, and 5 is greater than Item 1, and Items 2, 3 and 4 are maximized; or b) Item 6 is greater than Form 4.3--5 Item 6 and Items 2, 3 and 4 are maximized
- On-site retention and infiltration is determined to be infeasible and biotreatment BMP provide biotreatment for all pollutants of concern for full LID DCV: Yes ☐ No ☐
  If yes, Form 4.3-1 Items 7 and 8 were both checked yes

8 If the LID DCV is not achieved by any of these means, then the project may be allowed to develop an alternative compliance plan. Check box that describes the scenario which caused the need for alternative compliance:

- Combination of HSC, retention and infiltration, harvest and use, and biotreatment BMPs provide less than full LID DCV capture: ☐
  Checked yes for Form 4.3-5 Item 7, Item 6 is zero, and sum of Items 2, 3, 4, and 5 is less than Item 1. If so, apply water quality credits and calculate volume for alternative compliance, V_{alt} *= (Item 1 – Item 2 – Item 3 – Item 4 – Item 5) * (100 - Form 2.4-1 Item 2)%*
- An approved Watershed Action Plan (WAP) demonstrates that water quality and hydrologic impacts of urbanization are more effective when managed in at an off-site facility: ☐
  Attach appropriate WAP section, including technical documentation, showing effectiveness comparisons for the project site and regional watershed

4.3.6 Hydromodification Control BMP

Use Form 4.3-10 to compute the remaining runoff volume retention, after LID BMP are implemented, needed to address HCOC, and the increase in time of concentration and decrease in peak runoff necessary to meet targets for protection of waterbodies with a potential HCOC. Describe hydromodification control BMP that address HCOC, which may include off-site BMP and/or in-stream controls. Section 5.6 of the TGD for WQMP provides additional details on selection and evaluation of hydromodification control BMP.

Form 4.3-10 Hydromodification Control BMPs (DA 1)

1 Volume reduction needed for HCOC performance criteria (ft^3): 23,999 *(Form 4.2-2 Item 4 * 0.95) – Form 4.2-2 Item 1*	**2** On-site retention with site design hydrologic source control, infiltration, and harvest and use LID BMP (ft^3): 25,093 *Sum of Form 4.3-9 Items 2, 3, and 4 Evaluate option to increase implementation of on-site retention in Forms 4.3-2, 4.3-3, and 4.3-4 in excess of LID DCV toward achieving HCOC volume reduction*
3 Remaining volume for HCOC volume capture (ft^3): 0 *Item 1 – Item 2*	**4** Volume capture provided by incorporating additional on-site or off-site retention BMPs (ft^3): N/A *Existing downstream BMP may be used to demonstrate additional volume capture (if so, attach to this WQMP a hydrologic analysis showing how the additional volume would be retained during a 2-yr storm event for the regional watershed)*

5 If Item 4 is less than Item 3, incorporate in-stream controls on downstream waterbody segment to prevent impacts due to hydromodification ☐ *Attach in-stream control BMP selection and evaluation to this WQMP*

6 Is Form 4.2-2 Item 11 less than or equal to 5%: Yes ☐ No ☒

If yes, HCOC performance criteria is achieved. If no, select one or more mitigation options below:

- Demonstrate increase in time of concentration achieved by proposed LID site design, LID BMP, and additional on-site or off-site retention BMP ☒

  BMP upstream of a waterbody segment with a potential HCOC may be used to demonstrate increased time of concentration through hydrograph attenuation (if so, show that the hydraulic residence time provided in BMP for a 2-year storm event is equal or greater than the addition time of concentration requirement in Form 4.2-4 Item 15)
- Increase time of concentration by preserving pre-developed flow path and/or increase travel time by reducing slope and increasing cross-sectional area and roughness for proposed on-site conveyance facilities ☐
- Incorporate appropriate in-stream controls for downstream waterbody segment to prevent impacts due to hydromodification, in a plan approved and signed by a licensed engineer in the State of California ☐

7 Form 4.2-2 Item 12 less than or equal to 5%: Yes ☐ No ☒

If yes, HCOC performance criteria is achieved. If no, select one or more mitigation options below:

- Demonstrate reduction in peak runoff achieved by proposed LID site design, LID BMPs, and additional on-site or off-site retention BMPs ☒

  BMPs upstream of a waterbody segment with a potential HCOC may be used to demonstrate additional peak runoff reduction through hydrograph attenuation (if so, attach to this WQMP, a hydrograph analysis showing how the peak runoff would be reduced during a 2-yr storm event)
- Incorporate appropriate in-stream controls for downstream waterbody segment to prevent impacts due to hydromodification, in a plan approved and signed by a licensed engineer in the State of California ☐

4.4 Alternative Compliance Plan (if applicable)

Describe an alternative compliance plan (if applicable) for projects not fully able to infiltrate, harvest and use, or biotreat the DCV via on-site LID practices. A project proponent must develop an alternative compliance plan to address the remainder of the LID DCV. Depending on project type some projects may qualify for water quality credits that can be applied to reduce the DCV that must be treated prior to development of an alternative compliance plan (see Form 2.4-1, Water Quality Credits). Form 4.3-9 Item 8 includes instructions on how to apply water quality credits when computing the DCV that must be met through alternative compliance. Alternative compliance plans may include one or more of the following elements:

- On-site structural treatment control BMP - All treatment control BMP should be located as close to possible to the pollutant sources and should not be located within receiving waters;
- Off-site structural treatment control BMP - Pollutant removal should occur prior to discharge of runoff to receiving waters;
- Urban runoff fund or In-lieu program, if available

Depending upon the proposed alternative compliance plan, approval by the executive officer may or may not be required (see Section 6 of the TGD for WQMP).

Section 5 Inspection and Maintenance Responsibility for Post Construction BMP

All BMP included as part of the project WQMP are required to be maintained through regular scheduled inspection and maintenance (refer to Section 8, Post Construction BMP Requirements, in the TGD for WQMP). Fully complete Form 5-1 summarizing all BMP included in the WQMP. Attach additional forms as needed. The WQMP shall also include a detailed Operation and Maintenance Plan for all BMP and may require a Maintenance Agreement (consult the jurisdiction's LIP). If a Maintenance Agreement is required, it must also be attached to the WQMP.

Form 5-1 BMP Inspection and Maintenance (use additional forms as necessary)

BMP	Reponsible Party(s)	Inspection/ Maintenance Activities Required	Minimum Frequency of Activities
Landscape Maintenance	Owner	Maintain landscape are vegetation, slope protection and grades adjacent to hardscape, and prevent discharge of landscape maintenance waste into storm drains.	Weekly
Litter Control	Owner	Maintain roofed waste collection areas and vacuum-sweep drive aisles and parking areas to remove potential stormwater contamination before anticipated storm events.	Weekly/Monthly
Vacuum Sweep Private Streets and Parking Lots	Owner	Streets, parking areas and alleyways within the project shall be vacuum swept at a minimum frequency monthly.	Monthly
Trash Enclosure Design and Maintenance	Owner	Trash enclosure shall be constructed with a solid canopy style roof and shall be set on a raised concrete pad, to prevent stormwater runon and the enclosure shall be swept at least once per week. Always maintain area clear of trash and debris.	Weekly
Irrigation System	Owner	Check and repair the irrigation system. Verify there are no leaks or runoff from landscape areas. Adjust irrigation heads and system run times as necessary to prevent overwater of vegetation, overspray or run-off from landscape areas and to ensure the health and aesthetic quality of the landscape.	Weekly
Onsite storm drain catch basins	Owner	Onsite catch basins shall be inspected monthly for debris buildup and evidence of illegal dumping and shall be cleaned whenever debris/sediment accumulates. Removal can be accomplished by vac-truck or other equally effective methods.	Monthly
Anti-Dumping Stenciling & Signage	Owner	Visual inspection and replacement of damaged or illegible stenciling and signage over on-site catch basins.	Annually

Underground Infiltration System	Owner	Regular inspections of system via the access manholes to determine sediment build up and infiltration capacity. Cleaning of accumulated trash, debris, and sediments as determined by inspections. Cleaning is recommended during dry weather. See manufacturer recommendations for additional maintenance activities.	Monthly within 48 hours following a significant storm event to verify if there is standing water in the chambers

Section 6 WQMP Attachments

6.1. Site Plan and Drainage Plan

Include a site plan and drainage plan sheet set containing the following minimum information:

- Project location
- Site boundary
- Land uses and land covers, as applicable
- Suitability/feasibility constraints
- Structural Source Control BMP locations
- Site Design Hydrologic Source Control BMP locations
- LID BMP details
- Drainage delineations and flow information
- Drainage connections

6.2 Electronic Data Submittal

Minimum requirements include submittal of PDF exhibits in addition to hard copies. Format must not require specialized software to open. If the local jurisdiction requires specialized electronic document formats (as described in their local Local Implementation Plan), this section will describe the contents (e.g., layering, nomenclature, geo-referencing, etc.) of these documents so that they may be interpreted efficiently and accurately.

6.3 Post Construction

Attach all O&M Plans and Maintenance Agreements for BMP to the WQMP.

6.4 Other Supporting Documentation

- 6.4.1 Vicinity Map
- 6.4.2 NOAA Precipitation Data
- 6.4.3 WAP Report
- 6.4.4 HCOC Calculations
- 6.4.5 BMP Sizing Calculations
- 6.4.6 Geotechnical Report
- 6.4.7 Educational Materials

Section 6.1 Site and Drainage Plan

CITY OF RIALTO

POST-DEVELOPMENT WQMP EXHIBIT

FOR

2175 S WILLOW AVE.

HYDROLOGY INFORMATION

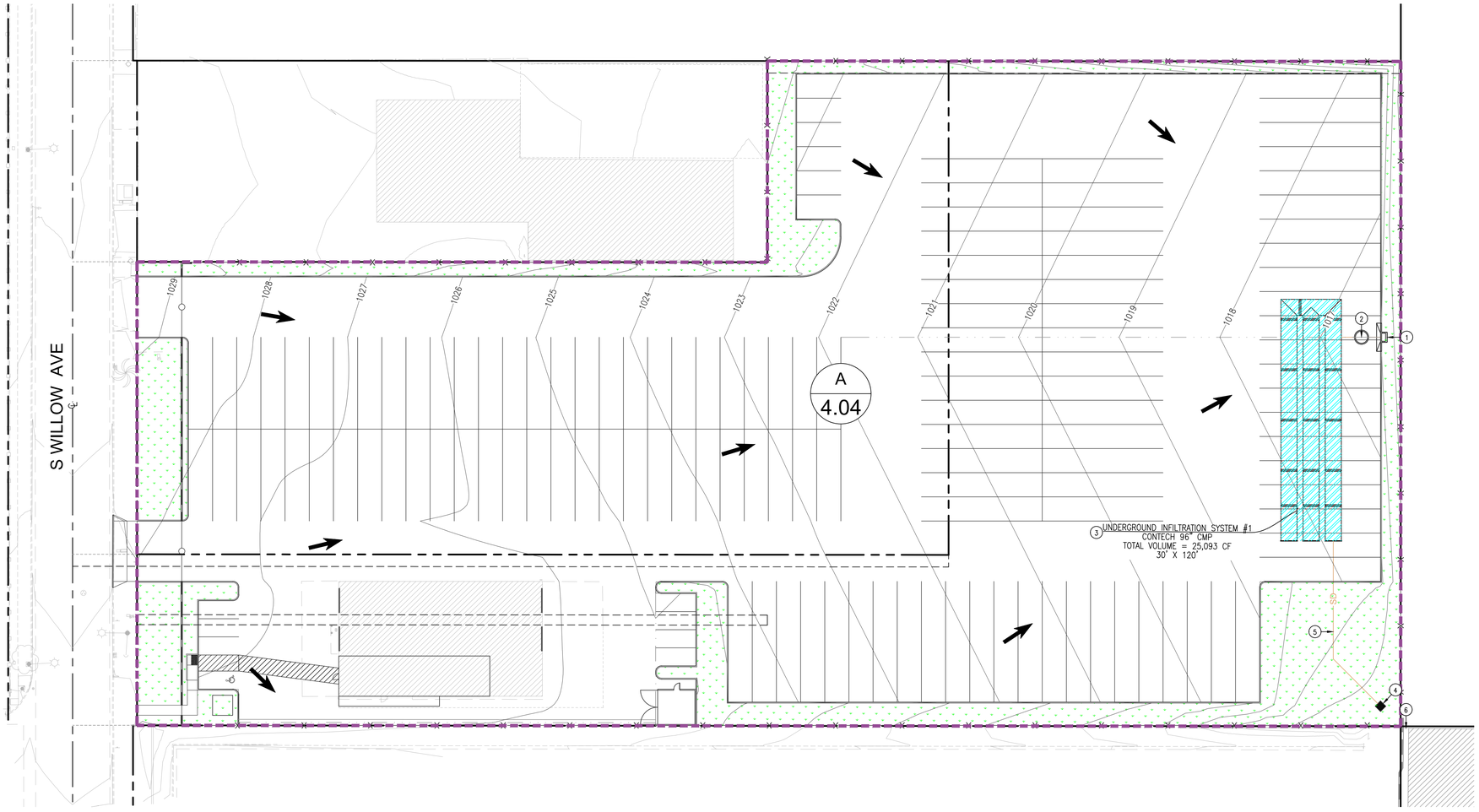
SITE AREA:	4.04 ACRES	
SOIL TYPE:	A	(NRCS WEB SOIL SURVEY)
IMPERVIOUS:	87%	(PER CALCULATIONS)
ISOHYETALS:	0.521 INCH	(2-YEAR, 1-HR STORM EVENT)
	1.27 INCH	(100-YEAR, 1-HR STORM EVENT)
CURVE NUMBER	32	(SOIL GROUP A)
FREQUENCY:	2-YEAR	(FOR STORMWATER QUALITY)
	100-YEAR	(FOR STORM DRAIN DESIGN)
METHOD:	SAN BERNARDINO COUNTY HYDROLOGY MANUAL	

LEGEND:

- DRAINAGE AREA BOUNDARY
- FLOW PATH
- PROPOSED STORM DRAIN PIPE (SD)
- PROPOSED FLOW DIRECTION ARROW
- X / X.XX — DRAINAGE AREA DESIGNATION / AREA (AC)
- 1.1 — STREAM #
- 1 — NODE

DRAINAGE NOTES:

1. PROPOSED CATCH BASIN WITH FILTER INSERT
2. PROPOSED BMP – HYDRODYNAMIC SEPARATOR
3. PROPOSED BMP – UNDERGROUND INFILTRATION BASIN
4. PROPOSED BUBBLER SYSTEM
5. PROPOSED STORM DRAIN PIPE PRIVATE MAINTAINED
6. EXISTING CONCRETE CHANNEL



WQMP SUMMARY							
DRAINAGE AREA NO.	TRIBUTARY AREA (SF)	TRIBUTARY AREA (AC)	IMPERVIOUS RATIO	DCV (CF)	V_{HCOC} (CF)	Q_2 ALLOWABLE (CFS)	RETENTION PROVIDED (CF)
A	175,959	4.04	0.87	15,384	23,999	2.18 (NATURAL GROUND)	25,093 (UNDERGROUND INFILTRATION SYSTEM #1)

NORTH

GRAPHIC SCALE IN FEET
0 15 30 60

SCALE: 1" = 30'
WHEN PRINTED AT FULL SIZE 24"X36"

PREPARED BY:

Kimley»Horn

1100 W TOWN AND COUNTRY ROAD,SUITE 700,
ORANGE, CA 92868
PHONE: 714-939-1030 FAX: 714-938-9488
WWW.KIMLEY-HORN.COM

2175 S WILLOW AVE
POST-DEVELOPMENT WQMP EXHIBIT
OUTOUR

CITY OF RIALTO

DATE: DEC 2024
SHEET
1
OF 1

K:\RIA_LA\OUTDOR STORAGE #NOTRACKED\191000 - 2175 S WILLOW AVE\REPORTS\WQMP\EXHIBITS\WQMP EXHIBIT - 2175 S WILLOW.DWG [12-04-24 1:33:32PM] Plotted by: anniecrowdus

12/04/2024

Section 6.2 Electronica Data Submittal

Section 6.3 Post Construction

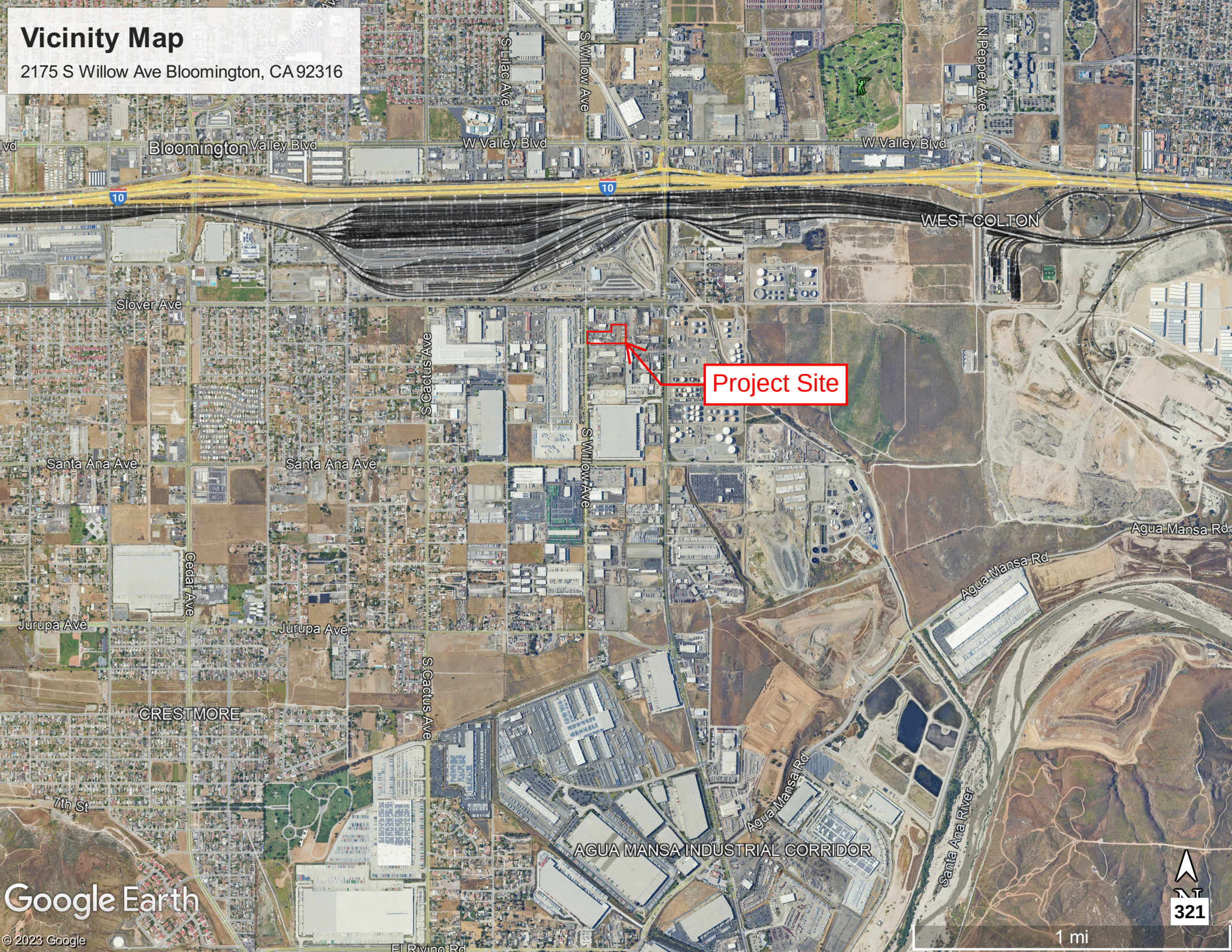
Section 6.4 Other Supporting Documentation

6.4.1 Vicinity Map
6.4.2 NOAA Precipitation Data
6.4.3 WAP Report
6.4.4 HCOC Calculations
6.4.5 BMP Sizing Calculations
6.4.6 Geotechnical Report
6.4.7 Educational Materials

Section 6.4.1 Vicinity Map

Vicinity Map

2175 S Willow Ave Bloomington, CA 92316



6.4.2 NOAA Precipitation Data

NOAA Atlas 14, Volume 6, Version 2
Location name: Bloomington, California, USA*
Latitude: 34.0617°, Longitude: -117.3731°
Elevation: 1023 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.108 (0.090-0.131)	0.139 (0.116-0.169)	0.181 (0.150-0.221)	0.216 (0.178-0.265)	0.264 (0.210-0.335)	0.302 (0.235-0.392)	0.340 (0.258-0.453)	0.381 (0.281-0.523)	0.439 (0.310-0.627)	0.484 (0.330-0.718)
10-min	0.154 (0.129-0.187)	0.200 (0.166-0.242)	0.260 (0.215-0.316)	0.310 (0.255-0.380)	0.378 (0.301-0.481)	0.432 (0.336-0.561)	0.488 (0.370-0.650)	0.547 (0.403-0.749)	0.629 (0.444-0.899)	0.694 (0.473-1.03)
15-min	0.187 (0.156-0.226)	0.241 (0.201-0.293)	0.314 (0.261-0.382)	0.374 (0.308-0.460)	0.457 (0.364-0.581)	0.523 (0.407-0.679)	0.590 (0.448-0.786)	0.661 (0.487-0.906)	0.760 (0.537-1.09)	0.840 (0.572-1.24)
30-min	0.279 (0.232-0.338)	0.360 (0.300-0.437)	0.468 (0.389-0.570)	0.558 (0.459-0.685)	0.682 (0.542-0.867)	0.780 (0.606-1.01)	0.880 (0.668-1.17)	0.986 (0.727-1.35)	1.13 (0.800-1.62)	1.25 (0.853-1.86)
60-min	0.403 (0.336-0.489)	0.521 (0.434-0.633)	0.678 (0.563-0.825)	0.808 (0.665-0.992)	0.987 (0.785-1.26)	1.13 (0.878-1.46)	1.27 (0.966-1.70)	1.43 (1.05-1.96)	1.64 (1.16-2.35)	1.81 (1.24-2.69)
2-hr	0.585 (0.488-0.709)	0.750 (0.624-0.911)	0.967 (0.803-1.18)	1.15 (0.943-1.41)	1.39 (1.10-1.77)	1.58 (1.23-2.05)	1.78 (1.35-2.36)	1.98 (1.46-2.71)	2.26 (1.60-3.23)	2.48 (1.69-3.68)
3-hr	0.726 (0.605-0.880)	0.928 (0.772-1.13)	1.19 (0.991-1.45)	1.41 (1.16-1.73)	1.71 (1.36-2.17)	1.94 (1.51-2.51)	2.17 (1.65-2.89)	2.41 (1.78-3.31)	2.75 (1.94-3.93)	3.02 (2.05-4.47)
6-hr	1.02 (0.850-1.24)	1.30 (1.08-1.58)	1.68 (1.39-2.04)	1.98 (1.63-2.43)	2.39 (1.90-3.03)	2.70 (2.10-3.51)	3.02 (2.29-4.03)	3.35 (2.47-4.60)	3.81 (2.69-5.45)	4.16 (2.84-6.17)
12-hr	1.36 (1.13-1.65)	1.74 (1.45-2.12)	2.24 (1.86-2.73)	2.65 (2.18-3.25)	3.20 (2.54-4.06)	3.62 (2.81-4.70)	4.04 (3.06-5.38)	4.48 (3.30-6.14)	5.07 (3.58-7.26)	5.54 (3.77-8.21)
24-hr	1.81 (1.60-2.09)	2.35 (2.08-2.71)	3.04 (2.68-3.52)	3.60 (3.15-4.20)	4.36 (3.69-5.25)	4.93 (4.09-6.07)	5.52 (4.47-6.95)	6.12 (4.82-7.93)	6.94 (5.25-9.35)	7.57 (5.54-10.6)
2-day	2.21 (1.95-2.54)	2.90 (2.57-3.35)	3.81 (3.36-4.41)	4.56 (3.98-5.31)	5.56 (4.71-6.71)	6.34 (5.26-7.80)	7.14 (5.78-8.99)	7.95 (6.27-10.3)	9.07 (6.86-12.2)	9.94 (7.27-13.9)
3-day	2.36 (2.09-2.72)	3.15 (2.79-3.64)	4.20 (3.70-4.86)	5.06 (4.42-5.90)	6.24 (5.28-7.52)	7.16 (5.94-8.80)	8.10 (6.56-10.2)	9.08 (7.16-11.8)	10.4 (7.89-14.1)	11.5 (8.40-16.0)
4-day	2.53 (2.24-2.92)	3.42 (3.02-3.94)	4.59 (4.04-5.31)	5.56 (4.86-6.48)	6.89 (5.84-8.30)	7.94 (6.58-9.76)	9.01 (7.30-11.4)	10.1 (7.99-13.1)	11.7 (8.84-15.8)	12.9 (9.45-18.0)
7-day	2.89 (2.56-3.33)	3.94 (3.49-4.55)	5.34 (4.71-6.18)	6.50 (5.68-7.58)	8.10 (6.86-9.76)	9.35 (7.76-11.5)	10.6 (8.62-13.4)	12.0 (9.46-15.5)	13.9 (10.5-18.7)	15.4 (11.3-21.5)
10-day	3.14 (2.78-3.62)	4.31 (3.81-4.97)	5.86 (5.17-6.79)	7.15 (6.26-8.34)	8.94 (7.57-10.8)	10.3 (8.58-12.7)	11.8 (9.56-14.9)	13.3 (10.5-17.3)	15.5 (11.7-20.8)	17.2 (12.5-23.9)
20-day	3.81 (3.37-4.39)	5.27 (4.66-6.09)	7.23 (6.37-8.36)	8.86 (7.75-10.3)	11.1 (9.42-13.4)	12.9 (10.7-15.9)	14.8 (12.0-18.6)	16.8 (13.2-21.7)	19.5 (14.8-26.4)	21.8 (15.9-30.4)
30-day	4.52 (4.00-5.21)	6.26 (5.53-7.22)	8.59 (7.57-9.94)	10.5 (9.22-12.3)	13.3 (11.2-16.0)	15.4 (12.8-19.0)	17.7 (14.3-22.3)	20.1 (15.9-26.0)	23.5 (17.8-31.7)	26.3 (19.2-36.7)
45-day	5.40 (4.78-6.22)	7.43 (6.57-8.57)	10.2 (8.96-11.8)	12.5 (10.9-14.5)	15.7 (13.3-18.9)	18.2 (15.1-22.4)	21.0 (17.0-26.4)	23.9 (18.8-30.9)	28.0 (21.2-37.8)	31.4 (23.0-43.8)
60-day	6.31 (5.59-7.28)	8.60 (7.61-9.93)	11.7 (10.3-13.5)	14.3 (12.5-16.7)	18.0 (15.2-21.7)	20.9 (17.3-25.7)	24.0 (19.5-30.3)	27.4 (21.6-35.4)	32.2 (24.3-43.4)	36.1 (26.4-50.4)

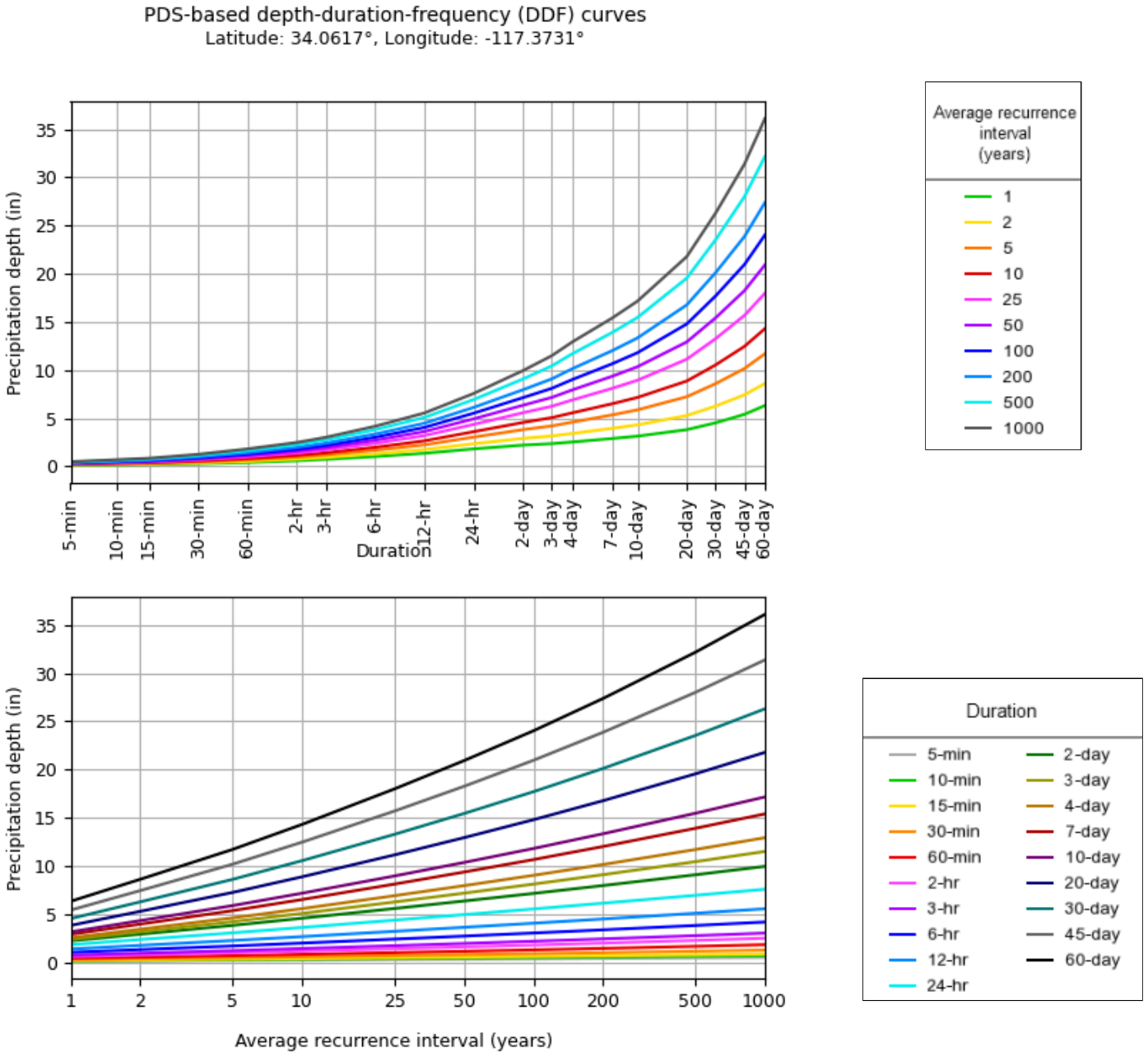
[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

Back to Top

PF graphical



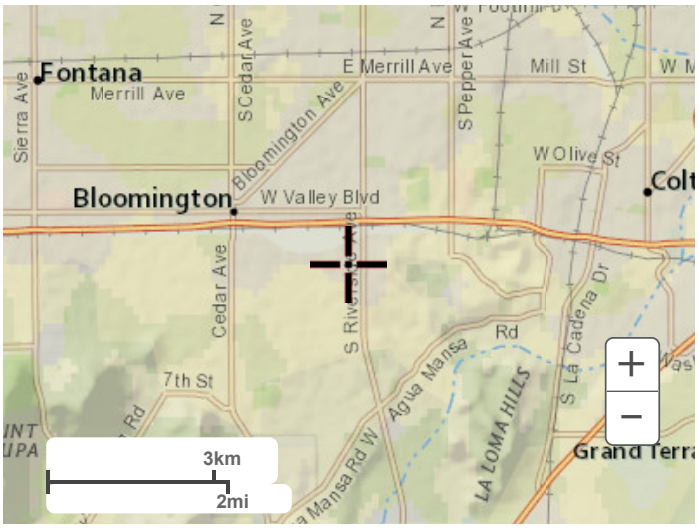
NOAA Atlas 14, Volume 6, Version 2

Created (GMT): Wed Nov 13 23:01:13 2024

Back to Top

Maps & aerials

Small scale terrain



Large scale terrain

Large scale map

Large scale aerial

Back to Top

US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

NOAA Atlas 14, Volume 6, Version 2
Location name: Bloomington, California, USA*
Latitude: 34.0617°, Longitude: -117.3731°
Elevation: 1023 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	1.30 (1.08-1.57)	1.67 (1.39-2.03)	2.17 (1.80-2.65)	2.59 (2.14-3.18)	3.17 (2.52-4.02)	3.62 (2.82-4.70)	4.08 (3.10-5.44)	4.57 (3.37-6.28)	5.27 (3.72-7.52)	5.81 (3.96-8.62)
10-min	0.924 (0.774-1.12)	1.20 (0.996-1.45)	1.56 (1.29-1.90)	1.86 (1.53-2.28)	2.27 (1.81-2.89)	2.59 (2.02-3.37)	2.93 (2.22-3.90)	3.28 (2.42-4.49)	3.77 (2.66-5.39)	4.16 (2.84-6.17)
15-min	0.748 (0.624-0.904)	0.964 (0.804-1.17)	1.26 (1.04-1.53)	1.50 (1.23-1.84)	1.83 (1.46-2.32)	2.09 (1.63-2.72)	2.36 (1.79-3.14)	2.64 (1.95-3.62)	3.04 (2.15-4.35)	3.36 (2.29-4.98)
30-min	0.558 (0.464-0.676)	0.720 (0.600-0.874)	0.936 (0.778-1.14)	1.12 (0.918-1.37)	1.36 (1.08-1.73)	1.56 (1.21-2.02)	1.76 (1.34-2.34)	1.97 (1.45-2.70)	2.27 (1.60-3.24)	2.50 (1.71-3.71)
60-min	0.403 (0.336-0.489)	0.521 (0.434-0.633)	0.678 (0.563-0.825)	0.808 (0.665-0.992)	0.987 (0.785-1.26)	1.13 (0.878-1.46)	1.27 (0.966-1.70)	1.43 (1.05-1.96)	1.64 (1.16-2.35)	1.81 (1.24-2.69)
2-hr	0.292 (0.244-0.354)	0.375 (0.312-0.455)	0.483 (0.401-0.589)	0.573 (0.471-0.703)	0.695 (0.552-0.883)	0.790 (0.614-1.03)	0.887 (0.673-1.18)	0.989 (0.729-1.36)	1.13 (0.797-1.62)	1.24 (0.845-1.84)
3-hr	0.241 (0.201-0.293)	0.309 (0.257-0.375)	0.397 (0.330-0.483)	0.469 (0.386-0.576)	0.568 (0.451-0.722)	0.644 (0.501-0.837)	0.722 (0.548-0.962)	0.803 (0.592-1.10)	0.915 (0.646-1.31)	1.00 (0.683-1.49)
6-hr	0.170 (0.141-0.206)	0.217 (0.181-0.264)	0.279 (0.232-0.340)	0.330 (0.271-0.405)	0.398 (0.316-0.506)	0.451 (0.351-0.586)	0.504 (0.382-0.672)	0.560 (0.412-0.768)	0.635 (0.448-0.909)	0.695 (0.473-1.03)
12-hr	0.112 (0.093-0.136)	0.144 (0.120-0.175)	0.186 (0.154-0.226)	0.219 (0.180-0.269)	0.265 (0.210-0.337)	0.300 (0.233-0.389)	0.335 (0.254-0.446)	0.371 (0.273-0.509)	0.421 (0.297-0.602)	0.459 (0.313-0.681)
24-hr	0.075 (0.066-0.087)	0.097 (0.086-0.112)	0.126 (0.111-0.146)	0.149 (0.131-0.174)	0.181 (0.153-0.218)	0.205 (0.170-0.252)	0.230 (0.186-0.289)	0.255 (0.201-0.330)	0.288 (0.218-0.389)	0.315 (0.230-0.439)
2-day	0.045 (0.040-0.052)	0.060 (0.053-0.069)	0.079 (0.070-0.091)	0.094 (0.083-0.110)	0.115 (0.098-0.139)	0.132 (0.109-0.162)	0.148 (0.120-0.187)	0.165 (0.130-0.214)	0.188 (0.142-0.254)	0.207 (0.151-0.288)
3-day	0.032 (0.028-0.037)	0.043 (0.038-0.050)	0.058 (0.051-0.067)	0.070 (0.061-0.081)	0.086 (0.073-0.104)	0.099 (0.082-0.122)	0.112 (0.091-0.141)	0.126 (0.099-0.163)	0.144 (0.109-0.195)	0.159 (0.116-0.222)
4-day	0.026 (0.023-0.030)	0.035 (0.031-0.041)	0.047 (0.042-0.055)	0.057 (0.050-0.067)	0.071 (0.060-0.086)	0.082 (0.068-0.101)	0.093 (0.076-0.118)	0.105 (0.083-0.136)	0.121 (0.092-0.164)	0.134 (0.098-0.187)
7-day	0.017 (0.015-0.019)	0.023 (0.020-0.027)	0.031 (0.028-0.036)	0.038 (0.033-0.045)	0.048 (0.040-0.058)	0.055 (0.046-0.068)	0.063 (0.051-0.079)	0.071 (0.056-0.092)	0.082 (0.062-0.111)	0.091 (0.067-0.127)
10-day	0.013 (0.011-0.015)	0.017 (0.015-0.020)	0.024 (0.021-0.028)	0.029 (0.026-0.034)	0.037 (0.031-0.044)	0.043 (0.035-0.053)	0.049 (0.039-0.061)	0.055 (0.043-0.071)	0.064 (0.048-0.086)	0.071 (0.052-0.099)
20-day	0.007 (0.007-0.009)	0.010 (0.009-0.012)	0.015 (0.013-0.017)	0.018 (0.016-0.021)	0.023 (0.019-0.027)	0.026 (0.022-0.033)	0.030 (0.024-0.038)	0.034 (0.027-0.045)	0.040 (0.030-0.054)	0.045 (0.033-0.063)
30-day	0.006 (0.005-0.007)	0.008 (0.007-0.010)	0.011 (0.010-0.013)	0.014 (0.012-0.017)	0.018 (0.015-0.022)	0.021 (0.017-0.026)	0.024 (0.019-0.030)	0.027 (0.022-0.036)	0.032 (0.024-0.044)	0.036 (0.026-0.050)
45-day	0.005 (0.004-0.005)	0.006 (0.006-0.007)	0.009 (0.008-0.010)	0.011 (0.010-0.013)	0.014 (0.012-0.017)	0.016 (0.014-0.020)	0.019 (0.015-0.024)	0.022 (0.017-0.028)	0.025 (0.019-0.034)	0.029 (0.021-0.040)
60-day	0.004 (0.003-0.005)	0.005 (0.005-0.006)	0.008 (0.007-0.009)	0.009 (0.008-0.011)	0.012 (0.010-0.015)	0.014 (0.012-0.017)	0.016 (0.013-0.021)	0.019 (0.014-0.024)	0.022 (0.016-0.030)	0.025 (0.018-0.034)

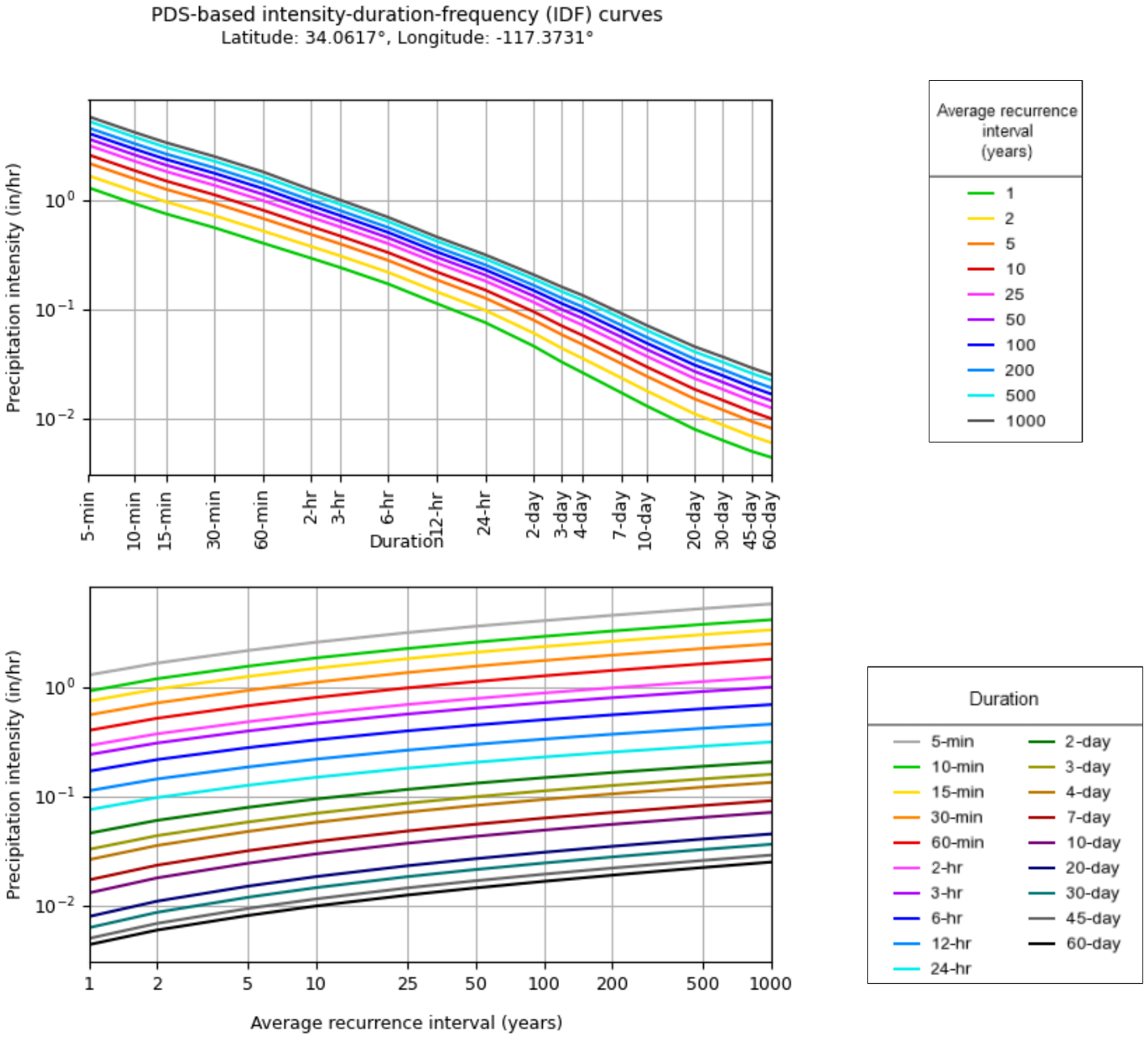
[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

Back to Top

PF graphical



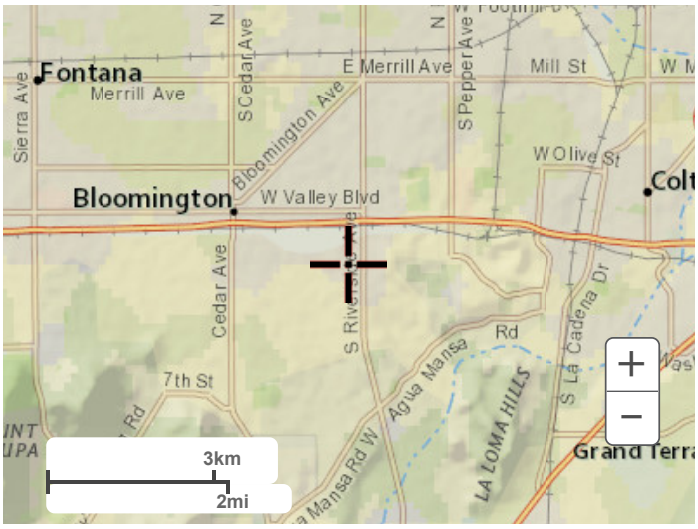
NOAA Atlas 14, Volume 6, Version 2

Created (GMT): Wed Nov 13 22:56:48 2024

Back to Top

Maps & aerials

Small scale terrain



Large scale terrain

Large scale map

Large scale aerial

Back to Top

US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

6.4.3 WAP Report

Area of Interest (AOI) Information

Area : 237,086.23 ft²

Nov 18 2024 14:34:39 Pacific Standard Time

Project Site Parcel Numbers

#	ParcelNumber	Acreage	Area(ft²)
1	025819113	0.45	155.28
2	025804139	2.68	5,881.47
3	025804109	4.73	6,383.00
4	025804111	4.04	12,126.39
5	025804123	0.72	31,308.35
6	025804128	1.55	67,558.93
7	025804129	2.49	108,463.64

Drainage Segment Details

#	System Number	Facility Name	Closest channel segment's susceptibility to Hydromodification	Highest downstream hydromodification susceptibility	Is this drainage segment subject to TMDLs?
1	2-120-1C	Rialto Channel	EHM	High	No

#	Are there downstream drainage segments subject to TMDLs?	Is this drainage segment a 303d listed stream?	Are there 303d listed streams downstream?	Area(ft²)
1	No	No	Yes	237,086.27

Onsite Soil Groups

#	Onsite Soils Group	Soil Type	Soil Type Abbreviation	Area(ft²)
1	Soils - Hydro Group B	HaC HANFORD COARSE SANDY LOAM, 2 TO 9 PERCENT SLO*	HANFORD COARSE SANDY LOAM	237,086.23

Studies and Reports Related to Project Site

#	Report Link	Source	Date	Area(ft²)
1	SBVMWD_High_Groundwater_/_Pressure_Zone_Area	USGS & San Bern Valley Municipal Water District	2005	237,086.23
2	CSDP_3_CALC_SHEET_FOR_HYDRO	San Bernardino County Flood Control District	April 1973	237,086.23
3	CSDP_3-3_Rialto_Channel_Drainage_Area_Volume_I	James M. Montgomery	April 1988	237,086.23
4	CSDP_3-3_Rialto_Channel_Drainage_Area_Volume_II	James M. Montgomery	April 1988	237,086.23
5	CSDP_3-3_Rialto_Channel_Drainage_Area_Volume_III	James M. Montgomery	April 1988	237,086.23
6	CSDP_3-3_Rialto_Channel_Drainage_Area_Volume_I	James M. Montgomery	April 1988	237,086.23
7	CSDP_3-3_Rialto_Channel_Drainage_Area_Volume_IV	James M. Montgomery	April 1988	237,086.23
8	CSDP_3-3_Rialto_Channel_Drainage_Area_Volume_V	James M. Montgomery	April 1988	237,086.23
9	Rialto_MPD_Vol1	Hall & Foreman, Inc	February 2009	237,086.23
10	Rialto_MPD_Vol_II	Hall & Foreman, Inc	February 2009	237,086.23
11	RS-Rialto_Map_Book-FINAL_Layout2	Hall & Foreman, Inc	February 2009	237,086.23
12	CSDP_3-3_Rialto_Channel_Drain_Area_Draft	James M. Montgomery	January 1987	237,086.23
13	Cactus_Basin	San Bernardino County Flood Control District	October 1985	237,086.23

Note: The information provided in this report and on the Stormwater Geodatabase for the County of San Bernardino Stormwater Program is intended to provide basic guidance in the preparation of the applicant's Water Quality Management Plan (WQMP) and should not be relied upon without independent verification. without independent verification.

6.4.4 HCOC Calculations

HCOC Summary
2-Year Pre-Development (Natural Conditions) Rational Method Calculations
2-Year Post Development Rational Method Calculations
2-Year Pre-Development (Natural Conditions) Unit Hydrograph Calculations
2-Year Post-Development Unit Hydrograph Calculations

6.4.4 HCOC Calculations

HCOC Summary

6.4.4 HCOC Calculations

2-Year Pre-Development (Natural Conditions) Rational Method Calculations

```
**************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
         (c) Copyright 1983-2016 Advanced Engineering Software (aes)
             Ver. 23.0  Release Date: 07/01/2016  License ID 1499

                          Analysis prepared by:




 ************************ DESCRIPTION OF STUDY ************************
* 2175 S WILLOW                                                       *
* RATIONAL METHOD                                                     *
* UNDEVELOPED CONDITIONS, 2-YEAR, DA A                                *
 **********************************************************************

  FILE NAME: RAT2PR.DAT
  TIME/DATE OF STUDY: 11:08 11/18/2024
==========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =    2.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  12.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 0.5210

  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

**************************************************************************
  FLOW PROCESS FROM NODE      1.00 TO NODE      1.10 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   655.11
  ELEVATION DATA: UPSTREAM(FEET) =   1029.41  DOWNSTREAM(FEET) =   1014.70

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   15.013
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.196
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL POOR COVER
  "GRASS"                    A        4.04      0.60     1.000    67   15.01
```

```
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.60
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      2.18
  TOTAL AREA(ACRES) =      4.04   PEAK FLOW RATE(CFS) =      2.18
================================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        4.0  TC(MIN.) =     15.01
  EFFECTIVE AREA(ACRES) =      4.04  AREA-AVERAGED Fm(INCH/HR)=  0.60
  AREA-AVERAGED Fp(INCH/HR) =  0.60  AREA-AVERAGED Ap = 1.000
  PEAK FLOW RATE(CFS)   =       2.18
================================================================================
================================================================================
  END OF RATIONAL METHOD ANALYSIS
```

6.4.4 HCOC Calculations

2-Year Post-Development Rational Method Calculations

```
**************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
         (c) Copyright 1983-2016 Advanced Engineering Software (aes)
             Ver. 23.0  Release Date: 07/01/2016  License ID 1499

                          Analysis prepared by:




 ************************ DESCRIPTION OF STUDY ************************
* 2175 S WILLOW                                                       *
* RATIONAL METHOD                                                     *
* POST DEVELOPMENT CONDITIONS, 2-YEAR, DA A                           *
 **********************************************************************

  FILE NAME: RAT2PO.DAT
  TIME/DATE OF STUDY: 12:13 11/21/2024
==========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =    2.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  12.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 0.5210

  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

**************************************************************************
  FLOW PROCESS FROM NODE      1.10 TO NODE      1.20 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   711.88
  ELEVATION DATA: UPSTREAM(FEET) =   1027.86  DOWNSTREAM(FEET) =   1013.42

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.171
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.608
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  COMMERCIAL                 A        4.04      0.98     0.100    32    9.17
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
```

```
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
  SUBAREA RUNOFF(CFS) =      5.49
  TOTAL AREA(ACRES) =      4.04   PEAK FLOW RATE(CFS) =      5.49
================================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        4.0  TC(MIN.) =      9.17
  EFFECTIVE AREA(ACRES) =      4.04  AREA-AVERAGED Fm(INCH/HR)=  0.10
  AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap = 0.100
  PEAK FLOW RATE(CFS)   =       5.49
================================================================================
================================================================================
  END OF RATIONAL METHOD ANALYSIS
```

6.4.4 HCOC Calculations

2-Year Pre-Development (Natural Conditions) Unit Hydrograph Calculations

```
******************************************************************************
                     SMALL AREA UNIT HYDROGRAPH MODEL
==============================================================================
         (C) Copyright 1989-2016 Advanced Engineering Software (aes)
             Ver. 23.0  Release Date: 07/01/2016  License ID 1499

                           Analysis prepared by:




******************************************************************************
------------------------------------------------------------------------------

 Problem Descriptions:
  2175 S WILLOW
  UNIT HYDROGRAPH
  UNDEVELOPED CONDITIONS,  2-YEAR, DA A
------------------------------------------------------------------------------


    RATIONAL METHOD CALIBRATION COEFFICIENT = 1.35
    TOTAL CATCHMENT AREA(ACRES) =    4.04
    SOIL-LOSS RATE, Fm,(INCH/HR) =  0.598
    LOW LOSS FRACTION = 0.874
    TIME OF CONCENTRATION(MIN.) = 15.01
    SMALL AREA PEAK Q COMPUTED USING PEAK FLOW RATE FORMULA
    USER SPECIFIED RAINFALL VALUES ARE USED
    RETURN FREQUENCY(YEARS) =   2
       5-MINUTE POINT RAINFALL VALUE(INCHES) =  0.14
      30-MINUTE POINT RAINFALL VALUE(INCHES) =  0.36
       1-HOUR   POINT RAINFALL VALUE(INCHES) =  0.52
       3-HOUR   POINT RAINFALL VALUE(INCHES) =  0.93
       6-HOUR   POINT RAINFALL VALUE(INCHES) =  1.30
      24-HOUR   POINT RAINFALL VALUE(INCHES) =  2.35

------------------------------------------------------------------------------

    TOTAL CATCHMENT   RUNOFF  VOLUME(ACRE-FEET) =     0.16
    TOTAL CATCHMENT SOIL-LOSS VOLUME(ACRE-FEET) =     0.63

******************************************************************************
  TIME     VOLUME       Q    0.        2.5       5.0       7.5      10.0
 (HOURS)    (AF)      (CFS)
------------------------------------------------------------------------------
  0.24      0.0003      0.03  Q         .         .         .         .
  0.49      0.0009      0.03  Q         .         .         .         .
  0.74      0.0015      0.03  Q         .         .         .         .
  0.99      0.0021      0.03  Q         .         .         .         .
  1.24      0.0027      0.03  Q         .         .         .         .
  1.49      0.0033      0.03  Q         .         .         .         .
  1.74      0.0040      0.03  Q         .         .         .         .
  1.99      0.0046      0.03  Q         .         .         .         .
  2.24      0.0052      0.03  Q         .         .         .         .
  2.49      0.0059      0.03  Q         .         .         .         .
  2.74      0.0065      0.03  Q         .         .         .         .
  2.99      0.0072      0.03  Q         .         .         .         .
  3.24      0.0079      0.03  Q         .         .         .         .
  3.49      0.0085      0.03  Q         .         .         .         .
  3.74      0.0092      0.03  Q         .         .         .         .
  3.99      0.0099      0.03  Q         .         .         .         .
  4.24      0.0106      0.03  Q         .         .         .         .
  4.49      0.0113      0.03  Q         .         .         .         .
  4.74      0.0120      0.03  Q         .         .         .         .
  4.99      0.0128      0.04  Q         .         .         .         .
  5.24      0.0135      0.04  Q         .         .         .         .
```

5.49	0.0142	0.04	Q	.	.	.	.
5.74	0.0150	0.04	Q	.	.	.	.
5.99	0.0158	0.04	Q	.	.	.	.
6.24	0.0165	0.04	Q	.	.	.	.
6.49	0.0173	0.04	Q	.	.	.	.
6.74	0.0181	0.04	Q	.	.	.	.
6.99	0.0189	0.04	Q	.	.	.	.
7.24	0.0198	0.04	Q	.	.	.	.
7.49	0.0206	0.04	Q	.	.	.	.
7.74	0.0214	0.04	Q	.	.	.	.
7.99	0.0223	0.04	Q	.	.	.	.
8.24	0.0232	0.04	Q	.	.	.	.
8.49	0.0241	0.04	Q	.	.	.	.
8.75	0.0250	0.04	Q	.	.	.	.
9.00	0.0259	0.05	Q	.	.	.	.
9.25	0.0269	0.05	Q	.	.	.	.
9.50	0.0279	0.05	Q	.	.	.	.
9.75	0.0288	0.05	Q	.	.	.	.
10.00	0.0299	0.05	Q	.	.	.	.
10.25	0.0309	0.05	Q	.	.	.	.
10.50	0.0320	0.05	Q	.	.	.	.
10.75	0.0330	0.05	Q	.	.	.	.
11.00	0.0342	0.05	Q	.	.	.	.
11.25	0.0353	0.06	Q	.	.	.	.
11.50	0.0365	0.06	Q	.	.	.	.
11.75	0.0377	0.06	Q	.	.	.	.
12.00	0.0390	0.06	Q	.	.	.	.
12.25	0.0404	0.07	Q	.	.	.	.
12.50	0.0419	0.08	Q	.	.	.	.
12.75	0.0435	0.08	Q	.	.	.	.
13.00	0.0451	0.08	Q	.	.	.	.
13.25	0.0468	0.09	Q	.	.	.	.
13.50	0.0486	0.09	Q	.	.	.	.
13.75	0.0505	0.09	Q	.	.	.	.
14.00	0.0525	0.10	Q	.	.	.	.
14.25	0.0547	0.11	Q	.	.	.	.
14.50	0.0571	0.12	Q	.	.	.	.
14.75	0.0597	0.13	Q	.	.	.	.
15.00	0.0625	0.14	Q	.	.	.	.
15.25	0.0656	0.16	Q	.	.	.	.
15.50	0.0692	0.18	Q	.	.	.	.
15.75	0.0735	0.24	Q	.	.	.	.
16.00	0.0791	0.31	.Q	.	.	.	.
16.25	0.1048	2.18	.	Q	.	.	.
16.50	0.1294	0.20	Q	.	.	.	.
16.75	0.1330	0.15	Q	.	.	.	.
17.00	0.1359	0.13	Q	.	.	.	.
17.25	0.1382	0.10	Q	.	.	.	.
17.50	0.1402	0.09	Q	.	.	.	.
17.75	0.1420	0.08	Q	.	.	.	.
18.00	0.1437	0.08	Q	.	.	.	.
18.25	0.1451	0.06	Q	.	.	.	.
18.50	0.1464	0.06	Q	.	.	.	.
18.75	0.1475	0.06	Q	.	.	.	.
19.00	0.1487	0.05	Q	.	.	.	.
19.25	0.1497	0.05	Q	.	.	.	.
19.50	0.1507	0.05	Q	.	.	.	.
19.75	0.1517	0.05	Q	.	.	.	.
20.00	0.1526	0.04	Q	.	.	.	.
20.25	0.1535	0.04	Q	.	.	.	.
20.50	0.1544	0.04	Q	.	.	.	.
20.75	0.1552	0.04	Q	.	.	.	.
21.00	0.1560	0.04	Q	.	.	.	.
21.25	0.1568	0.04	Q	.	.	.	.
21.50	0.1576	0.04	Q	.	.	.	.
21.75	0.1583	0.04	Q	.	.	.	.
22.00	0.1591	0.03	Q	.	.	.	.
22.25	0.1598	0.03	Q	.	.	.	.
22.50	0.1605	0.03	Q	.	.	.	.

```
  22.75      0.1611      0.03  Q         .         .         .         .
  23.00      0.1618      0.03  Q         .         .         .         .
  23.25      0.1624      0.03  Q         .         .         .         .
  23.51      0.1631      0.03  Q         .         .         .         .
  23.76      0.1637      0.03  Q         .         .         .         .
  24.01      0.1643      0.03  Q         .         .         .         .
  24.26      0.1646      0.00  Q         .         .         .         .
 ----------------------------------------------------------------------------
-------------------------------------------------------------------------------
    TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
    (Note: 100% of Peak Flow Rate estimate assumed to have
    an instantaneous time duration)

    Percentile of Estimated                Duration
        Peak Flow Rate                     (minutes)
    ======================                 =========
               0%                           1441.0
              10%                             45.0
              20%                             15.0
              30%                             15.0
              40%                             15.0
              50%                             15.0
              60%                             15.0
              70%                             15.0
              80%                             15.0
              90%                             15.0
```

6.4.4 HCOC Calculations

2-Year Post-Development Unit Hydrograph Calculations

```
******************************************************************************
                    SMALL AREA UNIT HYDROGRAPH MODEL
==============================================================================
         (C) Copyright 1989-2016 Advanced Engineering Software (aes)
             Ver. 23.0  Release Date: 07/01/2016  License ID 1499

                          Analysis prepared by:




******************************************************************************
------------------------------------------------------------------------------

 Problem Descriptions:
  2175 S WILLOW
  UNIT HYDROGRAPH
  POST DEVELOPMENT CONDITIONS, 2-YEAR, DA A
------------------------------------------------------------------------------


    RATIONAL METHOD CALIBRATION COEFFICIENT = 1.20
    TOTAL CATCHMENT AREA(ACRES) =    4.04
    SOIL-LOSS RATE, Fm,(INCH/HR) =  0.123
    LOW LOSS FRACTION = 0.211
    TIME OF CONCENTRATION(MIN.) =  9.17
    SMALL AREA PEAK Q COMPUTED USING PEAK FLOW RATE FORMULA
    USER SPECIFIED RAINFALL VALUES ARE USED
    RETURN FREQUENCY(YEARS) =   2
       5-MINUTE POINT RAINFALL VALUE(INCHES) =  0.14
      30-MINUTE POINT RAINFALL VALUE(INCHES) =  0.36
       1-HOUR   POINT RAINFALL VALUE(INCHES) =  0.52
       3-HOUR   POINT RAINFALL VALUE(INCHES) =  0.93
       6-HOUR   POINT RAINFALL VALUE(INCHES) =  1.30
      24-HOUR   POINT RAINFALL VALUE(INCHES) =  2.35

------------------------------------------------------------------------------

    TOTAL CATCHMENT   RUNOFF  VOLUME(ACRE-FEET) =     0.75
    TOTAL CATCHMENT SOIL-LOSS VOLUME(ACRE-FEET) =     0.04

******************************************************************************
  TIME     VOLUME       Q    0.        2.5       5.0       7.5      10.0
 (HOURS)    (AF)      (CFS)
------------------------------------------------------------------------------
  0.11      0.0010      0.16  Q         .         .         .         .
  0.26      0.0030      0.16  Q         .         .         .         .
  0.41      0.0051      0.16  Q         .         .         .         .
  0.56      0.0071      0.16  Q         .         .         .         .
  0.72      0.0092      0.16  Q         .         .         .         .
  0.87      0.0112      0.16  Q         .         .         .         .
  1.02      0.0133      0.17  Q         .         .         .         .
  1.18      0.0154      0.17  Q         .         .         .         .
  1.33      0.0175      0.17  Q         .         .         .         .
  1.48      0.0196      0.17  Q         .         .         .         .
  1.63      0.0218      0.17  Q         .         .         .         .
  1.79      0.0239      0.17  Q         .         .         .         .
  1.94      0.0261      0.17  Q         .         .         .         .
  2.09      0.0282      0.17  Q         .         .         .         .
  2.24      0.0304      0.17  Q         .         .         .         .
  2.40      0.0326      0.17  Q         .         .         .         .
  2.55      0.0348      0.18  Q         .         .         .         .
  2.70      0.0371      0.18  Q         .         .         .         .
  2.86      0.0393      0.18  Q         .         .         .         .
  3.01      0.0416      0.18  Q         .         .         .         .
  3.16      0.0438      0.18  Q         .         .         .         .
```

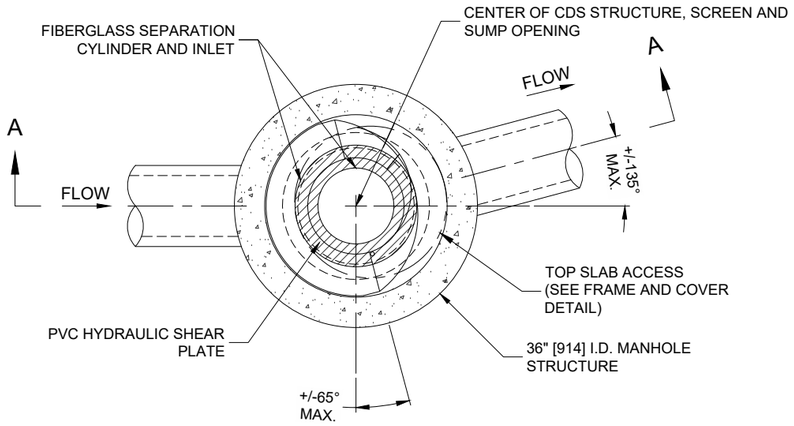
3.31	0.0461	0.18	Q	.	.	.	.
3.47	0.0484	0.18	Q	.	.	.	.
3.62	0.0507	0.18	Q	.	.	.	.
3.77	0.0531	0.19	Q	.	.	.	.
3.93	0.0554	0.19	Q	.	.	.	.
4.08	0.0578	0.19	Q	.	.	.	.
4.23	0.0602	0.19	Q	.	.	.	.
4.38	0.0626	0.19	Q	.	.	.	.
4.54	0.0650	0.19	Q	.	.	.	.
4.69	0.0674	0.19	Q	.	.	.	.
4.84	0.0699	0.20	Q	.	.	.	.
5.00	0.0724	0.20	Q	.	.	.	.
5.15	0.0748	0.20	Q	.	.	.	.
5.30	0.0774	0.20	Q	.	.	.	.
5.45	0.0799	0.20	Q	.	.	.	.
5.61	0.0825	0.20	Q	.	.	.	.
5.76	0.0850	0.21	Q	.	.	.	.
5.91	0.0876	0.21	Q	.	.	.	.
6.07	0.0903	0.21	Q	.	.	.	.
6.22	0.0929	0.21	Q	.	.	.	.
6.37	0.0956	0.21	Q	.	.	.	.
6.52	0.0983	0.21	Q	.	.	.	.
6.68	0.1010	0.22	Q	.	.	.	.
6.83	0.1037	0.22	Q	.	.	.	.
6.98	0.1065	0.22	Q	.	.	.	.
7.14	0.1093	0.22	Q	.	.	.	.
7.29	0.1121	0.22	Q	.	.	.	.
7.44	0.1150	0.23	Q	.	.	.	.
7.59	0.1178	0.23	Q	.	.	.	.
7.75	0.1208	0.23	Q	.	.	.	.
7.90	0.1237	0.23	Q	.	.	.	.
8.05	0.1267	0.24	Q	.	.	.	.
8.21	0.1297	0.24	Q	.	.	.	.
8.36	0.1327	0.24	Q	.	.	.	.
8.51	0.1358	0.25	Q	.	.	.	.
8.66	0.1389	0.25	Q	.	.	.	.
8.82	0.1420	0.25	.Q	.	.	.	.
8.97	0.1452	0.25	.Q	.	.	.	.
9.12	0.1484	0.26	.Q	.	.	.	.
9.28	0.1517	0.26	.Q	.	.	.	.
9.43	0.1550	0.26	.Q	.	.	.	.
9.58	0.1583	0.27	.Q	.	.	.	.
9.73	0.1617	0.27	.Q	.	.	.	.
9.89	0.1652	0.27	.Q	.	.	.	.
10.04	0.1687	0.28	.Q	.	.	.	.
10.19	0.1722	0.28	.Q	.	.	.	.
10.35	0.1758	0.29	.Q	.	.	.	.
10.50	0.1794	0.29	.Q	.	.	.	.
10.65	0.1831	0.30	.Q	.	.	.	.
10.80	0.1869	0.30	.Q	.	.	.	.
10.96	0.1907	0.31	.Q	.	.	.	.
11.11	0.1946	0.31	.Q	.	.	.	.
11.26	0.1986	0.32	.Q	.	.	.	.
11.41	0.2026	0.32	.Q	.	.	.	.
11.57	0.2067	0.33	.Q	.	.	.	.
11.72	0.2109	0.33	.Q	.	.	.	.
11.87	0.2152	0.34	.Q	.	.	.	.
12.03	0.2195	0.35	.Q	.	.	.	.
12.18	0.2243	0.41	.Q	.	.	.	.
12.33	0.2295	0.41	.Q	.	.	.	.
12.48	0.2348	0.42	.Q	.	.	.	.
12.64	0.2402	0.43	.Q	.	.	.	.
12.79	0.2457	0.44	.Q	.	.	.	.
12.94	0.2513	0.45	.Q	.	.	.	.
13.10	0.2571	0.47	.Q	.	.	.	.
13.25	0.2631	0.47	.Q	.	.	.	.
13.40	0.2692	0.49	.Q	.	.	.	.
13.55	0.2755	0.50	. Q	.	.	.	.
13.71	0.2820	0.52	. Q	.	.	.	.

```
13.86     0.2886     0.54  . Q       .         .         .         .
14.01     0.2956     0.56  . Q       .         .         .         .
14.17     0.3030     0.61  . Q       .         .         .         .
14.32     0.3109     0.66  . Q       .         .         .         .
14.47     0.3193     0.67  . Q       .         .         .         .
14.62     0.3281     0.72  . Q       .         .         .         .
14.78     0.3374     0.74  . Q       .         .         .         .
14.93     0.3471     0.80  .  Q      .         .         .         .
15.08     0.3574     0.84  .  Q      .         .         .         .
15.24     0.3686     0.92  .  Q      .         .         .         .
15.39     0.3806     0.98  .  Q      .         .         .         .
15.54     0.3941     1.15  .   Q     .         .         .         .
15.69     0.4094     1.27  .    Q    .         .         .         .
15.85     0.4279     1.67  .     Q   .         .         .         .
16.00     0.4519     2.14  .       Q .         .         .         .
16.15     0.5000     5.49  .         .         .Q        .         .
16.31     0.5437     1.42  .    Q    .         .         .         .
16.46     0.5593     1.06  .   Q     .         .         .         .
16.61     0.5716     0.88  .  Q      .         .         .         .
16.76     0.5820     0.77  .  Q      .         .         .         .
16.92     0.5912     0.70  . Q       .         .         .         .
17.07     0.5996     0.64  . Q       .         .         .         .
17.22     0.6071     0.55  . Q       .         .         .         .
17.38     0.6139     0.51  . Q       .         .         .         .
17.53     0.6202     0.48  .Q        .         .         .         .
17.68     0.6261     0.46  .Q        .         .         .         .
17.83     0.6318     0.44  .Q        .         .         .         .
17.99     0.6372     0.42  .Q        .         .         .         .
18.14     0.6421     0.37  .Q        .         .         .         .
18.29     0.6465     0.34  .Q        .         .         .         .
18.45     0.6507     0.33  .Q        .         .         .         .
18.60     0.6548     0.31  .Q        .         .         .         .
18.75     0.6587     0.30  .Q        .         .         .         .
18.90     0.6624     0.29  .Q        .         .         .         .
19.06     0.6661     0.28  .Q        .         .         .         .
19.21     0.6696     0.28  .Q        .         .         .         .
19.36     0.6730     0.27  .Q        .         .         .         .
19.52     0.6764     0.26  .Q        .         .         .         .
19.67     0.6797     0.26  .Q        .         .         .         .
19.82     0.6828     0.25  Q         .         .         .         .
19.97     0.6859     0.24  Q         .         .         .         .
20.13     0.6890     0.24  Q         .         .         .         .
20.28     0.6920     0.23  Q         .         .         .         .
20.43     0.6949     0.23  Q         .         .         .         .
20.58     0.6977     0.22  Q         .         .         .         .
20.74     0.7005     0.22  Q         .         .         .         .
20.89     0.7033     0.22  Q         .         .         .         .
21.04     0.7059     0.21  Q         .         .         .         .
21.20     0.7086     0.21  Q         .         .         .         .
21.35     0.7112     0.20  Q         .         .         .         .
21.50     0.7138     0.20  Q         .         .         .         .
21.65     0.7163     0.20  Q         .         .         .         .
21.81     0.7187     0.19  Q         .         .         .         .
21.96     0.7212     0.19  Q         .         .         .         .
22.11     0.7236     0.19  Q         .         .         .         .
22.27     0.7260     0.19  Q         .         .         .         .
22.42     0.7283     0.18  Q         .         .         .         .
22.57     0.7306     0.18  Q         .         .         .         .
22.72     0.7329     0.18  Q         .         .         .         .
22.88     0.7351     0.18  Q         .         .         .         .
23.03     0.7373     0.17  Q         .         .         .         .
23.18     0.7395     0.17  Q         .         .         .         .
23.34     0.7416     0.17  Q         .         .         .         .
23.49     0.7438     0.17  Q         .         .         .         .
23.64     0.7459     0.17  Q         .         .         .         .
23.79     0.7480     0.16  Q         .         .         .         .
23.95     0.7500     0.16  Q         .         .         .         .
24.10     0.7521     0.16  Q         .         .         .         .
24.25     0.7531     0.00  Q         .         .         .         .
```

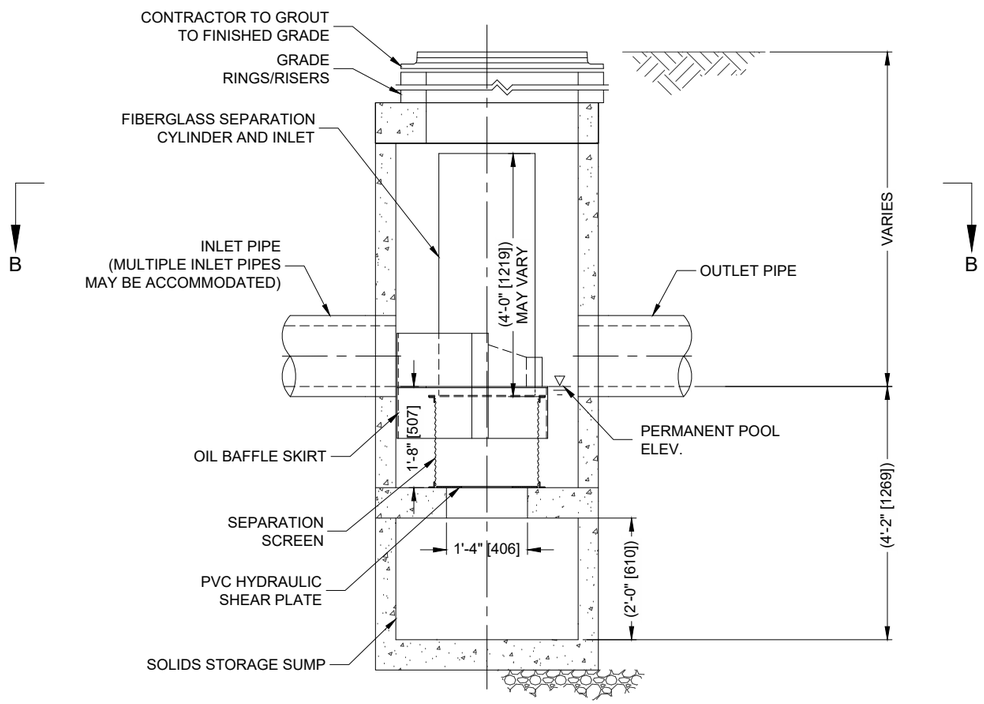
TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
(Note: 100% of Peak Flow Rate estimate assumed to have
an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1448.9
10%	201.7
20%	55.0
30%	27.5
40%	9.2
50%	9.2
60%	9.2
70%	9.2
80%	9.2
90%	9.2

6.4.5 BMP Sizing Calculations



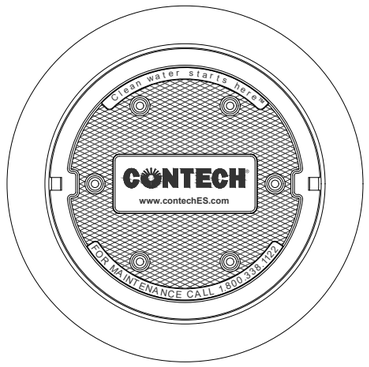
PLAN VIEW B-B
N.T.S.



ELEVATION A-A
N.T.S.

CDS1515-3-C DESIGN NOTES

THE STANDARD CDS1515-3-C CONFIGURATION IS SHOWN. ALTERNATE CONFIGURATIONS ARE AVAILABLE AND ARE LISTED BELOW. SOME CONFIGURATIONS MAY BE COMBINED TO SUIT SITE REQUIREMENTS.



FRAME AND COVER
(DIAMETER VARIES)
N.T.S.

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID			
WATER QUALITY FLOW RATE (CFS OR L/s)			*
PEAK FLOW RATE (CFS OR L/s)			*
RETURN PERIOD OF PEAK FLOW (YRS)			*
SCREEN APERTURE (2400 OR 4700)			*
PIPE DATA:	I.E.	MATERIAL	DIAMETER
INLET PIPE 1	*	*	*
INLET PIPE 2	*	*	*
OUTLET PIPE	*	*	*
RIM ELEVATION			*
ANTI-FLOTATION BALLAST		WIDTH	HEIGHT
		*	*

NOTES/SPECIAL REQUIREMENTS:

* PER ENGINEER OF RECORD

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR SITE SPECIFIC DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.ContechES.com
3. CDS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
4. STRUCTURE SHALL MEET AASHTO HS20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 2', AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 AND BE CAST WITH THE CONTECH LOGO..
5. IF REQUIRED, PVC HYDRAULIC SHEAR PLATE IS PLACED ON SHELF AT BOTTOM OF SCREEN CYLINDER. REMOVE AND REPLACE AS NECESSARY DURING MAINTENANCE CLEANING.
6. CDS STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-478 AND AASHTO LOAD FACTOR DESIGN METHOD.

INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CDS MANHOLE STRUCTURE.
C. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT INLET AND OUTLET PIPE(S). MATCH PIPE INVERTS WITH ELEVATIONS SHOWN. ALL PIPE CENTERLINES TO MATCH PIPE OPENING CENTERLINES.
E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

CONTECH ENGINEERED SOLUTIONS LLC
www.contechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

CDS1515-3-C
ONLINE CDS
STANDARD DETAIL

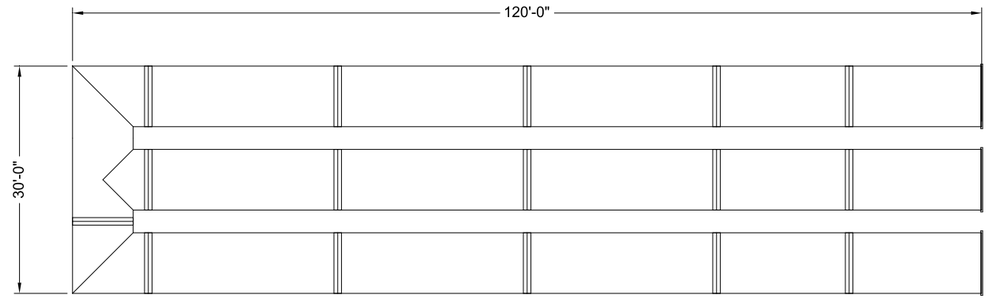
PROJECT SUMMARY

CALCULATION DETAILS
- LOADING = HS20/HS25
- APPROX. LINEAR FOOTAGE = 366 LF

STORAGE SUMMARY
- STORAGE VOLUME REQUIRED = 25,000 CF
- PIPE STORAGE VOLUME = 18,397 CF
- BACKFILL STORAGE VOLUME = 6,696 CF
- TOTAL STORAGE PROVIDED = 25,093 CF

PIPE DETAILS
- DIAMETER = 96"
- CORRUGATION = 5x1
- GAGE = 16
- COATING = ALT2
- WALL TYPE = SOLID
- BARREL SPACING = 36"

BACKFILL DETAILS
- WIDTH AT ENDS = 12"
- ABOVE PIPE = 6"
- WIDTH AT SIDES = 12"
- BELOW PIPE = 6"



NOTES

- ALL RISER AND STUB DIMENSIONS ARE TO CENTERLINE. ALL ELEVATIONS, DIMENSIONS, AND LOCATIONS OF RISERS AND INLETS, SHALL BE VERIFIED BY THE ENGINEER OF RECORD PRIOR TO RELEASING FOR FABRICATION.
- ALL FITTINGS AND REINFORCEMENT COMPLY WITH ASTM A998.
- ALL RISERS AND STUBS ARE $2\frac{2}{3}$" x $\frac{1}{2}$" CORRUGATION AND 16 GAGE UNLESS OTHERWISE NOTED.
- RISERS TO BE FIELD TRIMMED TO GRADE.
- QUANTITY OF PIPE SHOWN DOES NOT PROVIDE EXTRA PIPE FOR CONNECTING THE SYSTEM TO EXISTING PIPE OR DRAINAGE STRUCTURES. OUR SYSTEM AS DETAILED PROVIDES NOMINAL INLET AND/OR OUTLET PIPE STUB FOR CONNECTION TO EXISTING DRAINAGE FACILITIES. IF ADDITIONAL PIPE IS NEEDED IT IS THE RESPONSIBILITY OF THE CONTRACTOR.
- BAND TYPE TO BE DETERMINED UPON FINAL DESIGN.
- THE PROJECT SUMMARY IS REFLECTIVE OF THE DYODS DESIGN, QUANTITIES ARE APPROX. AND SHOULD BE VERIFIED UPON FINAL DESIGN AND APPROVAL. FOR EXAMPLE, TOTAL EXCAVATION DOES NOT CONSIDER ALL VARIABLES SUCH AS SHORING AND ONLY ACCOUNTS FOR MATERIAL WITHIN THE ESTIMATED EXCAVATION FOOTPRINT.
- THESE DRAWINGS ARE FOR CONCEPTUAL PURPOSES AND DO NOT REFLECT ANY LOCAL PREFERENCES OR REGULATIONS. PLEASE CONTACT YOUR LOCAL CONTECH REP FOR MODIFICATIONS.

ASSEMBLY
SCALE: 1" = 20'

DATE	REVISION DESCRIPTION	BY

CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

CONTECH CMP DETENTION SYSTEMS
CONTECH **DYODS** DRAWING

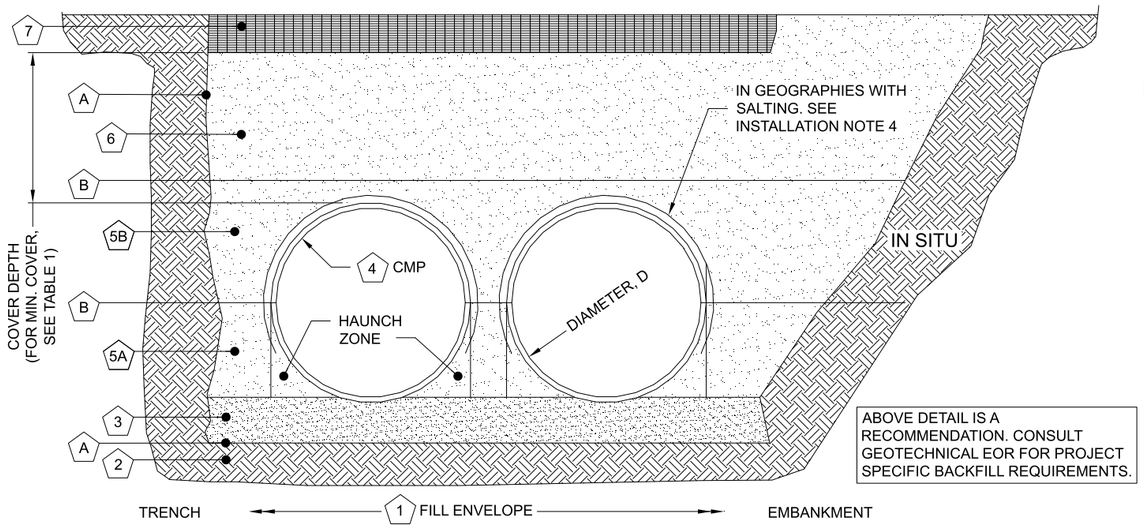
DYO63472 2175 S Willow
Basin #1
West Covina, CA
DETENTION SYSTEM

PROJECT No.:	SEQ. No.:	DATE:
45078	63472	11/22/2024
DESIGNED: DYO	DRAWN: DYO	
CHECKED: DYO	APPROVED: DYO	
SHEET NO.: 1		

TABLE 1:

DIAMETER, D	MIN. COVER	CORR. PROFILE
6"-10"	12"	1 1/2" x 1/4"
12"-48"	12"	2 2/3" x 1/2"
>48"-96"	12"	3" x 1", 5" x 1"
>96"	D/8	3" x 1", 5" x 1"

- STRUCTURAL BACKFILL MUST EXTEND TO LIMITS OF THE TABLE
- TOTAL HEIGHT OF COMPACTED COVER FOR CONVENTIONAL HIGHWAY LOADS IS MEASURED FROM TOP OF PIPE TO BOTTOM OF FLEXIBLE PAVEMENT OR TOP OF RIGID PAVEMENT
- ULTRAFLO ALSO AVAILABLE FOR SIZES 18" - 120" WITH 3/4"x 3/4"x 7 1/2" CORRUGATION



MINIMUM WIDTH DEPENDS ON SITE CONDITIONS AND ENGINEERING JUDGEMENT

INSTALLATION NOTES

1. WHEN PLACING THE FIRST LIFTS OF BACKFILL IT IS IMPORTANT TO MAKE SURE THAT THE BACKFILL IS PROPERLY COMPACTED UNDER AND AROUND THE PIPE HAUNCHES.
2. OTHER ALTERNATE BACKFILL MATERIAL MAY BE ALLOWED DEPENDING ON SITE SPECIFIC CONDITIONS, AS APPROVED BY SITE ENGINEER.
3. BACKFILL USING CONTROLLED LOW-STRENGTH MATERIAL (CLSM, "FLASH FILL" OR "FLOWABLE FILL") MAY BE USED WHEN THE SPACING BETWEEN THE PIPES WILL NOT ALLOW FOR PLACEMENT AND ADEQUATE COMPACTION OF THE BACKFILL. CONTACT CONTECH FOR FURTHER EVALUATION.
4. IF SALTING AGENTS FOR SNOW AND ICE REMOVAL ARE USED ON OR NEAR THE PROJECT, A GEOMEMBRANE BARRIER IS RECOMMENDED OVER THE UPPER HALF OF THE PIPE. THE GEOMEMBRANE LINER IS INTENDED TO HELP PROTECT THE SYSTEM FROM THE POTENTIAL ADVERSE EFFECTS THAT MAY RESULT FROM A CHANGE IN THE SURROUNDING ENVIRONMENT OVER A PERIOD OF TIME. PLEASE REFER TO THE CORRUGATED METAL PIPE DETENTION DESIGN GUIDE FOR ADDITIONAL INFORMATION.

TABLE 2: SOLID STANDARD

CMP DETENTION AND CMP DRAINAGE STANDARD BACKFILL SPECIFICATIONS

	MATERIAL LOCATION	MATERIAL SPECIFICATION	DESCRIPTION	
1	FILL ENVELOPE WIDTH	PER ENGINEER OF RECORD	MINIMUM TRENCH WIDTH MUST ALLOW ROOM FOR PROPER COMPACTION OF HAUNCH MATERIALS UNDER THE PIPE. THE SUGGESTED MINIMUM TRENCH WIDTH, OR EOR RECOMMENDATION: PIPE ≤ 12": D + 16" PIPE > 12": 1.5D + 12"	MINIMUM EMBANKMENT WIDTH (IN FEET) FOR INITIAL FILL ENVELOPE: PIPE < 24": 3.0D PIPE 24" - 144": D + 4'0" PIPE > 144": D + 10'0"
2	FOUNDATION	**AASHTO 26.5.2** OR PER ENGINEER OF RECORD	PRIOR TO PLACING THE BEDDING, THE FOUNDATION MUST BE CONSTRUCTED TO A UNIFORM AND STABLE GRADE. IN THE EVENT THAT UNSUITABLE FOUNDATION MATERIALS ARE ENCOUNTERED DURING EXCAVATION, THEY SHALL BE REMOVED AND FOUNDATION BROUGHT BACK TO GRADE WITH A FILL MATERIAL APPROVED BY THE ENGINEER OF RECORD.	
3	BEDDING	**AASHTO M 43: 3, 357, 4, 467, 5, 56, 57** (APPROVED REGIONAL EQUIVALENTS INCLUDE CA-7)	ENGINEER OF RECORD TO DETERMINE IF BEDDING IS REQUIRED. PIPE MAY BE PLACED ON THE TRENCH BOTTOM OF A RELATIVELY LOOSE, NATIVE SUITABLE WELL GRADED GRANULAR MATERIAL THAT IS ROUGHLY SHAPED TO FIT THE BOTTOM OF THE PIPE, 2" MIN DEPTH. THE BEDDING MATERIAL MAY BE SUITABLE FOUNDATION SOILS CONFORMING TO AASHTO SOIL CLASSIFICATIONS A1, A2, OR A3 WITH MAXIMUM PARTICLE SIZE OF 3" PER AASHTO 26.3.8.1	
4	CORRUGATED METAL PIPE			
5A	CRITICAL BACKFILL	**AASHTO M 145: A-1, A-2, A-3** *	HAUNCH ZONE MATERIAL SHALL BE HAND SHOVELED OR SHOVEL SLICED INTO PLACE TO ALLOW FOR PROPER COMPACTION WITHOUT SOFT SPOTS. BACKFILL SHALL BE PLACED IN 8" +/- LOOSE LIFTS AND COMPACTED TO 90% STANDARD PROCTOR PER AASHTO T 99. BACKFILL SHALL BE PLACED SUCH THAT THERE IS NO MORE THAN A THREE LIFT (24") DIFFERENTIAL BETWEEN ANY OF THE PIPES AT ANY TIME DURING THE BACKFILL PROCESS. THE BACKFILL SHOULD BE ADVANCED ALONG THE LENGTH OF THE SYSTEM TO AVOID DIFFERENTIAL LOADING. WELL GRADED GRANULAR MATERIAL WHICH MAY CONTAIN SMALL AMOUNTS OF SILT OR CLAY AND MAXIMUM PARTICLE SIZE OF 3" (PER AASHTO 26.3.8.1 AND 12.4-1.3).	
5B	BACKFILL	**AASHTO M 145: A-1, A-2, A-3**		
6	COVER MATERIAL	UP TO MIN. COVER - SEE 5A AND 5B ABOVE ABOVE MIN. COVER - PER ENGINEER OF RECORD	COVER MATERIAL MAY INCLUDE NON-BITUMINOUS, GRANULAR ROAD BASE MATERIAL WITHIN MIN COVER LIMITS	
7	RIGID OR FLEXIBLE PAVEMENT (IF APPLICABLE)	PER ENGINEER OF RECORD	FLEXIBLE PAVEMENT SHOULD NOT BE COUNTED AS PART OF THE FILL HEIGHT OVER THE CMP. FINAL BACKFILL MATERIAL SELECTION AND COMPACTION REQUIREMENTS SHALL FOLLOW THE PROJECT PLANS AND SPECIFICATIONS PER THE ENGINEER OF RECORD.	
A	OPTIONAL SIDE GEOTEXTILE	NONE	GEOTEXTILE LAYER IS RECOMMENDED ON SIDES OF EXCAVATION TO PREVENT SOIL MIGRATION.	
B	OPTIONAL GEOTEXTILE BETWEEN LAYERS	NONE	IF SOIL TYPES DIFFER AT ANY POINT ABOVE PIPE INVERT, A GEOTEXTILE LAYER IS RECOMMENDED TO BE PLACED BETWEEN THE LAYERS TO PREVENT SOIL MIGRATION.	

NOTES:
- FOR MULTIPLE BARREL INSTALLATIONS, THE RECOMMENDED STANDARD SPACING BETWEEN PARALLEL PIPE RUNS SHALL BE THE PIPE DIAMETER /2 BUT NO LESS THAN 12" FOR DIAMETERS <72". FOR 72" AND LARGER DIAMETERS, THE MINIMUM SPACING IS 36". CONTACT YOUR CONTECH REPRESENTATIVE FOR NONSTANDARD SPACING.

* APPROVED REGIONAL EQUIVALENTS FOR SECTION 5A INCLUDE CA-7, CODOT #67, MIDOT 2G, 34G, OR 21AA STONE OR GRAVEL; #8; #57; MIDOT 6A, 2G, 3G, 34G.

MANUFACTURER RECOMMENDED BACKFILL

NOT TO SCALE

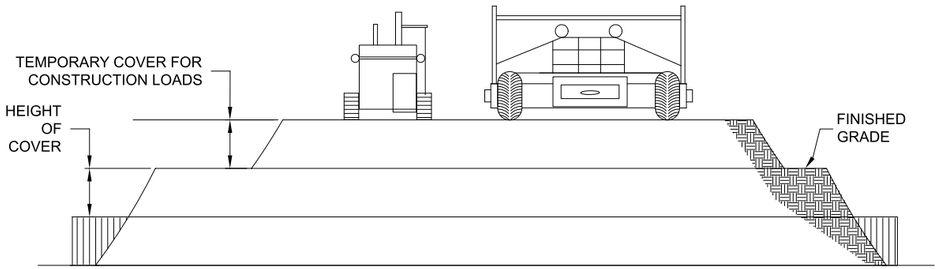
DATE	REVISION DESCRIPTION	BY

CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

CONTECH CMP DETENTION SYSTEMS
CONTECH DYODS DRAWING

DYO63472 2175 S Willow
Basin #1
West Covina, CA
DETENTION SYSTEM

PROJECT No.:	SEQ. No.:	DATE:
45078	63472	11/22/2024
DESIGNED: DYO	DRAWN: DYO	
CHECKED: DYO	APPROVED: DYO	
SHEET NO.: 1		



CONSTRUCTION LOADS

FOR TEMPORARY CONSTRUCTION VEHICLE LOADS, AN EXTRA AMOUNT OF COMPACTED COVER MAY BE REQUIRED OVER THE TOP OF THE PIPE. THE HEIGHT-OF-COVER SHALL MEET THE MINIMUM REQUIREMENTS SHOWN IN THE TABLE BELOW. THE USE OF HEAVY CONSTRUCTION EQUIPMENT NECESSITATES GREATER PROTECTION FOR THE PIPE THAN FINISHED GRADE COVER MINIMUMS FOR NORMAL HIGHWAY TRAFFIC.

PIPE SPAN, INCHES	AXLE LOADS (kips)			
	18-50	50-75	75-110	110-150
	MINIMUM COVER (FT)			
12-42	2.0	2.5	3.0	3.0
48-72	3.0	3.0	3.5	4.0
78-120	3.0	3.5	4.0	4.0
126-144	3.5	4.0	4.5	4.5

*MINIMUM COVER MAY VARY, DEPENDING ON LOCAL CONDITIONS. THE CONTRACTOR MUST PROVIDE THE ADDITIONAL COVER REQUIRED TO AVOID DAMAGE TO THE PIPE. MINIMUM COVER IS MEASURED FROM THE TOP OF THE PIPE TO THE TOP OF THE MAINTAINED CONSTRUCTION ROADWAY SURFACE.

CONSTRUCTION LOADING DIAGRAM

SCALE: N.T.S.

SPECIFICATION FOR DESIGNED DETENTION SYSTEM:

SCOPE
THIS SPECIFICATION COVERS THE MANUFACTURE AND INSTALLATION OF THE DESIGNED DETENTION SYSTEM DETAILED IN THE PROJECT PLANS.

MATERIAL
THE MATERIAL SHALL CONFORM TO THE APPLICABLE REQUIREMENTS LISTED BELOW:

ALUMINIZED TYPE 2 STEEL COILS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-274 OR ASTM A-92.

THE GALVANIZED STEEL COILS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-218 OR ASTM A-929.

THE POLYMER COATED STEEL COILS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-246 OR ASTM A-742.

THE ALUMINUM COILS SHALL CONFORM TO THE APPLICABLE OF AASHTO M-197 OR ASTM B-744.

CONSTRUCTION LOADS
CONSTRUCTION LOADS MAY BE HIGHER THAN FINAL LOADS. FOLLOW THE MANUFACTURER'S OR NCSPA GUIDELINES.

PIPE
THE PIPE SHALL BE MANUFACTURED IN ACCORDANCE TO THE APPLICABLE REQUIREMENTS LISTED BELOW:

ALUMINIZED TYPE 2: AASHTO M-36 OR ASTM A-760

GALVANIZED: AASHTO M-36 OR ASTM A-760

APPLICABLE POLYMER COATED: AASHTO M-245 OR ASTM A-762

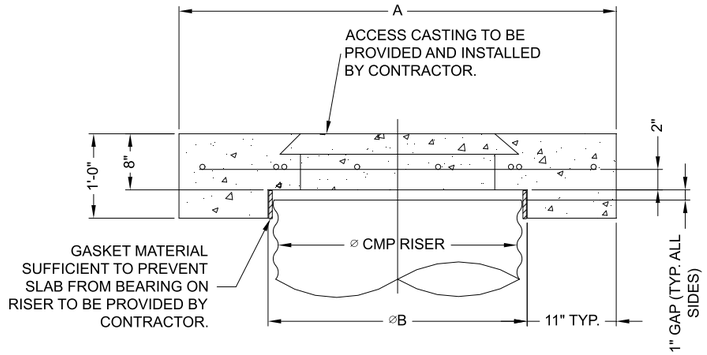
ALUMINUM: AASHTO M-196 OR ASTM B-745

APPLICABLE HANDLING AND ASSEMBLY
SHALL BE IN ACCORDANCE WITH NCSP'S (NATIONAL CORRUGATED STEEL PIPE ASSOCIATION) FOR ALUMINIZED TYPE 2, GALVANIZED OR POLYMER COATED STEEL. SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS FOR ALUMINUM PIPE.

REQUIREMENTS INSTALLATION
SHALL BE IN ACCORDANCE WITH AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SECTION 26, DIVISION II DIVISION II OR ASTM A-798 (FOR ALUMINIZED TYPE 2, GALVANIZED OR POLYMER COATED STEEL) OR ASTM B-788 (FOR ALUMINUM PIPE) AND IN CONFORMANCE WITH THE PROJECT PLANS AND SPECIFICATIONS. IF THERE ARE ANY INCONSISTENCIES OR CONFLICTS THE CONTRACTOR SHOULD DISCUSS AND RESOLVE WITH THE SITE ENGINEER.

IT IS ALWAYS THE RESPONSIBILITY OF THE CONTRACTOR TO FOLLOW OSHA GUIDELINES FOR SAFE PRACTICES.

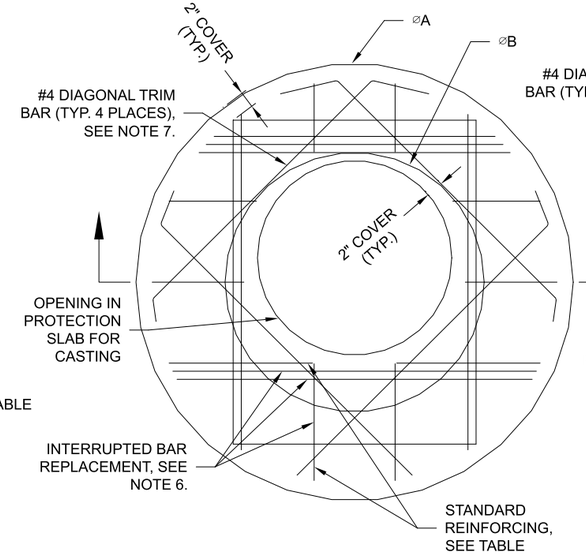
NOTE:
THESE DRAWINGS ARE FOR CONCEPTUAL PURPOSES AND DO NOT REFLECT ANY LOCAL PREFERENCES OR REGULATIONS. PLEASE CONTACT YOUR LOCAL CONTECH REP FOR MODIFICATIONS.



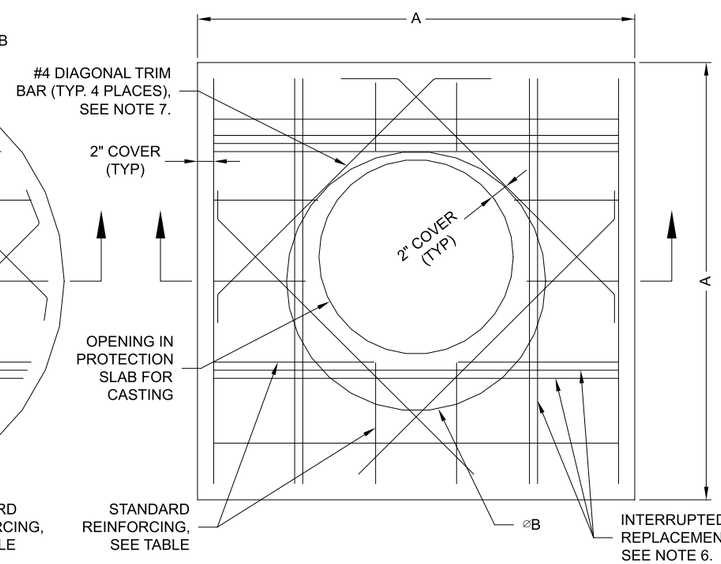
SECTION VIEW

REINFORCING TABLE				
⌀ CMP RISER	A	⌀ B	REINFORCING	**BEARING PRESSURE (PSF)
24"	⌀ 4' 4'X4'	26"	#5 @ 12" OCEW #5 @ 12" OCEW	2,410 1,780
30"	⌀ 4'-6" 4'-6" X 4'-6"	32"	#5 @ 12" OCEW #5 @ 12" OCEW	2,120 1,530
36"	⌀ 5' 5' X 5'	38"	#5 @ 10" OCEW #5 @ 10" OCEW	1,890 1,350
42"	⌀ 5'-6" 5'-6" X 5'-6"	44"	#5 @ 10" OCEW #5 @ 9" OCEW	1,720 1,210
48"	⌀ 6' 6' X 6'	50"	#5 @ 9" OCEW #5 @ 8" OCEW	1,600 1,100

** ASSUMED SOIL BEARING CAPACITY



ROUND OPTION PLAN VIEW



SQUARE OPTION PLAN VIEW

NOTES:

1. DESIGN IN ACCORDANCE WITH AASHTO, 17th EDITION.
2. DESIGN LOAD HS25.
3. EARTH COVER = 1' MAX.
4. CONCRETE STRENGTH = 3,500 psi
5. REINFORCING STEEL = ASTM A615, GRADE 60.
6. PROVIDE ADDITIONAL REINFORCING AROUND OPENINGS EQUAL TO THE BARS INTERRUPTED, HALF EACH SIDE. ADDITIONAL BARS TO BE IN THE SAME PLANE.
7. TRIM OPENING WITH DIAGONAL #4 BARS, EXTEND BARS A MINIMUM OF 12" BEYOND OPENING, BEND BARS AS REQUIRED TO MAINTAIN BAR COVER.
8. PROTECTION SLAB AND ALL MATERIALS TO BE PROVIDED AND INSTALLED BY CONTRACTOR.
9. DETAIL DESIGN BY DELTA ENGINEERING, BINGHAMTON, NY.

MANHOLE CAP DETAIL

SCALE: N.T.S.

DATE	REVISION DESCRIPTION	BY

CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

CONTECH CMP DETENTION SYSTEMS
CONTECH DYODS DRAWING

DYO63472 2175 S Willow
Basin #1
West Covina, CA
DETENTION SYSTEM

PROJECT No.:	SEQ. No.:	DATE:
45078	63472	11/22/2024
DESIGNED: DYO	DRAWN: DYO	
CHECKED: DYO	APPROVED: DYO	
SHEET NO.: 1		

C:\EXPORTS\TEMPLATES\CMP_V10.DWG 10/18/2019 10:02 AM

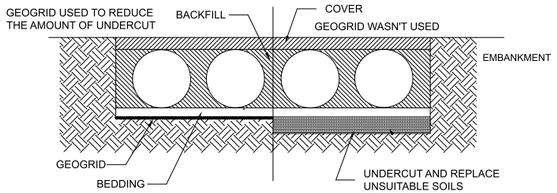
CMP DETENTION INSTALLATION GUIDE

PROPER INSTALLATION OF A FLEXIBLE UNDERGROUND DETENTION SYSTEM WILL ENSURE LONG-TERM PERFORMANCE. THE CONFIGURATION OF THESE SYSTEMS OFTEN REQUIRES SPECIAL CONSTRUCTION PRACTICES THAT DIFFER FROM CONVENTIONAL FLEXIBLE PIPE CONSTRUCTION. CONTECH ENGINEERED SOLUTIONS STRONGLY SUGGESTS SCHEDULING A PRE-CONSTRUCTION MEETING WITH YOUR LOCAL SALES ENGINEER TO DETERMINE IF ADDITIONAL MEASURES, NOT COVERED IN THIS GUIDE, ARE APPROPRIATE FOR YOUR SITE.

FOUNDATION

CONSTRUCT A FOUNDATION THAT CAN SUPPORT THE DESIGN LOADING APPLIED BY THE PIPE AND ADJACENT BACKFILL WEIGHT AS WELL AS MAINTAIN ITS INTEGRITY DURING CONSTRUCTION.

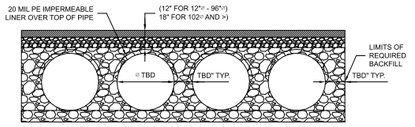
IF SOFT OR UNSUITABLE SOILS ARE ENCOUNTERED, REMOVE THE POOR SOILS DOWN TO A SUITABLE DEPTH AND THEN BUILD UP TO THE APPROPRIATE ELEVATION WITH A COMPETENT BACKFILL MATERIAL. THE STRUCTURAL FILL MATERIAL GRADATION SHOULD NOT ALLOW THE MIGRATION OF FINES, WHICH CAN CAUSE SETTLEMENT OF THE DETENTION SYSTEM OR PAVEMENT ABOVE. IF THE STRUCTURAL FILL MATERIAL IS NOT COMPATIBLE WITH THE UNDERLYING SOILS AN ENGINEERING FABRIC SHOULD BE USED AS A SEPARATOR. IN SOME CASES, USING A STIFF REINFORCING GEOGRID REDUCES OVER EXCAVATION AND REPLACEMENT FILL QUANTITIES.



GRADE THE FOUNDATION SUBGRADE TO A UNIFORM OR SLIGHTLY SLOPING GRADE. IF THE SUBGRADE IS CLAY OR RELATIVELY NON-POROUS AND THE CONSTRUCTION SEQUENCE WILL LAST FOR AN EXTENDED PERIOD OF TIME, IT IS BEST TO SLOPE THE GRADE TO ONE END OF THE SYSTEM. THIS WILL ALLOW EXCESS WATER TO DRAIN QUICKLY, PREVENTING SATURATION OF THE SUBGRADE.

GEOMEMBRANE BARRIER

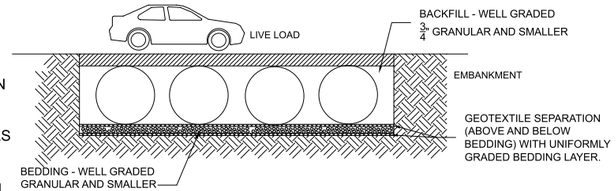
THE RESISTIVITY OF A PROJECT SITE MAY CHANGE OVER TIME DUE TO THE USE OF VARIOUS SALTING, DE-ICING, AND AGRICULTURAL AGENTS APPLIED ON OR NEAR THE AREA. TO MITIGATE THE POTENTIAL IMPACT OF THESE AGENTS, AN HDPE MEMBRANE LINER WILL BE INSTALLED ON THE CROWN OF EACH PIPE, CREATING AN IMPERMEABLE BARRIER. THIS MEASURE IS DESIGNED TO PROTECT THE SYSTEM FROM ENVIRONMENTAL CHANGES THAT COULD LEAD TO PREMATURE CORROSION AND REDUCE THE OVERALL SERVICE LIFE.



IN-SITU TRENCH WALL

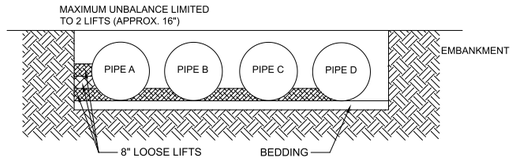
IF EXCAVATION IS REQUIRED, THE TRENCH WALL NEEDS TO BE CAPABLE OF SUPPORTING THE LOAD THAT THE PIPE SHEDS AS THE SYSTEM IS LOADED. IF SOILS ARE NOT CAPABLE OF SUPPORTING THESE LOADS, THE PIPE CAN DEFLECT. PERFORM A SIMPLE SOIL PRESSURE CHECK USING THE APPLIED LOADS TO DETERMINE THE LIMITS OF EXCAVATION BEYOND THE SPRING LINE OF THE OUTER MOST PIPES.

IN MOST CASES THE REQUIREMENTS FOR A SAFE WORK ENVIRONMENT AND PROPER BACKFILL PLACEMENT AND COMPACTION TAKE CARE OF THIS CONCERN.



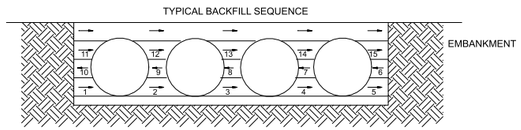
BACKFILL PLACEMENT

MATERIAL SHALL BE WORKED INTO THE PIPE HAUNCHES BY MEANS OF SHOVEL-SLICING, RODDING, AIR TAMPER, VIBRATORY ROD, OR OTHER EFFECTIVE METHODS.

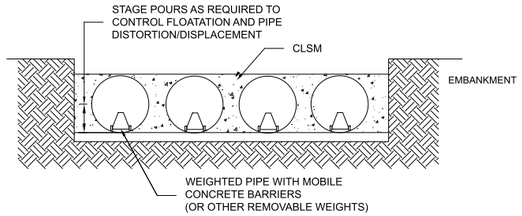


IF AASHTO T99 PROCEDURES ARE DETERMINED INFEASIBLE BY THE GEOTECHNICAL ENGINEER OF RECORD, COMPACTION IS CONSIDERED ADEQUATE WHEN NO FURTHER YIELDING OF THE MATERIAL IS OBSERVED UNDER THE COMPACTOR, OR UNDER FOOT, AND THE GEOTECHNICAL ENGINEER OF RECORD (OR REPRESENTATIVE THEREOF) IS SATISFIED WITH THE LEVEL OF COMPACTION.

FOR LARGE SYSTEMS, CONVEYOR SYSTEMS, BACKHOES WITH LONG REACHES OR DRAGLINES WITH STONE BUCKETS MAY BE USED TO PLACE BACKFILL. ONCE MINIMUM COVER FOR CONSTRUCTION LOADING ACROSS THE ENTIRE WIDTH OF THE SYSTEM IS REACHED, ADVANCE THE EQUIPMENT TO THE END OF THE RECENTLY PLACED FILL, AND BEGIN THE SEQUENCE AGAIN UNTIL THE SYSTEM IS COMPLETELY BACKFILLED. THIS TYPE OF CONSTRUCTION SEQUENCE PROVIDES ROOM FOR STOCKPILED BACKFILL DIRECTLY BEHIND THE BACKHOE, AS WELL AS THE MOVEMENT OF CONSTRUCTION TRAFFIC. MATERIAL STOCKPILES ON TOP OF THE BACKFILLED DETENTION SYSTEM SHOULD BE LIMITED TO 8- TO 10-FEET HIGH AND MUST PROVIDE BALANCED LOADING ACROSS ALL BARRELS. TO DETERMINE THE PROPER COVER OVER THE PIPES TO ALLOW THE MOVEMENT OF CONSTRUCTION EQUIPMENT SEE TABLE 1, OR CONTACT YOUR LOCAL CONTECH SALES ENGINEER.



WHEN FLOWABLE FILL IS USED, YOU MUST PREVENT PIPE FLOATATION. TYPICALLY, SMALL LIFTS ARE PLACED BETWEEN THE PIPES AND THEN ALLOWED TO SET-UP PRIOR TO THE PLACEMENT OF THE NEXT LIFT. THE ALLOWABLE THICKNESS OF THE CLSM LIFT IS A FUNCTION OF A PROPER BALANCE BETWEEN THE UPLIFT FORCE OF THE CLSM, THE OPPOSING WEIGHT OF THE PIPE, AND THE EFFECT OF OTHER RESTRAINING MEASURES. THE PIPE CAN CARRY LIMITED FLUID PRESSURE WITHOUT PIPE DISTORTION OR DISPLACEMENT, WHICH ALSO AFFECTS THE CLSM LIFT THICKNESS. YOUR LOCAL CONTECH SALES ENGINEER CAN HELP DETERMINE THE PROPER LIFT THICKNESS.

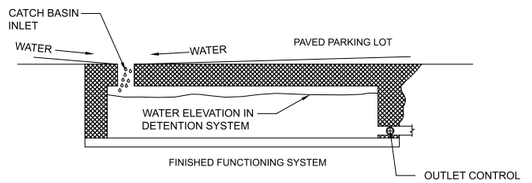


CONSTRUCTION LOADING

TYPICALLY, THE MINIMUM COVER SPECIFIED FOR A PROJECT ASSUMES H-20 LIVE LOAD. BECAUSE CONSTRUCTION LOADS OFTEN EXCEED DESIGN LIVE LOADS, INCREASED TEMPORARY MINIMUM COVER REQUIREMENTS ARE NECESSARY. SINCE CONSTRUCTION EQUIPMENT VARIES FROM JOB TO JOB, IT IS BEST TO ADDRESS EQUIPMENT SPECIFIC MINIMUM COVER REQUIREMENTS WITH YOUR LOCAL CONTECH SALES ENGINEER DURING YOUR PRE-CONSTRUCTION MEETING.

ADDITIONAL CONSIDERATIONS

BECAUSE MOST SYSTEMS ARE CONSTRUCTED BELOW-GRADE, RAINFALL CAN RAPIDLY FILL THE EXCAVATION; POTENTIALLY CAUSING FLOATATION AND MOVEMENT OF THE PREVIOUSLY PLACED PIPES. TO HELP MITIGATE POTENTIAL PROBLEMS, IT IS BEST TO START THE INSTALLATION AT THE DOWNSTREAM END WITH THE OUTLET ALREADY CONSTRUCTED TO ALLOW A ROUTE FOR THE WATER TO ESCAPE. TEMPORARY DIVERSION MEASURES MAY BE REQUIRED FOR HIGH FLOWS DUE TO THE RESTRICTED NATURE OF THE OUTLET PIPE.



CMP DETENTION SYSTEM INSPECTION AND MAINTENANCE

UNDERGROUND STORMWATER DETENTION AND INFILTRATION SYSTEMS MUST BE INSPECTED AND MAINTAINED AT REGULAR INTERVALS FOR PURPOSES OF PERFORMANCE AND LONGEVITY.

INSPECTION

INSPECTION IS THE KEY TO EFFECTIVE MAINTENANCE OF CMP DETENTION SYSTEMS AND IS EASILY PERFORMED. CONTECH RECOMMENDS ONGOING, ANNUAL INSPECTIONS. SITES WITH HIGH TRASH LOAD OR SMALL OUTLET CONTROL ORIFICES MAY NEED MORE FREQUENT INSPECTIONS. THE RATE AT WHICH THE SYSTEM COLLECTS POLLUTANTS WILL DEPEND MORE ON SITE SPECIFIC ACTIVITIES RATHER THAN THE SIZE OR CONFIGURATION OF THE SYSTEM.

INSPECTIONS SHOULD BE PERFORMED MORE OFTEN IN EQUIPMENT WASHDOWN AREAS, IN CLIMATES WHERE SANDING AND/OR SALTING OPERATIONS TAKE PLACE, AND IN OTHER VARIOUS INSTANCES IN WHICH ONE WOULD EXPECT HIGHER ACCUMULATIONS OF SEDIMENT OR ABRASIVE/ CORROSIVE CONDITIONS. A RECORD OF EACH INSPECTION IS TO BE MAINTAINED FOR THE LIFE OF THE SYSTEM

MAINTENANCE

CMP DETENTION SYSTEMS SHOULD BE CLEANED WHEN AN INSPECTION REVEALS ACCUMULATED SEDIMENT OR TRASH IS CLOGGING THE DISCHARGE ORIFICE.

ACCUMULATED SEDIMENT AND TRASH CAN TYPICALLY BE EVACUATED THROUGH THE MANHOLE OVER THE OUTLET ORIFICE. IF MAINTENANCE IS NOT PERFORMED AS RECOMMENDED, SEDIMENT AND TRASH MAY ACCUMULATE IN FRONT OF THE OUTLET ORIFICE. MANHOLE COVERS SHOULD BE SECURELY SEATED FOLLOWING CLEANING ACTIVITIES. CONTECH SUGGESTS THAT ALL SYSTEMS BE DESIGNED WITH AN ACCESS/INSPECTION MANHOLE SITUATED AT OR NEAR THE INLET AND THE OUTLET ORIFICE. SHOULD IT BE NECESSARY TO GET INSIDE THE SYSTEM TO PERFORM MAINTENANCE ACTIVITIES, ALL APPROPRIATE PRECAUTIONS REGARDING CONFINED SPACE ENTRY AND OSHA REGULATIONS SHOULD BE FOLLOWED.

ANNUAL INSPECTIONS ARE BEST PRACTICE FOR ALL UNDERGROUND SYSTEMS. DURING THIS INSPECTION, IF EVIDENCE OF SALTING/DE-ICING AGENTS IS OBSERVED WITHIN THE SYSTEM, IT IS BEST PRACTICE FOR THE SYSTEM TO BE RINSED, INCLUDING ABOVE THE SPRING LINE SOON AFTER THE SPRING THAW AS PART OF THE MAINTENANCE PROGRAM FOR THE SYSTEM.

MAINTAINING AN UNDERGROUND DETENTION OR INFILTRATION SYSTEM IS EASIEST WHEN THERE IS NO FLOW ENTERING THE SYSTEM. FOR THIS REASON, IT IS A GOOD IDEA TO SCHEDULE THE CLEANOUT DURING DRY WEATHER.

THE FOREGOING INSPECTION AND MAINTENANCE EFFORTS HELP ENSURE UNDERGROUND PIPE SYSTEMS USED FOR STORMWATER STORAGE CONTINUE TO FUNCTION AS INTENDED BY IDENTIFYING RECOMMENDED REGULAR INSPECTION AND MAINTENANCE PRACTICES. INSPECTION AND MAINTENANCE RELATED TO THE STRUCTURAL INTEGRITY OF THE PIPE OR THE SOUNDNESS OF PIPE JOINT CONNECTIONS IS BEYOND THE SCOPE OF THIS GUIDE.

DATE	REVISION DESCRIPTION	BY

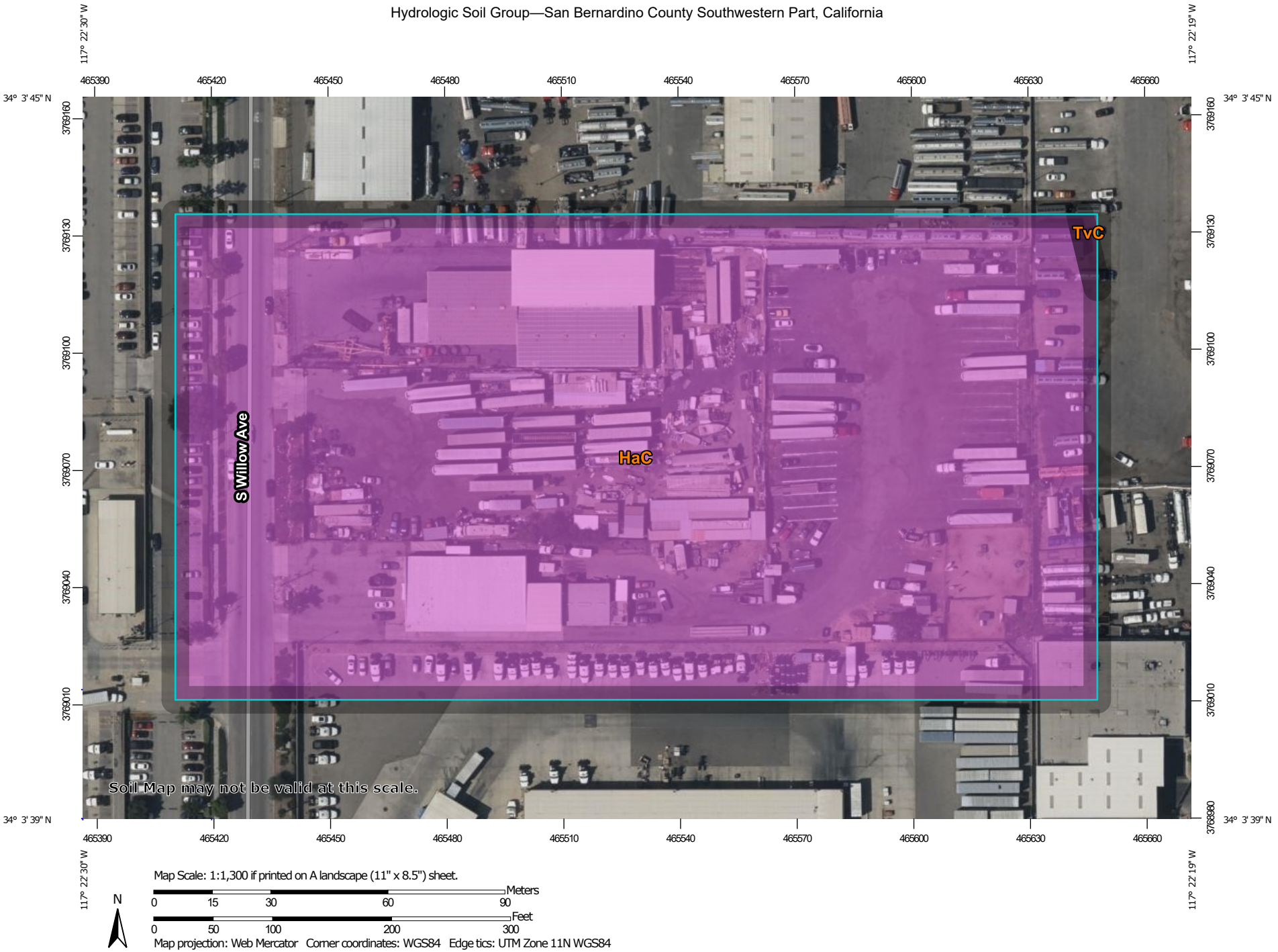
CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

CONTECH CMP DETENTION SYSTEMS
CONTECH DYODS DRAWING

DYO63472 2175 S Willow
Basin #1
West Covina, CA
DETENTION SYSTEM

PROJECT No.:	SEQ. No.:	DATE:
45078	63472	11/22/2024
DESIGNED: DYO	DRAWN: DYO	
CHECKED: DYO	APPROVED: DYO	
SHEET NO.: 1		

6.4.6 Geotechnical Report


117° 22' 30" W
117° 22' 19" W
34° 3' 45" N
34° 3' 39" N
465390
465420
465450
465480
465510
465540
465570
465600
465630
465660
3769160
3769130
3769100
3769070
3769040
3769010
3768980
S Willow Ave
HaC
TvC
Soil Map may not be valid at this scale.
Map Scale: 1:1,300 if printed on A landscape (11" x 8.5") sheet.
N
Meters
0 15 30 60 90
Feet
0 50 100 200 300
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Lines

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Points

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: San Bernardino County Southwestern Part, California
Survey Area Data: Version 16, Aug 30, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 17, 2022—Jun 12, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
HaC	Hanford coarse sandy loam, 2 to 9 percent slopes	A	7.3	99.9%
TvC	Tujunga gravelly loamy sand, 0 to 9 percent slopes	A	0.0	0.1%
Totals for Area of Interest			**7.3**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Sladden Engineering

45090 Golf Center Parkway, Suite F, Indio, CA. 92201 (760) 863-0713 Fax (760) 863-0847
6782 Stanton Avenue, Suite C, Buena Park, CA. 90621 (714) 523-0952 Fax (714) 523-1369
450 Egan Avenue, Beaumont, CA. 92223 (951) 845-7743 Fax (951) 845-8863
www.SladdenEngineering.com

November 14, 2024
(Revised November 18, 2024)

Project No. 444-24084
24-11-067

Outour Storage Acquisitions, LLC
800 Brickell Avenue, Suite 904
Miami, Florida 33131

Project: Proposed Truckyard/ IOS Facility
2175 South Willow Avenue
Rialto, California

Subject: Percolation/Infiltration Testing for On-Site Stormwater Management

In accordance with your request, we have performed percolation testing on the subject site to evaluate the infiltration potential of the near surface soil to assist in storm water management system design. It is our understanding that on-site stormwater retention including infiltration is planned for the proposed project.

Percolation testing was performed within two (2) test holes excavated on the site. Testing was performed at a depth of approximately 10 feet below the existing ground surface. The approximate locations of the test holes are presented on the attached Exploration Location Plan (Figure 3). Testing was performed by placing water within the test bores and recording the drop in the water surface with time. Testing was performed in general accordance with the *United States Bureau of Reclamation (BOR) Procedure 7300-89 (1999)*. Test results are summarized in the following table.

PERCOLATION TEST RESULTS

Test No.	Depth (Ft)	USCS	Percolation Rate (in/hr)	Infiltration Rate (in/hr)
BH-7/P-1	10.00	SM	109.50	17.01
BH-3/P-2	10.00	SM	107.25	16.42

The percolation rates determined represent the ultimate field rates that do not include a safety factor. The corresponding infiltration rates were calculated using the Porchet Method. An appropriate safety factor should be incorporated into retention/infiltration system design. Testing indicates a rapid infiltration rate within the test holes which is consistent with the highly permeable native sandy soil encountered below a depth of approximately 5 feet. Infiltration systems should extend through the silty surface soil into the sandy native soil.

Groundwater was not encountered within our exploratory boreholes. Based upon our review of groundwater levels within the vicinity of the site[1], it is our opinion that groundwater should not be a controlling factor in stormwater retention/infiltration system design.

If you have any questions regarding this memo or the testing summarized herein, please contact the undersigned.

Respectfully submitted,
SLADDEN ENGINEERING

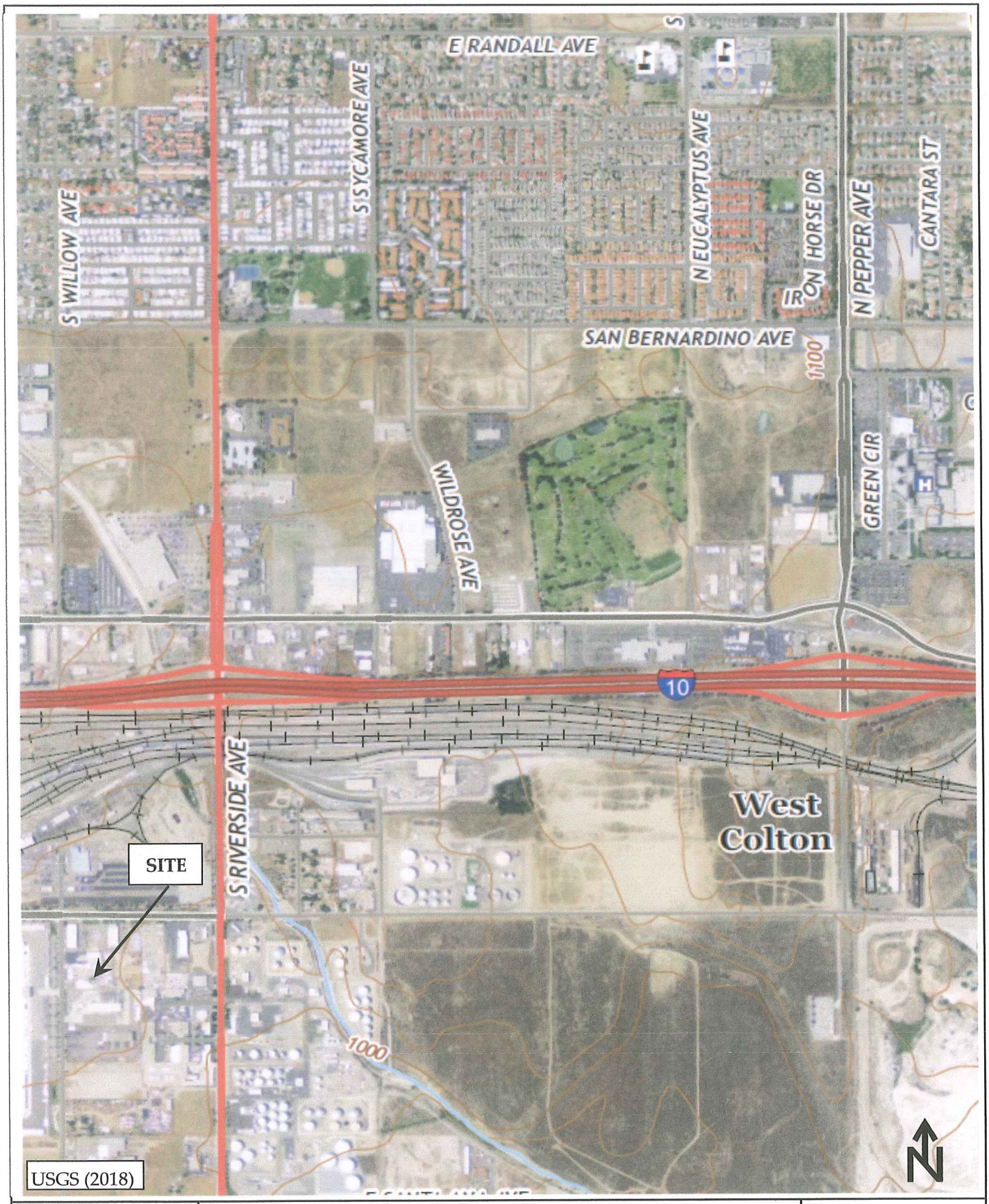
Brett L. Anderson
Principal Engineer

REGISTERED PROFESSIONAL ENGINEER
BRETT L. ANDERSON
No. C45389
CIVIL ENGINEERING
STATE OF CALIFORNIA

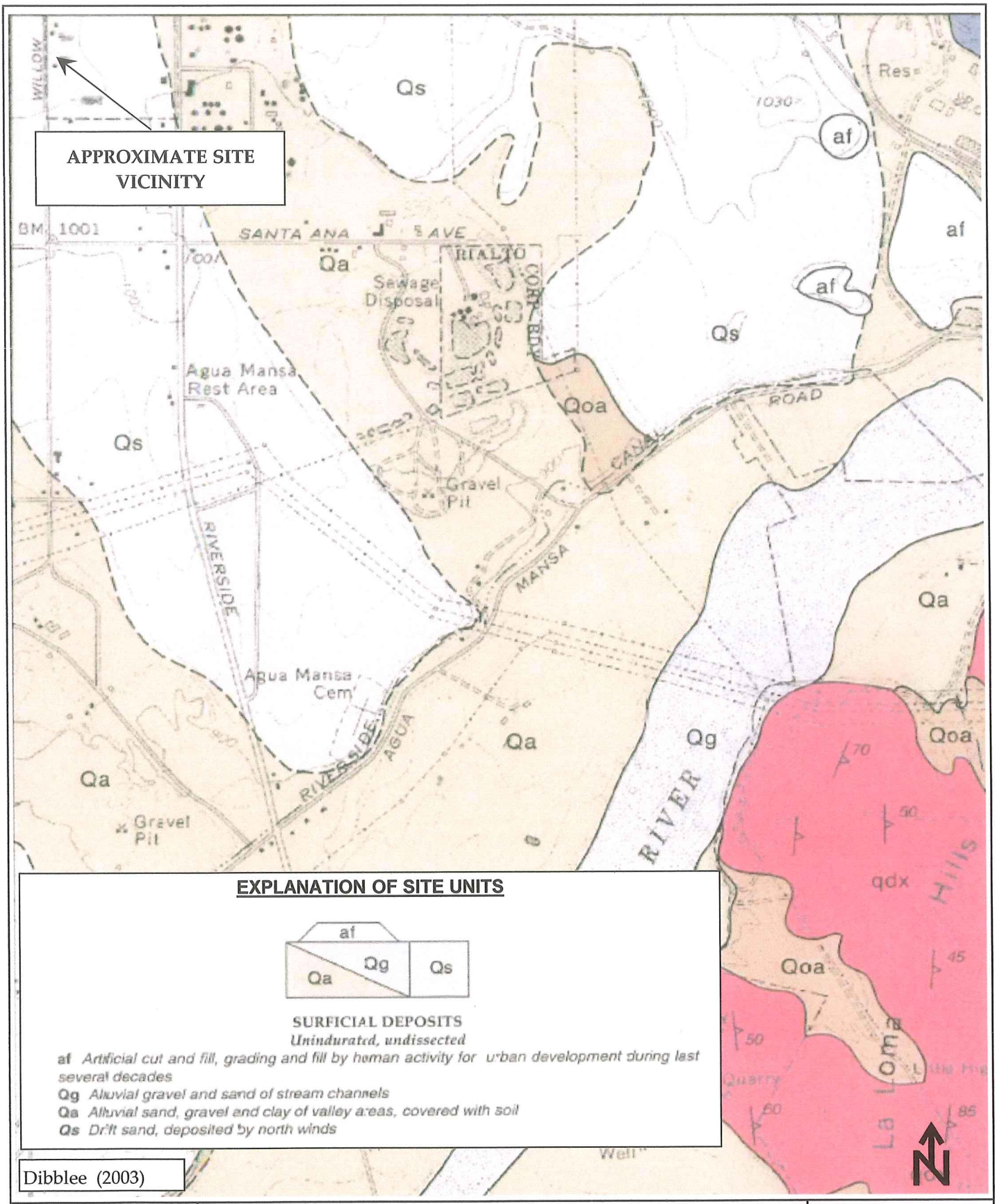
Copies: PDF/Addressee

[1] California Department of Water Resources, 2024, Water Data Library; available at: http://wdl.water.ca.gov/waterdatalibrary/

SITE LOCATION MAP
REGIONAL GEOLOGIC MAP
EXPLORATION LOCATION PLAN



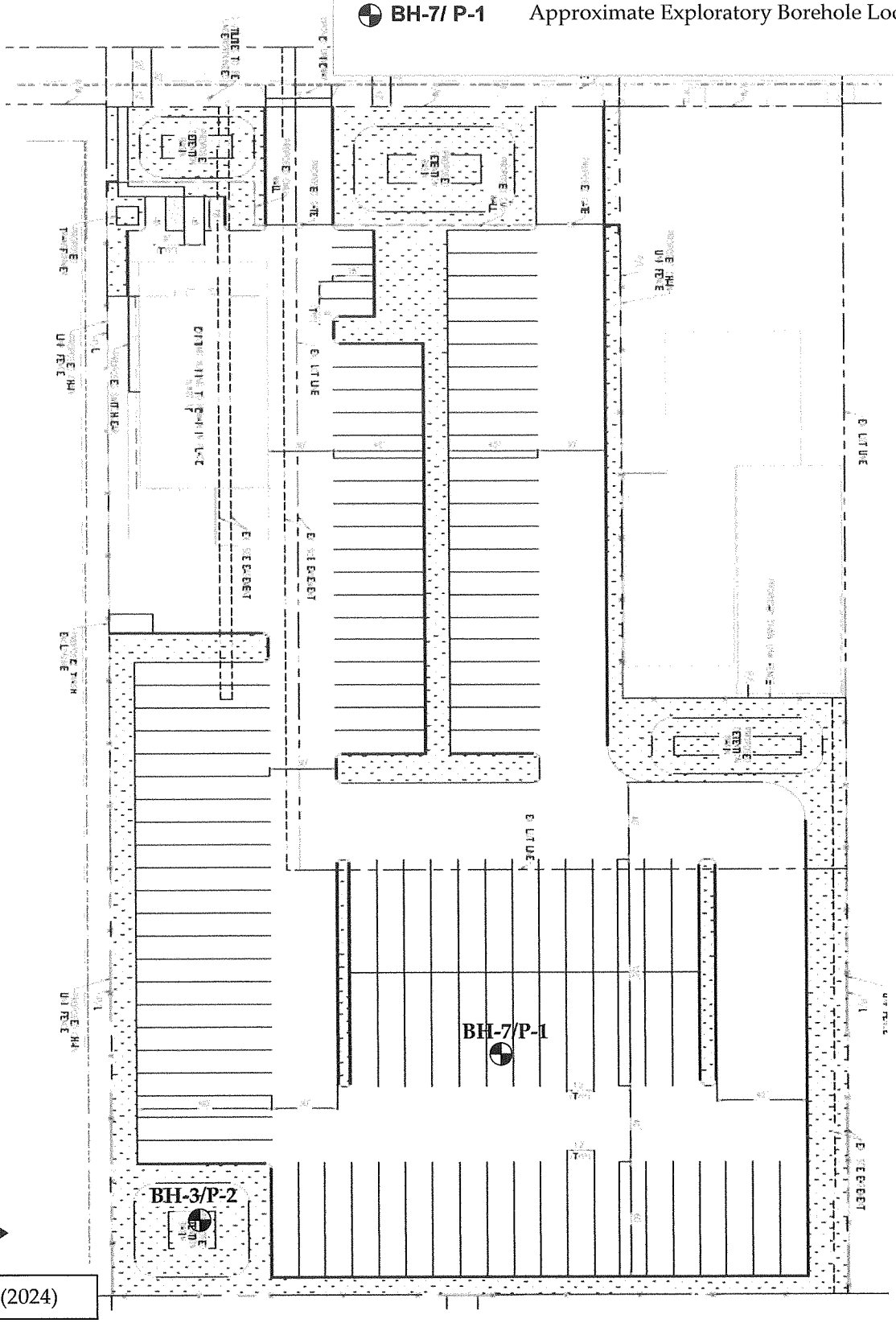
Sladden Engineering	SITE LOCATION MAP		FIGURE 1
	Project Number:	444-24084	
	Report Number:	24-11-067	
	Date:	November 18, 2024	



Sladden Engineering	REGIONAL GEOLOGIC MAP	FIGURE 2
	Project Number: 444-24084	
	Report Number: 24-11-067	
	Date: November 18, 2024	

LEGEND

BH-7/ P-1 Approximate Exploratory Borehole Location/



Kimley Horn (2024)

Sladden Engineering	EXPLORATION LOCATION PLAN		FIGURE 3
	Project Number:	444-24084	
	Report Number:	24-11-067	
	Date:	November 18, 2024	

BORELOGS

SLADDEN ENGINEERING

BORE LOG

Drill Rig:	Mobil B-61	Date Drilled:	11/18/2024
Elevation:	1020 Feet (MSL)	Boring No:	BH-7/P-1

Sample	Blow Counts	Bulk Sample	Expansion Index	% Minus #200	% Moisture	Density, pcf	Depth (Feet)	Graphic Lithology	Description
							2		Sandy Silt/ Silty Sand (ML/SM); yellowish brown, slightly moist, low plasticity with trace gravel (Fill).
							4		
							6		Silty Sand (SM); yellowish brown, slightly moist, fine- to coarse-grained with coarse gravel (Qs).
							8		
							10		
							12		Terminated at ~10.0 Feet bgs. No Bedrock Encountered. No Groundwater or Seepage Encountered. Borehole Cased with Perforated Pipe for Percolation Testing.
							14		
							16		
							18		
							20		
							22		
							24		
							26		
							28		
							30		
							32		
							34		
							36		
							38		
							40		
							42		
							44		
							46		
							48		
							50		

Completion Notes:

PROPOSED TRUCK YARD/ IOS FACILITY
2175 SOUTH WILLOW AVENUE, RIALTO

Project No:	444-24084	Page	1
Report No:	24-11-067		

SLADDEN ENGINEERING

BORE LOG

Drill Rig:	Mobil B-61	Date Drilled:	11/13/2024
Elevation:	1020 Feet (MSL)	Boring No:	BH-3/P-2

Sample	Blow Counts	Bulk Sample	Expansion Index	% Minus #200	% Moisture	Density, pcf	Depth (Feet)	Graphic Lithology	Description
							0–4		Sandy Silt/ Silty Sand (ML/SM); yellowish brown, slightly moist, low plasticity with trace gravel (Fill).
							4–10		Silty Sand (SM); yellowish brown, slightly moist, fine- to coarse-grained with coarse gravel (Qs).
							10–50		Terminated at ~10.0 Feet bgs. No Bedrock Encountered. No Groundwater or Seepage Encountered. Borehole Cased with Perforated Pipe for Percolation Testing.

Completion Notes:

PROPOSED TRUCK YARD/ IOS FACILITY
2175 SOUTH WILLOW AVENUE, RIALTO

Project No: 444-24084
Report No: 24-11-067

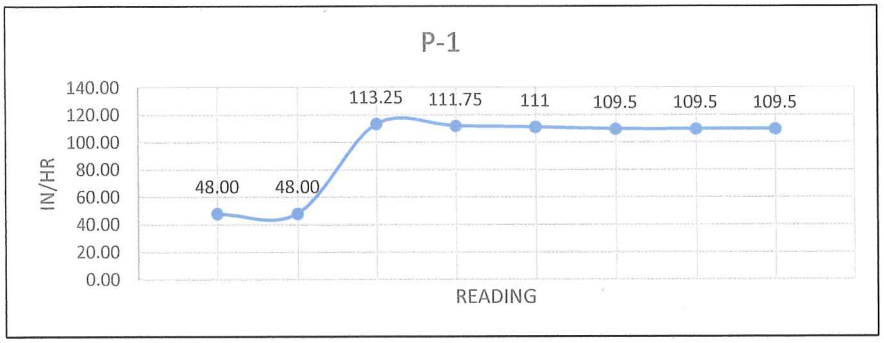
STORMWATER TESTING DATA SHEETS

STORMWATER PERCOLATION SHEET (LESS THAN 10 FT)

Project:	2175 South Willow Ave., Rialto	Depth (ft):	10.00
Job No. :	444-24084	USCS Soil Class:	SM
Date:	4/18/2024	Sandy Soil:	J.M.
Test Hole #:	P-1	Tested By:	J.M.

READING	TIME (min)	DEPTH (ft)	INITIAL W (in)	FINAL W (in)	ΔW (in)	IN/HR
A	25.00	10.00	20	0	20	48.00
B	25.00	10.00	20	0	20	48.00

READING	TIME (min)	DEPTH (ft)	INITIAL W (in)	FINAL W (in)	ΔW (in)	IN/HR
1	10.00	10.00	20	1 1/8	18 7/8	113.25
2	10.00	10.00	20	1 3/8	18 5/8	111.75
3	10.00	10.00	20	1 4/8	18 4/8	111
4	10.00	10.00	20	1 6/8	18 2/8	109.5
5	10.00	10.00	20	1 6/8	18 2/8	109.5
6	10.00	10.00	20	1 6/8	18 2/8	109.5



PERCOLATION RATE CONVERSION (PORCHET METHOD)

$$I_{t=} \quad \frac{\Delta H\ 60\ R}{\Delta t(r+2H_{avg})}$$

Δt =	10.00
D_f =	118.25
r =	4.00
D_0 =	100
D_t =	120.00
H_0 =	20
H_f =	1.75
ΔH =	18.25
H_{avg} =	10.88

Δt (minutes)
D_f (Final Depth to water)
r (hole radius in inches)
D_0 (Initial Depth to water)
D_t (Total Depth of test hole)
H_0 (initial height of water at selected time interval)

$$H_0 = D_t - D_0$$

H_f (final height of water at the selected time interval)

$$H_f = D_t - D_f$$

ΔH (change in head over the time interval)

$$\Delta H = H_0 - H_f$$

H_{avg} (average head height over the time interval)

$$H_{avg} = (H_0 + H_f)/2$$

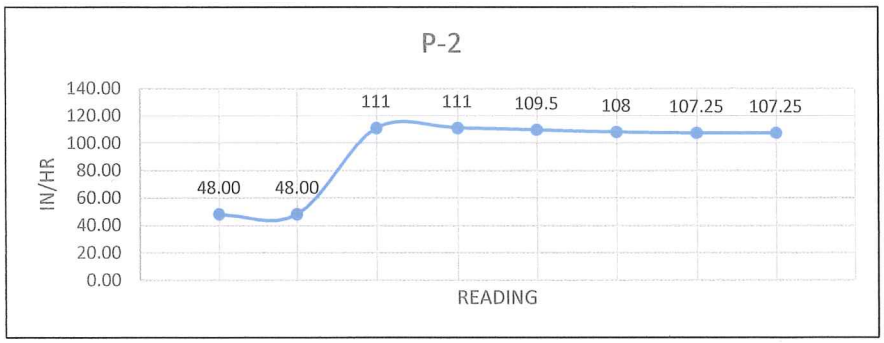
Field Rate: 109.5 in/hr
Infiltration Rate: 17.01 in/hr

STORMWATER PERCOLATION SHEET (LESS THAN 10 FT)

Project:	2175 South Willow Ave., Rialto	Depth (ft):	10.00
Job No. :	444-24084	USCS Soil Class:	SM
Date:	4/18/2024	Sandy Soil:	J.M.
Test Hole #:	P-2	Tested By:	J.M.

READING	TIME (min)	DEPTH (ft)	INITIAL W (in)	FINAL W (in)	ΔW (in)	IN/HR
A	25.00	10.00	20	0	20	48.00
B	25.00	10.00	20	0	20	48.00

READING	TIME (min)	DEPTH (ft)	INITIAL W (in)	FINAL W (in)	ΔW (in)	IN/HR
1	10.00	10.00	20	1 4/8	18 4/8	111
2	10.00	10.00	20	1 4/8	18 4/8	111
3	10.00	10.00	20	1 6/8	18 2/8	109.5
4	10.00	10.00	20	2	18	108
5	10.00	10.00	20	2 1/8	17 7/8	107.25
6	10.00	10.00	20	2 1/8	17 7/8	107.25



PERCOLATION RATE CONVERSION (PORCHET METHOD)

$$I_{t=} \quad \frac{\Delta H\ 60\ R}{\Delta t(r+2H_{avg})}$$

Δt =	10.00
D_f =	117.88
r =	4.00
D_0 =	100
D_t =	120.00
H_0 =	20
H_f =	2.125
ΔH =	17.88
H_{avg} =	11.06

Δt (minutes)

D_f (Final Depth to water)

r (hole radius in inches)

D_0 (Initial Depth to water)

D_t (Total Depth of test hole)

H_0 (initial height of water at selected time interval)

$$H_0 = D_t - D_0$$

H_f (final height of water at the selected time interval)

$$H_f = D_t - D_f$$

ΔH (change in head over the time interval)

$$\Delta H = H_0 - H_f$$

H_{avg} (average head height over the time interval)

$$H_{avg} = (H_0 + H_f)/2$$

Field Rate:	107.25 in/hr
Infiltration Rate:	16.42 in/hr

6.4.7 Educational Materials

CONTECH®
ENGINEERED SOLUTIONS

Hydrodynamic Separation

The experts you need to solve your stormwater challenges

Contech is the leader in stormwater solutions, helping engineers, contractors and owners with infrastructure and land development projects throughout North America.

With our responsive team of stormwater experts, local regulatory expertise and flexible solutions, Contech is the trusted partner you can count on for stormwater management solutions.

Your Contech Team

STORMWATER CONSULTANT

It's my job to recommend the best solution to meet permitting requirements.

STORMWATER DESIGN ENGINEER

I work with consultants to design the best approved solution to meet your project's needs.

REGULATORY MANAGER

I understand the local stormwater regulations and what solutions will be approved.

SALES ENGINEER

I make sure our solutions meet the needs of the contractor during construction.

Removing Pollutants using Hydrodynamic Separation

Utilize high-performance hydrodynamic separation to effectively remove finer sediment, oil and grease, and floating and sinking debris.

CASCADE separator™

CDS®

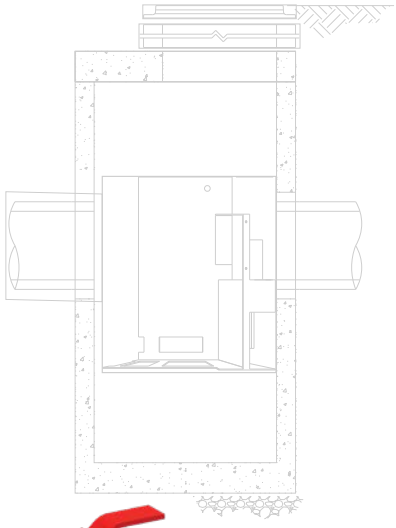
Vortechs®

HDS systems play a vital role in protecting our waterways by removing high levels of sediment, trash, debris, and hydrocarbons from stormwater runoff.

Frequently used as end-of-pipe solutions, they are also used to provide stormwater quality treatment in places where space is limited.

HDS systems capture and retain a variety of stormwater pollutants and are very easy to maintain. These two key benefits have resulted in new uses for HDS technologies, such as pretreating detention, Low Impact Development, and green infrastructure practices, as well as other land-based stormwater treatment systems.

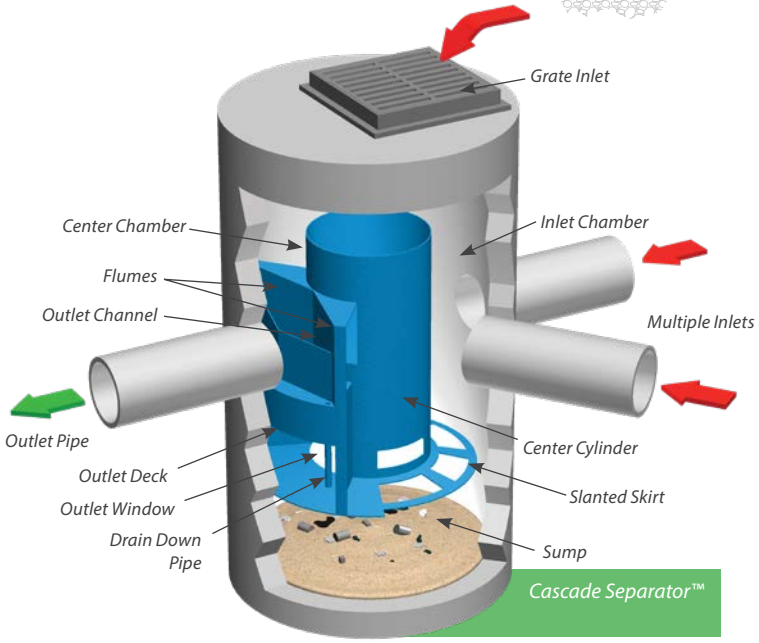
The Cascade Separator™ System



Advanced Sediment Capture Technology ...

The Cascade Separator™ is the newest innovation in stormwater treatment from Contech. The Cascade Separator was developed by Contech's stormwater experts using advanced modeling tools and Contech's industry leading stormwater laboratory.

This innovative hydrodynamic separator excels at sediment capture and retention while also removing hydrocarbons, trash, and debris from stormwater runoff. What makes the Cascade Separator unique is the use of opposing vortices that enhance particle settling and a unique skirt design that allows for sediment transport into the sump while reducing turbulence and resuspension of previously captured material. These two factors allow the Cascade Separator to treat high flow rates in a small footprint, resulting in an efficient and economical solution for any site.



FEATURE	BENEFIT
Unique skirt design & opposing vortices	Superior TSS removal; reduced system size and costs
Inlet area accepts wide range of inlet pipe angles	Design and installation flexibility
Accepts multiple inlet pipes	Eliminates the need for separate junction structure
Grate inlet option	Eliminates the need for a separate grate inlet structure
Internal bypass	Eliminates the need for a separate bypass structure
Clear access to sump and stored pollutants	Fast, easy maintenance

Learn More:
www.ContechES.com/cascade

SELECT CASCADE APPROVALS

- New Jersey Department of Environmental Protection Certification (NJDEP)

CASCADE MAINTENANCE

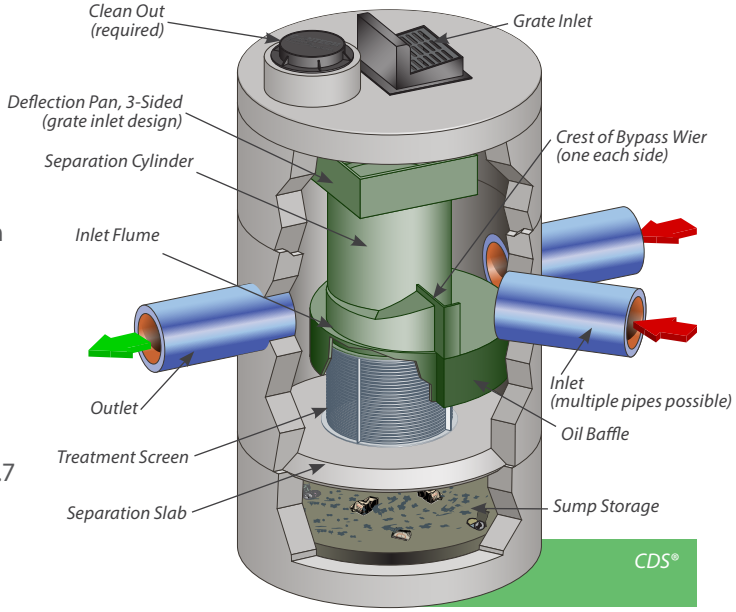
Cascade provides unobstructed access to stored pollutants, making it easy to maintain using a vacuum truck, with no requirement to enter the unit.

The CDS® System

Superior Trash Removal ...

The CDS is a hybrid technology that uses a combination of swirl concentration and indirect screening to separate and trap trash, debris, sediment, and hydrocarbons from stormwater runoff.

At the heart of the CDS system is a unique screening technology used to capture and retain trash and debris. The screen face is louvered so that it is smooth in the downstream direction. The effect created is called "Continuous Deflective Separation." The power of the incoming flow is harnessed to continually shear debris off the screen and to direct trash and sediment toward the center of the separation cylinder. This results in a screen that is self-cleaning and provides 100% removal of floatables and neutrally buoyant material debris 4.7 mm or larger, without blinding.



FEATURE	BENEFIT
Captures and retains 100% of floatables and neutrally buoyant debris 4.7 mm or larger	Superior trash removal
Self-cleaning screen	Ease of maintenance
Isolated storage sump eliminates scour potential	Excellent pollutant retention
Internal bypass	Eliminates the need for additional structures
Multiple pipe inlets and 90-180° angles	Design flexibility
Clear access to sump and stored pollutants	Fast, easy maintenance

Learn More:
www.ContechES.com/cds

SELECT CDS APPROVALS

- Washington Department of Ecology (GULD) – Pretreatment
- New Jersey Department of Environmental Protection Certification (NJDEP)
- Canadian Environmental Technology Verification (ETV)
- California Statewide Trash Amendments Full Capture System Certified*

** The CDS System has been certified by the California State Water Resources Control Board as a Full Capture System provided that it is sized to treat the peak flow rate from the region specific 1-year, 1-hour design storm, or the peak flow capacity of the corresponding storm drain, whichever is less.*

The Vortechs® System

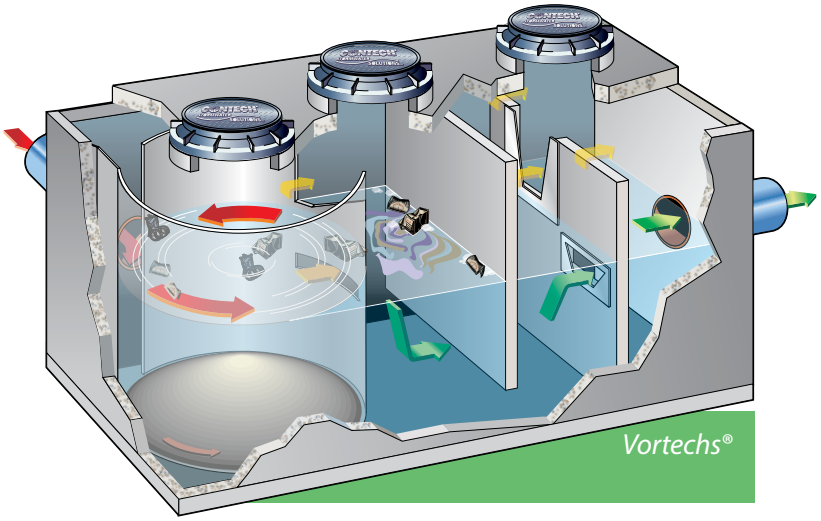
Stormwater Treatment in a Shallow Footprint ....

Vortechs combines swirl concentration and flow controls into a single treatment unit that captures and retains trash, debris, sediment, and hydrocarbons from stormwater runoff.

The Vortechs system's large swirl chamber and flow controls work together to create a low energy environment, ideal for capturing and retaining particles down to 50 microns.

Vortechs is the ideal solution for sites with high groundwater, bedrock, utility conflicts, or sites with a large volume runoff.

The Vortechs System is approved by the Washington Department of Ecology (GULD) - Pretreatment.



SELECT VORTECHS APPROVALS

- Washington Department of Ecology (GULD) – Pretreatment

Learn More:
www.ContechES.com/vortechs

FEATURE	BENEFIT
Large swirl chamber	Fine particle removal down to 50 microns
Shallow profile – Typical depth below pipe invert is only 3 feet.	Can be used on sites with high groundwater, bedrock, or utility conflicts
Unobstructed access to stored pollutants	Fast, easy maintenance

Design Your Own Hydrodynamic Separator (DYOHDS™)

Learn More:
www.ContechES.com/dyohds

Quickly prepare designs for estimates and project meetings ...

Engineers are always looking for new ways to quickly prepare designs for estimates and project meetings. Contech has developed an online tool to help with the hydrodynamic separation product selection process… the Design Your Own Hydrodynamic Separator (DYOHDS™) tool.

This free, online tool fully automates the layout process for identifying the proper hydrodynamic separator for your site. You can create multiple systems for each project while saving all project information for future use.

- Multiple sizing methods available.
- Site-specific questions ensure the selected unit will comply with site constraints.
- Multiple treatment options may be available based on regulations and site parameters.
- Follow up reports contain a site-specific design, sizing summary, standard detail, and specification.

A free, online tool to aid in the selection of a hydrodynamic separation solution.

A partner you can rely on

STORMWATER SOLUTIONS

PIPE SOLUTIONS

STRUCTURES SOLUTIONS

Few companies offer the wide range of high-quality stormwater resources you can find with us — state-of-the-art products, decades of expertise, and all the maintenance support you need to operate your system cost-effectively.

THE CONTECH WAY

Contech® Engineered Solutions provides innovative, cost-effective site solutions to engineers, contractors, and developers on projects across North America. Our portfolio includes bridges, drainage, erosion control, retaining wall, sanitary sewer and stormwater management products.

TAKE THE NEXT STEP

For more information: www.ContechES.com

CONTECH® ENGINEERED SOLUTIONS

Get social with us:

800-338-1122 | www.ContechES.com

CONTECH®
ENGINEERED SOLUTIONS

Corrugated Metal Pipe
Detention & Infiltration

The experts you need to solve your stormwater challenges

Contech is the leader in stormwater solutions, helping engineers, contractors and owners with infrastructure and land development projects throughout North America.

With our responsive team of stormwater experts, local regulatory expertise and flexible solutions, Contech is the trusted partner you can count on for stormwater management solutions.

Your Contech Team

STORMWATER CONSULTANT

It's my job to recommend the best solution to meet permitting requirements.

STORMWATER DESIGN ENGINEER

I work with consultants to design the best approved solution to meet your project's needs.

REGULATORY MANAGER

I understand the local stormwater regulations and what solutions will be approved.

SALES ENGINEER

I make sure our solutions meet the needs of the contractor during construction.

CMP Infiltration is used at Long Beach City College in Long Beach, California.

Subsurface Infiltration as a Stormwater Management Strategy

The only sure way to eliminate stormwater pollution is to eliminate stormwater runoff. In recognition of this fact, Green Infrastructure and Low Impact Development based stormwater management regulations prioritizing runoff reduction have proliferated throughout the United States.

Where site conditions allow, infiltration is typically the most cost effective and reliable runoff reduction approach. In urban environments where there are competing demands for land, subsurface infiltration can provide many of the benefits of landscape based systems but without requiring dedicated land area.

Infiltration systems are commonly comprised of a pretreatment component designed to remove sediment, trash, and oil, followed by plastic, metal or concrete storage units surrounded by permeable stone creating a high voids storage gallery.

Infiltration systems are typically designed to support vehicular loading and to withstand lateral pressures from surrounding soil that allows the overlying land to be used for virtually any non-building application.

Corrugated Metal Pipe
The “Go To” Material for Stormwater Detention

For the majority of applications, corrugated metal pipe (CMP) is the “go to” material for stormwater detention and infiltration. With its low cost, a wide variety of diameters, layout configurations and coatings, no other material can match CMP’s flexibility and versatility.

- NCSPA service life guidance of 75+ years for certain materials in recommended environments. Please refer to the Corrugated Metal Pipe Detention Design Guide for additional information.
- Various pipe coatings and materials are available to accommodate site-specific needs: Aluminized Steel Type 2 (ALT2), Galvanized, CORLIX® Aluminum, and Polymeric.
- Wide range of gages, corrugations, and shapes, diameters 12”– 144”
- Pipe can be fully or partially perforated for infiltration or groundwater recharge applications
- Custom risers and manifolds provide direct access for maintenance
- Outlet control devices can be incorporated within the system, eliminating the need for a separate structure
- Customizable - a variety of fittings allow CMP to match most layout configurations
- May be designed for heavy loading and high maximum cover
- Contributes to LEED points
- Available locally; quick turnaround time
- The most economical installed solution

No other material can match the flexibility and versatility of CMP

Service Life for Corrugated Metal Pipe

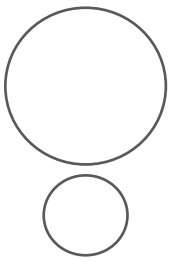
The durability of steel ...

Some engineers are hesitant to use corrugated metal pipe (CMP) for infiltration because they have heard about CMP drainage culverts that have corroded due to abrasion. Factors affecting longevity differ between culvert and infiltration applications. Culverts experience high velocity flows carrying abrasive sediment, which can wear off galvanized coatings used in older CMP culverts. Infiltration systems are designed for storage rather than conveyance, so velocity and abrasive forces are minimized. In addition, improved CMP coatings, such as Aluminized Type 2 (ALT2), are more abrasion resistant and have demonstrated superior in-ground performance against abrasion in long-term durability studies. Field studies also have indicated that ALT2 coating may extend service life in wider pH and resistivity ranges than galvanized coatings. Confirming and maintaining recommended environmental conditions helps ensure system longevity projected by the long term studies. Finally, properly designed infiltration systems include pretreatment, flow control and a stone backfill envelope that can reduce exposure to abrasion

Learn More:
www.ncspa.org

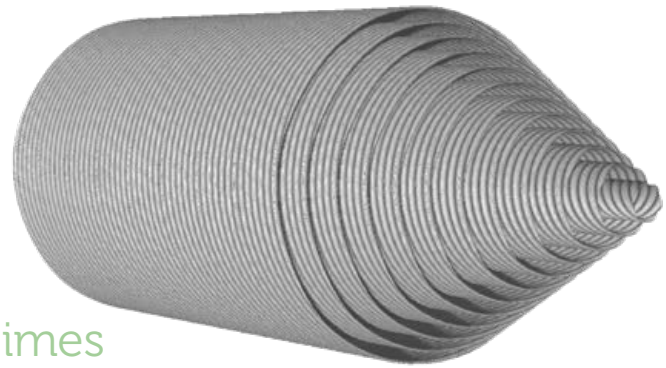
Maximizing Vertical Space: Every Inch Counts

One of the most overlooked advantages of CMP is its ability to maximize vertical storage space. Increasing the depth of a CMP infiltration system allows for more water storage in the same footprint. For example, doubling the diameter of pipe yields four times as much storage volume in the pipe. This provides a significant cost savings per cubic foot of storage. In addition, more vertical storage space means a smaller footprint, less excavation, and lower project costs.



96" diameter - 50.2 ft^3/ft

48" diameter - 12.5 ft^3/ft



Twice the diameter provides four times the storage space.

System Sizing

APPLICATION TIPS

- Use the largest diameter pipe possible to maximize vertical storage space and minimize the overall footprint. Doing so will reduce material, excavation, and backfill costs.
- Single manifold systems are most cost effective as they reduce the amount of fabrication needed.
- Incorporating flow controls into the CMP system can reduce costs by eliminating the need for additional concrete structures.
- The Contech MOBILE PIPE® mill can be delivered to remote locations and assembled on-site for fast and cost effective steel pipe manufacturing.

DIAMETER (IN)	VOLUME (FT^3/FT)	MIN. COVER HEIGHT
6	0.20	12″
8	0.35	12″
10	0.55	12″
12	0.78	12″
15	1.22	12″
18	1.76	12″
21	2.40	12″
24	3.14	12″
30	4.90	12″
36	7.10	12″
42	9.60	12″
48	12.60	12″
54	15.90	12″
60	19.60	12″
66	23.80	12″
72	28.30	12″
78	33.20	12″
84	38.50	12″
90	44.20	12″
96	50.30	12″
102	56.80	18″
108	63.60	18″
114	70.90	18″
120	78.50	18″
126	86.60	18″
132	95.00	18″
138	103.90	18″
144	113.10	18″

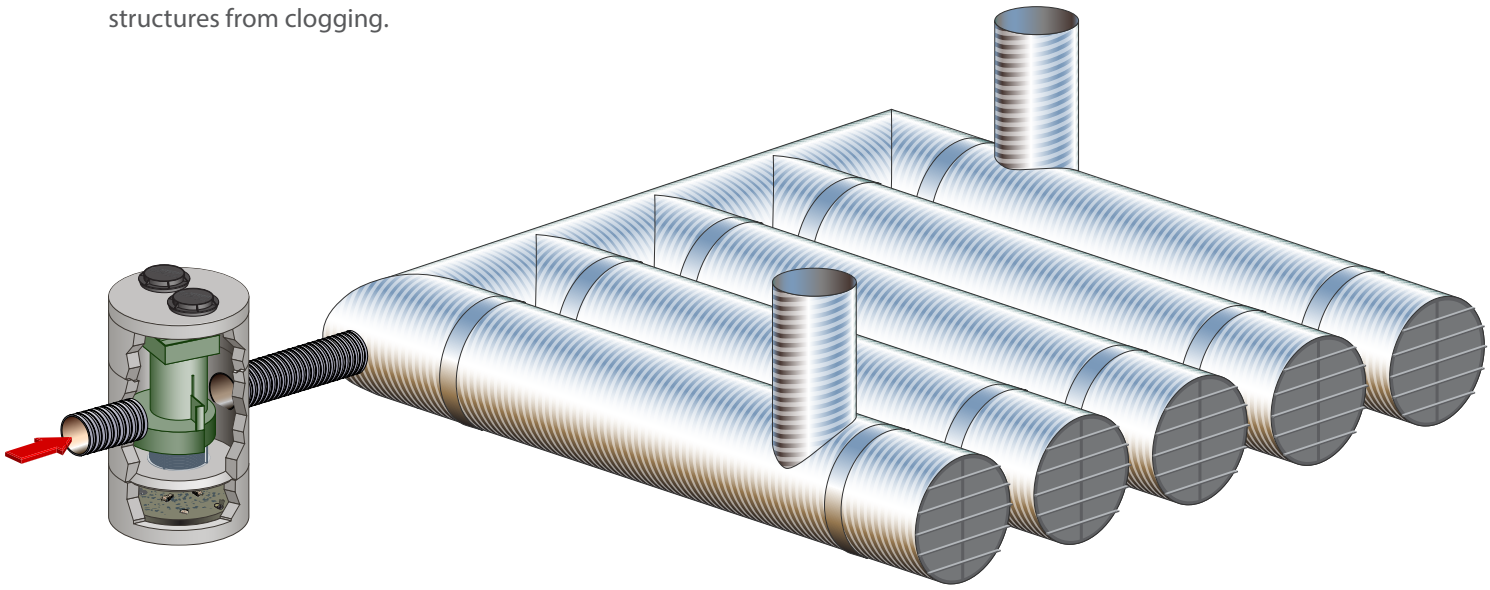
Because of its low cost and flexible configurations, CMP is the ‘go to’ material for stormwater detention and filtration.

Contech’s CMP Detention systems maximize vertical storage space

The Need for Effective Pretreatment

Infiltration systems have multiple components, and one of the most important is pretreatment. The purpose of a pretreatment device is to prolong the life of the infiltration system by removing debris and sediment that can collect on the invert and within the stone backfill voids. Pretreatment will maintain the efficiency of an infiltration system as well as extend the life cycle, therefore preventing a premature replacement. Pretreatment also offers these additional benefits:

- Easier to clean and maintain compared to the infiltration system itself.
- Cost savings due to the extended service life of the system.
- Removing trash and debris protects downstream outlet control structures from clogging.



Pretreatment systems that are easy to maintain and do not rely on the use of geotextile fabric are preferred.

Pretreatment Design Considerations

When choosing a pretreatment system, consider the following ...

- Downstream outlet control structures may require protection from a pretreatment device that screens trash and debris.
- Pretreatment system selection depends on pollutant targets. Trash, debris, and larger particles can be removed with hydrodynamic separators. Removing high percentages of fine particles and associated heavy metals and nutrients requires filtration.
- Reduced long term maintenance or replacement cost of the infiltration system can help justify pretreatment construction costs.
- Inlet and pipe layout will influence the number and type of pretreatment systems used. A combination of different systems may be appropriate for the various inlet locations and flows.

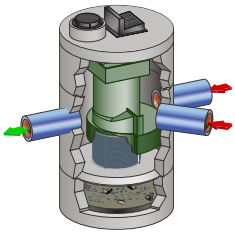
The CDS® provides direct access to cleaning, using a combination of swirl concentration and indirect screening.

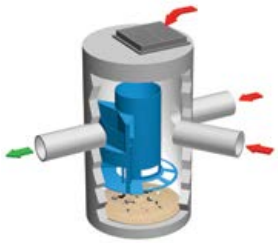
Learn More:
www.ContechES.com/cmp-detention

Reduce long term maintenance of an infiltration system with pretreatment.

Pretreatment Options

Contech offers a number of pretreatment options, all of which will extend the life of subsurface infiltration systems and improve water quality. The type of system chosen will depend on a number of factors including footprint, soil conditions, local regulations, and the desired level of pretreatment.





Hydrodynamic Separation

Hydrodynamic Separation (HDS) provides a basic level of pretreatment by capturing and retaining trash and debris, sediment, and oil from stormwater runoff.

CDS®

CDS provides superior trash and sediment removal, and is much easier to clean and maintain compared to the infiltration system itself.

Cascade Separator™

The Cascade Separator uses advanced sediment capture technology to provide the highest sediment removal efficiency to protect the stone backfill voids of infiltration systems, thus extending the life of the system.

Filtration

Filtration provides a higher level of pretreatment and improved water quality by removing trash and debris, oil, fine solids, and dissolved pollutants such as metals, hydrocarbons, and nutrients.

Filterra® Bioretention System

Filterra is an engineered bioretention system that has been optimized for high volume/flow treatment and high pollutant removal.

The Stormwater Management StormFilter®

The StormFilter system is comprised of a structure that houses rechargeable, media-filled cartridges. The media can be customized to target site-specific pollutants.

Jellyfish® Filter

The Jellyfish filter uses membrane filtration in a compact footprint to remove a high level and a wide variety of stormwater pollutants such as fine particulates, oil, trash and debris, metals, and nutrients.

Alternative Materials for Subsurface Infiltration

There may be instances where alternative materials are needed for subsurface infiltration due to site specific needs ...

Plastic Chambers

Plastic chambers are best suited to shallow depth applications; minimum cover is 18 inches, and maximum cover is 96 inches. Some benefits of chambers are:

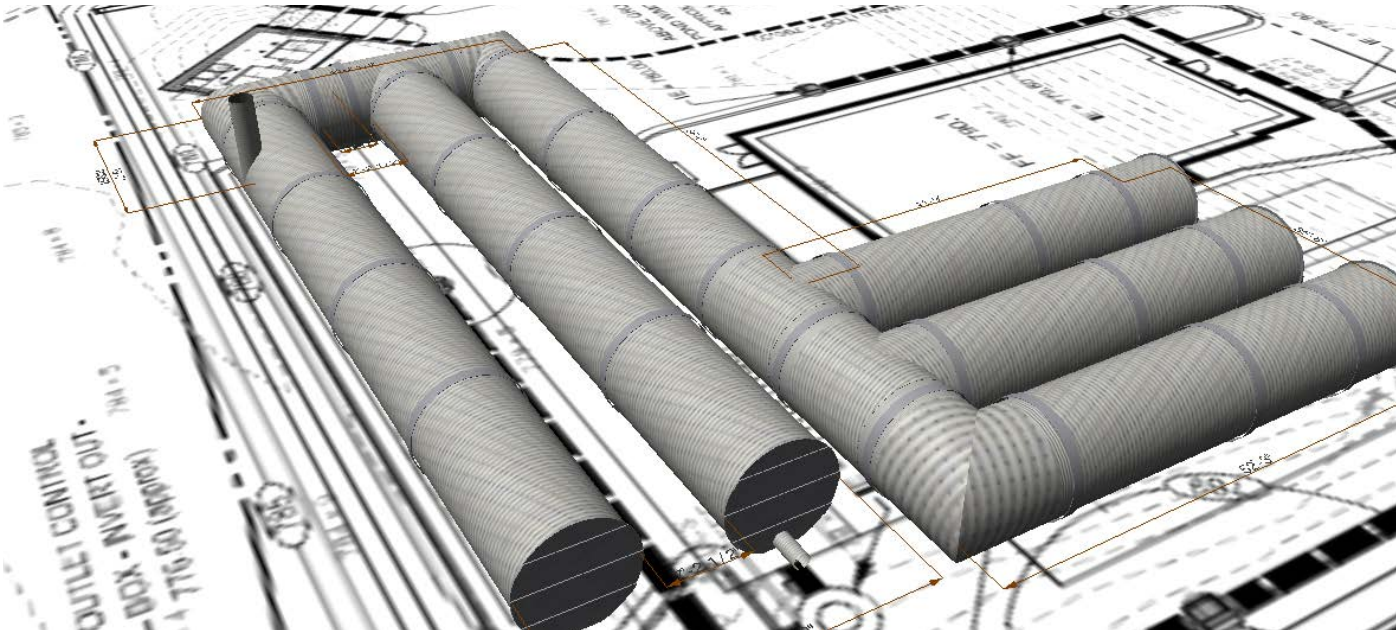
- Chambers may be beneficial for sites with limited vertical storage.
- Lightweight and installed by hand.
- Heavy equipment is not required to set units into place.
- Centralized stocking locations for short lead times.

Concrete Structures/Vaults

Some concrete structures and vaults are best suited for high loading applications such as railroads or airports. Concrete units are also ideal in corrosive environments or areas with high salinity. Some benefits of concrete structures are:

- Wide range of spans and heights.
- Greater underground infiltration storage in a smaller footprint.
- Ample and easy maintenance access.
- Fast installation.

Design Your Own Detention System (DYODS®)



Learn More:
www.ContechES.com/designcenter

Quickly prepare designs for estimates and project meetings ...

Engineers are always looking for new ways to quickly prepare designs for estimates and project meetings. We have a tool that does just that… the Design Your Own Detention System (DYODS®) tool.

Part of the Contech Design Center, this free, online tool fully automates the layout process for stormwater detention and infiltration systems. The tool allows you to design systems using corrugated metal pipe (CMP), ChamberMaxx® plastic chambers, or DuroMaxx® steel reinforced polyethylene (SRPE). You can also create multiple systems for each project while saving all project information for future use.

- "Drag and drop" feature allows users to customize layout
- A 2D/3D design environment with high-resolution graphics including BIM model output
- Optimize designs for the storage requirement or maximize storage for a given footprint
- Import a PDF site plan, scale and design a system over the plan and view the overlay in 2D
- Instant access to customized, project specific drawings, and CAD files
- Ability to co-workers or Contech design engineers to your project with the new Collaborator feature

CONTECH® DESIGNCENTER
DESIGN MADE EASY

A free, online tool that fully automates the layout process for stormwater detention systems.

A partner you can rely on

STORMWATER SOLUTIONS

PIPE SOLUTIONS

STRUCTURES SOLUTIONS

Few companies offer the wide range of high-quality stormwater resources you can find with us — state-of-the-art products, decades of expertise, and all the maintenance support you need to operate your system cost-effectively.

THE CONTECH WAY

Contech® Engineered Solutions provides innovative, cost-effective site solutions to engineers, contractors, and developers on projects across North America. Our portfolio includes bridges, drainage, erosion control, retaining wall, sanitary sewer and stormwater management products.

TAKE THE NEXT STEP

For more information: www.ContechES.com

CONTECH® ENGINEERED SOLUTIONS

Get social with us:

800-338-1122 | www.ContechES.com

RESOLUTION NO. 2025-XX

A RESOLUTION OF THE PLANNING COMMISSION OF THE CITY OF RIALTO, CALIFORNIA APPROVING CONDITIONAL DEVELOPMENT PERMIT NO. 2025-0002 ALLOWING THE OPERATION AN OUTDOOR STORAGE YARD FOR TRUCKS AND RAILERS ON 4.04 ACRES OF LAND (APNS 0258-041-28 AND 0258-041-29) AT 2175 SOUTH WILLOW AVENUE IN THE HEAVY INDUSTRIAL (H-IND) ZONE OF THE AGUA MANSA SPECIFIC PLAN.

WHEREAS, the applicant, Outour Storage Investments, proposes to develop and operate an outdoor storage yard for trucks and trailers("Project") on 4.04 acres of land (APNs 0258-041-28 and 0258-041-29) at 2175 South Willow Avenue in the Heavy Industrial Zone (H-IND) of the Agua Mansa Specific Plan ("Site"); and

WHEREAS, the Project will consist of refurbishing an existing 5,800 square-foot building, parking for up to 87 trucks and trailers, visitor and employee parking, newly paved surfaces, new landscaping, lighting, masonry block screen walls, a screening gate, drainage improvements, and pedestrian and vehicle access; and

WHEREAS, pursuant to Section 18.104.025(A)(5) of the Rialto Municipal Code, the Project requires a Conditional Development Permit, and the applicant applied for Conditional Development Permit No. 2025-0002 ("CDP No. 2025-0002"); and

WHEREAS, in conjunction with the Project and consistent with Section 18.65.010 of the Rialto Municipal Code, the applicant has applied for Precise Plan of Design No. 2025-0002 ("PPD No. 2025-0002") to facilitate the development of a semi-trailer and truck yard consisting of an existing 5,800 square-foot building, parking for up to 87 trucks and trailers, visitor and employee parking, newly paved surfaces, new landscaping, lighting, masonry block screen walls, a screening gate, drainage improvements, and pedestrian and vehicle access on the Site; and

WHEREAS, on August 20, 2025, the Planning Commission of the City of Rialto conducted a duly noticed public hearing, as required by law, on CDP No. 2025-0002 and PPD No. 2025-0002, took testimony, at which time it received input from staff, the city attorney, and the applicant; heard public testimony; discussed the proposed CDP No. 2025-0002 and PPD No. 2025-0002; and closed the public hearing; and

WHEREAS, all legal prerequisites to the adoption of this Resolution have occurred.

NOW, THEREFORE, BE IT RESOLVED by the Planning Commission of the City of Rialto as follows:

SECTION 1. The Planning Commission hereby specifically finds that all of the facts set forth in the recitals above of this Resolution are true and correct and incorporated herein.

SECTION 2. Based on substantial evidence presented to the Planning Commission during the public hearing conducted with regard to CDP No. 2025-0002, including written staff reports, verbal testimony, site plans, other documents, and the conditions of approval stated herein, the Planning Commission hereby determines that CDP No. 2025-0002 satisfies the requirements of Section 18.66.020 of the Rialto Municipal Code pertaining to the findings which must be made to grant a conditional development permit, which findings are as follows:

1. The proposed use is deemed essential or desirable to provide a service or facility which will contribute to the convenience or general well-being of the neighborhood or community; and

This finding is supported by the following facts:

The Site's parcel will be formed by merging two smaller parcels and will be developed from these highly disturbed lots with previous unlicensed activity. The project will refurbish the site by including frontage along South Willow Avenue, refurbish the existing building and parking, and include landscaping. The Project will bring a viable use that is consistent with the Agua Mansa Specific Plan's Heavy Industrial (H-IND) zone. Additionally, the Project will provide employment opportunities within the City and reduce blight.

2. The proposed use will not be detrimental or injurious to health, safety, or general welfare of persons residing or working in the vicinity; and

This finding is supported by the following facts:

The development and operation of a truck yard on the Site is consistent with the Agua Mansa Specific Plan's Heavy Industrial zone, which permits truck yards subject to a Conditional Development Permit. All the surrounding parcels are also in the Agua Mansa Specific Plan and zoned Heavy Industrial. To the north of the project site is a steel welding truck and trailer service repair. To the south is a semi-truck fueling station. To the southeast is a hazardous materials collection company, To the east is a truck and trailer storage use facility. To the west, across South Willow Avenue is a cross-dock warehouse facility. The Site will be screened from public view by a 14-foot-high decorative block wall. New trees

and drought resistant ground cover and shrubs will be placed along the South Willow Avenue setback.

3. The site for the proposed use is adequate in size, shape, topography, accessibility and other physical characteristics to accommodate the proposed use in a manner compatible with existing land uses; and

This finding is supported by the following facts:

The Site will merge a 1.55-acre parcel and a 2.49-acre parcel into one 4.04-acre parcel which will be able to accommodate the proposed use. It is on the east side of South Willow Avenue and will provide two (2) points of vehicle access. The northern most driveway is designed for trucks and the south driveway is designed for passenger vehicles. There will also be a pedestrian gate south of the south driveway. In addition, the Project includes the installation of fourteen (14) passenger vehicle parking spaces, meeting the minimum requirement of Chapter 18.58 (Off-Street Parking Regulations) of the Rialto Municipal Code.

4. The site has adequate access to those utilities and other services required for the proposed use; and

This finding is supported by the following facts:

The Site will have adequate access to all utilities and services required through main water, electric, sewer, and other utility lines that will be hooked up to the Site.

5. The proposed use will be arranged, designed, constructed, and maintained so as it will not be injurious to property or improvements in the vicinity or otherwise be inharmonious with the General Plan and its objectives, the Agua Mansa Specific Plan, or any zoning ordinances, and

This finding is supported by the following facts:

The use is consistent with the Heavy Industrial Zone in the Agua Mansa Specific Plan. A new 251-foot-long and fourteen (14) foot high block wall will be constructed along the west side and a portion of the north side of the Site. The wall will be 207 feet along the Site frontage and 44 feet along the north property line. This will provide adequate screening of the Project from the public right-of-way. Additionally, there will be a fully landscaped setback between twenty-five (25) and seventy-five (75) feet (at different points) along the frontage of South Willow Avenue. These landscape setbacks will help soften views of the development from the public right-of-way. The frontage landscape will consist of drought tolerant ground cover, shrubs, and trees.

Additionally, the proposed use is consistent with Goal 3-1 of the Economic Development Element of the Rialto General Plan by strengthening the business climate and by providing additional employment opportunities in the area and Goal 2-22 by promoting commercial and/or industrial development that is well designed, people-oriented, environmentally

sustainable, sensitive to the needs of the visitor or resident, and functionally efficient for its purpose.

6. Any potential adverse effects upon the surrounding properties will be minimized to every extent practical and any remaining adverse effects shall be outweighed by the benefits conferred upon the community or neighborhood as a whole.

This finding is supported by the following facts:

The Project's effects will be minimized through the implementation of the Conditions of Approval contained herein, and through the implementation of Conditions of Approval imposed by the Planning Commission on the Precise Plan of Design, such as new landscaping, solid screen walls, and overall aesthetic approval of the site. The development and operation of a truck yard will provide additional employment opportunities for residents and visitors to the City. The Project is consistent with the Agua Mansa Specific Plan's Heavy Industrial Zone. The surrounding uses are also industrial in nature. The Project is not expected to negatively impact any surrounding uses with the successful implementation of measures such as landscaping, the installation of solid screen walls, rehabilitating the existing building, and overall site improvement. Therefore, any potential adverse effects are outweighed by the benefits conferred upon the community and neighborhood as a whole.

SECTION 3. The Project is categorically exempt from the requirements of the California Environmental Quality Act (CEQA), pursuant to Section 15332, In-Fill Development Projects. The Planning Commission directs the Planning Division to file the necessary documentation with the Clerk of the Board of Supervisors for San Bernardino County.

The project is categorically exempt from the requirements of the California Environmental Quality Act (CEQA). The project qualifies as a Class 32 exemption under CEQA Guidelines Section 15332 - In-Fill Development Projects - as the project is consistent with the Rialto General Plan, the Agua Mansa Specific Plan, and the Heavy Industrial (H-IND) zoning designation and the project occurs on a site less than 5.0 acres. The site was previously developed and heavily disturbed having been used as a horse carriage manufacturer. The project site is surrounded by H-IND zoned heavy industrial development and uses. To the north is a steel welding and truck and trailer service repair. To the south is a semi-truck fuel station. To the southeast is a hazardous materials company. To the east is a truck and trailer storage use facility. To the west, across South Willow Avenue is a cross-dock warehouse facility. The project site has no value as habitat for threatened or

endangered species, the project will not result in any significant effects relating to traffic, noise, air quality, or water quality, and the project site can be adequately served by all required utilities and public services.

The applicant provided three reports to substantiate the CEQA exemption. The first is "Willow Avenue Trailer Parking Project - Air Quality and Greenhouse Gas Emissions Analysis", which is attached hereto as "Exhibit A". The second is "Hydrology Report: Truck Parking Facility 2175 S Willow Ave Bloomington, CA92316", which is attached hereto as "Exhibit B". The third is a **"**Preliminary Water Quality Management Plan for 2175 S Willow Avenue Rialto, CA", which is attached hereto as "Exhibit C". The reports provide evidence that the project will not result in a significant impact as it relates to air quality, greenhouse gases, or water pollution. As previously mentioned, the project's TIASA provides evidence that the project will not result in a significant impact as it relates to traffic.

SECTION 4. CDP No. 2025-0002 is granted to Outdoor Storage Investments in accordance with the plans and application on file with the Planning Division, subject to the following conditions:

1. The approval is granted allowing the development and operation of truck and trailer yard, including the refurbishing installation of a 5,800 square foot office building, on 4.04 acres of land to be formed by merging Assessor Parcels Numbers APN: 0258-041-29 (2.49 acres) and 0258-041-28 (1.55 acres) located at 2175 South Willow Avenue, as shown and described on the Exhibits A through K attached to the Project Staff Report and as approved by the Planning Commission. If the Conditions of Approval specified herein are not satisfied or otherwise completed, the project approval shall be subject to revocation.

2. City inspectors shall have access to the site to reasonably inspect the site during normal working hours to assure compliance with these conditions and other codes.

3. The applicant shall indemnify, protect, defend, and hold harmless, the City of Rialto, and/or any of its officials, officers, employees, agents, departments, agencies, and instrumentalities thereof (collectively, the "City Parties"), from any and all claims, demands, law suits, writs of mandamus, and other actions and proceedings (whether legal, equitable, declaratory, administrative or adjudicatory in nature), and alternative dispute resolutions procedures (including, but not limited to arbitrations, mediations, and other such procedures), (collectively "Actions"), brought against the City, and/or any of its officials, officers, employees, agents, departments, agencies, and instrumentalities thereof, that challenge, attack, or seek to modify, set aside, void, or annul, the any action of, or any permit or approval issued by, the City and/or any of its officials, officers, employees, agents, departments, agencies, and instrumentalities

thereof (including actions approved by the voters of the City), for or concerning the Project (collectively, the "Entitlements"), whether such Actions are brought under the California Environmental Quality Act, the Planning and Zoning Law, the Subdivision Map Act, Code of Civil Procedure Chapter 1085 or 1094.5, the California Public Records Act, or any other state, federal, or local statute, law, ordinance, rule, regulation, or any decision of a court of competent jurisdiction. This condition to indemnify, protect, defend, and hold the City harmless shall include, but not be limited to (i) damages, fees and/or costs awarded against the City, if any, and (ii) cost of suit, attorneys' fees and other costs, liabilities and expenses incurred in connection with such proceeding whether incurred by applicant, Property owner, or the City and/or other parties initiating or bringing such proceeding (collectively, subparts (i) and (ii) are the "Damages"). Notwithstanding anything to the contrary contained herein, the Applicant shall not be liable to the City Parties under this indemnity to the extent the Damages incurred by any of the City Parties in such Action(s) are a result of the City Parties' fraud, intentional misconduct or gross negligence in connection with issuing the Entitlements. The applicant shall execute an agreement to indemnify, protect, defend, and hold the City harmless as stated herein within five (5) days of approval of CDP No. 2025-0002.

4. In accordance with the provisions of Government Code Section 66020(d)(1), the imposition of fees, dedications, reservations, or exactions for this Project, if any, are subject to protest by the applicant at the time of approval or conditional approval of the Project or within 90 days after the date of the imposition of the fees, dedications, reservations, or exactions imposed on the Project.

5. The Project shall be limited to a maximum of 30 new passenger vehicle trips and 55 new truck trips daily, in accordance with Attachment B (Summary of Project Trip Generation) of the Traffic Impact Analysis Scoping Agreement prepared for the Project by Kimley-Horn & Associates, Inc. and dated July 21, 2025.

6. The applicant, landlord, operator(s) and/or tenant(s) shall ensure that all inbound truck traffic that requires temporary queuing or staging do so on-site. Inbound truck traffic shall not queue or stage on any public street at any time. Activities on-site shall not operate in such a manner that would impact traffic lanes, cause back up (queuing or staging) of vehicles into the public-right-of-way, or create any unsafe conditions. Fire and Police access and passage around trucks queuing or staging on-site shall be feasible at all times and activities shall not block parking areas, access or passage for disabled persons or emergency response vehicles.

7. The applicant, landlord, operator(s) and/or tenant(s) shall only park or store trucks and trailers within designated truck and trailer parking spaces within the enclosed truck yard. No trucks or trailers shall be parked or stored within or on any public street or within any on-site drive-aisles or passenger vehicle parking areas at any time.

8. Trucks shall not run idle on-site for more than five (5) minutes. A truck idling for five (5) minutes shall immediately leave the Site or the engine shall be shut off.

9. All trucks on-site shall be equipped with properly operating and maintained mufflers, consistent with manufacturer's standards, at all times.

10. The privileges granted by the Planning Commission pursuant to approval of this Conditional Development Permit are valid for one (1) year from the effective date of approval. If the applicant fails to commence the project within one year of said effective date, this conditional development permit shall be null and void and any privileges granted hereunder shall terminate automatically. If the applicant or his or her successor in interest commence the project within one year of the effective date of approval, the privileges granted hereunder will continue inured to the property as long as the property is used for the purpose for which the conditional development permit was granted, and such use remains compatible with adjacent property uses.

11. Approval of CDP No. 2025-0002 will not become effective until the applicant has signed a statement acknowledging awareness and acceptance of the required conditions of approval contained herein.

12. In the event, that any operation on the Site is found to be objectionable or incompatible with the character of the City and its environs due to excessive noise, excessive traffic, loitering, criminal or nuisance activity or other undesirable characteristics including, but not strictly limited to, uses which are or have become offensive to neighboring property or the goals and objectives of the Agua Mansa Specific Plan's Heavy Industrial (H-IND) zone and/or the City's General Plan, the applicant shall address the issues within forty-eight (48) hours of being notified by the City and promptly remedy the same.

13. If the applicant fails to comply with any of the conditions of approval placed upon the CDP No. 2025-0002 or accompanying PPD No. 2025-0002, the Planning Commission may initiate proceedings to revoke, modify or suspend the conditional development permit in accordance with the provisions of Sections 18.66.070 through 18.66.090, inclusive, of the Rialto Municipal Code. Conditional Development Permit No. 2025-0002 may be revoked, suspended or modified in accordance with Section 18.66.070 of the Zoning Ordinance at the discretion of the Planning Commission if:

    a) The use for which such approval was granted has not been used, ceased to exist, been subsequently modified, or has been suspended for six (6) months or more;

    b) Any of the express conditions or terms of such permit are violated;

    c) The use for which such approval was granted becomes or is found to be objectionable or incompatible with the character of the City and its environs due to dust, noise, odors or other undesirable characteristics including traffic, loitering, nuisance or criminal activity and those uses which are or have become offensive to neighboring property or the goals and objectives

of the Agua Mansa Specific Plan's Heavy Industrial (H-IND) and/or the City's General Plan.

SECTION 5. The Chairman of the Planning Commission shall sign the passage and adoption of this resolution and thereupon the same shall take effect and be in force.

PASSED, APPROVED AND ADOPTED this 20th day of August 2025.

_____
JERRY GUTIERREZ, CHAIR
CITY OF RIALTO PLANNING COMMISSION

STATE OF CALIFORNIA)
COUNTY OF SAN BERNARDINO) ss
CITY OF RIALTO)

I, Heidy Gonzalez, Administrative Assistant of the City of Rialto, do hereby certify that the foregoing Resolution No. _____ was duly passed and adopted at a regular meeting of the Planning Commission of the City of Rialto held on the 20th day of August 2025.

Upon motion of Planning Commissioner_____, seconded by Planning Commissioner_____, the foregoing Resolution No. _____ was duly passed and adopted.

Vote on the motion:

AYES:

NOES:

ABSENT:

IN WITNESS WHEREOF, I have hereunto set my hand and the Official Seal of the City of Rialto this 20th day of August 2025.

_____

HEIDY GONZALEZ, ADMINISTRATIVE ASSISTANT

Exhibit A

"Willow Avenue Trailer Parking Project - Air Quality and Greenhouse Gas Emissions Analysis"

Exhibit B
"Hydrology Report: Truck Parking Facility 2175 S Willow Ave Bloomington, CA92316"

Exhibit C
"Preliminary Water Quality Management Plan for 2175 S Willow Avenue Rialto, CA"

RESOLUTION NO. 2025-XX

A RESOLUTION OF THE PLANNING COMMISSION OF THE CITY OF RIALTO, CALIFORNIA APPROVING PRECSE PLAN OF DESIGN NO. 2025-0002 FOR SITE AND ARCHITECTURAL REVIEW OF A TRUCK AND TRAILER STORAGE YARD ON A 4.04 ACRE OF SITE (APN 0258-041-28 AND 0258-041-29) AT 2175 SOUTH WILLOW AVENUE IN THE HEAVY INDUSTRIAL (H-IND) ZONE OF THE AGUA MANSA SPECIFIC PLAN.

WHEREAS, the applicant, Outour Storage Investments, proposes to develop and operate a truck and trailer storage yard ("Project") on 4.04 acres of land (APNs 0258-041-28 and 0258-041-29) at 2175 South Willow Avenue in the Heavy Industrial Zone (H-IND) of the Agua Mansa Specific Plan ("Site"); and

WHEREAS, the Project will consist of refurbishing an existing 5,800 square-foot building, parking for up to 87 trucks and trailers, visitor and employee parking, newly paved surfaces, new landscaping, lighting, masonry block screen walls, a screening gate, drainage improvements, and pedestrian and vehicle access; and

WHEREAS, Pursuant to Section 18.104.025(A)(1) of the Rialto Municipal Code, the Project requires a Precise Plan of Design; and

WHEREAS, in conjunction with the Project, the applicant has applied for Precise Plan of Design No. 2025-0002 ("PPD No. 2025-0002") to facilitate the development of a semi-trailer and truck yard consisting of an existing 5,800 square-foot building, parking for up to 87 trucks and trailers, visitor and employee parking, newly paved surfaces, new landscaping, lighting, masonry block screen walls, a screening gate, drainage improvements, and pedestrian and vehicle access on the Site; and

WHEREAS, on August 20, 2025, the Planning Commission of the City of Rialto conducted a duly noticed public hearing, as required by law, PPD No. 2025-0002, took testimony, at which time it received input from staff, the city attorney, and the applicant; heard public testimony; discussed the proposed PPD; and closed the public hearing; and

WHEREAS, all legal prerequisites to the adoption of this Resolution have occurred.

NOW, THEREFORE, BE IT RESOLVED by the Planning Commission of the City of Rialto as follows:

SECTION 1. The Planning Commission hereby specifically finds that all of the facts set forth in the recitals above of this Resolution are true and correct and incorporated herein.

SECTION 2. Based on substantial evidence presented to the Planning Commission during the public hearing conducted with regard to the PPD, including written staff reports, verbal testimony, site plans, other documents, and the conditions of approval stated herein, the Planning Commission hereby determines that the PPD satisfies the requirements of Section 18.65.020E of the Rialto Municipal Code pertaining to the findings which must be made precedent to granting a Precise Plan of Design. The findings are as follows:

1. The proposed development is in compliance with all city ordinances and regulations, unless in accordance with an approved variance; and

This finding is supported by the following facts:

The Site has a General Plan land use designation of General Industrial with a Specific Plan Overlay (Agua Mansa Specific Plan) and a zoning designation of Heavy Industrial (H-IND) within the Agua Mansa Specific Plan. The Project, as conditioned herein, will comply with all City ordinances and regulations, including those required by the H-IND zone, Chapter 18.104 (Outdoor Storage Uses) of the Rialto Municipal Code, and Chapter 18.61 (Design Guidelines) of the Rialto Municipal Code. Chapter 18.104 and the H-IND zone allow for the development and operation of truck yards and outdoor storage yards with approval of the PPD. Additionally, the Project meets all the required development standards of the H-IND zone, Chapter 18.104 (Outdoor Storage Uses) of the Rialto Municipal Code, and Chapter 18.61 (Design Guidelines) of the Rialto Municipal Code including, but not limited to, required building setbacks, parking, landscaping, building height, floor area ratio, etc.

2. The site is physically suitable for the proposed development, and the proposed development will be arranged, designed, constructed, and maintained so that it will not be unreasonably detrimental or injurious to property, improvements, or the health, safety or general welfare of the general public in the vicinity, or otherwise be inharmonious with the city's general plan and its objectives, zoning ordinances or any applicable specific plan and its objectives; and

This finding is supported by the following facts:

The Site will be formed by the merger of Assessor Parcel Numbers 0258-041-28 and 0258-041-29 under Lot Line Adjustment No. 2025-0001. The resulting parcel will form one 4.04-acre lot on one (1) public street (South Willow Avenue to the west) and is within the

Agua Mansa Specific Plan's Heavy Industrial (H-IND) zone. All the surrounding parcels are also in the Agua Mansa Specific Plan and zoned Heavy Industrial. To the north of the project site is a steel welding truck and trailer service repair. To the south is a semi-truck fueling station. To the southeast is a hazardous materials collection company, To the east is a truck and trailer storage use facility. To the west, across South Willow Avenue is a cross-dock warehouse facility. The Site will be screened from public view by a 14-foot-high decorative block wall. New trees and drought resistant ground cover and shrubs will be placed along the South Willow Avenue setback.

3. The proposed development will not unreasonably interfere with the use or enjoyment of neighboring property rights or endanger the peace, health, safety or welfare of the general public; and

This finding is supported by the following facts:

The Project's effects will be minimized through the implementation of the Conditions of Approval contained herein, such as landscaping and concrete screen walls. The truck and trailer storage yard use is consistent with the uses of the parcel that surround the Site. All the surrounding parcels are also in the Agua Mansa Specific Plan and zoned Heavy Industrial. To the north of the project site is a steel welding truck and trailer service repair. To the south is a semi-truck fueling station. To the southeast is a hazardous materials collection company, To the east is a truck and trailer storage use facility. To the west, across South Willow Avenue is a cross-dock warehouse facility. The Site will be screened from public view by a 14-foot-high decorative block wall. New trees and drought resistant ground cover and shrubs will be placed along the South Willow Avenue setback. The Project is not expected to negatively impact any surrounding uses with the successful implementation of measures such as landscape buffering, the installation of solid screen walls, and a driveway gate 75 feet into the property to prevent trucks stacking in the street.

4. The proposed development will not substantially interfere with the orderly or planned development of the City of Rialto.

This finding is supported by the following facts:

The Project is consistent with the Agua Mansa Specific Plan's Heavy Industrial (H-IND) zone and is a logical addition to the existing industrial developments that ring the Site and throughout the surrounding area. The City staff have reviewed the design of the Project to ensure compliance with all health, safety, and design requirements to ensure the Project will enhance the infrastructure and aesthetics of the local community.

SECTION 3. The Project is categorically exempt from the requirements of the California Environmental Quality Act (CEQA), pursuant to Section 15332, In-Fill Development Projects. The Planning Commission directs the Planning Division to file the necessary documentation with the Clerk of the Board of Supervisors for San Bernardino County.

The project is categorically exempt from the requirements of the California Environmental Quality Act (CEQA). The project qualifies as a Class 32 exemption under CEQA Guidelines Section 15332 - In-Fill Development Projects - as the project is consistent with the Rialto General Plan, the Agua Mansa Specific Plan, and the Heavy Industrial (H-IND) zoning designation and the project occurs on a site less than 5.0 acres. The site was previously developed and heavily disturbed having been used as a horse carriage manufacturer. The project site is surrounded by H-IND zoned heavy industrial development and uses. To the north is a steel welding and truck and trailer service repair. To the south is a semi-truck fuel station. To the southeast is a hazardous materials company. To the east is a truck and trailer storage use facility. To the west, across South Willow Avenue is a cross-dock warehouse facility. The project site has no value as habitat for threatened or endangered species, the project will not result in any significant effects relating to traffic, noise, air quality, or water quality, and the project site can be adequately served by all required utilities and public services.

The applicant provided three reports to substantiate the CEQA exemption. The first is "Willow Avenue Trailer Parking Project - Air Quality and Greenhouse Gas Emissions Analysis", which is attached hereto as "Exhibit A". The second is "Hydrology Report: Truck Parking Facility 2175 S Willow Ave Bloomington, CA92316", which is attached hereto as "Exhibit B". The third is a **"**Preliminary Water Quality Management Plan for 2175 S Willow Avenue Rialto, CA", which is attached hereto as "Exhibit C". The reports provide evidence that the project will not result in a significant impact as it relates to air quality, greenhouse gases, or water pollution. As previously mentioned, the project's TIASA provides evidence that the project will not result in a significant impact as it relates to traffic.

SECTION 4. PPD No. 2025-0002 is granted to Outdoor Storage Investments, in accordance with the plans and application on file with the Planning Division, subject to the following Conditions of Approval:

1. The applicant is granted PPD No. 2025-0002 allowing the development of a truck and trailer storage yard including the renovation of an existing 5,800 square-foot building and associated paving, landscaping, lighting, screen walls, and drainage improvements on 4.04 acres of land (APN: 0258-041-28 0258-041-29) located at 2175 South Willow

Avenue within the Heavy Industrial Zone of the Agua Mansa Specific Plan (H-IND) zone, subject to the Conditions of Approval contained herein.

2. If the Conditions of Approval specified herein are not satisfied or otherwise completed, the project shall be subject to revocation.

3. The northern most gate on South Willow Avenue shall be set back a minimum of 75 feet from the west property line.

4. The approval of PPD No. 2025-0002 is granted for a one (1) year period from the date of approval. Approval of PPD No. 2025-0002 will not become effective until the applicant has signed a Statement of Acceptance acknowledging awareness and acceptance of the required Conditions of Approval contained herein. Any request for an extension shall be reviewed by the Community Development Director and shall be based on the progress that has taken place toward the development of the project.

5. The development associated with PPD No. 2025-0002 shall conform to the site plan, floor plan, exterior elevations, conceptual grading plan, and conceptual landscape plan as shown and described as Exhibits A through K attached to the Project Staff Report and as approved by the Planning Commission, except as may be required to be modified based on the Conditions of Approval contained herein.

6. The development associated with PPD No. 2025-0002 shall comply with all Conditions of Approval contained within CDP No. 2025-0002.

7. The development associated with PPD No. 2025-0002 shall comply with all applicable sections of the Rialto Municipal Code, and all other applicable State and local laws and ordinances.

8. City inspectors shall have access to the site to reasonably inspect the site during normal working hours to assure compliance with these conditions and other codes.

9. The applicant shall indemnify, protect, defend, and hold harmless, the City of Rialto, and/or any of its officials, officers, employees, agents, departments, agencies, and instrumentalities thereof (collectively, the "City Parties"), from any and all claims, demands, law suits, writs of mandamus, and other actions and proceedings (whether legal, equitable, declaratory, administrative or adjudicatory in nature), and alternative dispute resolutions procedures (including, but not limited to arbitrations, mediations, and other such procedures), (collectively "Actions"), brought against the City, and/or any of its officials, officers, employees, agents, departments, agencies, and instrumentalities thereof, that challenge, attack, or seek to modify, set aside, void, or annul, the any action of, or any permit or approval issued by, the City and/or any of its officials, officers, employees, agents, departments, agencies, and instrumentalities thereof (including actions approved by the voters of the City), for or concerning the Project (collectively, the "Entitlements"), whether such Actions are brought under the California Environmental Quality Act, the Planning and Zoning Law, the

Subdivision Map Act, Code of Civil Procedure Chapter 1085 or 1094.5, the California Public Records Act, or any other state, federal, or local statute, law, ordinance, rule, regulation, or any decision of a court of competent jurisdiction. This condition to indemnify, protect, defend, and hold the City harmless shall include, but not be limited to (i) damages, fees and/or costs awarded against the City, if any, and (ii) cost of suit, attorneys' fees and other costs, liabilities and expenses incurred in connection with such proceeding whether incurred by applicant, Property owner, or the City and/or other parties initiating or bringing such proceeding (collectively, subparts (i) and (ii) are the "Damages"). Notwithstanding anything to the contrary contained herein, the Applicant shall not be liable to the City Parties under this indemnity to the extent the Damages incurred by any of the City Parties in such Action(s) are a result of the City Parties' fraud, intentional misconduct or gross negligence in connection with issuing the Entitlements. The applicant shall execute an agreement to indemnify, protect, defend, and hold the City harmless as stated herein within five (5) days of approval of PPD No. 2022-0070.

10. In accordance with the provisions of Government Code Section 66020(d)(1), the imposition of fees, dedications, reservations, or exactions for this Project, if any, are subject to protest by the applicant at the time of approval or conditional approval of the Project or within 90 days after the date of the imposition of the fees, dedications, reservations, or exactions imposed on the Project.

11. The applicant shall install decorative pavement within every driveway connected to South Willow Avenue. The decorative pavement shall extend across the entire width of the driveway along South Willow Avenue from the property line to the gate. Decorative pavement means decorative pavers and/or color concrete with patterns and color variety. The decorative pavement shall include a concrete border with a broom finish and a minimum width of twelve (12) inches. The location of the decorative pavement shall be identified on the Precise Grading Plan prior to the issuance of a grading permit. Additionally, the location and type of decorative pavement shall be identified on the formal Landscape Plan submittal, and other on-site improvement plans, prior to the issuance of building permits.

12. Any new walls, including any retaining walls, shall be comprised of decorative masonry block or decorative concrete. Decorative masonry block means tan-colored slump stone block, tan-colored split-face block, or precision block with a stucco, plaster, or cultured stone finish. Decorative concrete means painted concrete with patterns, reveals, and/or trim lines. Pilasters shall be incorporated within all new walls visible from the public right-of-way. The pilasters shall be spaced a maximum of fifty (50) feet on-center and shall be placed at all corners and ends of the wall. All pilasters shall protrude a minimum of six (6) inches above and to the side of the wall. All decorative masonry walls and pilasters, including retaining walls, shall include a decorative masonry cap. All walls and pilasters shall be identified on the site plan and Precise Grading Plan, and an elevation detail for the walls shall be included in the formal building plan check submittal prior to the issuance of building permits.

13. Any new fencing installed on site shall be comprised of tubular steel. All fencing shall be identified on the site plan, and an elevation detail for the fencing shall be included in the formal building plan check submittal prior to the issuance of building permits.

14. All light standards installed on site, shall have a maximum height of twenty-five (25) feet, as measured from the finished surface, including the base. Lighting shall be shielded and/or directed toward the site so as not to produce direct glare or "stray light" onto adjacent properties. All light standards shall be identified on the site plan and a note indicating the height restriction shall be included within the formal building plan check submittal prior to the issuance of building permits.

15. The applicant shall submit a formal Landscape Plan to the Planning Division prior to the issuance of building permits. The submittal shall include a set of planting and irrigation plans, a completed Landscape Plan Review application, and the applicable review fee.

16. The applicant shall plant one (1) tree every thirty (30) feet on-center within the on-site landscape setback along Lilac Avenue. All trees within the landscape setback shall be a minimum of twenty-four (24) inch box in size, upon initial planting. Thereafter, the trees within the landscape setback shall be permanently irrigated and maintained by the property owner. At least fifty (50) percent of the trees within the setback shall consist of evergreen broadleaf trees, while the remaining percentage may consist of broadleaf deciduous trees and/or palm trees. The trees shall be identified on the formal Landscape Plan submittal prior to the issuance of a landscape permit.

17. The applicant shall plant one (1) tree every thirty (30) feet on-center within the public right-of-way parkway along South Willow Avenue. All trees within the public right-of-way parkway shall be a minimum of twenty-four (24) inch box in size, upon initial planting. Thereafter, the trees within the public right-of-way parking shall be permanently irrigated and maintained, as required by the Public Works Department. The street tree species along South Willow Avenue shall be the Platanus A. "Bloodgood, London Plane Tree," and Olea Wilsonii "Olive Tree." The street trees shall be identified on the formal Landscape Plan submittal prior to the issuance of a landscape permit.

18. The applicant shall plant shrubs that surround all ground mounted equipment and utility boxes, including transformers, fire-department connections, backflow devices, etc. for the purpose of providing screening of said equipment and utility boxes. All equipment and utility box screen shrubs shall be a minimum of five (5) gallons in size upon initial planting, and the shrubs shall be spaced no more than three (3) feet on-center. Thereafter, the equipment and utility box screen shrubs shall be permanently irrigated and maintained into a continuous box-shape with a height of no less than three and one-half (3.5) feet above the finished grade. The shrubs shall be identified on the formal Landscape Plan submittal prior to the issuance of a landscape permit.

19. The applicant shall plant trees, shrubs, and groundcover throughout all land on-site and off-site (adjacent to the project site) that is not covered by structures, walkways, parking

areas, and driveways, as approved by the Planning Division. Trees shall be planted a minimum of thirty (30) feet on-center, and all shrubs and groundcover shall be planted an average of three (3) feet on-center or less, or as approved by the Planning Division. All trees shall be minimum of fifteen (15) gallons in size upon initial planting, unless otherwise specified herein. At least fifty (50) percent of the trees shall consist of evergreen broadleaf trees, while the remaining percentage may consist of broadleaf deciduous trees and/or palm trees. All shrubs shall be a minimum of one (1) gallon in size, unless otherwise specified herein. All planter areas shall receive a minimum two (2) inch thick layer of brown bark, organic mulch, and/or decorative rock upon initial planting. Pea gravel and decomposed granite are not acceptable materials to use within planter areas. All planter areas on-site shall be permanently irrigated and maintained. The planting and irrigation shall be identified on the formal Landscape Plan submittal prior to the issuance of a landscape permit.

20. All planting and irrigation shall be installed on-site in accordance with the approved landscape plans and permit prior to the issuance of a Certificate of Occupancy. The installation of the planting and irrigation shall be certified in writing by the landscape architect responsible for preparing the landscape plans prior to the issuance of a Certificate of Occupancy.

21. All gates facing South Willow Avenue shall be louvered and painted black prior to the issuance of a Certificate of Occupancy, unless specified otherwise herein.

22. All non-glass doors shall be painted to match the color of the adjacent wall prior to the issuance of a Certificate of Occupancy.

23. The applicant shall comply with all conditions of approval for PPD No. 2025-0002 to the satisfaction of the City Engineer, prior to the issuance of a Certificate of Occupancy.

24. The applicant shall pay all applicable development impact fees in accordance with the current City of Rialto fee ordinance, prior to the issuance of any building permit related to the Project.

25. All requirements shall be completed to the satisfaction of the City Engineer prior to issuance of a certificate of occupancy unless otherwise noted.

26. Remove all graffiti within 24 hours pre-construction, during construction, and after a Certificate of Occupancy is issued.

27. The project shall submit civil engineering design plans, reports and/or documents, prepared by a registered/licensed civil engineer, for review and approval by the City Engineer per the current submittal requirements, prior to the indicated threshold or as required by the City Engineer.

28. The first submittal shall consist of, but is not limited to the following:

a. PRECISE GRADE W/ EROSION CONTROL PLAN (prior to grading permit issuance)
b. PUBLIC IMPROVEMENT PLAN – plans may include: Street, Signing & Striping, Landscape & Irrigation, Sewer, Water, etc. (prior off-site construction permit issuance or building permit issuance, whichever occurs first)
c. FINAL DRAINAGE STUDY, in conformance with Entitlement submittal study (prior to grading plan approval)
d. FINAL WQMP in conformance with Entitlement submittal report (prior to grading plan approval)
e. AS-BUILT/RECORD DRAWINGS for all plans (prior to occupancy approval)

29. The applicant is responsible for requesting address assignment from the Planning Division for any new building, irrigation water meter and electrical pedestal. Addresses for irrigation meters must be based upon approved civil plans. Addresses for electrical pedestals must be based upon approved SCE plans. The main building address shall be included on Precise Grading Plans and Building Plan set along with the PPD number. The electrical meter pedestal addresses (single or dual) shall be included in the public improvement plans.

30. Upon approval of any improvement plan by the City Engineer, the improvement plan shall be provided to the City in digital format, consisting of a DWG (AutoCAD drawing file), DXF (AutoCAD ASCII drawing exchange file), and PDF (Adobe Acrobat) formats. Variation of the type and format of the digital data to be submitted to the City may be authorized, upon prior approval, by the City Engineer.

31. All street cuts for utilities shall be repaired in accordance with City Standard SC-231 within 72 hours of completion of the utility work; and any interim trench repairs shall consist of compacted backfill to the bottom of the pavement structural section followed by placement of standard base course material in accordance with the Standard Specifications for Public Work Construction ("Greenbook"). The base course material shall be placed the full height of the structural section to be flush with the existing pavement surface and provide a smooth pavement surface until permanent cap paving occurs using an acceptable surface course material.

32. A single master Off-site Construction Permit is required for any street, wet utility (RWS only), landscape and irrigation, and street light improvements within the public right-of-way. To expedite and facilitate improvements in the public right-of-way, the applicant is responsible for submitting a multi-phase master plan traffic control plan which includes all phases of construction in the public right-of-way i.e., sewer, water, overhead, underground, etc. prior to the issuance of Off-site Construction Permit. Note, to simplify the permitting process, a single master Off-Site Construction Permit shall replace individual Encroachment Permits to be pulled by the developer's contactor.
33. All applicable landscape easement, and parkway landscaping shall be guaranteed for a period of one year from the date of acceptance by the City Engineer acceptance. Any landscaping that fails during the one-year landscape maintenance period shall be replaced with similar plant material to the satisfaction of the City Engineer and shall be

subject to a subsequent one-year landscape maintenance period. The applicant must contact the City of Rialto Landscape Contract Specialist at (909) 820-2602 to confirm a full twelve (12) months' time of non-interrupted ongoing maintenance.

34. In accordance with Chapter 15.32 of the City of Rialto Municipal Code, all existing and new electrical distribution lines of sixteen thousand volts or less and overhead service drop conductors, and all telephone, television cable service, and similar service wires or lines, which are on-site, abutting, and/or transecting, shall be installed underground. Utility undergrounding shall extend to the nearest off-site power pole. This may require undergrounding beyond the project limits to prevent any existing poles to remain or new poles to be placed for guy wire purposes along the project frontage. New power poles shall not be installed unless otherwise approved by the City Engineer. A letter from the owners of the affected utilities shall be submitted to the City Engineer prior to approval of the Grading Plan, informing the City that they have been notified of the City's utility undergrounding requirement and their intent to commence design of utility undergrounding plans. When available, the utility undergrounding plan shall be submitted to the City Engineer identifying all above ground facilities in the area of the project to be undergrounded.

35. In accordance with City Ordinance No. 1589, adopted to preserve newly paved streets, all street and/or trench cuts in street newly paved or slurry will be subject to moratorium street repair standards as referenced in Section 11.04.145 of the Rialto Municipal Code. Contact the Public Works Department for a list of streets subject to the moratorium.

36. The minimum pavement section for all on-site pavements shall be 3 inches asphalt concrete pavement over 4 inches crushed aggregate base with a minimum subgrade of 24 inches at 95% relative compaction, or equal. If an alternative pavement section is proposed, the proposed pavement section shall be designed by a California registered Geotechnical Engineer using "R" values from the project site and submitted to the City Engineer for approval.

37. Any utility trenches or other excavations within existing asphalt concrete pavement of off-site streets required by the proposed development shall be backfilled and repaired in accordance with City of Rialto Standard Drawings. The developer shall be responsible for removing, grinding, paving and/or overlaying existing asphalt concrete pavement of off-site streets as required by and at the discretion of the City Engineer, including pavement repairs in addition to pavement repairs made by utility companies for utilities installed for the benefit of the proposed development (i.e., West Valley Water District, Southern California Edison, Southern California Gas Company, Time Warner, Verizon, etc.). Multiple excavations, trenches, and other street cuts within existing asphalt concrete pavement of off-site streets required by the proposed development may require complete grinding and asphalt concrete overlay of the affected off-site streets, at the discretion of the City Engineer. The pavement condition of the existing off-site streets shall be returned to a condition equal to or better than what existed prior to construction of the proposed development.

38. All damaged, destroyed, or modified pavement legends, traffic control devices, signing, striping, and streetlights, associated with the proposed development shall be replaced as required by the City Engineer prior to issuing of a Certificate of Occupancy.

39. Construction signing, lighting, and barricading shall be provided during all phases of construction as required by City Standards or as directed by the City Engineer. As a minimum, all construction signing, lighting and barricading shall be in accordance with Part 6 Temporary Traffic Control of the 2014 California Manual on Uniform Traffic Control Devices, or subsequent editions in force at the time of construction.

40. The public street improvements outlined in these conditions of approval are intended to convey to the developer an accurate scope of required improvements, however, the City Engineer reserves the right to require reasonable additional improvements as may be determined during the review and approval of street improvement plans required by these conditions.

41. Development of the site is subject to the requirements of the National Pollution Discharge Elimination System (NPDES) Permit for the City of Rialto, issued by the Santa Ana Regional Water Quality Control Board, Board Order No. R8-2010-0036. Pursuant to the NPDES Permit, the developer shall ensure development of the site incorporates post-construction Best Management Practices (BMPs) in accordance with the Model Water Quality Management Plan (WQMP) approved for use for the Santa Ana River Watershed. The developer is advised that applicable Site Design BMPs will be required to be incorporated into the final site design, pursuant to a site specific WQMP submitted to the City Engineer for review and approval.

42. Prior to issuance of building permit, Lot Line Adjustment (LLA 2025-0001) shall be approved by the City and recorded with the San Bernardino County Recorder's Office.

43. Prior to grading plan approval, submit a final hydrology study to determine the volume of increased stormwater runoff due to development of the site, and to determine required stormwater runoff mitigation measures for the proposed development. All stormwater runoff passing through the site shall be accepted and conveyed across the property in a manner acceptable to the City Engineer. For all stormwater runoff falling on the site, on-site retention or other facilities approved by the City Engineer shall be required to contain the increased stormwater runoff generated by the development of the property. Hydrology studies shall be prepared in accordance with the San Bernardino County Hydrology Manual and Rialto drainage criteria. Final retention basin sizing and other stormwater runoff mitigation measures shall be determined upon review and approval of the hydrology study by the City Engineer and may require redesign or changes to site configuration or layout consistent with the findings of the final hydrology study. The volume of increased stormwater runoff to be retained on-site shall be determined by comparing the existing pre-developed condition and proposed developed condition, using the 100-year frequency storm. Calculations sizing on-site storm drain lines and catch basins shall be included. Final Hydrology Report shall be based upon the

Preliminary Hydrology Report submitted during the Entitlement process with incorporation of reviewer's recommendations.

44. Prior to grading plan approval, direct release of on-site nuisance water or stormwater runoff shall not be permitted to the adjacent public streets. Provisions for the interception of nuisance water from entering adjacent public streets from the project site shall be provided through the use of a minor storm drain system that collects and conveys nuisance water to landscape or parkway areas, and in only a stormwater runoff condition, pass runoff directly to the streets through parkway or under sidewalk drains.

45. Prior to grading plan approval, a geotechnical/soils report prepared by a California registered Geotechnical Engineer shall be required for and incorporated as an integral part of the grading plan for the proposed development. The geotechnical report shall include a section on infiltration testing. A digital copy (PDF) of the Geotechnical/Soils Report shall be submitted to the Engineering Division with the first submittal of the precise grading plan. Geotechnical reports older than one year shall be reaffirmed by a geotechnical engineer to still be valid or a new geotechnical report will be required.

46. Prior to grading plan approval, submit a Final Water Quality Management Plan identifying site-specific Best Management Practices (BMPs) in accordance with the Model Water Quality Management Plan (WQMP) approved for use for the Santa Ana River Watershed. The site specific WQMP shall be submitted to the City Engineer for review and approval with the precise grading plan. The Applicant acknowledges that more area than currently shown on the plans may be required to treat site runoff as required by the WQMP guidance document and FWQMP. Final WQMP shall be based upon the Preliminary WQMP submitted during the Entitlement process with incorporation of reviewer's recommendations.

47. Prior to grading plan approval, a Notice of Intent (NOI) to comply with the current California General Construction Stormwater Permit is required via the California Regional Water Quality Control Board online SMARTS system. A copy of the executed letter issuing a Waste Discharge Identification (WDID) number shall be provided to the City Engineer. The developer's contractor shall prepare and maintain a Storm Water Pollution Prevention Plan (SWPPP) as required by the General Construction Permit. All appropriate measures to prevent erosion and water pollution during construction shall be implemented as required by the SWPPP.

48. Prior to issuance of grading permit or on-site construction permit, submit a precise grading and drainage plan prepared by a California registered civil engineer to the Engineering Division for review and approval by the City Engineer. The plan shall conform to the requirements of the California Building Code for review and approval.

49. Prior to issuance of grading permit or on-site construction permit, the developer shall apply for annexation of the underlying property into City of Rialto Landscape and Lighting Maintenance District No. 2 ("LLMD 2"). An application fee of $5,000 shall be paid at the time of application. Annexation into LLMD 2 is a condition of acceptance

of any new median, landscape easement, and/or parkway landscaping in the public right-of-way, or any new public street lighting improvements conditioned on the project and to be maintained by the City of Rialto post construction.

50. Prior to commencing with any grading, the required erosion and dust control measures shall be in place. In addition, the following shall be included if not already identified: a. Tan-colored perimeter screened fencing b. Contractor information signage including contact information along [Street Name] and [Street Name] c. Post dust control signage with the following verbiage: Project Name, WDID No., IF YOU SEE DUST COMING FROM THIS PROJECT CALL: NAME (XXX) XXX-XXX, If you do not receive a response, please call the AQMD at 1-800-CUT-SMOG.

51. Prior to issuance of encroachment permit or off-site construction permit, all public improvement plans must be submitted and approved by the City Engineer.

52. Prior to issuance of a building permit, submit street improvement plans prepared by a registered California civil engineer to the Engineering Division for review. The street improvement plans shall be approved concurrently with any streetlight, landscape and irrigation, and signing and striping unless otherwise approved by the City Engineer.

53. Prior to issuance of building permit, submit traffic striping and signage plans prepared by a California registered civil engineer or traffic engineer, for review and approval by the City Engineer. All required traffic striping and signage improvements shall be completed concurrently with the required street improvements to the satisfaction of the City Engineer.

54. Prior to issuance of building permit, submit off-site landscaping and irrigation system improvement plans for review and approval concurrently with street improvement plan submittal to the Public Works Department. The median irrigation system, parkway irrigation system, and applicable Specific Plan required landscape easement irrigation system shall be separately metered from the on-site private irrigation to facilitate separate utility bill payment by the City after the required one-year maintenance period via the Landscape and Lighting Maintenance District No. 2. The off-site landscape and irrigation plans must show separate electrical meter, water meter, and separate irrigation lateral to be annexed into LLMD2 via a City Council public hearing process. Use of an existing LLMD2 water meter and electrical pedestal is encouraged. The Landscape and Irrigation plans shall be approved concurrently with the Street Improvement plans, including any median portion, applicable easement portion, and/or parkway portion. The landscaping architect must contact the City of Rialto Landscape Contract Specialist at (909) 820-2602 to ensure all landscape and irrigation guidelines are met prior to plan approval. Electrical and water irrigation meter pedestals must not be designed to be installed at or near street intersections or within a raised median to avoid burdensome traffic control set-up during ongoing maintenance. The off-site Landscape and Irrigation plans shall be designed in accordance with the Public Works Landscape Maintenance District Guidelines. Alternatively, a Landscape Maintenance Agreement may be required as determined by the City Engineer.

55. Prior to issuance of building permit or off-site construction permit, the applicant may be required to enter into a Public Improvement Agreement (PIA) with the City and furnish security (i.e. surety bonds, letter of credit, or cash) in amounts determined by the City Engineer.

56. Prior to issuance of building permit, submit a rough grade certification, engineered fill certification and compaction report pad elevation certifications for all building pads in conformance with the approved precise grading plan, to the Engineering Division. Trenching for footings or construction of any building foundation is not allowed until the certifications have been submitted for review and approval by the City Engineer.

57. Prior to occupancy approval, all public improvements shall be constructed to City standards subject to the satisfaction of the City Engineer.

58. Prior to occupancy approval, provide certification from West Valley Water District to demonstrate that all water and/or wastewater service accounts have been documented.

59. Prior to occupancy approval, submit a Precise/Final Grade Certification that demonstrates all grading is in conformance with the approved precise grading plan, to the Engineering Division.

60. Prior to occupancy approval, submit as-built plans or record drawings to the Engineering Division for review and approval by the City Engineer.

61. Prior to occupancy approval, submit a WQMP Certification that demonstrates that all structural BMPs have been constructed and installed in conformance with approved plans and specifications, and as identified in the approved WQMP.

62. Prior to occupancy approval, the developer must complete the LLMD2 annexation process. Due to the required City Council Public Hearing action, the annexation process takes months and as such the developer is advised to apply for Special District annexation as early-on in the process to avoid any delays with permit issuance.

63. Prior to occupancy approval, a WQMP Maintenance Agreement shall be required, obligating the property owner(s) to appropriate operation and maintenance obligations of on-site BMPs constructed pursuant to the approved WQMP.

64. Prior to occupancy approval, replace any existing non-compliant, damaged, or unsatisfactory sidewalk, curb & gutter, pavement, and landscaping along the project frontage to the satisfaction of the City Engineer. A site inspection is recommended so that any replacement of public improvements is included in the street improvement plans.

65. Prior to occupancy approval, construct a commercial driveway approach in accordance with City of Rialto Standard Drawing No. SC-214. The driveway approach shall be

constructed so the top of "X", BCR, and ECR is at least 5 feet from the property line, or as otherwise approved by the City Engineer. Nothing shall be constructed or planted in the corner cut-off area which does or will exceed 30 inches in height required to maintain an appropriate corner sight distance. If necessary, additional right of way shall be dedicated on-site to construct a path of travel of 5-feet width meeting ADA guidelines.

66. Prior to occupancy – Willow Avenue is designated a Commercial Collector with a 64-foot street right of way and 40-foot width curb-to-curb. The developer shall submit street improvement plans that include, but are not limited, to the following:
    a. Existing asphalt pavement within these limits shall be removed and reconstructed from curb to curb with a minimum pavement section of 4 inches asphalt concrete (AC) pavement over 6 inches crushed aggregate base (CAB) and a minimum subgrade of 24 inches at 95% relative compaction, or equal, in accordance with City of Rialto Standard Drawings. The pavement section shall be determined using a Traffic Index ("TI") of 10. The pavement section shall be designed by a California registered Geotechnical Engineer using "R" values from pavement core samples and submitted to the City Engineer for approval. Alternatively, depending on the existing street condition and geotechnical report, a street 2" grind and overlay, slurry seal, or other repair can be performed to preserve existing pavement improvements as approved by the City Engineer.
    b. 5.0-foot-wide sidewalk, property line adjacent, along Willow Avenue.
    c. Reconstruction of two existing driveway approaches
    d. Landscape & irrigation along property frontage
    e. Signing & Striping
    f. Undergrounding of overhead utilities along project frontage

67. Shall comply with the latest adopted edition of the California Code of Regulations Title 24, also known as the Building Code. The Building Codes and the edition shall be listed and published on the plans.

68. Shall comply with all applicable City of Rialto Municipal Codes and Ordinances. Plans shall incorporate any special provisions listed in the City of Rialto Municipal Codes and Ordinances.

69. Structures designed to and follow the City of Rialto Design Criteria handout.

70. Precise grading plan shall be submitted to Building and Engineering.

71. Pursuant to the California Business and Professions Code, when required, the designer shall be a Licensed Architect or Registered Professional Engineer.

72. The owner shall ensure all contractors, sub-contractors, special inspectors, testing labs, suppliers, and vendors working or distributing in the City of Rialto shall secure a City of Rialto Business License. A list of contractors, sub-contractors, special inspectors, testing labs, suppliers, and vendors and their business license number must be kept and

provided to the City of Rialto when requested. The City of Rialto Sub-Contractor Report Form must be completed and submitted to Business Licensing prior to Final and or Certificate of Occupancy.

73. The owner shall verify if the structure is in a flood hazard area as indicated on the Flood Insurance Rate Map and provide an elevation certificate in accordance with the National Flood Insurance Program. Plans shall show the finished floor elevations above the Base Flood Elevation.

74. The owner shall verify if the structure is in a Fire Severity Zone and implement the design features listed in the Building Codes. The plans shall indicate on the cover sheet if the site in a Fire Severity Zone.

75. The owner shall submit a hazardous materials inventory and disclosure form and shall be provided with a complete listing of SDS sheets, storage locations, how they are stored, and types of containers. A technical report and opinion prepared by an approved consultant shall be submitted for review and approval prior to or as part of the submission for a building permit.

76. Firestopping details shall be provided on the plans. Where a Firestopping condition occurs that is not covered by the details provided, a revision shall be provided by the designer of record or Firestop contractor. Where requested, the designer of record or firestop contractor shall provide the firestopping submittal for review and or reference.

77. Firestopping shall be performed by a firestop contractor.

78. Firestopping special inspector is required.

79. Owners shall secure approval from the County of San Bernardino, Department of Environmental Health Services and the Air Quality Management District prior to the issuance of any permit where hazardous materials are stored and/ or used.

80. Owners shall secure approval from the County of San Bernardino, Department of Environmental Health Services and the Air Quality Management District prior to the issuance of any permit where an on-site generator is proposed.

81. Owners shall secure approval from the County of San Bernardino, Department of Environmental Health Services for projects related to Public - Pools, Restaurants, Retail Food Facility, Wholesale Food Distribution, Body Art, Walk-in coolers, and other related projects.

82. Site shall be designed and graded to provide access to all entrances, access between buildings, and exterior ground floor exits.

83. Lot lines, easements, etc. and adjustments, shall be located so as to not cause any existing structure to become non-conforming with the latest adopted edition of the

California Code of Regulations Title 24 or any other applicable, law, or ordinance, and or cause any utilities to cross other properties other than its own.

84. Provide a required plumbing fixture calculation consistent with IAW Table 422.1 California Plumbing Code (CPC).

85. Provide required ventilation consistent with IAW Chapter 4 of the California Mechanical Code (CMC).

86. Grease interceptors shall be designed and installed per the California Code of Regulations (CCR) Title 24, Part 5. Each business establishment for which a gravity grease interceptor is required shall have an interceptor which shall serve that establishment.

87. New or existing residential On-Site Water Treatment Systems shall meet the State Water Board Tier 1 requirements and follow the City of Rialto On Site Water Treatment Systems guidelines.

88. If the site is Commercial or Industrial, or the proposed Onsite Wastewater Treatment System cannot meet OWTS-P Tier 1 design requirements, a Supplemental Treatment System, Seepage Pit, or Alternative Dispersal System shall be submitted to the Santa Ana Water Board –for review and approval.

89. Designer of record shall list the type and frequency of special inspections.

90. Special inspectors shall complete a City of Rialto Special Inspector Registration form before performing any inspections.

91. Permits are required prior to the removal and/ or demolition of any structure.

92. A construction waste management plan shall be prepared by the owner, designer, or general contractor and provided to the City of Rialto when requested. Shall comply with Construction and Demolition Diversion (C&D) requirements established by AB 939 and regulated by CCR Title 24, Part 11. May collect, transport, and dispose/ recycle the construction and demolition materials generated within their own specific site provided its transported to a CalRecycle facility and 65% diversion is achieved. Receipts and certificates of diversion must be kept and provided to the City of Rialto when requested. May contract with Burrtec Waste, the franchise hauler for the City of Rialto, and request a diversion report which will be provided at the completion of the project. Diversion report must be kept and provided to the City of Rialto when requested.

93. Trash enclosures shall be on an accessible route and meet the Burrtec Design Guidelines for Solid Waste, Recyclable & Organic Enclosures.

94. Exterior lighting shall meet the City of Rialto ordinances and CCR Title 24, Part 6. Exterior lighting shall not infringe on adjoining properties.

95. The owner is responsible for the coordination of the Final Occupancy and issuance of the Certificate of Occupancy. The owner shall obtain clearances from all departments prior to requesting a final building inspection from Building and Safety.

96. PRIOR TO PERMIT ISSUANCE:
    a. Owners shall secure will serve letters from the Utility Company for the Water and Sewer utilities not serviced by the Rialto Utilities Department. The will serve letter shall be submitted to Building and Safety.
    b. Shall submit pad certification Engineering division.
    c. Shall submit a soils report prepared by a registered geotechnical engineer to the Engineering division.
    d. Shall pay all applicable school fees. School fees need to be paid to the school district where the project is located. Copy of receipts shall be provided to Building and Safety.
    e. Shall pay all applicable fees and development impact fees.
    f. Tract or Parcel Map shall be recorded with the County of San Bernardino and submitted to the Engineering division.
    g. Shall submit notarized authorization letter if the permit application is not submitted by or obtained by the owner of the property.

97. Site shall be addressed and readily identifiable. Site address shall be viewable and legible from the right of way. Site address shall be provided to the satisfaction of the inspector. Failure to provide will result in a correction notice and or stop work notice.

98. Site shall be protected by a security fence and screening. Fencing and screening shall be maintained and kept free of any graffiti. Failure to maintain will result in a correction notice and/or stop work notice.

99. Temporary toilet facilities shall be provided and maintained in a sanitary condition. The number of toilet facilities shall comply with State and local laws.

100. All fire apparatus access roadways must be maintained unobstructed and drivable by fire apparatus throughout the construction process. Access roadways shall be hard surfaced (paved/concrete) and capable of holding an imposed load of 75,000 pounds including in adverse weather conditions.

101. Fire Apparatus Access roads (all roads in project) shall be usable (paved), accessible and fire hydrant(s) shall be capable of flowing required GPM and shall be tested/accepted by Rialto Fire Dept. prior to dropping any lumber for construction.

102. Prior to combustibles being brought to the site, the developer shall provide written certification from the local water purveyor, dated within the last thirty (30) days, that:
    a. All public fire hydrants or water purveyor connections required of the project have been installed, tested, and approved, and
    b. Are permanently connected to the public water main system, and

c. Are capable of supplying the required fire flow as required by Rialto Fire Department.

103. The proposed project shall pay all applicable development impact fees, pursuant to the City of Rialto Ordinances adopted at the time of permit issuance and that are amended from time to time.

104. The owner and contractor shall protect the public during the construction phase IAW the CBC and the Rialto Municipal Code.

105. The owner and contractor shall ensure compliance with the City of Rialto noise control ordinance. Violations of the noise ordinance will result in a disturbing the peace complaint to the Police Department and possible citation for failure to comply.
    - October 1st to April 30th
        - o Monday to Friday: 7AM to 5:30PM
        - o Saturday: 8AM to 5PM
        - o Sunday and Holiday: No work permitted
    - May 1st to September 30th
        - o Monday to Friday: 6AM to 7:00PM
        - o Saturday: 8AM to 5PM
        - o Sunday and Holiday: No work permitted

106. Temporary Electrical power and facilities shall obtain an electrical permit from Building and Safety.

107. Temporary Construction Trailer directly associated with the construction process requires an approved plan and permit.

108. Construction and Demolition Diversion (C&D) Diversion report must be kept and provided to the City of Rialto when requested.

109. PRIOR TO OCCUPANCY
    a. Shall receive final sign offs and release from all departments.
    b. Shall pay any outstanding fees.
    c. Shall submit a Precise Grade certification to Building and Safety and Engineering division.
    d. Post construction BMPs shall be completed and accepted by City of Rialto Engineering.
    e. Shall submit a Special Inspection Final Report.
    f. Shall provide all energy certificates of compliances and reports IAW with the California Energy Code.
    g. Permanent commercial/industrial three-dimensional street numbers, minimum 12 inches in height with a ½ inch stroke, shall be provided on the address side of the building at the highest point and furthest projection of the structure and on both corners of the building facing the street. The address shall be illuminated and be visible from the street and shall not be obstructed in any manner. Roof mounted

addressing for aerial support shall be provided for flat roofs or as directed by the fire code official and shall be a minimum of 3-feet in height, face the street in which it is addressed, be contrasting in color and durable enough for the weather conditions in which it will be exposed.

h. A lighted directory (site map), meeting Rialto Fire Department specifications, is required at each entrance to the complex. A site plan with all building locations identified by a number or letter, space numbers, fire protection equipment, etc. and shall be reviewed and approved by Rialto Fire Department prior to installation.

i. Final Construction and Demolition Diversion (C&D) Diversion report must be kept and provided to the City of Rialto.

110. The applicant shall comply with all applicable requirements of the California Fire Code and Chapter 15.28 (Fire Code) of the Rialto Municipal Code.

111. The applicant shall illuminate all walkways, passageways, and locations where pedestrians are likely to travel with a minimum of 1.5-foot candles (at surface level) of light during the hours of darkness. Lighting shall be designed/constructed in such a manner as to automatically turn on at dusk and turn off at dawn.

112. The applicant shall design/construct all lighting fixtures and luminaries, including supports, poles and brackets, in such a manner as to resist vandalism and/or destruction.

113. The applicant shall provide an illuminated channel letter address prominently placed on the building to be visible to the front of the location and if applicable, visible from the main street to which they are located (e.g. commercial building facing the interior of the property would require two address signs if located adjacent to a roadway), prior to the issuance of a Certificate of Occupancy.

114. At the discretion of the Rialto Police Department, the applicant shall install exterior security cameras at the location that cover the entire Site, prior to the issuance of a Certificate of Occupancy. The security cameras shall be accessible to the Rialto Police Department via FusionONE web application.

115. The applicant shall install Knox boxes immediately adjacent to the main entrance of the building, at least one (1) rear entrance on the building, and at the gate into the truck yard to facilitate the entry of safety personnel. The Knox boxes shall be installed in such a manner as to be alarmed, resist vandalism, removal, or destruction by hand, and be fully recessed into the building. The Knox boxes shall be equipped with the appropriate keys, for each required location, prior to the first day of business. The Knox-Box placement shall be shown on the formal building plan review submittal prior to the issuance of a building permit.

116. The applicant shall prominently display the address on the building rooftop to be visible to aerial law enforcement or fire aircraft. Specifications to be followed for alphanumeric characters are as follows: Three (3) foot tall and six (6) inches thick alphanumeric

characters. The alphanumeric characters shall be constructed in such a way that they are in stark contrast to the background to which they are attached (e.g. white numbers and letters on a black background), and resistant weathering that would cause a degradation of the contrast.

117. The applicant shall provide an audible alarm within the building, prior to the issuance of a Certificate of Occupancy. The building shall be alarmed in such a way as to emit a continuous audible notification until reset by responsible personnel (e.g. alarmed exit device / crash bar).

118. The applicant or General Contractor shall identify each contractor and subcontractor hired to work at the job site on a Contractor Sublist form and provide it to the Business License Division with a Business License application and the Business License tax fee based on the Contractors tax rate for each contractor.

119. Prior to issuance of a Certificate of Occupancy, the Lessor of the property shall pay a business license tax based on the Rental Income Property tax rate.

SECTION 5. The Chairman of the Planning Commission shall sign the passage and adoption of this resolution and thereupon the same shall take effect and be in force.

PASSED, APPROVED AND ADOPTED this 20th day of August 2025.

_____
JERRY GUTIERREZ, CHAIR
CITY OF RIALTO PLANNING COMMISSION

STATE OF CALIFORNIA)
COUNTY OF SAN BERNARDINO) ss
CITY OF RIALTO)

I, Heidy Gonzalez, Administrative Assistant of the City of Rialto, do hereby certify that the foregoing Resolution No. _____ was duly passed and adopted at a regular meeting of the Planning Commission of the City of Rialto held on the 20th day of August 2025.

Upon motion of Planning Commissioner_____, seconded by Planning Commissioner_____, the foregoing Resolution No. _____ was duly passed and adopted.

Vote on the motion:

AYES:

NOES:

ABSENT:

IN WITNESS WHEREOF, I have hereunto set my hand and the Official Seal of the City of Rialto this 20th day of August 2025.

_____

HEIDY GONZALEZ, ADMINISTRATIVE ASSISTANT

Exhibit A
"Willow Avenue Trailer Parking Project - Air Quality and Greenhouse Gas Emissions Analysis"

Exhibit B
"Hydrology Report: Truck Parking Facility 2175 S Willow Ave Bloomington, CA92316"

Exhibit C
"Preliminary Water Quality Management Plan for 2175 S Willow Avenue Rialto, CA"