

FINAL DRAINAGE REPORT

WHATABURGER

6100 ALAMEDA BLVD NE
ALBUQUERQUE, NM.

Prepared For:

CA Development, LLC
300 Concord Plaza
San Antonio, Texas 78216

Prepared by:



EXPIRATION DATE: 12-31-2022
SIGNATURE DATE: 03-29-2022

Sustainability Engineering Group

8280 E. Gelding Drive, Suite 101
Scottsdale, AZ 85260
480.588.7226 www.azSEG.com

Project Number: 210907

Submittal Date: March 29, 2022

Table of Contents

LIST OF FIGURES:	iii
APPENDIX:	iii
1. INTRODUCTION	1
2. LOCATION AND PROJECT DESCRIPTION	1
2.1 LOCATION:	1
2.2 EXISTING AND PROPOSED DEVELOPMENTS SURROUNDING THE SITE:	1
2.3 EXISTING SITE DESCRIPTION:	1
2.4 PROPOSED SITE DEVELOPMENT:	2
2.5 FLOOD HAZARD ZONE:	2
3. EXISTING DRAINAGE CONDITIONS	2
4. PROPOSED STORM WATER MANAGEMENT	3
4.1 DESIGN INTENT:	3
4.2 DESIGN STORM REQUIREMENTS:	3
4.5 PIPE CAPACITY CALCULATIONS:	5
4.6 STORM DRAIN INLET CALCULATIONS	5
5. FLOOD SAFETY	6
6. CONCLUSIONS	6
6.1 OVERALL PROJECT:	6
6.2 PROJECT PHASING:	6
7. REFERENCES	6

LIST OF FIGURES:

- FIGURE 1 - Vicinity Map
- FIGURE 2 - Aerial
- FIGURE 3 - FIRM

APPENDIX:

- APPENDIX I - Rainfall Data
- APPENDIX II - Calculations
- APPENDIX III - Grading & Drainage Plans
- APPENDIX IV - Grading & Drainage Plan: Mixed Use Development at Alameda and San Pedro Lot 1-A

1. INTRODUCTION

This Drainage Report represents the storm water analysis for Whataburger at the SEC of Alameda Blvd. & San Pedro Ave., a restaurant proposed in Albuquerque, New Mexico. The purpose of this report is to provide the hydrologic and hydraulic analyses, required by the City of Albuquerque, to support the proposed site plan for said development. This report includes discussions and calculations defining the storm water management concepts for the collection and conveyance necessary to comply with the drainage requirements of the City of Albuquerque and Bernalillo County. Preparation of this report has been done in accordance with the requirements of the City of Albuquerque Development Process Manual.

2. LOCATION AND PROJECT DESCRIPTION

2.1 LOCATION:

The subject property's subdivision name is described as Lot-1A, Block 29, Tract A, Unit B North Albuquerque Arces, which consists of a parcel of land located in a portion of Section 13, Township 11 North, Range 3 East of Bernalillo County, New Mexico. Total net property area is 1.00 acres.

- Parcel ID: UPC: 101806428134810229
- Address: 6100 Alameda Blvd NE, Albuquerque, New Mexico.

Refer to **FIGURE 1 - Vicinity Map** for the project's location with respect to major cross streets.

2.2 EXISTING AND PROPOSED DEVELOPMENTS SURROUNDING THE SITE:

The site is bound as follows:

- South: M&A Automotive LLC, Southwest Rovers, Beca Automotive Specialists, Peter's Automobile Service; Zoning is NR-BP
- West: Across San Pedro Dr., Meineke Car Care Center, Kameyab Imports Inc; Zoning is MX-M
- North: Across Alameda Blvd., Reserve Apartments; Zoning is R-MH
- East: Tin Can Alley ABQ, Phở Kup, Nitro Fog Creamery & Squeezed Juice Bar, Michael Thomas Coffee Roaster; Zoning is NR-BP

2.3 EXISTING SITE DESCRIPTION:

The existing site is partially developed. The southern portion of the property includes a parking lot with landscape islands while the north area remains undeveloped with an existing drainage pond, dirt piles and storage container. Drainage structures, sewer and water lines, and dry utilities such as power, gas and electricity exist within the site. Lot elevation drop from 1,238' at the east property line to about 1,232' at the west property line.

Refer to **FIGURE 2** attached for an aerial of the site.

2.4 PROPOSED SITE DEVELOPMENT:

The project will consist in the demolition of most of the existing south parking lot and the construction of a fast food restaurant (2,999 sf) with a drive-thru, parking area, and designated landscape.

Refer to **Appendix III** for **Grading and Drainage Plan**.

2.5 FLOOD HAZARD ZONE:

FIRM Map Number 35001C0137H dated August 16, 2012 indicates this site is designated as Zone "X. As such, it is defined as areas determined to be outside of the 0.2% annual chance floodplain.

Refer to **FIGURE 3** for the FIRM.

3. EXISTING DRAINAGE CONDITIONS

3.1 OFF-SITE DRAINAGE PATTERNS:

North:

Half the street drainage from Alameda Blvd NE flows towards the site and is intercepted by existing curb and gutter within the right-of-way. Flows are then conveyed to three existing curb inlets (EX-CB-1, EX-CB-2 and EX-CB-3) located along Alameda Blvd NE off the property limits. The area between the existing public detached sidewalk and the curb line also drains towards these catch basins. As such, no off-site flows affect the site from this direction.

East:

The site borders the parking lot from restaurant development Tin Can Alley to the east. Per topographic information, on-site drainage area EX-3 discharges off-site into catch basin EX-CB-4. This catch basin also captures the run-off associated to a portion of the existing east parking lot. Therefore, no off-site flows affect the site from this direction.

West:

The property is bound by San Pedro Dr. NE to the west, where stormwater flows to the west side of the street and is conveyed north by the existing curb & gutter. All run-off from this direction is directed away from the site.

South:

A fence separates the site from the south's neighbor property. Obtained topographic information on this area is limited but indicates that the south property manages their run-off on-site.

As such, no off-site flows affect the site from this direction.

3.2 ON-SITE DRAINAGE:

The north undeveloped area of the property drains through overland flow from east to west (EX-1). These flows are stored in temporary retention basin, EX-BASIN-A, which also receives flows captured by EX-CB-5 via an 8" PVC storm drain that discharges into the basin. Total provided volume by this basin is 3,495 CF. The parking area at the south drains with similar drainage patterns, where run-off sheetflows through the asphalt pavement from east to west before being

captured by existing catch basin EX-CB-5 at the southwest corner of the property. EX-3 discharges off-site to EX-CB-4, the latter is connected to curb inlet EX-CB-3 at Alameda Blvd. by a storm drain pipe that runs across the property.

Refer to **Existing Conditions Drainage Area Map** in **Appendix II**.

4. PROPOSED STORM WATER MANAGEMENT

4.1 DESIGN INTENT:

On-site drainage will be handled within paved areas through overland flow, curb & gutter and catch basins. Existing temporary basin, EX-BASIN-A, will be filled and project flows will ultimately be directed to the existing public storm drain system in San Pedro Dr. NE.

Refer to **Grading and Drainage Plans** in **Appendix III**.

4.2 DESIGN STORM REQUIREMENTS:

The storm water system will be designed in accordance with City of Albuquerque Development Process Manual, Chapter 6: Drainage, Flood Control and Erosion Control.

4.3 LAND CHARACTERISTICS AND HYDROLOGIC ANALYSIS:

Per section 6-1(A) City of Albuquerque Development Process Manual, hydrologic calculations can be performed using a simplified procedure based on the Rational Method and initial abstraction/uniform infiltration precipitation losses. This procedure is considered valid for watersheds up to 40 acres and smaller, which is the case of the project's site.

Precipitation:

The subject property is located in Precipitation Zone 3 in Figure 6.1 of the manual, the general location is between San Mateo and Eubank, North of Interstate 40; and between San Mateo and the East boundary of Range 4 East, South of Interstate 40. Precipitation depth and intensity values for this zone are as shown in Table 6.2. Refer to **Appendix II** for an excerpt of this table.

Land Treatments:

Land treatments within the site are classified as type C (CN=86) and D (CN=98) from Table 6.3 of the manual, referring to land with minimal vegetation/vacant lots and impervious areas respectively.

Abstractions:

The initial abstraction depth is the precipitation threshold that must be exceeded before direct run-off begins. Since most of the site consists of impervious surfaces, lower abstraction values are expected for the project area. As such, no abstraction values will be considered to achieve conservative results.

Infiltration:

No infiltration values will be considered for the hydrologic analysis due to the proposed project's land treatment (composed of mainly impervious surfaces) and the small size of the site (1.00 acre). This will also yield a conservative output in the expected peak flow calculations.

Peak Discharge Calculations:

Peak discharges for the site are computed following the peak discharges shown in Table 6.8 per Section 6-1(A)(5), multiplying each of the provided flows for each land treatment by the associated area within the project.

$$Q_P = Q_{PA}A_A + Q_{PB}A_B + Q_{PC}A_C + Q_{PD}A_D \dots$$

The total peak flow for each drainage area is the sum of all the individual peak flows per treatment land, the subject property was considered to have only C and D land treatments. Standard peak flows for the 100-year event are provided by the Development Process Manual summarized below:

Table 6.2.14 Peak Discharge		
100-year Peak Discharge (cfs/acre)		
Land Treatment	C	D
Zone 3	3.17	4.49

A summary of the peak flow calculations for the existing and proposed conditions is shown below for the 100-year storm event:

EXISTING PEAK FLOW CALCULATIONS					
AREA ID	Land Treatment C (Area)	Qc (cfs/ac)	Land Treatment D (Area)	Qd (cfs/ac)	Qp (cfs)
EX-1	0.43	3.17	0.00	4.49	1.36
EX-2	0.00	3.17	0.52	4.49	2.33
EX-3	0.00	3.17	0.05	4.49	0.23

PROPOSED PEAK FLOW CALCULATIONS					
AREA ID	Land Treatment C (Area)	Qc (cfs/ac)	Land Treatment D (Area)	Qd (cfs/ac)	Qp (cfs)
DA-1	0.10	3.17	0.20	4.49	1.20
DA-2	0.03	3.17	0.33	4.49	1.56
DA-3	0.04	3.17	0.17	4.49	0.91
DA-4	0.00	3.17	0.06	4.49	0.25
DA-B1	0.00	3.17	0.08	4.49	0.35

Refer to the **Proposed Condition Drainage Area Map and Calculations** in **Appendix II**.

4.4 DOWNSTREAM CAPACITY AND STORMWATER DISCHARGE

On-site flows will be ultimately directed to the existing 48" RCP public storm drain pipe in San Pedro Dr NE. Temporary retention basin EX-BASIN-A will be filled, re-routing its flows to the public storm drain via a new storm pipe system. Connection to the off-site public storm line has been already approved as shown in the plan *City Hydrology Section per Grading & Drainage Plan: Mixed Use Development at Alameda and San Pedro Lot 1-A*. An 8' storm manhole is proposed above the 48" public storm drain, connecting to a new public storm inlet located along San Pedro Dr NE's east curb and right next to the project's site. A private 18" will connect the public storm inlet with an on-site manhole to which the proposed on-site drains will discharge to.

Estimated peak flow by this approved plan to the public storm drain is 3.8 cfs. At proposed conditions, the estimated peak flow of the project towards this outfall includes drainage areas DA-1, DA-2, DA-3 and DA-B1 and totals 4.01 cfs for the 100-year event (as shown in section 4.3). This is a 0.21 cfs increase in comparison with the approved plan, however, the previous calculations by this plan considered less area draining towards this outfall. The current proposal shows less flows draining east of the property to EX-CB-4. Per the provided topographic information, all the existing storm drains ultimately connect at the intersection of San Pedro Dr NE. and Alameda Blvd NE, as such, the 0.21 cfs difference will be re-routed via EX-CB-4 but will ultimately drain to the same public storm drain system, for which downstream capacity has been already verified through the plan *City Hydrology Section per Grading & Drainage Plan: Mixed Use Development at Alameda and San Pedro Lot 1-A*. Therefore, there is no direct increase in the flows routed to the public system.

Refer to **Appendix IV** for *City Hydrology Section per Grading & Drainage Plan: Mixed Use Development at Alameda and San Pedro Lot 1-A*.

4.5 PIPE CAPACITY CALCULATIONS:

The proposed on-site drainage system consists of 18" pipes conveying run-off flows from proposed catch basins to the manhole directing flows to the off-site storm drains. Full flow capacity of the proposed drain with the least slope was verified in Flowmaster: a 18" pipe at 0.50% has a maximum Q of 7.43 cfs at full flow capacity. Since this maximum flow exceeds the maximum peak discharge of the project site, the proposed 18" pipes can adequately drain the 100-yr storm event.

Refer to **Appendix II** for **Pipe Capacity Calculations and Hydraulic Grade Profiles**

4.6 STORM DRAIN INLET CALCULATIONS

Nyloplast 2'x2' catch basins are proposed in the parking lot areas and drive-thru to capture on-site storm run-off. A Nyloplast 2'x2' catch basin can convey a flow of 3.30 cfs, while considering a clogging factor of 0.50. The proposed catch basin inlets can adequately convey runoff for the 100-year event, $Q_{10} = 1.56$ cfs (DA-2).

5. FLOOD SAFETY

5.1 FINISHED FLOOR ELEVATIONS

Despite the project being outside a flood zone, the proposed finished floor elevation is set at least one foot above the lot ultimate outfall.

6. CONCLUSIONS

6.1 OVERALL PROJECT:

1. The finish floor elevations will be designed a minimum of 12" above the lot outfall.
2. Downstream capacity of the public system is adequate to convey the project discharges.
3. Storm inlets have sufficient capacity to capture expected project peak flows for the 100-year storm event.

6.2 PROJECT PHASING:

This project will be constructed in a single phase.

7. REFERENCES

1. City of Albuquerque Development Process Manual, *Chapter 6: Drainage, Flood Control And Erosion Control*; Dated July 2018.