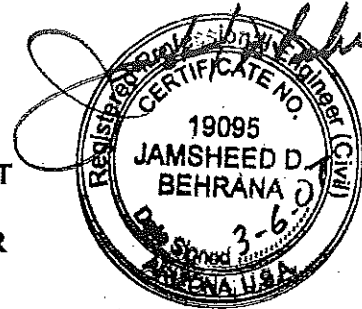


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**PRIVATE SEWER DESIGN REPORT**  
**CANYON TRAILS TOWNE CENTER**  
**GOODYEAR, ARIZONA**



07-2047

**Prepared By:**  
Optimus Civil Design Group  
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Phoenix, Arizona 85034

**GENERAL DESCRIPTION**

Canyon Trails Towne Center is a 90 ± acre commercial retail center located on the NEC of Yuma Road and Cotton Lane, within the City of Goodyear, more specifically, located within a portion of Section 12, Township 1 North, Range 2 West of the Gila and Salt River Base and Meridian, City of Goodyear, Maricopa County, Arizona. The commercial center consists of a total building square footage of ≈ 860,000 SF.

**SEWER AVAILABILITY**

Currently, there is a sewer trunk line existing at the NWC of Yuma Road and Cotton Lane. A 15" sewer stub exists on the east side of Cotton Lane just north of Yuma. This trunk line was designed by Coe & Van Loo as a part of the overall City of Goodyear Master Plan for the Canyon Trail Development. This project is required to extend the 15" sewer in accordance with the approved Master Plan along the east side of Cotton Lane within the proposed R/W, as a part of the offsite extension to serve other properties to the North. This project also contemplates an extension of an 8" public line east along Yuma to serve the onsite portion of this retail center. The onsite lines will tie into the 8" on Yuma and also have connection to the proposed 15" sewer line on Cotton Lane.

**SEWER FLOW PROJECTION**

The sewer flow projection is based on the AAC Title 18, Chapter 9 R18-19-E301-D. This table provides an average daily flow for retail areas of 0.1 gallons per square foot per day. A peaking factor was calculated using Hammon's Formula. The attached spreadsheet summarizes the various buildings and size.

**SEWER DEMAND/CALCULATIONS:**

The proposed 860,000 SF of retail development will generate ~ 86,000 gal/day in average daily flow (ADF).

**Peaking Factor:**

$$\text{Hammon's Formula} = Q_{MAX} = Q_{AVG} [1 + 14 / (4 + P^{1/2})]$$

Where P = Population/1000

A Typical Retail Center estimates at 0.0025 person / building SF

Therefore  $860,000 \times 0.0025 = \sim 2,150$  people

$Q_{MAX} = ADF \times 2.75$

Use a peaking factor of 2.75

**Peak Flow: 236,500 gal/day or 0.23 MGD**

**CONCLUSION:**

This project proposes at a minimum, an 8" line at a minimum slope of 0.34% which has a capacity of 0.70 cfs or 455,975 gal/day sufficient to meet the total wastewater discharges from this project.

Furthermore, the ADF (Average Daily Flow) is greater than 10,000 gal/day which would then require an O&M Manual in accordance AAC Title 18. An O&M Manual will be furnished upon request.

CANYON TRAILS TOWNE CENTER - UTILITY MATRIX

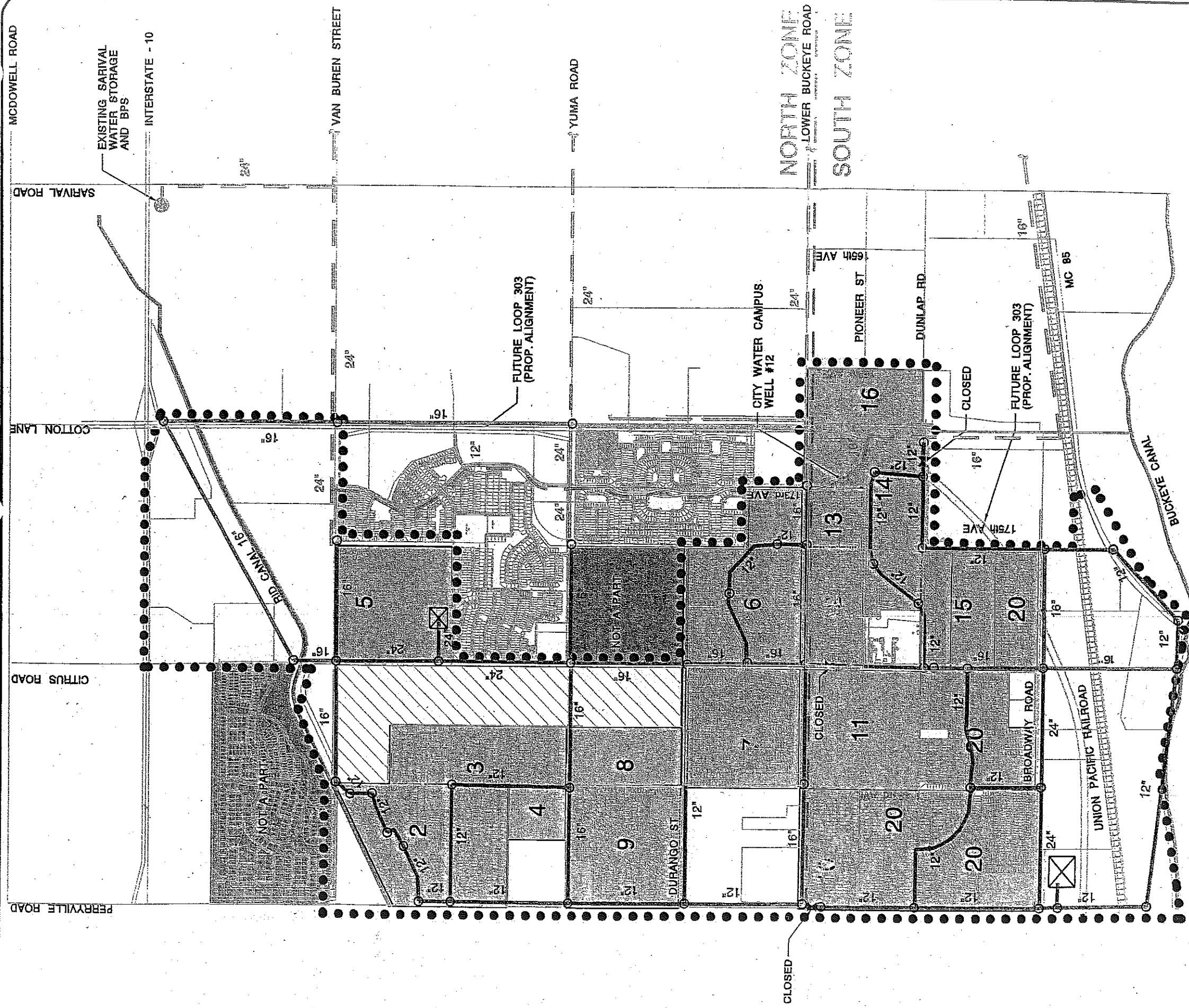
NEC Cotton Lane & Yuma Rd-Goodyear AZ

Created by : Byron Oberg - Vestar Development Co.  
 Date created:  
 Date last revised: 3/5/07  
 Wastewater and Water provided by Optimus Civil Design Group

cc:

Building	Tenant	Square Footage	SITE/CIVIL: Water Service (Tap Size)	SITE/CIVIL: Water Meter Size	BUILDING: Water Service Size	SITE/CIVIL: Sewer Service Size	BUILDING: Sewer Service Size	Fire Line Size/Riser Location	Other	Comment
Anchor A	Super Target	188,175	2"	2"	3"	2- 6"	6"	8"		SS in front and back.. 3" RPBF Reqd
Anchor B	Kohl's	88,000	2"	2"	2 1/2"	6"	6"	8"		sewer service in front.. 2 1/2" RPBF reqd
Anchor C	Lowe's	169,112	2"	2"	3"	6"	6"	12"		All wet utilities serviced from front per Lowes.. 3" RPBF reqd
Major A	Cost Plus World Market	18,300	2"	2"	2 1/2"	6"	6"	6"		sewer service in front.. 2 1/2" RPBF reqd
Major B	Ross	31,000	2"	2"	2"	6"	6"	6"		sewer service in front.. 2 1/2" RPBF reqd
Major C	Pier 1	10,000	1 1/2"	1 1/2"	2"	6"	6"	6"		sewer service in front.. 2" RPBF reqd
Major D	Dress Barn	7,200	1 1/2"	1 1/2"	2"	6"	6"	6"		sewer service in front.. 2" RPBF reqd
Major E	Famous Footwear	7,000	1 1/2"	1 1/2"	2"	6"	6"	6"		sewer service in front.. 2" RPBF reqd
Major F	Ulta	10,000	1 1/2"	1 1/2"	2"	6"	6"	6"		sewer service in front.. 2" RPBF reqd
Major G	Bed Bath & Beyond	25,000	2"	2"	2 1/2"	6"	6"	6"		sewer service in front.. 2 1/2" RPBF reqd
Major H	Marshall's	28,000	2"	2"	2 1/2"	6"	6"	6"		sewer service in front.. 2 1/2" RPBF reqd
Major I	PetsMart	22,875	2"	2"	2 1/2"	6"	6"	6"		sewer service in front.. 2 1/2" RPBF reqd
Major J	OfficeMax	17,992	1 1/2"	1 1/2"	2"	6"	6"	6"		sewer service in front.. 2" RPBF reqd
Shops A		6,933	2"	2"	2 1/2"	6"	6"	6"		2 1/2" RPBF reqd
Shops B		12,868	2"	2"	2 1/2"	6"	6"	6"		2 1/2" RPBF reqd
Shops C		6,020	2"	2"	2 1/2"	6"	6"	6"		2 1/2" RPBF reqd
Shops D		12,000	2"	2"	2 1/2"	6"	6"	6"		2 1/2" RPBF reqd
Shops E		12,000	2"	2"	2 1/2"	6"	6"	6"		2 1/2" RPBF reqd
Shops F		12,000	2"	2"	2 1/2"	6"	6"	6"		2 1/2" RPBF reqd
Shops G		12,648	2"	2"	2 1/2"	6"	6"	6"		2 1/2" RPBF reqd
Shops H		12,648	2"	2"	2 1/2"	6"	6"	6"		2 1/2" RPBF reqd
Pad A		2,659	2"	2"	2 1/2"	6"	6"	6"		2 1/2" RPBF reqd
Pad B		4,480	2"	2"	2 1/2"	6"	6"	6"		2 1/2" RPBF reqd
Pad C		8,000	2"	2"	2 1/2"	6"	6"	6"		2 1/2" RPBF reqd
Pad D		7,000	2"	2"	2 1/2"	6"	6"	6"		2 1/2" RPBF reqd
Pad E		7,000	2"	2"	2 1/2"	6"	6"	6"		2 1/2" RPBF reqd
Pad F		7,200	2"	2"	2 1/2"	6"	6"	6"		2 1/2" RPBF reqd
Pad G		7,000	2"	2"	2 1/2"	6"	6"	6"		2 1/2" RPBF reqd
Pad H		7,000	2"	2"	2 1/2"	6"	6"	6"		2 1/2" RPBF reqd
Pad I		8,000	2"	2"	2 1/2"	6"	6"	6"		2 1/2" RPBF reqd
Pad J		8,000	2"	2"	2 1/2"	6"	6"	6"		2 1/2" RPBF reqd
Pad K		8,000	2"	2"	2 1/2"	6"	6"	6"		2 1/2" RPBF reqd
Pad M		8,000	2"	2"	2 1/2"	6"	6"	6"		2 1/2" RPBF reqd
Pad N		8,000	2"	2"	2 1/2"	6"	6"	6"		2 1/2" RPBF reqd

Pad O		6,000	2"	2"	2 1/2"	6"		6"		2 1/2" RPBF reqd
Pad P		4,400	2"	2"	2 1/2"	6"		6"		2 1/2" RPBF reqd
Pad Q		8,000	2"	2"	2 1/2"	6"		6"		2 1/2" RPBF reqd
Pad R		8,000	2"	2"	2 1/2"	6"		6"		2 1/2" RPBF reqd
Pad S		8,000	2"	2"	2 1/2"	6"		6"		2 1/2" RPBF reqd
Pad T		10,000	2"	2"	2 1/2"	6"		6"		2-2 1/2" RPBF reqd
	Danny's	14,000	2-2"	2-2"	2-2 1/2"	6"	6"	8"		2 " RPBF Reqd
Irrigation service	Danny's		2"	2"	n/a	n/a	n/a	n/a		2 " RPBF Reqd
Irrigation service	Target		2"	2"	n/a	n/a	n/a	n/a		2 " RPBF Reqd
Irrigation service	Lowe's		2"	2"	n/a	n/a	n/a	n/a		2 " RPBF Reqd
Irrigation service	vestar-Onsite		2-2"	2"	n/a	n/a	n/a	n/a		2 " RPBF Reqd
Irrigation service	vestar		2"	2"	n/a	n/a	n/a	n/a		2 " RPBF Reqd



**LEGEND**

- ..... STUDY AREA BOUNDARY
- 12" PROPOSED WATER MAIN
- 16" PROPOSED WATER MAIN
- 24" PROPOSED WATER MAIN
- EXISTING WATER MAIN
- PRESSURE ZONE BOUNDARY
- JUNCTION NODE
- 12" ○ PIPE SIZE
- ⊗ WATER PLANT
- ⊕ PRESSURE RELIEF VALVE/ISOLATION VALVE
- ▭ EXISTING SUBDIVISION
- ▨ DEVELOPMENT PROPERTY



SCALE: NONE

<b>PROPOSED WATER DELIVERY SYSTEM</b>	JOB NO
	1.01.0112702
<b>MASTER WATER STUDY</b>	FIGURE
	4

4550 NORTH 12TH STREET  
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**COE & VAN LOO**

PLANNING ENGINEERING / LANDSCAPE ARCHITECTURE