Drainage Reports

Abbreveated Water & Sewer Need Reports

Water Study

Wastewater Study

Stormwater Waiver Application

PRELIMINARY WATER DISTRIBUTION SYSTEM BASIS OF DESIGN REPORT FOR MARRIOTT FAIRFIELD INN & SUITES Case No. 45-DR-2017

Revised March 5, 2018
October 18, 2017
WP #154365

Prepared For:

Scott Kusy
Trailside View, LLC
7010 East Acoma Drive
Suite 103
Scottsdale, Arizona 85254
Phone: (480) 481-9699

Submitted To:

City of Scottsdale
9388 East San Salvador Drive
Scottsdale, Arizona 85258
Phone: (480) 312-5636

Prepared By:

Wood, Patel & Associates, Inc.
2051 West Northern Avenue
Suite 100
Phoenix, Arizona 85021
Phone: (602) 335-8500
Website: www.woodpatel.com
Contact: Darrel E. Wood, R.L.S., P.E.

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CIVIL ENGINEERS • HYDROLOGISTS • LAND SURVEYORS • CONSTRUCTION MANAGERS

Darrel E. Wood, P.E., R.L.S.
Ashok C. Patel, P.E., R.L.S., CFM
Michael T. Young, P.E., LEED AP
James S. Campbell, P.E., LEED GA
Thomas R. Gettings, R.L.S.
Darin L. Moore, P.E., LEED GA
Jeffrey R. Minch, P.E., CFM
Robert D. Gofonia, P.E., R.L.S.
John M. Bulka, P.E.
Daniel J. Cronin, PMP, LEED AP, CDT
James G. Taillon, CFM
Daniel W. Matthews, P.E.
Joseph C. Daconta, P.E., CFM, PH
Ethan A. Boyle, P.E.
Cesar Castillo, P.E.
Ronald F. Martinez, P.E.
Gabriel S. Rios, R.L.S.
Frank M. Koo, P.E.
John G. Ritchie, P.E.
Christian D. Aguirre, P.E.
Nicholas E. Brown, P.E.
Derek C. Nichols, P.E.
Steven C. McKee, P.E.
Craig S. Bolze, P.E., ENV SP
Bob Dalton, P.E.
Brian Diehl, R.L.S.
Mike Fondren, R.L.S.

Revised March 5, 2018
October 18, 2017

Water Resources Engineer
City of Scottsdale
9388 East San Salvador Drive
Scottsdale, AZ 85258

Phone: (480) 312- 5636
Fax: (480) 312-5615

Re: **Marriott Fairfield Inn & Suites**
Preliminary Water Distribution System Report
WP# 154365

To Whom It May Concern:

The proposed project, entitled Marriott Fairfield Inn & Suites, is a resort hotel development located on a 1.7-acre parcel of land in Scottsdale, Arizona. The development is proposed to be constructed north of Trailside View between Pima Road and 91st Street. More specifically, the project is located on Lot 5 of the "DC Ranch Crossing" final plat (Book 993, Pg. 40, MCR) in the Northwest 1/4 of Section 31, Township 4 North, Range 5 East. The proposed development will include 123 rooms, underground garage parking, off-street at-grade parking, hardscape areas, a pool, and landscaping. This Preliminary Water Distribution System Basis of Design Report has been prepared to support the project's Development Review Board (DRB) submittal to the City of Scottsdale.

Previously, a design for the proposed site under the report titled "DC Ranch Parcel 1.1" was approved by the City of Scottsdale in 2008. A copy of the report with the prepared design calculations is attached for reference. The water infrastructure as proposed for the "DC Ranch Parcel 1.1" development was installed per City of Scottsdale approved as-built plans. The proposed Marriott Fairfield Inn & Suites site is located at the bottom of pressure zone five of the City of Scottsdale Public Water System.

The design criteria used to estimate potable water demands and evaluate system hydraulics are based on Wood, Patel & Associates, Inc.'s (Wood/Patel's) understanding of the requirements listed in the *City of Scottsdale Design Standards and Policy Manual (2010 Update)*, and the *2012 International Fire Code*. Specifically, the design criteria utilized are as follows:

- Average Daily Demand per Room: 446.3 gpd/room
- Estimated Number of Rooms: 123
- Max Day Peaking Factor: 2.0 x Avg Day Demand
- Peak Hour Peaking Factor: 3.5 x Avg Day Demand
- Minimum Fire Flow Requirement: 2,500 gpm
- Minimum Residual Pressure, Avg Day: 50 psi
- Minimum Residual Pressure, Max Day + Fire Flow: 30 psi

- Maximum Residual Pressure: 120 psi
- Maximum Pipe Headloss, Max Day Demand: 8 ft /1,000 ft
- Maximum Pipe Headloss, Peak Hour Demand 10 ft/1,000 ft

In order to construct the proposed improvements, domestic water will be conveyed through an existing 8-inch water line to an existing 6-inch water line stub and existing 1-1/2 inch domestic water service. This water line and water service will be utilized to supply fire suppression and domestic flows to the proposed building (see attached *Water Exhibit*).

The average day water demand for the proposed building and related facilities is projected to be approximately 54,895 gallons per day (gpd), or 38.1 gallons per minute (gpm). The projected max day water demand and peak hour water demand are 76.2 and 133.4 gpm respectively with 2,500 gpm of needed fire flow (see attached calculations). Per the approved report titled "DC Ranch Parcel 1.1" the existing water line has the capacity to convey an average daily demand of 123,840 gallons per day or 86 gallons per minute. The average demand for the proposed Marriott Fairfield Inn & Suites of 54,895 gallons per day was determined to be less than the approved Parcel 1.1 report. Additionally, a fire hydrant flow test, conducted by EJ Flow Tests, LLC, determined that 2,706 gpm with a pressure of 105.0 psi is provided to the site (see attached flow test summary).

The proposed system design and capacity are summarized in the attached spreadsheets. The spreadsheets show the proposed average day demands, projected peak hour demands, and fire flow. Please refer to the attached vicinity map and water exhibit for additional information and clarification.

Thank you for your prompt review of the proposed water distribution system report for Marriott Fairfield Inn & Suites. Please contact me if you have any questions.

Sincerely,

Wood, Patel & Associates, Inc.

Darrel E. Wood, P.E., R.L.S.
Principal

JE/ag

HYDRAULIC CALCULATIONS

WOOD/PATEL

WATER DEMAND DESIGN FLOWS

CIVIL ENGINEERS * HYDROLOGISTS * LAND SURVEYORS * CONSTRUCTION MANAGERS

Project: Marriott Fairfield Inn & Suites
Location: Scottsdale, AZ
Date: September 25, 2017
References: City of Scottsdale Design Standards and Policies Manual

Proj. Number: 154365
Proj. Engineer: Jasmine Eghbal, EIT

WATER DEMAND CALCULATIONS

		Water Demands								
Building ID	**Applicable Unit**	**Number of Units**	**ADF (GPD) / APPLICABLE UNIT**	**Average Day Water Demand (GPD)**	**Average Day Water Demand (GPM)**	**Max Day Peaking Factor**	**Max Day Water Demand (GPM)**	**Peak Hour Peaking Factor**	**Peak Hour Water Demand (GPM)**	**Fire Flow (GPM)**
Resort/Hotel	Rooms	123	446.3	54,895	38.1	2.00	76.2	3.50	133.4	2,500
TOTAL		**123**		**54,895**	**38.1**		**76.2**		**133.4**	**2,500**

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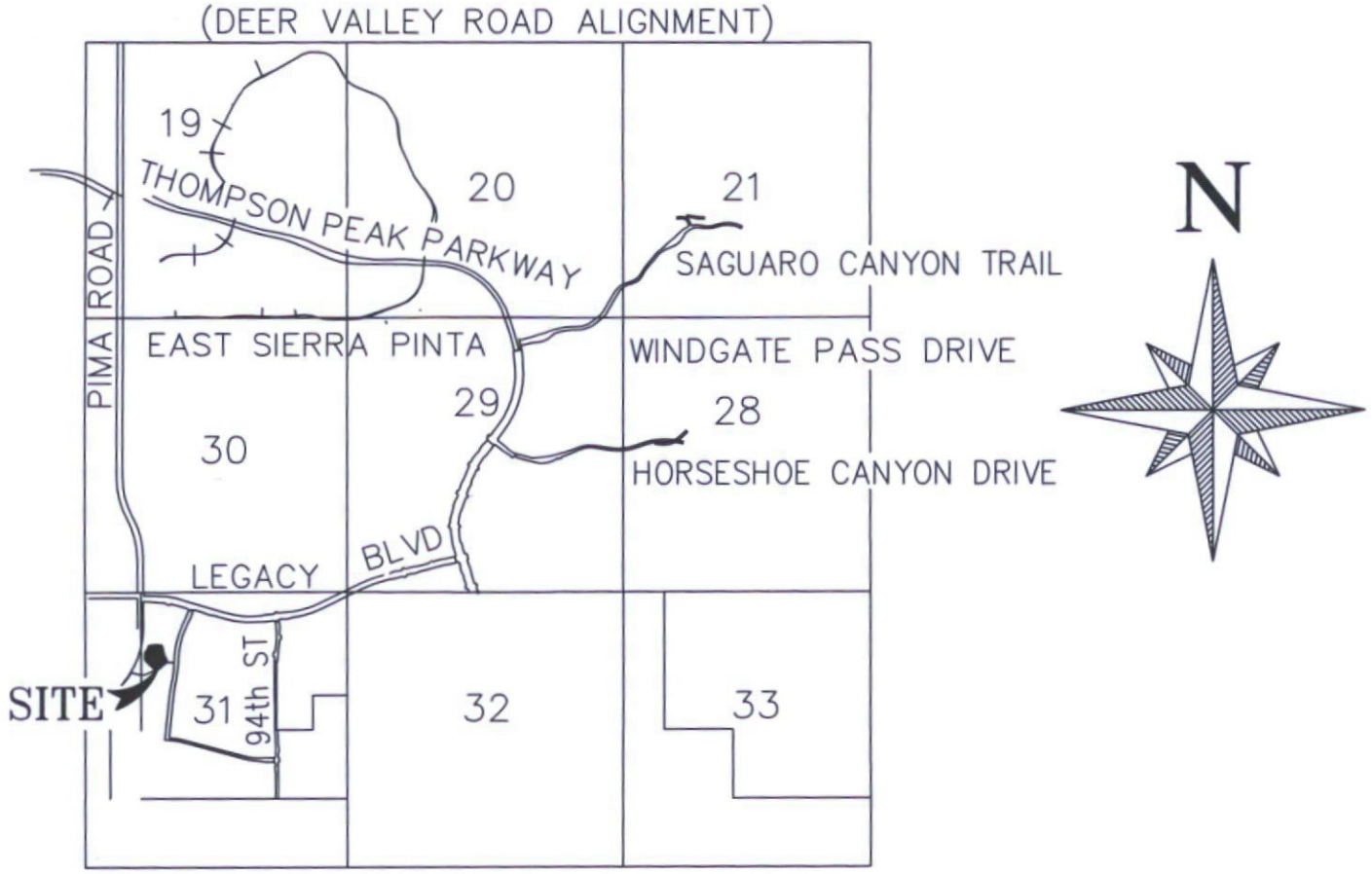
VICINITY MAP



VICINITY MAP

N.T.S.

WATER DISTRUBUTION SYSTEM EXHIBIT

EXISTING 8" WATER LINE

EXISTING 1-1/2" WATER SERVICE/METER

EXISTING FIRE HYDRANT (PRESSURE ZONE 5)

EXISTING 6" STUB

PRESSURE ZONE 5

PRESSURE ZONE 4

EXISTING FIRE HYDRANT (PRESSURE ZONE 4)

TRAILSIDE VIEW

N

0 20 40

Horz. 1 in. = 20 ft.

WOOD/PATEL

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(602) 335-8500

WWW.WOODPATEL.COM

PHOENIX - MESA

Call at least two full working days before you begin excavation

ARIZONA811

Arizona Blue Stake, Inc.

Dial 8-1-1 or 1-800-STAKE-IT (782-5348)

In Maricopa County (602) 263-1100

DC RANCH CROSSING

MARRIOTT FAIRFIELD INN & SUITES

18211 N. PIMA ROAD, SCOTTSDALE, AZ

WATER EXHIBIT

REV	DESCRIPTION	DATE

NOT FOR CONSTRUCTION OR RECORDING

SCALE (HORIZONTAL)	1" = 20'
SCALE (VERTICAL)	N/A
DATE	05/21/2018
JOB NUMBER	154365
SHEET	1 OF 1

45 DAY 2017

N:\2018\154365\Project Support\Reports\Water BOD\Updated Report 05-22-2017\Exhibits\4365-5922 Update Water BOD.dwg

(CHECKED BY: NB DESIGNED BY: CM DRAFTED BY: CM)

FIRE HYDRANT FLOW TEST RESULTS

E·J Flow Tests

FLOW TESTING SERVICES

Flow Test Summary

EJ Flow Tests Project Name:	Trailside Hotel (DC Ranch)
EJ Flow Tests Project No.:	15139
Project Address:	North Pima Road & East Trailside View, Scottsdale, AZ 85255
Date of Flow Test:	November 10, 2015
Time of Flow Test:	7:55 AM
Data is Current and Reliable Until:	May 10, 2016

City of Scottsdale requires a Maximum Static Pressure of 72 PSI for use as Safety Factor.

Raw Test Data:

Static Pressure: (measured in pounds per square inch)	122.0	psi
Residual Pressure: (measured in pounds per square inch)	105.0	psi
Pitot Pressure: (measured in pounds per square inch)	65.0	psi
Number of Outlets Flowed:	2	
Fire Hydrant Orifice Diameter: (measured in inches)	2.5	inches
Coefficient of Discharge: (0.9 smooth/round outlet, 0.8 square/sharp outlet, 0.7 square/raised outlet)	0.9	
Flowing GPM: (measured in gallons per minute)	2,706	
GPM at 20 PSI:	7,122	

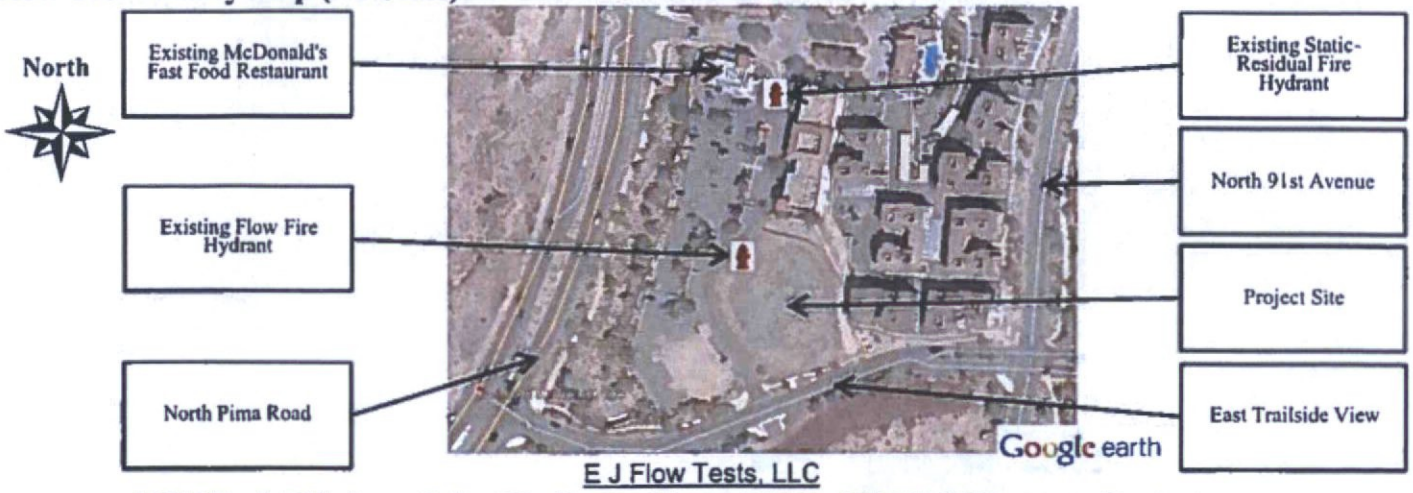
Data with minimum safety factor of: 50 PSI :

Static Pressure: (measured in pounds per square inch)	72.0	psi
Residual Pressure: (measured in pounds per square inch)	55.0	psi
Main Size: (measured in inches)	8	
Approximate Distance Between Hydrants: (measured in feet)	310	ft
Approx. Static/Residual Hydrant Elevation: (measured above sea level)	1,634	ft
Approx. Flow Hydrant Elevation: (measured above sea level)	1,629	ft
Flowing GPM: (measured in gallons per minute)	2,706	
GPM at 20 PSI:	4,950	

Conducted by/Witnessed by/City Forces Contacted:

Conducted by:	Cesar Reyna & Austin Gourley (EJ Flow Tests) 602.999.7637
Witnessed by:	Larry Frandle (City of Scottsdale) 602.541.4942
City Forces Contacted:	City of Scottsdale (Permit #: C49029)

Flow Test Vicinity Map (No Scale)



E J Flow Tests, LLC

21505 North 78th Ave. • Suite 125 • Peoria, Arizona 85382 • 602.999.7637 • www.ejflowtests.com

John L. Echeverri • NICET Level IV 078493 SME • C-16 FP Contractor ROC 271705 AZ • NFPA CFPS 1915

Image Courtesy of Google Earth

Scenario: Peak Hour
Steady State Analysis
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Control Status	Discharge (gpm)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)
P-568	383.00	8.0	Ductile Iron	130.0	Open	-70.30	1,911.73	1,911.79	0.05	0.13	0.45
P-569	134.00	8.0	Ductile Iron	130.0	Open	0.00	1,911.76	1,911.76	0.00	0.00	0.00
P-570	97.00	8.0	Ductile Iron	130.0	Open	0.00	1,911.76	1,911.76	0.00	0.00	0.00
P-572	477.00	8.0	Ductile Iron	130.0	Open	41.11	1,911.76	1,911.74	0.02	0.05	0.26
P-573	199.00	6.0	Ductile Iron	130.0	Open	28.92	1,911.74	1,911.72	0.02	0.10	0.33
P-574	97.00	8.0	Ductile Iron	130.0	Open	12.19	1,911.74	1,911.74	0.00	0.01	0.08
P-575	274.00	8.0	Ductile Iron	130.0	Open	0.59	1,911.74	1,911.74	0.00	0.00	0.0
P-577	755.00	8.0	Ductile Iron	130.0	Open	11.60	1,911.74	1,911.73	0.00	0.00	0.07
P-582	205.00	8.0	Ductile Iron	130.0	Open	-25.42	1,911.70	1,911.71	0.00	0.02	0.16
P-583	199.00	8.0	Ductile Iron	130.0	Open	-25.42	1,911.71	1,911.71	0.00	0.02	0.16
P-585	76.00	8.0	Ductile Iron	130.0	Open	-1.34	2,458.21	2,458.21	0.00	0.00	0.01
P-586	422.00	6.0	Ductile Iron	130.0	Open	3.80	2,585.05	2,585.05	0.00	0.00	0.04
P-587	75.00	8.0	Ductile Iron	130.0	Open	-25.76	2,049.90	2,049.90	0.00	0.02	0.16
P-588	108.00	8.0	Ductile Iron	130.0	Open	-55.23	2,049.90	2,049.91	0.01	0.09	0.35
P-589	470.00	8.0	Ductile Iron	130.0	Open	25.82	2,049.91	2,049.90	0.01	0.02	0.16
P-590	807.00	8.0	Ductile Iron	130.0	Open	81.05	2,050.05	2,049.91	0.14	0.17	0.52
P-591	467.00	8.0	Ductile Iron	130.0	Open	0.00	2,049.90	2,049.90	0.00	0.00	0.00
P-592	161.00	8.0	Ductile Iron	130.0	Open	3.70	2,049.88	2,049.88	0.00	0.00	0.02
P-593	522.00	8.0	Ductile Iron	130.0	Open	-20.51	2,049.88	2,049.89	0.01	0.01	0.13
P-594	268.00	8.0	Ductile Iron	130.0	Open	-24.21	2,049.87	2,049.88	0.01	0.02	0.15
P-595	102.00	8.0	Ductile Iron	130.0	Open	-25.76	2,049.89	2,049.89	0.00	0.02	0.16
P-596	396.00	8.0	Ductile Iron	130.0	Open	-11.27	2,049.89	2,049.89	0.00	0.00	0.07
P-597	251.00	8.0	Ductile Iron	130.0	Open	-25.76	2,049.89	2,049.90	0.01	0.02	0.16
P-598	249.00	8.0	Ductile Iron	130.0	Open	14.48	2,049.89	2,049.89	0.00	0.01	0.0
P-599	347.00	8.0	Ductile Iron	130.0	Open	-7.02	2,049.90	2,049.90	0.00	0.00	0.04
P-600	186.00	8.0	Ductile Iron	130.0	Open	-7.37	2,049.90	2,049.90	0.00	0.00	0.05
P-601	508.00	8.0	Ductile Iron	130.0	Open	6.38	2,049.90	2,049.90	0.00	0.00	0.04
P-602	58.00	8.0	Ductile Iron	130.0	Open	-32.44	2,049.90	2,049.91	0.00	0.03	0.21
P-603	51.00	8.0	Ductile Iron	130.0	Open	25.15	2,049.91	2,049.90	0.00	0.02	0.16
P-604	578.00	8.0	Ductile Iron	130.0	Open	11.40	2,049.90	2,049.90	0.00	0.00	0.07
P-605	377.00	8.0	Ductile Iron	130.0	Open	-13.75	2,049.90	2,049.90	0.00	0.01	0.09
P-606	141.00	8.0	Ductile Iron	130.0	Open	-57.59	2,049.91	2,049.92	0.01	0.09	0.37
P-607	340.00	24.0	Ductile Iron	130.0	Open	1,356.96	1,910.05	1,910.00	0.05	0.15	0.96
P-608	127.00	24.0	Ductile Iron	130.0	Open	892.36	1,910.00	1,909.99	0.01	0.07	0.63
P-609	242.00	24.0	Ductile Iron	130.0	Open	-464.59	1,909.99	1,910.00	0.01	0.02	0.33

Scenario: Peak Hour
Steady State Analysis
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Control Status	Discharge (gpm)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)
P-613	184.00	12.0	Ductile Iron	130.0	Open	288.37	2,050.05	2,050.01	0.05	0.25	0.82
P-614	574.00	8.0	Ductile Iron	130.0	Open	0.94	2,180.55	2,180.55	0.00	0.00	0.01
P-615	209.00	16.0	Ductile Iron	130.0	Open	774.33	2,180.55	2,180.46	0.08	0.39	1.24
P-616	2,729.00	16.0	Ductile Iron	130.0	Open	485.97	2,180.46	2,180.02	0.45	0.16	0.78
P-617	321.00	12.0	Ductile Iron	130.0	Open	288.37	2,180.46	2,180.38	0.08	0.25	0.82
P-618	278.00	8.0	Ductile Iron	130.0	Open	-6.29	2,180.55	2,180.55	0.00	0.00	0.04
P-619	330.00	8.0	Ductile Iron	130.0	Open	33.43	2,049.87	2,049.86	0.01	0.03	0.21
P-620	108.00	8.0	Ductile Iron	130.0	Open	12.58	2,049.86	2,049.86	0.00	0.00	0.08
P-621	389.00	8.0	Ductile Iron	130.0	Open	20.85	2,049.86	2,049.86	0.01	0.01	0.13
P-622	160.00	8.0	Ductile Iron	130.0	Open	8.09	2,049.79	2,049.79	0.00	0.00	0.05
P-623	448.00	8.0	Ductile Iron	130.0	Open	11.21	2,049.79	2,049.79	0.00	0.00	0.07
P-624	148.00	8.0	Ductile Iron	130.0	Open	-0.66	2,049.79	2,049.79	0.00	0.00	0.00
P-625	376.00	8.0	Ductile Iron	130.0	Open	-3.78	2,049.79	2,049.79	0.00	0.00	0.02
P-626	395.00	8.0	Ductile Iron	130.0	Open	-3.13	2,049.79	2,049.79	0.00	0.00	0.02
P-627	156.00	6.0	Ductile Iron	130.0	Open	0.00	2,715.07	2,715.07	0.00	0.00	0.00
P-629	364.00	12.0	Ductile Iron	130.0	Open	-137.95	1,911.69	1,911.71	0.02	0.06	0.39
P-630	391.00	6.0	Ductile Iron	130.0	Open	9.49	2,049.79	2,049.79	0.01	0.01	0.11
P-631	454.00	6.0	Ductile Iron	130.0	Open	-7.59	2,049.78	2,049.79	0.00	0.01	0.09
P-632	331.00	8.0	Ductile Iron	130.0	Open	-11.64	2,049.81	2,049.81	0.00	0.01	0.07
P-633	488.00	8.0	Ductile Iron	130.0	Open	-28.10	2,049.81	2,049.82	0.01	0.02	0.18
P-634	126.00	8.0	Ductile Iron	130.0	Open	16.46	2,049.81	2,049.81	0.00	0.01	0.11
P-635	274.00	24.0	Ductile Iron	130.0	Open	-2,781.21	1,914.09	1,914.25	0.16	0.58	1.97
P-636	166.00	6.0	Ductile Iron	130.0	Open	24.97	2,715.07	2,715.05	0.01	0.08	0.28
P-637	1,359.00	30.0	Ductile Iron	130.0	Open	1,945.68	1,914.09	1,913.95	0.14	0.10	0.88
P-638	844.00	30.0	Ductile Iron	130.0	Open	1,945.68	1,913.95	1,913.87	0.08	0.10	0.88
P-639	748.00	30.0	Ductile Iron	130.0	Open	1,945.68	1,913.87	1,913.79	0.07	0.10	0.88
P-640	100.00	6.0	Ductile Iron	130.0	Open	38.95	2,985.06	2,985.04	0.02	0.18	0.44
P-641	689.00	6.0	Ductile Iron	130.0	Open	-36.52	1,767.80	1,767.91	0.11	0.16	0.41
P-646	607.00	12.0	Ductile Iron	130.0	Open	-351.04	2,178.25	2,178.47	0.22	0.36	1.00
P-649	104.00	6.0	Ductile Iron	130.0	Open	38.95	2,985.04	2,985.02	0.02	0.18	0.44
P-650	97.00	6.0	Ductile Iron	130.0	Open	0.00	2,844.88	2,844.88	0.00	0.00	0.00
P-651	125.00	6.0	Ductile Iron	130.0	Open	24.97	2,715.14	2,715.13	0.01	0.08	0.28
P-652	829.00	6.0	Ductile Iron	130.0	Open	24.97	2,715.13	2,715.07	0.07	0.08	0.28
P-653	279.00	6.0	Ductile Iron	130.0	Open	44.65	2,715.14	2,715.08	0.07	0.23	0.51
P-654	105.00	6.0	Ductile Iron	130.0	Open	22.53	2,715.06	2,715.05	0.01	0.07	0.26

Scenario: Peak Hour
Steady State Analysis
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Control Status	Discharge (gpm)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)
P-655	573.00	6.0	Ductile Iron	130.0	Open	16.83	2,715.05	2,715.03	0.02	0.04	0.19
P-656	518.00	6.0	Ductile Iron	130.0	Open	5.70	2,715.05	2,715.05	0.00	0.01	0.06
P-657	625.00	6.0	Ductile Iron	130.0	Open	0.00	2,844.81	2,844.81	0.00	0.00	0.00
P-658	209.00	8.0	Ductile Iron	130.0	Open	26.74	1,767.94	1,767.93	0.00	0.02	0.17
P-659	578.00	8.0	Ductile Iron	130.0	Open	26.74	1,767.93	1,767.92	0.01	0.02	0.17
P-660	766.00	8.0	Ductile Iron	130.0	Open	28.47	1,767.92	1,767.90	0.02	0.03	0.18
P-661	1,137.00	8.0	Ductile Iron	130.0	Open	21.60	1,767.90	1,767.88	0.02	0.02	0.1
P-662	949.00	8.0	Ductile Iron	130.0	Open	22.33	1,767.91	1,767.89	0.02	0.02	0.14
P-663	804.00	8.0	Ductile Iron	130.0	Open	-14.53	1,767.89	1,767.90	0.01	0.01	0.09
P-665	350.00	12.0	Ductile Iron	130.0	Open	303.33	1,913.04	1,912.94	0.10	0.28	0.86
P-668	329.00	12.0	Ductile Iron	130.0	Open	124.18	1,768.00	1,767.99	0.02	0.05	0.35
P-669	415.00	8.0	Ductile Iron	130.0	Open	-64.12	1,912.94	1,912.99	0.05	0.11	0.41
P-670	316.00	8.0	Ductile Iron	130.0	Open	-45.44	1,912.99	1,913.01	0.02	0.06	0.29
P-671	405.00	8.0	Ductile Iron	130.0	Open	-3.09	1,913.01	1,913.01	0.00	0.00	0.02
P-672	483.00	8.0	Ductile Iron	130.0	Open	-22.43	1,913.01	1,913.01	0.01	0.02	0.14
P-673	722.00	8.0	Ductile Iron	130.0	Open	35.18	1,913.01	1,912.99	0.03	0.04	0.22
P-674	244.00	8.0	Ductile Iron	130.0	Open	-74.10	1,913.01	1,913.05	0.04	0.15	0.47
P-676	500.00	8.0	Ductile Iron	130.0	Open	31.02	1,768.00	1,767.99	0.01	0.03	0.20
P-677	357.00	8.0	Ductile Iron	130.0	Open	15.27	1,767.99	1,767.98	0.00	0.01	0.10
P-684	923.00	8.0	Ductile Iron	130.0	Open	47.73	1,913.45	1,913.39	0.06	0.07	0.30
P-685	347.00	8.0	Ductile Iron	130.0	Open	9.00	1,913.39	1,913.39	0.00	0.00	0.06
P-686	240.00	12.0	Ductile Iron	130.0	Open	-79.15	1,912.94	1,912.94	0.01	0.02	0.22
P-688	135.00	12.0	Ductile Iron	130.0	Open	323.58	1,913.39	1,913.34	0.04	0.31	0.92
P-689	362.00	8.0	Ductile Iron	130.0	Open	-55.98	1,913.01	1,913.04	0.03	0.09	0.36
P-690	265.00	6.0	Ductile Iron	130.0	Open	6.01	2,715.02	2,715.02	0.00	0.01	0.07
P-691	272.00	8.0	Ductile Iron	130.0	Open	-2.86	1,913.01	1,913.01	0.00	0.00	0.02
P-692	195.00	8.0	Ductile Iron	130.0	Open	-2.86	1,913.01	1,913.01	0.00	0.00	0.02
P-693	559.00	8.0	Ductile Iron	130.0	Open	-90.59	1,913.05	1,913.17	0.12	0.21	0.58
P-694	214.00	8.0	Ductile Iron	130.0	Open	-90.59	1,913.17	1,913.22	0.05	0.21	0.58
P-696	378.00	8.0	Ductile Iron	130.0	Open	-14.14	1,913.22	1,913.22	0.00	0.01	0.09
P-697	250.00	8.0	Ductile Iron	130.0	Open	-47.43	1,913.22	1,913.23	0.02	0.06	0.30
P-698	218.00	8.0	Ductile Iron	130.0	Open	123.88	1,913.34	1,913.26	0.08	0.38	0.79
P-699	290.00	8.0	Ductile Iron	130.0	Open	76.45	1,913.26	1,913.22	0.05	0.16	0.49
P-700	412.00	8.0	Ductile Iron	130.0	Open	-47.43	1,913.23	1,913.26	0.03	0.06	0.30
P-701	289.00	12.0	Ductile Iron	130.0	Open	288.30	1,912.94	1,912.87	0.07	0.25	0.82

Scenario: Peak Hour
Steady State Analysis
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Control Status	Discharge (gpm)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)
P-702	134.00	12.0	Ductile Iron	130.0	Open	288.30	1,768.05	1,768.02	0.03	0.25	0.82
P-703	331.00	8.0	Ductile Iron	130.0	Open	56.79	1,768.02	1,767.99	0.03	0.09	0.36
P-706	818.00	8.0	Ductile Iron	130.0	Open	-13.02	1,767.98	1,767.99	0.00	0.01	0.08
P-707	288.00	8.0	Ductile Iron	130.0	Open	5.72	1,767.98	1,767.98	0.00	0.00	0.04
P-708	725.00	8.0	Ductile Iron	130.0	Open	-10.77	1,767.98	1,767.98	0.00	0.00	0.07
P-709	132.00	8.0	Ductile Iron	130.0	Open	-0.80	1,767.98	1,767.98	0.00	0.00	0.01
P-710	417.00	8.0	Ductile Iron	130.0	Open	-9.17	1,767.98	1,767.99	0.00	0.00	0.0
P-711	161.00	8.0	Ductile Iron	130.0	Open	-9.97	1,767.98	1,767.98	0.00	0.00	0.06
P-712	234.00	8.0	Ductile Iron	130.0	Open	8.12	1,767.98	1,767.98	0.00	0.00	0.05
P-713	148.00	8.0	Ductile Iron	130.0	Open	-18.09	1,767.98	1,767.99	0.00	0.01	0.12
P-714	458.00	8.0	Ductile Iron	130.0	Open	35.77	1,768.01	1,767.99	0.02	0.04	0.23
P-715	284.00	8.0	Ductile Iron	130.0	Open	35.77	1,767.99	1,767.98	0.01	0.04	0.23
P-716	264.00	8.0	Ductile Iron	130.0	Open	0.00	1,767.99	1,767.99	0.00	0.00	0.00
P-717	52.00	12.0	Ductile Iron	130.0	Open	199.70	1,913.34	1,913.34	0.01	0.13	0.57
P-718	278.00	12.0	Ductile Iron	130.0	Open	199.70	1,768.04	1,768.01	0.04	0.13	0.57
P-719	460.00	12.0	Ductile Iron	130.0	Open	166.41	1,767.98	1,767.94	0.04	0.09	0.47
P-721	164.00	12.0	Ductile Iron	130.0	Open	155.20	1,768.02	1,768.00	0.01	0.08	0.44
P-722	1,092.00	8.0	Ductile Iron	130.0	Open	-9.18	1,767.98	1,767.98	0.00	0.00	0.06
P-723	304.00	8.0	Ductile Iron	130.0	Open	16.49	1,767.98	1,767.98	0.00	0.01	0.11
P-724	70.00	8.0	Ductile Iron	130.0	Open	-25.67	1,767.98	1,767.99	0.00	0.02	0.16
P-725	609.00	6.0	Ductile Iron	130.0	Open	8.30	2,456.88	2,456.87	0.01	0.01	0.09
P-727	417.00	6.0	Ductile Iron	130.0	Open	20.77	2,456.90	2,456.88	0.02	0.06	0.24
P-728	486.00	8.0	Ductile Iron	130.0	Open	32.77	2,456.49	2,456.48	0.02	0.03	0.21
P-729	291.00	6.0	Ductile Iron	130.0	Open	6.94	2,456.88	2,456.88	0.00	0.01	0.08
P-730	264.00	6.0	Ductile Iron	130.0	Open	6.94	2,456.88	2,456.88	0.00	0.01	0.08
P-731	219.00	6.0	Ductile Iron	130.0	Open	-63.19	2,456.78	2,456.88	0.10	0.45	0.72
P-732	132.00	6.0	Ductile Iron	130.0	Open	-70.08	2,456.88	2,456.95	0.07	0.54	0.80
P-733	754.00	6.0	Ductile Iron	130.0	Open	-6.89	2,456.88	2,456.88	0.01	0.01	0.08
P-734	318.00	12.0	Ductile Iron	130.0	Open	-170.05	1,911.62	1,911.65	0.03	0.10	0.48
P-735	685.00	12.0	Ductile Iron	130.0	Open	-134.15	1,911.65	1,911.69	0.04	0.06	0.38
P-737	940.00	8.0	Ductile Iron	130.0	Open	-17.31	2,049.81	2,049.82	0.01	0.01	0.11
P-739	343.00	8.0	Ductile Iron	130.0	Open	13.83	2,324.92	2,324.91	0.00	0.01	0.09
P-741	20.00	8.0	Ductile Iron	130.0	Open	0.00	2,049.79	2,049.79	0.00	0.00	0.00
P-742	20.00	8.0	Ductile Iron	130.0	Open	0.00	1,911.65	1,911.65	0.00	0.00	0.00
P-743	513.00	12.0	Ductile Iron	130.0	Open	-309.65	2,177.77	2,177.92	0.15	0.29	0.88

Scenario: Peak Hour
Steady State Analysis
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Control Status	Discharge (gpm)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)
P-744	996.00	12.0	Ductile Iron	130.0	Open	-337.21	2,177.92	2,178.25	0.34	0.34	0.96
P-745	517.00	8.0	Ductile Iron	130.0	Open	-13.83	2,177.91	2,177.92	0.00	0.01	0.09
P-746	997.00	8.0	Ductile Iron	130.0	Open	18.03	1,913.56	1,913.55	0.01	0.01	0.12
P-749	341.00	8.0	Ductile Iron	130.0	Open	-25.43	1,913.33	1,913.34	0.01	0.02	0.16
P-750	765.00	6.0	Ductile Iron	130.0	Open	15.27	1,913.37	1,913.35	0.02	0.03	0.17
P-751	673.00	6.0	Ductile Iron	130.0	Open	4.45	1,913.35	1,913.34	0.00	0.00	0.05
P-753	93.00	8.0	Ductile Iron	130.0	Open	-27.79	1,913.32	1,913.32	0.00	0.02	0.1
P-754	463.00	6.0	Ductile Iron	130.0	Open	-4.69	1,913.32	1,913.32	0.00	0.00	0.05
P-755	393.00	8.0	Ductile Iron	130.0	Open	-31.42	1,913.32	1,913.33	0.01	0.03	0.20
P-756	316.00	8.0	Ductile Iron	130.0	Open	-21.81	1,913.32	1,913.32	0.00	0.02	0.14
P-757	571.00	8.0	Ductile Iron	130.0	Open	-21.81	1,913.32	1,913.33	0.01	0.02	0.14
P-759	846.00	8.0	Ductile Iron	130.0	Open	6.03	2,049.84	2,049.84	0.00	0.00	0.04
P-760	441.00	8.0	Ductile Iron	130.0	Open	6.03	2,050.03	2,050.03	0.00	0.00	0.04
P-761	1,712.00	8.0	Ductile Iron	130.0	Open	22.90	1,913.37	1,913.34	0.03	0.02	0.15
P-762	814.00	6.0	Ductile Iron	130.0	Open	-16.06	1,913.34	1,913.37	0.03	0.04	0.18
P-763	380.00	8.0	Ductile Iron	130.0	Open	-11.40	1,913.33	1,913.33	0.00	0.00	0.07
P-764	201.00	8.0	Ductile Iron	130.0	Open	-39.52	1,913.33	1,913.34	0.01	0.05	0.25
P-765	618.00	6.0	Ductile Iron	130.0	Open	-17.95	1,913.34	1,913.37	0.03	0.04	0.20
P-766	83.00	6.0	Ductile Iron	130.0	Open	-15.19	1,913.34	1,913.34	0.00	0.03	0.17
P-767	87.00	6.0	Ductile Iron	130.0	Open	-41.34	1,913.37	1,913.39	0.02	0.20	0.47
P-768	263.00	8.0	Ductile Iron	130.0	Open	55.19	1,913.39	1,913.37	0.02	0.09	0.35
P-769	619.00	6.0	Ductile Iron	130.0	Open	-24.33	1,913.34	1,913.39	0.05	0.08	0.28
P-770	340.00	6.0	Ductile Iron	130.0	Open	11.36	2,049.80	2,049.79	0.01	0.02	0.13
P-771	606.00	6.0	Ductile Iron	130.0	Open	-7.89	2,049.79	2,049.79	0.01	0.01	0.09
P-772	573.00	8.0	Ductile Iron	130.0	Open	0.00	1,913.32	1,913.32	0.00	0.00	0.00
P-773	917.00	8.0	Ductile Iron	130.0	Closed	0.00	1,912.06	1,910.81	0.00	0.00	0.00
P-775	820.00	8.0	Ductile Iron	130.0	Closed	0.00	1,913.32	1,912.06	0.00	0.00	0.00
P-776	100.00	6.0	Ductile Iron	130.0	Open	7.89	2,049.80	2,049.79	0.00	0.01	0.09
P-777	318.00	6.0	Ductile Iron	130.0	Open	11.36	2,049.79	2,049.79	0.01	0.02	0.13
P-778	366.00	8.0	Ductile Iron	130.0	Open	137.96	1,913.43	1,913.26	0.17	0.47	0.88
P-780	324.00	8.0	Ductile Iron	130.0	Open	-10.47	1,911.71	1,911.71	0.00	0.00	0.07
P-781	507.00	8.0	Ductile Iron	130.0	Open	10.47	1,911.71	1,911.70	0.00	0.00	0.07
P-782	645.00	12.0	Ductile Iron	130.0	Closed	0.00	1,911.71	1,913.49	0.00	0.00	0.00
P-783	194.00	12.0	Ductile Iron	130.0	Open	-116.00	1,913.49	1,913.50	0.01	0.05	0.33
P-784	1,490.00	8.0	Ductile Iron	130.0	Open	-35.90	1,911.65	1,911.70	0.06	0.04	0.23

ALLIANCE FIRE PROTECTION CO.

Phone: (480) 966-9178 Fax: (480) 967-9191
2114 East Cedar Street • Tempe, Arizona 85281
E-mail Address: afpc@afpc.com

AZ Lic. C-16 58130
AZ Lic. L-16 74007
NV Lic. C-41a 30135

FIRE HYDRANT FLOW TEST

Name: ALTA/NSPS Land Title Survey
18211 N Pima Rd
Scottsdale, AZ

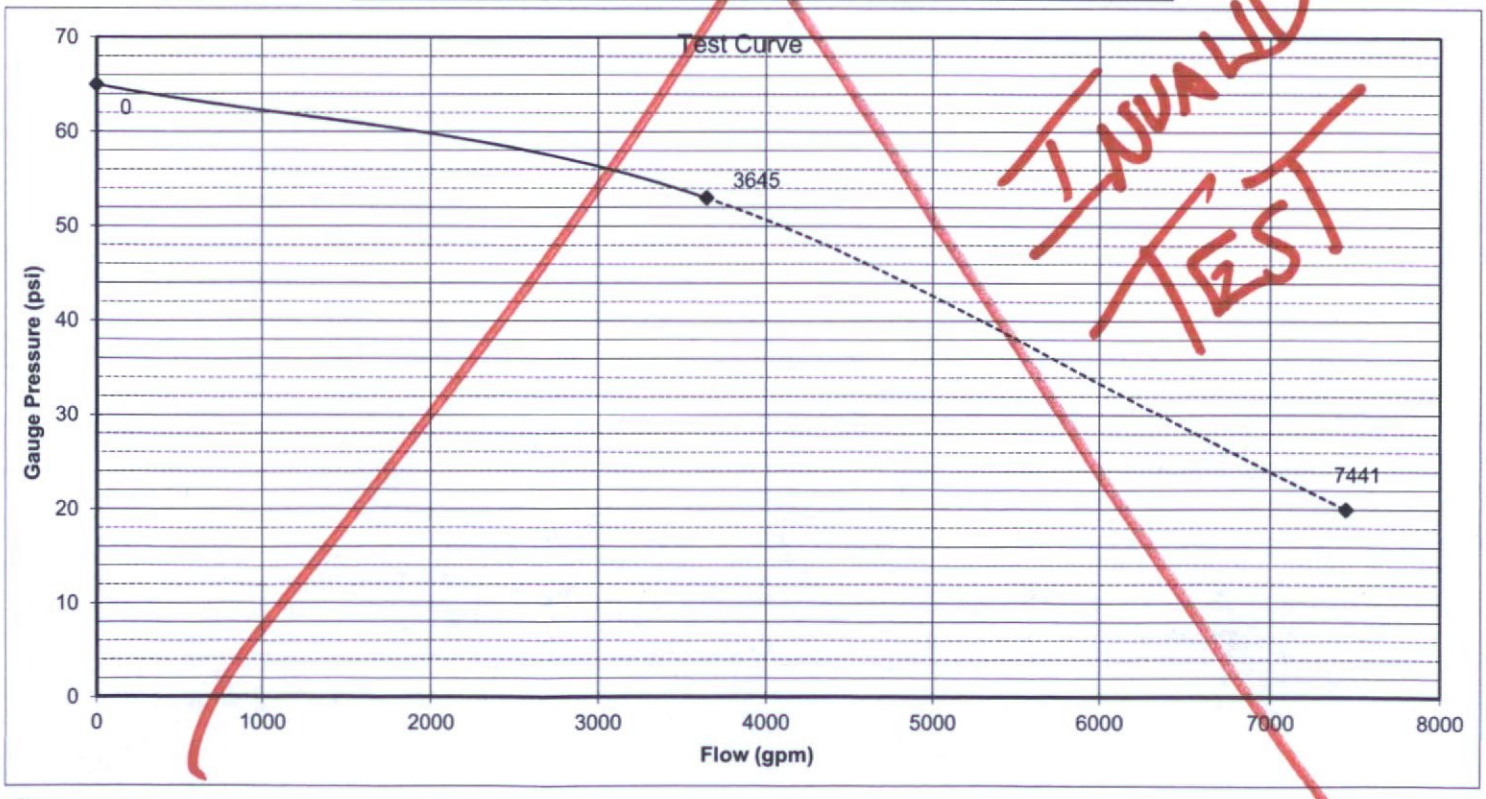
Date: 01/25/18
Time: 9:30 AM
Report #
Tech: Gus Piombi

Static Hydrant: See Map
Elevation: 0
Dist. Between Hydrants: 150'-0"
Diameter of Main:
Static Pressure: 65.0
Residual Pressure: 53.0
Pump Present:
Tank Present:
Req. GPM: Req. PSI:

Flowing Hydrant: See Map
Elevation: 0
Type of Supply: City Main

Hydrant:	1	2	3	4
Outlet Diameter:	4.0			
Pitot Reading:	72.0			
Coeff:	0.900			
Discharge GPM:	3645	0	0	0

Static pressure of	65	psi @	0	gpm
Residual pressure of	53	psi @	3645	gpm
Available flow @	20	psi @	7441	gpm



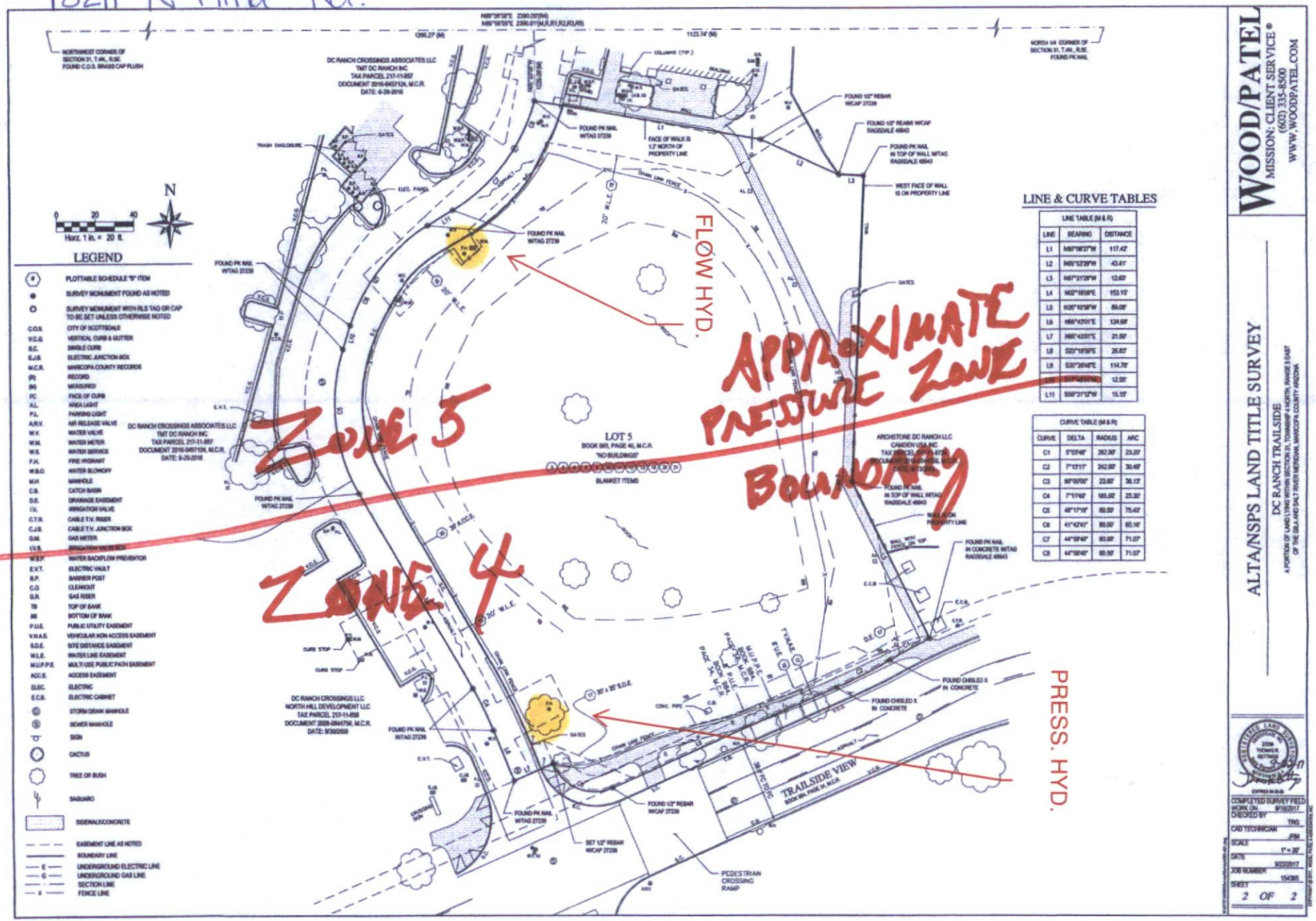
INVALID TEST

Comments:

NOTES:

1. Flowing hydrant is assumed to be on a circulating main or downstream of the pressure test hydrant on a dead-end system.
2. Flow analysis assumes a gravity flow system with no distribution pumps and having no demand, other than the test
3. The distance between hydrants, elevations & main diameters are for information only.

18211 N Pima Rd.



"DC RANCH PARCEL 1.1 WASTEWATER BASIS OF DESIGN" REPORT

WOOD/PATEL

LAND DEVELOPMENT • WATER RESOURCES • WATER/WASTEWATER • TRANSPORTATION/TRAFFIC • SURVEYING • CONSTRUCTION MANAGEMENT

Darrel E. Wood, P.E., R.L.S.
Ashok C. Patel, P.E., R.L.S., CFM
Gordon W. R. Wark, P.E.
James S. Campbell, P.E.
Thomas R. Gettings, R.L.S.
Timothy A. Huval, P.E.
Michael T. Young, P.E.
Peter Hemingway, P.E.
Jeffrey R. Minch, P.E.
Robert D. Gofonia, P.E., R.L.S.
Gerald R. Copeland, P.E., R.L.S.
Patrick W. Marum, P.E.

Revised December 6, 2006
September 8, 2006

Mr. Douglas L. Mann, P.E.
Water Resources Engineer
City of Scottsdale Water Resources
9388 East San Salvador Drive
Scottsdale, AZ 85258

Phone: (480) 312-5636
Fax: (480) 312-5615

Re: **DC Ranch Parcel 1.1**
Water Distribution Basis of Design
WP #062762

Dear Mr. Mann:

The existing Zone 5 storage reservoir provides the potable water storage for the DC Ranch Parcel 1.1 development.

The water system for DC Ranch Parcel 1.1 was analyzed in the amended *Planning Unit I and Second Amendment to Planning Units III, V, and VI Potable Water System Study,* dated August 29, 2002. The land uses, demands, and pipe locations have been updated to their current and proposed condition. The demands for the site are included in the attached spreadsheet named *Water Demands*.

The proposed water system consists of 8-inch waterlines that will provide potable water service to all 12 proposed buildings within Parcel 1.1. The proposed 8-inch waterlines will connect to proposed waterlines in three (3) locations: (1.) 12-inch Zone 4 waterline in the Trailside View alignment (commercial access road) just east of Pima Road – Node J-438, (2.) 12-inch waterline on the north side of Parcel 1.2 – Node J-294, and (3.) 12-inch waterline on the south side of Parcel 1.2 – Node J-296.

The estimated average-day demand for Parcel 1.1 is 86 gallons per minute (gpm), the maximum-day demand for the proposed development totals 172 gpm, and the peak-hour demand is 300 gpm. This demand was put broken up into 3 nodes on the site to represent the actual service locations. Nodes J-281, J-435, J-436, J-437, J-442, J-443, and J-444 represent these locations.

Attached are the results of the maximum-day plus fire flow tests and peak-hour test along with an exhibit illustrating the specified node locations and pipeline sizes.

As indicated by the results of the water system modeling, adequate maximum-day demand pressures and fire flow requirements have been met at all service junctions. Pressure during peak-hour flow demand at node J-437 is 61-psi. This node is at the high end of Pressure Zone 4. The pressures for the peak-hour flow demands for the rest of the nodes mentioned above are 116-psi to 122-psi. These nodes are at the low end of Pressure Zone 5. Fire flow rates of 1,500 gpm have been met at the specified nodes. All pressures exceed the 30-psi minimum requirement during the maximum-day plus fire flow scenario.

Pressures within the development may require individual pressure reducing valves, fire pumps, or other required potable water devices. This will depend on building use development and should be determined by a mechanical engineer.

Thank you for your prompt review of the water system analysis provided for DC Ranch Parcel 1.1.

If you have any questions, please feel free to contact us.

Sincerely,

WOOD, PATEL & ASSOCIATES, INC.

Timothy A. Huval, P.E.
Executive Vice President

Registered Professional Engineer (Civil) CERTIFICATE NO. 30505 TIMOTHY A. HUVAL Date Signed 12-6-06 ARIZONA, U.S.A.

TAH/kk

Enclosure(s)

Y:\WP\General Correspondence\062762 DC Ranch Parcel 1.1 Water BOD.doc

WATER DEMANDS

Project: *DC Ranch Parcel 1.1*
Location: City of Scottsdale, Arizona
Date: December 6, 2006
References: DC Ranch Planning Unit I and Second Ammendment to Planning Units III, V, and VI - Potable Water Systems Study
City of Scottsdale, Design Standards and Policy Manual

			NON-RESIDENTIAL Commercial/Retail		NON-RESIDENTIAL										
Node	SUB-AREA	LAND USE	AREA (SF)	ADF/ SF (GPD)	ADF SUB-TOTAL (GPD)	MAX DAY FACTOR	MAX DAY SUB TOTAL (GPD)	PEAK HOUR FACTOR	PEAK HOUR SUB-TOTAL (GPD)	TOTAL ADF (GPD)	MAX DAY TOTAL (GPD)	PEAK HOUR TOTAL (GPD)	TOTAL ADF (GPM)	MAX DAY TOTAL (GPM)	PEAK HOUR TOTAL (GPM)	
2.1																
J-437	2.1	12 - BUILDING K BANK, 5297 sf	5,297	0.8	4,238	2	8,475	3.5	14,832	4,238	8,475	14,832				
TOTAL SUB-AREA 2.1 (J-437)					4238		8,475		14,832	4,238	8,475	14,832	2.94	5.88	10.30	TOTAL SUB-AREA 2.1 (J-437)
J-444	2.2	13 - BUILDING J OFFICE, 67778 sf	67,778	0.8	54,222	2	108,445	3.5	189,778	54,222	108,445	189,778				
TOTAL SUB-AREA 2.2 (J-444)					54,222		108,445		189,778	54,222	108,445	189,778	37.65	75.31	131.79	TOTAL SUB-AREA 2.2 (J-444)
J-436	2.3	17 - BUILDING F COMMERCIAL PAD, 6541 sf	6,541	0.8	5,233	2	10,466	3.5	18,315	5,233	10,466	18,315				
J-436	2.3	18 - BUILDING E COMMERCIAL, 11533 sf	11,533	0.8	9,226	2	18,453	3.5	32,292	9,226	18,453	32,292				
J-436	2.3	19 - BUILDING D GROCERCY STORE, 17544 sf	17,544	0.8	14,035	2	28,070	3.5	49,123	14,035	28,070	49,123				
J-436	2.3	20 - BUILDING C COMMERCIAL, 4500 sf	4,500	0.8	3,600	2	7,200	3.5	12,600	3,600	7,200	12,600				
TOTAL SUB-AREA 2.3 (J-436)					32,094		64,189		112,330	32,094	64,189	112,330	22.29	44.58	78.01	TOTAL SUB-AREA 2.3 (J-436)
J-435	2.4	14 - BUILDING T COMMERCIAL, 3500 sf	3,500	0.8	2,800	2	5,600	3.5	9,800	2,800	5,600	9,800				
J-435	2.4	15 - BUILDING H COMMERCIAL, 6554 sf	6,554	0.8	5,243	2	10,486	3.5	18,351	5,243	10,486	18,351				
J-435	2.4	16 - BUILDING G COMMERCIAL PAD, 6189 sf	6,189	0.8	4,951	2	9,902	3.5	17,329	4,951	9,902	17,329				
TOTAL SUB-AREA 2.4 (J-435)					12,994		25,988		45,480	12,994	25,988	45,480	9.02	18.05	31.58	TOTAL SUB-AREA 2.4 (J-435)
J-443	2.5	21 - BUILDING B COMMERCIAL PAD, 7164 sf	7,164	0.8	5,731	2	11,462	3.5	20,059	5,731	11,462	20,059				
TOTAL SUB-AREA 2.5 (J-443)					5,731		11,462		20,059	5,731	11,462	20,059	3.98	7.96	13.93	TOTAL SUB-AREA 2.5 (J-443)
J-442	2.6	22 - BUILDING A COMMERCIAL PAD, 6770 sf	6,770	0.8	5,416	2	10,832	3.5	18,956	5,416	10,832	18,956				
TOTAL SUB-AREA 2.6 (J-442)					5,416		10,832		18,956	5,416	10,832	18,956	3.76	7.52	13.16	TOTAL SUB-AREA 2.6 (J-442)
J-281	2.7	23 - BULDING L COMMERCIAL, 11145 sf	11,145	0.8	8,916	2	17,832	3.5	31,206	8,916	17,832	31,206				
TOTAL SUB-AREA 2.7 (J-281)					8,916		17,832		31,206	8,916	17,832	31,206	6.19	12.38	21.67	TOTAL SUB-AREA 2.7 (J-281)

PARCEL 1.1 TOTAL

COMM SF
154,515

	ADF	MAX DAY	PEAK HOUR
TOTAL FLOW OUT OF DC RANCH 1.1 (GPD)	123,612	247,224	432,642
TOTAL FLOW OUT OF DC RANCH 1.1 (GPM)	86	172	300

WATER DEMANDS - Reference

Project: *DC Ranch Parcel 1.1*
Location: City of Scottsdale, Arizona
Date: December 6, 2006
References: DC Ranch Planning Unit I and Second Ammendment to Planning Units III, V, and VI - Potable Water Systems Study
City of Scottsdale, Design Standards and Policy Manual

Project Number: 062732
Project Engineer: Tim Huval, P.E.

Land Use	Average Day Flow		Type
Commercial/Retail	0.8	GPD / SF	Service/Employment

Maximum Head Loss 8.0 FT/1000 FT (Avg and Max Day Flow Conditions)
10.0 FT/1000 FT (Peak Hour Flow Conditions)
Maximum Pipe Velocity 10 FPS
Minimum Pressure 50.0 PSI (Normal Use Conditions)
30.0 PSI (Fire Flow Conditions)

Max Day Factor 2 times Average Day
Peak Hour Factor 3.5 times Average Day

Pressure Zone	HGL	Ground Elevation Min	Ground Elevation Max
4	1790	1510	1650
5	1910	1650	1790
6	2050	1790	1920
7	2180	1920	2050
8	2325	2050	2180
9	2455	2180	2310
10	2585	2310	2440
11	2715	2440	2570
12	2845	2570	2700
13	2975	2700	2830

Scenario: Peak Hour
Steady State Analysis
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Control Status	Discharge (gpm)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)
P-440	393.00	8.0	Ductile Iron	130.0	Open	4.86	1,767.89	1,767.89	0.00	0.00	0.03
P-441	704.00	8.0	Ductile Iron	130.0	Open	208.27	2,717.16	2,716.46	0.70	1.00	1.33
P-444	269.00	8.0	Ductile Iron	130.0	Open	-24.40	2,049.87	2,049.88	0.01	0.02	0.16
P-446	392.00	8.0	Ductile Iron	130.0	Open	-16.35	2,049.90	2,049.90	0.00	0.01	0.10
P-447	587.00	8.0	Ductile Iron	130.0	Open	-30.91	2,049.88	2,049.90	0.02	0.03	0.20
P-448	442.00	8.0	Ductile Iron	130.0	Open	208.27	2,716.46	2,716.02	0.44	1.00	1.3?
P-449	432.00	12.0	Ductile Iron	130.0	Open	-136.36	1,912.94	1,912.96	0.03	0.06	0.?
P-451	756.00	6.0	Ductile Iron	130.0	Open	-12.87	1,767.80	1,767.82	0.02	0.02	0.15
P-453	887.00	8.0	Ductile Iron	130.0	Open	17.27	2,049.90	2,049.89	0.01	0.01	0.11
P-456	582.00	8.0	Ductile Iron	130.0	Open	208.27	2,716.02	2,715.43	0.58	1.00	1.33
P-457	423.00	8.0	Ductile Iron	130.0	Open	-18.72	2,049.86	2,049.86	0.00	0.01	0.12
P-458	344.00	8.0	Ductile Iron	130.0	Open	-10.83	2,049.86	2,049.86	0.00	0.00	0.07
P-459	563.00	8.0	Ductile Iron	130.0	Open	-15.52	2,049.86	2,049.87	0.00	0.01	0.10
P-461	212.00	8.0	Ductile Iron	130.0	Open	7.20	2,049.86	2,049.86	0.00	0.00	0.05
P-462	100.00	6.0	Ductile Iron	130.0	Open	44.65	2,985.08	2,985.06	0.02	0.23	0.51
P-463	227.00	8.0	Ductile Iron	130.0	Open	-11.89	2,049.86	2,049.86	0.00	0.00	0.08
P-464	336.00	6.0	Ductile Iron	130.0	Open	5.70	2,985.06	2,985.05	0.00	0.01	0.06
P-465	151.00	8.0	Ductile Iron	130.0	Open	-17.55	2,049.86	2,049.86	0.00	0.01	0.11
P-466	211.00	8.0	Ductile Iron	130.0	Open	35.46	2,049.86	2,049.85	0.01	0.04	0.23
P-467	330.00	8.0	Ductile Iron	130.0	Open	30.77	2,049.85	2,049.84	0.01	0.03	0.20
P-468	358.00	8.0	Ductile Iron	130.0	Open	-10.71	2,049.86	2,049.86	0.00	0.00	0.07
P-469	329.00	8.0	Ductile Iron	130.0	Open	-2.31	2,049.86	2,049.86	0.00	0.00	0.01
P-470	256.00	8.0	Ductile Iron	130.0	Open	-22.73	2,049.84	2,049.84	0.00	0.02	0.15
P-471	672.00	8.0	Ductile Iron	130.0	Open	-26.48	2,049.84	2,049.86	0.01	0.02	0.1
P-472	250.00	8.0	Ductile Iron	130.0	Open	-18.56	2,049.79	2,049.79	0.00	0.01	0.12
P-474	884.00	6.0	Ductile Iron	130.0	Open	40.04	2,845.05	2,844.88	0.17	0.19	0.45
P-475	215.00	8.0	Ductile Iron	130.0	Open	-20.22	2,049.79	2,049.79	0.00	0.01	0.13
P-476	281.00	6.0	Ductile Iron	130.0	Open	34.33	2,844.88	2,844.84	0.04	0.14	0.39
P-477	415.00	6.0	Ductile Iron	130.0	Open	26.73	2,844.84	2,844.81	0.04	0.09	0.30
P-478	502.00	8.0	Ductile Iron	130.0	Open	3.19	2,049.79	2,049.79	0.00	0.00	0.02
P-479	533.00	8.0	Ductile Iron	130.0	Open	-4.83	2,049.79	2,049.79	0.00	0.00	0.03
P-480	327.00	8.0	Ductile Iron	130.0	Open	-12.85	2,049.79	2,049.79	0.00	0.01	0.08
P-481	154.00	8.0	Ductile Iron	130.0	Open	81.05	2,178.89	2,178.87	0.03	0.17	0.52
P-485	154.00	6.0	Ductile Iron	130.0	Open	22.93	2,844.81	2,844.79	0.01	0.07	0.26
P-486	434.00	6.0	Ductile Iron	130.0	Open	15.85	2,325.01	2,325.00	0.01	0.03	0.18

Scenario: Peak Hour
Steady State Analysis
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Control Status	Discharge (gpm)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)
P-487	130.00	6.0	Ductile Iron	130.0	Open	0.00	2,325.00	2,325.00	0.00	0.00	0.00
P-488	277.00	6.0	Ductile Iron	130.0	Open	0.00	2,325.00	2,325.00	0.00	0.00	0.00
P-489	427.00	6.0	Ductile Iron	130.0	Open	0.00	2,325.00	2,325.00	0.00	0.00	0.00
P-490	711.00	6.0	Ductile Iron	130.0	Open	17.08	2,180.01	2,179.98	0.03	0.04	0.19
P-491	176.00	6.0	Ductile Iron	130.0	Open	17.08	2,179.98	2,179.97	0.01	0.04	0.19
P-492	478.00	8.0	Ductile Iron	130.0	Open	43.70	2,324.74	2,324.71	0.03	0.06	0.28
P-493	342.00	8.0	Ductile Iron	130.0	Open	60.67	2,324.73	2,324.69	0.03	0.10	0.3
P-494	2,368.00	8.0	Ductile Iron	130.0	Open	104.37	2,324.69	2,324.04	0.66	0.28	0.67
P-495	373.00	8.0	Ductile Iron	130.0	Open	43.70	2,324.71	2,324.69	0.02	0.05	0.28
P-496	352.00	8.0	Ductile Iron	130.0	Open	15.85	2,324.74	2,324.74	0.00	0.01	0.10
P-497	260.00	6.0	Ductile Iron	130.0	Open	4.44	2,325.02	2,325.02	0.00	0.00	0.05
P-498	288.00	8.0	Ductile Iron	130.0	Open	5.35	2,325.02	2,325.02	0.00	0.00	0.03
P-500	149.00	8.0	Ductile Iron	130.0	Open	3.17	2,458.07	2,458.07	0.00	0.00	0.02
P-501	917.00	6.0	Ductile Iron	130.0	Open	3.53	2,715.03	2,715.02	0.00	0.00	0.04
P-502	445.00	12.0	Ductile Iron	130.0	Open	180.19	2,050.39	2,050.34	0.05	0.11	0.51
P-503	260.00	12.0	Ductile Iron	130.0	Open	126.84	2,050.34	2,050.33	0.01	0.06	0.36
P-504	824.00	12.0	Ductile Iron	130.0	Open	96.58	2,050.33	2,050.30	0.03	0.03	0.27
P-505	939.00	8.0	Ductile Iron	130.0	Open	10.87	1,910.01	1,910.01	0.00	0.00	0.07
P-506	1,193.00	8.0	Ductile Iron	130.0	Open	-32.30	1,910.01	1,910.04	0.04	0.03	0.21
P-507	598.00	12.0	Ductile Iron	130.0	Open	355.60	2,049.87	2,049.64	0.22	0.37	1.01
P-508	238.00	12.0	Ductile Iron	130.0	Open	335.25	2,049.64	2,049.56	0.08	0.33	0.95
P-509	1,466.00	12.0	Ductile Iron	130.0	Open	212.67	2,049.56	2,049.35	0.21	0.14	0.60
P-510	549.00	12.0	Ductile Iron	130.0	Open	224.80	2,050.51	2,050.43	0.09	0.16	0.64
P-511	265.00	12.0	Ductile Iron	130.0	Open	201.32	2,050.43	2,050.39	0.03	0.13	0.5
P-512	250.00	12.0	Ductile Iron	130.0	Open	80.23	2,050.05	2,050.05	0.01	0.02	0.23
P-513	403.00	12.0	Ductile Iron	130.0	Open	30.01	2,050.05	2,050.05	0.00	0.00	0.09
P-514	1,050.00	12.0	Ductile Iron	130.0	Open	0.00	1,913.79	1,913.79	0.00	0.00	0.00
P-515	567.00	6.0	Ductile Iron	130.0	Open	13.30	2,715.02	2,715.01	0.01	0.02	0.15
P-516	1,078.00	30.0	Ductile Iron	130.0	Open	1,945.68	1,913.79	1,913.69	0.11	0.10	0.88
P-517	1,688.00	30.0	Ductile Iron	130.0	Open	1,238.90	1,913.69	1,913.61	0.07	0.04	0.56
P-518	263.00	8.0	Ductile Iron	130.0	Open	38.49	1,913.61	1,913.60	0.01	0.04	0.25
P-519	635.00	8.0	Ductile Iron	130.0	Open	23.37	1,913.60	1,913.59	0.01	0.02	0.15
P-520	511.00	8.0	Ductile Iron	130.0	Open	15.12	1,913.60	1,913.60	0.00	0.01	0.10
P-521	785.00	6.0	Ductile Iron	130.0	Open	13.30	2,585.06	2,585.04	0.02	0.02	0.15
P-522	136.00	6.0	Ductile Iron	130.0	Open	0.00	2,585.04	2,585.04	0.00	0.00	0.00

Scenario: Peak Hour
Steady State Analysis
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Control Status	Discharge (gpm)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)
P-523	684.00	8.0	Ductile Iron	130.0	Open	0.00	2,457.88	2,457.88	0.00	0.00	0.00
P-527	246.00	6.0	Ductile Iron	130.0	Open	24.97	2,715.05	2,715.04	0.02	0.08	0.28
P-528	631.00	8.0	Ductile Iron	130.0	Open	22.96	1,767.91	1,767.90	0.01	0.02	0.15
P-532	151.00	6.0	Ductile Iron	130.0	Open	23.07	2,715.04	2,715.02	0.01	0.07	0.26
P-533	324.00	6.0	Ductile Iron	130.0	Open	5.39	2,715.02	2,715.02	0.00	0.00	0.06
P-534	569.00	6.0	Ductile Iron	130.0	Open	7.60	2,715.02	2,715.02	0.00	0.01	0.09
P-536	518.00	6.0	Ductile Iron	130.0	Open	3.80	2,715.02	2,715.02	0.00	0.00	0.04
P-537	1,583.00	12.0	Ductile Iron	130.0	Open	-114.52	1,767.91	1,767.99	0.07	0.05	0.32
P-538	371.00	8.0	Ductile Iron	130.0	Open	0.48	1,767.99	1,767.98	0.00	0.00	0.00
P-540	412.00	8.0	Ductile Iron	130.0	Open	40.67	1,767.91	1,767.89	0.02	0.05	0.26
P-541	945.00	12.0	Ductile Iron	130.0	Open	37.33	1,767.91	1,767.91	0.01	0.01	0.11
P-542	346.00	8.0	Ductile Iron	130.0	Open	31.57	1,767.91	1,767.90	0.01	0.03	0.20
P-543	366.00	8.0	Ductile Iron	130.0	Open	19.22	1,767.90	1,767.89	0.00	0.01	0.12
P-544	408.00	8.0	Ductile Iron	130.0	Open	12.35	1,767.90	1,767.89	0.00	0.01	0.08
P-546	491.00	12.0	Ductile Iron	130.0	Open	-31.19	1,767.91	1,767.91	0.00	0.00	0.09
P-547	1,468.00	30.0	Ductile Iron	130.0	Open	819.44	1,913.61	1,913.58	0.03	0.02	0.37
P-549	534.00	6.0	Ductile Iron	130.0	Open	36.95	1,767.91	1,767.82	0.09	0.17	0.42
P-550	379.00	8.0	Ductile Iron	130.0	Open	6.95	2,049.89	2,049.89	0.00	0.00	0.04
P-551	648.00	8.0	Ductile Iron	130.0	Open	6.95	2,049.89	2,049.89	0.00	0.00	0.04
P-552	334.00	8.0	Ductile Iron	130.0	Open	-7.16	2,049.90	2,049.90	0.00	0.00	0.05
P-553	462.00	8.0	Ductile Iron	130.0	Open	-14.18	2,049.90	2,049.90	0.00	0.01	0.09
P-554	311.00	8.0	Ductile Iron	130.0	Open	-31.75	2,049.86	2,049.87	0.01	0.03	0.20
P-555	228.00	8.0	Ductile Iron	130.0	Open	-31.75	2,049.87	2,049.87	0.01	0.03	0.20
P-556	290.00	8.0	Ductile Iron	130.0	Open	208.27	2,715.43	2,715.14	0.29	1.00	1.33
P-557	255.00	8.0	Ductile Iron	130.0	Open	86.00	2,458.07	2,458.02	0.05	0.19	0.55
P-558	803.00	6.0	Ductile Iron	130.0	Open	-0.91	2,325.02	2,325.02	0.00	0.00	0.01
P-559	374.00	6.0	Ductile Iron	130.0	Open	-0.91	2,325.02	2,325.02	0.00	0.00	0.01
P-560	287.00	6.0	Ductile Iron	130.0	Open	25.27	2,325.05	2,325.03	0.02	0.08	0.29
P-561	910.00	6.0	Ductile Iron	130.0	Open	19.02	2,325.03	2,324.98	0.04	0.05	0.22
P-562	1,758.00	6.0	Ductile Iron	130.0	Open	-6.25	2,325.02	2,325.03	0.01	0.01	0.07
P-563	457.00	8.0	Ductile Iron	130.0	Open	44.29	2,458.02	2,457.99	0.03	0.06	0.28
P-564	575.00	6.0	Ductile Iron	130.0	Open	25.27	2,457.99	2,457.95	0.05	0.08	0.29
P-565	195.00	8.0	Ductile Iron	130.0	Open	138.65	2,715.14	2,715.05	0.09	0.47	0.88
P-566	475.00	8.0	Ductile Iron	130.0	Open	41.11	1,911.79	1,911.76	0.02	0.05	0.26
P-567	251.00	12.0	Ductile Iron	130.0	Open	-163.37	1,911.71	1,911.73	0.02	0.09	0.46

Scenario: Peak Hour
Steady State Analysis
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Control Status	Discharge (gpm)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)	Velocity (ft/s)
P-785	1,006.00	8.0	Ductile Iron	130.0	Open	234.82	1,913.26	1,912.01	1.26	1.25	1.50
P-786	710.00	8.0	Ductile Iron	130.0	Open	111.41	1,912.01	1,911.79	0.22	0.31	0.71
P-787	1,100.00	8.0	Ductile Iron	130.0	Open	-98.36	1,911.73	1,912.01	0.27	0.25	0.63
P-788	919.00	8.0	Ductile Iron	130.0	Open	15.05	1,912.01	1,912.00	0.01	0.01	0.10
P-789	582.00	8.0	Ductile Iron	130.0	Open	-300.82	1,911.72	1,912.87	1.15	1.97	1.92
P-790	830.00	8.0	Ductile Iron	130.0	Open	102.32	1,913.49	1,913.26	0.22	0.27	0.65
P-792	325.00	8.0	Ductile Iron	130.0	Open	-306.29	1,912.87	1,913.54	0.66	2.04	1.9
P-793	254.00	6.0	Ductile Iron	130.0	Open	-114.54	1,910.81	1,911.15	0.34	1.34	1.30
P-794	266.00	6.0	Ductile Iron	130.0	Open	-114.54	1,911.15	1,911.50	0.36	1.34	1.30
P-795	457.00	8.0	Ductile Iron	130.0	Open	0.00	1,913.22	1,913.22	0.00	0.00	0.00
P-796	1,129.00	6.0	Ductile Iron	130.0	Open	-122.66	1,911.50	1,913.22	1.72	1.52	1.39
P-797	252.00	8.0	Ductile Iron	130.0	Open	-122.66	1,913.22	1,913.32	0.09	0.37	0.78
P-798	102.00	12.0	Ductile Iron	130.0	Open	685.11	1,913.69	1,913.56	0.13	1.26	1.94
P-799	413.00	12.0	Ductile Iron	130.0	Open	685.11	1,913.56	1,913.04	0.52	1.26	1.94
P-800	864.00	8.0	Ductile Iron	130.0	Open	-24.38	1,912.75	1,912.76	0.02	0.02	0.16
P-801	483.00	8.0	Ductile Iron	130.0	Open	-129.46	1,912.76	1,912.96	0.20	0.41	0.83
P-802	400.00	8.0	Ductile Iron	130.0	Open	-138.99	1,912.75	1,912.94	0.19	0.47	0.89
P-803	113.00	8.0	Ductile Iron	130.0	Open	-10.30	1,767.94	1,767.94	0.00	0.00	0.07
P-804	515.00	8.0	Ductile Iron	130.0	Open	75.05	1,768.02	1,767.94	0.08	0.15	0.48
P-805	492.00	8.0	Ductile Iron	130.0	Open	64.75	1,767.94	1,767.88	0.06	0.11	0.41
P-806	220.00	8.0	Ductile Iron	130.0	Open	20.52	2,049.56	2,049.56	0.00	0.01	0.13
P-807	615.00	8.0	Ductile Iron	130.0	Open	6.64	2,049.56	2,049.56	0.00	0.00	0.04
P-808	391.00	8.0	Ductile Iron	130.0	Open	6.64	2,049.56	2,049.56	0.00	0.00	0.04
P-809	296.00	8.0	Ductile Iron	130.0	Open	-13.16	1,912.76	1,912.76	0.00	0.01	0.08
P-810	131.00	8.0	Ductile Iron	130.0	Open	-13.92	1,912.76	1,912.76	0.00	0.01	0.09
P-811	109.00	8.0	Ductile Iron	130.0	Open	-131.79	1,912.70	1,912.75	0.05	0.43	0.84
P-812	238.00	12.0	Ductile Iron	130.0	Open	-325.80	1,912.96	1,913.04	0.08	0.32	0.92

Scenario: Peak Hour
Steady State Analysis
Junction Report

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Demand (Calculated) (gpm)	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-87	1,660.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.87	109.84
J-92	1,695.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,914.09	94.79
J-93	1,680.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.95	101.22
J-94	1,627.00	Zone-5	Demand	1.93	DC Ranch	1.93	1,913.93	124.14
J-95	1,790.00	Zone-5	Demand	12.23	DC Ranch	12.23	1,913.81	53.57
J-96	1,800.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.78	49.23
J-111	1,800.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.78	49.23
J-148	1,785.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,910.04	54.10
J-149	1,770.00	Zone-5	Demand	46.31	DC Ranch	46.31	1,910.01	60.58
J-151	1,760.00	Zone-5	Demand	77.88	DC Ranch	77.88	1,910.01	64.90
J-154	1,790.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,910.73	52.24
J-171	1,725.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,911.76	80.80
J-194	1,765.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,910.81	54.43
J-195	1,775.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,910.81	58.76
J-196	1,745.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.54	72.92
J-197	1,710.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.54	88.06
J-198	1,720.00	Zone-5	Demand	9.45	DC Ranch	9.45	1,913.50	83.72
J-199	1,710.00	Zone-5	Demand	24.29	DC Ranch	24.29	1,913.43	88.02
J-200	1,747.00	Zone-5	Demand	13.68	DC Ranch	13.68	1,911.71	71.26
J-203	1,740.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,911.70	74.29
J-204	1,748.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,911.71	70.83
J-207	1,785.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,911.07	54.54
J-208	1,805.00	Zone-5	Demand	13.37	DC Ranch	13.37	1,911.62	46.13
J-210	1,770.00	Zone-5	Demand	9.57	DC Ranch	9.57	1,911.72	61.32
J-211	1,745.00	Zone-5	Demand	3.61	DC Ranch	3.61	1,913.32	72.82
J-212	1,743.00	Zone-5	Demand	9.02	DC Ranch	9.02	1,913.32	73.69
J-213	1,747.00	Zone-5	Demand	8.12	DC Ranch	8.12	1,913.32	71.96
J-214	1,782.00	Zone-5	Demand	8.12	DC Ranch	8.12	1,911.50	56.03
J-215	1,695.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.56	94.56
J-216	1,727.00	Zone-5	Demand	13.53	DC Ranch	13.53	1,913.34	80.62
J-217	1,690.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.55	96.72
J-218	1,695.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.54	94.55
J-219	1,702.00	Zone-5	Demand	8.12	DC Ranch	8.12	1,913.37	91.45
J-220	1,725.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.54	81.57
J-221	1,635.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.79	120.62
J-222	1,680.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.58	101.06

Scenario: Peak Hour
Steady State Analysis
Junction Report

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Demand (Calculated) (gpm)	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-275	1,760.00	Zone-5	Demand	43.16	DC Ranch	43.16	1,910.01	64.90
J-280	1,640.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.79	118.46
J-281	1,645.00	Zone-5	Demand	21.67	DC Ranch	21.67	1,913.69	116.25
J-282	1,660.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.61	109.73
J-283	1,660.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.60	109.72
J-284	1,660.00	Zone-5	Demand	23.37	DC Ranch	23.37	1,913.59	109.72
J-285	1,670.00	Zone-5	Demand	15.12	DC Ranch	15.12	1,913.60	105.39
J-286	1,637.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,768.01	56.68
J-287	1,649.00	Zone-5	Demand	25.17	DC Ranch	25.17	1,913.38	114.39
J-288	1,649.00	Zone-5	Demand	33.29	DC Ranch	33.29	1,913.22	114.31
J-289	1,626.00	Zone-4	Demand	33.29	DC Ranch	33.29	1,767.98	61.43
J-290	1,620.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.94	64.01
J-291	1,603.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.91	71.35
J-292	1,610.00	Zone-4	Demand	15.30	DC Ranch	15.30	1,767.90	68.32
J-293	1,642.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.04	117.27
J-294	1,642.00	Zone-5	Demand	59.98	DC Ranch	59.98	1,912.96	117.23
J-296	1,637.00	Zone-5	Demand	76.52	DC Ranch	76.52	1,912.94	119.38
J-297	1,623.00	Zone-4	Demand	1.27	DC Ranch	1.27	1,768.02	62.74
J-299	1,600.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.91	72.65
J-300	1,615.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.99	66.19
J-301	1,613.00	Zone-4	Demand	15.75	DC Ranch	15.75	1,767.98	67.05
J-302	1,590.00	Zone-4	Demand	35.81	DC Ranch	35.81	1,767.89	76.97
J-303	1,605.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.91	70.48
J-304	1,600.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.90	72.64
J-305	1,595.00	Zone-4	Demand	24.08	DC Ranch	24.08	1,767.89	74.80
J-306	1,595.00	Zone-4	Demand	12.35	DC Ranch	12.35	1,767.89	74.80
J-307	1,610.00	Zone-4	Demand	24.08	DC Ranch	24.08	1,767.82	68.28
J-308	1,662.00	Zone-5	Demand	23.22	DC Ranch	23.22	1,913.39	108.76
J-317	1,720.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,911.79	82.98
J-318	1,740.00	Zone-5	Demand	16.89	DC Ranch	16.89	1,911.73	74.30
J-319	1,740.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,911.76	74.31
J-320	1,750.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,911.76	69.99
J-321	1,720.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,911.74	82.96
J-322	1,740.00	Zone-5	Demand	28.92	DC Ranch	28.92	1,911.72	74.29
J-323	1,740.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,911.74	74.30
J-324	1,740.00	Zone-5	Demand	0.59	DC Ranch	0.59	1,911.74	74.30

Scenario: Peak Hour
Steady State Analysis
Junction Report

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Demand (Calculated) (gpm)	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-328	1,742.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,911.71	73.42
J-345	1,569.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.91	86.06
J-346	1,763.00	Zone-5	Demand	3.80	DC Ranch	3.80	1,911.69	64.33
J-350	1,610.00	Zone-4	Demand	49.40	DC Ranch	49.40	1,767.80	68.27
J-351	1,620.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.93	64.00
J-352	1,636.00	Zone-5	Demand	16.49	DC Ranch	16.49	1,912.99	119.84
J-355	1,766.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,910.81	62.65
J-357	1,735.00	Zone-5	Demand	2.74	DC Ranch	2.74	1,911.71	76.45
J-358	1,689.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.54	97.15
J-359	1,632.00	Zone-4	Demand	34.72	DC Ranch	34.72	1,767.91	58.80
J-360	1,647.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.39	115.25
J-361	1,652.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.45	113.12
J-362	1,632.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.98	58.83
J-363	1,611.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.92	67.89
J-364	1,591.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.91	76.54
J-365	1,614.00	Zone-4	Demand	64.75	DC Ranch	64.75	1,767.88	66.58
J-366	1,642.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.34	117.40
J-378	1,608.00	Zone-4	Demand	26.74	DC Ranch	26.74	1,767.92	69.19
J-379	1,631.00	Zone-4	Demand	21.60	DC Ranch	21.60	1,767.88	59.22
J-380	1,600.00	Zone-4	Demand	36.86	DC Ranch	36.86	1,767.89	72.64
J-381	1,631.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,912.94	121.98
J-382	1,640.00	Zone-5	Demand	16.49	DC Ranch	16.49	1,913.01	118.12
J-383	1,648.00	Zone-5	Demand	16.49	DC Ranch	16.49	1,913.01	114.66
J-384	1,645.00	Zone-5	Demand	16.49	DC Ranch	16.49	1,913.01	115.96
J-385	1,639.00	Zone-5	Demand	16.49	DC Ranch	16.49	1,913.05	118.57
J-386	1,620.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,768.00	64.03
J-387	1,616.00	Zone-4	Demand	15.75	DC Ranch	15.75	1,767.99	65.76
J-388	1,632.00	Zone-4	Demand	16.49	DC Ranch	16.49	1,767.98	58.83
J-389	1,627.00	Zone-4	Demand	16.49	DC Ranch	16.49	1,767.98	61.00
J-390	1,669.00	Zone-5	Demand	9.00	DC Ranch	9.00	1,913.39	105.74
J-391	1,645.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.01	115.95
J-392	1,638.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.17	119.05
J-393	1,641.50	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.22	117.56
J-394	1,649.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.23	114.32
J-395	1,645.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.26	116.06
J-396	1,631.00	Zone-4	Demand	16.49	DC Ranch	16.49	1,767.98	59.27

Scenario: Peak Hour
Steady State Analysis
Junction Report

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Demand (Calculated) (gpm)	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-397	1,625.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.99	61.86
J-398	1,622.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.98	63.16
J-399	1,622.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.98	63.16
J-400	1,619.00	Zone-4	Demand	16.49	DC Ranch	16.49	1,767.98	64.46
J-401	1,635.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.99	57.54
J-402	1,630.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.99	59.70
J-403	1,625.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.98	61.86
J-407	1,795.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,911.65	50.47
J-408	1,990.00	Zone-5	Demand	13.83	DC Ranch	13.83	2,177.91	81.30
J-409	1,987.00	Zone-5	Demand	13.83	DC Ranch	13.83	2,177.92	82.60
J-410	1,720.00	Zone-5	Demand	6.31	DC Ranch	6.31	1,913.33	83.65
J-411	1,703.00	Zone-5	Demand	10.82	DC Ranch	10.82	1,913.35	91.01
J-412	1,747.00	Zone-5	Demand	14.42	DC Ranch	14.42	1,913.32	71.96
J-413	1,732.00	Zone-5	Demand	5.41	DC Ranch	5.41	1,913.33	78.45
J-414	1,733.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.32	78.02
J-416	1,707.00	Zone-5	Demand	16.23	DC Ranch	16.23	1,913.37	89.28
J-417	1,715.00	Zone-5	Demand	7.21	DC Ranch	7.21	1,913.34	85.81
J-418	1,715.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.34	85.81
J-419	1,702.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.39	91.46
J-422	1,760.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.32	66.33
J-425	1,740.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,911.71	74.29
J-426	1,695.00	Zone-5	Demand	5.46	DC Ranch	5.46	1,913.26	94.43
J-427	1,720.00	Zone-5	Demand	13.68	DC Ranch	13.68	1,913.49	83.71
J-428	1,720.00	Zone-5	Demand	10.00	DC Ranch	10.00	1,912.01	83.07
J-429	1,720.00	Zone-5	Demand	15.05	DC Ranch	15.05	1,912.00	83.07
J-430	1,748.00	Zone-5	Demand	5.47	DC Ranch	5.47	1,912.87	71.33
J-431	1,782.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,911.15	55.88
J-432	1,765.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.22	64.13
J-433	1,753.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.22	69.32
J-434	1,647.00	Zone-5	Demand	0.00	DC Ranch	0.00	1,913.56	115.33
J-435	1,632.00	Zone-5	Demand	31.58	DC Ranch	31.58	1,912.75	121.47
J-436	1,640.00	Zone-5	Demand	78.00	DC Ranch	78.00	1,912.76	118.01
J-437	1,626.00	Zone-4	Demand	10.30	DC Ranch	10.30	1,767.94	61.41
J-438	1,621.00	Zone-4	Demand	0.00	DC Ranch	0.00	1,767.94	63.57
J-442	1,639.00	Zone-5	Demand	13.16	Fixed	13.16	1,912.76	118.44
J-443	1,644.00	Zone-5	Demand	13.92	Fixed	13.92	1,912.76	116.28

Scenario: Peak Hour
Steady State Analysis
Junction Report

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Demand (Calculated) (gpm)	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-444	1,630.00	Zone-5	Demand	131.79	Fixed	131.79	1,912.70	122.31

Scenario: Max Day + Fire Flow
Fire Flow Analysis
Fire Flow Report

Label	Zone	Fire Flow Balanced?	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Total Flow Needed (gpm)	Total Flow Available (gpm)	Pressure (psi)	Calculated Hydraulic Grade (ft)	Calculated Residual Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction
J-87	Zone-5	true	true	500.00	500.00	600.00	110.41	1,915.20	109.77	46.17	J-208
J-92	Zone-5	true	true	500.00	500.00	600.00	95.33	1,915.35	94.71	46.18	J-208
J-93	Zone-5	true	true	500.00	500.00	600.00	101.79	1,915.26	101.15	46.17	J-208
J-94	Zone-5	true	true	500.00	501.37	601.37	124.66	1,915.14	123.98	46.19	J-208
J-95	Zone-5	true	true	500.00	508.66	608.66	54.08	1,914.99	53.36	46.20	J-208
J-96	Zone-5	true	true	500.00	500.00	600.00	49.74	1,914.96	49.01	46.20	J-208
J-148	Zone-5	true	true	500.00	500.00	600.00	54.10	1,910.04	54.00	46.49	J-208
J-149	Zone-5	true	true	500.00	532.80	632.80	60.58	1,910.03	59.87	46.49	J-208
J-151	Zone-5	true	true	500.00	555.16	655.16	64.91	1,910.03	64.28	46.49	J-208
J-154	Zone-5	true	true	500.00	500.00	600.00	52.37	1,911.05	52.11	46.29	J-208
J-111	Zone-5	true	true	500.00	500.00	600.00	49.74	1,914.96	48.96	46.20	J-208
J-194	Zone-5	true	true	500.00	500.00	600.00	54.58	1,911.16	54.28	46.26	J-208
J-195	Zone-5	true	true	500.00	500.00	600.00	58.91	1,911.16	58.60	46.26	J-208
J-196	Zone-5	true	true	500.00	500.00	1,600.00	73.53	1,914.94	71.67	45.58	J-208
J-197	Zone-5	true	true	1,500.00	1,500.00	1,600.00	88.67	1,914.95	86.85	45.58	J-208
J-198	Zone-5	true	true	1,500.00	1,505.40	1,605.40	84.32	1,914.90	81.97	45.48	J-208
J-199	Zone-5	true	true	500.00	517.20	1,617.20	88.62	1,914.83	85.46	45.37	J-208
J-200	Zone-5	true	true	500.00	507.82	607.82	71.64	1,912.59	70.04	45.67	J-208
J-203	Zone-5	true	true	500.00	500.00	600.00	74.67	1,912.59	73.37	45.54	J-208
J-204	Zone-5	true	true	500.00	500.00	600.00	71.22	1,912.61	70.09	45.48	J-208
J-207	Zone-5	true	true	500.00	500.00	1,600.00	54.76	1,911.58	53.52	45.50	J-208
J-208	Zone-5	true	true	500.00	510.13	610.13	46.49	1,912.46	45.37	49.50	J-111
J-210	Zone-5	true	true	500.00	505.47	605.47	61.69	1,912.59	60.79	45.86	J-208
J-211	Zone-5	true	true	500.00	502.06	602.06	73.44	1,914.75	71.86	46.14	J-208
J-212	Zone-5	true	true	500.00	505.15	605.15	74.31	1,914.76	72.26	46.14	J-208
J-213	Zone-5	true	true	500.00	504.63	604.63	72.58	1,914.76	70.43	46.14	J-208
J-214	Zone-5	true	true	500.00	504.64	604.64	56.33	1,912.20	53.49	46.23	J-208
J-215	Zone-5	true	true	500.00	500.00	600.00	95.17	1,914.97	94.46	46.13	J-208
J-216	Zone-5	true	true	500.00	507.73	607.73	81.25	1,914.78	79.34	46.14	J-208
J-217	Zone-5	true	true	1,500.00	1,500.00	1,600.00	97.33	1,914.96	90.74	45.58	J-208
J-218	Zone-5	true	true	1,500.00	1,500.00	1,600.00	95.16	1,914.95	93.10	45.56	J-208
J-219	Zone-5	true	true	500.00	504.64	604.64	92.08	1,914.82	90.12	46.14	J-208
J-220	Zone-5	true	true	1,500.00	1,500.00	1,600.00	82.18	1,914.95	80.34	45.58	J-208
J-221	Zone-5	true	true	500.00	500.00	600.00	121.21	1,915.16	120.10	46.16	J-208
J-222	Zone-5	true	true	500.00	500.00	600.00	101.67	1,915.00	100.97	46.14	J-208

Scenario: Max Day + Fire Flow
Fire Flow Analysis
Fire Flow Report

Label	Zone	Fire Flow Balanced?	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Total Flow Needed (gpm)	Total Flow Available (gpm)	Pressure (psi)	Calculated Hydraulic Grade (ft)	Calculated Residual Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction
J-171	Zone-5	true	true	1,500.00	1,500.00	1,600.00	81.21	1,912.70	71.91	42.66	J-208
J-275	Zone-5	true	true	500.00	530.57	630.57	64.91	1,910.02	63.72	46.49	J-208
J-280	Zone-5	true	true	500.00	500.00	600.00	119.05	1,915.16	118.39	46.16	J-208
J-281	Zone-5	true	true	1,500.00	1,512.38	1,612.38	116.85	1,915.09	115.13	45.64	J-208
J-282	Zone-5	true	true	500.00	500.00	600.00	110.34	1,915.03	109.65	46.15	J-208
J-283	Zone-5	true	true	500.00	500.00	600.00	110.34	1,915.02	108.77	46.15	J-208
J-284	Zone-5	true	true	500.00	516.55	616.55	110.33	1,915.02	106.72	46.15	J-208
J-285	Zone-5	true	true	500.00	510.71	610.71	106.01	1,915.02	102.83	46.15	J-208
J-286	Zone-4	true	true	500.00	500.00	600.00	58.69	1,768.03	58.57	57.43	J-401
J-287	Zone-5	true	true	500.00	514.39	614.39	115.06	1,914.94	113.29	46.15	J-208
J-288	Zone-5	true	true	500.00	519.01	619.01	115.04	1,914.89	113.29	46.15	J-208
J-289	Zone-4	true	true	500.00	519.01	619.01	61.44	1,768.02	60.87	56.58	J-286
J-290	Zone-4	true	true	500.00	500.00	600.00	64.03	1,768.00	63.74	56.60	J-286
J-291	Zone-4	true	true	500.00	500.00	600.00	71.38	1,767.99	71.00	56.62	J-286
J-292	Zone-4	true	true	500.00	508.74	608.74	68.35	1,767.98	67.59	56.62	J-286
J-293	Zone-5	true	true	500.00	500.00	600.00	118.04	1,914.84	117.01	46.15	J-208
J-294	Zone-5	true	true	1,500.00	1,534.27	1,634.27	118.03	1,914.81	114.47	45.64	J-208
J-296	Zone-5	true	true	1,500.00	1,543.72	1,643.72	120.19	1,914.80	116.52	45.64	J-208
J-297	Zone-4	true	true	500.00	500.90	600.90	62.75	1,768.04	62.68	56.68	J-286
J-299	Zone-4	true	true	500.00	500.00	600.00	72.68	1,767.99	72.28	56.64	J-286
J-300	Zone-4	true	true	500.00	500.00	600.00	66.21	1,768.02	66.04	56.67	J-286
J-301	Zone-4	true	true	500.00	509.00	1,609.00	67.07	1,768.02	63.61	56.63	J-286
J-302	Zone-4	true	true	1,500.00	1,525.37	1,625.37	77.00	1,767.98	71.72	56.45	J-286
J-304	Zone-4	true	true	500.00	500.00	600.00	72.68	1,767.98	71.77	56.63	J-286
J-305	Zone-4	true	true	500.00	517.06	617.06	74.84	1,767.98	73.76	56.64	J-286
J-306	Zone-4	true	true	500.00	508.75	608.75	74.84	1,767.98	72.65	56.63	J-286
J-308	Zone-5	true	true	500.00	513.27	613.27	109.44	1,914.94	107.53	46.15	J-208
J-307	Zone-4	true	true	500.00	517.06	617.06	68.33	1,767.94	64.83	56.64	J-286
J-317	Zone-5	true	true	1,500.00	1,500.00	1,600.00	83.38	1,912.73	76.96	42.73	J-208
J-318	Zone-5	true	true	1,500.00	1,511.96	1,611.96	74.70	1,912.65	69.77	42.53	J-208
J-319	Zone-5	true	true	1,500.00	1,500.00	1,600.00	74.72	1,912.70	62.89	42.66	J-208
J-320	Zone-5	true	true	1,500.00	1,500.00	1,600.00	70.39	1,912.70	56.74	42.66	J-208
J-321	Zone-5	true	true	1,500.00	1,500.00	1,600.00	83.36	1,912.67	73.49	42.61	J-208
J-322	Zone-5	true	true	1,500.00	1,520.48	1,620.48	74.70	1,912.66	49.22	42.61	J-208
J-323	Zone-5	true	true	1,500.00	1,500.00	1,600.00	74.70	1,912.67	64.97	42.60	J-208

Scenario: Max Day + Fire Flow
Fire Flow Analysis
Fire Flow Report

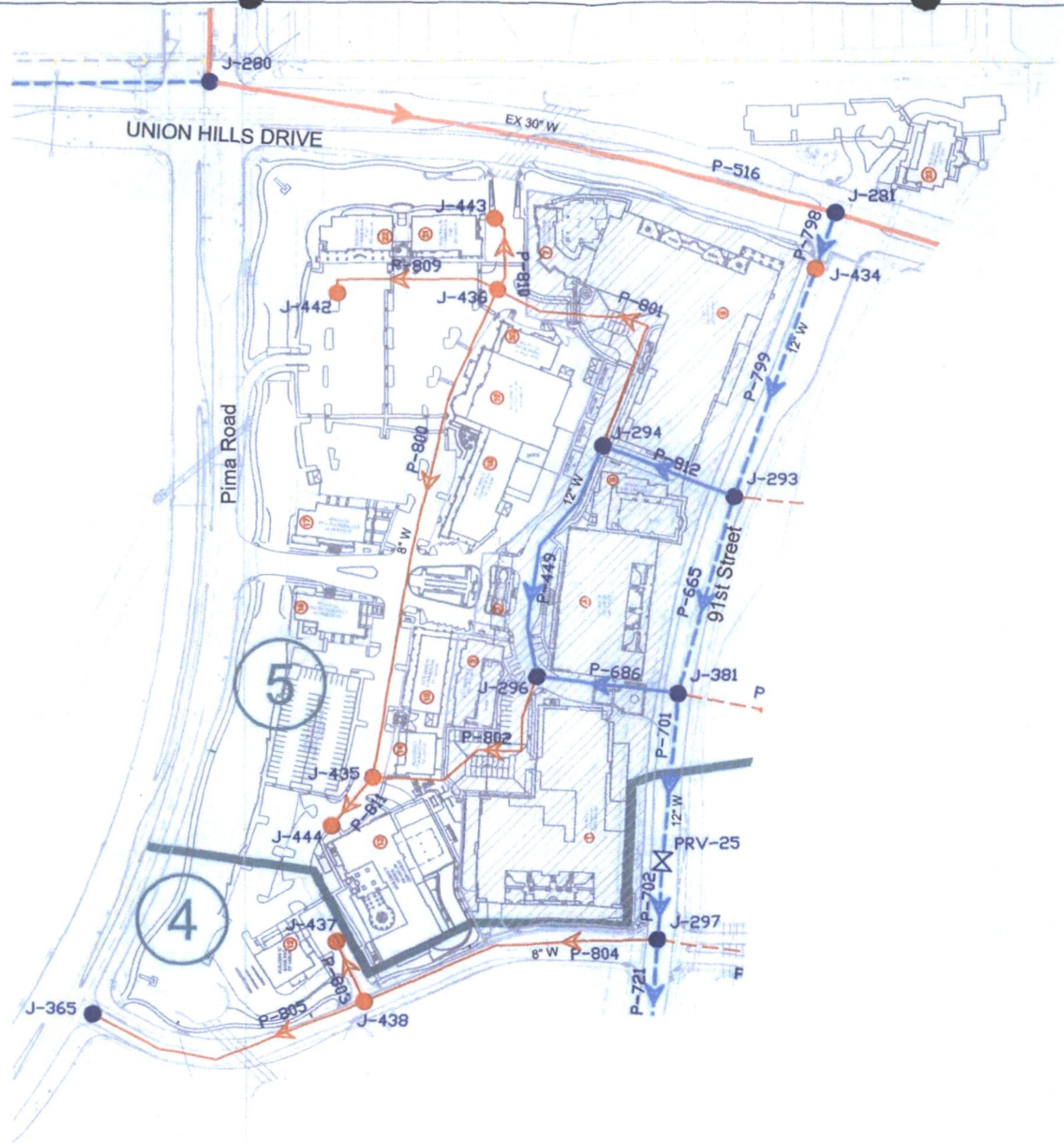
Label	Zone	Fire Flow Balanced?	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Total Flow Needed (gpm)	Total Flow Available (gpm)	Pressure (psi)	Calculated Hydraulic Grade (ft)	Calculated Residual Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction
J-324	Zone-5	true	true	1,500.00	1,500.42	1,600.42	74.70	1,912.67	59.79	42.60	J-208
J-328	Zone-5	true	true	500.00	500.00	600.00	73.81	1,912.60	72.52	45.50	J-208
J-345	Zone-4	true	true	500.00	500.00	1,600.00	86.09	1,767.98	78.96	56.37	J-286
J-346	Zone-5	true	true	500.00	502.70	602.70	64.71	1,912.58	63.58	45.46	J-208
J-350	Zone-4	true	true	500.00	534.99	634.99	68.33	1,767.93	64.39	56.64	J-286
J-351	Zone-4	true	true	500.00	500.00	600.00	64.03	1,768.00	63.07	56.60	J-286
J-352	Zone-5	true	true	500.00	509.42	609.42	120.63	1,914.82	119.32	46.15	J-208
J-355	Zone-5	true	true	500.00	500.00	600.00	62.80	1,911.16	62.50	46.26	J-208
J-357	Zone-5	true	true	500.00	501.56	601.56	76.83	1,912.59	73.53	45.67	J-208
J-358	Zone-5	true	true	1,500.00	1,500.00	1,600.00	97.76	1,914.95	95.53	45.56	J-208
J-359	Zone-4	true	true	500.00	524.59	624.59	58.83	1,767.98	56.03	56.60	J-286
J-360	Zone-5	true	true	500.00	500.00	1,600.00	115.93	1,914.94	112.91	45.62	J-208
J-361	Zone-5	true	true	500.00	500.00	1,600.00	113.77	1,914.97	111.09	45.62	J-208
J-362	Zone-4	true	true	500.00	500.00	1,600.00	58.85	1,768.02	57.91	56.18	J-286
J-363	Zone-4	true	true	500.00	500.00	1,600.00	67.92	1,767.99	66.12	56.34	J-286
J-364	Zone-4	true	true	500.00	500.00	1,600.00	76.57	1,767.98	73.56	56.37	J-286
J-365	Zone-4	true	true	1,500.00	1,537.00	1,637.00	66.62	1,767.99	46.42	50.91	J-437
J-303	Zone-4	true	true	500.00	500.00	600.00	70.52	1,767.98	70.11	56.63	J-286
J-366	Zone-5	true	true	500.00	500.00	600.00	118.08	1,914.93	117.09	46.15	J-208
J-378	Zone-4	true	true	500.00	515.88	615.88	69.22	1,767.99	66.40	56.60	J-286
J-379	Zone-4	true	true	500.00	512.34	612.34	59.26	1,767.98	54.88	56.62	J-286
J-380	Zone-4	true	true	500.00	521.06	1,621.06	72.68	1,767.98	65.43	56.36	J-286
J-381	Zone-5	true	true	500.00	500.00	1,600.00	122.79	1,914.80	119.22	45.64	J-208
J-382	Zone-5	true	true	500.00	509.42	609.42	118.90	1,914.82	117.62	46.15	J-208
J-383	Zone-5	true	true	500.00	509.42	1,609.42	115.44	1,914.82	109.93	45.64	J-208
J-384	Zone-5	true	true	500.00	509.42	609.42	116.74	1,914.83	115.33	46.15	J-208
J-385	Zone-5	true	true	500.00	509.42	609.42	119.34	1,914.84	117.78	46.15	J-208
J-386	Zone-4	true	true	500.00	500.00	1,600.00	64.05	1,768.03	63.47	56.64	J-286
J-387	Zone-4	true	true	500.00	509.00	1,609.00	65.77	1,768.02	62.03	56.63	J-286
J-388	Zone-4	true	true	500.00	509.42	609.42	58.85	1,768.02	57.99	56.68	J-286
J-389	Zone-4	true	true	500.00	509.42	609.42	61.01	1,768.02	60.00	56.68	J-286
J-390	Zone-5	true	true	500.00	505.14	605.14	106.41	1,914.94	103.42	46.15	J-208
J-391	Zone-5	true	true	500.00	500.00	600.00	116.74	1,914.82	115.24	46.15	J-208
J-392	Zone-5	true	true	500.00	500.00	1,600.00	119.79	1,914.87	113.22	45.63	J-208
J-393	Zone-5	true	true	500.00	500.00	1,600.00	118.28	1,914.89	112.43	45.63	J-208

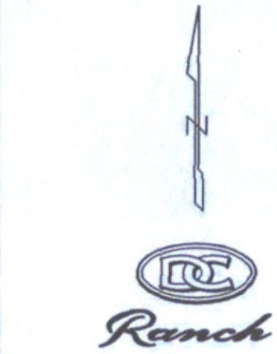
Scenario: Max Day + Fire Flow
Fire Flow Analysis
Fire Flow Report

Label	Zone	Fire Flow Balanced?	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Total Flow Needed (gpm)	Total Flow Available (gpm)	Pressure (psi)	Calculated Hydraulic Grade (ft)	Calculated Residual Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction
J-394	Zone-5	true	true	500.00	500.00	1,600.00	115.04	1,914.89	107.35	45.63	J-208
J-395	Zone-5	true	true	500.00	500.00	1,600.00	116.77	1,914.90	111.67	45.63	J-208
J-396	Zone-4	true	true	500.00	509.42	1,609.42	59.28	1,768.02	49.91	56.12	J-388
J-397	Zone-4	true	true	500.00	500.00	1,600.00	61.88	1,768.02	59.22	56.26	J-388
J-398	Zone-4	true	true	500.00	500.00	1,600.00	63.18	1,768.02	60.02	56.41	J-388
J-399	Zone-4	true	true	500.00	500.00	1,600.00	63.18	1,768.02	60.26	56.46	J-388
J-400	Zone-4	true	true	500.00	509.42	1,609.42	64.47	1,768.02	61.67	56.64	J-286
J-401	Zone-4	true	true	500.00	500.00	1,600.00	57.55	1,768.02	49.15	56.13	J-286
J-402	Zone-4	true	true	500.00	500.00	1,600.00	59.72	1,768.02	56.29	54.13	J-401
J-403	Zone-4	true	true	500.00	500.00	600.00	61.88	1,768.02	61.25	56.68	J-286
J-407	Zone-5	true	true	500.00	500.00	1,600.00	50.84	1,912.51	46.08	41.90	J-208
J-408	Zone-5	true	true	500.00	507.90	1,607.90	82.14	2,179.86	56.91	46.49	J-208
J-409	Zone-5	true	true	500.00	507.90	1,607.90	83.44	2,179.86	68.05	46.49	J-208
J-410	Zone-5	true	true	500.00	503.61	1,603.61	84.27	1,914.78	77.86	45.64	J-208
J-411	Zone-5	true	true	500.00	506.18	1,606.18	91.63	1,914.80	69.26	45.63	J-208
J-412	Zone-5	true	true	500.00	508.24	1,608.24	72.58	1,914.75	67.38	45.65	J-208
J-413	Zone-5	true	true	500.00	503.09	1,603.09	79.08	1,914.77	72.98	45.64	J-208
J-414	Zone-5	true	true	500.00	500.00	1,600.00	78.64	1,914.76	69.92	45.64	J-208
J-416	Zone-5	true	true	500.00	509.28	1,609.28	89.91	1,914.81	82.68	45.63	J-208
J-417	Zone-5	true	true	500.00	504.12	1,604.12	86.44	1,914.79	77.48	45.64	J-208
J-418	Zone-5	true	true	500.00	500.00	1,600.00	86.44	1,914.79	79.42	45.64	J-208
J-419	Zone-5	true	true	500.00	500.00	1,600.00	92.08	1,914.83	86.83	45.63	J-208
J-422	Zone-5	true	true	500.00	500.00	1,600.00	66.96	1,914.76	47.04	45.64	J-208
J-425	Zone-5	true	true	500.00	500.00	600.00	74.67	1,912.59	73.08	45.65	J-208
J-426	Zone-5	true	true	500.00	503.12	603.12	95.02	1,914.62	93.71	45.95	J-208
J-427	Zone-5	true	true	500.00	507.82	1,607.82	84.32	1,914.89	81.65	45.46	J-208
J-428	Zone-5	true	true	500.00	505.50	1,605.50	83.52	1,913.04	77.62	43.16	J-208
J-429	Zone-5	true	true	500.00	508.60	1,608.60	83.52	1,913.04	60.10	43.16	J-208
J-430	Zone-5	true	true	500.00	503.12	1,603.12	71.86	1,914.09	68.11	45.40	J-208
J-431	Zone-5	true	true	500.00	500.00	1,600.00	56.10	1,911.67	44.98	45.92	J-208
J-432	Zone-5	true	true	500.00	500.00	1,600.00	64.73	1,914.61	48.26	45.68	J-208
J-433	Zone-5	true	true	500.00	500.00	1,600.00	69.92	1,914.61	62.08	45.68	J-208
J-434	Zone-5	true	true	500.00	500.00	1,600.00	115.97	1,915.04	113.89	45.64	J-208
J-435	Zone-5	true	true	1,500.00	1,518.04	1,618.04	122.32	1,914.73	114.86	45.64	J-208
J-436	Zone-5	true	true	1,500.00	1,544.57	1,644.57	118.87	1,914.74	111.13	45.64	J-208

Scenario: Max Day + Fire Flow
Fire Flow Analysis
Fire Flow Report

Label	Zone	Fire Flow Balanced?	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Total Flow Needed (gpm)	Total Flow Available (gpm)	Pressure (psi)	Calculated Hydraulic Grade (ft)	Calculated Residual Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction
J-437	Zone-4	true	true	1,500.00	1,505.88	1,605.88	61.44	1,768.01	48.77	53.08	J-438
J-438	Zone-4	true	true	1,500.00	1,500.00	1,600.00	63.60	1,768.01	53.08	50.91	J-437
J-442	Zone-5	true	true	1,500.00	1,507.52	1,607.52	119.30	1,914.74	105.93	45.64	J-208
J-443	Zone-5	true	true	1,500.00	1,507.96	1,607.96	117.14	1,914.74	106.90	45.64	J-208
J-444	Zone-5	true	true	1,500.00	1,575.31	1,675.31	123.18	1,914.72	113.49	45.64	J-208





Water Distribution Plan
for Parcel 1.1

- 6" DIA. WATER
- 8" DIA. WATER
- 12" DIA. WATER
- 16" DIA. WATER
- 18" DIA. WATER
- 20" DIA. WATER
- 24" DIA. WATER
- 30" DIA. WATER

J-105 WATERCAD NODE/JUNCTION

P-318 (9) PROPOSED WATERCAD PIPE/LINK (ZONE)

P-318 (9) EXISTING WATERCAD PIPE/LINK (ZONE)

(6) PRESSURE ZONE

PRESSURE ZONE BOUNDARY

NOT APART OF PROJECT

200 0 100 200

1 inch = 200 ft.

Notes:

Lotting and roadway layouts are conceptual and subject to change. Pressure zone line boundaries are based on natural topography and may be adjusted with design of finish floor elevation of each lot.

Individual booster pumps may be required where inadequate pressure is available for individual lots.

The waterline layout is a conceptual design illustrating the pipe size necessary to serve each parcel and is not specific to its location.

Project Number: 062762 Date: December 6, 2006

WOOD/PATEL
Civil Engineers
Hydrologists
Land Surveyors
Construction Managers
(602) 335-8500

DMB DC Ranch LLC
7600 East Doubletree
Ranch Road, Suite 300
Phoenix, Arizona 85015
(602) 956-7577
(602) 956-7561 FAX

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