

DEXTER WILSON ENGINEERING, INC.

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CONSULTING ENGINEERS

SAFARI HIGHLANDS RANCH POTABLE WATER AND RECYCLED WATER REPORT

May 19, 2017

**SAFARI HIGHLANDS RANCH
POTABLE WATER AND
RECYCLED WATER REPORT**

May 19, 2017

Prepared For:
Concordia Homes
437 S. Highway 101, Suite 212
Solana Beach, CA 92075

Prepared by:
Dexter Wilson Engineering, Inc.
2234 Faraday Avenue
Carlsbad, CA 92008
(760) 438-4422



Job No. 750-003

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CHAPTER 1

INTRODUCTION

This report provides an overview of potable water and recycled water service for the Safari Highlands Ranch Project and recommends facilities to meet the needs of the Project. The Safari Highlands Ranch Project is not currently within the City of Escondido (City). The project plans to annex to the City at which time the City will be the water service provider. The City has existing facilities adjacent to the project. In addition to annexation to the City, the project will also have to annex to the San Diego County Water Authority and the Metropolitan Water District.

PROJECT OVERVIEW

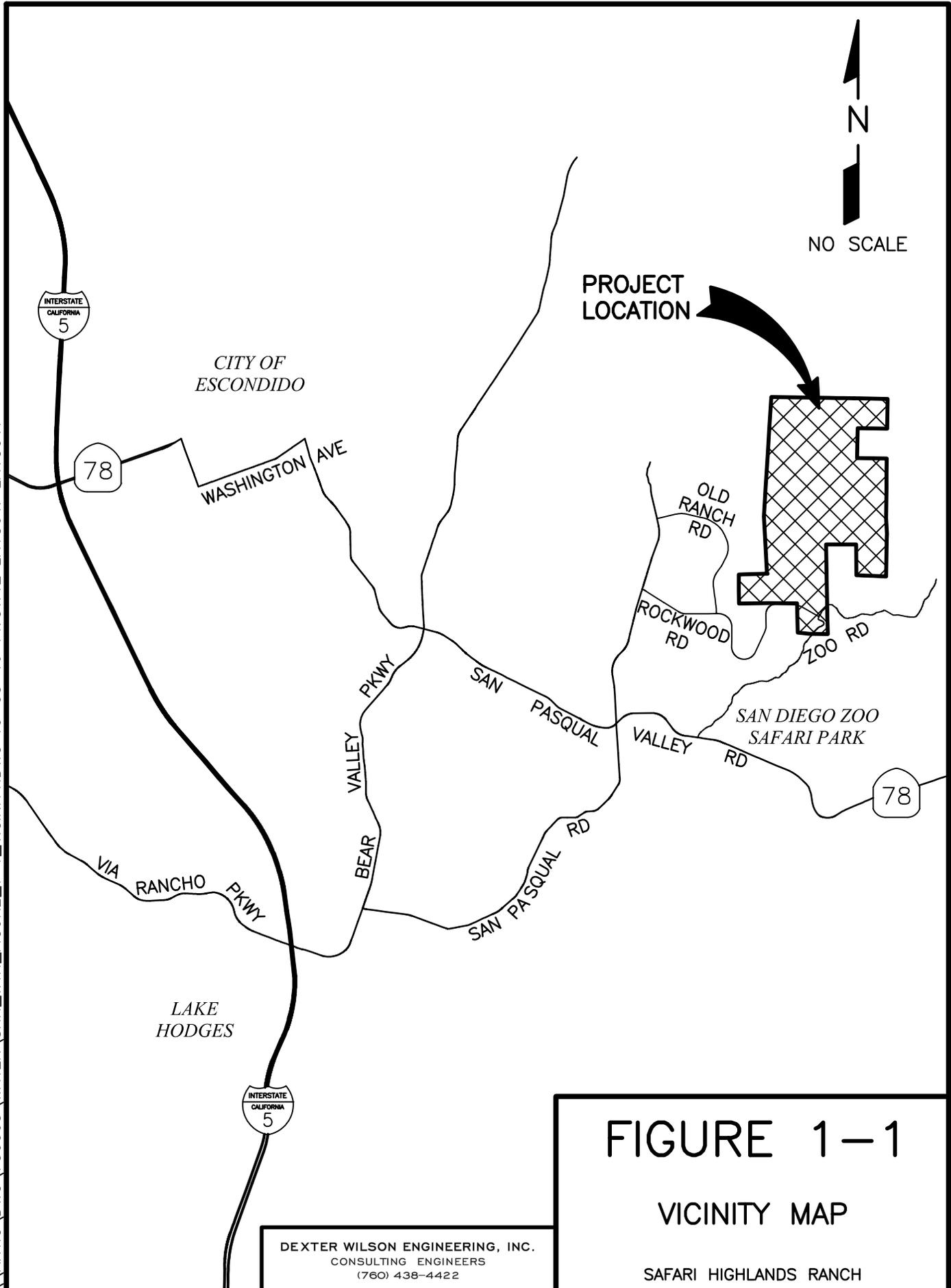
The Safari Highlands Ranch project is located in the County of San Diego bordering the city limits of the City of Escondido. Elevations within the project range from 900 feet above mean sea level (AMSL) to 1791 feet AMSL. The project is bordered directly to the southwest by the San Diego Zoo Safari Park. Access is provided via Rockwood Road through the southern boundary of the site. The project area is shown on Figure 1-1 Vicinity Map.

PROJECT DESCRIPTION

The land uses proposed by the Safari Highlands Ranch are shown on Table 1-1 and consist of single-family neighborhoods, a recreational center, and a fire station.

TABLE 1-1 SAFARI HIGHLANDS RANCH LAND USAGE	
Land Use	Units
Single-Family Residential	550 edu
Recreational Center	3,000 sf
Fire Station	6,825 sf

\\ARTIC\DWG\750003\WATER\SHR_WTR_FIGURE_1-1_VICINITY.DWG 10-03-16 14:31:12 LAYOUT: LAYOUT1



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FIGURE 1-1
VICINITY MAP
SAFARI HIGHLANDS RANCH

CHAPTER 2

DESIGN CRITERIA AND PROJECTED WATER DEMANDS

This chapter presents the design criteria used to size the potable and recycled water systems for the Safari Highlands Ranch Project. The design criteria are utilized for analysis of the existing water system as well as for design and sizing of proposed improvements and expansions to the existing system to accommodate demands in the study area.

Duty Factors and Peaking Factors

Table 2-1 presents the duty factors used to project the total average demand for the Safari Highlands Ranch project. The demand factors are from the April 2014 City Design Standards and Standard Drawings and the project's landscape architect. The required fire flows and durations are also listed. The fire flows are based on requirements set for development in the high and very high fire severity zones shown in the City of Escondido June 2012 Water Master Plan (2012 Master Plan).

TABLE 2-1 SAFARI HIGHLANDS RANCH AVERAGE DAILY WATER DEMANDS			
Land Use Designation	Demand Factor	Required Fire Flow (gpm)	Required Fire Flow Duration (hours)
SF - Lot size > 1 acre	800 gpd/acre	2,500	2
SF - Lot size > 7,000 sf and < 1 acre	800 gpd/edu	2,500	2
SF - Lot size < 7,000 sf	500 gpd/edu	2,500	2
Recreational Center	2,300 gpd/acre	2,500	2
Fire Station	2,300 gpd/acre	2,500	2
Irrigation	1,650 gpd/acre	---	---

Total Water Demands

The total water demand for the Safari Highlands Ranch project is presented in Table 2-2. Detailed residential water demand calculations are presented in Appendix C. The total estimated average water use is 540,444 gpd. The project landscape pallet and landscaping plans will include low water use plants and high efficiency irrigation systems (e.g. drip irrigation). Furthermore, restrictions will be placed within the community via CC&Rs to restrict irrigation options.

TABLE 2-2 SAFARI HIGHLANDS RANCH PROJECTED WATER DEMANDS				
Land Use Designation	Acres	Quantity, Units	Water Duty Factor	Total Average Water Demand, gpd
SF Res – Lot Size >1 acre	-	92 edu	800 gpd/acre	101,344 ¹
SF Res – Lot Size >7,000 sf and < 1 acre	-	458 edu	800 gpd/edu	366,400 ¹
Detention Basins	8.0	-	1,650 gpd/acre	13,200
Streetscapes	13.0	-	1,650 gpd/acre	21,450
Fire Station	1.9	-	2,300 gpd/acre	4,370
Recreational Center	7.9 *	-	2,300 gpd/acre	18,170
Parks	1.2	-	1,650 gpd/acre	1,980
Irrigated Slopes **	8.2	-	1,650 gpd/acre	13,530
TOTAL				540,444 gpd (606 AFY)

Note: Phase 1 water demands (188,440 gpd) include the Recreational Center demand, the Fire Station demand, and 35% of the total Residential demand.

¹ See Appendix C for detailed calculations.

* The Rec Center net pad area is 4.9 acres and the total lot area is 7.9 acres. 7.9 acres is used to provide a conservative planning level analysis of water demands.

** Interior slopes and Zone 1 slopes not within SF, Fire Station, or Recreation Center Lots.

Recycled Water Demands

A portion of the project's water demand will be met with recycled water. Table 2-3 provides the projected recycled water demand for the Safari Highlands Ranch project. The recycled water usage acreage was provided by the project's landscape architect. Additionally, the estimated duty factor is based on the landscape architect's work as well.

TABLE 2-3 SAFARI HIGHLANDS RANCH RECYCLED WATER USE DEMANDS				
Land Use Designation	Acres	Quantity, Units	Water Duty Factor	Total Average Water Demand, gpd
Detention Basins	8.0	-	1,650 gpd/acre	13,200
Streetscapes	13.0	-	1,650 gpd/acre	21,450
Recreational Center	5.0	-	1,650 gpd/acre	8,250
Parks	1.2	-	1,650 gpd/acre	1,980
Irrigated Slopes	81.1	-	1,650 gpd/acre	133,815
TOTAL	108.3			178,695 (200 AFY)

Potable Water Demands

As discussed previously, the project will rely on potable and recycled water. The majority of the irrigated slope acreage (72.9 acres of the 81.1 acres) lies within the single-family, fire station, and recreation center lots. Therefore, to avoid double counting for irrigation, the recycled water demands are subtracted from the total project demands to determine the effective potable water demand utilized for facility sizing. As such, the total average day potable water demand is 361,749 gpd (405 AFY).

Potable Peaking Factors and Fire Flows

Table 2-4 displays other pertinent information regarding estimated demands for the potable water system.

TABLE 2-4 ESTIMATED POTABLE DEMAND PEAKING			
Demand	Factor	Flow, gpd	Flow, gpm
Average Day	1.0	361,749	252
Maximum Day	Average Day * 1.8	651,148	452
Peak Hour	Maximum Day * 2.7	1,758,100	1,222
Max Fire Flow	2 Hour Duration	300,000	2,500

Pipeline Design Criteria

Pipeline design criteria are based on the April 2014 City Design Standards and Standard Drawings. Table 2-5 provides pipeline design criteria for the potable water system.

TABLE 2-5 PIPELINE DESIGN CRITERIA	
Category	Design/Evaluation Criteria
Pressure	40 psi – minimum pressure at peak flow 20 psi – minimum pressure with maximum day demands plus fire flow
Pipelines	10 fps – maximum allowable velocity

CHAPTER 3

RECOMMENDED POTABLE WATER FACILITIES

The Safari Highlands Ranch project proposes to annex into the City service area. The project will receive its water from the City through the Reed Pressure Zone at a hydraulic grade of 945 feet. The elevations in the proposed Safari Highlands Ranch Project are all at 900 feet AMSL or greater. Thus, it will be necessary to increase the hydraulic grade within the project using a pumping station. A new water reservoir will also be included in the proposed project.

WATER SERVICE ZONES

The Safari Highlands Ranch project will be divided into three hydraulic grade zones. Figure 3-1 displays these zones. The water will enter the project from the main on Rockwood Road which is at a hydraulic grade of 945 feet. The water will then pass through a new booster pump station which will convey the water through the project to a reservoir with a high water level elevation of 1,821 feet. The water from the reservoir will serve 226 units in the 1821 zone, 87 units utilizing redundant pressure reducing stations serving the 1500 zone, and 237 units plus the fire station and recreation center through redundant pressure reducing stations serving the 1292 zone. At buildout, all fire flows will come from the reservoir.

PUMP STATION

As stated previously the project will require a pump station to increase the hydraulic grade of the water serving the project. In accordance with the 2012 Master Plan design criteria for open systems, the pump station will be designed to convey a flow equal to that of the maximum day demand plus fire flow recharge over three days. The pump station at buildout will, therefore, be designed to convey 650 gpm, at 930 TDH with a requirement of 250 horsepower (hp).

In order to meet phasing requirements, the pump station will also be designed to meet closed system requirements. In order to service Phase 1 of the project, the pump station must convey a flow equal to that of the Phase 1 maximum day demands plus fire flow. Therefore, the pump station will also be designed to convey 2,850 gpm, at 550 TDH with a requirement of 750 hp.

To serve Phase 1, the pump station would be designed to meet the City criteria for a closed system by adding a standby generator, adding a hydropneumatic tank, utilizing variable speed pumps, and providing sufficient pumping to meet fire flows. This would allow the first phase to be built without the reservoir.

It is assumed that the hydraulic zones will correspond to similar areas for phasing of construction for the project. Once the pump station and reservoir are in place these phases can be constructed in any order, so long as the construction of the reducing stations for said zone is included in the same phase.

After construction of the reservoir, the pump station operation can be revised. We propose to do this with a PLC programed for two operational modes. Thus, the station controls could be changed quickly through the operator interface on the PLC. If the reservoir needed to be taken out of service, or if there was a pipe break, the pump station could be changed back to closed system operations as needed.

The vertical turbine pumps would be contained within a building approximately 20' by 30' in size. The project should allow for a site of approximately 3,200 sf in size. Figure 3-2 presents a conceptual layout of the site.

RESERVOIR

The proposed project includes the construction of a potable water reservoir. The 2012 Master Plan states that a storage reservoir must have capacity equal to 15 percent of maximum day demand plus one average day demand or two hours of maximum fire flow, whichever is greater. For the project the average day plus 15% of maximum day quantity is greater than the maximum fire flow; thus, the minimum storage capacity of the reservoir is 459,422 gallons. The proposed pad elevation of the reservoir is 1,791 feet. The reservoir would be 32 feet high with a high water level at 1,821 feet and two feet of freeboard. The tank diameter would be 53 feet (495,067 gallons of storage).

PRESSURE REDUCING STATIONS

In order to create the division of three water zones from one reservoir in the highest zone, the project will also include four pressure reducing stations. Each pressure reducing station will be designed to convey the flow for its corresponding zone. Flows for each zone within the Safari Highlands Ranch project are presented in Table 3-1. For locations of these pressure reducing stations, refer to Figure 3-1. These pressure reducing stations will serve fire flows to the lower zones.

TABLE 3-1 SAFARI HIGHLANDS RANCH PROJECTED POTABLE WATER DEMANDS BY ZONE			
Zone	Land Use Designation	Quantity, Units	Total Average Water Demand, GPD
1292	SF Residential	237 edu	165,900
	Fire Station	1.9 acres	4,370
	Recreation Center	7.9 acres	18,170
	<i>1292 Zone Total</i>	-	<i>188,440</i>
1500	SF Residential	87 edu	60,900
1821	SF Residential	226 edu	158,200

PIPING

Pipelines for the project will range from 8-inch to 12-inch in diameter as shown in Figure 3-1. Welded steel pipe (with bonded joints and cathodic test stations) is recommended for the 12-inch piping where pressures exceed 300 psi, all remaining piping shall be C900 PVC (Class 235 or Class 305, as appropriate). Appendix A provides the hydraulic modeling.

\\ARTIC\DWG\750003\WATER\SHR_WTR_FIGURE_3-1_POTABLE.DWG 04-05-17 16:23:59 LAYOUT: LAYOUT

SCALE: 1" = 1,000'

LEGEND

- PROJECT BOUNDARY
- - - EXISTING 945 ZONE WATER LINE
- PROPOSED 945 ZONE WATER LINE
- PROPOSED 1292 ZONE WATER LINE
- PROPOSED 1500 ZONE WATER LINE
- PROPOSED 1821 ZONE WATER LINE

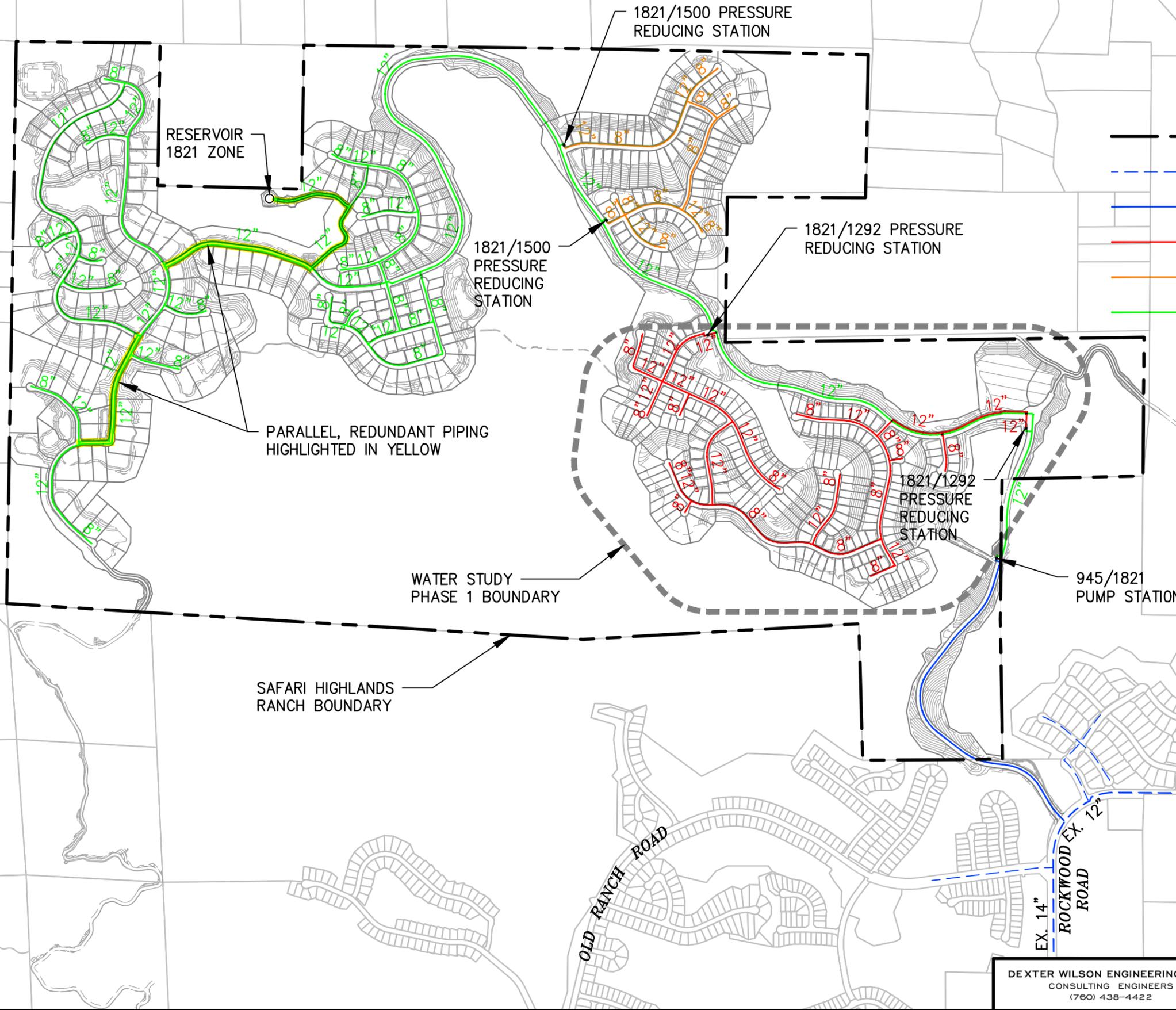
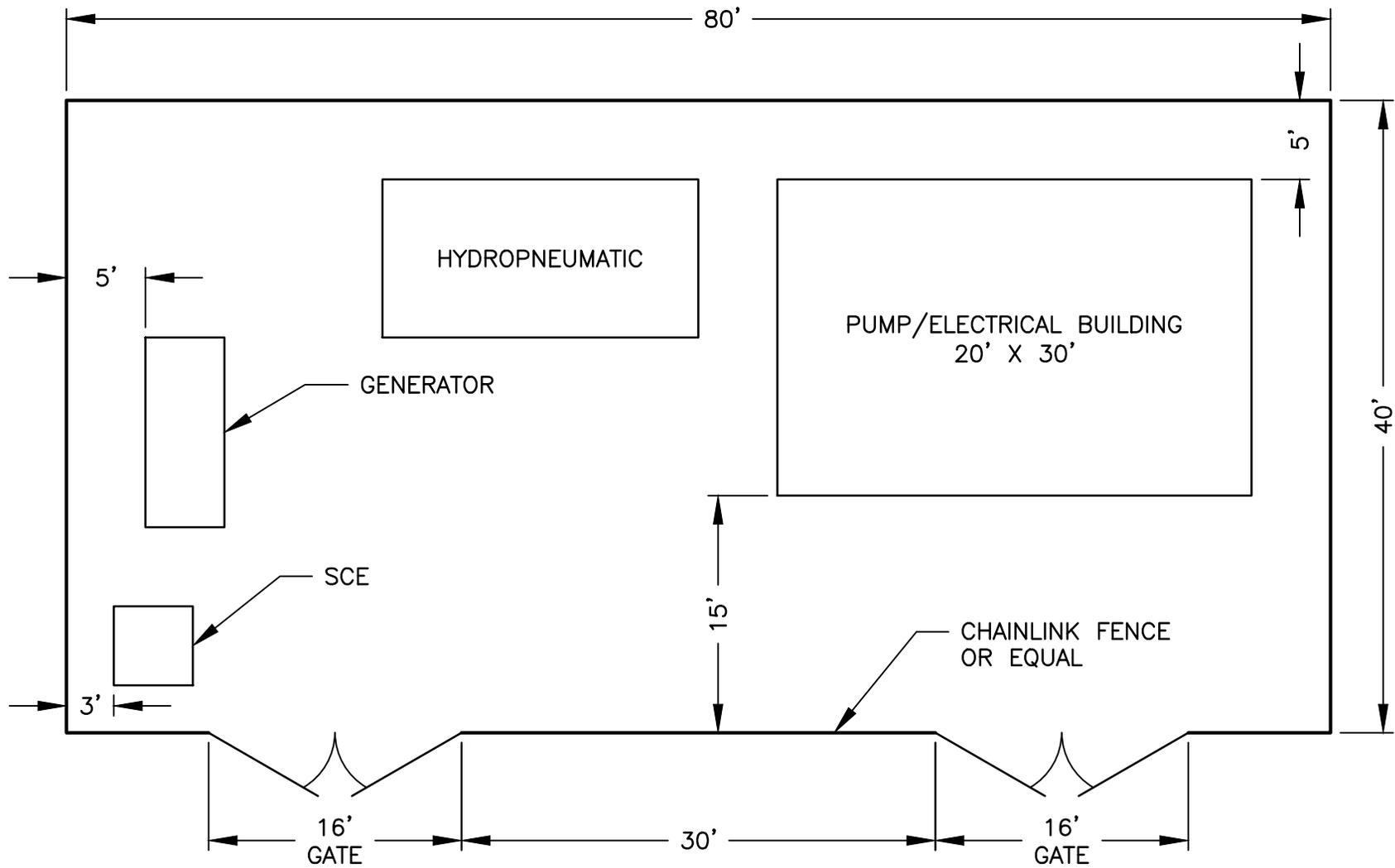


FIGURE 3-1
PROPOSED POTABLE
WATER LAYOUT
 SAFARI HIGHLANDS RANCH

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SCALE: 1" = 10'

FIGURE 3-2
WATER BOOSTER STATION
CONCEPTUAL LAYOUT

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TOTAL SITE AREA = 3,200 SQ. FT

SAFARI HIGHLANDS RANCH

CHAPTER 4

RECOMMENDED RECYCLED WATER FACILITIES

The City completed its Recycled Water Master Plan in June 2011. This plan recommended a phased expansion of the recycled water piping system. The City is proceeding with the design of Phase 1 improvements. For the purpose of this study, we are assuming that the City constructs a recycled water line to the corner of Cloverdale Road and Rockwood Road and that the Safari Highlands Ranch project would need to extend recycled facilities from that point. Figure 4-1 shows the proposed City recycled water pipelines as well as the proposed off-site recycled water pipelines for the Safari Highlands Ranch project.

RECYCLED WATER SYSTEM

Figure 4-2 shows the onsite recycled water system. These facilities include piping, a pump station, and a possible storage site.

Piping

Figure 4-2 shows the recycled water piping for the project. There will be a 945 HGL Zone and a 1778 HGL Zone. The 945 Zone will be served from an offsite reservoir. The 1778 Zone will have an onsite reservoir. Appendix B provides the hydraulic modeling.

Pumping

A recycled water pump station will be constructed to pump from the 945 Zone to the 1778 HGL Zone. This station will have a pressure reducing valve to allow water to flow from the 1778 Zone back to the 945 Zone. The pump station will be sized to pump 1,000 gpm and have a backup pump. The location of this pump station is shown in Figure 4-2. Private irrigation pump stations for some slopes will be utilized.

RECYCLED WATER STORAGE

The project will include a site for a 2.5 million gallon open reservoir. The site is located in the northeast band of the project and the reservoir would have a high water level of 1,778 feet to provide operational and wet weather recycled water storage for the City. Sizing of the site assumes recycled water use only (i.e., not intended to accommodate storm water flows).

\\ARTIC\DWG\750003\REC WATER\SH_RW_FIGURE_4-1.DWG 05-19-17 14:56:41 LAYOUT: LAYOUT

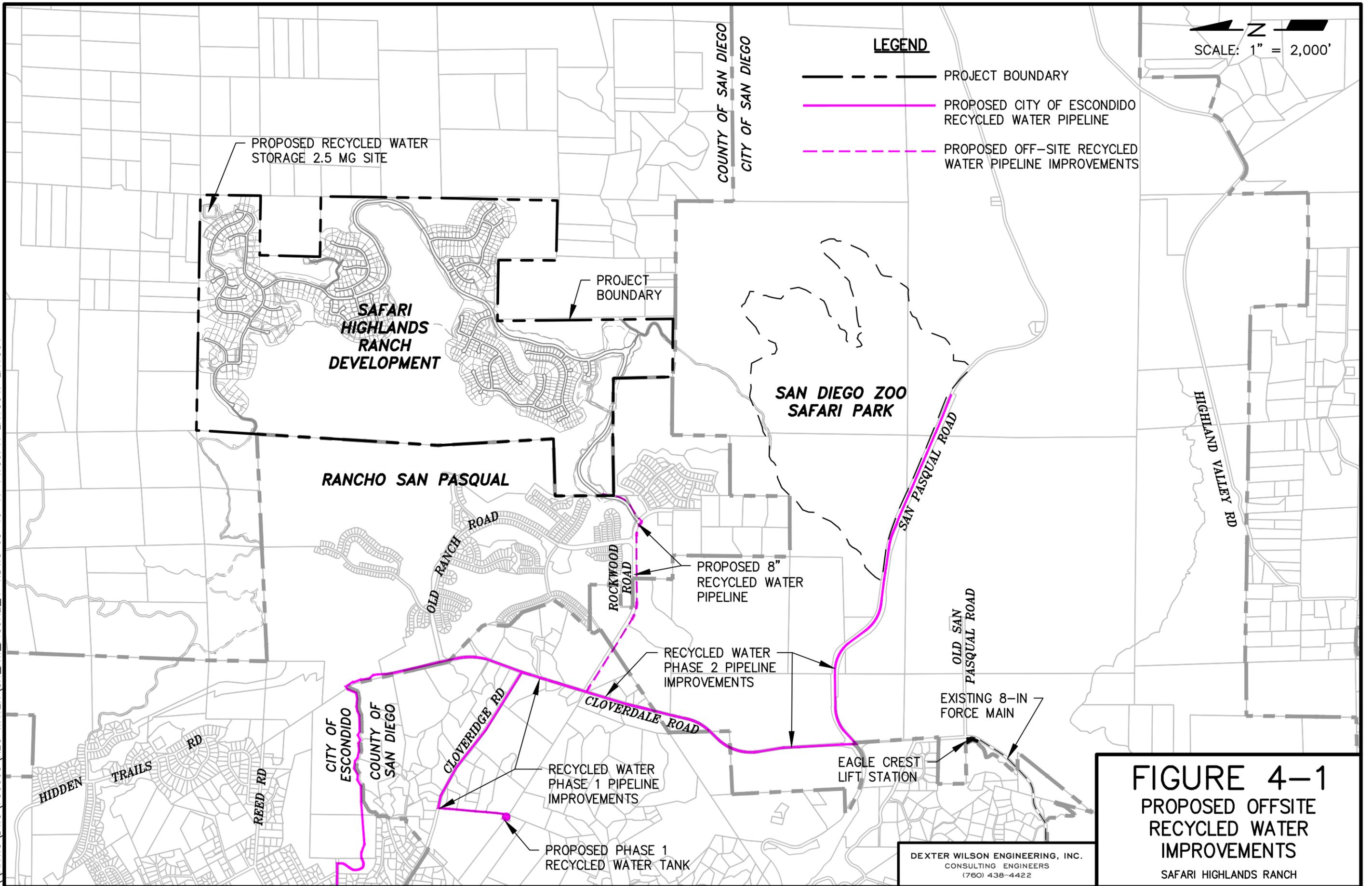
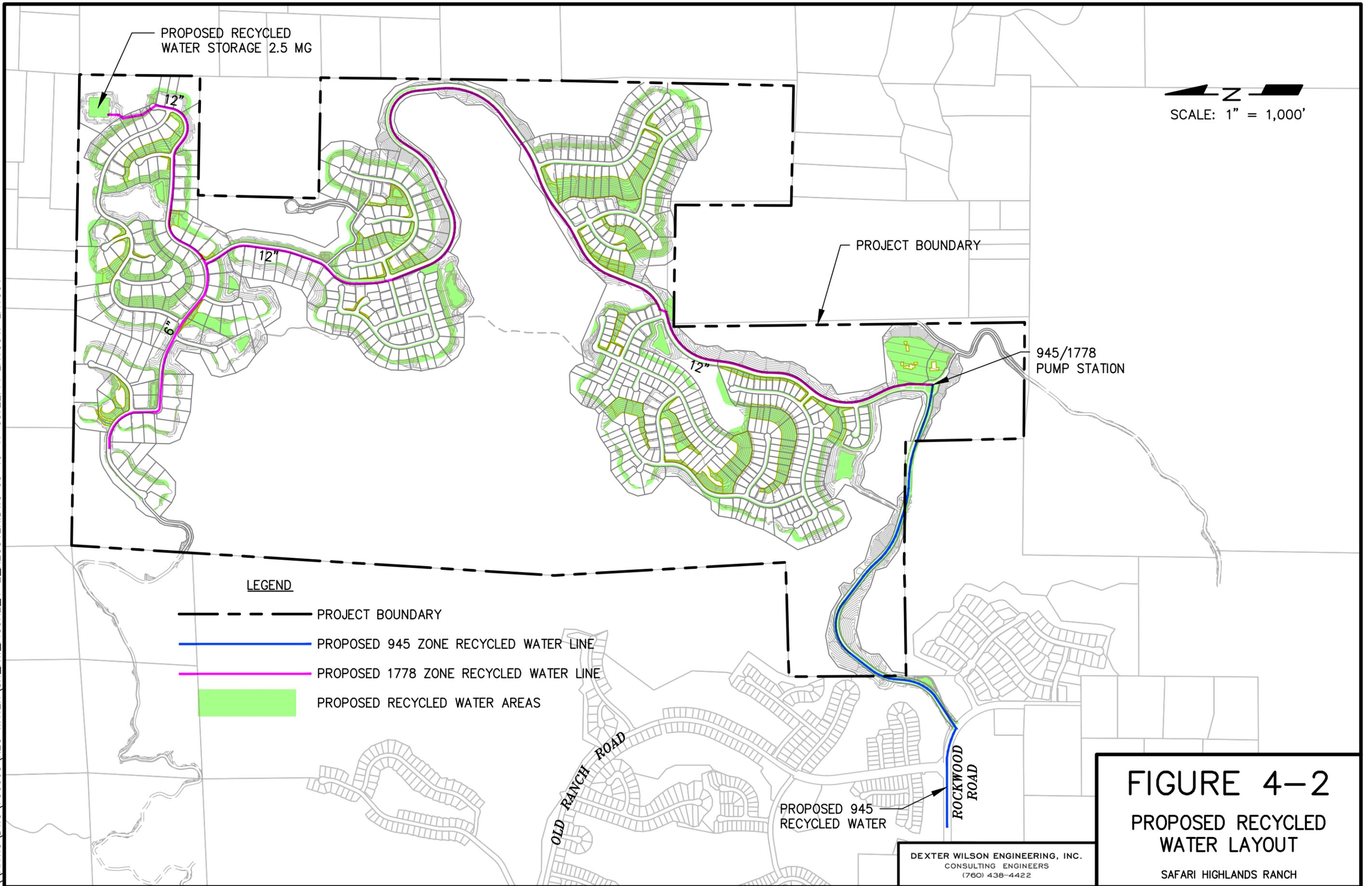


FIGURE 4-1
PROPOSED OFFSITE RECYCLED WATER IMPROVEMENTS
 SAFARI HIGHLANDS RANCH

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\\ARTIC\DWG\750003\REC_WATER\SH_RW_FIGURE_4-2_RECOVER.DWG 05-19-17 09:22:14 LAYOUT: LAYOUT



PROPOSED RECYCLED WATER STORAGE 2.5 MG

SCALE: 1" = 1,000'

PROJECT BOUNDARY

945/1778 PUMP STATION

LEGEND

- PROJECT BOUNDARY
- PROPOSED 945 ZONE RECYCLED WATER LINE
- PROPOSED 1778 ZONE RECYCLED WATER LINE
- PROPOSED RECYCLED WATER AREAS

OLD RANCH ROAD

ROCKWOOD ROAD

PROPOSED 945 RECYCLED WATER

FIGURE 4-2
PROPOSED RECYCLED WATER LAYOUT

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SAFARI HIGHLANDS RANCH

APPENDIX A

POTABLE WATER PIPELINE MODELING

Safari Highlands Ranch Project
Ultimate Water System Analysis (750PW4)
Average Day, Maximum Day, Peak Hour, and
Fire Flow Demand Scenarios

April 18, 2017
Dexter Wilson Engr., Inc.
Job No. 750-003

FLOWRATE IS EXPRESSED IN GPM AND PRESSURE IN PSIG

A SUMMARY OF THE ORIGINAL DATA FOLLOWS

THERE IS A PRV AT JUNCTION 100 FOR LINE 301 SET AT A GRADE OF 1292.00
THERE IS A PRV AT JUNCTION 144 FOR LINE 303 SET AT A GRADE OF 1292.00
THERE IS A PRV AT JUNCTION 200 FOR LINE 305 SET AT A GRADE OF 1500.00
THERE IS A PRV AT JUNCTION 216 FOR LINE 307 SET AT A GRADE OF 1500.00

PIPE NO.	NODE NOS.	LENGTH (FEET)	DIAMETER (INCHES)	ROUGHNESS	MINOR LOSS K	FIXED GRADE
101	100 102	1100.0	12.0	130.0	.00	
103	102 104	360.0	8.0	130.0	.00	
105	102 106	860.0	12.0	130.0	.00	
107	106 110	320.0	8.0	130.0	.00	
108	110 111	150.0	8.0	130.0	.00	
109	110 112	910.0	8.0	130.0	.00	
111	112 116	840.0	8.0	130.0	.00	
113	116 124	1310.0	8.0	130.0	.00	
115	124 126	240.0	12.0	130.0	.00	
117	124 132	1080.0	12.0	130.0	.00	
121	132 130	600.0	12.0	130.0	.00	
123	126 127	170.0	8.0	130.0	.00	
125	140 144	940.0	12.0	130.0	.00	
127	126 114	230.0	12.0	130.0	.00	
128	106 107	680.0	12.0	130.0	.00	
129	107 108	250.0	8.0	130.0	.00	
131	130 140	330.0	12.0	130.0	.00	
133	116 118	590.0	12.0	130.0	.00	
135	118 120	250.0	8.0	130.0	.00	
137	114 128	250.0	8.0	130.0	.00	
139	140 141	140.0	12.0	130.0	.00	
140	132 134	660.0	12.0	130.0	.00	
141	134 136	250.0	8.0	130.0	.00	
143	130 138	250.0	8.0	130.0	.00	
145	141 142	250.0	8.0	130.0	.00	
147	140 146	470.0	12.0	130.0	.00	
149	112 147	350.0	12.0	130.0	.00	
151	147 148	151.0	8.0	130.0	.00	
155	146 152	155.0	8.0	130.0	.00	
201	200 202	270.0	8.0	130.0	.00	
203	202 204	700.0	8.0	130.0	.00	
205	204 208	1140.0	8.0	130.0	.00	
207	202 210	210.0	8.0	130.0	.00	
209	208 212	410.0	8.0	130.0	.00	
211	202 211	330.0	12.0	130.0	.00	
213	212 216	1770.0	8.0	130.0	.00	
215	204 218	50.0	12.0	130.0	.00	
217	211 214	250.0	8.0	130.0	.00	
219	218 222	250.0	8.0	130.0	.00	
221	208 220	250.0	8.0	130.0	.00	
223	212 226	240.0	12.0	130.0	.00	

**Safari Highlands Ranch Project
 Ultimate Water System Analysis (750PW4)
 Average Day, Maximum Day, Peak Hour, and
 Fire Flow Demand Scenarios**

**April 18, 2017
 Dexter Wilson Engr., Inc.
 Job No. 750-003**

225	226	224	250.0	8.0	130.0	.00	
301	300	100	130.0	12.0	120.0	.00	
303	304	144	30.0	12.0	120.0	.00	
305	308	200	30.0	12.0	120.0	.00	
307	312	216	30.0	12.0	120.0	.00	
309	301	300	1590.0	12.0	120.0	.00	
311	300	304	4310.0	12.0	120.0	.00	
315	304	308	1910.0	12.0	120.0	.00	
319	308	312	1010.0	12.0	120.0	.00	
323	312	346	5300.0	12.0	130.0	.00	
327	316	320	940.0	12.0	130.0	.00	
329	326	328	460.0	12.0	130.0	.00	
331	320	324	1770.0	12.0	130.0	.00	
332	320	324	1770.0	12.0	130.0	.00	
333	328	330	240.0	12.0	130.0	.00	
335	324	326	450.0	12.0	130.0	.00	
339	330	336	1410.0	12.0	130.0	.00	
341	330	397	300.0	12.0	130.0	.00	
342	397	399	250.0	8.0	130.0	.00	
343	336	338	1160.0	12.0	130.0	.00	
344	338	340	250.0	8.0	130.0	.00	
345	326	395	230.0	12.0	130.0	.00	
346	395	398	250.0	8.0	130.0	.00	
347	332	355	210.0	12.0	130.0	.00	
349	316	344	580.0	8.0	130.0	.00	
351	352	344	410.0	12.0	130.0	.00	
353	348	346	620.0	8.0	130.0	.00	
354	346	316	410.0	12.0	130.0	.00	
355	344	348	410.0	8.0	130.0	.00	
356	352	354	330.0	12.0	130.0	.00	
357	354	351	180.0	12.0	130.0	.00	
358	351	350	250.0	8.0	130.0	.00	
359	348	352	1360.0	8.0	130.0	.00	
361	354	358	220.0	8.0	130.0	.00	
363	356	320	960.0	12.0	130.0	.00	
364	356	320	960.0	12.0	130.0	.00	
365	369	371	160.0	12.0	130.0	.00	
366	371	377	250.0	8.0	130.0	.00	
367	0	356	920.0	12.0	130.0	.00	1806.00
368	0	356	920.0	12.0	130.0	.00	1806.00
371	360	356	530.0	8.0	130.0	.00	
373	360	361	160.0	12.0	130.0	.00	
374	361	363	250.0	8.0	130.0	.00	
375	362	360	870.0	8.0	130.0	.00	
377	374	394	250.0	8.0	130.0	.00	
379	369	362	790.0	8.0	130.0	.00	
381	316	369	260.0	8.0	130.0	.00	
382	374	378	350.0	12.0	130.0	.00	
383	324	332	1720.0	12.0	130.0	.00	
384	378	370	410.0	12.0	130.0	.00	
385	332	368	780.0	12.0	130.0	.00	
386	370	396	250.0	8.0	130.0	.00	
387	368	372	2340.0	12.0	130.0	.00	
389	355	392	250.0	8.0	130.0	.00	

**Safari Highlands Ranch Project
 Ultimate Water System Analysis (750PW4)
 Average Day, Maximum Day, Peak Hour, and
 Fire Flow Demand Scenarios**

**April 18, 2017
 Dexter Wilson Engr., Inc.
 Job No. 750-003**

391	378	328	1340.0	12.0	130.0	.00
392	372	382	120.0	12.0	130.0	.00
393	382	384	250.0	8.0	130.0	.00
394	372	374	300.0	12.0	130.0	.00
395	336	342	660.0	12.0	130.0	.00
396	342	376	250.0	8.0	130.0	.00
397	368	380	250.0	8.0	130.0	.00
398	362	364	380.0	12.0	130.0	.00
399	364	365	250.0	8.0	130.0	.00

JUNCTION NUMBER	DEMAND	ELEVATION	CONNECTING PIPES
100	.00	885.00	101 301
102	.00	886.00	101 103 105
104	.00	880.00	103
106	36.60	944.00	105 107 128
107	.00	982.00	128 129
108	11.90	983.00	129
110	.00	949.00	107 108 109
111	.00	950.00	108
112	38.70	965.00	109 111 149
114	.00	1048.00	127 137
116	22.60	1017.00	111 113 133
118	.00	1035.00	133 135
120	10.80	1042.00	135
124	20.40	1047.00	113 115 117
126	.00	1048.00	115 123 127
127	.00	1049.00	123
128	9.70	1053.00	137
130	.00	1125.00	121 131 143
132	44.10	1121.00	117 121 140
134	.00	1124.00	140 141
136	6.50	1128.00	141
138	.00	1129.00	143
140	33.30	1124.00	125 131 139 147
141	.00	1126.00	139 145
142	.00	1130.00	145
144	.00	1081.00	125 303
146	.00	1138.00	147 155
147	.00	970.00	149 151
148	.00	973.00	151
152	5.40	1148.00	155
200	.00	1205.00	201 305
202	.00	1207.00	201 203 207 211
204	35.60	1254.00	203 205 215
208	14.00	1297.00	205 209 221
210	.00	1210.00	207
211	.00	1196.00	211 217
212	33.30	1312.00	209 213 223
214	.00	1185.00	217
216	.00	1290.00	213 307
218	.00	1254.00	215 219
220	.00	1302.00	221
222	.00	1259.00	219

**Safari Highlands Ranch Project
 Ultimate Water System Analysis (750PW4)
 Average Day, Maximum Day, Peak Hour, and
 Fire Flow Demand Scenarios**

**April 18, 2017
 Dexter Wilson Engr., Inc.
 Job No. 750-003**

224	10.80	1333.00	225					
226	.00	1326.00	223	225				
300	.00	885.00	301	309	311			
301	.00	820.00	309					
304	.00	1081.00	303	311	315			
308	.00	1207.00	305	315	319			
312	.00	1290.00	307	319	323			
316	.00	1604.00	327	349	354	381		
320	8.60	1590.00	327	331	332	363	364	
324	19.40	1600.00	331	332	335	383		
326	.00	1588.00	329	335	345			
328	14.00	1568.00	329	333	391			
330	.00	1545.00	333	339	341			
332	.00	1668.00	347	383	385			
336	20.40	1606.00	339	343	395			
338	.00	1626.00	343	344				
340	5.40	1629.00	344					
342	.00	1605.00	395	396				
344	.00	1590.00	349	351	355			
346	.00	1588.00	323	353	354			
348	30.10	1585.00	353	355	359			
350	6.50	1608.00	358					
351	.00	1604.00	357	358				
352	25.80	1592.00	351	356	359			
354	.00	1601.00	356	357	361			
355	.00	1670.00	347	389				
356	.00	1695.00	363	364	367	368	371	
358	.00	1602.00	361					
360	18.30	1657.00	371	373	375			
361	.00	1666.00	373	374				
362	23.70	1663.00	375	379	398			
363	.00	1678.00	374					
364	.00	1674.00	398	399				
365	11.90	1686.00	399					
368	23.70	1710.00	385	387	397			
369	.00	1613.00	365	379	381			
370	.00	1629.00	384	386				
371	.00	1615.00	365	366				
372	19.40	1673.00	387	392	394			
374	.00	1654.00	377	382	394			
376	.00	1608.00	396					
377	.00	1619.00	366					
378	.00	1625.00	382	384	391			
380	3.30	1713.00	397					
382	.00	1677.00	392	393				
384	4.30	1686.00	393					
392	.00	1673.00	389					
394	.00	1664.00	377					
395	.00	1585.00	345	346				
396	.00	1631.00	386					
397	.00	1545.00	341	342				
398	.00	1580.00	346					
399	.00	1511.00	342					

Safari Highlands Ranch Project
Ultimate Water System Analysis (750PW4)
Average Day, Maximum Day, Peak Hour, and
Fire Flow Demand Scenarios

April 18, 2017
Dexter Wilson Engr., Inc.
Job No. 750-003

OUTPUT SELECTION: ALL RESULTS ARE OUTPUT EACH PERIOD
 3 VALUES ARE OUTPUT FOR MAXIMUM AND MINIMUM PRESSURES

THIS SYSTEM HAS MULTIPLE SUPPLY ZONES

ZONE NO. 1 IS SUPPLIED THROUGH THESE PIPES:
 305
 307

ZONE NO. 2 IS SUPPLIED THROUGH THESE PIPES:
 367
 368

THIS SYSTEM HAS 104 PIPES WITH 95 JUNCTIONS , 6 LOOPS AND 6 FGNS

THE RESULTS ARE OBTAINED AFTER 7 TRIALS WITH AN ACCURACY = .00295

SAFARI HIGHLANDS RANCH
POTABLE WATER SYSTEM ANALYSIS
MAXIMUM DAY DEMANDS

PIPE NO.	NODE NOS.	FLOWRATE	HEAD LOSS	PUMP HEAD	MINOR LOSS	VELOCITY	HL/1000
101	100 102	94.94	.04	.00	.00	.27	.03
103	102 104	.00	.00	.00	.00	.00	.00
105	102 106	94.94	.03	.00	.00	.27	.03
107	106 110	46.44	.02	.00	.00	.30	.06
108	110 111	.00	.00	.00	.00	.00	.00
109	110 112	46.44	.06	.00	.00	.30	.06
111	112 116	7.74	.00	.00	.00	.05	.00
113	116 124	-25.66	-.03	.00	.00	-.16	-.02
115	124 126	9.70	.00	.00	.00	.03	.00
117	124 132	-55.76	-.01	.00	.00	-.16	-.01
121	132 130	-106.36	-.02	.00	.00	-.30	-.04
123	126 127	.00	.00	.00	.00	.00	.00
125	140 144	-145.06	-.07	.00	.00	-.41	-.07
127	126 114	9.70	.00	.00	.00	.03	.00
128	106 107	11.90	.00	.00	.00	.03	.00
129	107 108	11.90	.00	.00	.00	.08	.00
131	130 140	-106.36	-.01	.00	.00	-.30	-.04
133	116 118	10.80	.00	.00	.00	.03	.00
135	118 120	10.80	.00	.00	.00	.07	.00
137	114 128	9.70	.00	.00	.00	.06	.00
139	140 141	.00	.00	.00	.00	.00	.00
140	132 134	6.50	.00	.00	.00	.02	.00
141	134 136	6.50	.00	.00	.00	.04	.00
143	130 138	.00	.00	.00	.00	.00	.00

**Safari Highlands Ranch Project
 Ultimate Water System Analysis (750PW4)
 Average Day, Maximum Day, Peak Hour, and
 Fire Flow Demand Scenarios**

**April 18, 2017
 Dexter Wilson Engr., Inc.
 Job No. 750-003**

145	141	142	.00	.00	.00	.00	.00	.00
147	140	146	5.40	.00	.00	.00	.02	.00
149	112	147	.00	.00	.00	.00	.00	.00
151	147	148	.00	.00	.00	.00	.00	.00
155	146	152	5.40	.00	.00	.00	.03	.00
201	200	202	52.66	.02	.00	.00	.34	.08
203	202	204	52.66	.05	.00	.00	.34	.08
205	204	208	17.06	.01	.00	.00	.11	.01
207	202	210	.00	.00	.00	.00	.00	.00
209	208	212	3.06	.00	.00	.00	.02	.00
211	202	211	.00	.00	.00	.00	.00	.00
213	212	216	-41.04	-.09	.00	.00	-.26	-.05
215	204	218	.00	.00	.00	.00	.00	.00
217	211	214	.00	.00	.00	.00	.00	.00
219	218	222	.00	.00	.00	.00	.00	.00
221	208	220	.00	.00	.00	.00	.00	.00
223	212	226	10.80	.00	.00	.00	.03	.00
225	226	224	10.80	.00	.00	.00	.07	.00
301	0	100	94.94	.00	.00	.00	.27	.04
303	0	144	145.06	.00	.00	.00	.41	.08
305	0	200	52.66	.00	.00	.00	.15	.01
307	0	216	41.04	.00	.00	.00	.12	.01
309	301	300	.00	.00	.00	.00	.00	.00
311	300	304	-94.94	-.16	.00	.00	-.27	-.04
315	304	308	-240.00	-.40	.00	.00	-.68	-.21
319	308	312	-292.66	-.31	.00	.00	-.83	-.30
323	312	346	-333.70	-1.76	.00	.00	-.95	-.33
327	316	320	-336.95	-.32	.00	.00	-.96	-.34
329	326	328	55.72	.01	.00	.00	.16	.01
331	320	324	54.95	.02	.00	.00	.16	.01
332	320	324	54.95	.02	.00	.00	.16	.01
333	328	330	25.80	.00	.00	.00	.07	.00
335	324	326	55.72	.01	.00	.00	.16	.01
339	330	336	25.80	.00	.00	.00	.07	.00
341	330	397	.00	.00	.00	.00	.00	.00
342	397	399	.00	.00	.00	.00	.00	.00
343	336	338	5.40	.00	.00	.00	.02	.00
344	338	340	5.40	.00	.00	.00	.03	.00
345	326	395	.00	.00	.00	.00	.00	.00
346	395	398	.00	.00	.00	.00	.00	.00
347	332	355	.00	.00	.00	.00	.00	.00
349	316	344	81.17	.10	.00	.00	.52	.17
351	352	344	-47.50	.00	.00	.00	-.13	-.01
353	348	346	18.77	.01	.00	.00	.12	.01
354	346	316	-314.93	-.12	.00	.00	-.89	-.30
355	344	348	33.67	.01	.00	.00	.21	.03
356	352	354	6.50	.00	.00	.00	.02	.00
357	354	351	6.50	.00	.00	.00	.02	.00
358	351	350	6.50	.00	.00	.00	.04	.00
359	348	352	-15.20	-.01	.00	.00	-.10	-.01
361	354	358	.00	.00	.00	.00	.00	.00
363	356	320	227.72	.16	.00	.00	.65	.16
364	356	320	227.72	.16	.00	.00	.65	.16
365	369	371	.00	.00	.00	.00	.00	.00

**Safari Highlands Ranch Project
 Ultimate Water System Analysis (750PW4)
 Average Day, Maximum Day, Peak Hour, and
 Fire Flow Demand Scenarios**

**April 18, 2017
 Dexter Wilson Engr., Inc.
 Job No. 750-003**

366	371	377	.00	.00	.00	.00	.00	.00
367	0	356	284.25	.23	.00	.00	.81	.25
368	0	356	284.25	.23	.00	.00	.81	.25
371	360	356	-113.05	-.17	.00	.00	-.72	-.32
373	360	361	.00	.00	.00	.00	.00	.00
374	361	363	.00	.00	.00	.00	.00	.00
375	362	360	-94.75	-.20	.00	.00	-.60	-.23
377	374	394	.00	.00	.00	.00	.00	.00
379	369	362	-59.15	-.08	.00	.00	-.38	-.10
381	316	369	-59.15	-.03	.00	.00	-.38	-.10
382	374	378	-15.92	.00	.00	.00	-.05	.00
383	324	332	34.78	.01	.00	.00	.10	.01
384	378	370	.00	.00	.00	.00	.00	.00
385	332	368	34.78	.00	.00	.00	.10	.01
386	370	396	.00	.00	.00	.00	.00	.00
387	368	372	7.78	.00	.00	.00	.02	.00
389	355	392	.00	.00	.00	.00	.00	.00
391	378	328	-15.92	.00	.00	.00	-.05	.00
392	372	382	4.30	.00	.00	.00	.01	.00
393	382	384	4.30	.00	.00	.00	.03	.00
394	372	374	-15.92	.00	.00	.00	-.05	.00
395	336	342	.00	.00	.00	.00	.00	.00
396	342	376	.00	.00	.00	.00	.00	.00
397	368	380	3.30	.00	.00	.00	.02	.00
398	362	364	11.90	.00	.00	.00	.03	.00
399	364	365	11.90	.00	.00	.00	.08	.00

JUNCTION NUMBER	DEMAND	GRADE LINE	ELEVATION	PRESSURE
100	.00	1292.00	885.00	176.36
102	.00	1291.96	886.00	175.92
104	.00	1291.96	880.00	178.52
106	36.60	1291.93	944.00	150.77
107	.00	1291.93	982.00	134.30
108	11.90	1291.93	983.00	133.87
110	.00	1291.91	949.00	148.60
111	.00	1291.91	950.00	148.16
112	38.70	1291.86	965.00	141.64
114	.00	1291.88	1048.00	105.68
116	22.60	1291.85	1017.00	119.10
118	.00	1291.85	1035.00	111.30
120	10.80	1291.85	1042.00	108.27
124	20.40	1291.88	1047.00	106.11
126	.00	1291.88	1048.00	105.68
127	.00	1291.88	1049.00	105.25
128	9.70	1291.88	1053.00	103.51
130	.00	1291.92	1125.00	72.33
132	44.10	1291.89	1121.00	74.05
134	.00	1291.89	1124.00	72.75
136	6.50	1291.89	1128.00	71.02
138	.00	1291.92	1129.00	70.60
140	33.30	1291.93	1124.00	72.77
141	.00	1291.93	1126.00	71.90
142	.00	1291.93	1130.00	70.17

**Safari Highlands Ranch Project
 Ultimate Water System Analysis (750PW4)
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**April 18, 2017
 Dexter Wilson Engr., Inc.
 Job No. 750-003**

144	.00	1292.00	1081.00	91.43
146	.00	1291.93	1138.00	66.70
147	.00	1291.86	970.00	139.47
148	.00	1291.86	973.00	138.17
152	5.40	1291.93	1148.00	62.37
200	.00	1500.00	1205.00	127.83
202	.00	1499.98	1207.00	126.96
204	35.60	1499.92	1254.00	106.57
208	14.00	1499.91	1297.00	87.93
210	.00	1499.98	1210.00	125.66
211	.00	1499.98	1196.00	131.72
212	33.30	1499.91	1312.00	81.43
214	.00	1499.98	1185.00	136.49
216	.00	1500.00	1290.00	91.00
218	.00	1499.92	1254.00	106.57
220	.00	1499.91	1302.00	85.76
222	.00	1499.92	1259.00	104.40
224	10.80	1499.91	1333.00	72.33
226	.00	1499.91	1326.00	75.36
300	.00	1802.55	885.00	397.60
301	.00	1802.55	820.00	425.77
304	.00	1802.71	1081.00	312.74
308	.00	1803.11	1207.00	258.31
312	.00	1803.42	1290.00	222.48
316	.00	1805.30	1604.00	87.23
320	8.60	1805.62	1590.00	93.43
324	19.40	1805.59	1600.00	89.09
326	.00	1805.59	1588.00	94.29
328	14.00	1805.58	1568.00	102.95
330	.00	1805.58	1545.00	112.92
332	.00	1805.59	1668.00	59.62
336	20.40	1805.58	1606.00	86.48
338	.00	1805.58	1626.00	77.82
340	5.40	1805.58	1629.00	76.52
342	.00	1805.58	1605.00	86.92
344	.00	1805.20	1590.00	93.25
346	.00	1805.18	1588.00	94.11
348	30.10	1805.18	1585.00	95.41
350	6.50	1805.19	1608.00	85.45
351	.00	1805.19	1604.00	87.18
352	25.80	1805.19	1592.00	92.38
354	.00	1805.19	1601.00	88.48
355	.00	1805.59	1670.00	58.75
356	.00	1805.77	1695.00	48.00
358	.00	1805.19	1602.00	88.05
360	18.30	1805.60	1657.00	64.39
361	.00	1805.60	1666.00	60.49
362	23.70	1805.40	1663.00	61.71
363	.00	1805.60	1678.00	55.29
364	.00	1805.40	1674.00	56.94
365	11.90	1805.40	1686.00	51.74
368	23.70	1805.58	1710.00	41.42
369	.00	1805.32	1613.00	83.34
370	.00	1805.58	1629.00	76.52

Safari Highlands Ranch Project
Ultimate Water System Analysis (750PW4)
Average Day, Maximum Day, Peak Hour, and
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April 18, 2017
Dexter Wilson Engr., Inc.
Job No. 750-003

371	.00	1805.32	1615.00	82.47
372	19.40	1805.58	1673.00	57.45
374	.00	1805.58	1654.00	65.69
376	.00	1805.58	1608.00	85.62
377	.00	1805.32	1619.00	80.74
378	.00	1805.58	1625.00	78.25
380	3.30	1805.58	1713.00	40.12
382	.00	1805.58	1677.00	55.72
384	4.30	1805.58	1686.00	51.82
392	.00	1805.59	1673.00	57.45
394	.00	1805.58	1664.00	61.35
395	.00	1805.59	1585.00	95.59
396	.00	1805.58	1631.00	75.65
397	.00	1805.58	1545.00	112.92
398	.00	1805.59	1580.00	97.76
399	.00	1805.58	1511.00	127.65

MAXIMUM PRESSURES

301	.00	1802.55	820.00	425.77
300	.00	1802.55	885.00	397.60
304	.00	1802.71	1081.00	312.74

MINIMUM PRESSURES

380	3.30	1805.58	1713.00	40.12
368	23.70	1805.58	1710.00	41.42
356	.00	1805.77	1695.00	48.00

THE NET SYSTEM DEMAND = 568.50

SUMMARY OF INFLOWS (+) AND OUTFLOWS (-) FROM FIXED GRADE NODES

PIPE NUMBER	FLOWRATE
367	284.25
368	284.25

THE NET FLOW INTO THE SYSTEM FROM FIXED GRADE NODES = 568.50
 THE NET FLOW OUT OF THE SYSTEM INTO FIXED GRADE NODES = .00

A SUMMARY OF CONDITIONS SPECIFIED FOR THE NEXT SIMULATION FOLLOWS

THE DEMANDS ARE CHANGED FROM ORIGINAL VALUES BY A FACTOR = 2.70

THE FOLLOWING CHANGES IN PIPE DATA ARE SPECIFIED

FOR PIPE NUMBER 367 THE VALUE OF THE FIXED GRADE IS CHANGED TO 1813.5

FOR PIPE NUMBER 368 THE VALUE OF THE FIXED GRADE IS CHANGED TO 1813.5

THE RESULTS ARE OBTAINED AFTER 3 TRIALS WITH AN ACCURACY = .00014

**Safari Highlands Ranch Project
 Ultimate Water System Analysis (750PW4)
 Average Day, Maximum Day, Peak Hour, and
 Fire Flow Demand Scenarios**

**April 18, 2017
 Dexter Wilson Engr., Inc.
 Job No. 750-003**

**Safari Highlands Ranch
 Peak Hour Demands
 Reservoir 3/4 Full**

PIPE NO.	NODE NOS.	FLOWRATE	HEAD LOSS	PUMP HEAD	MINOR LOSS	VELOCITY	HL/1000
101	100 102	256.33	.22	.00	.00	.73	.20
103	102 104	.00	.00	.00	.00	.00	.00
105	102 106	256.33	.18	.00	.00	.73	.20
107	106 110	125.38	.12	.00	.00	.80	.39
108	110 111	.00	.00	.00	.00	.00	.00
109	110 112	125.38	.36	.00	.00	.80	.39
111	112 116	20.89	.01	.00	.00	.13	.01
113	116 124	-69.29	-.17	.00	.00	-.44	-.13
115	124 126	26.19	.00	.00	.00	.07	.00
117	124 132	-150.56	-.08	.00	.00	-.43	-.08
121	132 130	-287.18	-.15	.00	.00	-.81	-.25
123	126 127	.00	.00	.00	.00	.00	.00
125	140 144	-391.67	-.42	.00	.00	-1.11	-.45
127	126 114	26.19	.00	.00	.00	.07	.00
128	106 107	32.13	.00	.00	.00	.09	.00
129	107 108	32.13	.01	.00	.00	.21	.03
131	130 140	-287.18	-.08	.00	.00	-.81	-.25
133	116 118	29.16	.00	.00	.00	.08	.00
135	118 120	29.16	.01	.00	.00	.19	.03
137	114 128	26.19	.01	.00	.00	.17	.02
139	140 141	.00	.00	.00	.00	.00	.00
140	132 134	17.55	.00	.00	.00	.05	.00
141	134 136	17.55	.00	.00	.00	.11	.01
143	130 138	.00	.00	.00	.00	.00	.00
145	141 142	.00	.00	.00	.00	.00	.00
147	140 146	14.58	.00	.00	.00	.04	.00
149	112 147	.00	.00	.00	.00	.00	.00
151	147 148	.00	.00	.00	.00	.00	.00
155	146 152	14.58	.00	.00	.00	.09	.01
201	200 202	142.19	.13	.00	.00	.91	.49
203	202 204	142.19	.35	.00	.00	.91	.49
205	204 208	46.07	.07	.00	.00	.29	.06
207	202 210	.00	.00	.00	.00	.00	.00
209	208 212	8.27	.00	.00	.00	.05	.00
211	202 211	.00	.00	.00	.00	.00	.00
213	212 216	-110.80	-.55	.00	.00	-.71	-.31
215	204 218	.00	.00	.00	.00	.00	.00
217	211 214	.00	.00	.00	.00	.00	.00
219	218 222	.00	.00	.00	.00	.00	.00
221	208 220	.00	.00	.00	.00	.00	.00
223	212 226	29.16	.00	.00	.00	.08	.00
225	226 224	29.16	.01	.00	.00	.19	.03
301	0 100	256.33	.03	.00	.00	.73	.24
303	0 144	391.67	.02	.00	.00	1.11	.52
305	0 200	142.19	.00	.00	.00	.40	.08
307	0 216	110.80	.00	.00	.00	.31	.05
309	301 300	.00	.00	.00	.00	.00	.00

**Safari Highlands Ranch Project
 Ultimate Water System Analysis (750PW4)
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 Dexter Wilson Engr., Inc.
 Job No. 750-003**

311	300	304	-256.33	-1.02	.00	.00	-.73	-.24
315	304	308	-648.00	-2.52	.00	.00	-1.84	-1.32
319	308	312	-790.19	-1.92	.00	.00	-2.24	-1.90
323	312	346	-900.99	-11.08	.00	.00	-2.56	-2.09
327	316	320	-909.77	-2.00	.00	.00	-2.58	-2.13
329	326	328	150.44	.03	.00	.00	.43	.08
331	320	324	148.37	.13	.00	.00	.42	.07
332	320	324	148.37	.13	.00	.00	.42	.07
333	328	330	69.66	.00	.00	.00	.20	.02
335	324	326	150.44	.03	.00	.00	.43	.08
339	330	336	69.66	.03	.00	.00	.20	.02
341	330	397	.00	.00	.00	.00	.00	.00
342	397	399	.00	.00	.00	.00	.00	.00
343	336	338	14.58	.00	.00	.00	.04	.00
344	338	340	14.58	.00	.00	.00	.09	.01
345	326	395	.00	.00	.00	.00	.00	.00
346	395	398	.00	.00	.00	.00	.00	.00
347	332	355	.00	.00	.00	.00	.00	.00
349	316	344	219.03	.64	.00	.00	1.40	1.10
351	352	344	-127.81	-.02	.00	.00	-.36	-.06
353	348	346	50.55	.05	.00	.00	.32	.07
354	346	316	-850.44	-.77	.00	.00	-2.41	-1.88
355	344	348	91.22	.09	.00	.00	.58	.22
356	352	354	17.55	.00	.00	.00	.05	.00
357	354	351	17.55	.00	.00	.00	.05	.00
358	351	350	17.55	.00	.00	.00	.11	.01
359	348	352	-40.60	-.07	.00	.00	-.26	-.05
361	354	358	.00	.00	.00	.00	.00	.00
363	356	320	614.86	.99	.00	.00	1.74	1.03
364	356	320	614.86	.99	.00	.00	1.74	1.03
365	369	371	.00	.00	.00	.00	.00	.00
366	371	377	.00	.00	.00	.00	.00	.00
367	0	356	767.47	1.43	.00	.00	2.18	1.55
368	0	356	767.47	1.43	.00	.00	2.18	1.55
371	360	356	-305.23	-1.08	.00	.00	-1.95	-2.03
373	360	361	.00	.00	.00	.00	.00	.00
374	361	363	.00	.00	.00	.00	.00	.00
375	362	360	-255.82	-1.27	.00	.00	-1.63	-1.46
377	374	394	.00	.00	.00	.00	.00	.00
379	369	362	-159.70	-.48	.00	.00	-1.02	-.61
381	316	369	-159.70	-.16	.00	.00	-1.02	-.61
382	374	378	-42.98	.00	.00	.00	-.12	-.01
383	324	332	93.91	.05	.00	.00	.27	.03
384	378	370	.00	.00	.00	.00	.00	.00
385	332	368	93.91	.02	.00	.00	.27	.03
386	370	396	.00	.00	.00	.00	.00	.00
387	368	372	21.01	.00	.00	.00	.06	.00
389	355	392	.00	.00	.00	.00	.00	.00
391	378	328	-42.98	-.01	.00	.00	-.12	-.01
392	372	382	11.61	.00	.00	.00	.03	.00
393	382	384	11.61	.00	.00	.00	.07	.00
394	372	374	-42.98	.00	.00	.00	-.12	-.01
395	336	342	.00	.00	.00	.00	.00	.00
396	342	376	.00	.00	.00	.00	.00	.00

**Safari Highlands Ranch Project
 Ultimate Water System Analysis (750PW4)
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**April 18, 2017
 Dexter Wilson Engr., Inc.
 Job No. 750-003**

397	368	380	8.91	.00	.00	.00	.06	.00
398	362	364	32.13	.00	.00	.00	.09	.00
399	364	365	32.13	.01	.00	.00	.21	.03

JUNCTION NUMBER	DEMAND	GRADE LINE	ELEVATION	PRESSURE
100	.00	1291.97	885.00	176.35
102	.00	1291.74	886.00	175.82
104	.00	1291.74	880.00	178.42
106	98.82	1291.57	944.00	150.61
107	.00	1291.57	982.00	134.15
108	32.13	1291.56	983.00	133.71
110	.00	1291.44	949.00	148.39
111	.00	1291.44	950.00	147.96
112	104.49	1291.09	965.00	141.31
114	.00	1291.25	1048.00	105.41
116	61.02	1291.08	1017.00	118.77
118	.00	1291.08	1035.00	110.97
120	29.16	1291.07	1042.00	107.93
124	55.08	1291.25	1047.00	105.84
126	.00	1291.25	1048.00	105.41
127	.00	1291.25	1049.00	104.97
128	26.19	1291.24	1053.00	103.24
130	.00	1291.48	1125.00	72.14
132	119.07	1291.33	1121.00	73.81
134	.00	1291.33	1124.00	72.51
136	17.55	1291.33	1128.00	70.78
138	.00	1291.48	1129.00	70.41
140	89.91	1291.56	1124.00	72.61
141	.00	1291.56	1126.00	71.74
142	.00	1291.56	1130.00	70.01
144	.00	1291.98	1081.00	91.43
146	.00	1291.56	1138.00	66.54
147	.00	1291.09	970.00	139.14
148	.00	1291.09	973.00	137.84
152	14.58	1291.56	1148.00	62.21
200	.00	1500.00	1205.00	127.83
202	.00	1499.86	1207.00	126.91
204	96.12	1499.52	1254.00	106.39
208	37.80	1499.45	1297.00	87.73
210	.00	1499.86	1210.00	125.61
211	.00	1499.86	1196.00	131.67
212	89.91	1499.45	1312.00	81.23
214	.00	1499.86	1185.00	136.44
216	.00	1500.00	1290.00	91.00
218	.00	1499.52	1254.00	106.39
220	.00	1499.45	1302.00	85.56
222	.00	1499.52	1259.00	104.23
224	29.16	1499.44	1333.00	72.12
226	.00	1499.45	1326.00	75.16
300	.00	1791.78	885.00	392.94
301	.00	1791.78	820.00	421.10
304	.00	1792.79	1081.00	308.44
308	.00	1795.31	1207.00	254.93

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**April 18, 2017
 Dexter Wilson Engr., Inc.
 Job No. 750-003**

312	.00	1797.23	1290.00	219.80
316	.00	1809.08	1604.00	88.87
320	23.22	1811.08	1590.00	95.80
324	52.38	1810.95	1600.00	91.41
326	.00	1810.92	1588.00	96.60
328	37.80	1810.88	1568.00	105.25
330	.00	1810.88	1545.00	115.21
332	.00	1810.90	1668.00	61.92
336	55.08	1810.85	1606.00	88.77
338	.00	1810.85	1626.00	80.10
340	14.58	1810.85	1629.00	78.80
342	.00	1810.85	1605.00	89.20
344	.00	1808.44	1590.00	94.66
346	.00	1808.31	1588.00	95.47
348	81.27	1808.36	1585.00	96.79
350	17.55	1808.42	1608.00	86.85
351	.00	1808.42	1604.00	88.58
352	69.66	1808.42	1592.00	93.78
354	.00	1808.42	1601.00	89.88
355	.00	1810.90	1670.00	61.06
356	.00	1812.07	1695.00	50.73
358	.00	1808.42	1602.00	89.45
360	49.41	1811.00	1657.00	66.73
361	.00	1811.00	1666.00	62.83
362	63.99	1809.72	1663.00	63.58
363	.00	1811.00	1678.00	57.63
364	.00	1809.72	1674.00	58.81
365	32.13	1809.71	1686.00	53.61
368	63.99	1810.87	1710.00	43.71
369	.00	1809.24	1613.00	85.04
370	.00	1810.87	1629.00	78.81
371	.00	1809.24	1615.00	84.17
372	52.38	1810.87	1673.00	59.74
374	.00	1810.87	1654.00	67.98
376	.00	1810.85	1608.00	87.90
377	.00	1809.24	1619.00	82.44
378	.00	1810.87	1625.00	80.54
380	8.91	1810.87	1713.00	42.41
382	.00	1810.87	1677.00	58.01
384	11.61	1810.87	1686.00	54.11
392	.00	1810.90	1673.00	59.76
394	.00	1810.87	1664.00	63.64
395	.00	1810.92	1585.00	97.90
396	.00	1810.87	1631.00	77.94
397	.00	1810.88	1545.00	115.21
398	.00	1810.92	1580.00	100.06
399	.00	1810.88	1511.00	129.95

MAXIMUM PRESSURES

301	.00	1791.78	820.00	421.10
300	.00	1791.78	885.00	392.94
304	.00	1792.79	1081.00	308.44

MINIMUM PRESSURES

**Safari Highlands Ranch Project
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 Job No. 750-003**

380	8.91	1810.87	1713.00	42.41
368	63.99	1810.87	1710.00	43.71
356	.00	1812.07	1695.00	50.73

THE NET SYSTEM DEMAND = 1534.95

SUMMARY OF INFLOWS(+) AND OUTFLOWS(-) FROM FIXED GRADE NODES

PIPE NUMBER	FLOWRATE
367	767.47
368	767.47

THE NET FLOW INTO THE SYSTEM FROM FIXED GRADE NODES = 1534.95
 THE NET FLOW OUT OF THE SYSTEM INTO FIXED GRADE NODES = .00

A SUMMARY OF CONDITIONS SPECIFIED FOR THE NEXT SIMULATION FOLLOWS

THE FOLLOWING SPECIFIC DEMAND CHANGES ARE MADE :

JUNCTION NUMBER	DEMAND
114	1250.00
128	1250.00

THE RESULTS ARE OBTAINED AFTER 3 TRIALS WITH AN ACCURACY = .00035

**MAX DAY DEMAND PLUS 2500 GPM FIRE FLOW
 BETWEEN NODES 114 AND 128**

PIPE NO.	NODE NOS.	FLOWRATE	HEAD LOSS	PUMP HEAD	MINOR LOSS	VELOCITY	HL/1000
101	100 102	692.05	1.41	.00	.00	1.96	1.28
103	102 104	.00	.00	.00	.00	.00	.00
105	102 106	692.05	1.10	.00	.00	1.96	1.28
107	106 110	643.55	2.58	.00	.00	4.11	8.08
108	110 111	.00	.00	.00	.00	.00	.00
109	110 112	643.55	7.35	.00	.00	4.11	8.08
111	112 116	604.85	6.05	.00	.00	3.86	7.20
113	116 124	571.45	8.49	.00	.00	3.65	6.48
115	124 126	2500.00	3.32	.00	.00	7.09	13.84
117	124 132	-1948.95	-9.42	.00	.00	-5.53	-8.73
121	132 130	-1999.55	-5.49	.00	.00	-5.67	-9.15
123	126 127	.00	.00	.00	.00	.00	.00
125	140 144	-2038.25	-8.91	.00	.00	-5.78	-9.48
127	126 114	2500.00	3.18	.00	.00	7.09	13.84
128	106 107	11.90	.00	.00	.00	.03	.00
129	107 108	11.90	.00	.00	.00	.08	.00
131	130 140	-1999.55	-3.02	.00	.00	-5.67	-9.15
133	116 118	10.80	.00	.00	.00	.03	.00
135	118 120	10.80	.00	.00	.00	.07	.00

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137	114	128	1250.00	6.90	.00	.00	7.98	27.62
139	140	141	.00	.00	.00	.00	.00	.00
140	132	134	6.50	.00	.00	.00	.02	.00
141	134	136	6.50	.00	.00	.00	.04	.00
143	130	138	.00	.00	.00	.00	.00	.00
145	141	142	.00	.00	.00	.00	.00	.00
147	140	146	5.40	.00	.00	.00	.02	.00
149	112	147	.00	.00	.00	.00	.00	.00
151	147	148	.00	.00	.00	.00	.00	.00
155	146	152	5.40	.00	.00	.00	.03	.00
201	200	202	52.66	.02	.00	.00	.34	.08
203	202	204	52.66	.05	.00	.00	.34	.08
205	204	208	17.06	.01	.00	.00	.11	.01
207	202	210	.00	.00	.00	.00	.00	.00
209	208	212	3.06	.00	.00	.00	.02	.00
211	202	211	.00	.00	.00	.00	.00	.00
213	212	216	-41.04	-.09	.00	.00	-.26	-.05
215	204	218	.00	.00	.00	.00	.00	.00
217	211	214	.00	.00	.00	.00	.00	.00
219	218	222	.00	.00	.00	.00	.00	.00
221	208	220	.00	.00	.00	.00	.00	.00
223	212	226	10.80	.00	.00	.00	.03	.00
225	226	224	10.80	.00	.00	.00	.07	.00
301	0	100	692.05	.19	.00	.00	1.96	1.49
303	0	144	2038.25	.33	.00	.00	5.78	11.00
305	0	200	52.66	.00	.00	.00	.15	.01
307	0	216	41.04	.00	.00	.00	.12	.01
309	301	300	.00	.00	.00	.00	.00	.00
311	300	304	-692.05	-6.41	.00	.00	-1.96	-1.49
315	304	308	-2730.30	-36.09	.00	.00	-7.74	-18.90
319	308	312	-2782.96	-19.77	.00	.00	-7.89	-19.58
323	312	346	-2824.00	-91.92	.00	.00	-8.01	-17.34
327	316	320	-2352.44	-11.62	.00	.00	-6.67	-12.36
329	326	328	55.72	.01	.00	.00	.16	.01
331	320	324	54.95	.02	.00	.00	.16	.01
332	320	324	54.95	.02	.00	.00	.16	.01
333	328	330	25.80	.00	.00	.00	.07	.00
335	324	326	55.72	.01	.00	.00	.16	.01
339	330	336	25.80	.00	.00	.00	.07	.00
341	330	397	.00	.00	.00	.00	.00	.00
342	397	399	.00	.00	.00	.00	.00	.00
343	336	338	5.40	.00	.00	.00	.02	.00
344	338	340	5.40	.00	.00	.00	.03	.00
345	326	395	.00	.00	.00	.00	.00	.00
346	395	398	.00	.00	.00	.00	.00	.00
347	332	355	.00	.00	.00	.00	.00	.00
349	316	344	462.75	2.54	.00	.00	2.95	4.38
351	352	344	-177.11	-.04	.00	.00	-.50	-.10
353	348	346	400.35	2.08	.00	.00	2.56	3.35
354	346	316	-2423.65	-5.36	.00	.00	-6.87	-13.07
355	344	348	285.64	.74	.00	.00	1.82	1.79
356	352	354	6.50	.00	.00	.00	.02	.00
357	354	351	6.50	.00	.00	.00	.02	.00
358	351	350	6.50	.00	.00	.00	.04	.00

**Safari Highlands Ranch Project
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 Dexter Wilson Engr., Inc.
 Job No. 750-003**

359	348	352	-144.81	-.69	.00	.00	-.92	-.51
361	354	358	.00	.00	.00	.00	.00	.00
363	356	320	1235.47	3.60	.00	.00	3.50	3.75
364	356	320	1235.47	3.60	.00	.00	3.50	3.75
365	369	371	.00	.00	.00	.00	.00	.00
366	371	377	.00	.00	.00	.00	.00	.00
367	0	356	1529.40	5.12	.00	.00	4.34	5.57
368	0	356	1529.40	5.12	.00	.00	4.34	5.57
371	360	356	-587.86	-3.62	.00	.00	-3.75	-6.83
373	360	361	.00	.00	.00	.00	.00	.00
374	361	363	.00	.00	.00	.00	.00	.00
375	362	360	-569.56	-5.60	.00	.00	-3.64	-6.44
377	374	394	.00	.00	.00	.00	.00	.00
379	369	362	-533.96	-4.52	.00	.00	-3.41	-5.72
381	316	369	-533.96	-1.49	.00	.00	-3.41	-5.72
382	374	378	-15.92	.00	.00	.00	-.05	.00
383	324	332	34.78	.01	.00	.00	.10	.01
384	378	370	.00	.00	.00	.00	.00	.00
385	332	368	34.78	.00	.00	.00	.10	.01
386	370	396	.00	.00	.00	.00	.00	.00
387	368	372	7.78	.00	.00	.00	.02	.00
389	355	392	.00	.00	.00	.00	.00	.00
391	378	328	-15.92	.00	.00	.00	-.05	.00
392	372	382	4.30	.00	.00	.00	.01	.00
393	382	384	4.30	.00	.00	.00	.03	.00
394	372	374	-15.92	.00	.00	.00	-.05	.00
395	336	342	.00	.00	.00	.00	.00	.00
396	342	376	.00	.00	.00	.00	.00	.00
397	368	380	3.30	.00	.00	.00	.02	.00
398	362	364	11.90	.00	.00	.00	.03	.00
399	364	365	11.90	.00	.00	.00	.08	.00

JUNCTION NUMBER	DEMAND	GRADE LINE	ELEVATION	PRESSURE
100	.00	1291.81	885.00	176.28
102	.00	1290.40	886.00	175.24
104	.00	1290.40	880.00	177.84
106	36.60	1289.29	944.00	149.63
107	.00	1289.29	982.00	133.16
108	11.90	1289.29	983.00	132.73
110	.00	1286.71	949.00	146.34
111	.00	1286.71	950.00	145.91
112	38.70	1279.36	965.00	136.22
114	1250.00	1258.32	1048.00	91.14
116	22.60	1273.31	1017.00	111.07
118	.00	1273.31	1035.00	103.27
120	10.80	1273.31	1042.00	100.23
124	20.40	1264.82	1047.00	94.39
126	.00	1261.50	1048.00	92.52
127	.00	1261.50	1049.00	92.08
128	1250.00	1251.41	1053.00	85.98
130	.00	1279.74	1125.00	67.05
132	44.10	1274.25	1121.00	66.41
134	.00	1274.25	1124.00	65.11

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 Job No. 750-003**

136	6.50	1274.25	1128.00	63.37
138	.00	1279.74	1129.00	65.32
140	33.30	1282.76	1124.00	68.79
141	.00	1282.76	1126.00	67.93
142	.00	1282.76	1130.00	66.19
144	.00	1291.67	1081.00	91.29
146	.00	1282.76	1138.00	62.73
147	.00	1279.36	970.00	134.06
148	.00	1279.36	973.00	132.76
152	5.40	1282.76	1148.00	58.39
200	.00	1500.00	1205.00	127.83
202	.00	1499.98	1207.00	126.96
204	35.60	1499.92	1254.00	106.57
208	14.00	1499.91	1297.00	87.93
210	.00	1499.98	1210.00	125.66
211	.00	1499.98	1196.00	131.72
212	33.30	1499.91	1312.00	81.43
214	.00	1499.98	1185.00	136.49
216	.00	1500.00	1290.00	91.00
218	.00	1499.92	1254.00	106.57
220	.00	1499.91	1302.00	85.76
222	.00	1499.92	1259.00	104.40
224	10.80	1499.91	1333.00	72.33
226	.00	1499.91	1326.00	75.36
300	.00	1626.10	885.00	321.14
301	.00	1626.10	820.00	349.31
304	.00	1632.51	1081.00	238.99
308	.00	1668.60	1207.00	200.03
312	.00	1688.37	1290.00	172.63
316	.00	1785.65	1604.00	78.72
320	8.60	1797.27	1590.00	89.82
324	19.40	1797.25	1600.00	85.48
326	.00	1797.25	1588.00	90.67
328	14.00	1797.24	1568.00	99.34
330	.00	1797.24	1545.00	109.30
332	.00	1797.24	1668.00	56.01
336	20.40	1797.24	1606.00	82.87
338	.00	1797.24	1626.00	74.20
340	5.40	1797.24	1629.00	72.90
342	.00	1797.24	1605.00	83.30
344	.00	1783.11	1590.00	83.68
346	.00	1780.29	1588.00	83.33
348	30.10	1782.37	1585.00	85.53
350	6.50	1783.07	1608.00	75.86
351	.00	1783.07	1604.00	77.60
352	25.80	1783.07	1592.00	82.80
354	.00	1783.07	1601.00	78.90
355	.00	1797.24	1670.00	55.14
356	.00	1800.88	1695.00	45.88
358	.00	1783.07	1602.00	78.46
360	18.30	1797.26	1657.00	60.78
361	.00	1797.26	1666.00	56.88
362	23.70	1791.65	1663.00	55.75
363	.00	1797.26	1678.00	51.68

**Safari Highlands Ranch Project
 Ultimate Water System Analysis (750PW4)
 Average Day, Maximum Day, Peak Hour, and
 Fire Flow Demand Scenarios**

**April 18, 2017
 Dexter Wilson Engr., Inc.
 Job No. 750-003**

364	.00	1791.65	1674.00	50.98
365	11.90	1791.65	1686.00	45.78
368	23.70	1797.24	1710.00	37.80
369	.00	1787.14	1613.00	75.46
370	.00	1797.24	1629.00	72.90
371	.00	1787.14	1615.00	74.59
372	19.40	1797.24	1673.00	53.84
374	.00	1797.24	1654.00	62.07
376	.00	1797.24	1608.00	82.00
377	.00	1787.14	1619.00	72.86
378	.00	1797.24	1625.00	74.64
380	3.30	1797.24	1713.00	36.50
382	.00	1797.24	1677.00	52.10
384	4.30	1797.24	1686.00	48.20
392	.00	1797.24	1673.00	53.84
394	.00	1797.24	1664.00	57.74
395	.00	1797.25	1585.00	91.97
396	.00	1797.24	1631.00	72.04
397	.00	1797.24	1545.00	109.30
398	.00	1797.25	1580.00	94.14
399	.00	1797.24	1511.00	124.04

MAXIMUM PRESSURES

301	.00	1626.10	820.00	349.31
300	.00	1626.10	885.00	321.14
304	.00	1632.51	1081.00	238.99

MINIMUM PRESSURES

380	3.30	1797.24	1713.00	36.50
368	23.70	1797.24	1710.00	37.80
365	11.90	1791.65	1686.00	45.78

THE NET SYSTEM DEMAND = 3058.80

SUMMARY OF INFLOWS(+) AND OUTFLOWS(-) FROM FIXED GRADE NODES

PIPE NUMBER	FLOWRATE
367	1529.40
368	1529.40

THE NET FLOW INTO THE SYSTEM FROM FIXED GRADE NODES = 3058.80

THE NET FLOW OUT OF THE SYSTEM INTO FIXED GRADE NODES = .00

A SUMMARY OF CONDITIONS SPECIFIED FOR THE NEXT SIMULATION FOLLOWS

THE FOLLOWING SPECIFIC DEMAND CHANGES ARE MADE :

JUNCTION NUMBER	DEMAND
107	1250.00
108	1250.00

**Safari Highlands Ranch Project
 Ultimate Water System Analysis (750PW4)
 Average Day, Maximum Day, Peak Hour, and
 Fire Flow Demand Scenarios**

**April 18, 2017
 Dexter Wilson Engr., Inc.
 Job No. 750-003**

THE RESULTS ARE OBTAINED AFTER 4 TRIALS WITH AN ACCURACY = .00441

**MAX DAY DEMAND PLUS 2500 GPM FIRE FLOW
 BETWEEN NODES 107 AND 108**

PIPE NO.	NODE NOS.	FLOWRATE	HEAD LOSS	PUMP HEAD	MINOR LOSS	VELOCITY	HL/1000
101	100 102	2068.80	10.72	.00	.00	5.87	9.75
103	102 104	.00	.00	.00	.00	.00	.00
105	102 106	2068.80	8.38	.00	.00	5.87	9.75
107	106 110	-467.80	-1.43	.00	.00	-2.99	-4.47
108	110 111	.00	.00	.00	.00	.00	.00
109	110 112	-467.80	-4.07	.00	.00	-2.99	-4.47
111	112 116	-506.50	-4.35	.00	.00	-3.23	-5.18
113	116 124	-539.90	-7.64	.00	.00	-3.45	-5.83
115	124 126	9.70	.00	.00	.00	.03	.00
117	124 132	-570.00	-.97	.00	.00	-1.62	-.90
121	132 130	-620.60	-.63	.00	.00	-1.76	-1.05
123	126 127	.00	.00	.00	.00	.00	.00
125	140 144	-659.30	-1.10	.00	.00	-1.87	-1.17
127	126 114	9.70	.00	.00	.00	.03	.00
128	106 107	2500.00	9.41	.00	.00	7.09	13.84
129	107 108	1250.00	6.90	.00	.00	7.98	27.62
131	130 140	-620.60	-.35	.00	.00	-1.76	-1.05
133	116 118	10.80	.00	.00	.00	.03	.00
135	118 120	10.80	.00	.00	.00	.07	.00
137	114 128	9.70	.00	.00	.00	.06	.00
139	140 141	.00	.00	.00	.00	.00	.00
140	132 134	6.50	.00	.00	.00	.02	.00
141	134 136	6.50	.00	.00	.00	.04	.00
143	130 138	.00	.00	.00	.00	.00	.00
145	141 142	.00	.00	.00	.00	.00	.00
147	140 146	5.40	.00	.00	.00	.02	.00
149	112 147	.00	.00	.00	.00	.00	.00
151	147 148	.00	.00	.00	.00	.00	.00
155	146 152	5.40	.00	.00	.00	.03	.00
201	200 202	52.66	.02	.00	.00	.34	.08
203	202 204	52.66	.05	.00	.00	.34	.08
205	204 208	17.06	.01	.00	.00	.11	.01
207	202 210	.00	.00	.00	.00	.00	.00
209	208 212	3.06	.00	.00	.00	.02	.00
211	202 211	.00	.00	.00	.00	.00	.00
213	212 216	-41.04	-.09	.00	.00	-.26	-.05
215	204 218	.00	.00	.00	.00	.00	.00
217	211 214	.00	.00	.00	.00	.00	.00
219	218 222	.00	.00	.00	.00	.00	.00
221	208 220	.00	.00	.00	.00	.00	.00
223	212 226	10.80	.00	.00	.00	.03	.00
225	226 224	10.80	.00	.00	.00	.07	.00
301	0 100	2068.80	1.47	.00	.00	5.87	11.30
303	0 144	659.30	.04	.00	.00	1.87	1.36
305	0 200	52.66	.00	.00	.00	.15	.01

**Safari Highlands Ranch Project
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**April 18, 2017
 Dexter Wilson Engr., Inc.
 Job No. 750-003**

307	0	216	41.04	.00	.00	.00	.12	.01
309	301	300	.00	.00	.00	.00	.00	.00
311	300	304	-2068.80	-48.72	.00	.00	-5.87	-11.30
315	304	308	-2728.10	-36.04	.00	.00	-7.74	-18.87
319	308	312	-2780.76	-19.74	.00	.00	-7.89	-19.55
323	312	346	-2821.80	-91.79	.00	.00	-8.00	-17.32
327	316	320	-2350.66	-11.61	.00	.00	-6.67	-12.35
329	326	328	55.72	.01	.00	.00	.16	.01
331	320	324	54.95	.02	.00	.00	.16	.01
332	320	324	54.95	.02	.00	.00	.16	.01
333	328	330	25.80	.00	.00	.00	.07	.00
335	324	326	55.72	.01	.00	.00	.16	.01
339	330	336	25.80	.00	.00	.00	.07	.00
341	330	397	.00	.00	.00	.00	.00	.00
342	397	399	.00	.00	.00	.00	.00	.00
343	336	338	5.40	.00	.00	.00	.02	.00
344	338	340	5.40	.00	.00	.00	.03	.00
345	326	395	.00	.00	.00	.00	.00	.00
346	395	398	.00	.00	.00	.00	.00	.00
347	332	355	.00	.00	.00	.00	.00	.00
349	316	344	462.42	2.54	.00	.00	2.95	4.38
351	352	344	-177.00	-.04	.00	.00	-.50	-.10
353	348	346	400.02	2.08	.00	.00	2.55	3.35
354	346	316	-2421.78	-5.35	.00	.00	-6.87	-13.05
355	344	348	285.42	.73	.00	.00	1.82	1.79
356	352	354	6.50	.00	.00	.00	.02	.00
357	354	351	6.50	.00	.00	.00	.02	.00
358	351	350	6.50	.00	.00	.00	.04	.00
359	348	352	-144.70	-.69	.00	.00	-.92	-.51
361	354	358	.00	.00	.00	.00	.00	.00
363	356	320	1234.58	3.60	.00	.00	3.50	3.75
364	356	320	1234.58	3.60	.00	.00	3.50	3.75
365	369	371	.00	.00	.00	.00	.00	.00
366	371	377	.00	.00	.00	.00	.00	.00
367	0	356	1528.30	5.12	.00	.00	4.34	5.56
368	0	356	1528.30	5.12	.00	.00	4.34	5.56
371	360	356	-587.44	-3.61	.00	.00	-3.75	-6.82
373	360	361	.00	.00	.00	.00	.00	.00
374	361	363	.00	.00	.00	.00	.00	.00
375	362	360	-569.14	-5.60	.00	.00	-3.63	-6.43
377	374	394	.00	.00	.00	.00	.00	.00
379	369	362	-533.54	-4.51	.00	.00	-3.41	-5.71
381	316	369	-533.54	-1.48	.00	.00	-3.41	-5.71
382	374	378	-15.92	.00	.00	.00	-.05	.00
383	324	332	34.78	.01	.00	.00	.10	.01
384	378	370	.00	.00	.00	.00	.00	.00
385	332	368	34.78	.00	.00	.00	.10	.01
386	370	396	.00	.00	.00	.00	.00	.00
387	368	372	7.78	.00	.00	.00	.02	.00
389	355	392	.00	.00	.00	.00	.00	.00
391	378	328	-15.92	.00	.00	.00	-.05	.00
392	372	382	4.30	.00	.00	.00	.01	.00
393	382	384	4.30	.00	.00	.00	.03	.00
394	372	374	-15.92	.00	.00	.00	-.05	.00

**Safari Highlands Ranch Project
 Ultimate Water System Analysis (750PW4)
 Average Day, Maximum Day, Peak Hour, and
 Fire Flow Demand Scenarios**

**April 18, 2017
 Dexter Wilson Engr., Inc.
 Job No. 750-003**

395	336	342	.00	.00	.00	.00	.00	.00
396	342	376	.00	.00	.00	.00	.00	.00
397	368	380	3.30	.00	.00	.00	.02	.00
398	362	364	11.90	.00	.00	.00	.03	.00
399	364	365	11.90	.00	.00	.00	.08	.00

JUNCTION NUMBER	DEMAND	GRADE LINE	ELEVATION	PRESSURE
100	.00	1290.53	885.00	175.73
102	.00	1279.81	886.00	170.65
104	.00	1279.81	880.00	173.25
106	36.60	1271.43	944.00	141.89
107	1250.00	1262.02	982.00	121.34
108	1250.00	1255.11	983.00	117.92
110	.00	1272.86	949.00	140.34
111	.00	1272.86	950.00	139.91
112	38.70	1276.93	965.00	135.17
114	.00	1288.92	1048.00	104.40
116	22.60	1281.28	1017.00	114.52
118	.00	1281.28	1035.00	106.72
120	10.80	1281.28	1042.00	103.69
124	20.40	1288.92	1047.00	104.83
126	.00	1288.92	1048.00	104.40
127	.00	1288.92	1049.00	103.96
128	9.70	1288.91	1053.00	102.23
130	.00	1290.51	1125.00	71.72
132	44.10	1289.88	1121.00	73.18
134	.00	1289.88	1124.00	71.88
136	6.50	1289.88	1128.00	70.15
138	.00	1290.51	1129.00	69.99
140	33.30	1290.86	1124.00	72.30
141	.00	1290.86	1126.00	71.44
142	.00	1290.86	1130.00	69.70
144	.00	1291.96	1081.00	91.42
146	.00	1290.86	1138.00	66.24
147	.00	1276.93	970.00	133.00
148	.00	1276.93	973.00	131.70
152	5.40	1290.86	1148.00	61.90
200	.00	1500.00	1205.00	127.83
202	.00	1499.98	1207.00	126.96
204	35.60	1499.92	1254.00	106.57
208	14.00	1499.91	1297.00	87.93
210	.00	1499.98	1210.00	125.66
211	.00	1499.98	1196.00	131.72
212	33.30	1499.91	1312.00	81.43
214	.00	1499.98	1185.00	136.49
216	.00	1500.00	1290.00	91.00
218	.00	1499.92	1254.00	106.57
220	.00	1499.91	1302.00	85.76
222	.00	1499.92	1259.00	104.40
224	10.80	1499.91	1333.00	72.33
226	.00	1499.91	1326.00	75.36
300	.00	1584.04	885.00	302.92
301	.00	1584.04	820.00	331.09

**Safari Highlands Ranch Project
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 Job No. 750-003**

304	.00	1632.76	1081.00	239.10
308	.00	1668.80	1207.00	200.11
312	.00	1688.54	1290.00	172.70
316	.00	1785.68	1604.00	78.73
320	8.60	1797.29	1590.00	89.82
324	19.40	1797.26	1600.00	85.48
326	.00	1797.26	1588.00	90.68
328	14.00	1797.25	1568.00	99.34
330	.00	1797.25	1545.00	109.31
332	.00	1797.26	1668.00	56.01
336	20.40	1797.25	1606.00	82.87
338	.00	1797.25	1626.00	74.21
340	5.40	1797.25	1629.00	72.91
342	.00	1797.25	1605.00	83.31
344	.00	1783.14	1590.00	83.69
346	.00	1780.33	1588.00	83.34
348	30.10	1782.41	1585.00	85.54
350	6.50	1783.10	1608.00	75.88
351	.00	1783.10	1604.00	77.61
352	25.80	1783.10	1592.00	82.81
354	.00	1783.10	1601.00	78.91
355	.00	1797.26	1670.00	55.14
356	.00	1800.88	1695.00	45.88
358	.00	1783.10	1602.00	78.48
360	18.30	1797.27	1657.00	60.78
361	.00	1797.27	1666.00	56.88
362	23.70	1791.67	1663.00	55.76
363	.00	1797.27	1678.00	51.68
364	.00	1791.67	1674.00	50.99
365	11.90	1791.67	1686.00	45.79
368	23.70	1797.25	1710.00	37.81
369	.00	1787.16	1613.00	75.47
370	.00	1797.25	1629.00	72.91
371	.00	1787.16	1615.00	74.60
372	19.40	1797.25	1673.00	53.84
374	.00	1797.25	1654.00	62.08
376	.00	1797.25	1608.00	82.01
377	.00	1787.16	1619.00	72.87
378	.00	1797.25	1625.00	74.64
380	3.30	1797.25	1713.00	36.51
382	.00	1797.25	1677.00	52.11
384	4.30	1797.25	1686.00	48.21
392	.00	1797.26	1673.00	53.84
394	.00	1797.25	1664.00	57.74
395	.00	1797.26	1585.00	91.98
396	.00	1797.25	1631.00	72.04
397	.00	1797.25	1545.00	109.31
398	.00	1797.26	1580.00	94.15
399	.00	1797.25	1511.00	124.04
MAXIMUM PRESSURES				
301	.00	1584.04	820.00	331.09
300	.00	1584.04	885.00	302.92
304	.00	1632.76	1081.00	239.10

**Safari Highlands Ranch Project
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 Dexter Wilson Engr., Inc.
 Job No. 750-003**

	MINIMUM PRESSURES			
380	3.30	1797.25	1713.00	36.51
368	23.70	1797.25	1710.00	37.81
365	11.90	1791.67	1686.00	45.79

THE NET SYSTEM DEMAND = 3056.60

SUMMARY OF INFLOWS(+) AND OUTFLOWS(-) FROM FIXED GRADE NODES

PIPE NUMBER	FLOWRATE
367	1528.30
368	1528.30

THE NET FLOW INTO THE SYSTEM FROM FIXED GRADE NODES = 3056.60
 THE NET FLOW OUT OF THE SYSTEM INTO FIXED GRADE NODES = .00

A SUMMARY OF CONDITIONS SPECIFIED FOR THE NEXT SIMULATION FOLLOWS

THE FOLLOWING SPECIFIC DEMAND CHANGES ARE MADE :

JUNCTION NUMBER	DEMAND
118	1250.00
120	1250.00

THE RESULTS ARE OBTAINED AFTER 3 TRIALS WITH AN ACCURACY = .00066

**MAX DAY DEMAND PLUS 2500 GPM FIRE FLOW
 BETWEEN NODES 118 AND 120**

PIPE NO.	NODE NOS.	FLOWRATE	HEAD LOSS	PUMP HEAD	MINOR LOSS	VELOCITY	HL/1000
101	100 102	1232.96	4.11	.00	.00	3.50	3.74
103	102 104	.00	.00	.00	.00	.00	.00
105	102 106	1232.96	3.21	.00	.00	3.50	3.74
107	106 110	1184.46	8.00	.00	.00	7.56	24.99
108	110 111	.00	.00	.00	.00	.00	.00
109	110 112	1184.46	22.75	.00	.00	7.56	24.99
111	112 116	1145.76	19.74	.00	.00	7.31	23.50
113	116 124	-1376.84	-43.27	.00	.00	-8.79	-33.03
115	124 126	9.70	.00	.00	.00	.03	.00
117	124 132	-1406.94	-5.15	.00	.00	-3.99	-4.77
121	132 130	-1457.54	-3.06	.00	.00	-4.13	-5.10
123	126 127	.00	.00	.00	.00	.00	.00
125	140 144	-1496.24	-5.03	.00	.00	-4.24	-5.35
127	126 114	9.70	.00	.00	.00	.03	.00
128	106 107	11.90	.00	.00	.00	.03	.00
129	107 108	11.90	.00	.00	.00	.08	.00
131	130 140	-1457.54	-1.68	.00	.00	-4.13	-5.10

**Safari Highlands Ranch Project
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133	116	118	2500.00	8.17	.00	.00	7.09	13.84
135	118	120	1250.00	6.90	.00	.00	7.98	27.62
137	114	128	9.70	.00	.00	.00	.06	.00
139	140	141	.00	.00	.00	.00	.00	.00
140	132	134	6.50	.00	.00	.00	.02	.00
141	134	136	6.50	.00	.00	.00	.04	.00
143	130	138	.00	.00	.00	.00	.00	.00
145	141	142	.00	.00	.00	.00	.00	.00
147	140	146	5.40	.00	.00	.00	.02	.00
149	112	147	.00	.00	.00	.00	.00	.00
151	147	148	.00	.00	.00	.00	.00	.00
155	146	152	5.40	.00	.00	.00	.03	.00
201	200	202	52.66	.02	.00	.00	.34	.08
203	202	204	52.66	.05	.00	.00	.34	.08
205	204	208	17.06	.01	.00	.00	.11	.01
207	202	210	.00	.00	.00	.00	.00	.00
209	208	212	3.06	.00	.00	.00	.02	.00
211	202	211	.00	.00	.00	.00	.00	.00
213	212	216	-41.04	-.09	.00	.00	-.26	-.05
215	204	218	.00	.00	.00	.00	.00	.00
217	211	214	.00	.00	.00	.00	.00	.00
219	218	222	.00	.00	.00	.00	.00	.00
221	208	220	.00	.00	.00	.00	.00	.00
223	212	226	10.80	.00	.00	.00	.03	.00
225	226	224	10.80	.00	.00	.00	.07	.00
301	0	100	1232.96	.56	.00	.00	3.50	4.33
303	0	144	1496.24	.19	.00	.00	4.24	6.20
305	0	200	52.66	.00	.00	.00	.15	.01
307	0	216	41.04	.00	.00	.00	.12	.01
309	301	300	.00	.00	.00	.00	.00	.00
311	300	304	-1232.96	-18.68	.00	.00	-3.50	-4.33
315	304	308	-2729.20	-36.06	.00	.00	-7.74	-18.88
319	308	312	-2781.86	-19.76	.00	.00	-7.89	-19.56
323	312	346	-2822.90	-91.85	.00	.00	-8.01	-17.33
327	316	320	-2351.55	-11.61	.00	.00	-6.67	-12.36
329	326	328	55.72	.01	.00	.00	.16	.01
331	320	324	54.95	.02	.00	.00	.16	.01
332	320	324	54.95	.02	.00	.00	.16	.01
333	328	330	25.80	.00	.00	.00	.07	.00
335	324	326	55.72	.01	.00	.00	.16	.01
339	330	336	25.80	.00	.00	.00	.07	.00
341	330	397	.00	.00	.00	.00	.00	.00
342	397	399	.00	.00	.00	.00	.00	.00
343	336	338	5.40	.00	.00	.00	.02	.00
344	338	340	5.40	.00	.00	.00	.03	.00
345	326	395	.00	.00	.00	.00	.00	.00
346	395	398	.00	.00	.00	.00	.00	.00
347	332	355	.00	.00	.00	.00	.00	.00
349	316	344	462.58	2.54	.00	.00	2.95	4.38
351	352	344	-177.05	-.04	.00	.00	-.50	-.10
353	348	346	400.18	2.08	.00	.00	2.55	3.35
354	346	316	-2422.72	-5.35	.00	.00	-6.87	-13.06
355	344	348	285.53	.74	.00	.00	1.82	1.79
356	352	354	6.50	.00	.00	.00	.02	.00

**Safari Highlands Ranch Project
 Ultimate Water System Analysis (750PW4)
 Average Day, Maximum Day, Peak Hour, and
 Fire Flow Demand Scenarios**

**April 18, 2017
 Dexter Wilson Engr., Inc.
 Job No. 750-003**

357	354	351	6.50	.00	.00	.00	.02	.00
358	351	350	6.50	.00	.00	.00	.04	.00
359	348	352	-144.75	-.69	.00	.00	-.92	-.51
361	354	358	.00	.00	.00	.00	.00	.00
363	356	320	1235.03	3.60	.00	.00	3.50	3.75
364	356	320	1235.03	3.60	.00	.00	3.50	3.75
365	369	371	.00	.00	.00	.00	.00	.00
366	371	377	.00	.00	.00	.00	.00	.00
367	0	356	1528.85	5.12	.00	.00	4.34	5.57
368	0	356	1528.85	5.12	.00	.00	4.34	5.57
371	360	356	-587.65	-3.62	.00	.00	-3.75	-6.82
373	360	361	.00	.00	.00	.00	.00	.00
374	361	363	.00	.00	.00	.00	.00	.00
375	362	360	-569.35	-5.60	.00	.00	-3.63	-6.44
377	374	394	.00	.00	.00	.00	.00	.00
379	369	362	-533.75	-4.51	.00	.00	-3.41	-5.71
381	316	369	-533.75	-1.48	.00	.00	-3.41	-5.71
382	374	378	-15.92	.00	.00	.00	-.05	.00
383	324	332	34.78	.01	.00	.00	.10	.01
384	378	370	.00	.00	.00	.00	.00	.00
385	332	368	34.78	.00	.00	.00	.10	.01
386	370	396	.00	.00	.00	.00	.00	.00
387	368	372	7.78	.00	.00	.00	.02	.00
389	355	392	.00	.00	.00	.00	.00	.00
391	378	328	-15.92	.00	.00	.00	-.05	.00
392	372	382	4.30	.00	.00	.00	.01	.00
393	382	384	4.30	.00	.00	.00	.03	.00
394	372	374	-15.92	.00	.00	.00	-.05	.00
395	336	342	.00	.00	.00	.00	.00	.00
396	342	376	.00	.00	.00	.00	.00	.00
397	368	380	3.30	.00	.00	.00	.02	.00
398	362	364	11.90	.00	.00	.00	.03	.00
399	364	365	11.90	.00	.00	.00	.08	.00

JUNCTION NUMBER	DEMAND	GRADE LINE	ELEVATION	PRESSURE
100	.00	1291.44	885.00	176.12
102	.00	1287.33	886.00	173.91
104	.00	1287.33	880.00	176.51
106	36.60	1284.11	944.00	147.38
107	.00	1284.11	982.00	130.91
108	11.90	1284.11	983.00	130.48
110	.00	1276.11	949.00	141.75
111	.00	1276.11	950.00	141.32
112	38.70	1253.37	965.00	124.96
114	.00	1276.89	1048.00	99.19
116	22.60	1233.62	1017.00	93.87
118	1250.00	1225.46	1035.00	82.53
120	1250.00	1218.56	1042.00	76.51
124	20.40	1276.89	1047.00	99.62
126	.00	1276.89	1048.00	99.19
127	.00	1276.89	1049.00	98.75
128	9.70	1276.89	1053.00	97.02
130	.00	1285.10	1125.00	69.38

**Safari Highlands Ranch Project
 Ultimate Water System Analysis (750PW4)
 Average Day, Maximum Day, Peak Hour, and
 Fire Flow Demand Scenarios**

**April 18, 2017
 Dexter Wilson Engr., Inc.
 Job No. 750-003**

132	44.10	1282.05	1121.00	69.79
134	.00	1282.05	1124.00	68.49
136	6.50	1282.05	1128.00	66.75
138	.00	1285.10	1129.00	67.65
140	33.30	1286.79	1124.00	70.54
141	.00	1286.79	1126.00	69.67
142	.00	1286.79	1130.00	67.94
144	.00	1291.81	1081.00	91.35
146	.00	1286.79	1138.00	64.47
147	.00	1253.37	970.00	122.79
148	.00	1253.37	973.00	121.49
152	5.40	1286.79	1148.00	60.14
200	.00	1500.00	1205.00	127.83
202	.00	1499.98	1207.00	126.96
204	35.60	1499.92	1254.00	106.57
208	14.00	1499.91	1297.00	87.93
210	.00	1499.98	1210.00	125.66
211	.00	1499.98	1196.00	131.72
212	33.30	1499.91	1312.00	81.43
214	.00	1499.98	1185.00	136.49
216	.00	1500.00	1290.00	91.00
218	.00	1499.92	1254.00	106.57
220	.00	1499.91	1302.00	85.76
222	.00	1499.92	1259.00	104.40
224	10.80	1499.91	1333.00	72.33
226	.00	1499.91	1326.00	75.36
300	.00	1613.95	885.00	315.88
301	.00	1613.95	820.00	344.05
304	.00	1632.64	1081.00	239.04
308	.00	1668.70	1207.00	200.07
312	.00	1688.46	1290.00	172.67
316	.00	1785.67	1604.00	78.72
320	8.60	1797.28	1590.00	89.82
324	19.40	1797.26	1600.00	85.48
326	.00	1797.25	1588.00	90.68
328	14.00	1797.25	1568.00	99.34
330	.00	1797.25	1545.00	109.31
332	.00	1797.25	1668.00	56.01
336	20.40	1797.24	1606.00	82.87
338	.00	1797.24	1626.00	74.21
340	5.40	1797.24	1629.00	72.91
342	.00	1797.24	1605.00	83.31
344	.00	1783.12	1590.00	83.69
346	.00	1780.31	1588.00	83.34
348	30.10	1782.39	1585.00	85.54
350	6.50	1783.08	1608.00	75.87
351	.00	1783.08	1604.00	77.60
352	25.80	1783.08	1592.00	82.80
354	.00	1783.08	1601.00	78.90
355	.00	1797.25	1670.00	55.14
356	.00	1800.88	1695.00	45.88
358	.00	1783.08	1602.00	78.47
360	18.30	1797.26	1657.00	60.78
361	.00	1797.26	1666.00	56.88

**Safari Highlands Ranch Project
 Ultimate Water System Analysis (750PW4)
 Average Day, Maximum Day, Peak Hour, and
 Fire Flow Demand Scenarios**

**April 18, 2017
 Dexter Wilson Engr., Inc.
 Job No. 750-003**

362	23.70	1791.66	1663.00	55.75
363	.00	1797.26	1678.00	51.68
364	.00	1791.66	1674.00	50.99
365	11.90	1791.66	1686.00	45.79
368	23.70	1797.25	1710.00	37.81
369	.00	1787.15	1613.00	75.47
370	.00	1797.25	1629.00	72.91
371	.00	1787.15	1615.00	74.60
372	19.40	1797.25	1673.00	53.84
374	.00	1797.25	1654.00	62.07
376	.00	1797.24	1608.00	82.01
377	.00	1787.15	1619.00	72.87
378	.00	1797.25	1625.00	74.64
380	3.30	1797.25	1713.00	36.51
382	.00	1797.25	1677.00	52.11
384	4.30	1797.25	1686.00	48.21
392	.00	1797.25	1673.00	53.84
394	.00	1797.25	1664.00	57.74
395	.00	1797.25	1585.00	91.98
396	.00	1797.25	1631.00	72.04
397	.00	1797.25	1545.00	109.31
398	.00	1797.25	1580.00	94.14
399	.00	1797.25	1511.00	124.04

MAXIMUM PRESSURES

301	.00	1613.95	820.00	344.05
300	.00	1613.95	885.00	315.88
304	.00	1632.64	1081.00	239.04

MINIMUM PRESSURES

380	3.30	1797.25	1713.00	36.51
368	23.70	1797.25	1710.00	37.81
365	11.90	1791.66	1686.00	45.79

THE NET SYSTEM DEMAND = 3057.70

SUMMARY OF INFLOWS (+) AND OUTFLOWS (-) FROM FIXED GRADE NODES

PIPE NUMBER	FLOWRATE
367	1528.85
368	1528.85

THE NET FLOW INTO THE SYSTEM FROM FIXED GRADE NODES = 3057.70
 THE NET FLOW OUT OF THE SYSTEM INTO FIXED GRADE NODES = .00

A SUMMARY OF CONDITIONS SPECIFIED FOR THE NEXT SIMULATION FOLLOWS

THE FOLLOWING SPECIFIC DEMAND CHANGES ARE MADE :

JUNCTION NUMBER	DEMAND
136	1250.00

**Safari Highlands Ranch Project
 Ultimate Water System Analysis (750PW4)
 Average Day, Maximum Day, Peak Hour, and
 Fire Flow Demand Scenarios**

**April 18, 2017
 Dexter Wilson Engr., Inc.
 Job No. 750-003**

134

1250.00

THE RESULTS ARE OBTAINED AFTER 4 TRIALS WITH AN ACCURACY = .00237

**MAX DAY DEMAND PLUS 2500 GPM FIRE FLOW
 AT NODE 136**

PIPE NO.	NODE NOS.	FLOWRATE	HEAD LOSS	PUMP HEAD	MINOR LOSS	VELOCITY	HL/1000
101	100 102	584.27	1.03	.00	.00	1.66	.94
103	102 104	.00	.00	.00	.00	.00	.00
105	102 106	584.27	.81	.00	.00	1.66	.94
107	106 110	535.77	1.84	.00	.00	3.42	5.75
108	110 111	.00	.00	.00	.00	.00	.00
109	110 112	535.77	5.23	.00	.00	3.42	5.75
111	112 116	497.07	4.20	.00	.00	3.17	5.01
113	116 124	463.67	5.76	.00	.00	2.96	4.40
115	124 126	9.70	.00	.00	.00	.03	.00
117	124 132	433.57	.58	.00	.00	1.23	.54
121	132 130	-2110.53	-6.07	.00	.00	-5.99	-10.11
123	126 127	.00	.00	.00	.00	.00	.00
125	140 144	-2149.23	-9.83	.00	.00	-6.10	-10.46
127	126 114	9.70	.00	.00	.00	.03	.00
128	106 107	11.90	.00	.00	.00	.03	.00
129	107 108	11.90	.00	.00	.00	.08	.00
131	130 140	-2110.53	-3.34	.00	.00	-5.99	-10.11
133	116 118	10.80	.00	.00	.00	.03	.00
135	118 120	10.80	.00	.00	.00	.07	.00
137	114 128	9.70	.00	.00	.00	.06	.00
139	140 141	.00	.00	.00	.00	.00	.00
140	132 134	2500.00	9.13	.00	.00	7.09	13.84
141	134 136	1250.00	6.90	.00	.00	7.98	27.62
143	130 138	.00	.00	.00	.00	.00	.00
145	141 142	.00	.00	.00	.00	.00	.00
147	140 146	5.40	.00	.00	.00	.02	.00
149	112 147	.00	.00	.00	.00	.00	.00
151	147 148	.00	.00	.00	.00	.00	.00
155	146 152	5.40	.00	.00	.00	.03	.00
201	200 202	52.66	.02	.00	.00	.34	.08
203	202 204	52.66	.05	.00	.00	.34	.08
205	204 208	17.06	.01	.00	.00	.11	.01
207	202 210	.00	.00	.00	.00	.00	.00
209	208 212	3.06	.00	.00	.00	.02	.00
211	202 211	.00	.00	.00	.00	.00	.00
213	212 216	-41.04	-.09	.00	.00	-.26	-.05
215	204 218	.00	.00	.00	.00	.00	.00
217	211 214	.00	.00	.00	.00	.00	.00
219	218 222	.00	.00	.00	.00	.00	.00
221	208 220	.00	.00	.00	.00	.00	.00
223	212 226	10.80	.00	.00	.00	.03	.00
225	226 224	10.80	.00	.00	.00	.07	.00
301	0 100	584.27	.14	.00	.00	1.66	1.09

**Safari Highlands Ranch Project
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**April 18, 2017
 Dexter Wilson Engr., Inc.
 Job No. 750-003**

303	0	144	2149.23	.36	.00	.00	6.10	12.13
305	0	200	52.66	.00	.00	.00	.15	.01
307	0	216	41.04	.00	.00	.00	.12	.01
309	301	300	.00	.00	.00	.00	.00	.00
311	300	304	-584.27	-4.69	.00	.00	-1.66	-1.09
315	304	308	-2733.50	-36.17	.00	.00	-7.75	-18.94
319	308	312	-2786.16	-19.81	.00	.00	-7.90	-19.62
323	312	346	-2827.20	-92.11	.00	.00	-8.02	-17.38
327	316	320	-2355.03	-11.65	.00	.00	-6.68	-12.39
329	326	328	55.72	.01	.00	.00	.16	.01
331	320	324	54.95	.02	.00	.00	.16	.01
332	320	324	54.95	.02	.00	.00	.16	.01
333	328	330	25.80	.00	.00	.00	.07	.00
335	324	326	55.72	.01	.00	.00	.16	.01
339	330	336	25.80	.00	.00	.00	.07	.00
341	330	397	.00	.00	.00	.00	.00	.00
342	397	399	.00	.00	.00	.00	.00	.00
343	336	338	5.40	.00	.00	.00	.02	.00
344	338	340	5.40	.00	.00	.00	.03	.00
345	326	395	.00	.00	.00	.00	.00	.00
346	395	398	.00	.00	.00	.00	.00	.00
347	332	355	.00	.00	.00	.00	.00	.00
349	316	344	463.23	2.55	.00	.00	2.96	4.39
351	352	344	-177.27	-.04	.00	.00	-.50	-.10
353	348	346	400.83	2.08	.00	.00	2.56	3.36
354	346	316	-2426.36	-5.37	.00	.00	-6.88	-13.09
355	344	348	285.96	.74	.00	.00	1.83	1.80
356	352	354	6.50	.00	.00	.00	.02	.00
357	354	351	6.50	.00	.00	.00	.02	.00
358	351	350	6.50	.00	.00	.00	.04	.00
359	348	352	-144.97	-.69	.00	.00	-.93	-.51
361	354	358	.00	.00	.00	.00	.00	.00
363	356	320	1236.77	3.61	.00	.00	3.51	3.76
364	356	320	1236.77	3.61	.00	.00	3.51	3.76
365	369	371	.00	.00	.00	.00	.00	.00
366	371	377	.00	.00	.00	.00	.00	.00
367	0	356	1531.00	5.13	.00	.00	4.34	5.58
368	0	356	1531.00	5.13	.00	.00	4.34	5.58
371	360	356	-588.47	-3.63	.00	.00	-3.76	-6.84
373	360	361	.00	.00	.00	.00	.00	.00
374	361	363	.00	.00	.00	.00	.00	.00
375	362	360	-570.17	-5.61	.00	.00	-3.64	-6.45
377	374	394	.00	.00	.00	.00	.00	.00
379	369	362	-534.57	-4.52	.00	.00	-3.41	-5.73
381	316	369	-534.57	-1.49	.00	.00	-3.41	-5.73
382	374	378	-15.92	.00	.00	.00	-.05	.00
383	324	332	34.78	.01	.00	.00	.10	.01
384	378	370	.00	.00	.00	.00	.00	.00
385	332	368	34.78	.00	.00	.00	.10	.01
386	370	396	.00	.00	.00	.00	.00	.00
387	368	372	7.78	.00	.00	.00	.02	.00
389	355	392	.00	.00	.00	.00	.00	.00
391	378	328	-15.92	.00	.00	.00	-.05	.00
392	372	382	4.30	.00	.00	.00	.01	.00

Safari Highlands Ranch Project
Ultimate Water System Analysis (750PW4)
Average Day, Maximum Day, Peak Hour, and
Fire Flow Demand Scenarios

April 18, 2017
Dexter Wilson Engr., Inc.
Job No. 750-003

393	382	384	4.30	.00	.00	.00	.03	.00
394	372	374	-15.92	.00	.00	.00	-.05	.00
395	336	342	.00	.00	.00	.00	.00	.00
396	342	376	.00	.00	.00	.00	.00	.00
397	368	380	3.30	.00	.00	.00	.02	.00
398	362	364	11.90	.00	.00	.00	.03	.00
399	364	365	11.90	.00	.00	.00	.08	.00

JUNCTION NUMBER	DEMAND	GRADE LINE	ELEVATION	PRESSURE
100	.00	1291.86	885.00	176.31
102	.00	1290.83	886.00	175.43
104	.00	1290.83	880.00	178.03
106	36.60	1290.02	944.00	149.94
107	.00	1290.02	982.00	133.48
108	11.90	1290.02	983.00	133.04
110	.00	1288.18	949.00	146.98
111	.00	1288.18	950.00	146.55
112	38.70	1282.95	965.00	137.78
114	.00	1272.98	1048.00	97.49
116	22.60	1278.74	1017.00	113.42
118	.00	1278.74	1035.00	105.62
120	10.80	1278.74	1042.00	102.59
124	20.40	1272.98	1047.00	97.93
126	.00	1272.98	1048.00	97.49
127	.00	1272.98	1049.00	97.06
128	9.70	1272.98	1053.00	95.32
130	.00	1278.47	1125.00	66.50
132	44.10	1272.40	1121.00	65.61
134	1250.00	1263.26	1124.00	60.35
136	1250.00	1256.36	1128.00	55.62
138	.00	1278.47	1129.00	64.77
140	33.30	1281.80	1124.00	68.38
141	.00	1281.80	1126.00	67.52
142	.00	1281.80	1130.00	65.78
144	.00	1291.64	1081.00	91.28
146	.00	1281.80	1138.00	62.32
147	.00	1282.95	970.00	135.61
148	.00	1282.95	973.00	134.31
152	5.40	1281.80	1148.00	57.98
200	.00	1500.00	1205.00	127.83
202	.00	1499.98	1207.00	126.96
204	35.60	1499.92	1254.00	106.57
208	14.00	1499.91	1297.00	87.93
210	.00	1499.98	1210.00	125.66
211	.00	1499.98	1196.00	131.72
212	33.30	1499.91	1312.00	81.43
214	.00	1499.98	1185.00	136.49
216	.00	1500.00	1290.00	91.00
218	.00	1499.92	1254.00	106.57
220	.00	1499.91	1302.00	85.76
222	.00	1499.92	1259.00	104.40
224	10.80	1499.91	1333.00	72.33
226	.00	1499.91	1326.00	75.36

**Safari Highlands Ranch Project
 Ultimate Water System Analysis (750PW4)
 Average Day, Maximum Day, Peak Hour, and
 Fire Flow Demand Scenarios**

**April 18, 2017
 Dexter Wilson Engr., Inc.
 Job No. 750-003**

300	.00	1627.46	885.00	321.73
301	.00	1627.46	820.00	349.90
304	.00	1632.15	1081.00	238.83
308	.00	1668.32	1207.00	199.90
312	.00	1688.13	1290.00	172.52
316	.00	1785.61	1604.00	78.70
320	8.60	1797.26	1590.00	89.81
324	19.40	1797.24	1600.00	85.47
326	.00	1797.23	1588.00	90.67
328	14.00	1797.23	1568.00	99.33
330	.00	1797.22	1545.00	109.30
332	.00	1797.23	1668.00	56.00
336	20.40	1797.22	1606.00	82.86
338	.00	1797.22	1626.00	74.20
340	5.40	1797.22	1629.00	72.90
342	.00	1797.22	1605.00	83.30
344	.00	1783.06	1590.00	83.66
346	.00	1780.24	1588.00	83.30
348	30.10	1782.33	1585.00	85.51
350	6.50	1783.02	1608.00	75.84
351	.00	1783.02	1604.00	77.58
352	25.80	1783.02	1592.00	82.78
354	.00	1783.02	1601.00	78.88
355	.00	1797.23	1670.00	55.13
356	.00	1800.87	1695.00	45.88
358	.00	1783.02	1602.00	78.44
360	18.30	1797.24	1657.00	60.77
361	.00	1797.24	1666.00	56.87
362	23.70	1791.62	1663.00	55.74
363	.00	1797.24	1678.00	51.67
364	.00	1791.62	1674.00	50.97
365	11.90	1791.62	1686.00	45.77
368	23.70	1797.22	1710.00	37.80
369	.00	1787.10	1613.00	75.44
370	.00	1797.22	1629.00	72.90
371	.00	1787.10	1615.00	74.58
372	19.40	1797.22	1673.00	53.83
374	.00	1797.22	1654.00	62.06
376	.00	1797.22	1608.00	82.00
377	.00	1787.10	1619.00	72.84
378	.00	1797.22	1625.00	74.63
380	3.30	1797.22	1713.00	36.50
382	.00	1797.22	1677.00	52.10
384	4.30	1797.22	1686.00	48.20
392	.00	1797.23	1673.00	53.83
394	.00	1797.22	1664.00	57.73
395	.00	1797.23	1585.00	91.97
396	.00	1797.22	1631.00	72.03
397	.00	1797.22	1545.00	109.30
398	.00	1797.23	1580.00	94.13
399	.00	1797.22	1511.00	124.03

MAXIMUM PRESSURES

301	.00	1627.46	820.00	349.90
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**Safari Highlands Ranch Project
 Ultimate Water System Analysis (750PW4)
 Average Day, Maximum Day, Peak Hour, and
 Fire Flow Demand Scenarios**

**April 18, 2017
 Dexter Wilson Engr., Inc.
 Job No. 750-003**

300	.00	1627.46	885.00	321.73
304	.00	1632.15	1081.00	238.83
MINIMUM PRESSURES				
380	3.30	1797.22	1713.00	36.50
368	23.70	1797.22	1710.00	37.80
365	11.90	1791.62	1686.00	45.77

THE NET SYSTEM DEMAND = 3062.00

SUMMARY OF INFLOWS(+) AND OUTFLOWS(-) FROM FIXED GRADE NODES

PIPE NUMBER	FLOWRATE
367	1531.00
368	1531.00

THE NET FLOW INTO THE SYSTEM FROM FIXED GRADE NODES = 3062.00
 THE NET FLOW OUT OF THE SYSTEM INTO FIXED GRADE NODES = .00

A SUMMARY OF CONDITIONS SPECIFIED FOR THE NEXT SIMULATION FOLLOWS

THE FOLLOWING SPECIFIC DEMAND CHANGES ARE MADE :

JUNCTION NUMBER	DEMAND
146	1250.00
152	1250.00

THE RESULTS ARE OBTAINED AFTER 3 TRIALS WITH AN ACCURACY = .00450

**MAX DAY DEMAND PLUS 2500 GPM FIRE FLOW
 BETWEEN NODES 146 AND 152**

PIPE NO.	NODE NOS.	FLOWRATE	HEAD LOSS	PUMP HEAD	MINOR LOSS	VELOCITY	HL/1000
101	100 102	452.75	.64	.00	.00	1.28	.58
103	102 104	.00	.00	.00	.00	.00	.00
105	102 106	452.75	.50	.00	.00	1.28	.58
107	106 110	404.25	1.09	.00	.00	2.58	3.41
108	110 111	.00	.00	.00	.00	.00	.00
109	110 112	404.25	3.11	.00	.00	2.58	3.41
111	112 116	365.55	2.38	.00	.00	2.33	2.83
113	116 124	332.15	3.11	.00	.00	2.12	2.37
115	124 126	9.70	.00	.00	.00	.03	.00
117	124 132	302.05	.30	.00	.00	.86	.28
121	132 130	251.45	.12	.00	.00	.71	.20
123	126 127	.00	.00	.00	.00	.00	.00
125	140 144	-2281.85	-10.99	.00	.00	-6.47	-11.69
127	126 114	9.70	.00	.00	.00	.03	.00
128	106 107	11.90	.00	.00	.00	.03	.00

**Safari Highlands Ranch Project
 Ultimate Water System Analysis (750PW4)
 Average Day, Maximum Day, Peak Hour, and
 Fire Flow Demand Scenarios**

**April 18, 2017
 Dexter Wilson Engr., Inc.
 Job No. 750-003**

129	107	108	11.90	.00	.00	.00	.08	.00
131	130	140	251.45	.06	.00	.00	.71	.20
133	116	118	10.80	.00	.00	.00	.03	.00
135	118	120	10.80	.00	.00	.00	.07	.00
137	114	128	9.70	.00	.00	.00	.06	.00
139	140	141	.00	.00	.00	.00	.00	.00
140	132	134	6.50	.00	.00	.00	.02	.00
141	134	136	6.50	.00	.00	.00	.04	.00
143	130	138	.00	.00	.00	.00	.00	.00
145	141	142	.00	.00	.00	.00	.00	.00
147	140	146	2500.00	6.50	.00	.00	7.09	13.84
149	112	147	.00	.00	.00	.00	.00	.00
151	147	148	.00	.00	.00	.00	.00	.00
155	146	152	1250.00	4.28	.00	.00	7.98	27.62
201	200	202	52.66	.02	.00	.00	.34	.08
203	202	204	52.66	.05	.00	.00	.34	.08
205	204	208	17.06	.01	.00	.00	.11	.01
207	202	210	.00	.00	.00	.00	.00	.00
209	208	212	3.06	.00	.00	.00	.02	.00
211	202	211	.00	.00	.00	.00	.00	.00
213	212	216	-41.04	-.09	.00	.00	-.26	-.05
215	204	218	.00	.00	.00	.00	.00	.00
217	211	214	.00	.00	.00	.00	.00	.00
219	218	222	.00	.00	.00	.00	.00	.00
221	208	220	.00	.00	.00	.00	.00	.00
223	212	226	10.80	.00	.00	.00	.03	.00
225	226	224	10.80	.00	.00	.00	.07	.00
301	0	100	452.75	.09	.00	.00	1.28	.68
303	0	144	2281.85	.41	.00	.00	6.47	13.55
305	0	200	52.66	.00	.00	.00	.15	.01
307	0	216	41.04	.00	.00	.00	.12	.01
309	301	300	.00	.00	.00	.00	.00	.00
311	300	304	-452.75	-2.92	.00	.00	-1.28	-.68
315	304	308	-2734.60	-36.20	.00	.00	-7.76	-18.95
319	308	312	-2787.26	-19.83	.00	.00	-7.91	-19.63
323	312	346	-2828.30	-92.18	.00	.00	-8.02	-17.39
327	316	320	-2355.92	-11.65	.00	.00	-6.68	-12.40
329	326	328	55.72	.01	.00	.00	.16	.01
331	320	324	54.95	.02	.00	.00	.16	.01
332	320	324	54.95	.02	.00	.00	.16	.01
333	328	330	25.80	.00	.00	.00	.07	.00
335	324	326	55.72	.01	.00	.00	.16	.01
339	330	336	25.80	.00	.00	.00	.07	.00
341	330	397	.00	.00	.00	.00	.00	.00
342	397	399	.00	.00	.00	.00	.00	.00
343	336	338	5.40	.00	.00	.00	.02	.00
344	338	340	5.40	.00	.00	.00	.03	.00
345	326	395	.00	.00	.00	.00	.00	.00
346	395	398	.00	.00	.00	.00	.00	.00
347	332	355	.00	.00	.00	.00	.00	.00
349	316	344	463.40	2.55	.00	.00	2.96	4.40
351	352	344	-177.33	-.04	.00	.00	-.50	-.10
353	348	346	401.00	2.09	.00	.00	2.56	3.36
354	346	316	-2427.30	-5.37	.00	.00	-6.89	-13.10

Safari Highlands Ranch Project
Ultimate Water System Analysis (750PW4)
Average Day, Maximum Day, Peak Hour, and
Fire Flow Demand Scenarios

April 18, 2017
Dexter Wilson Engr., Inc.
Job No. 750-003

355	344	348	286.07	.74	.00	.00	1.83	1.80
356	352	354	6.50	.00	.00	.00	.02	.00
357	354	351	6.50	.00	.00	.00	.02	.00
358	351	350	6.50	.00	.00	.00	.04	.00
359	348	352	-145.03	-.70	.00	.00	-.93	-.51
361	354	358	.00	.00	.00	.00	.00	.00
363	356	320	1237.21	3.61	.00	.00	3.51	3.76
364	356	320	1237.21	3.61	.00	.00	3.51	3.76
365	369	371	.00	.00	.00	.00	.00	.00
366	371	377	.00	.00	.00	.00	.00	.00
367	0	356	1531.55	5.14	.00	.00	4.34	5.58
368	0	356	1531.55	5.14	.00	.00	4.34	5.58
371	360	356	-588.67	-3.63	.00	.00	-3.76	-6.85
373	360	361	.00	.00	.00	.00	.00	.00
374	361	363	.00	.00	.00	.00	.00	.00
375	362	360	-570.37	-5.62	.00	.00	-3.64	-6.46
377	374	394	.00	.00	.00	.00	.00	.00
379	369	362	-534.77	-4.53	.00	.00	-3.41	-5.73
381	316	369	-534.77	-1.49	.00	.00	-3.41	-5.73
382	374	378	-15.92	.00	.00	.00	-.05	.00
383	324	332	34.78	.01	.00	.00	.10	.01
384	378	370	.00	.00	.00	.00	.00	.00
385	332	368	34.78	.00	.00	.00	.10	.01
386	370	396	.00	.00	.00	.00	.00	.00
387	368	372	7.78	.00	.00	.00	.02	.00
389	355	392	.00	.00	.00	.00	.00	.00
391	378	328	-15.92	.00	.00	.00	-.05	.00
392	372	382	4.30	.00	.00	.00	.01	.00
393	382	384	4.30	.00	.00	.00	.03	.00
394	372	374	-15.92	.00	.00	.00	-.05	.00
395	336	342	.00	.00	.00	.00	.00	.00
396	342	376	.00	.00	.00	.00	.00	.00
397	368	380	3.30	.00	.00	.00	.02	.00
398	362	364	11.90	.00	.00	.00	.03	.00
399	364	365	11.90	.00	.00	.00	.08	.00

JUNCTION NUMBER	DEMAND	GRADE LINE	ELEVATION	PRESSURE
100	.00	1291.91	885.00	176.33
102	.00	1291.27	886.00	175.62
104	.00	1291.27	880.00	178.22
106	36.60	1290.77	944.00	150.27
107	.00	1290.77	982.00	133.80
108	11.90	1290.76	983.00	133.36
110	.00	1289.67	949.00	147.63
111	.00	1289.67	950.00	147.19
112	38.70	1286.57	965.00	139.35
114	.00	1281.09	1048.00	101.01
116	22.60	1284.19	1017.00	115.78
118	.00	1284.19	1035.00	107.98
120	10.80	1284.19	1042.00	104.95
124	20.40	1281.09	1047.00	101.44
126	.00	1281.09	1048.00	101.01
127	.00	1281.09	1049.00	100.57

**Safari Highlands Ranch Project
 Ultimate Water System Analysis (750PW4)
 Average Day, Maximum Day, Peak Hour, and
 Fire Flow Demand Scenarios**

**April 18, 2017
 Dexter Wilson Engr., Inc.
 Job No. 750-003**

128	9.70	1281.09	1053.00	98.84
130	.00	1280.67	1125.00	67.46
132	44.10	1280.79	1121.00	69.24
134	.00	1280.79	1124.00	67.94
136	6.50	1280.79	1128.00	66.21
138	.00	1280.67	1129.00	65.73
140	33.30	1280.61	1124.00	67.86
141	.00	1280.61	1126.00	67.00
142	.00	1280.61	1130.00	65.26
144	.00	1291.59	1081.00	91.26
146	1250.00	1274.10	1138.00	58.98
147	.00	1286.57	970.00	137.18
148	.00	1286.57	973.00	135.88
152	1250.00	1269.82	1148.00	52.79
200	.00	1500.00	1205.00	127.83
202	.00	1499.98	1207.00	126.96
204	35.60	1499.92	1254.00	106.57
208	14.00	1499.91	1297.00	87.93
210	.00	1499.98	1210.00	125.66
211	.00	1499.98	1196.00	131.72
212	33.30	1499.91	1312.00	81.43
214	.00	1499.98	1185.00	136.49
216	.00	1500.00	1290.00	91.00
218	.00	1499.92	1254.00	106.57
220	.00	1499.91	1302.00	85.76
222	.00	1499.92	1259.00	104.40
224	10.80	1499.91	1333.00	72.33
226	.00	1499.91	1326.00	75.36
300	.00	1629.10	885.00	322.44
301	.00	1629.10	820.00	350.61
304	.00	1632.02	1081.00	238.78
308	.00	1668.22	1207.00	199.86
312	.00	1688.05	1290.00	172.49
316	.00	1785.60	1604.00	78.69
320	8.60	1797.25	1590.00	89.81
324	19.40	1797.23	1600.00	85.47
326	.00	1797.23	1588.00	90.66
328	14.00	1797.22	1568.00	99.33
330	.00	1797.22	1545.00	109.29
332	.00	1797.22	1668.00	56.00
336	20.40	1797.21	1606.00	82.86
338	.00	1797.21	1626.00	74.19
340	5.40	1797.21	1629.00	72.89
342	.00	1797.21	1605.00	83.29
344	.00	1783.05	1590.00	83.65
346	.00	1780.22	1588.00	83.30
348	30.10	1782.31	1585.00	85.50
350	6.50	1783.00	1608.00	75.84
351	.00	1783.00	1604.00	77.57
352	25.80	1783.00	1592.00	82.77
354	.00	1783.00	1601.00	78.87
355	.00	1797.22	1670.00	55.13
356	.00	1800.86	1695.00	45.87
358	.00	1783.00	1602.00	78.44

**Safari Highlands Ranch Project
 Ultimate Water System Analysis (750PW4)
 Average Day, Maximum Day, Peak Hour, and
 Fire Flow Demand Scenarios**

**April 18, 2017
 Dexter Wilson Engr., Inc.
 Job No. 750-003**

360	18.30	1797.23	1657.00	60.77
361	.00	1797.23	1666.00	56.87
362	23.70	1791.61	1663.00	55.73
363	.00	1797.23	1678.00	51.67
364	.00	1791.61	1674.00	50.97
365	11.90	1791.61	1686.00	45.77
368	23.70	1797.22	1710.00	37.79
369	.00	1787.09	1613.00	75.44
370	.00	1797.22	1629.00	72.89
371	.00	1787.09	1615.00	74.57
372	19.40	1797.22	1673.00	53.83
374	.00	1797.22	1654.00	62.06
376	.00	1797.21	1608.00	81.99
377	.00	1787.09	1619.00	72.84
378	.00	1797.22	1625.00	74.63
380	3.30	1797.22	1713.00	36.49
382	.00	1797.22	1677.00	52.09
384	4.30	1797.22	1686.00	48.19
392	.00	1797.22	1673.00	53.83
394	.00	1797.22	1664.00	57.73
395	.00	1797.23	1585.00	91.96
396	.00	1797.22	1631.00	72.03
397	.00	1797.22	1545.00	109.29
398	.00	1797.23	1580.00	94.13
399	.00	1797.22	1511.00	124.03

MAXIMUM PRESSURES

301	.00	1629.10	820.00	350.61
300	.00	1629.10	885.00	322.44
304	.00	1632.02	1081.00	238.78

MINIMUM PRESSURES

380	3.30	1797.22	1713.00	36.49
368	23.70	1797.22	1710.00	37.79
365	11.90	1791.61	1686.00	45.77

THE NET SYSTEM DEMAND = 3063.10

SUMMARY OF INFLOWS(+) AND OUTFLOWS(-) FROM FIXED GRADE NODES

PIPE NUMBER	FLOWRATE
367	1531.55
368	1531.55

THE NET FLOW INTO THE SYSTEM FROM FIXED GRADE NODES = 3063.10
 THE NET FLOW OUT OF THE SYSTEM INTO FIXED GRADE NODES = .00

A SUMMARY OF CONDITIONS SPECIFIED FOR THE NEXT SIMULATION FOLLOWS

THE FOLLOWING SPECIFIC DEMAND CHANGES ARE MADE :

**Safari Highlands Ranch Project
 Ultimate Water System Analysis (750PW4)
 Average Day, Maximum Day, Peak Hour, and
 Fire Flow Demand Scenarios**

**April 18, 2017
 Dexter Wilson Engr., Inc.
 Job No. 750-003**

JUNCTION NUMBER	DEMAND
224	1250.00
226	1250.00

THE RESULTS ARE OBTAINED AFTER 3 TRIALS WITH AN ACCURACY = .00023

**MAX DAY DEMAND PLUS 2500 GPM FIRE FLOW
 BETWEEN NODES 224 AND 226**

PIPE NO.	NODE NOS.	FLOWRATE	HEAD LOSS	PUMP HEAD	MINOR LOSS	VELOCITY	HL/1000
101	100 102	94.94	.04	.00	.00	.27	.03
103	102 104	.00	.00	.00	.00	.00	.00
105	102 106	94.94	.03	.00	.00	.27	.03
107	106 110	46.44	.02	.00	.00	.30	.06
108	110 111	.00	.00	.00	.00	.00	.00
109	110 112	46.44	.06	.00	.00	.30	.06
111	112 116	7.74	.00	.00	.00	.05	.00
113	116 124	-25.66	-.03	.00	.00	-.16	-.02
115	124 126	9.70	.00	.00	.00	.03	.00
117	124 132	-55.76	-.01	.00	.00	-.16	-.01
121	132 130	-106.36	-.02	.00	.00	-.30	-.04
123	126 127	.00	.00	.00	.00	.00	.00
125	140 144	-145.06	-.07	.00	.00	-.41	-.07
127	126 114	9.70	.00	.00	.00	.03	.00
128	106 107	11.90	.00	.00	.00	.03	.00
129	107 108	11.90	.00	.00	.00	.08	.00
131	130 140	-106.36	-.01	.00	.00	-.30	-.04
133	116 118	10.80	.00	.00	.00	.03	.00
135	118 120	10.80	.00	.00	.00	.07	.00
137	114 128	9.70	.00	.00	.00	.06	.00
139	140 141	.00	.00	.00	.00	.00	.00
140	132 134	6.50	.00	.00	.00	.02	.00
141	134 136	6.50	.00	.00	.00	.04	.00
143	130 138	.00	.00	.00	.00	.00	.00
145	141 142	.00	.00	.00	.00	.00	.00
147	140 146	5.40	.00	.00	.00	.02	.00
149	112 147	.00	.00	.00	.00	.00	.00
151	147 148	.00	.00	.00	.00	.00	.00
155	146 152	5.40	.00	.00	.00	.03	.00
201	200 202	1182.06	6.72	.00	.00	7.54	24.90
203	202 204	1182.06	17.43	.00	.00	7.54	24.90
205	204 208	1146.46	26.82	.00	.00	7.32	23.53
207	202 210	.00	.00	.00	.00	.00	.00
209	208 212	1132.46	9.43	.00	.00	7.23	23.00
211	202 211	.00	.00	.00	.00	.00	.00
213	212 216	-1400.84	-60.36	.00	.00	-8.94	-34.10
215	204 218	.00	.00	.00	.00	.00	.00
217	211 214	.00	.00	.00	.00	.00	.00
219	218 222	.00	.00	.00	.00	.00	.00
221	208 220	.00	.00	.00	.00	.00	.00
223	212 226	2500.00	3.32	.00	.00	7.09	13.84

**Safari Highlands Ranch Project
 Ultimate Water System Analysis (750PW4)
 Average Day, Maximum Day, Peak Hour, and
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**April 18, 2017
 Dexter Wilson Engr., Inc.
 Job No. 750-003**

225	226	224	1250.00	6.90	.00	.00	7.98	27.62
301	0	100	94.94	.00	.00	.00	.27	.04
303	0	144	145.06	.00	.00	.00	.41	.08
305	0	200	1182.06	.12	.00	.00	3.35	4.01
307	0	216	1400.84	.16	.00	.00	3.97	5.49
309	301	300	.00	.00	.00	.00	.00	.00
311	300	304	-94.94	-.16	.00	.00	-.27	-.04
315	304	308	-240.00	-.40	.00	.00	-.68	-.21
319	308	312	-1422.06	-5.70	.00	.00	-4.03	-5.65
323	312	346	-2822.90	-91.85	.00	.00	-8.01	-17.33
327	316	320	-2351.55	-11.61	.00	.00	-6.67	-12.36
329	326	328	55.72	.01	.00	.00	.16	.01
331	320	324	54.95	.02	.00	.00	.16	.01
332	320	324	54.95	.02	.00	.00	.16	.01
333	328	330	25.80	.00	.00	.00	.07	.00
335	324	326	55.72	.01	.00	.00	.16	.01
339	330	336	25.80	.00	.00	.00	.07	.00
341	330	397	.00	.00	.00	.00	.00	.00
342	397	399	.00	.00	.00	.00	.00	.00
343	336	338	5.40	.00	.00	.00	.02	.00
344	338	340	5.40	.00	.00	.00	.03	.00
345	326	395	.00	.00	.00	.00	.00	.00
346	395	398	.00	.00	.00	.00	.00	.00
347	332	355	.00	.00	.00	.00	.00	.00
349	316	344	462.58	2.54	.00	.00	2.95	4.38
351	352	344	-177.05	-.04	.00	.00	-.50	-.10
353	348	346	400.18	2.08	.00	.00	2.55	3.35
354	346	316	-2422.72	-5.35	.00	.00	-6.87	-13.06
355	344	348	285.53	.74	.00	.00	1.82	1.79
356	352	354	6.50	.00	.00	.00	.02	.00
357	354	351	6.50	.00	.00	.00	.02	.00
358	351	350	6.50	.00	.00	.00	.04	.00
359	348	352	-144.75	-.69	.00	.00	-.92	-.51
361	354	358	.00	.00	.00	.00	.00	.00
363	356	320	1235.03	3.60	.00	.00	3.50	3.75
364	356	320	1235.03	3.60	.00	.00	3.50	3.75
365	369	371	.00	.00	.00	.00	.00	.00
366	371	377	.00	.00	.00	.00	.00	.00
367	0	356	1528.85	5.12	.00	.00	4.34	5.57
368	0	356	1528.85	5.12	.00	.00	4.34	5.57
371	360	356	-587.65	-3.62	.00	.00	-3.75	-6.82
373	360	361	.00	.00	.00	.00	.00	.00
374	361	363	.00	.00	.00	.00	.00	.00
375	362	360	-569.35	-5.60	.00	.00	-3.63	-6.44
377	374	394	.00	.00	.00	.00	.00	.00
379	369	362	-533.75	-4.51	.00	.00	-3.41	-5.71
381	316	369	-533.75	-1.48	.00	.00	-3.41	-5.71
382	374	378	-15.92	.00	.00	.00	-.05	.00
383	324	332	34.78	.01	.00	.00	.10	.01
384	378	370	.00	.00	.00	.00	.00	.00
385	332	368	34.78	.00	.00	.00	.10	.01
386	370	396	.00	.00	.00	.00	.00	.00
387	368	372	7.78	.00	.00	.00	.02	.00
389	355	392	.00	.00	.00	.00	.00	.00

**Safari Highlands Ranch Project
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**April 18, 2017
 Dexter Wilson Engr., Inc.
 Job No. 750-003**

391	378	328	-15.92	.00	.00	.00	-.05	.00
392	372	382	4.30	.00	.00	.00	.01	.00
393	382	384	4.30	.00	.00	.00	.03	.00
394	372	374	-15.92	.00	.00	.00	-.05	.00
395	336	342	.00	.00	.00	.00	.00	.00
396	342	376	.00	.00	.00	.00	.00	.00
397	368	380	3.30	.00	.00	.00	.02	.00
398	362	364	11.90	.00	.00	.00	.03	.00
399	364	365	11.90	.00	.00	.00	.08	.00

JUNCTION NUMBER	DEMAND	GRADE LINE	ELEVATION	PRESSURE
100	.00	1292.00	885.00	176.36
102	.00	1291.96	886.00	175.92
104	.00	1291.96	880.00	178.52
106	36.60	1291.93	944.00	150.77
107	.00	1291.93	982.00	134.30
108	11.90	1291.93	983.00	133.87
110	.00	1291.91	949.00	148.60
111	.00	1291.91	950.00	148.16
112	38.70	1291.86	965.00	141.64
114	.00	1291.88	1048.00	105.68
116	22.60	1291.85	1017.00	119.10
118	.00	1291.85	1035.00	111.30
120	10.80	1291.85	1042.00	108.27
124	20.40	1291.88	1047.00	106.11
126	.00	1291.88	1048.00	105.68
127	.00	1291.88	1049.00	105.25
128	9.70	1291.88	1053.00	103.51
130	.00	1291.92	1125.00	72.33
132	44.10	1291.89	1121.00	74.05
134	.00	1291.89	1124.00	72.75
136	6.50	1291.89	1128.00	71.02
138	.00	1291.92	1129.00	70.60
140	33.30	1291.93	1124.00	72.77
141	.00	1291.93	1126.00	71.90
142	.00	1291.93	1130.00	70.17
144	.00	1292.00	1081.00	91.43
146	.00	1291.93	1138.00	66.70
147	.00	1291.86	970.00	139.47
148	.00	1291.86	973.00	138.17
152	5.40	1291.93	1148.00	62.37
200	.00	1499.88	1205.00	127.78
202	.00	1493.16	1207.00	124.00
204	35.60	1475.73	1254.00	96.08
208	14.00	1448.90	1297.00	65.82
210	.00	1493.16	1210.00	122.70
211	.00	1493.16	1196.00	128.77
212	33.30	1439.47	1312.00	55.24
214	.00	1493.16	1185.00	133.53
216	.00	1499.84	1290.00	90.93
218	.00	1475.73	1254.00	96.08
220	.00	1448.90	1302.00	63.66
222	.00	1475.73	1259.00	93.91

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**April 18, 2017
 Dexter Wilson Engr., Inc.
 Job No. 750-003**

224	1250.00	1429.25	1333.00	41.71
226	1250.00	1436.15	1326.00	47.73
300	.00	1682.20	885.00	345.45
301	.00	1682.20	820.00	373.62
304	.00	1682.36	1081.00	260.59
308	.00	1682.76	1207.00	206.16
312	.00	1688.46	1290.00	172.67
316	.00	1785.67	1604.00	78.72
320	8.60	1797.28	1590.00	89.82
324	19.40	1797.26	1600.00	85.48
326	.00	1797.25	1588.00	90.68
328	14.00	1797.25	1568.00	99.34
330	.00	1797.25	1545.00	109.31
332	.00	1797.25	1668.00	56.01
336	20.40	1797.24	1606.00	82.87
338	.00	1797.24	1626.00	74.21
340	5.40	1797.24	1629.00	72.91
342	.00	1797.24	1605.00	83.31
344	.00	1783.12	1590.00	83.69
346	.00	1780.31	1588.00	83.34
348	30.10	1782.39	1585.00	85.54
350	6.50	1783.08	1608.00	75.87
351	.00	1783.08	1604.00	77.60
352	25.80	1783.08	1592.00	82.80
354	.00	1783.08	1601.00	78.90
355	.00	1797.25	1670.00	55.14
356	.00	1800.88	1695.00	45.88
358	.00	1783.08	1602.00	78.47
360	18.30	1797.26	1657.00	60.78
361	.00	1797.26	1666.00	56.88
362	23.70	1791.66	1663.00	55.75
363	.00	1797.26	1678.00	51.68
364	.00	1791.66	1674.00	50.99
365	11.90	1791.66	1686.00	45.79
368	23.70	1797.25	1710.00	37.81
369	.00	1787.15	1613.00	75.47
370	.00	1797.25	1629.00	72.91
371	.00	1787.15	1615.00	74.60
372	19.40	1797.25	1673.00	53.84
374	.00	1797.25	1654.00	62.07
376	.00	1797.24	1608.00	82.01
377	.00	1787.15	1619.00	72.87
378	.00	1797.25	1625.00	74.64
380	3.30	1797.25	1713.00	36.51
382	.00	1797.25	1677.00	52.11
384	4.30	1797.25	1686.00	48.21
392	.00	1797.25	1673.00	53.84
394	.00	1797.25	1664.00	57.74
395	.00	1797.25	1585.00	91.98
396	.00	1797.25	1631.00	72.04
397	.00	1797.25	1545.00	109.31
398	.00	1797.25	1580.00	94.14
399	.00	1797.25	1511.00	124.04

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MAXIMUM PRESSURES				
301	.00	1682.20	820.00	373.62
300	.00	1682.20	885.00	345.45
304	.00	1682.36	1081.00	260.59
MINIMUM PRESSURES				
380	3.30	1797.25	1713.00	36.51
368	23.70	1797.25	1710.00	37.81
224	1250.00	1429.25	1333.00	41.71

THE NET SYSTEM DEMAND = 3057.70

SUMMARY OF INFLOWS (+) AND OUTFLOWS (-) FROM FIXED GRADE NODES

PIPE NUMBER	FLOWRATE
367	1528.85
368	1528.85

THE NET FLOW INTO THE SYSTEM FROM FIXED GRADE NODES = 3057.70
 THE NET FLOW OUT OF THE SYSTEM INTO FIXED GRADE NODES = .00

A SUMMARY OF CONDITIONS SPECIFIED FOR THE NEXT SIMULATION FOLLOWS

THE FOLLOWING SPECIFIC DEMAND CHANGES ARE MADE :

JUNCTION NUMBER	DEMAND
350	1250.00
351	1250.00

THE RESULTS ARE OBTAINED AFTER 3 TRIALS WITH AN ACCURACY = .00122

**MAX DAY DEMAND PLUS 2500 GPM FIRE FLOW
 BETWEEN NODES 350 AND 351**

PIPE NO.	NODE NOS.	FLOWRATE	HEAD LOSS	PUMP HEAD	MINOR LOSS	VELOCITY	HL/1000
101	100 102	94.94	.04	.00	.00	.27	.03
103	102 104	.00	.00	.00	.00	.00	.00
105	102 106	94.94	.03	.00	.00	.27	.03
107	106 110	46.44	.02	.00	.00	.30	.06
108	110 111	.00	.00	.00	.00	.00	.00
109	110 112	46.44	.06	.00	.00	.30	.06
111	112 116	7.74	.00	.00	.00	.05	.00
113	116 124	-25.66	-.03	.00	.00	-.16	-.02
115	124 126	9.70	.00	.00	.00	.03	.00
117	124 132	-55.76	-.01	.00	.00	-.16	-.01
121	132 130	-106.36	-.02	.00	.00	-.30	-.04
123	126 127	.00	.00	.00	.00	.00	.00
125	140 144	-145.06	-.07	.00	.00	-.41	-.07

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**April 18, 2017
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 Job No. 750-003**

127	126	114	9.70	.00	.00	.00	.03	.00
128	106	107	11.90	.00	.00	.00	.03	.00
129	107	108	11.90	.00	.00	.00	.08	.00
131	130	140	-106.36	-.01	.00	.00	-.30	-.04
133	116	118	10.80	.00	.00	.00	.03	.00
135	118	120	10.80	.00	.00	.00	.07	.00
137	114	128	9.70	.00	.00	.00	.06	.00
139	140	141	.00	.00	.00	.00	.00	.00
140	132	134	6.50	.00	.00	.00	.02	.00
141	134	136	6.50	.00	.00	.00	.04	.00
143	130	138	.00	.00	.00	.00	.00	.00
145	141	142	.00	.00	.00	.00	.00	.00
147	140	146	5.40	.00	.00	.00	.02	.00
149	112	147	.00	.00	.00	.00	.00	.00
151	147	148	.00	.00	.00	.00	.00	.00
155	146	152	5.40	.00	.00	.00	.03	.00
201	200	202	52.66	.02	.00	.00	.34	.08
203	202	204	52.66	.05	.00	.00	.34	.08
205	204	208	17.06	.01	.00	.00	.11	.01
207	202	210	.00	.00	.00	.00	.00	.00
209	208	212	3.06	.00	.00	.00	.02	.00
211	202	211	.00	.00	.00	.00	.00	.00
213	212	216	-41.04	-.09	.00	.00	-.26	-.05
215	204	218	.00	.00	.00	.00	.00	.00
217	211	214	.00	.00	.00	.00	.00	.00
219	218	222	.00	.00	.00	.00	.00	.00
221	208	220	.00	.00	.00	.00	.00	.00
223	212	226	10.80	.00	.00	.00	.03	.00
225	226	224	10.80	.00	.00	.00	.07	.00
301	0	100	94.94	.00	.00	.00	.27	.04
303	0	144	145.06	.00	.00	.00	.41	.08
305	0	200	52.66	.00	.00	.00	.15	.01
307	0	216	41.04	.00	.00	.00	.12	.01
309	301	300	.00	.00	.00	.00	.00	.00
311	300	304	-94.94	-.16	.00	.00	-.27	-.04
315	304	308	-240.00	-.40	.00	.00	-.68	-.21
319	308	312	-292.66	-.31	.00	.00	-.83	-.30
323	312	346	-333.70	-1.76	.00	.00	-.95	-.33
327	316	320	-2355.03	-11.65	.00	.00	-6.68	-12.39
329	326	328	55.72	.01	.00	.00	.16	.01
331	320	324	54.95	.02	.00	.00	.16	.01
332	320	324	54.95	.02	.00	.00	.16	.01
333	328	330	25.80	.00	.00	.00	.07	.00
335	324	326	55.72	.01	.00	.00	.16	.01
339	330	336	25.80	.00	.00	.00	.07	.00
341	330	397	.00	.00	.00	.00	.00	.00
342	397	399	.00	.00	.00	.00	.00	.00
343	336	338	5.40	.00	.00	.00	.02	.00
344	338	340	5.40	.00	.00	.00	.03	.00
345	326	395	.00	.00	.00	.00	.00	.00
346	395	398	.00	.00	.00	.00	.00	.00
347	332	355	.00	.00	.00	.00	.00	.00
349	316	344	1405.82	19.91	.00	.00	8.97	34.33
351	352	344	-2024.42	-3.84	.00	.00	-5.74	-9.36

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 Job No. 750-003**

353	348	346	-1150.08	-14.67	.00	.00	-7.34	-23.67
354	346	316	-1483.78	-2.16	.00	.00	-4.21	-5.27
355	344	348	-618.61	-3.08	.00	.00	-3.95	-7.51
356	352	354	2500.00	4.57	.00	.00	7.09	13.84
357	354	351	2500.00	2.49	.00	.00	7.09	13.84
358	351	350	1250.00	6.90	.00	.00	7.98	27.62
359	348	352	501.38	6.92	.00	.00	3.20	5.09
361	354	358	.00	.00	.00	.00	.00	.00
363	356	320	1236.77	3.61	.00	.00	3.51	3.76
364	356	320	1236.77	3.61	.00	.00	3.51	3.76
365	369	371	.00	.00	.00	.00	.00	.00
366	371	377	.00	.00	.00	.00	.00	.00
367	0	356	1531.00	5.13	.00	.00	4.34	5.58
368	0	356	1531.00	5.13	.00	.00	4.34	5.58
371	360	356	-588.47	-3.63	.00	.00	-3.76	-6.84
373	360	361	.00	.00	.00	.00	.00	.00
374	361	363	.00	.00	.00	.00	.00	.00
375	362	360	-570.17	-5.61	.00	.00	-3.64	-6.45
377	374	394	.00	.00	.00	.00	.00	.00
379	369	362	-534.57	-4.52	.00	.00	-3.41	-5.73
381	316	369	-534.57	-1.49	.00	.00	-3.41	-5.73
382	374	378	-15.92	.00	.00	.00	-.05	.00
383	324	332	34.78	.01	.00	.00	.10	.01
384	378	370	.00	.00	.00	.00	.00	.00
385	332	368	34.78	.00	.00	.00	.10	.01
386	370	396	.00	.00	.00	.00	.00	.00
387	368	372	7.78	.00	.00	.00	.02	.00
389	355	392	.00	.00	.00	.00	.00	.00
391	378	328	-15.92	.00	.00	.00	-.05	.00
392	372	382	4.30	.00	.00	.00	.01	.00
393	382	384	4.30	.00	.00	.00	.03	.00
394	372	374	-15.92	.00	.00	.00	-.05	.00
395	336	342	.00	.00	.00	.00	.00	.00
396	342	376	.00	.00	.00	.00	.00	.00
397	368	380	3.30	.00	.00	.00	.02	.00
398	362	364	11.90	.00	.00	.00	.03	.00
399	364	365	11.90	.00	.00	.00	.08	.00

JUNCTION NUMBER	DEMAND	GRADE LINE	ELEVATION	PRESSURE
100	.00	1292.00	885.00	176.36
102	.00	1291.96	886.00	175.92
104	.00	1291.96	880.00	178.52
106	36.60	1291.93	944.00	150.77
107	.00	1291.93	982.00	134.30
108	11.90	1291.93	983.00	133.87
110	.00	1291.91	949.00	148.60
111	.00	1291.91	950.00	148.16
112	38.70	1291.86	965.00	141.64
114	.00	1291.88	1048.00	105.68
116	22.60	1291.85	1017.00	119.10
118	.00	1291.85	1035.00	111.30
120	10.80	1291.85	1042.00	108.27
124	20.40	1291.88	1047.00	106.11

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**April 18, 2017
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 Job No. 750-003**

126	.00	1291.88	1048.00	105.68
127	.00	1291.88	1049.00	105.25
128	9.70	1291.88	1053.00	103.51
130	.00	1291.92	1125.00	72.33
132	44.10	1291.89	1121.00	74.05
134	.00	1291.89	1124.00	72.75
136	6.50	1291.89	1128.00	71.02
138	.00	1291.92	1129.00	70.60
140	33.30	1291.93	1124.00	72.77
141	.00	1291.93	1126.00	71.90
142	.00	1291.93	1130.00	70.17
144	.00	1292.00	1081.00	91.43
146	.00	1291.93	1138.00	66.70
147	.00	1291.86	970.00	139.47
148	.00	1291.86	973.00	138.17
152	5.40	1291.93	1148.00	62.37
200	.00	1500.00	1205.00	127.83
202	.00	1499.98	1207.00	126.96
204	35.60	1499.92	1254.00	106.57
208	14.00	1499.91	1297.00	87.93
210	.00	1499.98	1210.00	125.66
211	.00	1499.98	1196.00	131.72
212	33.30	1499.91	1312.00	81.43
214	.00	1499.98	1185.00	136.49
216	.00	1500.00	1290.00	91.00
218	.00	1499.92	1254.00	106.57
220	.00	1499.91	1302.00	85.76
222	.00	1499.92	1259.00	104.40
224	10.80	1499.91	1333.00	72.33
226	.00	1499.91	1326.00	75.36
300	.00	1780.82	885.00	388.19
301	.00	1780.82	820.00	416.36
304	.00	1780.99	1081.00	303.33
308	.00	1781.39	1207.00	248.90
312	.00	1781.69	1290.00	213.07
316	.00	1785.61	1604.00	78.70
320	8.60	1797.26	1590.00	89.81
324	19.40	1797.24	1600.00	85.47
326	.00	1797.23	1588.00	90.67
328	14.00	1797.23	1568.00	99.33
330	.00	1797.22	1545.00	109.30
332	.00	1797.23	1668.00	56.00
336	20.40	1797.22	1606.00	82.86
338	.00	1797.22	1626.00	74.20
340	5.40	1797.22	1629.00	72.90
342	.00	1797.22	1605.00	83.30
344	.00	1765.70	1590.00	76.14
346	.00	1783.45	1588.00	84.70
348	30.10	1768.78	1585.00	79.64
350	1250.00	1747.90	1608.00	60.62
351	1250.00	1754.80	1604.00	65.35
352	25.80	1761.86	1592.00	73.61
354	.00	1757.29	1601.00	67.73
355	.00	1797.23	1670.00	55.13

**Safari Highlands Ranch Project
 Ultimate Water System Analysis (750PW4)
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**April 18, 2017
 Dexter Wilson Engr., Inc.
 Job No. 750-003**

356	.00	1800.87	1695.00	45.88
358	.00	1757.29	1602.00	67.29
360	18.30	1797.24	1657.00	60.77
361	.00	1797.24	1666.00	56.87
362	23.70	1791.62	1663.00	55.74
363	.00	1797.24	1678.00	51.67
364	.00	1791.62	1674.00	50.97
365	11.90	1791.62	1686.00	45.77
368	23.70	1797.22	1710.00	37.80
369	.00	1787.10	1613.00	75.44
370	.00	1797.22	1629.00	72.90
371	.00	1787.10	1615.00	74.58
372	19.40	1797.22	1673.00	53.83
374	.00	1797.22	1654.00	62.06
376	.00	1797.22	1608.00	82.00
377	.00	1787.10	1619.00	72.84
378	.00	1797.22	1625.00	74.63
380	3.30	1797.22	1713.00	36.50
382	.00	1797.22	1677.00	52.10
384	4.30	1797.22	1686.00	48.20
392	.00	1797.23	1673.00	53.83
394	.00	1797.22	1664.00	57.73
395	.00	1797.23	1585.00	91.97
396	.00	1797.22	1631.00	72.03
397	.00	1797.22	1545.00	109.30
398	.00	1797.23	1580.00	94.13
399	.00	1797.22	1511.00	124.03

MAXIMUM PRESSURES

301	.00	1780.82	820.00	416.36
300	.00	1780.82	885.00	388.19
304	.00	1780.99	1081.00	303.33

MINIMUM PRESSURES

380	3.30	1797.22	1713.00	36.50
368	23.70	1797.22	1710.00	37.80
365	11.90	1791.62	1686.00	45.77

THE NET SYSTEM DEMAND = 3062.00

SUMMARY OF INFLOWS (+) AND OUTFLOWS (-) FROM FIXED GRADE NODES

PIPE NUMBER	FLOWRATE
367	1531.00
368	1531.00

THE NET FLOW INTO THE SYSTEM FROM FIXED GRADE NODES = 3062.00
 THE NET FLOW OUT OF THE SYSTEM INTO FIXED GRADE NODES = .00

A SUMMARY OF CONDITIONS SPECIFIED FOR THE NEXT SIMULATION FOLLOWS

**Safari Highlands Ranch Project
 Ultimate Water System Analysis (750PW4)
 Average Day, Maximum Day, Peak Hour, and
 Fire Flow Demand Scenarios**

**April 18, 2017
 Dexter Wilson Engr., Inc.
 Job No. 750-003**

THE FOLLOWING SPECIFIC DEMAND CHANGES ARE MADE :

JUNCTION NUMBER	DEMAND
364	1250.00
365	1250.00

THE RESULTS ARE OBTAINED AFTER 3 TRIALS WITH AN ACCURACY = .00256

**MAX DAY DEMAND PLUS 2500 GPM FIRE FLOW
 BETWEEN NODES 364 AND 365**

PIPE NO.	NODE NOS.	FLOWRATE	HEAD LOSS	PUMP HEAD	MINOR LOSS	VELOCITY	HL/1000
101	100 102	94.94	.04	.00	.00	.27	.03
103	102 104	.00	.00	.00	.00	.00	.00
105	102 106	94.94	.03	.00	.00	.27	.03
107	106 110	46.44	.02	.00	.00	.30	.06
108	110 111	.00	.00	.00	.00	.00	.00
109	110 112	46.44	.06	.00	.00	.30	.06
111	112 116	7.74	.00	.00	.00	.05	.00
113	116 124	-25.66	-.03	.00	.00	-.16	-.02
115	124 126	9.70	.00	.00	.00	.03	.00
117	124 132	-55.76	-.01	.00	.00	-.16	-.01
121	132 130	-106.36	-.02	.00	.00	-.30	-.04
123	126 127	.00	.00	.00	.00	.00	.00
125	140 144	-145.06	-.07	.00	.00	-.41	-.07
127	126 114	9.70	.00	.00	.00	.03	.00
128	106 107	11.90	.00	.00	.00	.03	.00
129	107 108	11.90	.00	.00	.00	.08	.00
131	130 140	-106.36	-.01	.00	.00	-.30	-.04
133	116 118	10.80	.00	.00	.00	.03	.00
135	118 120	10.80	.00	.00	.00	.07	.00
137	114 128	9.70	.00	.00	.00	.06	.00
139	140 141	.00	.00	.00	.00	.00	.00
140	132 134	6.50	.00	.00	.00	.02	.00
141	134 136	6.50	.00	.00	.00	.04	.00
143	130 138	.00	.00	.00	.00	.00	.00
145	141 142	.00	.00	.00	.00	.00	.00
147	140 146	5.40	.00	.00	.00	.02	.00
149	112 147	.00	.00	.00	.00	.00	.00
151	147 148	.00	.00	.00	.00	.00	.00
155	146 152	5.40	.00	.00	.00	.03	.00
201	200 202	52.66	.02	.00	.00	.34	.08
203	202 204	52.66	.05	.00	.00	.34	.08
205	204 208	17.06	.01	.00	.00	.11	.01
207	202 210	.00	.00	.00	.00	.00	.00
209	208 212	3.06	.00	.00	.00	.02	.00
211	202 211	.00	.00	.00	.00	.00	.00
213	212 216	-41.04	-.09	.00	.00	-.26	-.05
215	204 218	.00	.00	.00	.00	.00	.00
217	211 214	.00	.00	.00	.00	.00	.00
219	218 222	.00	.00	.00	.00	.00	.00

**Safari Highlands Ranch Project
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**April 18, 2017
 Dexter Wilson Engr., Inc.
 Job No. 750-003**

221	208	220	.00	.00	.00	.00	.00	.00
223	212	226	10.80	.00	.00	.00	.03	.00
225	226	224	10.80	.00	.00	.00	.07	.00
301	0	100	94.94	.00	.00	.00	.27	.04
303	0	144	145.06	.00	.00	.00	.41	.08
305	0	200	52.66	.00	.00	.00	.15	.01
307	0	216	41.04	.00	.00	.00	.12	.01
309	301	300	.00	.00	.00	.00	.00	.00
311	300	304	-94.94	-.16	.00	.00	-.27	-.04
315	304	308	-240.00	-.40	.00	.00	-.68	-.21
319	308	312	-292.66	-.31	.00	.00	-.83	-.30
323	312	346	-333.70	-1.76	.00	.00	-.95	-.33
327	316	320	-1677.97	-6.22	.00	.00	-4.76	-6.61
329	326	328	55.72	.01	.00	.00	.16	.01
331	320	324	54.95	.02	.00	.00	.16	.01
332	320	324	54.95	.02	.00	.00	.16	.01
333	328	330	25.80	.00	.00	.00	.07	.00
335	324	326	55.72	.01	.00	.00	.16	.01
339	330	336	25.80	.00	.00	.00	.07	.00
341	330	397	.00	.00	.00	.00	.00	.00
342	397	399	.00	.00	.00	.00	.00	.00
343	336	338	5.40	.00	.00	.00	.02	.00
344	338	340	5.40	.00	.00	.00	.03	.00
345	326	395	.00	.00	.00	.00	.00	.00
346	395	398	.00	.00	.00	.00	.00	.00
347	332	355	.00	.00	.00	.00	.00	.00
349	316	344	81.74	.10	.00	.00	.52	.18
351	352	344	-49.54	.00	.00	.00	-.14	-.01
353	348	346	19.34	.01	.00	.00	.12	.01
354	346	316	-314.36	-.12	.00	.00	-.89	-.30
355	344	348	32.20	.01	.00	.00	.21	.03
356	352	354	6.50	.00	.00	.00	.02	.00
357	354	351	6.50	.00	.00	.00	.02	.00
358	351	350	6.50	.00	.00	.00	.04	.00
359	348	352	-17.24	-.01	.00	.00	-.11	-.01
361	354	358	.00	.00	.00	.00	.00	.00
363	356	320	898.24	2.00	.00	.00	2.55	2.08
364	356	320	898.24	2.00	.00	.00	2.55	2.08
365	369	371	.00	.00	.00	.00	.00	.00
366	371	377	.00	.00	.00	.00	.00	.00
367	0	356	1528.30	5.12	.00	.00	4.34	5.56
368	0	356	1528.30	5.12	.00	.00	4.34	5.56
371	360	356	-1260.13	-14.86	.00	.00	-8.04	-28.03
373	360	361	.00	.00	.00	.00	.00	.00
374	361	363	.00	.00	.00	.00	.00	.00
375	362	360	-1241.83	-23.74	.00	.00	-7.93	-27.28
377	374	394	.00	.00	.00	.00	.00	.00
379	369	362	1281.87	22.86	.00	.00	8.18	28.93
381	316	369	1281.87	7.52	.00	.00	8.18	28.93
382	374	378	-15.92	.00	.00	.00	-.05	.00
383	324	332	34.78	.01	.00	.00	.10	.01
384	378	370	.00	.00	.00	.00	.00	.00
385	332	368	34.78	.00	.00	.00	.10	.01
386	370	396	.00	.00	.00	.00	.00	.00

**Safari Highlands Ranch Project
 Ultimate Water System Analysis (750PW4)
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 Fire Flow Demand Scenarios**

**April 18, 2017
 Dexter Wilson Engr., Inc.
 Job No. 750 003**

387	368	372	7.78	.00	.00	.00	.02	.00
389	355	392	.00	.00	.00	.00	.00	.00
391	378	328	-15.92	.00	.00	.00	-.05	.00
392	372	382	4.30	.00	.00	.00	.01	.00
393	382	384	4.30	.00	.00	.00	.03	.00
394	372	374	-15.92	.00	.00	.00	-.05	.00
395	336	342	.00	.00	.00	.00	.00	.00
396	342	376	.00	.00	.00	.00	.00	.00
397	368	380	3.30	.00	.00	.00	.02	.00
398	362	364	2500.00	5.26	.00	.00	7.09	13.84
399	364	365	1250.00	6.90	.00	.00	7.98	27.62

JUNCTION NUMBER	DEMAND	GRADE LINE	ELEVATION	PRESSURE
100	.00	1292.00	885.00	176.36
102	.00	1291.96	886.00	175.92
104	.00	1291.96	880.00	178.52
106	36.60	1291.93	944.00	150.77
107	.00	1291.93	982.00	134.30
108	11.90	1291.93	983.00	133.87
110	.00	1291.91	949.00	148.60
111	.00	1291.91	950.00	148.16
112	38.70	1291.86	965.00	141.64
114	.00	1291.88	1048.00	105.68
116	22.60	1291.85	1017.00	119.10
118	.00	1291.85	1035.00	111.30
120	10.80	1291.85	1042.00	108.27
124	20.40	1291.88	1047.00	106.11
126	.00	1291.88	1048.00	105.68
127	.00	1291.88	1049.00	105.25
128	9.70	1291.88	1053.00	103.51
130	.00	1291.92	1125.00	72.33
132	44.10	1291.89	1121.00	74.05
134	.00	1291.89	1124.00	72.75
136	6.50	1291.89	1128.00	71.02
138	.00	1291.92	1129.00	70.60
140	33.30	1291.93	1124.00	72.77
141	.00	1291.93	1126.00	71.90
142	.00	1291.93	1130.00	70.17
144	.00	1292.00	1081.00	91.43
146	.00	1291.93	1138.00	66.70
147	.00	1291.86	970.00	139.47
148	.00	1291.86	973.00	138.17
152	5.40	1291.93	1148.00	62.37
200	.00	1500.00	1205.00	127.83
202	.00	1499.98	1207.00	126.96
204	35.60	1499.92	1254.00	106.57
208	14.00	1499.91	1297.00	87.93
210	.00	1499.98	1210.00	125.66
211	.00	1499.98	1196.00	131.72
212	33.30	1499.91	1312.00	81.43
214	.00	1499.98	1185.00	136.49
216	.00	1500.00	1290.00	91.00
218	.00	1499.92	1254.00	106.57

**Safari Highlands Ranch Project
 Ultimate Water System Analysis (750PW4)
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 Dexter Wilson Engr., Inc.
 Job No. 750-003**

220	.00	1499.91	1302.00	85.76
222	.00	1499.92	1259.00	104.40
224	10.80	1499.91	1333.00	72.33
226	.00	1499.91	1326.00	75.36
300	.00	1789.92	885.00	392.13
301	.00	1789.92	820.00	420.30
304	.00	1790.08	1081.00	307.27
308	.00	1790.48	1207.00	252.84
312	.00	1790.79	1290.00	217.01
316	.00	1792.67	1604.00	81.76
320	8.60	1798.89	1590.00	90.52
324	19.40	1798.87	1600.00	86.18
326	.00	1798.86	1588.00	91.37
328	14.00	1798.85	1568.00	100.04
330	.00	1798.85	1545.00	110.00
332	.00	1798.86	1668.00	56.70
336	20.40	1798.85	1606.00	83.57
338	.00	1798.85	1626.00	74.90
340	5.40	1798.85	1629.00	73.60
342	.00	1798.85	1605.00	84.00
344	.00	1792.57	1590.00	87.78
346	.00	1792.55	1588.00	88.64
348	30.10	1792.55	1585.00	89.94
350	6.50	1792.56	1608.00	79.98
351	.00	1792.56	1604.00	81.71
352	25.80	1792.56	1592.00	86.91
354	.00	1792.56	1601.00	83.01
355	.00	1798.86	1670.00	55.84
356	.00	1800.88	1695.00	45.88
358	.00	1792.56	1602.00	82.58
360	18.30	1786.03	1657.00	55.91
361	.00	1786.03	1666.00	52.01
362	23.70	1762.29	1663.00	43.03
363	.00	1786.03	1678.00	46.81
364	1250.00	1757.03	1674.00	35.98
365	1250.00	1750.13	1686.00	27.79
368	23.70	1798.85	1710.00	38.50
369	.00	1785.15	1613.00	74.60
370	.00	1798.85	1629.00	73.60
371	.00	1785.15	1615.00	73.73
372	19.40	1798.85	1673.00	54.54
374	.00	1798.85	1654.00	62.77
376	.00	1798.85	1608.00	82.70
377	.00	1785.15	1619.00	72.00
378	.00	1798.85	1625.00	75.34
380	3.30	1798.85	1713.00	37.20
382	.00	1798.85	1677.00	52.80
384	4.30	1798.85	1686.00	48.90
392	.00	1798.86	1673.00	54.54
394	.00	1798.85	1664.00	58.44
395	.00	1798.86	1585.00	92.67
396	.00	1798.85	1631.00	72.74
397	.00	1798.85	1545.00	110.00
398	.00	1798.86	1580.00	94.84

**Safari Highlands Ranch Project
 Ultimate Water System Analysis (750PW4)
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**April 18, 2017
 Dexter Wilson Engr., Inc.
 Job No. 750-003**

399 .00 1798.85 1511.00 124.74

MAXIMUM PRESSURES

301 .00 1789.92 820.00 420.30
 300 .00 1789.92 885.00 392.13
 304 .00 1790.08 1081.00 307.27

MINIMUM PRESSURES

365 1250.00 1750.13 1686.00 27.79
 364 1250.00 1757.03 1674.00 35.98
 380 3.30 1798.85 1713.00 37.20

THE NET SYSTEM DEMAND = 3056.60

SUMMARY OF INFLOWS(+) AND OUTFLOWS(-) FROM FIXED GRADE NODES

PIPE NUMBER	FLOWRATE
367	1528.30
368	1528.30

THE NET FLOW INTO THE SYSTEM FROM FIXED GRADE NODES = 3056.61
 THE NET FLOW OUT OF THE SYSTEM INTO FIXED GRADE NODES = .00

A SUMMARY OF CONDITIONS SPECIFIED FOR THE NEXT SIMULATION FOLLOWS

THE FOLLOWING SPECIFIC DEMAND CHANGES ARE MADE :

JUNCTION NUMBER	DEMAND
368	1250.00
380	1250.00

THE RESULTS ARE OBTAINED AFTER 4 TRIALS WITH AN ACCURACY = .00352

**MAX DAY DEMAND PLUS 2500 GPM FIRE FLOW
 BETWEEN NODES 368 AND 380**

PIPE NO.	NODE NOS.	FLOWRATE	HEAD LOSS	PUMP HEAD	MINOR LOSS	VELOCITY	HL/1000
101	100 102	94.94	.04	.00	.00	.27	.03
103	102 104	.00	.00	.00	.00	.00	.00
105	102 106	94.94	.03	.00	.00	.27	.03
107	106 110	46.44	.02	.00	.00	.30	.06
108	110 111	.00	.00	.00	.00	.00	.00
109	110 112	46.44	.06	.00	.00	.30	.06
111	112 116	7.74	.00	.00	.00	.05	.00
113	116 124	-25.66	-.03	.00	.00	-.16	-.02
115	124 126	9.70	.00	.00	.00	.03	.00
117	124 132	-55.76	-.01	.00	.00	-.16	-.01
121	132 130	-106.36	-.02	.00	.00	-.30	-.04

**Safari Highlands Ranch Project
 Ultimate Water System Analysis (750PW4)
 Average Day, Maximum Day, Peak Hour, and
 Fire Flow Demand Scenarios**

**April 18, 2017
 Dexter Wilson Engr., Inc.
 Job No. 750-003**

123	126	127	.00	.00	.00	.00	.00	.00
125	140	144	-145.06	-.07	.00	.00	-.41	-.07
127	126	114	9.70	.00	.00	.00	.03	.00
128	106	107	11.90	.00	.00	.00	.03	.00
129	107	108	11.90	.00	.00	.00	.08	.00
131	130	140	-106.36	-.01	.00	.00	-.30	-.04
133	116	118	10.80	.00	.00	.00	.03	.00
135	118	120	10.80	.00	.00	.00	.07	.00
137	114	128	9.70	.00	.00	.00	.06	.00
139	140	141	.00	.00	.00	.00	.00	.00
140	132	134	6.50	.00	.00	.00	.02	.00
141	134	136	6.50	.00	.00	.00	.04	.00
143	130	138	.00	.00	.00	.00	.00	.00
145	141	142	.00	.00	.00	.00	.00	.00
147	140	146	5.40	.00	.00	.00	.02	.00
149	112	147	.00	.00	.00	.00	.00	.00
151	147	148	.00	.00	.00	.00	.00	.00
155	146	152	5.40	.00	.00	.00	.03	.00
201	200	202	52.66	.02	.00	.00	.34	.08
203	202	204	52.66	.05	.00	.00	.34	.08
205	204	208	17.06	.01	.00	.00	.11	.01
207	202	210	.00	.00	.00	.00	.00	.00
209	208	212	3.06	.00	.00	.00	.02	.00
211	202	211	.00	.00	.00	.00	.00	.00
213	212	216	-41.04	-.09	.00	.00	-.26	-.05
215	204	218	.00	.00	.00	.00	.00	.00
217	211	214	.00	.00	.00	.00	.00	.00
219	218	222	.00	.00	.00	.00	.00	.00
221	208	220	.00	.00	.00	.00	.00	.00
223	212	226	10.80	.00	.00	.00	.03	.00
225	226	224	10.80	.00	.00	.00	.07	.00
301	0	100	94.94	.00	.00	.00	.27	.04
303	0	144	145.06	.00	.00	.00	.41	.08
305	0	200	52.66	.00	.00	.00	.15	.01
307	0	216	41.04	.00	.00	.00	.12	.01
309	301	300	.00	.00	.00	.00	.00	.00
311	300	304	-94.94	-.16	.00	.00	-.27	-.04
315	304	308	-240.00	-.40	.00	.00	-.68	-.21
319	308	312	-292.66	-.31	.00	.00	-.83	-.30
323	312	346	-333.70	-1.76	.00	.00	-.95	-.33
327	316	320	-135.70	-.06	.00	.00	-.38	-.06
329	326	328	1054.91	1.29	.00	.00	2.99	2.80
331	320	324	1291.45	7.21	.00	.00	3.66	4.07
332	320	324	1291.45	7.21	.00	.00	3.66	4.07
333	328	330	25.80	.00	.00	.00	.07	.00
335	324	326	1054.91	1.26	.00	.00	2.99	2.80
339	330	336	25.80	.00	.00	.00	.07	.00
341	330	397	.00	.00	.00	.00	.00	.00
342	397	399	.00	.00	.00	.00	.00	.00
343	336	338	5.40	.00	.00	.00	.02	.00
344	338	340	5.40	.00	.00	.00	.03	.00
345	326	395	.00	.00	.00	.00	.00	.00
346	395	398	.00	.00	.00	.00	.00	.00
347	332	355	.00	.00	.00	.00	.00	.00

**Safari Highlands Ranch Project
 Ultimate Water System Analysis (750PW4)
 Average Day, Maximum Day, Peak Hour, and
 Fire Flow Demand Scenarios**

**April 18, 2017
 Dexter Wilson Engr., Inc.
 Job No. 750-003**

349	316	344	81.12	.10	.00	.00	.52	.17
351	352	344	-47.34	.00	.00	.00	-.13	-.01
353	348	346	18.72	.01	.00	.00	.12	.01
354	346	316	-314.98	-.12	.00	.00	-.89	-.30
355	344	348	33.78	.01	.00	.00	.22	.03
356	352	354	6.50	.00	.00	.00	.02	.00
357	354	351	6.50	.00	.00	.00	.02	.00
358	351	350	6.50	.00	.00	.00	.04	.00
359	348	352	-15.04	-.01	.00	.00	-.10	-.01
361	354	358	.00	.00	.00	.00	.00	.00
363	356	320	1363.60	4.32	.00	.00	3.87	4.50
364	356	320	1363.60	4.32	.00	.00	3.87	4.50
365	369	371	.00	.00	.00	.00	.00	.00
366	371	377	.00	.00	.00	.00	.00	.00
367	0	356	1520.75	5.07	.00	.00	4.31	5.51
368	0	356	1520.75	5.07	.00	.00	4.31	5.51
371	360	356	-314.30	-1.14	.00	.00	-2.01	-2.14
373	360	361	.00	.00	.00	.00	.00	.00
374	361	363	.00	.00	.00	.00	.00	.00
375	362	360	-296.00	-1.67	.00	.00	-1.89	-1.92
377	374	394	.00	.00	.00	.00	.00	.00
379	369	362	-260.40	-1.19	.00	.00	-1.66	-1.51
381	316	369	-260.40	-.39	.00	.00	-1.66	-1.51
382	374	378	-1015.11	-.91	.00	.00	-2.88	-2.61
383	324	332	1508.59	9.34	.00	.00	4.28	5.43
384	378	370	.00	.00	.00	.00	.00	.00
385	332	368	1508.59	4.24	.00	.00	4.28	5.43
386	370	396	.00	.00	.00	.00	.00	.00
387	368	372	-991.41	-5.84	.00	.00	-2.81	-2.50
389	355	392	.00	.00	.00	.00	.00	.00
391	378	328	-1015.11	-3.49	.00	.00	-2.88	-2.61
392	372	382	4.30	.00	.00	.00	.01	.00
393	382	384	4.30	.00	.00	.00	.03	.00
394	372	374	-1015.11	-.78	.00	.00	-2.88	-2.61
395	336	342	.00	.00	.00	.00	.00	.00
396	342	376	.00	.00	.00	.00	.00	.00
397	368	380	1250.00	6.90	.00	.00	7.98	27.62
398	362	364	11.90	.00	.00	.00	.03	.00
399	364	365	11.90	.00	.00	.00	.08	.00

JUNCTION NUMBER	DEMAND	GRADE LINE	ELEVATION	PRESSURE
100	.00	1292.00	885.00	176.36
102	.00	1291.96	886.00	175.92
104	.00	1291.96	880.00	178.52
106	36.60	1291.93	944.00	150.77
107	.00	1291.93	982.00	134.30
108	11.90	1291.93	983.00	133.87
110	.00	1291.91	949.00	148.60
111	.00	1291.91	950.00	148.16
112	38.70	1291.86	965.00	141.64
114	.00	1291.88	1048.00	105.68
116	22.60	1291.85	1017.00	119.10
118	.00	1291.85	1035.00	111.30

**Safari Highlands Ranch Project
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**April 18, 2017
 Dexter Wilson Engr., Inc.
 Job No. 750-003**

120	10.80	1291.85	1042.00	108.27
124	20.40	1291.88	1047.00	106.11
126	.00	1291.88	1048.00	105.68
127	.00	1291.88	1049.00	105.25
128	9.70	1291.88	1053.00	103.51
130	.00	1291.92	1125.00	72.33
132	44.10	1291.89	1121.00	74.05
134	.00	1291.89	1124.00	72.75
136	6.50	1291.89	1128.00	71.02
138	.00	1291.92	1129.00	70.60
140	33.30	1291.93	1124.00	72.77
141	.00	1291.93	1126.00	71.90
142	.00	1291.93	1130.00	70.17
144	.00	1292.00	1081.00	91.43
146	.00	1291.93	1138.00	66.70
147	.00	1291.86	970.00	139.47
148	.00	1291.86	973.00	138.17
152	5.40	1291.93	1148.00	62.37
200	.00	1500.00	1205.00	127.83
202	.00	1499.98	1207.00	126.96
204	35.60	1499.92	1254.00	106.57
208	14.00	1499.91	1297.00	87.93
210	.00	1499.98	1210.00	125.66
211	.00	1499.98	1196.00	131.72
212	33.30	1499.91	1312.00	81.43
214	.00	1499.98	1185.00	136.49
216	.00	1500.00	1290.00	91.00
218	.00	1499.92	1254.00	106.57
220	.00	1499.91	1302.00	85.76
222	.00	1499.92	1259.00	104.40
224	10.80	1499.91	1333.00	72.33
226	.00	1499.91	1326.00	75.36
300	.00	1793.80	885.00	393.81
301	.00	1793.80	820.00	421.98
304	.00	1793.96	1081.00	308.95
308	.00	1794.36	1207.00	254.52
312	.00	1794.66	1290.00	218.69
316	.00	1796.55	1604.00	83.44
320	8.60	1796.61	1590.00	89.53
324	19.40	1789.40	1600.00	82.07
326	.00	1788.14	1588.00	86.73
328	14.00	1786.85	1568.00	94.83
330	.00	1786.85	1545.00	104.80
332	.00	1780.06	1668.00	48.56
336	20.40	1786.84	1606.00	78.37
338	.00	1786.84	1626.00	69.70
340	5.40	1786.84	1629.00	68.40
342	.00	1786.84	1605.00	78.80
344	.00	1796.45	1590.00	89.46
346	.00	1796.42	1588.00	90.32
348	30.10	1796.43	1585.00	91.62
350	6.50	1796.44	1608.00	81.66
351	.00	1796.44	1604.00	83.39
352	25.80	1796.44	1592.00	88.59

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 Job No. 750-003**

354	.00	1796.44	1601.00	84.69
355	.00	1780.06	1670.00	47.69
356	.00	1800.93	1695.00	45.90
358	.00	1796.44	1602.00	84.26
360	18.30	1799.79	1657.00	61.88
361	.00	1799.79	1666.00	57.98
362	23.70	1798.13	1663.00	58.55
363	.00	1799.79	1678.00	52.78
364	.00	1798.13	1674.00	53.79
365	11.90	1798.13	1686.00	48.59
368	1250.00	1775.82	1710.00	28.52
369	.00	1796.94	1613.00	79.71
370	.00	1783.36	1629.00	66.89
371	.00	1796.94	1615.00	78.84
372	19.40	1781.66	1673.00	47.09
374	.00	1782.44	1654.00	55.66
376	.00	1786.84	1608.00	77.50
377	.00	1796.94	1619.00	77.11
378	.00	1783.36	1625.00	68.62
380	1250.00	1768.92	1713.00	24.23
382	.00	1781.66	1677.00	45.35
384	4.30	1781.66	1686.00	41.45
392	.00	1780.06	1673.00	46.39
394	.00	1782.44	1664.00	51.33
395	.00	1788.14	1585.00	88.03
396	.00	1783.36	1631.00	66.02
397	.00	1786.85	1545.00	104.80
398	.00	1788.14	1580.00	90.19
399	.00	1786.85	1511.00	119.53

MAXIMUM PRESSURES

301	.00	1793.80	820.00	421.98
300	.00	1793.80	885.00	393.81
304	.00	1793.96	1081.00	308.95

MINIMUM PRESSURES

380	1250.00	1768.92	1713.00	24.23
368	1250.00	1775.82	1710.00	28.52
384	4.30	1781.66	1686.00	41.45

THE NET SYSTEM DEMAND = 3041.50

SUMMARY OF INFLOWS(+) AND OUTFLOWS(-) FROM FIXED GRADE NODES

PIPE NUMBER	FLOWRATE
367	1520.75
368	1520.75

THE NET FLOW INTO THE SYSTEM FROM FIXED GRADE NODES = 3041.50

THE NET FLOW OUT OF THE SYSTEM INTO FIXED GRADE NODES = .00

**Safari Highlands Ranch Project
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**April 18, 2017
 Dexter Wilson Engr., Inc.
 Job No. 750-003**

A SUMMARY OF CONDITIONS SPECIFIED FOR THE NEXT SIMULATION FOLLOWS

THE FOLLOWING SPECIFIC DEMAND CHANGES ARE MADE :

JUNCTION NUMBER	DEMAND
338	1250.00
340	1250.00

THE RESULTS ARE OBTAINED AFTER 4 TRIALS WITH AN ACCURACY = .00112

**MAX DAY DEMAND PLUS 2500 GPM FIRE FLOW
 BETWEEN NODES 338 AND 340**

PIPE NO.	NO.	NODE NOS.	FLOWRATE	HEAD LOSS	PUMP HEAD	MINOR LOSS	VELOCITY	HL/1000
101	100	102	94.94	.04	.00	.00	.27	.03
103	102	104	.00	.00	.00	.00	.00	.00
105	102	106	94.94	.03	.00	.00	.27	.03
107	106	110	46.44	.02	.00	.00	.30	.06
108	110	111	.00	.00	.00	.00	.00	.00
109	110	112	46.44	.06	.00	.00	.30	.06
111	112	116	7.74	.00	.00	.00	.05	.00
113	116	124	-25.66	-.03	.00	.00	-.16	-.02
115	124	126	9.70	.00	.00	.00	.03	.00
117	124	132	-55.76	-.01	.00	.00	-.16	-.01
121	132	130	-106.36	-.02	.00	.00	-.30	-.04
123	126	127	.00	.00	.00	.00	.00	.00
125	140	144	-145.06	-.07	.00	.00	-.41	-.07
127	126	114	9.70	.00	.00	.00	.03	.00
128	106	107	11.90	.00	.00	.00	.03	.00
129	107	108	11.90	.00	.00	.00	.08	.00
131	130	140	-106.36	-.01	.00	.00	-.30	-.04
133	116	118	10.80	.00	.00	.00	.03	.00
135	118	120	10.80	.00	.00	.00	.07	.00
137	114	128	9.70	.00	.00	.00	.06	.00
139	140	141	.00	.00	.00	.00	.00	.00
140	132	134	6.50	.00	.00	.00	.02	.00
141	134	136	6.50	.00	.00	.00	.04	.00
143	130	138	.00	.00	.00	.00	.00	.00
145	141	142	.00	.00	.00	.00	.00	.00
147	140	146	5.40	.00	.00	.00	.02	.00
149	112	147	.00	.00	.00	.00	.00	.00
151	147	148	.00	.00	.00	.00	.00	.00
155	146	152	5.40	.00	.00	.00	.03	.00
201	200	202	52.66	.02	.00	.00	.34	.08
203	202	204	52.66	.05	.00	.00	.34	.08
205	204	208	17.06	.01	.00	.00	.11	.01
207	202	210	.00	.00	.00	.00	.00	.00
209	208	212	3.06	.00	.00	.00	.02	.00
211	202	211	.00	.00	.00	.00	.00	.00
213	212	216	-41.04	-.09	.00	.00	-.26	-.05
215	204	218	.00	.00	.00	.00	.00	.00

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 Dexter Wilson Engr., Inc.
 Job No. 750-003**

217	211	214	.00	.00	.00	.00	.00	.00	.00
219	218	222	.00	.00	.00	.00	.00	.00	.00
221	208	220	.00	.00	.00	.00	.00	.00	.00
223	212	226	10.80	.00	.00	.00	.03	.00	.00
225	226	224	10.80	.00	.00	.00	.07	.00	.00
301	0	100	94.94	.00	.00	.00	.27	.04	.00
303	0	144	145.06	.00	.00	.00	.41	.08	.00
305	0	200	52.66	.00	.00	.00	.15	.01	.00
307	0	216	41.04	.00	.00	.00	.12	.01	.00
309	301	300	.00	.00	.00	.00	.00	.00	.00
311	300	304	-94.94	-.16	.00	.00	-.27	-.04	.00
315	304	308	-240.00	-.40	.00	.00	-.68	-.21	.00
319	308	312	-292.66	-.31	.00	.00	-.83	-.30	.00
323	312	346	-333.70	-1.76	.00	.00	-.95	-.33	.00
327	316	320	-133.95	-.06	.00	.00	-.38	-.06	.00
329	326	328	1916.07	3.89	.00	.00	5.44	8.46	.00
331	320	324	1302.25	7.32	.00	.00	3.69	4.14	.00
332	320	324	1302.25	7.32	.00	.00	3.69	4.14	.00
333	328	330	2520.40	3.37	.00	.00	7.15	14.05	.00
335	324	326	1916.07	3.81	.00	.00	5.44	8.46	.00
339	330	336	2520.40	19.81	.00	.00	7.15	14.05	.00
341	330	397	.00	.00	.00	.00	.00	.00	.00
342	397	399	.00	.00	.00	.00	.00	.00	.00
343	336	338	2500.00	16.05	.00	.00	7.09	13.84	.00
344	338	340	1250.00	6.90	.00	.00	7.98	27.62	.00
345	326	395	.00	.00	.00	.00	.00	.00	.00
346	395	398	.00	.00	.00	.00	.00	.00	.00
347	332	355	.00	.00	.00	.00	.00	.00	.00
349	316	344	81.12	.10	.00	.00	.52	.17	.00
351	352	344	-47.34	.00	.00	.00	-.13	-.01	.00
353	348	346	18.72	.01	.00	.00	.12	.01	.00
354	346	316	-314.98	-.12	.00	.00	-.89	-.30	.00
355	344	348	33.78	.01	.00	.00	.22	.03	.00
356	352	354	6.50	.00	.00	.00	.02	.00	.00
357	354	351	6.50	.00	.00	.00	.02	.00	.00
358	351	350	6.50	.00	.00	.00	.04	.00	.00
359	348	352	-15.04	-.01	.00	.00	-.10	-.01	.00
361	354	358	.00	.00	.00	.00	.00	.00	.00
363	356	320	1373.53	4.38	.00	.00	3.90	4.56	.00
364	356	320	1373.53	4.38	.00	.00	3.90	4.56	.00
365	369	371	.00	.00	.00	.00	.00	.00	.00
366	371	377	.00	.00	.00	.00	.00	.00	.00
367	0	356	1531.55	5.14	.00	.00	4.34	5.58	.00
368	0	356	1531.55	5.14	.00	.00	4.34	5.58	.00
371	360	356	-316.05	-1.15	.00	.00	-2.02	-2.16	.00
373	360	361	.00	.00	.00	.00	.00	.00	.00
374	361	363	.00	.00	.00	.00	.00	.00	.00
375	362	360	-297.75	-1.69	.00	.00	-1.90	-1.94	.00
377	374	394	.00	.00	.00	.00	.00	.00	.00
379	369	362	-262.15	-1.21	.00	.00	-1.67	-1.53	.00
381	316	369	-262.15	-.40	.00	.00	-1.67	-1.53	.00
382	374	378	618.33	.36	.00	.00	1.75	1.04	.00
383	324	332	669.03	2.07	.00	.00	1.90	1.20	.00
384	378	370	.00	.00	.00	.00	.00	.00	.00

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 Dexter Wilson Engr., Inc.
 Job No. 750-003**

385	332	368	669.03	.94	.00	.00	1.90	1.20
386	370	396	.00	.00	.00	.00	.00	.00
387	368	372	642.03	2.61	.00	.00	1.82	1.12
389	355	392	.00	.00	.00	.00	.00	.00
391	378	328	618.33	1.39	.00	.00	1.75	1.04
392	372	382	4.30	.00	.00	.00	.01	.00
393	382	384	4.30	.00	.00	.00	.03	.00
394	372	374	618.33	.31	.00	.00	1.75	1.04
395	336	342	.00	.00	.00	.00	.00	.00
396	342	376	.00	.00	.00	.00	.00	.00
397	368	380	3.30	.00	.00	.00	.02	.00
398	362	364	11.90	.00	.00	.00	.03	.00
399	364	365	11.90	.00	.00	.00	.08	.00

JUNCTION NUMBER	DEMAND	GRADE LINE	ELEVATION	PRESSURE
100	.00	1292.00	885.00	176.36
102	.00	1291.96	886.00	175.92
104	.00	1291.96	880.00	178.52
106	36.60	1291.93	944.00	150.77
107	.00	1291.93	982.00	134.30
108	11.90	1291.93	983.00	133.87
110	.00	1291.91	949.00	148.60
111	.00	1291.91	950.00	148.16
112	38.70	1291.86	965.00	141.64
114	.00	1291.88	1048.00	105.68
116	22.60	1291.85	1017.00	119.10
118	.00	1291.85	1035.00	111.30
120	10.80	1291.85	1042.00	108.27
124	20.40	1291.88	1047.00	106.11
126	.00	1291.88	1048.00	105.68
127	.00	1291.88	1049.00	105.25
128	9.70	1291.88	1053.00	103.51
130	.00	1291.92	1125.00	72.33
132	44.10	1291.89	1121.00	74.05
134	.00	1291.89	1124.00	72.75
136	6.50	1291.89	1128.00	71.02
138	.00	1291.92	1129.00	70.60
140	33.30	1291.93	1124.00	72.77
141	.00	1291.93	1126.00	71.90
142	.00	1291.93	1130.00	70.17
144	.00	1292.00	1081.00	91.43
146	.00	1291.93	1138.00	66.70
147	.00	1291.86	970.00	139.47
148	.00	1291.86	973.00	138.17
152	5.40	1291.93	1148.00	62.37
200	.00	1500.00	1205.00	127.83
202	.00	1499.98	1207.00	126.96
204	35.60	1499.92	1254.00	106.57
208	14.00	1499.91	1297.00	87.93
210	.00	1499.98	1210.00	125.66
211	.00	1499.98	1196.00	131.72
212	33.30	1499.91	1312.00	81.43
214	.00	1499.98	1185.00	136.49

**Safari Highlands Ranch Project
 Ultimate Water System Analysis (750PW4)
 Average Day, Maximum Day, Peak Hour, and
 Fire Flow Demand Scenarios**

**April 18, 2017
 Dexter Wilson Engr., Inc.
 Job No. 750-003**

216	.00	1500.00	1290.00	91.00
218	.00	1499.92	1254.00	106.57
220	.00	1499.91	1302.00	85.76
222	.00	1499.92	1259.00	104.40
224	10.80	1499.91	1333.00	72.33
226	.00	1499.91	1326.00	75.36
300	.00	1793.67	885.00	393.76
301	.00	1793.67	820.00	421.92
304	.00	1793.83	1081.00	308.90
308	.00	1794.23	1207.00	254.47
312	.00	1794.54	1290.00	218.63
316	.00	1796.42	1604.00	83.38
320	8.60	1796.48	1590.00	89.47
324	19.40	1789.16	1600.00	81.97
326	.00	1785.36	1588.00	85.52
328	14.00	1781.47	1568.00	92.50
330	.00	1778.09	1545.00	101.01
332	.00	1787.09	1668.00	51.60
336	20.40	1758.28	1606.00	65.99
338	1250.00	1742.23	1626.00	50.37
340	1250.00	1735.33	1629.00	46.07
342	.00	1758.28	1605.00	66.42
344	.00	1796.32	1590.00	89.41
346	.00	1796.30	1588.00	90.26
348	30.10	1796.31	1585.00	91.57
350	6.50	1796.32	1608.00	81.60
351	.00	1796.32	1604.00	83.34
352	25.80	1796.32	1592.00	88.54
354	.00	1796.32	1601.00	84.64
355	.00	1787.09	1670.00	50.74
356	.00	1800.86	1695.00	45.87
358	.00	1796.32	1602.00	84.20
360	18.30	1799.72	1657.00	61.84
361	.00	1799.72	1666.00	57.94
362	23.70	1798.03	1663.00	58.51
363	.00	1799.72	1678.00	52.74
364	.00	1798.03	1674.00	53.75
365	11.90	1798.03	1686.00	48.55
368	23.70	1786.15	1710.00	33.00
369	.00	1796.82	1613.00	79.66
370	.00	1782.86	1629.00	66.67
371	.00	1796.82	1615.00	78.79
372	19.40	1783.54	1673.00	47.90
374	.00	1783.22	1654.00	56.00
376	.00	1758.28	1608.00	65.12
377	.00	1796.82	1619.00	77.06
378	.00	1782.86	1625.00	68.41
380	3.30	1786.15	1713.00	31.70
382	.00	1783.54	1677.00	46.17
384	4.30	1783.54	1686.00	42.27
392	.00	1787.09	1673.00	49.44
394	.00	1783.22	1664.00	51.66
395	.00	1785.36	1585.00	86.82
396	.00	1782.86	1631.00	65.81

**Safari Highlands Ranch Project
 Ultimate Water System Analysis (750PW4)
 Average Day, Maximum Day, Peak Hour, and
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**April 18, 2017
 Dexter Wilson Engr., Inc.
 Job No. 750-003**

397	.00	1778.09	1545.00	101.01
398	.00	1785.36	1580.00	88.99
399	.00	1778.09	1511.00	115.74

MAXIMUM PRESSURES

301	.00	1793.67	820.00	421.92
300	.00	1793.67	885.00	393.76
304	.00	1793.83	1081.00	308.90

MINIMUM PRESSURES

380	3.30	1786.15	1713.00	31.70
368	23.70	1786.15	1710.00	33.00
384	4.30	1783.54	1686.00	42.27

THE NET SYSTEM DEMAND = 3063.10

SUMMARY OF INFLOWS (+) AND OUTFLOWS (-) FROM FIXED GRADE NODES

PIPE NUMBER	FLOWRATE
367	1531.55
368	1531.55

THE NET FLOW INTO THE SYSTEM FROM FIXED GRADE NODES = 3063.10
 THE NET FLOW OUT OF THE SYSTEM INTO FIXED GRADE NODES = .00

A SUMMARY OF CONDITIONS SPECIFIED FOR THE NEXT SIMULATION FOLLOWS

THE FOLLOWING SPECIFIC DEMAND CHANGES ARE MADE :

JUNCTION NUMBER	DEMAND
300	2500.00

THE RESULTS ARE OBTAINED AFTER 4 TRIALS WITH AN ACCURACY = .00017

**MAX DAY DEMAND PLUS 2500 GPM FIRE FLOW
 AT NODE 300**

PIPE NO.	NODE NOS.	FLOWRATE	HEAD LOSS	PUMP HEAD	MINOR LOSS	VELOCITY	HL/1000
101	100 102	94.94	.04	.00	.00	.27	.03
103	102 104	.00	.00	.00	.00	.00	.00
105	102 106	94.94	.03	.00	.00	.27	.03
107	106 110	46.44	.02	.00	.00	.30	.06
108	110 111	.00	.00	.00	.00	.00	.00
109	110 112	46.44	.06	.00	.00	.30	.06
111	112 116	7.74	.00	.00	.00	.05	.00
113	116 124	-25.66	-.03	.00	.00	-.16	-.02
115	124 126	9.70	.00	.00	.00	.03	.00
117	124 132	-55.76	-.01	.00	.00	-.16	-.01

**Safari Highlands Ranch Project
 Ultimate Water System Analysis (750PW4)
 Average Day, Maximum Day, Peak Hour, and
 Fire Flow Demand Scenarios**

**April 18, 2017
 Dexter Wilson Engr., Inc.
 Job No. 750 003**

121	132	130	-106.36	-.02	.00	.00	-.30	-.04
123	126	127	.00	.00	.00	.00	.00	.00
125	140	144	-145.06	-.07	.00	.00	-.41	-.07
127	126	114	9.70	.00	.00	.00	.03	.00
128	106	107	11.90	.00	.00	.00	.03	.00
129	107	108	11.90	.00	.00	.00	.08	.00
131	130	140	-106.36	-.01	.00	.00	-.30	-.04
133	116	118	10.80	.00	.00	.00	.03	.00
135	118	120	10.80	.00	.00	.00	.07	.00
137	114	128	9.70	.00	.00	.00	.06	.00
139	140	141	.00	.00	.00	.00	.00	.00
140	132	134	6.50	.00	.00	.00	.02	.00
141	134	136	6.50	.00	.00	.00	.04	.00
143	130	138	.00	.00	.00	.00	.00	.00
145	141	142	.00	.00	.00	.00	.00	.00
147	140	146	5.40	.00	.00	.00	.02	.00
149	112	147	.00	.00	.00	.00	.00	.00
151	147	148	.00	.00	.00	.00	.00	.00
155	146	152	5.40	.00	.00	.00	.03	.00
201	200	202	52.66	.02	.00	.00	.34	.08
203	202	204	52.66	.05	.00	.00	.34	.08
205	204	208	17.06	.01	.00	.00	.11	.01
207	202	210	.00	.00	.00	.00	.00	.00
209	208	212	3.06	.00	.00	.00	.02	.00
211	202	211	.00	.00	.00	.00	.00	.00
213	212	216	-41.04	-.09	.00	.00	-.26	-.05
215	204	218	.00	.00	.00	.00	.00	.00
217	211	214	.00	.00	.00	.00	.00	.00
219	218	222	.00	.00	.00	.00	.00	.00
221	208	220	.00	.00	.00	.00	.00	.00
223	212	226	10.80	.00	.00	.00	.03	.00
225	226	224	10.80	.00	.00	.00	.07	.00
301	0	100	94.94	.00	.00	.00	.27	.04
303	0	144	145.06	.00	.00	.00	.41	.08
305	0	200	52.66	.00	.00	.00	.15	.01
307	0	216	41.04	.00	.00	.00	.12	.01
309	301	300	.00	.00	.00	.00	.00	.00
311	300	304	-2594.94	-74.12	.00	.00	-7.36	-17.20
315	304	308	-2740.00	-36.33	.00	.00	-7.77	-19.02
319	308	312	-2792.66	-19.90	.00	.00	-7.92	-19.70
323	312	346	-2833.70	-92.50	.00	.00	-8.04	-17.45
327	316	320	-2360.30	-11.69	.00	.00	-6.70	-12.44
329	326	328	55.72	.01	.00	.00	.16	.01
331	320	324	54.95	.02	.00	.00	.16	.01
332	320	324	54.95	.02	.00	.00	.16	.01
333	328	330	25.80	.00	.00	.00	.07	.00
335	324	326	55.72	.01	.00	.00	.16	.01
339	330	336	25.80	.00	.00	.00	.07	.00
341	330	397	.00	.00	.00	.00	.00	.00
342	397	399	.00	.00	.00	.00	.00	.00
343	336	338	5.40	.00	.00	.00	.02	.00
344	338	340	5.40	.00	.00	.00	.03	.00
345	326	395	.00	.00	.00	.00	.00	.00
346	395	398	.00	.00	.00	.00	.00	.00

**Safari Highlands Ranch Project
 Ultimate Water System Analysis (750PW4)
 Average Day, Maximum Day, Peak Hour, and
 Fire Flow Demand Scenarios**

**April 18, 2017
 Dexter Wilson Engr., Inc.
 Job No. 750-003**

347	332	355	.00	.00	.00	.00	.00	.00
349	316	344	464.22	2.56	.00	.00	2.96	4.41
351	352	344	-177.61	-.04	.00	.00	-.50	-.10
353	348	346	401.82	2.09	.00	.00	2.56	3.38
354	346	316	-2431.88	-5.39	.00	.00	-6.90	-13.15
355	344	348	286.61	.74	.00	.00	1.83	1.81
356	352	354	6.50	.00	.00	.00	.02	.00
357	354	351	6.50	.00	.00	.00	.02	.00
358	351	350	6.50	.00	.00	.00	.04	.00
359	348	352	-145.31	-.70	.00	.00	-.93	-.51
361	354	358	.00	.00	.00	.00	.00	.00
363	356	320	1239.40	3.62	.00	.00	3.52	3.77
364	356	320	1239.40	3.62	.00	.00	3.52	3.77
365	369	371	.00	.00	.00	.00	.00	.00
366	371	377	.00	.00	.00	.00	.00	.00
367	0	356	1534.25	5.15	.00	.00	4.35	5.60
368	0	356	1534.25	5.15	.00	.00	4.35	5.60
371	360	356	-589.70	-3.64	.00	.00	-3.76	-6.87
373	360	361	.00	.00	.00	.00	.00	.00
374	361	363	.00	.00	.00	.00	.00	.00
375	362	360	-571.40	-5.64	.00	.00	-3.65	-6.48
377	374	394	.00	.00	.00	.00	.00	.00
379	369	362	-535.80	-4.54	.00	.00	-3.42	-5.75
381	316	369	-535.80	-1.50	.00	.00	-3.42	-5.75
382	374	378	-15.92	.00	.00	.00	-.05	.00
383	324	332	34.78	.01	.00	.00	.10	.01
384	378	370	.00	.00	.00	.00	.00	.00
385	332	368	34.78	.00	.00	.00	.10	.01
386	370	396	.00	.00	.00	.00	.00	.00
387	368	372	7.78	.00	.00	.00	.02	.00
389	355	392	.00	.00	.00	.00	.00	.00
391	378	328	-15.92	.00	.00	.00	-.05	.00
392	372	382	4.30	.00	.00	.00	.01	.00
393	382	384	4.30	.00	.00	.00	.03	.00
394	372	374	-15.92	.00	.00	.00	-.05	.00
395	336	342	.00	.00	.00	.00	.00	.00
396	342	376	.00	.00	.00	.00	.00	.00
397	368	380	3.30	.00	.00	.00	.02	.00
398	362	364	11.90	.00	.00	.00	.03	.00
399	364	365	11.90	.00	.00	.00	.08	.00

JUNCTION NUMBER	DEMAND	GRADE LINE	ELEVATION	PRESSURE
100	.00	1292.00	885.00	176.36
102	.00	1291.96	886.00	175.92
104	.00	1291.96	880.00	178.52
106	36.60	1291.93	944.00	150.77
107	.00	1291.93	982.00	134.30
108	11.90	1291.93	983.00	133.87
110	.00	1291.91	949.00	148.60
111	.00	1291.91	950.00	148.16
112	38.70	1291.86	965.00	141.64
114	.00	1291.88	1048.00	105.68
116	22.60	1291.85	1017.00	119.10

**Safari Highlands Ranch Project
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**April 18, 2017
 Dexter Wilson Engr., Inc.
 Job No. 750-003**

118	.00	1291.85	1035.00	111.30
120	10.80	1291.85	1042.00	108.27
124	20.40	1291.88	1047.00	106.11
126	.00	1291.88	1048.00	105.68
127	.00	1291.88	1049.00	105.25
128	9.70	1291.88	1053.00	103.51
130	.00	1291.92	1125.00	72.33
132	44.10	1291.89	1121.00	74.05
134	.00	1291.89	1124.00	72.75
136	6.50	1291.89	1128.00	71.02
138	.00	1291.92	1129.00	70.60
140	33.30	1291.93	1124.00	72.77
141	.00	1291.93	1126.00	71.90
142	.00	1291.93	1130.00	70.17
144	.00	1292.00	1081.00	91.43
146	.00	1291.93	1138.00	66.70
147	.00	1291.86	970.00	139.47
148	.00	1291.86	973.00	138.17
152	5.40	1291.93	1148.00	62.37
200	.00	1500.00	1205.00	127.83
202	.00	1499.98	1207.00	126.96
204	35.60	1499.92	1254.00	106.57
208	14.00	1499.91	1297.00	87.93
210	.00	1499.98	1210.00	125.66
211	.00	1499.98	1196.00	131.72
212	33.30	1499.91	1312.00	81.43
214	.00	1499.98	1185.00	136.49
216	.00	1500.00	1290.00	91.00
218	.00	1499.92	1254.00	106.57
220	.00	1499.91	1302.00	85.76
222	.00	1499.92	1259.00	104.40
224	10.80	1499.91	1333.00	72.33
226	.00	1499.91	1326.00	75.36
300	2500.00	1557.28	885.00	291.32
301	.00	1557.28	820.00	319.49
304	.00	1631.40	1081.00	238.51
308	.00	1667.73	1207.00	199.65
312	.00	1687.63	1290.00	172.31
316	.00	1785.53	1604.00	78.66
320	8.60	1797.22	1590.00	89.80
324	19.40	1797.20	1600.00	85.45
326	.00	1797.20	1588.00	90.65
328	14.00	1797.19	1568.00	99.32
330	.00	1797.19	1545.00	109.28
332	.00	1797.19	1668.00	55.98
336	20.40	1797.19	1606.00	82.85
338	.00	1797.19	1626.00	74.18
340	5.40	1797.19	1629.00	72.88
342	.00	1797.19	1605.00	83.28
344	.00	1782.97	1590.00	83.62
346	.00	1780.14	1588.00	83.26
348	30.10	1782.23	1585.00	85.47
350	6.50	1782.93	1608.00	75.80
351	.00	1782.93	1604.00	77.54

**Safari Highlands Ranch Project
 Ultimate Water System Analysis (750PW4)
 Average Day, Maximum Day, Peak Hour, and
 Fire Flow Demand Scenarios**

**April 18, 2017
 Dexter Wilson Engr., Inc.
 Job No. 750-003**

352	25.80	1782.93	1592.00	82.74
354	.00	1782.93	1601.00	78.84
355	.00	1797.19	1670.00	55.12
356	.00	1800.85	1695.00	45.87
358	.00	1782.93	1602.00	78.40
360	18.30	1797.20	1657.00	60.76
361	.00	1797.20	1666.00	56.86
362	23.70	1791.57	1663.00	55.71
363	.00	1797.20	1678.00	51.66
364	.00	1791.57	1674.00	50.95
365	11.90	1791.57	1686.00	45.75
368	23.70	1797.19	1710.00	37.78
369	.00	1787.02	1613.00	75.41
370	.00	1797.19	1629.00	72.88
371	.00	1787.02	1615.00	74.54
372	19.40	1797.19	1673.00	53.82
374	.00	1797.19	1654.00	62.05
376	.00	1797.19	1608.00	81.98
377	.00	1787.02	1619.00	72.81
378	.00	1797.19	1625.00	74.62
380	3.30	1797.19	1713.00	36.48
382	.00	1797.19	1677.00	52.08
384	4.30	1797.19	1686.00	48.18
392	.00	1797.19	1673.00	53.82
394	.00	1797.19	1664.00	57.72
395	.00	1797.20	1585.00	91.95
396	.00	1797.19	1631.00	72.02
397	.00	1797.19	1545.00	109.28
398	.00	1797.20	1580.00	94.12
399	.00	1797.19	1511.00	124.02

MAXIMUM PRESSURES

301	.00	1557.28	820.00	319.49
300	2500.00	1557.28	885.00	291.32
304	.00	1631.40	1081.00	238.51

MINIMUM PRESSURES

380	3.30	1797.19	1713.00	36.48
368	23.70	1797.19	1710.00	37.78
365	11.90	1791.57	1686.00	45.75

THE NET SYSTEM DEMAND = 3068.50

SUMMARY OF INFLOWS (+) AND OUTFLOWS (-) FROM FIXED GRADE NODES

PIPE NUMBER	FLOWRATE
367	1534.25
368	1534.25

THE NET FLOW INTO THE SYSTEM FROM FIXED GRADE NODES = 3068.50
 THE NET FLOW OUT OF THE SYSTEM INTO FIXED GRADE NODES = .00

**Safari Highlands Ranch Project
 Ultimate Water System Analysis (750PW4)
 Average Day, Maximum Day, Peak Hour, and
 Fire Flow Demand Scenarios**

**April 18, 2017
 Dexter Wilson Engr., Inc.
 Job No. 750-003**

A SUMMARY OF CONDITIONS SPECIFIED FOR THE NEXT SIMULATION FOLLOWS

THE FOLLOWING SPECIFIC DEMAND CHANGES ARE MADE :

JUNCTION NUMBER	DEMAND
304	2500.00

THE RESULTS ARE OBTAINED AFTER 2 TRIALS WITH AN ACCURACY = .00000

**MAX DAY DEMAND PLUS 2500 GPM FIRE FLOW
 AT NODE 304**

PIPE NO.	NODE NOS.	FLOWRATE	HEAD LOSS	PUMP HEAD	MINOR LOSS	VELOCITY	HL/1000
101	100 102	94.94	.04	.00	.00	.27	.03
103	102 104	.00	.00	.00	.00	.00	.00
105	102 106	94.94	.03	.00	.00	.27	.03
107	106 110	46.44	.02	.00	.00	.30	.06
108	110 111	.00	.00	.00	.00	.00	.00
109	110 112	46.44	.06	.00	.00	.30	.06
111	112 116	7.74	.00	.00	.00	.05	.00
113	116 124	-25.66	-.03	.00	.00	-.16	-.02
115	124 126	9.70	.00	.00	.00	.03	.00
117	124 132	-55.76	-.01	.00	.00	-.16	-.01
121	132 130	-106.36	-.02	.00	.00	-.30	-.04
123	126 127	.00	.00	.00	.00	.00	.00
125	140 144	-145.06	-.07	.00	.00	-.41	-.07
127	126 114	9.70	.00	.00	.00	.03	.00
128	106 107	11.90	.00	.00	.00	.03	.00
129	107 108	11.90	.00	.00	.00	.08	.00
131	130 140	-106.36	-.01	.00	.00	-.30	-.04
133	116 118	10.80	.00	.00	.00	.03	.00
135	118 120	10.80	.00	.00	.00	.07	.00
137	114 128	9.70	.00	.00	.00	.06	.00
139	140 141	.00	.00	.00	.00	.00	.00
140	132 134	6.50	.00	.00	.00	.02	.00
141	134 136	6.50	.00	.00	.00	.04	.00
143	130 138	.00	.00	.00	.00	.00	.00
145	141 142	.00	.00	.00	.00	.00	.00
147	140 146	5.40	.00	.00	.00	.02	.00
149	112 147	.00	.00	.00	.00	.00	.00
151	147 148	.00	.00	.00	.00	.00	.00
155	146 152	5.40	.00	.00	.00	.03	.00
201	200 202	52.66	.02	.00	.00	.34	.08
203	202 204	52.66	.05	.00	.00	.34	.08
205	204 208	17.06	.01	.00	.00	.11	.01
207	202 210	.00	.00	.00	.00	.00	.00
209	208 212	3.06	.00	.00	.00	.02	.00
211	202 211	.00	.00	.00	.00	.00	.00
213	212 216	-41.04	-.09	.00	.00	-.26	-.05
215	204 218	.00	.00	.00	.00	.00	.00

**Safari Highlands Ranch Project
 Ultimate Water System Analysis (750PW4)
 Average Day, Maximum Day, Peak Hour, and
 Fire Flow Demand Scenarios**

**April 18, 2017
 Dexter Wilson Engr., Inc.
 Job No. 750-003**

217	211	214	.00	.00	.00	.00	.00	.00	.00
219	218	222	.00	.00	.00	.00	.00	.00	.00
221	208	220	.00	.00	.00	.00	.00	.00	.00
223	212	226	10.80	.00	.00	.00	.03	.00	.00
225	226	224	10.80	.00	.00	.00	.07	.00	.00
301	0	100	94.94	.00	.00	.00	.27	.04	.00
303	0	144	145.06	.00	.00	.00	.41	.08	.00
305	0	200	52.66	.00	.00	.00	.15	.01	.00
307	0	216	41.04	.00	.00	.00	.12	.01	.00
309	301	300	.00	.00	.00	.00	.00	.00	.00
311	300	304	-94.94	-.16	.00	.00	-.27	-.04	.00
315	304	308	-2740.00	-36.33	.00	.00	-7.77	-19.02	.00
319	308	312	-2792.66	-19.90	.00	.00	-7.92	-19.70	.00
323	312	346	-2833.70	-92.50	.00	.00	-8.04	-17.45	.00
327	316	320	-2360.30	-11.69	.00	.00	-6.70	-12.44	.00
329	326	328	55.72	.01	.00	.00	.16	.01	.00
331	320	324	54.95	.02	.00	.00	.16	.01	.00
332	320	324	54.95	.02	.00	.00	.16	.01	.00
333	328	330	25.80	.00	.00	.00	.07	.00	.00
335	324	326	55.72	.01	.00	.00	.16	.01	.00
339	330	336	25.80	.00	.00	.00	.07	.00	.00
341	330	397	.00	.00	.00	.00	.00	.00	.00
342	397	399	.00	.00	.00	.00	.00	.00	.00
343	336	338	5.40	.00	.00	.00	.02	.00	.00
344	338	340	5.40	.00	.00	.00	.03	.00	.00
345	326	395	.00	.00	.00	.00	.00	.00	.00
346	395	398	.00	.00	.00	.00	.00	.00	.00
347	332	355	.00	.00	.00	.00	.00	.00	.00
349	316	344	464.22	2.56	.00	.00	2.96	4.41	.00
351	352	344	-177.61	-.04	.00	.00	-.50	-.10	.00
353	348	346	401.82	2.09	.00	.00	2.56	3.38	.00
354	346	316	-2431.88	-5.39	.00	.00	-6.90	-13.15	.00
355	344	348	286.61	.74	.00	.00	1.83	1.81	.00
356	352	354	6.50	.00	.00	.00	.02	.00	.00
357	354	351	6.50	.00	.00	.00	.02	.00	.00
358	351	350	6.50	.00	.00	.00	.04	.00	.00
359	348	352	-145.31	-.70	.00	.00	-.93	-.51	.00
361	354	358	.00	.00	.00	.00	.00	.00	.00
363	356	320	1239.40	3.62	.00	.00	3.52	3.77	.00
364	356	320	1239.40	3.62	.00	.00	3.52	3.77	.00
365	369	371	.00	.00	.00	.00	.00	.00	.00
366	371	377	.00	.00	.00	.00	.00	.00	.00
367	0	356	1534.25	5.15	.00	.00	4.35	5.60	.00
368	0	356	1534.25	5.15	.00	.00	4.35	5.60	.00
371	360	356	-589.70	-3.64	.00	.00	-3.76	-6.87	.00
373	360	361	.00	.00	.00	.00	.00	.00	.00
374	361	363	.00	.00	.00	.00	.00	.00	.00
375	362	360	-571.40	-5.64	.00	.00	-3.65	-6.48	.00
377	374	394	.00	.00	.00	.00	.00	.00	.00
379	369	362	-535.80	-4.54	.00	.00	-3.42	-5.75	.00
381	316	369	-535.80	-1.50	.00	.00	-3.42	-5.75	.00
382	374	378	-15.92	.00	.00	.00	-.05	.00	.00
383	324	332	34.78	.01	.00	.00	.10	.01	.00
384	378	370	.00	.00	.00	.00	.00	.00	.00

**Safari Highlands Ranch Project
 Ultimate Water System Analysis (750PW4)
 Average Day, Maximum Day, Peak Hour, and
 Fire Flow Demand Scenarios**

**April 18, 2017
 Dexter Wilson Engr., Inc.
 Job No. 750-003**

385	332	368	34.78	.00	.00	.00	.10	.01
386	370	396	.00	.00	.00	.00	.00	.00
387	368	372	7.78	.00	.00	.00	.02	.00
389	355	392	.00	.00	.00	.00	.00	.00
391	378	328	-15.92	.00	.00	.00	-.05	.00
392	372	382	4.30	.00	.00	.00	.01	.00
393	382	384	4.30	.00	.00	.00	.03	.00
394	372	374	-15.92	.00	.00	.00	-.05	.00
395	336	342	.00	.00	.00	.00	.00	.00
396	342	376	.00	.00	.00	.00	.00	.00
397	368	380	3.30	.00	.00	.00	.02	.00
398	362	364	11.90	.00	.00	.00	.03	.00
399	364	365	11.90	.00	.00	.00	.08	.00

JUNCTION NUMBER	DEMAND	GRADE LINE	ELEVATION	PRESSURE
100	.00	1292.00	885.00	176.36
102	.00	1291.96	886.00	175.92
104	.00	1291.96	880.00	178.52
106	36.60	1291.93	944.00	150.77
107	.00	1291.93	982.00	134.30
108	11.90	1291.93	983.00	133.87
110	.00	1291.91	949.00	148.60
111	.00	1291.91	950.00	148.16
112	38.70	1291.86	965.00	141.64
114	.00	1291.88	1048.00	105.68
116	22.60	1291.85	1017.00	119.10
118	.00	1291.85	1035.00	111.30
120	10.80	1291.85	1042.00	108.27
124	20.40	1291.88	1047.00	106.11
126	.00	1291.88	1048.00	105.68
127	.00	1291.88	1049.00	105.25
128	9.70	1291.88	1053.00	103.51
130	.00	1291.92	1125.00	72.33
132	44.10	1291.89	1121.00	74.05
134	.00	1291.89	1124.00	72.75
136	6.50	1291.89	1128.00	71.02
138	.00	1291.92	1129.00	70.60
140	33.30	1291.93	1124.00	72.77
141	.00	1291.93	1126.00	71.90
142	.00	1291.93	1130.00	70.17
144	.00	1292.00	1081.00	91.43
146	.00	1291.93	1138.00	66.70
147	.00	1291.86	970.00	139.47
148	.00	1291.86	973.00	138.17
152	5.40	1291.93	1148.00	62.37
200	.00	1500.00	1205.00	127.83
202	.00	1499.98	1207.00	126.96
204	35.60	1499.92	1254.00	106.57
208	14.00	1499.91	1297.00	87.93
210	.00	1499.98	1210.00	125.66
211	.00	1499.98	1196.00	131.72
212	33.30	1499.91	1312.00	81.43
214	.00	1499.98	1185.00	136.49

**Safari Highlands Ranch Project
 Ultimate Water System Analysis (750PW4)
 Average Day, Maximum Day, Peak Hour, and
 Fire Flow Demand Scenarios**

**April 18, 2017
 Dexter Wilson Engr., Inc.
 Job No. 750-003**

216	.00	1500.00	1290.00	91.00
218	.00	1499.92	1254.00	106.57
220	.00	1499.91	1302.00	85.76
222	.00	1499.92	1259.00	104.40
224	10.80	1499.91	1333.00	72.33
226	.00	1499.91	1326.00	75.36
300	.00	1631.24	885.00	323.37
301	.00	1631.24	820.00	351.54
304	2500.00	1631.40	1081.00	238.51
308	.00	1667.73	1207.00	199.65
312	.00	1687.63	1290.00	172.31
316	.00	1785.53	1604.00	78.66
320	8.60	1797.22	1590.00	89.80
324	19.40	1797.20	1600.00	85.45
326	.00	1797.20	1588.00	90.65
328	14.00	1797.19	1568.00	99.32
330	.00	1797.19	1545.00	109.28
332	.00	1797.19	1668.00	55.98
336	20.40	1797.19	1606.00	82.85
338	.00	1797.19	1626.00	74.18
340	5.40	1797.19	1629.00	72.88
342	.00	1797.19	1605.00	83.28
344	.00	1782.97	1590.00	83.62
346	.00	1780.14	1588.00	83.26
348	30.10	1782.23	1585.00	85.47
350	6.50	1782.93	1608.00	75.80
351	.00	1782.93	1604.00	77.54
352	25.80	1782.93	1592.00	82.74
354	.00	1782.93	1601.00	78.84
355	.00	1797.19	1670.00	55.12
356	.00	1800.85	1695.00	45.87
358	.00	1782.93	1602.00	78.40
360	18.30	1797.20	1657.00	60.76
361	.00	1797.20	1666.00	56.86
362	23.70	1791.57	1663.00	55.71
363	.00	1797.20	1678.00	51.66
364	.00	1791.57	1674.00	50.95
365	11.90	1791.57	1686.00	45.75
368	23.70	1797.19	1710.00	37.78
369	.00	1787.02	1613.00	75.41
370	.00	1797.19	1629.00	72.88
371	.00	1787.02	1615.00	74.54
372	19.40	1797.19	1673.00	53.82
374	.00	1797.19	1654.00	62.05
376	.00	1797.19	1608.00	81.98
377	.00	1787.02	1619.00	72.81
378	.00	1797.19	1625.00	74.62
380	3.30	1797.19	1713.00	36.48
382	.00	1797.19	1677.00	52.08
384	4.30	1797.19	1686.00	48.18
392	.00	1797.19	1673.00	53.82
394	.00	1797.19	1664.00	57.72
395	.00	1797.20	1585.00	91.95
396	.00	1797.19	1631.00	72.02

**Safari Highlands Ranch Project
 Ultimate Water System Analysis (750PW4)
 Average Day, Maximum Day, Peak Hour, and
 Fire Flow Demand Scenarios**

**April 18, 2017
 Dexter Wilson Engr., Inc.
 Job No. 750-003**

397	.00	1797.19	1545.00	109.28
398	.00	1797.20	1580.00	94.12
399	.00	1797.19	1511.00	124.02

MAXIMUM PRESSURES

301	.00	1631.24	820.00	351.54
300	.00	1631.24	885.00	323.37
304	2500.00	1631.40	1081.00	238.51

MINIMUM PRESSURES

380	3.30	1797.19	1713.00	36.48
368	23.70	1797.19	1710.00	37.78
365	11.90	1791.57	1686.00	45.75

THE NET SYSTEM DEMAND = 3068.50

SUMMARY OF INFLOWS(+) AND OUTFLOWS(-) FROM FIXED GRADE NODES

PIPE NUMBER	FLOWRATE
367	1534.25
368	1534.25

THE NET FLOW INTO THE SYSTEM FROM FIXED GRADE NODES = 3068.50

THE NET FLOW OUT OF THE SYSTEM INTO FIXED GRADE NODES = .00

APPENDIX B

RECYCLED WATER PIPELINE MODELING

**Safari Highlands Ranch Project
Recycled Water System Analysis (750RW)**

**May 18, 2017
Dexter Wilson Engr., Inc.
Job No. 750-003**

FLOWRATE IS EXPRESSED IN GPM AND PRESSURE IN PSIG

A SUMMARY OF THE ORIGINAL DATA FOLLOWS

PIPE NO.	NODE NOS.	LENGTH (FEET)	DIAMETER (INCHES)	ROUGHNESS	MINOR LOSS K	FIXED GRADE
301	0 301	20.0	12.0	140.0	.00	1778.00
309	301 300	1590.0	12.0	140.0	.00	
311	300 304	4310.0	12.0	140.0	.00	
315	304 308	1910.0	12.0	140.0	.00	
319	308 312	1000.0	12.0	140.0	.00	
323	312 316	5720.0	12.0	140.0	.00	
327	316 320	940.0	12.0	140.0	.00	
331	320 324	1770.0	12.0	140.0	.00	
335	324 328	3280.0	6.0	140.0	.00	
383	324 368	2500.0	12.0	140.0	.00	
397	368 380	400.0	12.0	140.0	.00	

JUNCTION NUMBER	DEMAND	ELEVATION	CONNECTING PIPES
300	.00	885.00	309 311
301	.00	.00	301 309
304	.00	1081.00	311 315
308	.00	1207.00	315 319
312	.00	1290.00	319 323
316	.00	1604.00	323 327
320	.00	1590.00	327 331
324	.00	1600.00	331 335 383
328	.00	1620.00	335
368	.00	1710.00	383 397
380	1000.00	1713.00	397

OUTPUT SELECTION: ALL RESULTS ARE OUTPUT EACH PERIOD
3 VALUES ARE OUTPUT FOR MAXIMUM AND MINIMUM PRESSURES

THIS SYSTEM HAS 11 PIPES WITH 11 JUNCTIONS , 0 LOOPS AND 1 FGNS

THE RESULTS ARE OBTAINED AFTER 2 TRIALS WITH AN ACCURACY = .00000

**SAFARI HIGHLANDS RANCH
RECYCLED WATER SYSTEM ANALYSIS**

PIPE NO.	NODE NOS.	FLOWRATE	HEAD LOSS	PUMP HEAD	MINOR LOSS	VELOCITY	HL/1000
301	0 301	1000.00	.04	.00	.00	2.84	2.21
309	301 300	1000.00	3.51	.00	.00	2.84	2.21
311	300 304	1000.00	9.53	.00	.00	2.84	2.21
315	304 308	1000.00	4.22	.00	.00	2.84	2.21

**Safari Highlands Ranch Project
Recycled Water System Analysis (750RW)**

**May 18, 2017
Dexter Wilson Engr., Inc.
Job No. 750-003**

319	308	312	1000.00	2.21	.00	.00	2.84	2.21
323	312	316	1000.00	12.64	.00	.00	2.84	2.21
327	316	320	1000.00	2.08	.00	.00	2.84	2.21
331	320	324	1000.00	3.91	.00	.00	2.84	2.21
335	324	328	.00	.00	.00	.00	.00	.00
383	324	368	1000.00	5.53	.00	.00	2.84	2.21
397	368	380	1000.00	.88	.00	.00	2.84	2.21

JUNCTION NUMBER	DEMAND	GRADE LINE	ELEVATION	PRESSURE
300	.00	1774.44	885.00	385.42
301	.00	1777.96		
304	.00	1764.91	1081.00	296.36
308	.00	1760.69	1207.00	239.93
312	.00	1758.48	1290.00	203.01
316	.00	1745.83	1604.00	61.46
320	.00	1743.76	1590.00	66.63
324	.00	1739.84	1600.00	60.60
328	.00	1739.84	1620.00	51.93
368	.00	1734.32	1710.00	10.54
380	1000.00	1733.43	1713.00	8.85
MAXIMUM PRESSURES				
300	.00	1774.44	885.00	385.42
304	.00	1764.91	1081.00	296.36
308	.00	1760.69	1207.00	239.93
MINIMUM PRESSURES				
380	1000.00	1733.43	1713.00	8.85
368	.00	1734.32	1710.00	10.54
328	.00	1739.84	1620.00	51.93

THE NET SYSTEM DEMAND = 1000.00

SUMMARY OF INFLOWS(+) AND OUTFLOWS(-) FROM FIXED GRADE NODES

PIPE NUMBER	FLOWRATE
301	1000.00

THE NET FLOW INTO THE SYSTEM FROM FIXED GRADE NODES = 1000.00

THE NET FLOW OUT OF THE SYSTEM INTO FIXED GRADE NODES = .00

A SUMMARY OF CONDITIONS SPECIFIED FOR THE NEXT SIMULATION FOLLOWS

THE FOLLOWING SPECIFIC DEMAND CHANGES ARE MADE :

JUNCTION NUMBER	DEMAND
328	280.00
380	720.00

**Safari Highlands Ranch Project
Recycled Water System Analysis (750RW)**

**May 18, 2017
Dexter Wilson Engr., Inc.
Job No. 750-003**

THE RESULTS ARE OBTAINED AFTER 2 TRIALS WITH AN ACCURACY = .00000

**Safari Highlands Ranch
Recycled Water System
280 GPM Demand at Node 328**

PIPE NO.	NODE NOS.	FLOWRATE	HEAD LOSS	PUMP HEAD	MINOR LOSS	VELOCITY	HL/1000
301	0 301	1000.00	.04	.00	.00	2.84	2.21
309	301 300	1000.00	3.51	.00	.00	2.84	2.21
311	300 304	1000.00	9.53	.00	.00	2.84	2.21
315	304 308	1000.00	4.22	.00	.00	2.84	2.21
319	308 312	1000.00	2.21	.00	.00	2.84	2.21
323	312 316	1000.00	12.64	.00	.00	2.84	2.21
327	316 320	1000.00	2.08	.00	.00	2.84	2.21
331	320 324	1000.00	3.91	.00	.00	2.84	2.21
335	324 328	280.00	20.07	.00	.00	3.18	6.12
383	324 368	720.00	3.01	.00	.00	2.04	1.20
397	368 380	720.00	.48	.00	.00	2.04	1.20

JUNCTION NUMBER	DEMAND	GRADE LINE	ELEVATION	PRESSURE
300	.00	1774.44	885.00	385.42
301	.00	1777.96		
304	.00	1764.91	1081.00	296.36
308	.00	1760.69	1207.00	239.93
312	.00	1758.48	1290.00	203.01
316	.00	1745.83	1604.00	61.46
320	.00	1743.76	1590.00	66.63
324	.00	1739.84	1600.00	60.60
328	280.00	1719.77	1620.00	43.24
368	.00	1736.84	1710.00	11.63
380	720.00	1736.35	1713.00	10.12

MAXIMUM PRESSURES

300	.00	1774.44	885.00	385.42
304	.00	1764.91	1081.00	296.36
308	.00	1760.69	1207.00	239.93

MINIMUM PRESSURES

380	720.00	1736.35	1713.00	10.12
368	.00	1736.84	1710.00	11.63
328	280.00	1719.77	1620.00	43.24

THE NET SYSTEM DEMAND = 1000.00

SUMMARY OF INFLOWS(+) AND OUTFLOWS(-) FROM FIXED GRADE NODES

PIPE NUMBER	FLOWRATE
301	1000.00

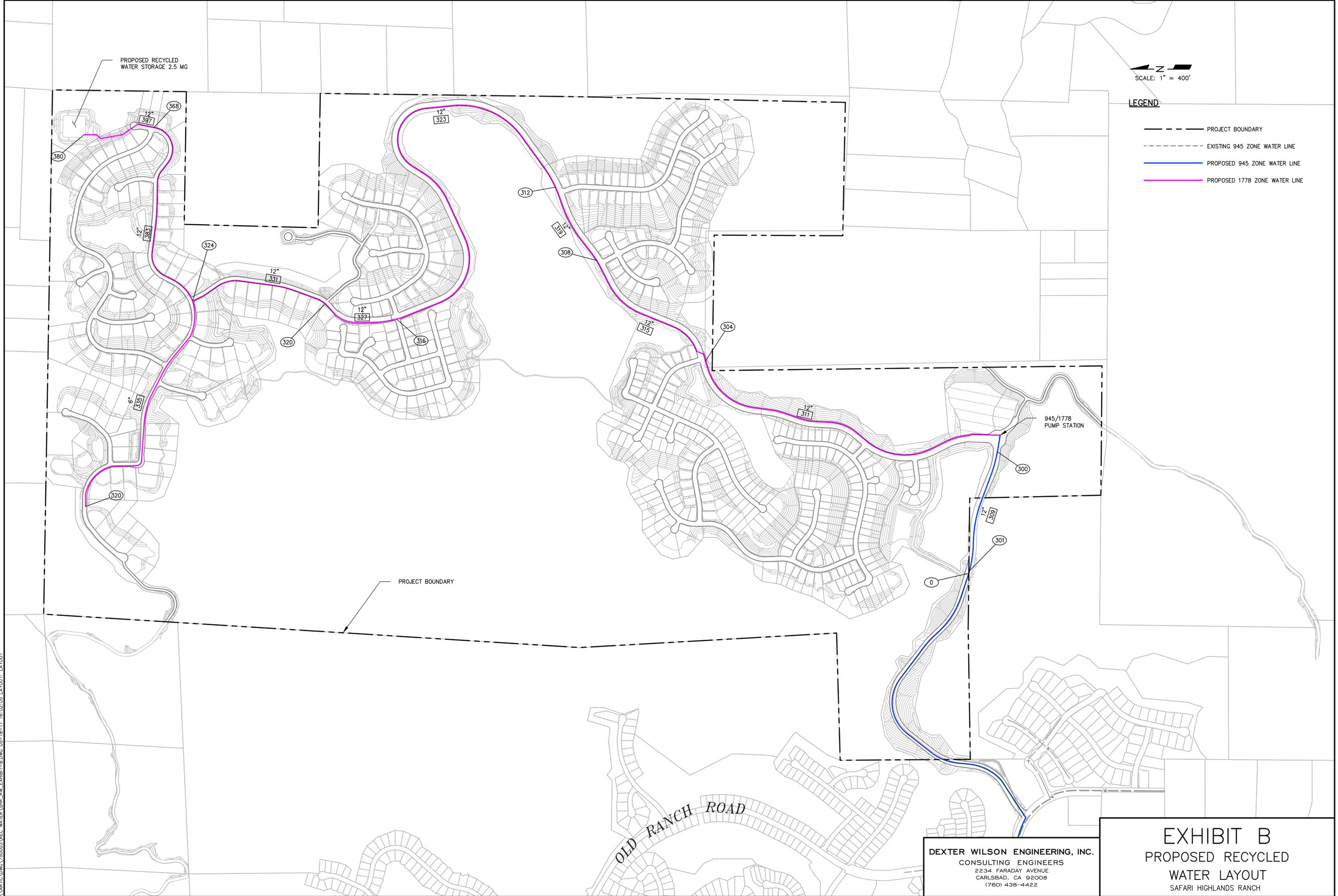
THE NET FLOW INTO THE SYSTEM FROM FIXED GRADE NODES = 1000.00
THE NET FLOW OUT OF THE SYSTEM INTO FIXED GRADE NODES = .00

PROPOSED RECYCLED
WATER STORAGE 2.5 MG

SCALE: 1" = 400'

LEGEND

- PROJECT BOUNDARY
- - - EXISTING 945 ZONE WATER LINE
- PROPOSED 945 ZONE WATER LINE
- PROPOSED 1778 ZONE WATER LINE



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DEXTER WILSON ENGINEERING, INC.
 CONSULTING ENGINEERS
 2234 FARADAY AVENUE
 CARLSBAD, CA 92008
 (760) 438-4422

EXHIBIT B
 PROPOSED RECYCLED
 WATER LAYOUT
 SAFARI HIGHLANDS RANCH

APPENDIX C

**DETAILED RESIDENTIAL
WATER DEMAND CALCULATIONS**

E-1

Lot No.	Lot Area (ft ²)	Lot Area (ac)	Demand Factor (gpd/ac)	Demand (gpd)	Demand (gpm)
1	70,266	1.61	800	1,290	0.90
2	46,483	1.07	800	854	0.59
3	43,587	1.00	800	800	0.56
4	43,663	1.00	800	802	0.56
5	43,686	1.00	800	802	0.56
6	44,383	1.02	800	815	0.57
7	43,940	1.01	800	807	0.56
8	43,738	1.00	800	803	0.56
9	43,648	1.00	800	802	0.56
10	46,985	1.08	800	863	0.60
11	58,222	1.34	800	1,069	0.74
12	53,343	1.22	800	980	0.68
13	140,260	3.22	800	2,576	1.79
14	84,028	1.93	800	1,543	1.07
16	54,317	1.25	800	998	0.69
17	43,817	1.01	800	805	0.56
18	44,539	1.02	800	818	0.57
19	55,213	1.27	800	1,014	0.70
20	46,160	1.06	800	848	0.59
21	113,987	2.62	800	2,093	1.45
22	82,053	1.88	800	1,507	1.05
24	47,035	1.08	800	864	0.60
25	45,463	1.04	800	835	0.58
27	80,186	1.84	800	1,473	1.02
28	44,689	1.03	800	821	0.57
29	44,706	1.03	800	821	0.57
30	57,971	1.33	800	1,065	0.74
31	62,308	1.43	800	1,144	0.79
32	62,793	1.44	800	1,153	0.80
33	50,138	1.15	800	921	0.64
34	48,361	1.11	800	888	0.62
35	66,716	1.53	800	1,225	0.85
36	44,191	1.01	800	812	0.56
37	98,118	2.25	800	1,802	1.25
38	63,762	1.46	800	1,171	0.81
39	87,914	2.02	800	1,615	1.12
40	155,265	3.56	800	2,852	1.98
41	53,891	1.24	800	990	0.69
42	54,220	1.24	800	996	0.69
43	57,492	1.32	800	1,056	0.73
44	62,057	1.42	800	1,140	0.79
45	70,764	1.62	800	1,300	0.90
			SUBTOTAL =	47,830	33

Lots > 1 acre: 42

Lots > 7,000 sf and < 1 acre: 5

Lots < 7,000 sf: 0

E-2

Lot No.	Lot Area (ft ²)	Lot Area (ac)	Demand Factor (gpd/ac)	Demand (gpd)	Demand (gpm)
1	54,237	1.25	800	996	0.69
5	47,727	1.10	800	877	0.61
6	55,120	1.27	800	1,012	0.70
7	85,025	1.95	800	1,562	1.08
8	55,715	1.28	800	1,023	0.71
11	157,560	3.62	800	2,894	2.01
12	52,566	1.21	800	965	0.67
16	45,378	1.04	800	833	0.58
19	45,865	1.05	800	842	0.58
27	49,897	1.15	800	916	0.64
49	54,775	1.26	800	1,006	0.70
60	97,686	2.24	800	1,794	1.25
61	43,654	1.00	800	802	0.56
65	45,968	1.06	800	844	0.59
66	61,366	1.41	800	1,127	0.78
68	49,198	1.13	800	904	0.63
69	66,090	1.52	800	1,214	0.84

Lots > 1 acre: 17

SUBTOTAL =

19,611

14

Lots > 7,000 sf and < 1 acre: 52

Lots < 7,000 sf: 0

R-1

Lot No.	Lot Area (ft ²)	Lot Area (ac)	Demand Factor (gpd/ac)	Demand (gpd)	Demand (gpm)
30	57,397	1.32	800	1,054	0.73
37	46,247	1.06	800	849	0.59
67	44,479	1.02	800	817	0.57
68	49,783	1.14	800	914	0.63

Lots > 1 acre: 4

SUBTOTAL =

3,635

3

Lots > 7,000 sf and < 1 acre: 114

Lots < 7,000 sf: 0

R-2

Lot No.	Lot Area (ft ²)	Lot Area (ac)	Demand Factor (gpd/ac)	Demand (gpd)	Demand (gpm)
27	72,072	1.65	800	1,324	0.92
31	103,143	2.37	800	1,894	1.32
59	45,763	1.05	800	840	0.58
60	53,930	1.24	800	990	0.69
61	45,577	1.05	800	837	0.58
98	56,214	1.29	800	1,032	0.72

Lots > 1 acre: 6

SUBTOTAL =

6,918

5

Lots > 7,000 sf and < 1 acre: 113

Lots < 7,000 sf: 0

R-3

Lot No.	Lot Area (ft ²)	Lot Area (ac)	Demand Factor (gpd/ac)	Demand (gpd)	Demand (gpm)
1	46,467	1.07	800	853	0.59
10	52,425	1.20	800	963	0.67
11	44,447	1.02	800	816	0.57
30	44,294	1.02	800	813	0.56
31	61,211	1.41	800	1,124	0.78
41	81,996	1.88	800	1,506	1.05
42	79,598	1.83	800	1,462	1.02
43	68,347	1.57	800	1,255	0.87
57	56,161	1.29	800	1,031	0.72
59	58,428	1.34	800	1,073	0.75
67	58,842	1.35	800	1,081	0.75
68	53,031	1.22	800	974	0.68

Lots > 1 acre: 12

SUBTOTAL =

12,952

9

Lots > 7,000 sf and < 1 acre: 75

Lots < 7,000 sf: 0

R-4

Lot No.	Lot Area (ft ²)	Lot Area (ac)	Demand Factor (gpd/ac)	Demand (gpd)	Demand (gpm)
29	45,563	1.05	800	837	0.58
30	50,208	1.15	800	922	0.64
31	61,186	1.40	800	1,124	0.78
38	64,034	1.47	800	1,176	0.82
39	45,904	1.05	800	843	0.59
40	44,170	1.01	800	811	0.56
44	46,174	1.06	800	848	0.59
45	45,325	1.04	800	832	0.58
46	48,460	1.11	800	890	0.62

Lots > 1 acre: 9

SUBTOTAL =

8,283

6

Lots > 7,000 sf and < 1 acre: 40

Lots < 7,000 sf: 0

R-5

Lot No.	Lot Area (ft ²)	Lot Area (ac)	Demand Factor (gpd/ac)	Demand (gpd)	Demand (gpm)
18	54,611	1.25	800	1,003	0.70
34	60,507	1.39	800	1,111	0.77
Lots > 1 acre: 2			SUBTOTAL =	2,114	1
Lots > 7,000 sf and < 1 acre: 59					
Lots < 7,000 sf: 0			TOTAL =	101,344	70

E-1		E-2		R-1		R-2		R-2 (CONTINUED)		R-3		R-3 (CONTINUED)		R-4		R-5			
LOT #	LOT AREA	LOT AREA	NET PAD AREA	LOT #	LOT AREA	LOT #	LOT AREA	LOT #	LOT AREA	LOT #	LOT AREA	LOT #	LOT AREA	LOT #	LOT AREA	LOT #	LOT AREA		
1	70,266	18,140	13,212	59	11,059	64	11,461	1	46,467	48	18,736	1	17,502	1	17,502	1	13,403		
2	46,483	13,772	14,116	60	10,304	65	11,631	2	31,268	49	18,962	2	17,902	2	17,902	2	11,875		
3	43,587	16,890	14,018	61	10,922	66	10,646	3	35,735	50	25,733	3	14,853	3	14,853	3	11,875		
4	43,663	19,628	8,934	62	12,173	67	11,291	4	32,205	51	27,394	4	12,744	4	12,744	4	11,707		
5	43,686	18,839	16,101	63	12,451	68	13,443	5	32,897	52	24,053	5	12,868	5	12,868	5	11,300		
6	44,383	18,441	16,228	64	13,038	69	11,761	6	32,146	53	19,882	6	24,501	6	24,501	6	12,926		
7	44,940	21,091	15,882	65	20,670	70	15,086	7	15,743	54	17,931	7	17,931	7	17,931	7	15,330		
8	43,738	18,699	16,888	66	21,189	71	13,159	8	13,675	55	22,805	8	18,954	8	18,954	8	15,330		
9	43,648	14,694	20,259	67	14,000	72	14,000	9	14,000	56	27,985	9	22,914	9	22,914	9	12,888		
10	46,985	15,781	11,112	68	45,783	73	17,001	10	17,001	57	52,425	10	22,449	10	22,449	10	13,854		
11	58,272	16,086	22,928	69	19,010	74	17,104	11	14,447	58	56,161	11	25,045	11	25,045	11	11,865		
12	53,343	16,717	17,524	70	16,884	75	17,624	12	29,844	59	36,537	12	15,637	12	15,637	12	10,796		
13	140,260	25,043	13,877	71	18,553	76	11,937	13	26,702	60	58,428	13	26,370	13	26,370	13	10,976		
14	84,028	24,223	17,083	72	18,689	77	11,937	14	26,702	61	20,254	14	13,179	14	13,179	14	11,101		
15	42,559	18,315	16,117	73	23,431	78	9,666	15	16,104	62	18,210	15	12,148	15	12,148	15	11,224		
16	34,317	19,406	17,394	74	15,109	79	8,966	16	15,092	63	17,384	16	17,384	16	17,384	16	29,589		
17	43,817	18,399	19,754	75	11,028	80	8,050	17	15,617	64	20,968	17	19,601	17	19,601	17	38,494		
18	44,539	19,033	16,517	76	30,119	81	11,089	18	14,000	65	9,039	18	18,404	18	18,404	18	54,611		
19	55,213	25,352	17,564	77	12,198	82	13,925	19	14,000	66	16,134	19	13,900	19	13,900	19	39,036		
20	46,160	18,374	15,426	78	18,684	83	8,122	20	13,852	67	19,412	20	12,497	20	12,497	20	26,453		
21	113,987	18,560	15,165	79	18,180	84	11,578	21	9,375	68	58,842	21	11,647	21	11,647	21	25,925		
22	87,053	27,799	14,609	80	15,868	85	11,555	22	13,645	69	28,854	22	14,337	22	14,337	22	25,301		
23	42,545	16,001	17,397	81	9,945	86	8,687	23	13,523	70	31,641	23	16,916	23	16,916	23	28,138		
24	47,035	20,664	17,766	82	14,018	87	12,151	24	14,018	71	31,663	24	14,317	24	14,317	24	27,505		
25	45,463	24,271	15,220	83	14,156	88	8,108	25	14,156	72	22,800	25	30,289	25	30,289	25	28,222		
26	30,211	19,892	14,214	84	13,327	89	8,108	26	14,304	73	23,816	26	31,127	26	31,127	26	27,456		
27	80,186	28,132	13,789	85	11,500	90	7,663	27	72,072	74	22,800	27	34,855	27	34,855	27	23,829		
28	44,689	15,966	12,769	86	25,396	91	7,663	28	25,396	75	21,056	28	21,056	28	21,056	28	21,000		
29	44,706	18,717	15,892	87	10,011	92	7,663	29	25,704	76	17,484	29	20,221	29	20,221	29	20,221		
30	57,971	17,789	14,630	88	9,898	93	26,580	30	26,580	77	17,484	30	50,208	30	50,208	30	19,666		
31	62,908	22,041	13,393	89	9,785	94	19,740	31	10,879	78	16,260	31	61,186	31	61,186	31	21,666		
32	62,793	19,112	15,135	90	9,635	95	10,143	32	24,869	79	19,666	32	19,666	32	19,666	32	21,666		
33	50,138	19,192	14,613	91	10,448	96	19,111	33	24,869	80	22,800	33	41,734	33	41,734	33	23,973		
34	23,400	15,130	20,821	92	10,845	97	20,723	34	24,580	81	23,952	34	26,856	34	26,856	34	60,507		
35	22,295	20,650	18,067	93	10,815	98	8,809	35	8,809	82	23,784	35	26,856	35	26,856	35	12,795		
36	22,707	17,201	16,548	94	10,879	99	8,842	36	8,842	83	23,712	36	28,427	36	28,427	36	12,805		
37	34,132	16,548	18,067	95	10,824	100	26,024	37	26,024	84	24,902	37	34,797	37	34,797	37	12,875		
38	28,658	16,394	17,945	96	8,819	101	8,167	38	10,120	85	24,902	38	64,034	38	64,034	38	12,877		
39	55,265	26,901	20,734	97	10,884	102	8,167	39	10,120	86	31,743	39	45,904	39	45,904	39	12,130		
40	155,265	26,901	20,734	98	10,884	103	7,700	40	8,500	87	29,992	40	44,170	40	44,170	40	16,163		
41	53,891	20,279	17,410	99	10,731	104	10,730	41	8,500	88	16,380	41	30,143	41	30,143	41	15,687		
42	54,220	19,676	15,241	100	10,669	105	10,669	42	10,669	89	16,380	42	29,269	42	29,269	42	15,687		
43	57,465	28,132	13,772	101	10,707	106	34,412	43	16,598	90	10,141	43	42,367	43	42,367	43	16,045		
44	57,492	18,469	14,116	102	10,550	107	7,917	44	7,917	91	10,141	44	46,174	44	46,174	44	14,808		
45	62,057	22,002	14,279	103	11,093	108	8,078	45	8,078	92	11,355	45	45,325	45	45,325	45	21,039		
46	70,764	21,992	14,279	104	10,845	109	24,834	46	24,834	93	23,834	46	48,460	46	48,460	46	21,039		
47	43,417	22,938	22,871	105	14,698	110	9,985	47	9,985	94	25,961	47	30,222	47	30,222	47	11,591		
48	22,686	14,662	14,147	106	22,130	111	8,553	48	26,223	95	20,757	48	23,992	48	23,992	48	14,909		
49	54,775	21,537	18,395	107	13,378	112	9,770	49	40,680	96	16,380	49	29,246	49	29,246	49	15,593		
50	40,472	13,482	10,162	108	12,052	113	14,564	50	43,317	97	10,730	50	29,246	50	29,246	50	15,593		
51	32,577	14,073	11,792	109	11,792	114	14,564	51	21,222	98	16,598	51	1,380,238	51	1,380,238	51	13,500		
52	28,934	13,794	11,562	110	11,562	115	24,334	52	24,334	99	18,509	52	31.7	52	31.7	13,500			
53	29,333	13,648	10,666	111	10,666	116	8,818	53	18,509	100	10,666	53	64,034	53	64,034	53	12,989		
54	28,988	12,773	10,018	112	10,018	117	24,048	54	24,048	101	11,355	54	11,647	54	11,647	54	13,344		
55	26,041	14,485	17,169	113	9,923	118	20,167	55	20,167	102	10,202	55	28,168	55	28,168	55	17,231		
56	23,385	15,914	16,616	114	11,035	119	11,035	56	11,035	103	11,046	56	28,168	56	28,168	56	14,518		
57	22,249	17,976	11,734	115	11,734	120	17,139	57	17,139	104	2,064,988	57	30,222	57	30,222	57	14,798		
58	35,352	12,710	11,298	116	11,298	121	18,093	58	18,093	105	47.4	58	20,726	58	20,726	58	14,525		
59	36,767	12,058	13,369	117	11,298	122	18,093	59	45,763	106	103,143	59	31.69	59	31.69	13,120			
60	97,686	11,798	12,433	118	13,370	123	18,093	60	53,930	107	47.4	60	31.69	60	31.69	13,120			
61	43,654	12,917	10,753	119	1,821,942	124	18,093	61	45,577	108	47.4	61	12,868	61	12,868	61	12,868		
62	36,340	13,766	10,423	120	41.8	125	17,507	62	45,577	109	47.4	62	28,168	62	28,168	62	14,798		
63	36,882	13,128	11,385	121	57,397	126	17,507	63	11,869	110	2,064,988	63	31.69	63	31.69	14,798			
64	36,220	13,516	15,440	122	8,050	127	11,869	64	11,869	111	47.41	64	31.69	64	31.69	14,798			
65	45,968	16,637	15,440	123	15,440	128	11,869	65	11,869	112	47.41	65	31.69	65	31.69	14,798			
66	61,366	17,802	17,802	124	1,821,942	129	11,869	66	11,869	113	47.41	66	31.69	66	31.69	14,798			
67	37,112	13,925	13,925	125	1,821,942	130	11,869	67	11,869	114	47.41	67	31.69	67	31.69	14,798			
68	49,198	18,031	18,031	126	1,821,942	131	11,869	68	11,869	115	47.41	68	31.69	68	31.69	14,798			
69	66,080	21,382	21,382	127	1,821,942	132	11,869	69	11,869	116	47.41	69	31.69	69	31.69	14,798			
RES. SUBTOTAL SF	2,677,098	1,125,994		RES. SUBTOTAL SF	1,821,942	RES. SUBTOTAL SF	1,152,369												
MAX	157,560	23,994	25.8	MAX	57,397	MAX	57,397	MAX	57,397	MAX	57,397								