ORIGINAL

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Steve Wene, No. 019630
MOYES SELLERS & HENDRICKS LTD.
1850 N. Central Avenue, Suite 1100
Phoenix, Arizona 85004
(602)-604-2189
swene@law-msh.com
Attorneys for Utility Source, L.L.C.

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AZ CORP COMMISSION
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BEFORE THE ARIZONA CORPORATION COMMISSION

COMMISSIONERS
DOUG LITTLE, CHAIRMAN
BOB STUMP
BOB BURNS
TOM FORESE
ANDY TOBIN

Arizona Corporation Commission
DOCKETED
MAR 24 2016
DOCKETED BY

IN THE MATTER OF THE APPLICATION OF UTILITY SOURCE, LLC, AN ARIZONA CORPORATION, FOR A DETERMINATION OF THE FAIR VALUE OF ITS UTILITY PLANTS AND PROPERTY AND FOR INCREASES IN ITS WATER AND WASTEWATER RATES AND CHARGES FOR UTILITY SERVICE BASED THEREON.

DOCKET NO: WS-04235A-13-0331

NOTICE OF COMPLIANCE REGARDING THE ENGINEERING ANALYSIS

Utility Source, L.L.C. ("Company"), hereby files its notice of compliance regarding the engineering analysis of the water system. As previously reported, the Company engaged Shephard-Wesnitzer, Inc., to perform the engineering analysis of the water system. This report is now complete and is set forth in Attachment 1.

RESPECTFULLY SUBMITTED on March 24, 2016.

Steve Wene

Original and thirteen (13) copies
of the foregoing filed this
24th day of March, 2016 with:

Arizona Corporation Commission
1200 West Washington Street
Phoenix, Arizona 85007

Donnelly Herbert

ATTACHMENT 1

110 West Dale Avenue
Flagstaff, AZ 86001

928.773.0354
928.774.8934 fax

www.swiaz.com

Engineering an environment of excellence.

Utility Source
Fire Protection Analysis
Bellemont, AZ

March 23, 2016

SWI # 15303

Prepared For:
Mr. Lonny McCleve
Utility Source LLC
20525 East Chandler Heights Road
Queen Creek, AZ 85142

Prepared By:
David M. Monihan Jr., PE, RLS
Shephard - Wesnitzer, Inc.

Registered Professional Engineer (Civil)
CERTIFICATE NO.
13494
DAVID M.
MONIHAN, JR.
Date Signed 3/23/16
Expires 9/30/16

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1. INTRODUCTION

The purpose of this report is to complete the analysis of the fire protection provisions of the Utility Source water system serving portions of Bellemont, AZ north of the Interstate.

This analysis was requested by the Arizona Corporation Commission in Docket No. WS-04235A-13-0331 dated December 15, 2015. It is specified in Appendix A, Proposed Settlement Agreement dated November 5, 2015, Section IV Post-Decision Company Duties, Item 4.2 System Analysis.

The Waterline Exhibit shows the water distribution system. It is included in the appendix.

The Process Flow Diagram Exhibit shows the wells, storage tank, booster pump, fire pump and associated components. It is included in the appendix.

2. FIRE PROTECTION ANALYSIS

2.1. FLOW RATE

The Water Company provided flow monitoring information for the water and wastewater system for the 2013 calendar year. A copy is included in the appendix.

Water:

Highest Month, June, Sold:	2,251,000 gallons
Highest Month, June, Pumped:	2,354,000 gallons
Connections:	332
Average Daily Flow = 2,251,000 / 30 =	75,033 gallons per day (gpd)
Average Daily Flow = 75,033 / 332 =	236 gpd / connection

Wastewater:

Highest Month, August:	2,283,932 gallons
Peak Daily Flow:	86,635 gpd
Connections:	331
Average Daily Flow = 2,283,932 / 31 / 331 =	223 gpd / connection
Peak Daily Flow = 86,635 / 331 =	262 gpd / connection
Peak / Average Ration = 262 / 223 =	1.17

After some review of the data provided the following design flow was used in the analysis of the water system:

Existing Flow	75,033 gpd
Average Design Flow =	**76,000 gpd**

A spreadsheet was used to analyze the flow data and is included in the Appendix. Some key figures from that analysis:

Average Design Flow =	76,000 gpd
Average Design Flow =	52.8 gallons per minute (gpm)
Peaking Factor =	6.2
Peak Design Flow =	329 gpm
Water Storage Period:	7 days
Domestic Water Storage =	532,000 gallons
Fire Flow:	1,000 gpm
Fire Flow Duration:	2 hours
Fire Flow Storage =	120,000 gallons

2.2. WELL

The well capacity is shown in the Process Flow Exhibit.

Shallow Well Capacity = 10 + 10 + 10 =	30 gpm
Deep Well Capacity = 10 + 15 + 70 + 240 =	335 gpm
Total Well Capacity =	365 gpm

Well capacity to Average daily flow ratio:

Well capacity / Average Daily Flow = 365 / 52.8 = 6.91

The well capacity is adequate to provide system flow requirements including backup for well failure. Most of the required capacity is in only two wells which can each provide the required domestic flow.

2.3. STORAGE TANK

The total required storage:

Water Storage, required = 532,000 + 120,000 = 652,000 gallons.

Water storage is shown o the Process Flow Exhibit:

Water Storage, provided = 422,000 + 258,000 = 680,000 gallons.

The storage tanks provided are adequate.

Considering that a backup well supply is available, the 7 day storage of domestic flow is very conservative. One day is needed to address diurnal flow requirements and more is needed to address a well pump failure if there is no backup.

2.4. BOOSTER PUMPS

The peak flow calculated above is the requirement for the Booster Pumping System:

Peak Water Flow = 329 gpm

As shown in the Process Flow Exhibit there are 3 booster pumps, Grundfos, Model CR 45-2 with a capacity of 255 gpm at 162 feet (70 psi) Total Dynamic Head (TDH). (Pump documentation is available but was not included in this report.) The water system at the booster station is run at a pressure of 70 psi. The system capacity uses 2 pumps and leaves 1 pump in reserve:

Booster Pump Capacity = 2 * 255 = 510 gpm

The booster pumping system is adequate.

2.5. FIRE PUMP

The required fire flow is shown above:

Fire Flow, Required = 1,000 gpm

As shown in the Process Flow Exhibit there is one fire flow pump, Griswold, Model R6EM with a capacity of 1,000 gpm at 173 feet (75 psi). The water system at the booster station is run a pressure of 70 psi. The fire pump has a capacity of 1,200 gpm at 162 feet (70 psi) TDH.

Fire Pump Capacity = 1,200 gpm

The fire pump is adequate.

Considering that the system pressure may drop to 20 psi, the fire pump will provide substantially more than required.

2.6. DISTRIBUTION

The distribution system is shown in the Waterline exhibit. There is a 12 inch main in Brannigan Park Road / Shadow Mountain Drive. The rest of the service area is services with 8 inch water mains. In general these are adequately sized.

The ground elevation of the booster station is 7130 where the water system pressure is 70 psi. The ground elevation at the highest hydrant / water service is 7159. The low static pressure is

Low Static Pressure = 70 - (7159 – 7130) * 62.4 / 144 = 57.4 psi.

Domestic peak flow in the distribution system will have nominal dynamic loss so the system pressures will be adequate. (No system model was run for this report.)

Fire Hydrant Flow tests were performed by the Ponderosa Fire District in support of the Insurance Services Office rating. A copy is included in the appendix. It appears that test 11, although near the highest and most remote point of the system, has an excessively high static pressure. It appears that the fire pump charged the system in the previous test. Therefore hydrant test 10 was used in this report.

Fire hydrant flow test number 10, although not at the highest and most remote point in the system as shown in the Waterline Exhibit does appear to be most representative of the normal system operations. The results are as follows:

Fire Hydrant Test No.:	10
Static Pressure:	50 psi
Hydrant Flow (both 2.5" nozzles):	1,680 gpm
Residual Pressure:	35 psi
Flow at 20 psi =	2,400 gpm

Flow testing of the distribution system indicates that the required fire flow can be provided and the system pressures remain above the minimum.

The distribution system is adequate.

3. CONCLUSION

The water system including well, storage tanks, booster pumps, fire pump and distribution system are adequate to provide water service in accordance with ADEQ standards and to provide service for Fire Protection in accordance with the applicable fire code requirements.

4. APPENDIX

The following documents are included in the appendix:

- Waterline Exhibit
- Process Flow Exhibit
- Water Use Data and Wastewater Flows for 2013
- Design Flow Calculations
- Hydrant Test Data

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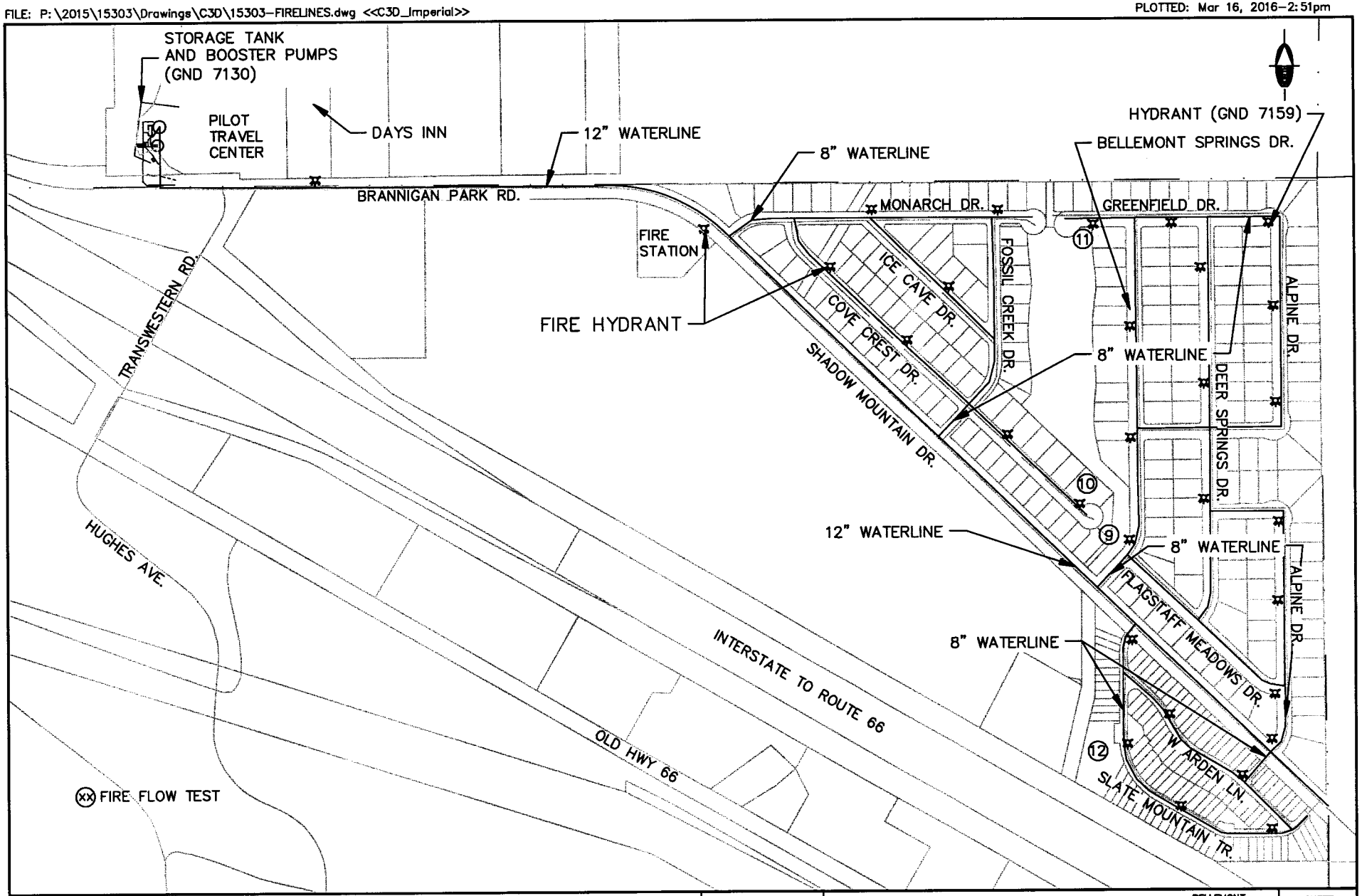

SWI
Shephard Wesnitzer, Inc.

110 W. Dale Avenue
Flagstaff, AZ 86001
928.773.0354
928.774.8934 fax
www.swiaz.com

JOB NO.	15303
DATE	MAR 2016
SCALE	1" = 500'
DRAWN	KMW
DESIGN	DMM
CHECKED	DMM

UTILITY SOURCE FIRE PROTECTION

BELLEMONT
ARIZONA

WATERLINE EXHIBIT

SHEET 1 OF 2

FILE: P:\2015\15303\Drawings\PFD.dwg <<C3D_Imperial>>

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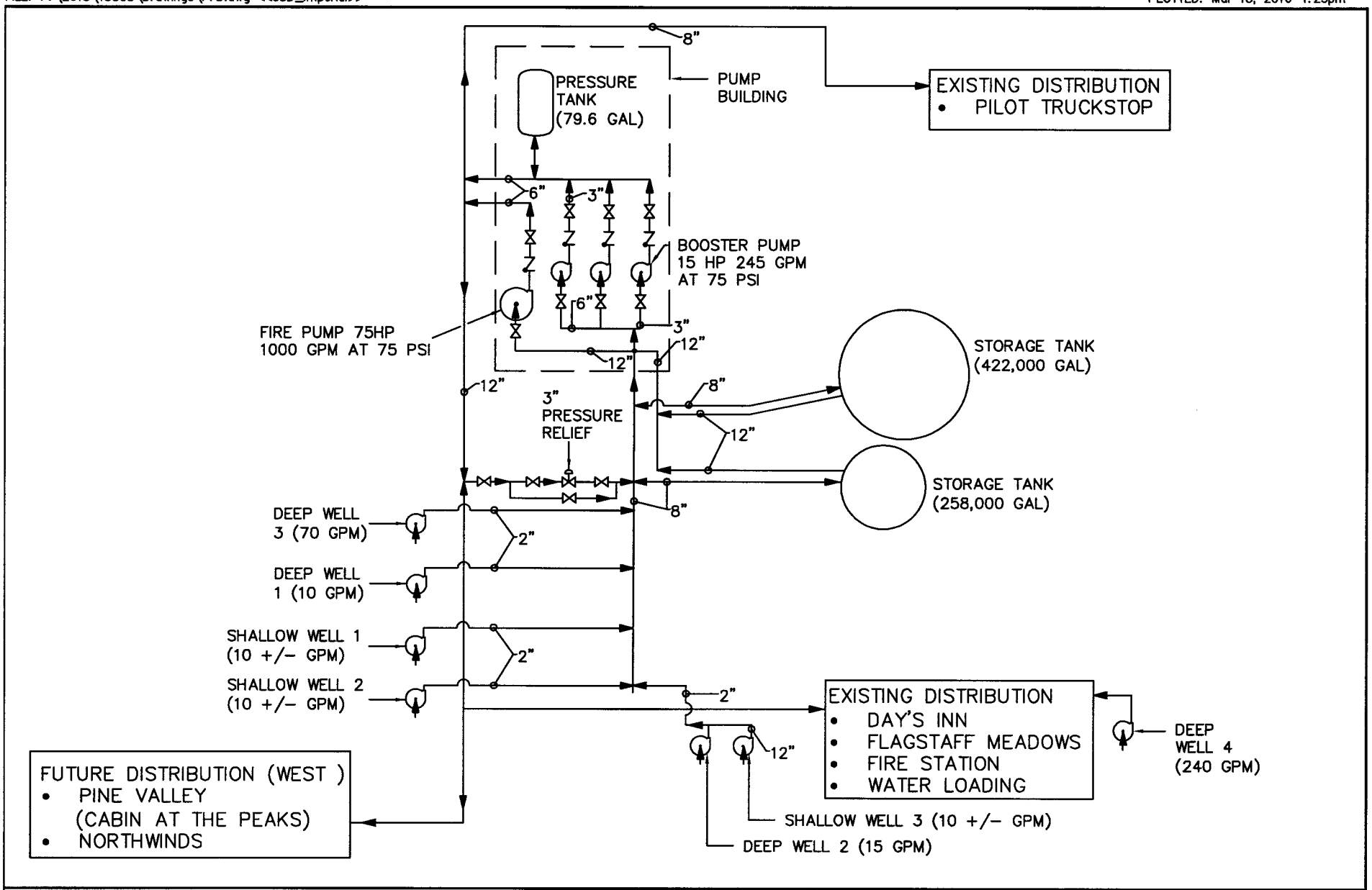

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Flagstaff, AZ 86001
928.773.0354
928.774.8934 fax
www.swiaz.com

JOB NO.	15303
DATE	MAR 2016
SCALE	NONE
DRAWN	RNJ
DESIGN	DMM
CHECKED	DMM

UTILITY SOURCE FIRE PROTECTION

BELLEMONT ARIZONA

PROCESS FLOW DIAGRAM EXHIBIT

SHEET 2 OF 2

COMPANY NAME: *UTILITY SOURCE, LLC*	
Name of System: *Flagstaff Meadows Water System*	**ADEQ Public Water System Number:** *03300*

WATER USE DATA SHEET BY MONTH FOR CALENDAR YEAR 2013

MONTH	NUMBER OF CUSTOMERS	GALLONS SOLD (Thousands)	GALLONS PUMPED (Thousands)	GALLONS PURCHASED (Thousands)
JANUARY	331	1,481	1,529	
FEBRUARY	331	1,465	1,564	
MARCH	330	1,394	1,427	
APRIL	332	1,474	1,536	
MAY	332	1,770	1,789	
JUNE	332	2,251	2,354	
JULY	329	2,185	2,268	
AUGUST	331	1,838	1,944	
SEPTEMBER	330	1,750	1,818	
OCTOBER	331	1,677	1,752	
NOVEMBER	331	1,014	1,598	
DECEMBER	332	939	1,149	
	TOTALS →	19,238	20,728	0

What is the level of arsenic for each well on your system? _<.001_ mg/l
(If more than one well, please list each separately.)

If system has fire hydrants, what is the fire flow requirement? _1000_ GPM for _2_ hrs

If system has chlorination treatment, does this treatment system chlorinate continuously?
(X) Yes ( ) No

Is the Water Utility located in an ADWR Active Management Area (AMA)?
( ) Yes (X) No

Does the Company have an ADWR Gallons Per Capita Per Day (GPCPD) requirement?
( ) Yes (X) No

If yes, provide the GPCPD amount:_____

Note: If you are filing for more than one system, please provide separate data sheets for each system.

COMPANY NAME *UTILITY SOURCE, LLC*	
Name of System: *Flagstaff Meadows Wastewater Treatment Plant*	**Wastewater Inventory Number (if applicable):**

WASTEWATER FLOWS

MONTH/YEAR (Most Recent 12 Months)	NUMBER OF SERVICES	TOTAL MONTHLY SEWAGE FLOW	SEWAGE FLOW ON PEAK DAY
January	331	1,849,291	77,803
February	331	1,588,261	69,082
March	330	1,935,852	69,166
April	332	1,963,684	72,576
May	332	1,903,634	68,710
June	332	1,902,259	69,183
July	329	2,371,827	93,810
August	331	2,474,296	86,106
September	330	2,283,932	86,635
October	331	1,978,858	69,285
November	331	1,753,864	62,343
December	332	1,832,195	64,773

PROVIDE THE FOLLOWING INFORMATION AS APPLICABLE PER WASTEWATER SYSTEM

Method of Effluent Disposal (leach field, surface water discharge, reuse, injection wells, groundwater recharge, evaporation ponds, etc.)	Surface Water Discharge
Groundwater Permit Number	N/A
ADEQ Aquifer Protection Permit Number	P104083
ADEQ Reuse Permit Number	R-104083
EPA NPDES Permit Number	AZ 0024708

Note: If you are filing for more than one system, please provide separate sheets for each system.

DESIGN FLOW CALCULATIONS

Project: Utility Source, Fire Protection
Job: 15303
Designer: DMM
Date = 16-Mar-16

Description		Number of Units	Unit Flow (gpd)	Flow (gpd)
EXISTING DEVELOPMENT:				
Utility Source Water System		1	75,033	75,033
Pilot Truck Stop				
Day's Inn Hotel				
Water Loading Station				
Fire Department Facility				
Residential Connections (329)				
SUBTOTAL =				75,033
Contingency (0%) =				0
EXISTING DEVELOPMENT TOTAL =				**75,033**
DESIGN FLOW =				**76,000**

Design Flow, Water:

Design Flow for Development =	76,000	gpd		
Irrigation, Private Usage:	0	gpd		
Irrigation, Public Usage:	0	gpd		
Water, Design Flow, Average =			**76,000**	**gpd**
Duration for storage	1	days		
Water, Storage (rounded up) =			**76,000**	**gal**
Water, Design Flow, Average =			52.8	gpm
Per Capita Flow Rate:	80	gpd		
Residential Occupancy:	3.0	per residence		
Residence Equivalent =	317	residences		
Water Peaking Factor =	6.2			
Water, Design Flow, Peak =			**329**	**gpm**

Design Flow, Irrigation:

Irrigation, Private Usage:	0	gpd		
Irrigation, Public Usage:	0	gpd		
Irrigation, Design Flow, Average =			**0**	**gpd**
Irrigation, Design Flow, Average =			0.0	gpm
Period for Watering:	8	hours		
Irrigation, Design Flow, Peak =			**0**	**gpm**
Daily Flow Percentage for Storage	50%			
Irrigation, Storage (rounded up) =			**0**	**gal**

Design Flow, Fire:				
Fire Flow:	1,000	gpm		
Sprinkler Flow:	0	gpm		
Fire, Design Flow =			**1,000**	**gpm**
Duration	2	hours		
Fire, Storage (rounded up) =			**120,000**	**gal**
Design Flow, Wastewater:				
Design Flow for Development =	76,000	gpd		
Infiltration and Inflow:	0	gpd		
Other Flows:	0	gpd		
Wastewater, Design Flow, Average =			**76,000**	**gpd**
Wastewater, Design Flow, Average =			52.8	gpm
Population Equivalent =	950	people		
Wastewater Peaking Factor =	2.42			
Wastewater, Design Flow, Peak =			**183,920**	**gpd**
Wastewater, Design Flow, Peak =			128	gpm
Wastewater, Design Flow, Lift Station =			199	gpm

Notes:

1. Unit Flows are based upon ADEQ Rule, Chapter 18, Article 3, Aquifer Protection Permit, Table 1.
2. Design Flow is rounded up to an even 1,000 gpd
3. Water Peaking factor is based upon ADEQ Engineering Bulletin 10 Guidelines for the Construction of Water Systems.
4. Fire Flow assumptions need to be confirmed by appropriate Fire Protection Authority.
5. Sewer Peaking factor is based upon ADEQ R18-9-E301.D.1.b.i. (Not applied to I&I Flow)
6. Design Flow, Lift Station is based upon ADEQ R18-9-E301.D.1.b.ii. (I&I is added without peaking factor.) It is shown for informational purposes only. It is not reliable for design purposes.
7. Utility Source provided monthly water and wastewater flows for 2013. The average daily flow was calculated from the highest month, July 2013.

JEREMY @ Bellemont WATER

INSURANCE SERVICES OFFICE, INC.

HYDRANT FLOW DATA SUMMARY

City Ponderosa Fd

County Arizona(Ccconino), State ARIZONA (02) Witnessed by: Insurance Services Office Date: Jun 12, 2015

TEST NO.	TYPE DIST.*	TEST LOCATION	SERVICE	FLOW - GPM $Q=(29.83(C(d^2)p^{0.5}))$ INDIVIDUAL HYDRANTS			TOTAL	PRESSURE PSI STATIC	RESID.	FLOW - AT 20 PSI NEEDED **	AVAIL.	REMARKS***	MODEL TYPE
10		11488 Cove Crest Drive	Utility Source Water System, Main	840	840	0	1680	50	35	1000	2400		
11		4761 Bellemont Springs Drive	Utility Source Water System, Main	810	810	0	1620	115	60	1000	2200		
12		9141 W Slate Mountain Trail	Utility Source Water System, Main	810	810	0	1620	115	60	1000	2200		
13		12913 Spring Valley Trail, (School Parking Lot)	Maine School Water System, Main	840	840	0	1680	75	55	2250	2900	(B)-(1500 gpm)	
1FDS			Fire Department Supply	0	0	0	500	0	0	500	500		Calculated Tanker Relay
2FDS			Fire Department Supply	0	0	0	600	0	0	750	600		Calculated Tanker Relay
3FDS		FDS	Fire Department Supply	0	0	0	650	0	0	500	650		Calculated Tanker Relay
4FDS		FDS	Fire Department Supply	0	0	0	650	0	0	1500	650		Calculated Tanker Relay
5FDS		FDS	Fire Department Supply	0	0	0	550	0	0	1250	550		Calculated Tanker Relay
6FDS		FDS	Fire Department Supply	0	0	0	500	0	0	1000	500		Calculated Tanker Relay
7FDS		FDS	Fire Department Supply	0	0	0	250	0	0	500	250		Calculated Tanker Relay
8FDS		FDS	Fire Department Supply	0	0	0	500	0	0	500	500		Calculated Tanker Relay
9		Rear of 11951 Shadow Mountain Drive	Utility Source Water System, Main	950	950	0	1900	50	35	1250	2800		

THE ABOVE LISTED NEEDED FIRE FLOWS ARE FOR PROPERTY INSURANCE PREMIUM CALCULATIONS ONLY AND ARE *NOT* INTENDED TO PREDICT THE MAXIMUM AMOUNT OF WATER REQUIRED FOR A LARGE SCALE FIRE CONDITION.

THE AVAILABLE FLOWS ONLY INDICATE THE CONDITIONS THAT EXISTED AT THE TIME AND AT THE LOCATION WHERE TESTS WERE WITNESSED.

*Comm = Commercial; Res = Residential.

**Needed is the rate of flow for a specific duration for a full credit condition. Needed Fire Flows greater than 3,500 gpm are not considered in determining the classification of the city when using the Fire Suppression Rating Schedule.

*** (A)-Limited by available hydrants to gpm shown. Available facilities limit flow to gpm shown plus consumption for the needed duration of (B)-2 hours, (C)-3 hours or (D)-4 hours.