

May 8, 2020  
Revised: October 16, 2020

## Smoke Tree Resort

7101 East Lincoln Drive  
Paradise Valley, Arizona 85253

### Water Service Impact Study



Prepared for:

**Gentree LLC**

3620 East Campbell Avenue  
Suite B

Phoenix, AZ 85018

Contact: Sam Robinson

Prepared by:

**Coe & Van Loo Consultants, Inc.**

4550 N. 12th Street

Phoenix, AZ 85014

Contact: Cassandra Alejandro, P.E.

602.285.4763

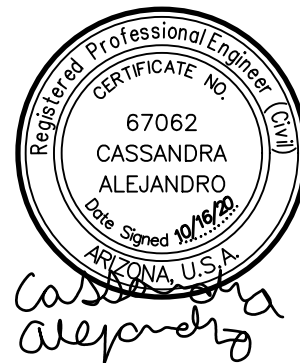
Job # 1.01.0315301



**WATER SERVICE IMPACT STUDY**

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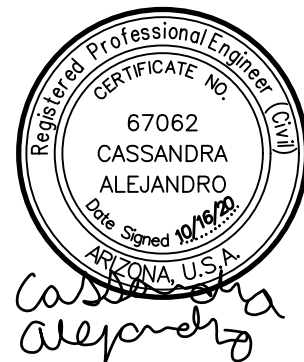
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Appendix A: Water Quarter Section Map
Appendix B: Fire Flow Test Results
Appendix C: WaterCAD Results (Domestic)
Appendix D: WaterCAD Results (Fire Flow)
Appendix E: Water Quality Report



## EXECUTIVE SUMMARY

The proposed Smoke Tree Resort is the redevelopment of an existing resort complex. The proposed development will be constructed on approximately 5 acres of existing special use permit resort land on the southeast corner of East Lincoln Drive and Quail Run Road. The property lies within the Town of Paradise Valley. Water service to the property is provided by EPCOR Water. EPCOR has stubbed out a 12-inch waterline in Quail Run Road from the existing 16-inch waterline on the north side of Lincoln Drive as part of the Town's Roadway and Utility Improvement Project No. 2016-1. Smoke Tree Resort will be required to extend the 12-inch waterline to service their property from the 12-inch stub to the existing 8-inch waterline at the intersection of Quail Run road and Mockingbird Lane. Smoke Tree Resort will reimburse EPCOR the amount of \$58,397.23 for the 12-inch stub as part of the Lincoln Road Improvement Project No. 2016-14 installed by EPCOR. The proposed 12-inch waterline and existing 16-inch waterline described above will serve the development.

Demand calculations were prepared based on the design requirements for the Town of Paradise Valley and EPCOR Water. Fire flow demands are per the 2018 International Fire Code with City of Phoenix Amendments. The calculated demands are as follow

- Average Day Demand: 54,763 gpd (38.03 gpm)
- Maximum Day Demand: 98,574 gpd (68.45 gpm)
- Peak Hour Demand: 164,290 gpd (114.09 gpm)
- Maximum Day + Fire Flow Demands: 2,068.45 gpm

Modeling of the system was conducted utilizing WaterCAD version 8i software. Pressures in the proposed development were found to range between 89 and 94 psi for the ADD, MDD, and PHD scenarios. Velocities during Fire Flow for all fire flow scenarios were below 10 fps. The proposed water system is designed to meet the Town of Paradise Valley design standards and EPCOR Water's *Developer and Engineering Guide*, dated January 2015.

The September 26, 2019 updated "Will-Serve" letter from EPCOR Water is provided in Appendix A.



## **1.0 INTRODUCTION**

### **1.1 General Description**

Smoke Tree Resort is a proposed redevelopment of an existing resort complex on approximately 5 acres of existing special use permit resort land located in the Town of Paradise Valley, Arizona. A total of 122 new rental rooms are proposed. Room counts have not been approved by the Town of Paradise Valley's Town Council. Room counts may be revised. The site will also include a Restaurant, Market, and Coffee Shop with square footages estimated and may be revised at 3,200; 4,000; and 1,800 respectively.

This study addresses the water service connections and fire protection requirements for the proposed development. EPCOR Water will provide water service to the development. EPCOR Water design standards in the *Developer and Engineering Guide*, Dated January 2015 will be used to determine domestic water demands. The Town of Paradise Valley will provide fire protection service to the site. Fire flow standards will be based on the Town of Paradise Valley design standards and EPCOR Water's *Developer and Engineering Guide*, dated January 2015.

### **1.2 Project Location**

Smoke Tree Resort is located in Section 10 of Township 2 North, Range 4 East of the Gila and Salt River Base and Meridian. The development is bordered by East Lincoln Drive to the north and Quail Run Road to the west. See Figure 1, 2, 3, and 4.









## PROGRAM:

- A. Pedestrian entry
- B. Resort Reception Entry Plaza and Valet
- C. Resort Reception and Lobby
- D. Pavilion
- E. Event Lawn
- F. Shade Trellis
- G. Restaurant
- H. Market
- I. Coffee Shop
- J. Outdoor Patio
- K. Resort Pool
- L. Pool Lounge
- M. Entry Lounge
- N. Resort Suites (guest rooms)
- O. Resort Guest Flex Space
- P. Luxury Suites (guest rooms)
- Q. Signage
- R. Surface Parking
- S. Quail Run Road Access Point
- T. Garbage Bins
- U. Delivery Location
- V. Employee Break Area
- W. Back of House
- AB. Sight Visibility Triangle - 33' x 33'
- AC. APS Utility Box
- AD. 12' Wide Exit Only Driveway

## RESORT UNITS - 122 KEYS

Main Hotel	
1st Level	= 42 keys
2nd Level	= 45 keys
3rd Level	= 15 keys
	<u>102 keys</u>

Luxury Suites (guest rooms)	
4 villas with 3 keys	= 12 keys
2 villas with 4 keys	= 8 keys
	<u>20 keys</u>

Total Keys = 122 keys

Total Self-Park Spaces = 170  
Dimensions: 9' x 18' + 2' overhang

or

Total Valet Spaces = 196

**PHX**  
ARCHITECTURE

GREEY|PICKETT

**BEUS**  
**GILBERT**



CREATIVE DESIGNS  
IN LIGHTING

**CVL**  
CONSULTANTS

**GH**

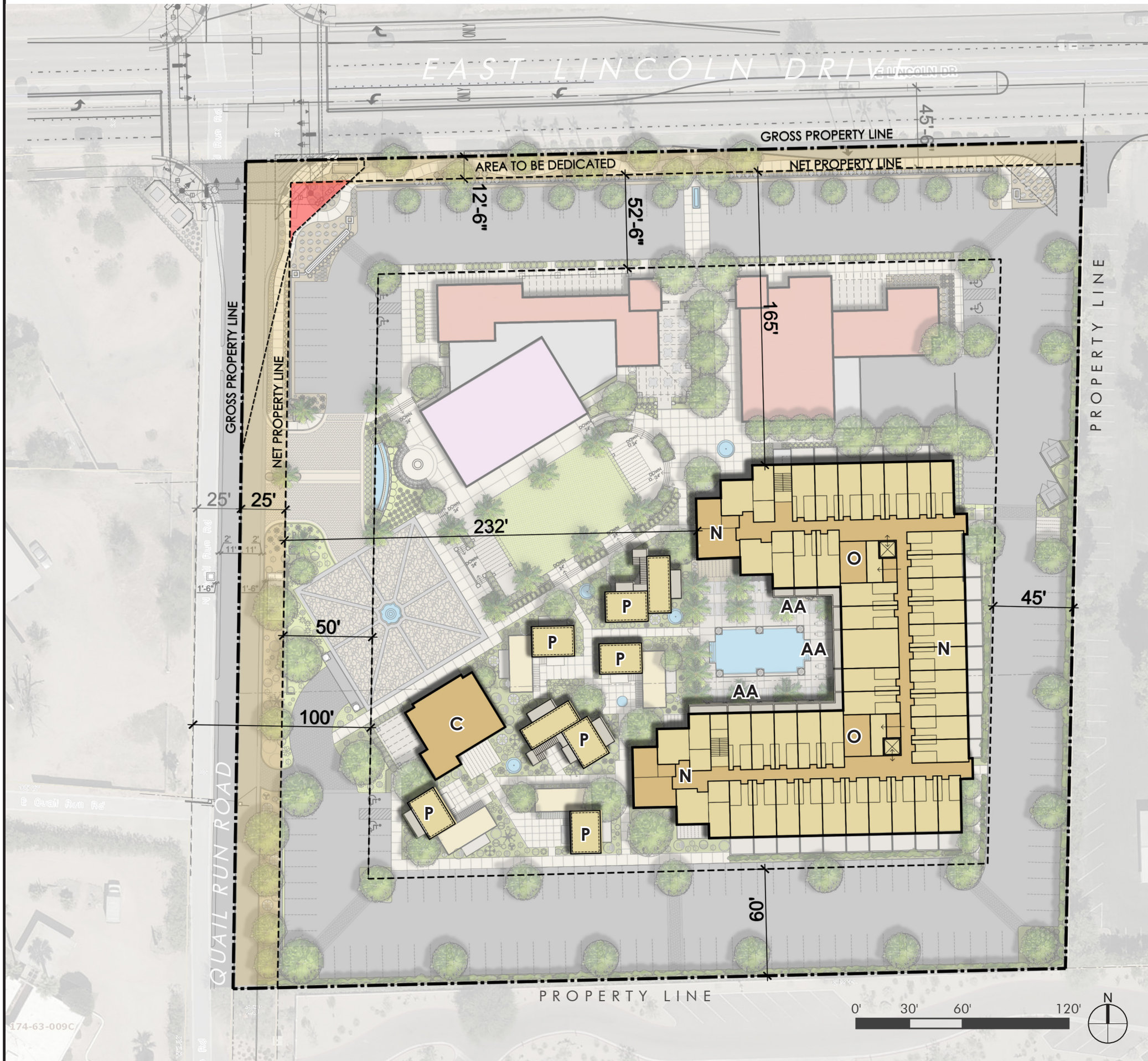
PROPOSED SITE PLAN - GROUND LEVEL

THE SMOKE TREE RESORT  
7101 E LINCOLN DR, PARADISE VALLEY, AZ 85253  
SPECIAL USE PERMIT | MAJOR AMENDMENT APPLICATION

**A8**

SEP 6, 2019  
11 x 17 format  
REVISED  
OCT 15, 2020





## PROGRAM:

- C. Resort Reception and Lobby
- N. Resort Suites (guest rooms)
- O. Resort Guest Flex Space
- P. Luxury Suites (guest rooms)
- AA. Balconies

**PHX**  
ARCHITECTURE

GREEY|PICKETT

**BEUS**  
**GILBERT**



CREATIVE DESIGNS  
IN LIGHTING

**CVL**  
CONSULTANTS



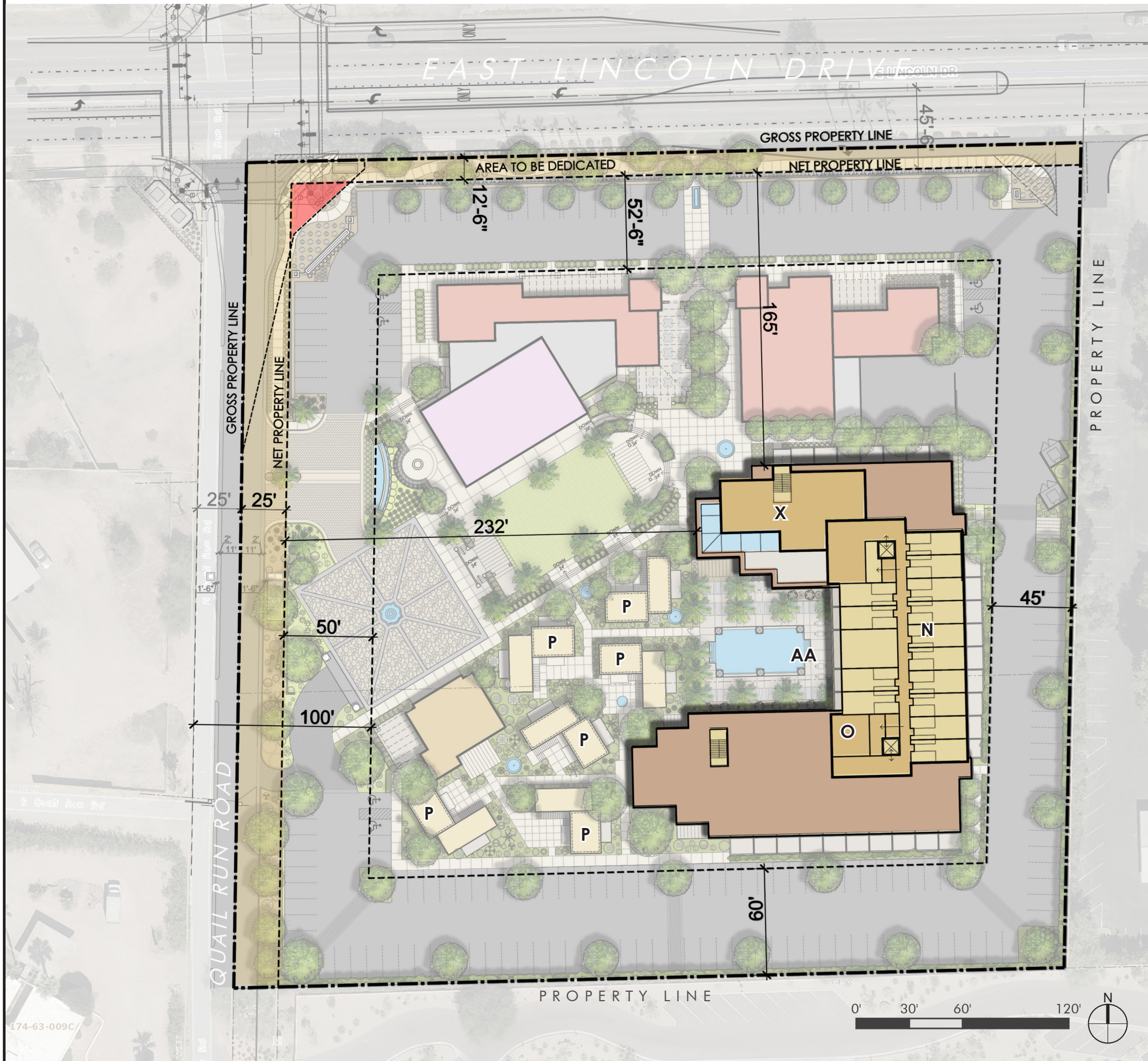
PROPOSED SITE PLAN - SECOND LEVEL

THE **SMOKE TREE** RESORT  
7101 E LINCOLN DR, PARADISE VALLEY, AZ 85253  
SPECIAL USE PERMIT | MAJOR AMENDMENT APPLICATION

**A9**

SEP 6, 2019  
11 x 17 format  
REVISED  
OCT 15, 2020





# **PROGRAM:**

- N. Resort Suites (guest rooms)
- O. Resort Guest Flex Space
- X. Resort Guest Amenity
- AA. Balconies



GREEY|PICKETT

BEUS  
GILBERT



CREATIVE DESIGNS  
IN LIGHTING



PROPOSED SITE PLAN - THIRD LEVEL

THE  
SMOKE TREE  
RESORT

7101 E LINCOLN DR, PARADISE VALLEY, AZ 85253  
SPECIAL USE PERMIT | MAJOR AMENDMENT APPLICATION

**A10**

SEP 6, 2019  
11 x 17 format  
REVISED  
OCT 15, 2020

## 2.0 WATER SYSTEM DESIGN CRITERIA

The following criteria was be used in developing the water study.

### 2.1 Design Criteria

This water study is based on criteria from the Town of Paradise Valley and EPCOR Water's *Developer & Engineering Guide*, dated January, 2015. The following criteria were used in developing this plan:

- Demand factors
  - Resort Average Day Demand = 446 gpd/room
    - Includes site amenities
  - Commercial = 1,700 gpd/acre
  - Max day factor = 1.8 x Average Day Demand
  - Peak hour factor = 3.0 x Average Day Demand
- Pressure requirements
  - Minimum
    - 20 psi at the meter
  - Maximum = 120 psi
- Velocity
  - Maximum
    - 5 fps for maximum day demand
    - 7 fps for peak hour demand
    - 10 fps for maximum day demand plus fire flow
- Unit friction head loss
  - Maximum = 10ft/1,000 ft of distribution lines
- Hazen-Williams Coefficient = 130
- Fire Flows = 2,000 gpm

### **3.0 EXISTING INFRASTRUCTURE**

#### **3.1 Existing Waterlines**

Existing adjacent waterlines to Smoke Tree Resort consist of a 16-inch waterline on the north side of East Lincoln Drive and an 8-inch waterline in North Quail Run Road approximately 680 feet south of the corner of Smoke Tree Resort and East Lincoln Drive. The nearest existing fire hydrants are located directly east on East Lincoln Drive. See Appendix B.

See Appendix B for an EPCOR Water quarter section for this area.

#### **3.2 Water Quality**

Appendix F contains a copy of the 2018 Water Quality Report. No violations were reported.



## 4.0 PROPOSED INFRASTRUCTURE

### 4.1 Water Demands

The water demands for Smoke Tree Resort may be seen below in Table 1.

Table 1 – Smoke Tree Resort Water Demands

Land Use	Description	Unit	No. of Units	Unit Factor (gpd/unit)	ADD (gpd)	MDF	MDD (gpd)	PHF	PHD (gpd)
Room	Resort	room	122	446 <sup>1</sup>	54,412	1.8	97,942	3.0	163,236
Restaurant, Market, & Coffee Shop	Commercial	acre	0.21	1,700	351	1.8	632	3.0	1,054
<b>Total</b>					<b>54,763</b>		<b>98,574</b>		<b>164,290</b>

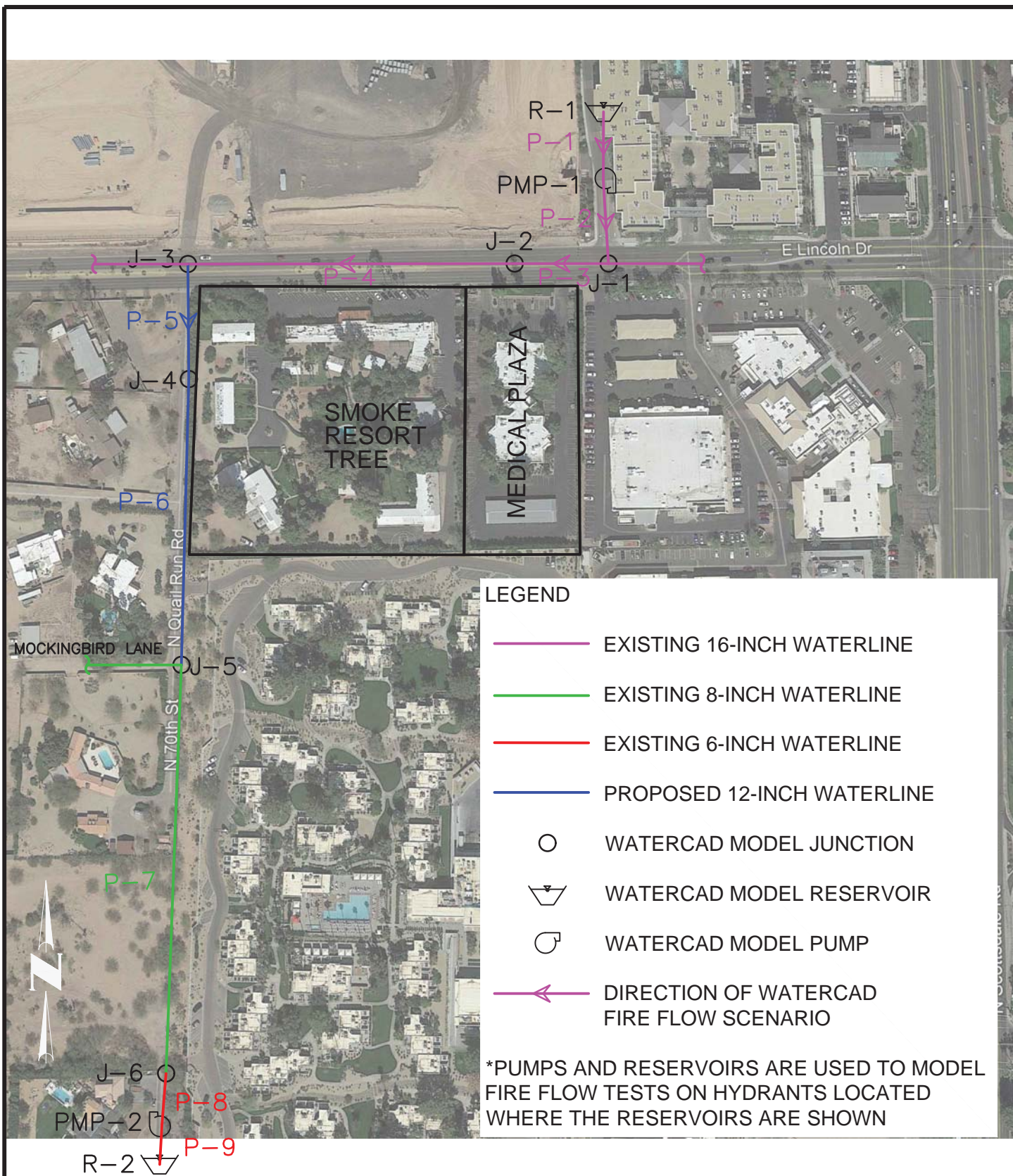
<sup>1</sup>Includes site amenities

Fire flow demands of 2,000 gpm will be modeled.

### 4.2 Proposed On-Site Water Infrastructure

A proposed 12-inch waterline is to extend north from the existing 8-inch waterline in North Quail Run Road to the 16-inch waterline in Lincoln Drive. A proposed 2-inch domestic water meter will be located at the west side of the development along Quail Run Road. See Appendix B: Paradise Valley Water Company Block Map PV – 407 for a detailed map of existing conditions for this connection.





NOT TO SCALE  
1.01.0315301  
4550 North 12th Street  
Phoenix, Arizona 85014  
Phone 602-264-6831  
<http://www.cvlci.com>

# WATER LAYOUT

## SMOKE TREE RESORT

**CVL**  
CONSULTANTS  
CELEBRATING 60 YEARS

FIGURE 3

## **5.0 WATER SYSTEM MODELING**

### **5.1 Network Analysis Domestic Demands**

The network analysis for the proposed development's distribution system was completed using WaterCAD V8i. A model was created and modified as necessary to demonstrate that the existing and proposed water infrastructure meets the water system design criteria. All networks were analyzed for average day, maximum day and peak hour demand conditions. The existing conditions were determined by a fire flow test completed on October 11, 2018. Results from this fire flow test may be seen in Appendix C.

The pipes were sized based on pressure requirements for average day, max day, and peak hour as described in Section 2.0.

Input parameters of the water distribution system modeling include:

- Pipe Diameters (inches)
- Elevations of Nodes/Junctions (feet)
- System Water Demands (gpm)
- Hazen-Williams, C=130

Output parameters include but are not limited to:

- Velocities (fps)
- Pressure (psi)
- Head Loss (feet)
- Flow Rates (gpm)

## 5.2 Modeling Results Domestic Demands

The detailed results of the WaterCAD analysis for the domestic demands are presented in Appendix D. Table 2 summarize the results.

**Table 2 – Water Model Results Summary for Domestic Demands**

Scenario	Flow (gpm)	Pressure (psi)				Maximum Velocity (fps)	Pipe ID
		Minimum	Node	Maximum	Node		
Average Day	38.03	89.52	J-6	93.84	J-1	0.11	P-5
Max Day	68.46	89.51	J-6	93.84	J-1	0.19	P-5
Peak Hour	114.09	89.50	J-6	93.83	J-1	0.32	P-5

## 5.3 Network Analysis Fire Flows

The network analysis was performed as described in subsection 5.1 above. The detailed results of the Water CAD analysis for the fire flow scenario are shown in Appendix E. Table 3 summarizes the results.

**Table 3 – Water Model Results Summary for Fire Flow Demands**

Maximum Day + Fire Flow Needed (gpm)	Pressure (psi)				Maximum Velocity (fps)	Pipe ID
	Minimum	Node	Maximum	Node		
2,068.45	86.23	J-4	90.08	J-2	5.87	P-5

## 6.0 SUMMARY

This Water Service Impact Study presents the proposed water system connections, and an overview of existing infrastructure surrounding the project site. The following summarizes CVL's findings of the proposed water system to serve Smoke Tree Resort.

- The water service connections will be made to the existing EPCOR Water system.
- Existing adjacent waterlines to Smoke Tree Resort consist of a 16-inch waterline on the north side of East Lincoln Drive and an 8-inch waterline in North Quail Run Road approximately 680 feet south of the corner of Smoke Tree Resort and East Lincoln Drive.
- EPCOR has stubbed out the 12-inch waterline on Quail Run Road from the existing 16-inch waterline on the north side of Lincoln Drive as part of the Town's Roadway and Utility Improvement Project No. 2016-14. Smoke Tree Resort will be required to extend the 12-inch waterline to service their property from the 12-inch stub to the existing 8-inch waterline at the intersection of Quail Run Road and Mockingbird Lane. This proposed 12-inch waterline will serve the development and will be required to meet the required fire flow demand of 2,000 gpm.
- Smoke Tree Resort will reimburse EPCOR the amount of \$58,397.23 for the 12-inch stub as part of the Lincoln Road Improvement Project No. 2016-14 installed by EPCOR.
- Demands from the Smoke Tree Resort are:
  - Average Day Demand: 0.0548 MGD
  - Max Day Demand: 0.0986 MGD
  - Peak Hour Demand: 0.1643 MGD
- Pressures within the proposed development are approximately 89-94 psi for all domestic demand scenarios which is within the Town of Paradise Valley's pressure requirements. Individual PRVs are required after the meter where pressures are greater than 80 psi.
- The nearest fire hydrants to the proposed development are to the east of Smoke Tree Resort along East Lincoln Drive.
- Velocities in the existing system are less than the 10 fps maximum requirement. The maximum velocity that occurs when a fire flow of 2,068.45 gpm is modeled at the site is 5.87 fps within P-5.
- Individual PRVs are needed for all sites where pressures at above 80 psi occur.
- The Restaurant, Market, and Coffee Shop have been added as individual land uses beyond site amenities to match the Wastewater Capacity Study where the City of Scottsdale requested the flows be added separately.

## **APPENDIX A**

**September 26, 2019 EPCOR Water “Will-Serve” Letter**



2355 West Pinnacle Peak Road, Suite 300  
Phoenix, AZ 85027 USA  
[epcor.com](http://epcor.com)

September 26, 2019

Coe & Van Loo Consultants, Inc.  
Attn: Fred Fleet, P.E.  
4550 N. 12<sup>th</sup> Street  
Phoenix, AZ 85014

Sent via e-mail to: [fef\\_@cvlci.com](mailto:fef_@cvlci.com)

Re: Will-Serve Letter for Water Service  
7101 E. Lincoln Drive, Paradise Valley  
APN 174-64-003A

Dear Mr. Fleet;

This letter is in response to your request to EPCOR Water Arizona Inc. ("EPCOR") regarding EPCOR's willingness to provide water service to a proposed resort hotel to be located at 7101 E. Lincoln Drive in Paradise Valley (the "Development") as shown in **Exhibit A**. EPCOR provides the following information for your consideration:

1. EPCOR has confirmed that the Development is located within the area encompassed by EPCOR's Certificate of Convenience & Necessity ("CC&N") for water service as issued by the Arizona Corporation Commission.
2. Water service to the Development by EPCOR will be conditioned upon developer entering into a Main Extension Agreement (an "MXA") with EPCOR in a form acceptable to EPCOR, and upon EPCOR and developer fully performing its respective obligations under the MXA. The MXA will provide, among other things, that developer will be responsible for constructing at its cost all water main extensions necessary to distribute water from EPCOR's water system to the individual service line connections in the Development. The design and construction of all such main extensions will be subject to EPCOR's approval, and ownership of the main extensions, together with related real property easement rights, must be transferred to EPCOR prior to the initiation of water service in the Development.
3. Based on the water service currently provided by EPCOR in the CC&N, EPCOR will have adequate water capacity for normal use in the Development upon EPCOR's and developer's fulfillment of its respective obligations under the MXA. Please note that EPCOR does not guarantee the adequacy of its water capacity for fire protection.
4. Developer will also be required, as a condition to EPCOR providing water service to the Development, to pay all required fees pursuant to EPCOR's tariffs and as may be provided in the MXA.

This letter assumes that construction of the main extensions within the Development will begin within one (1) year after the date of this letter.

If developer begins construction of any water mains in the Development or any other water service infrastructure intended to serve the Development without, in each instance, the prior written approval of such construction by EPCOR, developer will be proceeding with such construction at its own risk.

This letter does not independently create any rights or obligations in either developer or EPCOR, and is provided for information only. Any agreement between developer and EPCOR for water service in the Development must be memorialized in a written agreement executed and delivered by their respective authorized representatives.

For additional information, please contact me at (623) 445-2402 or at [bfinke@epcor.com](mailto:bfinke@epcor.com).

Sincerely,

A handwritten signature in black ink, appearing to read "Brad Finke". The signature is written in a cursive, flowing style.

Brad Finke, P.E.  
Engineering Manager

Enclosure: Exhibit A – Location Description of Development



### Location of Development





August 28, 2019

## Smoke Tree Resort

7101 East Lincoln Drive  
Paradise Valley, Arizona 85253

### Water Service Impact Study

**EPCOR**

Accepted By: Brad Linke

Date: 9-26-2019

Prepared for:

**Gentree LLC**

3620 East Campbell Avenue  
Suite B

Phoenix, AZ 85018

Contact: Sam Robinson

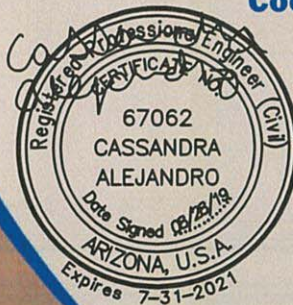
Prepared by:

**Coe & Van Loo Consultants, Inc.**

4550 N. 12th Street  
Phoenix, AZ 85014

Contact: Cassandra Alejandro, P.E.

602.285.4763



Job # 1.01.0315301

**WATER SERVICE IMPACT STUDY**



May 8, 2020

## Smoke Tree Resort

7101 East Lincoln Drive  
Paradise Valley, Arizona 85253

### Water Service Impact Study

Prepared for:

#### **Gentree LLC**

3620 East Campbell Avenue  
Suite B  
Phoenix, AZ 85018  
Contact: Sam Robinson



Prepared by:

#### **Coe & Van Loo Consultants, Inc.**

4550 N. 12th Street  
Phoenix, AZ 85014  
Contact: Cassandra Alejandro, P.E.  
602.285.4763

**EPCOR**

Accepted By: Brenda Linke  
(with comments)  
Date: 5-18-2020



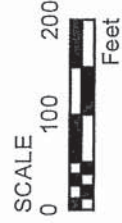
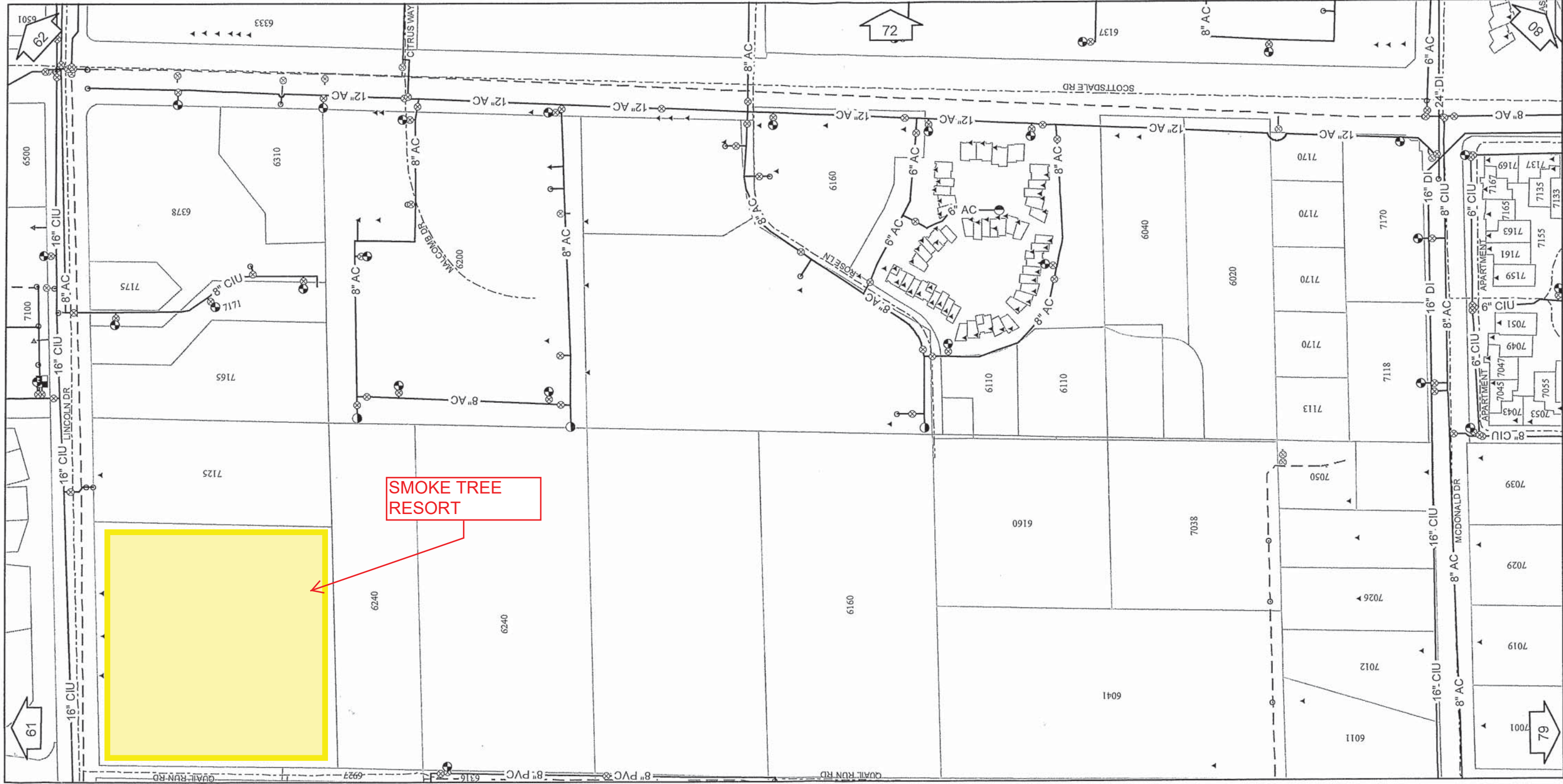
Job # 1.01.0315301

**WATER SERVICE IMPACT STUDY**

## **APPENDIX B**

### **Water Quarter Section Map**





## WATER FEATURES

### Street Valves

- Air Release
- Ball (Blow-off)
- Double Check
- Pressure Regulate
- Gate, Butterfly Open
- Gate, Butterfly Closed

### Other

- Customer Meter
- Hydrant
- Cap/Reducer
- Pump Station
- Tank
- Well
- Water Treatment Plant
- System Interconnection

### Lateral Service

- All Types
- (Domestic Not Shown For Map Clarity)

### Mains

- Distribution
- Plant
- Transmission

### Abandoned Features

- Mains/Laterals
- All Other Features Shown 50% Grey

Mapgrid: 21-44



**EPCOR Water**  
EASTERN DIVISION

71

RIGHT

*Brad sent flow tests  
Fred sent to me*





## AREA BOUNDARIES



Service Area

## LAND FEATURES

### Street Centerline

## Lotlines

## TYPICAL LOT

ADDRESS  
NUMBER,

123

MAP PAGES

60	61	62
70	71	72
78	79	80

## 2N4E SE10

SE 1/4 SECTION 10

Mapgrid: 21-44



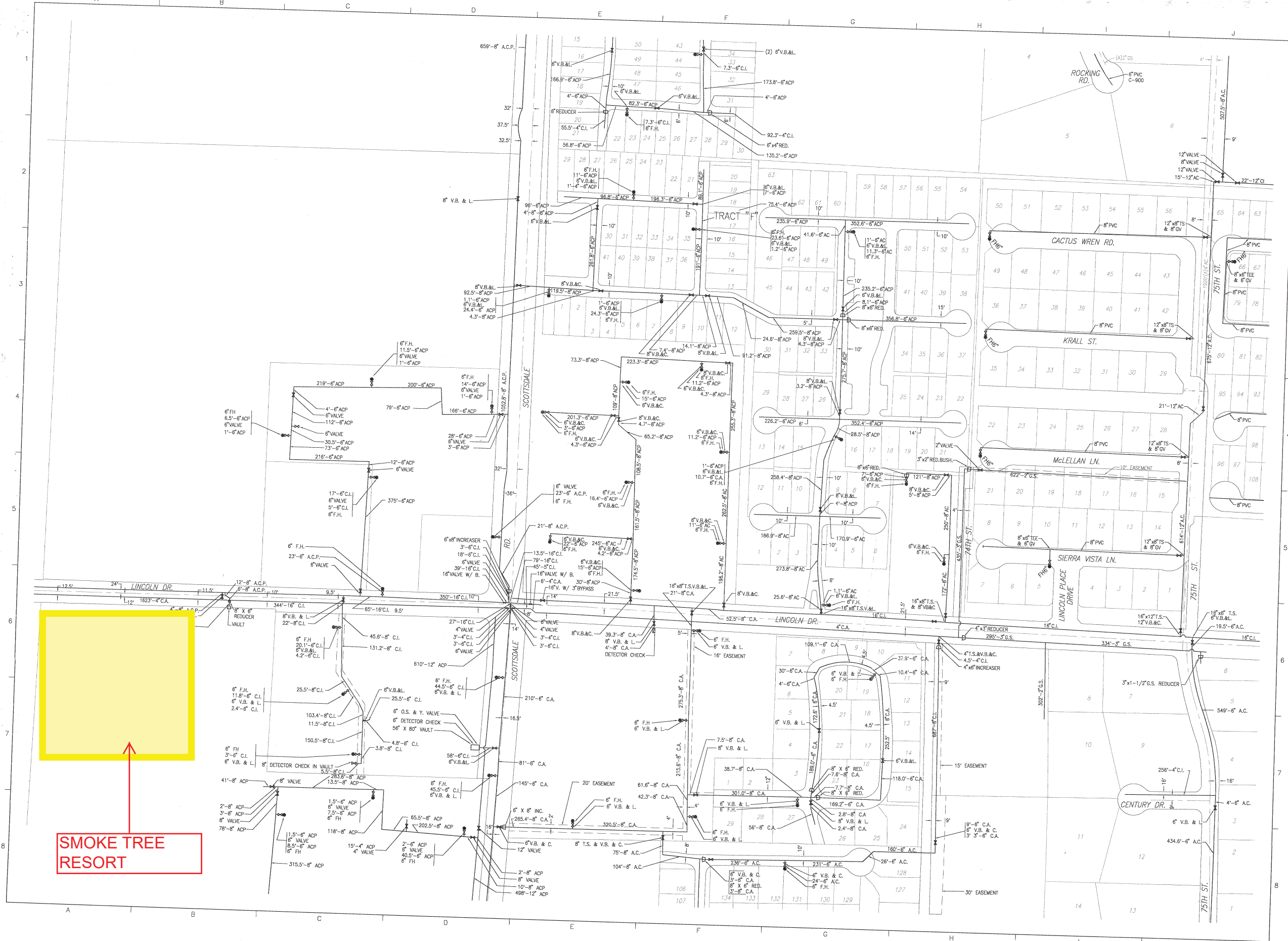
71 PARADISE VALLEY WATER

LEFT

REVISÉ: MAY 2014

COPYRIGHT © 2012 EPCOR WATER COMPANY  
EPCOR MAKES NO CLAIMS CONCERNING THE ACCURACY  
OF THIS MAP NOR ASSUMES ANY LIABILITY RESULTING  
FROM THE USE OF THE INFORMATION HEREON





Legend		
SYMBOL	ABBREV.	DESCRIPTION
	F.H.	COMPANY FIRE HYDRANT
	P.F.H.	PRIVATE FIRE HYDRANT
	REDU.	REDUCER
		WATER METER
		VALVE
		BLOW-OFF
	ARV-M	AIR RELEASE VALVE (MANUAL)
	ARV-A	AIR RELEASE VALVE (AUTOMATIC)
	(A)	ABANDONED
		WELL
	P.S./P.S.	PUMP STATION
		TANK
	A.C.	ASBESTOS CEMENT
	BRS.	BRASS
	C.A.	CEMENT ASBESTOS
	C.I.	CAST IRON
	COP.	COPPER
	D.I.	DUCTILE IRON
	G.S.	GALVANIZED STEEL
	G.V.	GATE VALVE
	M.J.	MECHANICAL JOINT
	P.V.C.	POLYVINYL CHLORIDE
	R.W.	RAW WATER
	STL.	STEEL
	T.S.	TAPPING SLEEVE
	V.B.&C.	VALVE, BOX & COVER
	W.S.	WELDED STEEL
	V.	VALVE

02	103
201	202
301	302
401	402
501	502
601	602
701	702
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901	902
1001	1002
1101	1102
1201	1202
1301	1302
1401	1402
1501	1502
1601	1602
1701	1702
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4701	4702
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7401	7402
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12601	12602
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13501	13502
13601	13602
13701	13702
13801	13802
13901	13902
14001	14002
14101	14102
14201	14202
14301	14302
14401	14402
14501	14502
14601	14602
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15001	15002
15101	15102
15201	15202
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15401	15402
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15601	15602
15701	15702
15801	15802
15901	15902
16001	16002
16101	16102
16201	16202
16301	16302
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16501	16502
16601	16602
16701	16702
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16901	16902
17001	17002
17101	17102
17201	17202
17301	17302
17401	17402
17501	17502
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17901	17902
18001	18002
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18201	18202
18301	18302
18401	18402
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18601	18602
18701	18702
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19001	19002
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19201	19202
19301	19302
19401	19402
19501	19502
19601	19602
19701	19702
19801	19802
19901	19902
20001	20002
20101	20102
20201	20202
20301	20302
20401	20402
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20601	20602
20701	20702
20801	20802
20901	20902
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47201	47202
47301	47302
47401	47402
47501	47502
47601	47602
47701	47702
47801	47802
47901	47902
48001	4

# **APPENDIX C**

## **Fire Flow Test Results**



# Flow Test Summary

Project Name: EJFT 18296-1  
Project Address: 7125 E Lincoln Dr, Paradise Valley, AZ 85253  
Date of Flow Test: 2018-10-11  
Time of Flow Test: 7:45 AM  
Data Reliable Until: 2019-04-11  
Conducted By: Eder Cueva & Tayler Lynch (EJ Flow Tests) 602.999.7637  
Witnessed By: Garren Willey (EPCOR) 480.450.4670  
City Forces Contacted: EPCOR Water (480.450.4670)

## Raw Flow Test Data

Static Pressure: 104.0 PSI  
Residual Pressure: 99.0 PSI  
Flowing GPM: 2,831  
GPM @ 20 PSI: 12,989

## Data with a 10 % Safety Factor

Static Pressure: 93.6 PSI  
Residual Pressure: 88.6 PSI  
Flowing GPM: 2,831  
GPM @ 20 PSI: 12,094

## Hydrant F<sub>1</sub>

Pitot Pressure (1): 63 PSI  
Coefficient of Discharge (1): 0.9  
Hydrant Orifice Diameter (1): 4 inches  
Additional Coefficient 0.83 on orifice #1



Static-Residual Hydrant  
Flow Hydrant  
Distance Between F<sub>1</sub> and R  
249 ft (measured linearly)  
Static-Residual Elevation  
1304 ft (above sea level)  
Flow Hydrant (F<sub>1</sub>) Elevation  
1306 ft (above sea level)  
Elevation & distance values are approximate



## Static-Residual Hydrant



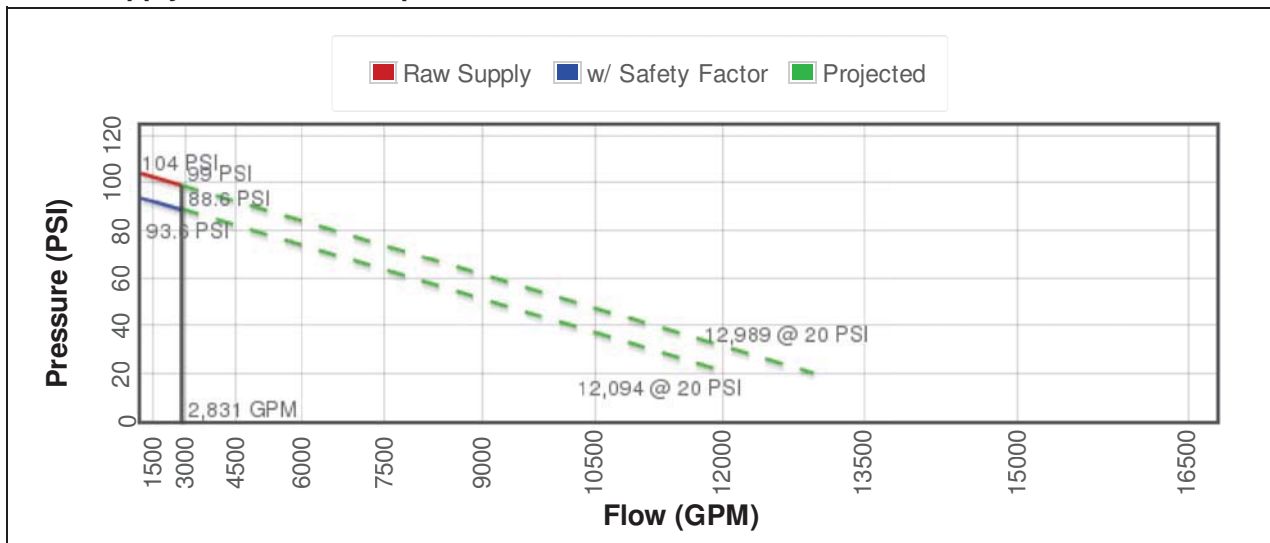
## Flow Hydrant (only hydrant F1 shown for clarity)



## Approximate Project Site



## Water Supply Curve $N^{1.85}$ Graph





# Flow Test Summary

Project Name: EJFT 18296-2  
Project Address: 7125 E Lincoln Dr, Paradise Valley, AZ 85253  
Date of Flow Test: 2018-12-11  
Time of Flow Test: 7:55 AM  
Data Reliable Until: 2019-06-11  
Conducted By: Eder Cueva & Tayler Lynch (EJ Flow Tests) 602.999.7637  
City Forces Contacted: EPCOR Water (480.450.4670)

## Raw Flow Test Data

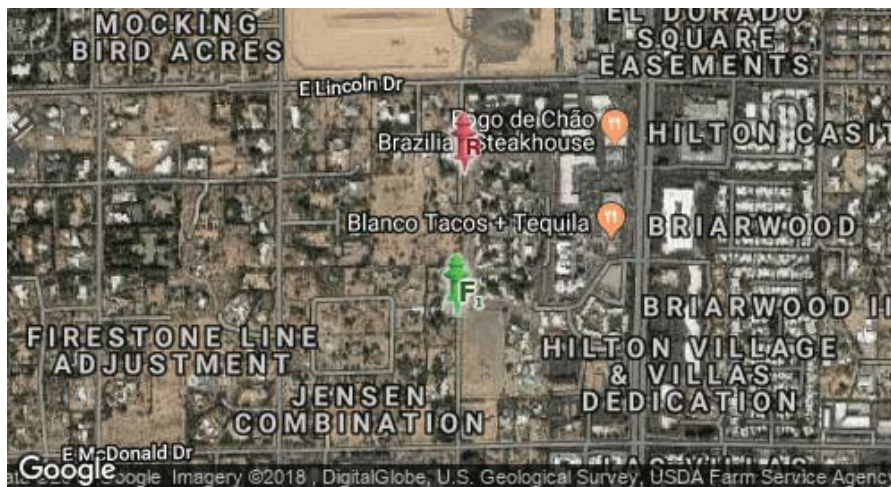
Static Pressure: 92.0 PSI  
Residual Pressure: 70.0 PSI  
Flowing GPM: 1,501  
GPM @ 20 PSI: 2,848


## Data with a 10 % Safety Factor

Static Pressure: 82.8 PSI  
Residual Pressure: 60.8 PSI  
Flowing GPM: 1,501  
GPM @ 20 PSI: 2,645

## Hydrant F<sub>1</sub>

Pitot Pressure (1): 20 PSI  
Coefficient of Discharge (1): 0.9  
Hydrant Orifice Diameter (1): 2.5 inches  
Pitot Pressure (2): 20 PSI  
Coefficient of Discharge (2): 0.9  
Hydrant Orifice Diameter (2): 2.5 inches



 Static-Residual Hydrant

 Flow Hydrant

Distance Between F<sub>1</sub> and R  
1036 ft (measured linearly)

Static-Residual Elevation  
1316 ft (above sea level)

Flow Hydrant (F<sub>1</sub>) Elevation  
1315 ft (above sea level)

Elevation & distance values are approximate

EJ Flow Tests, LLC

21505 North 78th Ave. | Suite 130 | Peoria, Arizona 85382 | (602) 999-7637 | [www.ejengineering.com](http://www.ejengineering.com)  
John L. Echeverri | NICET Level IV 078493 SME | C-16 FP Contractor ROC 271705 AZ | NFPA CFPS 1915  
[www.flowtestsummary.com](http://www.flowtestsummary.com)

## Static-Residual Hydrant



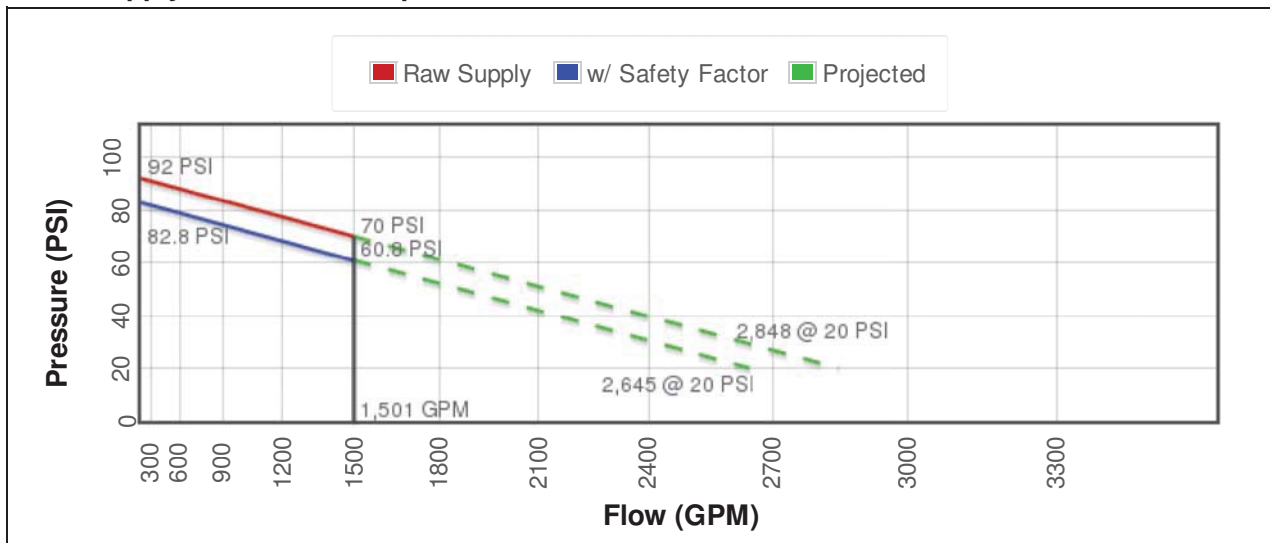
## Flow Hydrant (only hydrant F1 shown for clarity)



## Approximate Project Site



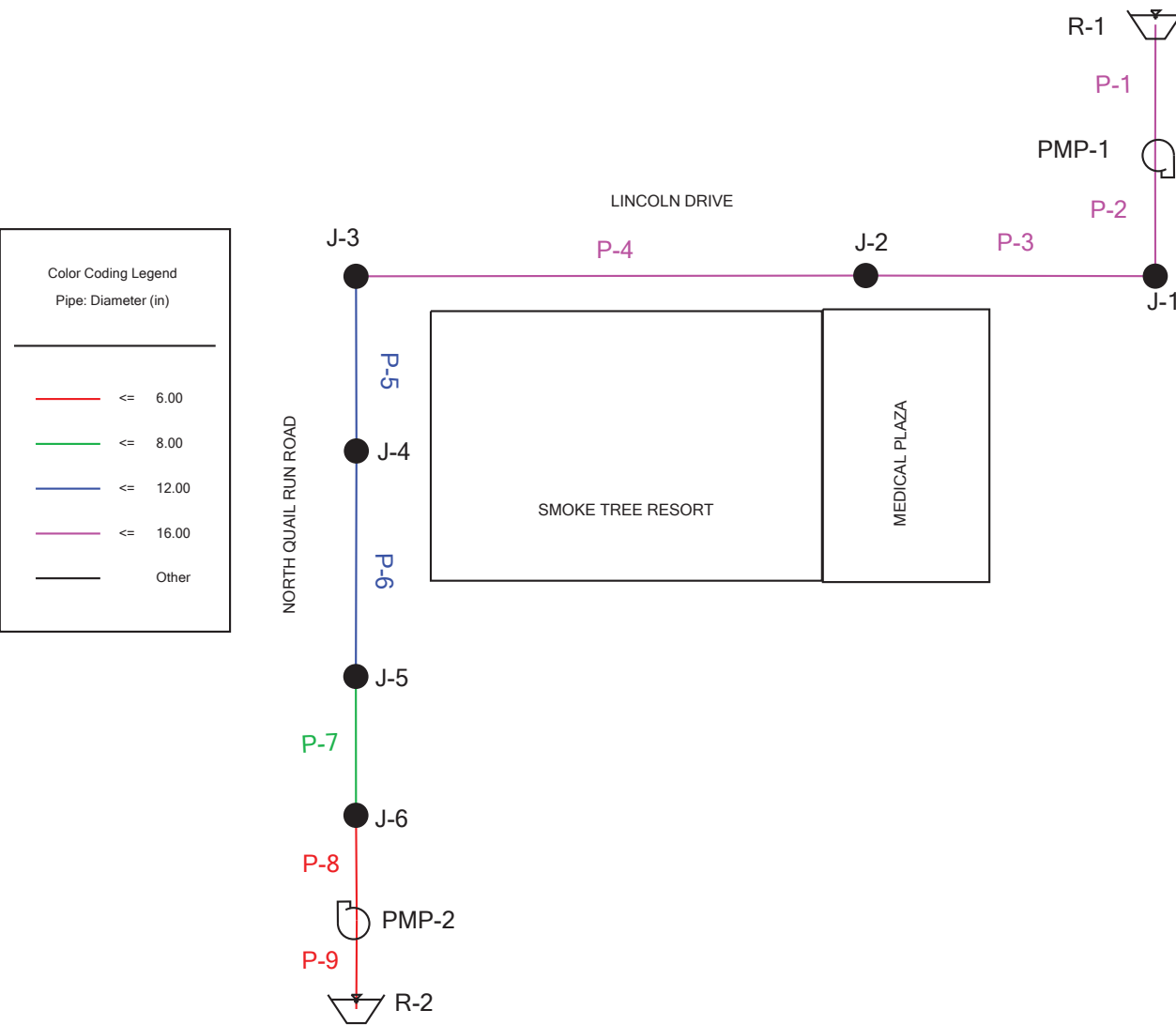
## Water Supply Curve $N^{1.85}$ Graph



## **APPENDIX D**

### **WaterCAD Results (Domestic)**

Scenario: Base  
Active Scenario: Base



FlexTable: Pipe Table  
Active Scenario: Ave Day

ID	Label	Length (Scaled) (ft)	Zone	Start Node	Stop Node	Diameter (in)	Material	Hazen- Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)
47	P-1	32	<None>	R-1	PMP-1	16.00	Cast iron	130.0	38.03	0.06	0.0000
49	P-2	28	<None>	PMP-1	J-1	16.00	Cast iron	130.0	38.03	0.06	0.0000
80	P-3	69	<None>	J-1	J-2	16.00	Ductile Iron	130.0	38.03	0.06	0.0000
148	P-4	122	<None>	J-2	J-3	16.00	Cast iron	130.0	38.03	0.06	0.0000
143	P-5	42	<None>	J-3	J-4	12.00	Ductile Iron	130.0	38.03	0.11	0.0000
142	P-6	54	<None>	J-5	J-4	12.00	Ductile Iron	130.0	0.00	0.00	0.0000
55	P-7	33	<None>	J-6	J-5	8.00	PVC	150.0	0.00	0.00	0.0000
135	P-8	25	<None>	PMP-2	J-6	6.00	Asbestos Cement	140.0	0.00	0.00	0.0000
136	P-9	21	<None>	R-2	PMP-2	6.00	Asbestos Cement	140.0	0.00	0.00	0.0000

## FlexTable: Junction Table

Active Scenario: Ave Day

ID	Label	Elevation (ft)	Zone	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
48	J-1	1,308.00	<None>	0.00	1,524.90	93.84
41	J-2	1,309.00	<None>	0.00	1,524.90	93.41
147	J-3	1,314.69	<None>	0.00	1,524.90	90.95
141	J-4	1,316.00	<None>	38.03	1,524.90	90.38
52	J-5	1,318.00	<None>	0.00	1,524.90	89.52
54	J-6	1,318.00	<None>	0.00	1,524.90	89.52

## FlexTable: Reservoir Table

Active Scenario: Ave Day

ID	Label	Elevation (ft)	Zone	Flow (Out net) (gpm)	Hydraulic Grade (ft)
45	R-1	1,308.00	<None>	38.03	1,308.00
134	R-2	1,316.00	<None>	0.00	1,316.00



FlexTable: Pipe Table  
Active Scenario: Max Day

ID	Label	Length (Scaled) (ft)	Zone	Start Node	Stop Node	Diameter (in)	Material	Hazen- Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)
47	P-1	32	<None>	R-1	PMP-1	16.00	Cast iron	130.0	68.46	0.11	0.0000
49	P-2	28	<None>	PMP-1	J-1	16.00	Cast iron	130.0	68.46	0.11	0.0000
80	P-3	69	<None>	J-1	J-2	16.00	Ductile Iron	130.0	68.46	0.11	0.0000
148	P-4	122	<None>	J-2	J-3	16.00	Cast iron	130.0	68.46	0.11	0.0000
143	P-5	42	<None>	J-3	J-4	12.00	Ductile Iron	130.0	68.46	0.19	0.0000
142	P-6	54	<None>	J-5	J-4	12.00	Ductile Iron	130.0	0.00	0.00	0.0000
55	P-7	33	<None>	J-6	J-5	8.00	PVC	150.0	0.00	0.00	0.0000
135	P-8	25	<None>	PMP-2	J-6	6.00	Asbestos Cement	140.0	0.00	0.00	0.0000
136	P-9	21	<None>	R-2	PMP-2	6.00	Asbestos Cement	140.0	0.00	0.00	0.0000

## FlexTable: Junction Table

Active Scenario: Max Day

ID	Label	Elevation (ft)	Zone	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
48	J-1	1,308.00	<None>	0.00	1,524.89	93.84
41	J-2	1,309.00	<None>	0.00	1,524.89	93.41
147	J-3	1,314.69	<None>	0.00	1,524.89	90.94
141	J-4	1,316.00	<None>	68.45	1,524.89	90.38
52	J-5	1,318.00	<None>	0.00	1,524.89	89.51
54	J-6	1,318.00	<None>	0.00	1,524.89	89.51

## FlexTable: Reservoir Table

Active Scenario: Max Day

ID	Label	Elevation (ft)	Zone	Flow (Out net) (gpm)	Hydraulic Grade (ft)
45	R-1	1,308.00	<None>	68.46	1,308.00
134	R-2	1,316.00	<None>	0.00	1,316.00

# FlexTable: Pipe Table

## Active Scenario: Peak Hour

ID	Label	Length (Scaled) (ft)	Zone	Start Node	Stop Node	Diameter (in)	Material	Hazen- Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/ft)
47	P-1	32	<None>	R-1	PMP-1	16.00	Cast iron	130.0	114.09	0.18	0.0000
49	P-2	28	<None>	PMP-1	J-1	16.00	Cast iron	130.0	114.09	0.18	0.0000
80	P-3	69	<None>	J-1	J-2	16.00	Ductile Iron	130.0	114.09	0.18	0.0000
148	P-4	122	<None>	J-2	J-3	16.00	Cast iron	130.0	114.09	0.18	0.0000
143	P-5	42	<None>	J-3	J-4	12.00	Ductile Iron	130.0	114.09	0.32	0.0000
142	P-6	54	<None>	J-5	J-4	12.00	Ductile Iron	130.0	0.00	0.00	0.0000
55	P-7	33	<None>	J-6	J-5	8.00	PVC	150.0	0.00	0.00	0.0000
135	P-8	25	<None>	PMP-2	J-6	6.00	Asbestos Cement	140.0	0.00	0.00	0.0000
136	P-9	21	<None>	R-2	PMP-2	6.00	Asbestos Cement	140.0	0.00	0.00	0.0000

# FlexTable: Junction Table

## Active Scenario: Peak Hour

ID	Label	Elevation (ft)	Zone	Demand (gpm)	Hydraulic Grade (ft)	Pressure (psi)
48	J-1	1,308.00	<None>	0.00	1,524.87	93.83
41	J-2	1,309.00	<None>	0.00	1,524.87	93.40
147	J-3	1,314.69	<None>	0.00	1,524.86	90.93
141	J-4	1,316.00	<None>	114.09	1,524.86	90.36
52	J-5	1,318.00	<None>	0.00	1,524.86	89.50
54	J-6	1,318.00	<None>	0.00	1,524.86	89.50

FlexTable: Reservoir Table  
Active Scenario: Peak Hour

ID	Label	Elevation (ft)	Zone	Flow (Out net) (gpm)	Hydraulic Grade (ft)
45	R-1	1,308.00	<None>	114.09	1,308.00
134	R-2	1,316.00	<None>	0.00	1,316.00

# **APPENDIX E**

## **WaterCAD Results (Fire Flow)**



## Fire Flow Node FlexTable: Fire Flow Report

### Active Scenario: Residential Fire Flow

Label	Satisfies Fire Flow Constraints?	Fire Flow (Needed) (gpm)	Fire Flow (Available) (gpm)	Flow (Total Available) (gpm)	Pressure (Calculated Residual) (psi)	Pressure (Calculated System Lower Limit) (psi)	Junction w/ Minimum Pressure (System)	Pipe w/ Maximum Velocity	Velocity of Maximum Pipe (ft/s)
J-1	False	2,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
J-2	True	2,000.00	2,001.00	2,001.00	90.08	86.19	J-6	P-2	3.30
J-3	True	2,000.00	2,001.00	2,001.00	87.11	85.68	J-6	P-2	3.30
J-4	True	2,000.00	2,001.00	2,069.45	86.23	85.36	J-6	P-5	5.87
J-5	False	2,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
J-6	False	2,000.00	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)

## **APPENDIX F**

### **Water Quality Report**



**PARADISE VALLEY/SCOTTSDALE**

# **2018** **WATER QUALITY** **REPORT**

[epcor.com](http://epcor.com)

PWS ID AZ0407056

## Safety. Quality. Community. You'll hear these words spoken often around EPCOR.

### Water. It's life.

At EPCOR, we're committed to providing you safe, quality, reliable drinking water every day. It's our mission, and it's an honor. Water fuels our daily routine, quenches our thirst and breathes life into our meals.

But we can't take it for granted. Our water system needs a steward, one who's there behind the scenes 24 hours a day, 7 days a week to manage, maintain and invest in it.

EPCOR takes this responsibility seriously. From daily water quality checks that ensure safety and quality to investing in your water system, we're ensuring that water will be available for years to come, whether your water source is deep underground or from rivers and lakes.

In addition to monitoring the water that comes out of your tap, we're also maintaining and improving the miles of pipelines, water mains, wells and hydrants that make up your water system. We're ensuring that water isn't wasted, and that it's a resource that will be there for the long term.

Because every drop matters.

Sincerely,

*J. D. Apfel*  
**Joe Gysel**

President,  
EPCOR USA, Inc.



## YOU WANT TO KNOW WHAT'S IN THE WATER YOU'RE DRINKING

As your water service provider, we're committed to ensuring the quality and safety of that water. That's why you are receiving this annual water quality report from us. We hope it will help you understand your community's water a little better and what we're doing to protect it.

## WHAT WILL I FIND IN THIS REPORT?

This report complies with state and U.S. Environmental Protection Agency (EPA) drinking water regulations.

In it you'll find information on:

- Where your water comes from
- Protecting your water
- What's in your water

Information in this report is compiled, in part, from analytical data generated by laboratories certified in drinking water analysis.

## READ THIS REPORT – AND SHARE IT!

Reading this report and understanding your community's water is the first step. But it's also important to share this information with those who might not receive it directly. If you're a landlord, business, school or hospital, please share this report with water users in your community.

## QUESTIONS?

**EPCOR Customer Care:**

**1-800-383-0834**

**mywater@epcor.com**

Este informe contiene información muy importante sobre su agua potable. Tradúzcalo o hable con alguien que lo entienda bien.



# ABOUT YOUR WATER

## PARADISE VALLEY/SCOTTSDALE

### ABOUT YOUR DISTRICT

- EPCOR provides water service to approximately 4,900 service connections in the Paradise Valley district.

### WHERE YOUR WATER COMES FROM

- Groundwater in the West Salt River Valley (WSRV) Sub-Basin, bordering the Phoenix Mountains

#### Additional information about the groundwater in your area

- The WSRV Sub-Basin is a broad, gently sloping alluvial plain, drained by the Gila and Salt Rivers.
- Sources of groundwater recharge include natural recharge from stream flows and along mountain fronts, incidental recharge from agricultural and urban uses, and intentional recharge at constructed recharge facilities.

#### How We Protect Groundwater Together

Both groundwater and the associated pumping and delivery facilities are part of a complex system that needs not just monitoring, but also maintenance. From pipelines to water mains, wells to hydrants, we're ensuring that the groundwater supply is protected and accessible.

#### How You Can Help

Properly dispose of hazardous household chemicals on hazardous material collection days and limit your pesticide and fertilizer use. For information on household hazardous material collection days in your area, contact the **Arizona Department of Environmental Quality** at **602-771-2300** or **Earth911.com**.



### NOTICE OF SOURCE WATER ASSESSMENT

In 2004, the Arizona Department of Environmental Quality (ADEQ) completed a source water assessment for the seven wells used by EPCOR-Paradise Valley. The assessment reviewed the adjacent land uses that may pose a potential risk to the sources. These risks include, but are not limited to, gas stations, landfills, dry cleaners, agriculture fields, wastewater treatment plants, and mining activities. Once ADEQ identified the adjacent land uses, they were ranked as to their potential to affect the water sources. The results of the assessment were that two wells had no adjacent land uses, four wells had 10 adjacent land uses that posed a low risk to the source and each well also had one adjacent land use that posed a high risk, and one well had one adjacent land use that posed a high risk.

The complete assessment is available for inspection at the Arizona Department of Environmental Quality, 1110 W. Washington, Phoenix, AZ 85007, between the hours of 8 a.m. and 5 p.m. For more information please contact **ADEQ** at **602-771-2300**.

#### GETTING INVOLVED

Consulting with the community is important to us. If you have a question, concern or suggestion about your local water system, please contact our Customer Care team at **1-800-383-0834**.



# WHAT YOU CAN EXPECT TO FIND IN YOUR WATER

## SOURCES OF DRINKING WATER

The sources of drinking water—both tap water and bottled water—include rivers, lakes, streams, ponds, reservoirs, springs and wells. As water travels over land surfaces or through the ground, it can acquire naturally occurring minerals. In some cases it can also acquire radioactive material and substances resulting from the presence of animals or from human activity.

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of these contaminants does not necessarily indicate that the water poses a health risk.

More information about contaminants and potential health effects can be obtained by calling the **EPA's Safe Drinking Water Information Hotline** at **1-800-426-4791**.

## DID YOU KNOW?

- ◉ **One-Part-Per-Million** (mg/L or ppm) is equivalent to one inch in 16 miles.
- ◉ **One-Part-Per-Billion** (ug/L or ppb) is equivalent to a single 4-inch hamburger in a chain of hamburgers long enough to circle the earth at the equator 2.5 times.
- ◉ **One-Part-Per-Trillion** (ng/L or ppt) is equal to a single drop of water being diluted into 20 Olympic-size swimming pools.



## SUBSTANCES THAT MAY BE PRESENT IN SOURCE WATER

**Microbial Contaminants**, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations or wildlife.

**Inorganic Contaminants**, such as salts and metals, which can be naturally occurring or may result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining or farming.

**Pesticides and Herbicides**, may come from a variety of sources, such as agriculture, urban stormwater runoff and residential uses.

**Organic Chemical Contaminants**, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and may also come from gas stations, urban stormwater runoff and septic systems.

**Radioactive Contaminants**, which can be naturally occurring or may be the result of oil and gas production and mining activities.



## ENSURING YOUR WATER IS SAFE

To ensure that tap water is safe to drink, the EPA prescribes regulations limiting the amount of certain contaminants in water provided by public water systems. To ensure bottled water is safe to drink, U.S. Food and Drug Administration regulations establish limits for contaminants in bottled water.

# WHAT YOU CAN EXPECT TO FIND IN YOUR WATER

## SPECIAL HEALTH INFORMATION

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly and infants may be particularly at risk from infections. These people should seek advice about drinking water from their healthcare providers. EPA/CDC (Centers for Disease Control and Prevention) guidelines on appropriate means to lessen the risk of infection by cryptosporidium and other microbial contaminants are available from the **EPA's Safe Drinking Water Information Hotline** at **1-800-426-4791**.

### Lead

EPCOR monitored the water for lead and copper in 2017 at 30 residences throughout the community and met the federal lead and copper standards. The 30 houses sampled were representative of the types of houses throughout the system. If your house was sampled you would have received the analysis results. If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. EPCOR is responsible for providing highquality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods and steps you can take to minimize exposure is available from the **Safe Drinking Water Information Hotline** or at **[www.epa.gov/safewater/lead](http://www.epa.gov/safewater/lead)**.

## HOME WATER TREATMENT UNITS

Failure to perform maintenance on your home water treatment unit can result in poor water quality. If you installed a home water treatment system such as a water softener or reverse osmosis system, please remember to follow the manufacturer's instructions on operation and maintenance. For more information, contact the manufacturer of your treatment system for maintenance instructions or assistance. Additional information about home water treatment systems is available from the **Water Quality Association** at **630-505-0160** or by visiting **[wqa.org](http://wqa.org)**.



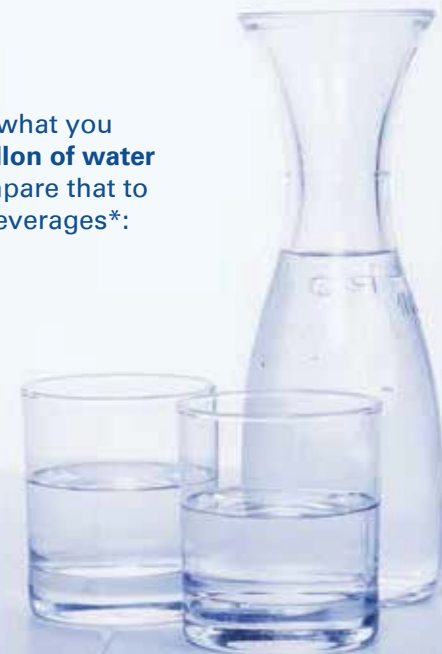
## DID YOU KNOW?



Tap water costs a lot less than what you pay for other beverages. **A gallon of water costs you about 1 penny.** Compare that to the cost of a gallon of these beverages\*:

- ♦ Milk = \$3.29/gallon
- ♦ Orange Juice = \$2.55/gallon
- ♦ Beer = \$15.00/gallon
- ♦ Bottled Water = \$1.21/gallon
- ♦ Wine = \$25/gallon

\* Costs for milk, orange juice and bottled water obtained from Bureau of Labor Statistics and Beverage Marketing Association reports. Other costs determined by calculating average supermarket pricing for bottles of soda, wine and beer and converting to a gallon.





# FREQUENTLY ASKED QUESTIONS

## WHAT IS THE WHITE OR COLORED DEPOSIT ON MY DISHES OR FAUCETS?

In most cases, the deposits or sediments left behind after water evaporates are calcium carbonate. The amount of calcium in the water is referred to as hardness. Cleaning with white vinegar can help to dissolve and remove deposits. Using a commercial conditioner, liquid detergents or the “air-dry” option in dishwashers can help to decrease the calcium carbonate found on dishes.

## ARE THE DEPOSITS OR HARD WATER HARMFUL?

Hardness and/or the deposits left by hard water don’t pose a health concern and may have health benefits. We don’t treat drinking water for water hardness that can result in hard water deposits.

## WHAT IS THE LEVEL OF HARDNESS IN MY WATER?

The hardness in your water ranges from 12 to 20 grains per gallon (gpg).

### Degree of water hardness range (gpg)

Soft	Less than 1
Slightly Hard	1 to 3.4
Moderately Hard	3.5 to 6.9
Hard	7 to 10.4
Very Hard	Greater than 10.5

## WHY IS MY WATER CLOUDY OR MILKY IN APPEARANCE WHEN IT COMES OUT OF THE TAP?

Water that appears cloudy or milky is typically caused by trapped air (very small air bubbles) in the water. If this occurs, simply let the water stand for a few minutes—the air will dissipate leaving a clear glass of water.

The quality of your water depends on the source water itself as well as factors such as the geology and biology of the area where the water came from. For some elements that are known to have an effect on the aesthetics of the water quality parameters, the EPA has established guidance levels known as secondary maximum contaminant level standards (SMCLs). When levels of these contaminants are found to be above the SMCLs, they may impact the aesthetic quality of the water (e.g., color, taste and odor). Although aesthetic water qualities may vary, your water meets all state and federal regulatory standards and is safe to use for all drinking water purposes. Secondary contaminants include, but are not limited to, manganese, iron and total dissolved solids (TDS).

## WHY IS CHLORINE ADDED TO MY DRINKING WATER?

Chlorine is added to your water for your protection and is used as a disinfectant to ensure that harmful organisms, such as bacteria and viruses, are destroyed in the treatment process.

## ARE THERE OTHER WAYS TO REMOVE THE CHLORINE TASTE OR SMELL FROM MY WATER?

To remove the taste of chlorine from your water, try these tips:

- ▶ Place water in a glass container in the refrigerator overnight, uncovered. This will let the chlorine dissipate.
- ▶ Bring your water to a rolling boil for five minutes and let it stand to cool.
- ▶ Add a slice of lemon or a few drops of lemon juice to your glass of drinking water.



## WILL MY HOME TREATMENT DEVICE REMOVE CHLORINE?

Some home treatment devices can remove chlorine. Once chlorine is removed, the water should be treated like any other beverage product and used as quickly as possible. We recommend that you follow the manufacturer’s instructions for maintaining the device to ensure water quality.

# DEFINITION OF TERMS

**AL (Action Level):** The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.

**GPG (grains per gallon):** Used to describe the dissolved hardness minerals contained in water and is a unit of weight that equals 1/7,000 of a pound.

**HAA5 (Haloacetic Acids):** Consist of Monochloroacetic Acid, Dichloroacetic Acid, Trichloroacetic Acid, Bromoacetic Acid and Dibromoacetic Acid.

**MCL (Maximum Contaminant Level):** The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

**MCLG (Maximum Contaminant Level Goal):** The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

**MNR:** Monitored, not regulated.

**MRDL (Maximum Residual Disinfectant Level):** The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

**MRDLG (Maximum Residual Disinfectant Level Goal):** The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

**NA:** Not Applicable.

**ND:** None Detected.

**NTU:** Nephelometric turbidity units.

**ppb (Parts per Billion):** One part substance per billion parts water (or micrograms per liter).

**pCi/L (Picocuries per Liter):** Measurement of the natural rate of disintegration of radioactive contaminants in water (also beta particles).



**ppm (Parts per Million):** One part substance per million parts water (or milligrams per liter).

**ppt (Parts per Trillion):** One part substance per trillion parts water (or nanograms per liter).

**SMCL (Secondary Maximum Contaminant Level):** Non-enforceable guidelines regulating contaminants that may cause cosmetic or aesthetic effects in drinking water.

**Total Dissolved Solids:** An overall indicator of the amount of minerals in water.

**TT (Treatment Technique):** A required process intended to reduce the level of a contaminant in drinking water.

**TTHM (Total Trihalomethanes):** Consist of Chloroform, Bromoform, Bromodichloromethane and Dibromochloromethane.

**UCMR (Unregulated Contaminant Monitoring Rule):** Unregulated substances are measured, but maximum contaminant levels have not been established by the government.

# WHAT'S IN YOUR WATER

## HOW TO READ YOUR WATER QUALITY TABLE

Below, you'll see an analysis of your drinking water.  
Here's an example of how to read these tables:



Start here and read across	2018 or year prior	The goal level for that substance	Highest level of substance allowed	Highest amount that was found	Highest and lowest amounts found	Yes means the amount found is below gov't requirements	Where substance usually originates
Substance (units)	Year Sampled	MCLG	MCL	Highest Amount Detected	Range of Detections	Compliance Achieved	Typical Sources

## YOUR WATER QUALITY TABLE

The data shown in the tables below are results from commercial laboratories certified in drinking water analysis by the Arizona Department of Health Services.

The table shows what substances were detected in your drinking water during 2018 or the last required sampling period within the last five years.

### Regulated Substances Measured in the Water Leaving the Treatment Facility

Substance (units)	Year Sampled	MCLG	MCL	Highest Amount Detected	Range of Detections	Compliance Achieved	Typical Sources
Arsenic (ppb)	2018	0	10	8.6 <sup>1</sup>	7.9 - 8.6	YES	Erosion of natural deposits
Barium (ppm)	2017	2	2	0.017	0.017	YES	Erosion of natural deposits
Chromium (ppb)	2017	100	100	25	25	YES	Erosion of natural deposits
Fluoride (ppm)	2017	4.0	4.0	0.37	0.37	YES	Erosion of natural deposits
Nitrate (ppm)	2018	10	10	4.77	4.77	YES	Runoff from fertilizer use; leaking from septic tanks, sewage; erosion of natural deposits
Selenium (ppb)	2017	50	50	2.2	2.5	YES	Erosion of natural deposits
Sodium (ppb)	2017	NA	MNR	65	65	YES	Erosion of natural deposits
Gross Alpha excluding radon and uranium (pCi/L)	2014	0	15	4.8	4.8	YES	Erosion of natural deposits

# WHAT'S IN YOUR WATER

## Regulated Substances Measured in the Distribution System

Substance (units)	Year Sampled	MCLG/ MRDLG	MCL/ MRDL	Highest Running Annual Average	Range of Detections	Compliance Achieved	Typical Sources
TTHMs (ppb)	2018	NA <sup>2</sup>	80	14.7	5.3 - 14.7	YES	By-product of drinking water disinfection
HAA5 (ppb)	2018	NA <sup>2</sup>	60	2.1	ND - 2.1	YES	By-product of drinking water disinfection
Chlorine Residual (ppm)	2018	4	4.0	0.9	0.8 - 0.9	YES	Water additive used to control microbes

## Tap Water Samples: Lead and Copper Results

Substance (units)	Year Sampled	MCLG	Action Level	Number of Samples	90th Percentile	Number of Samples Above Action Level	Compliance Achieved	Typical Sources
Copper (ppm)	2017	1.3	1.3	30	0.19	0	YES	Corrosion of household plumbing systems; erosion of natural deposits
Lead (ppb)	2017	0	15	30	ND	0	YES	Corrosion of household plumbing systems; erosion of natural deposits

## Unregulated Substances Measured in the Water Leaving the Treatment Facility

Substance (units)	Year Sampled	Range of Detections	Typical Sources
Hardness (grains/gallon)	2014	11.7 - 19.8	Natural calcium and magnesium content
pH (units)	2014	7.1 - 8.5	pH is a measure of the acid/base properties
Total Dissolved Solids (ppm)	2014	470 - 640	Erosion of natural deposits



# WHAT'S IN YOUR WATER

## Unregulated Contaminant Monitoring Rule Substances Measured at the Treatment Facility and in the Distribution System

Substance (units)	Year Sampled	Range of Detections	Typical Sources
Vanadium (ppb)	2014	20 - 21	Erosion of natural deposits
Strontium (ppm)	2014	0.73 - 0.78	Erosion of natural deposits
Molybdenum (ppb)	2014	1.1	Erosion of natural deposits
Chromium (Total) (ppb)	2014	27 - 28	Erosion of natural deposits
Chromium VI (ppb)	2014	26 - 28	Erosion of natural deposits
Chlorate (ppb)	2014	140 - 150	By-product of drinking water disinfection
Chlorodifluoromethane (ppb)	2014	0.12	Discharge from industrial chemical factories

**<sup>1</sup>Arsenic:** EPCOR's groundwater arsenic removal facility continues to produce water with arsenic levels below the current federal and state standards. While your drinking water meets EPA's standard for arsenic, it does contain low levels of arsenic. EPA's standard balances the current understanding of arsenic's possible health effects against the costs of removing arsenic from drinking water. EPA continues to research the health effects of low levels of arsenic, which is a mineral known to cause cancer in humans at high concentrations and is linked to other health effects such as skin damage and circulatory problems.

**<sup>2</sup>TTHM/HAA5:** Although there is no collective MCLG for this contaminant group, there are individual MCLGs for some of the individual contaminants: Trihalomethanes: bromodichloromethane (0.0 mg/L); bromoform (0.0 mg/L); chloroform (0.07 mg/L); dibromochloro-methane (0.06 mg/L). Haloacetic acids: dichloroacetic acid (0.0 mg/L); trichloroacetic acid (0.3 mg/L). Monochloroacetic acid, bromoacetic acid and dibromoacetic acid are regulated with this group but have no MCLGs.

EPCOR collected total coliform samples during the February 2018 timeframe as required by safe drinking water regulations. The analytical results from these samples, as established by a state licensed laboratory, showed that the water met the required state and federal safe drinking water standard for this contaminant. However, some of the data were not reported to ADEQ by March 10, 2018 as is required by rule. EPCOR updated internal data review procedures to prevent any future late reporting of analytical results.

## ADDITIONAL MONITORING

In addition to the parameters listed in this table, other parameters were monitored for, including regulated pesticides, herbicides, petroleum by-products and metals. None of those parameters were detected in the water. If you have any questions about this report or your drinking water, please call our **Customer Care** team at **1-800-383-0834**.

EPCOR encourages feedback related to the quality of water that is provided to you. Please feel free to submit comments to us directly at [mywater@epcor.com](mailto:mywater@epcor.com). You may also provide feedback to the Arizona Corporation Commission (ACC).



Learn more about your  
water at [epcor.com](https://epcor.com).

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