

## Paul Michaud

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**From:** Fred Fleet <fef\_@cvlci.com>  
**Sent:** Wednesday, August 29, 2018 2:05 PM  
**To:** Paul Michaud; Paul Mood  
**Cc:** ghedmunds@geoffreyedmunds.com; rod@cullumhomes.com; Brad Cullum; Parker Froehlich  
**Subject:** Ironwood Golf Villas Public Notice

PLEASE SEE BELOW FOR THE LATEST RELATIVE TO THE ASSURED WATER CERTIFICATE.

**Fred E. Fleet, P.E., F. ASCE**  
**Senior Project Manager**

Main: 602-264-6831 direct: 602.285.4768 fax: 602.264.0928 cell: 602-228-3802

**COE & VAN LOO CONSULTANTS, INC.**  
4550 N. 12th Street • Phoenix, Arizona • 85014



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**From:** DeAnn Hauver [mailto:dhauver@swgroundwater.com]  
**Sent:** Wednesday, August 29, 2018 1:53 PM  
**To:** Fred Fleet  
**Subject:** FW: Ironwood Golf Villas Public Notice

Hi Fred,

Below is the email from ADWR regarding the status of the Ironwood Golf Villas application and the public notice.

**DeAnn G. Hauver**  
Senior Project Hydrologist

Southwest Groundwater Consultants  
3033 N 44 Street, Ste 120  
Phoenix, AZ 85018-7226  
[602.955.5547](tel:602.955.5547) Office  
[602.515.0298](tel:602.515.0298) Direct  
[602.955.7585](tel:602.955.7585) Fax



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**From:** Edward V. St.Pierre <evstpierre@azwater.gov>  
**Sent:** Friday, August 10, 2018 8:17 AM

**To:** DeAnn Hauver <dhauver@swgroundwater.com>

**Subject:** Ironwood Golf Villas Public Notice

Good morning DeAnn,

Please accept the following from my manager:

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***Via Electronic Mail***

August 10, 2018

DeAnn Hauver  
Southwest Groundwater Consultants, Inc.  
3033 N. 44th Street, Suite 120  
Phoenix, AZ 85018

**Re: Application for a Certificate of Assured Water Supply  
Ironwood Golf Villas  
DWR File No. 27-701025.0000**

Dear Ms. Hauver:

The above-referenced application was received on July 30, 2018. After review by the Arizona Department of Water Resources (Department), the application has been determined administratively complete. Pursuant to A.R.S. § 45-578.A., the Department is required to publish a public notice of the above referenced application. We have requested that this notice be published in the Arizona Business Gazette on August 16, 2018 and August 23, 2018. After the second appearance of the notice, there will be a waiting period of 15 days which ends on September 7, 2018. During this 15-day waiting period, any person residing in the Active Management Area may make known pertinent objections. If an objection is received, the Director of the Department may hold a hearing at least 60 days, but not more than 90 days from the end of the waiting period.

This completeness determination marks the end of the administrative time frame established in A.R.S. §§ 41-1072 through 41-1079 and A.A.C. R12-15-401, et seq. The substantive time frame is now in effect. For a certificate of assured water supply, the substantive time frame is sixty (60) days. During the substantive time frame the Department must make a determination as to the application's substantive correctness. If the application is determined to be incorrect or a protest is received, the applicant will be contacted by mail. Only issuance of an incorrect letter causes the time frame to pause until the Department receives an appropriate response. If you have any questions, please contact Edward St.Pierre at (602) 771-8599.

Sincerely,

David L. McKay  
Manager, AAWS & Recharge Permitting

DLM/evs

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---  
Thank you very much!

Very Respectfully,

Edward St. Pierre  
Assured & Adequate Water Supply Programs  
Arizona Department of Water Resources  
1110 W. Washington St., Suite 310 Phoenix, AZ 85007  
Phone: (602)771-0508



**PROTECTING ARIZONA'S  
WATER SUPPLIES  
for ITS NEXT CENTURY**

**Paul Michaud**

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**From:** Fred Fleet <fef\_@cvlci.com>  
**Sent:** Friday, August 17, 2018 10:39 AM  
**To:** ghedmunds@geoffreyedmunds.com; rod@cullumhomes.com; Brad Cullum; Doug Jorden  
**Cc:** Paul Michaud  
**Subject:** FW: Ironwood Golf Villas CAWS

THE LATEST TIME ESTIMATE FROM SOUTHWEST GROUNDWATER.

FLEET

**Fred E. Fleet, P.E., F. ASCE**  
**Senior Project Manager**

Main: 602-264-6831 direct: 602.285.4768 fax: 602.264.0928 cell: 602-228-3802

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**From:** DeAnn Hauver [mailto:dhauver@swgroundwater.com]  
**Sent:** Friday, August 17, 2018 10:14 AM  
**To:** Fred Fleet  
**Subject:** RE: Ironwood Golf Villas CAWS

Hi Fred,

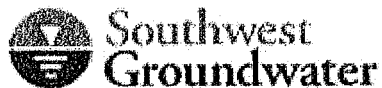
The public notice waiting period ends on Sept. 7<sup>th</sup>. CAGR D is still waiting to receive the Operating Agreements and recorded Articles of Organization from both Town Triangle LLC and Folkman Properties LLC. I'm not sure how long getting these documents will take. CAGR D will not send out the final two documents until they receive all of the requested data. If we can provide these documents to CAGR D by the end of the month, CAGR D should be able to get the final two documents out before Sept. 7<sup>th</sup>. If we can return the final two documents, signed and notarized, back to CAGR D around Sept. 7<sup>th</sup>, ADWR should issue the Certificate no later than Sept. 21<sup>st</sup>. That is my best guess.

**DeAnn G. Hauver**  
Senior Project Hydrologist

Southwest Groundwater Consultants  
3033 N 44 Street, Ste 120  
Phoenix, AZ 85018-7226  
602.955.5547 Office

602.515.0298 Direct

602.955.7585 Fax



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**From:** Fred Fleet <fef\_@cvlci.com>  
**Sent:** Friday, August 17, 2018 9:41 AM  
**To:** DeAnn Hauver <dhauver@swgroundwater.com>  
**Subject:** RE: Ironwood Golf Villas CAWS

DEANN

ABOUT WHEN DO YOU THINK WE MIGHT HAVE THE 100 YEAR CERTIFICATE IN HAND?

**Fred E. Fleet, P.E., F. ASCE**  
**Senior Project Manager**

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Main: 602-264-6831 direct: 602.285.4768 fax: 602.264.0928 cell: 602-228-3802

**COE & VAN LOO CONSULTANTS, INC.**

4550 N. 12th Street • Phoenix, Arizona • 85014



**CELEBRATING 60 YEARS**

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**From:** DeAnn Hauver [<mailto:dhauver@swgroundwater.com>]  
**Sent:** Monday, August 13, 2018 8:45 AM  
**To:** Geoffrey Edmunds  
**Cc:** Rod Cullum ([rod@cullumhomes.com](mailto:rod@cullumhomes.com)); Krista Bruns; Fred Fleet; Nathan Miller  
**Subject:** Ironwood Golf Villas CAWS

Geoffrey,

The public notice for Ironwood Golf Villas will be published in the Arizona Business Gazette on Aug. 16<sup>th</sup> and Aug. 23<sup>rd</sup>. The waiting period will end on Sept. 7<sup>th</sup>. We need to provide all of the requested data to CAGRDR as soon as possible in order to move forward with the CAGRDR enrollment process. Once CAGRDR has received all the data they requested, they can send out the final two documents that must be signed and notarized by the owners, buyers and the water provider. The CAGRDR enrollment will be finalized as soon as these signed and notarized documents have been returned to CAGRDR. ADWR will not issue the Certificate until the CAGRDR enrollment has been completed.

Thanks,  
DeAnn

**DeAnn G. Hauver**  
Senior Project Hydrologist

Southwest Groundwater Consultants

## Paul Michaud

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**From:** Fred Fleet <fef\_@cvlci.com>  
**Sent:** Tuesday, August 14, 2018 3:13 PM  
**To:** Paul Michaud  
**Cc:** rod@cullumhomes.com; ghedmunds@geoffreyedmunds.com; Brad Cullum  
**Subject:** FW: Ironwood Golf Villas CAWS application  
**Attachments:** Ironwood Golf Villas - CAWS Application-No Hydro Report.pdf

PAUL-

PLEASE SEE THE ATTACHED.

WHAT THIS TELLS US IS THAT THE APPLICATION IS COMPLETE AND THE CERTIFICATE SHOULD BE ISSUED IN ABOUT 60 DAYS OR LESS.

**Fred E. Fleet, P.E., F. ASCE**  
**Senior Project Manager**

Main: 602-264-6831 direct: 602.285.4768 fax: 602.264.0928 cell: 602-228-3802

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4550 N. 12th Street • Phoenix, Arizona • 85014



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**From:** DeAnn Hauver [mailto:dhauver@swgroundwater.com]  
**Sent:** Tuesday, August 14, 2018 2:49 PM  
**To:** Geoffrey Edmunds; Krista Bruns  
**Cc:** Rod Cullum (rod@cullumhomes.com); Fred Fleet  
**Subject:** Ironwood Golf Villas CAWS application

Attached please find a pdf copy of the CAWS application for the Ironwood Golf Villas. Due to the file size, the hydrogeologic report and the CAGR application will be sent in separate emails.

Thanks,  
Deann

**DeAnn G. Hauver**  
Senior Project Hydrologist

Southwest Groundwater Consultants  
3033 N 44 Street, Ste 120  
Phoenix, AZ 85018-7226  
602.955.5547 Office  
602.515.0298 Direct  
602.955.7585 Fax

<b>ARIZONA DEPARTMENT OF WATER RESOURCES</b> <b>OFFICE OF ASSURED AND ADEQUATE WATER SUPPLY</b> 1110 W Washington St, Ste 310 PHOENIX, ARIZONA 85007-2954 (602) 771-8599 Fax: (602) 771-8689 assuredadequate@azwater.gov	<b>DATE RECEIVED:</b>
<b>APPLICATION NO:</b>	

### CERTIFICATE OF ASSURED WATER SUPPLY APPLICATION

**I DO HEREBY** certify that the information contained in **this application and all information accompanying it is true and correct to the best of my knowledge and belief.** **NOTE:** All owners and buyers, if applicable, must sign (attach additional sheets, if necessary). **NOTE:** You may use the Department's Letter of Authorization for Signature form to give another person the authority to sign this application and related documents on your behalf, or you may submit a letter signed by you and dated within 90 days of the date this application is submitted, authorizing your representative to submit applications for permits regarding the land to be included in this Certificate.

**See Attachment I**

\_\_\_\_\_  
 Please print the name and title of the owner or the owner's authorized agent (if signator is someone other than the owner)

**See Attachment I**

\_\_\_\_\_  
 Signature of Owner or Owner's Authorized Agent Date

**See Attachment II**

\_\_\_\_\_  
 Please print the name and title of the buyer or the buyer's authorized agent (if signator is someone other than the buyer)

**See Attachment II**

\_\_\_\_\_  
 Signature of Buyer or Buyer's Authorized Agent Date

#### PART A - GENERAL INFORMATION

1. Has a Certificate of Assured Water Supply (Certificate) previously been issued for this property?  Yes  No.

**If you answered "yes" to this question, this may not be the appropriate application form. Please contact the Office of Assured and Adequate Water Supply for assistance.**

2. Subdivision information:

a. Name of subdivision as it will appear on submittals to the platting entity and the Department of Real Estate:  
Ironwood Golf Villas Number of Lots: 8

b. Location of the subdivision: Township 3 North Range 4 East Section(s) 34

If there is more than one township and range, please list them on a separate page and reference as an attachment.  
 See attachment \_\_\_\_\_

City: Paradise Valley County: Maricopa AMA: Phoenix

3. Subdivision method of water distribution:  Central distribution system (water provider) or  Dry lot (individual wells)

If there will be a central distribution system, identify the water provider and the water provider's system name, if it operates more than one, that will be serving the subdivision. The water provider must be the same entity that signs the Notice of Intent to Serve. If there will be more than one water provider for the subdivision, please identify both water providers.

Primary Water Provider: Berneil Water Company System Name: \_\_\_\_\_

System No. 56- 002004.0000 (Contact the Office of Assured and Adequate Water Supply)

Secondary Water Provider (if applicable): N/A System Name: \_\_\_\_\_



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## Assured/Adequate Water Supply - LTF Report

Select format

AMA	COUNTY	FILE_NUMBER	TOTAL_DEMAND	APPLICATION_TYPE	APPLICATION_NAME	DATE_RECEIVED	LTF_DAYS_ELAPSED	LTF_PERIOD	CLOCK_FLAG	LTF_DAY_REMAINING	COMPLETE	CORRECT	COMMENT	END_DT
PHOENIX AMA	Maricopa	27-701025-0000	12.19	Assured Water Supply Certificate	Ironwood golf	7/30/2018 12:00:00 AM	18	Substantive	Y	52	8/9/2018 12:00:00 AM	Y		09/07/2018

Arizona Department of Water Resources  
110 West Washington Street  
Phoenix, Arizona 85007

Effective November 28th, 2005, our location & Driving Directions to ADWR  
ADWR privacy and web site Disclaimer.

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Phone: (602) 771-8500  
Long Distance within Arizona: (800) 352-8488  
Fax: (602) 771-8684



## Paul Michaud

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**From:** Robert Lee  
**Sent:** Thursday, September 07, 2017 7:32 AM  
**To:** Paul Michaud  
**Subject:** RE: DT Item: Villas at Cheney Estates

Hi Paul,

The preliminary plat for the Villas at Cheney Estates is acceptable for Fire Prevention. The plan to install a 55' cul-de-sac is a good alternative to a secondary access by easement. Please let me know if you need anything else.

Thanks,  
Bob Lee  
Building Official  
Town of Paradise Valley  
480 348-3631

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**From:** Paul Michaud  
**Sent:** Thursday, August 31, 2017 2:33 PM  
**To:** Andrew Miller; Dawn Marie Buckland; Deborah Robberson; Diane Wayland; Eva Cutro; George Burton; Jeremy Knapp; Kevin Burke; Paul Mood; Peter Wingert; Richard Edwards; Robert Lee  
**Subject:** DT Item: Villas at Cheney Estates

For discussion at the DT meeting next week, revised preliminary plat for Town Triangle

**BERNEIL WATER COMPANY  
P. O. BOX 219  
TEMPE, ARIZONA 85280**

**PHONE 480-966-5804  
FAX 480-967-7857**

August 19, 2016

Villas at Camelback Country Club

The Berneil Water Company will provide water to the proposed eight lot subdivision which is in the water companies CC&N. This agreement is predicated upon the company obtaining an assured water supply certificate.



**Brad Folkman  
President**



P.O. Box 53933  
Phoenix, AZ 85072

8/17/2016

Mr. Fred Fleet  
COE & VAN LOO Consultants Inc  
4550 North 12th Street  
Phoenix, AZ 85014

Re: NWC of Scottsdale Rd and Northern Avenue

Dear Mr. Fleet,

The above referenced project is located in Arizona Public Service Company's electric service area. The Company extends its lines in accordance with the "Conditions Governing Extensions of Electric Distribution Lines and Services," Schedule 3, and the "Terms and Conditions for the Sale of Electric Service," Schedule 1, on file with the Arizona Corporation Commission at the time we begin installation of the electric facilities.

Application for the Company's electric service often involves construction of new facilities for various distances and costs depending upon customer's location, load size and load characteristics. With such variations, it is necessary to establish conditions under which Arizona Public Service will extend its facilities.

The enclosed policy governs the extension of overhead and underground electric facilities to customers whose requirements are deemed by Arizona Public Service to be usual and reasonable in nature.

Please give me a call at 602-493-4468 so that we may set up an appointment to discuss the details necessary for your project.

Sincerely,

Heather Legg  
Customer Project Manager  
Customer Construction East



# SOUTHWEST GAS CORPORATION

August 17, 2016

Mr. Fred Fleet  
COE & VAN LOO CONSULTANTS, INC.  
4550 North 12<sup>th</sup> Street  
Phoenix, AZ 85014

**RE:** Natural Gas Service to Parcel 174-36-002X:

Dear Mr. Fleet,

Thank you for your inquiry regarding gas availability for the above referenced project. Southwest Gas has natural gas facilities available to serve this project and can be extended to serve your project in accordance with our Rule Six as filed with the Arizona Corporation Commission

Without reviewing the preliminary engineering plans on the project we cannot determine what fees would be required.

Southwest Gas is very interested in serving this project with the preferred fuel *natural gas*, and I look forward to working with you as the project progresses.

If you should have any questions or require additional information, please contact me at 602/763-5122, or email me at [crista.longobardo@swgas.com](mailto:crista.longobardo@swgas.com).

Sincerely,

Crista Longobardo  
Energy Analyst  
Energy Solutions Department  
Central Arizona Division



**CenturyLink™**

CenturyLink Engineering  
135 W. Orion St. 1<sup>st</sup> Floor  
Tempe, AZ 85283  
BICS@Centurylink.com

August 8, 2016  
Mr. Fred Fleet  
COE & VAN LOO CONSULTANTS, INC.  
4550 North 12<sup>th</sup> Street  
Phoenix, Arizona 85014

RE: Jarvis Parcel

Mr. Fleet:

The above mentioned project is located in a parcel of land located in Section 34, Township 3N and Range 4E in Maricopa County.

In response to your "Service Availability" request for the above mentioned development located at the northwest corner of Scottsdale Road and Northern Avenue, Paradise Valley, AZ, this letter is to acknowledge that this subject property is within CenturyLink serving territory.

The tariff Rates and Regulations prescribed for service for this area are on file with your State Utilities Commission, and may be examined at your local CenturyLink Business Office.

Sincerely,

Ronijean Grant-Sloan  
CenturyLink Supervisor Construction/Engineering Permits/Joint Use/Developer Administration  
135 W Orion Street, 1st Floor  
Tempe, AZ 85283  
480/768-4294 (Office)  
480/748-1352 (Cell)



1550 W Deer Valley Rd  
Phoenix, AZ 85027

August 24<sup>th</sup>, 2016

Mr. Fred Fleet  
COE & VAN LOO CONSULTANTS, INC.  
4550 North 12<sup>th</sup> Street  
Phoenix, AZ 85014

RE: Jarvis Parcel

This letter is to confirm that Cox Communications is a licensed telecommunications provider for the above area. Service to a development with public streets and public utility easements, meeting the density requirement as stipulated in the license with the County, will be provided at no cost to the developer. Should the project not meet the density requirement, a capital contribution program is available.

For private communities (whether gated or not), our standard easement agreement will be required. Otherwise the same procedures apply. The developer also has the option of providing service to the community at a reduced rate under the bulk discount program. If you're interested, please contact me for additional information on the program.

Upon receipt of the appropriate trench maps and placement time lines, Cox Communications will place its facilities in the joint utility trenches. For the preliminary information and/or the service area map, please call our Cox Traffic Management Center at 623-328-3554.

Sincerely,

*Jessica Baxley*

Jessica Baxley  
Account Executive  
Cox Communications  
New Business Development  
(623) 328-2022

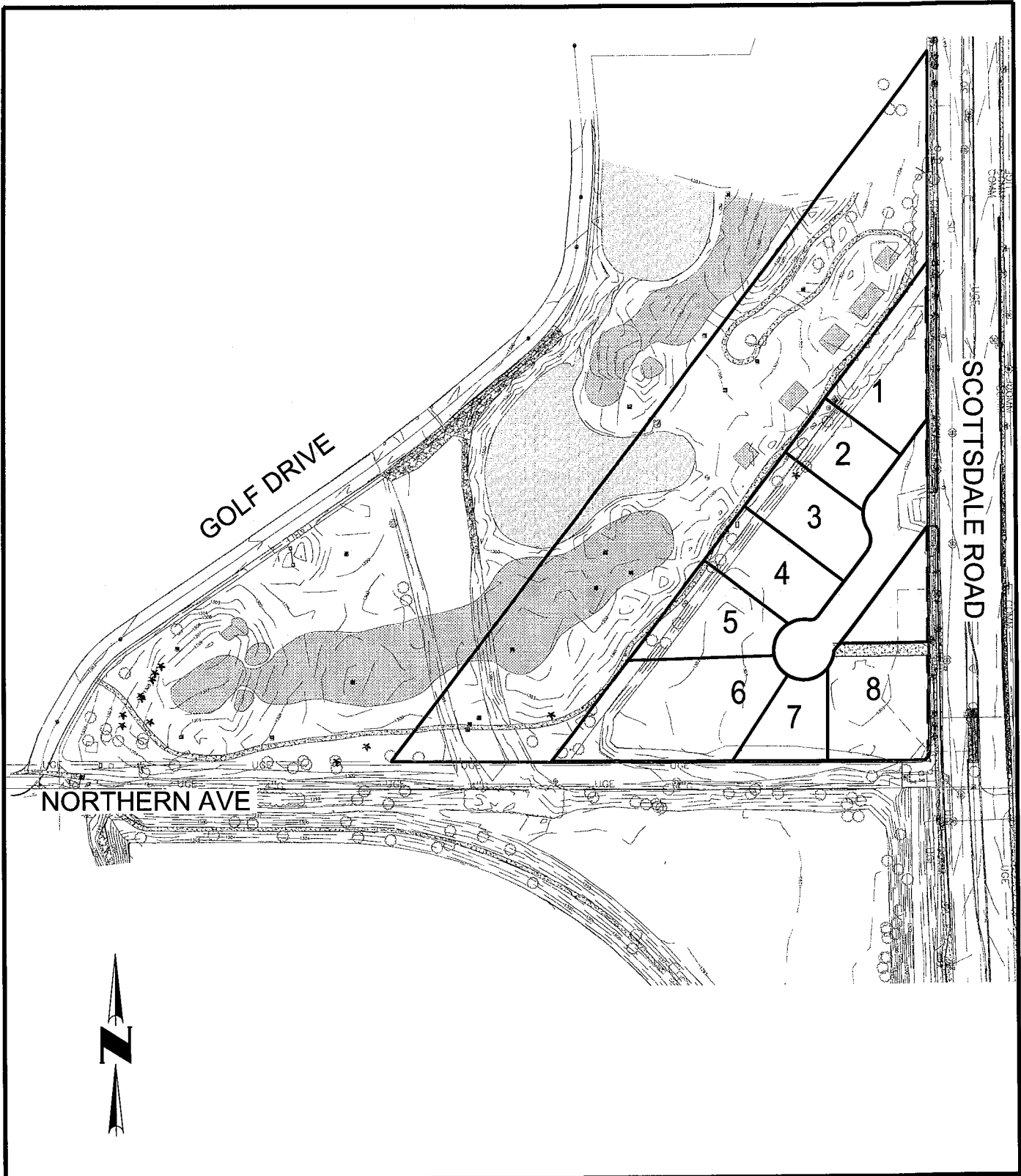
## **1.0 INTRODUCTION**

### **1.1 General Description**

The Villas at Cheney Estates is a proposed 9.636 acre planned Development located in Paradise Valley, Arizona. A total of 8 residential dwelling units (DU) are planned. This report addresses the water distribution system and fire protection for the proposed development. Berneil Water Company will provide water service to the development. The proposed water distribution system will be owned and operated by the Berneil Water Company. City of Scottsdale design requirements and guidelines in the City of Scottsdale's *Design Standards & Policies Manual*, 2010 were used as supplemental material to determine water demands for the development.

### **1.2 Project Location**

The Villas at Cheney Estates is located in Section 34 of Township 4 North, Range 4 East of the Gila and Salt River Base and Meridian. It is bordered by Scottsdale Road to the east, Northern Avenue to the south, and Cheney Estates Golf Course to the northwest. See Figure 1.



SCALE 1" = 200'

FIGURE 1

4550 North 12th Street  
 Phoenix, Arizona 85014  
 Phone 602-264-6831  
<http://www.cvlci.com>

# SITE MAP

THE VILLAS AT CHENEY ESTATES



1.01.0288101



## **2.0 WATER SYSTEM DESIGN CRITERIA**

The following criteria will be used in developing the water report.

### **2.1 Design Criteria**

This water report is based on criteria from the Town of Paradise Valley and City of Scottsdale's *Design Standards & Policies Manual*, dated January, 2010. The following criteria were used in developing this plan:

- Demand factors
  - Single family residential demand factor = 485.6 gpd/DU
  - Maximum day factor = 2 x Average Day Demand
  - Peak hour factor = 3.5 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 headloss
  - Maximum = 10ft/1,000 ft of distribution lines
- Hazen-Williams Coefficient = 130
- Fire Flows = 1,500 gpm

### **3.0 EXISTING INFRASTRUCTURE**

#### **3.1 Existing Waterlines**

There are no existing waterlines within the proposed development. Adjacent existing waterlines include an existing 6" waterline in Golf Drive. This existing 6" waterline continues north in Golf Drive to the Camelback Country Club Estates 3 Development and east in Northern Avenue to 68<sup>th</sup> Street where it heads north to serve the Camelback Country Club Estates Development.

See Appendix A for a map of the existing Berneil Water Company system.

#### **3.2 Berneil Water System Fire Protection**

The Berneil Water Company has entered into an agreement with the City of Scottsdale to provide emergency water service during times when the Berneil Water System is inoperative or during fire emergencies. See Appendix B for a copy of the Agreement. The emergency interconnection is located at 9000 N. Scottsdale Road and consists of a 4-inch water meter, a PR/PSV control valve, a backflow device and associated 6-inch interconnecting pipe. See Appendix C for a copy of the O + M Instructions for operating this emergency interconnection.

#### **3.3 Water Quality**

Appendix G contains a copy of the 2015 Annual Water Quality Report. No violations were reported.

#### 4.0 PROPOSED INFRASTRUCTURE

##### 4.1 Water Demands

The water demands for The Villas at Cheney Estates may be seen below in Table 1.

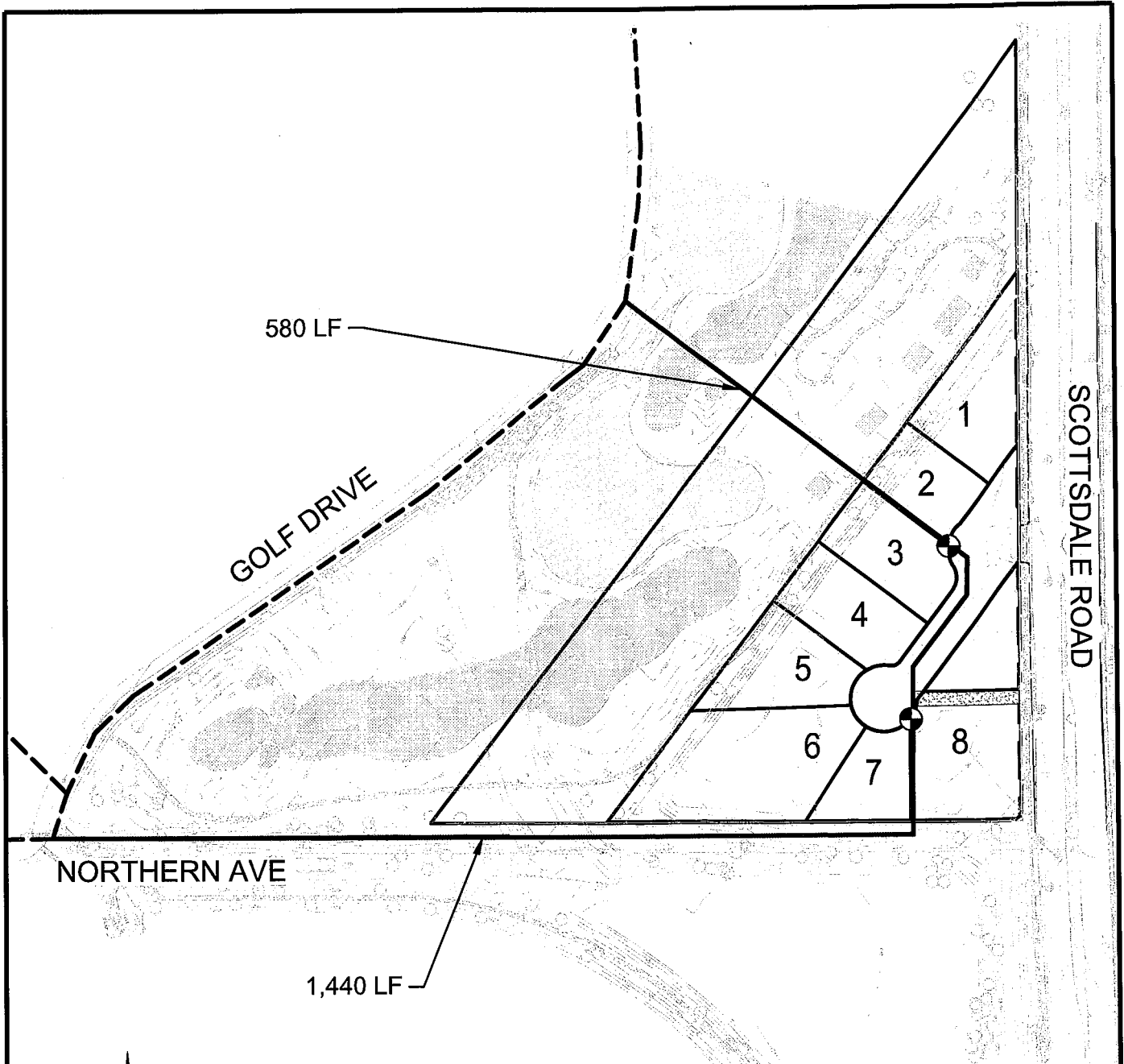
**Table 1 – The Villas at Cheney Estates Water Demands**

<b>Number of DU</b>	<b>Unit Factor (gpd/unit)</b>	<b>ADD (gpd)</b>	<b>MDF</b>	<b>MDD (gpd)</b>	<b>PHF</b>	<b>PHD (gpd)</b>
8	485.6	3,884.8	2	7,769.6	3.5	13,596.8

Fire flow demands of 1,500 gpm will be modeled.

##### 4.2 Proposed On-Site Infrastructure

A distribution system of 8” waterlines was designed to provide water to The Villas at Cheney Estates. This design may be seen in Figure 2. The proposed design includes two connections to the existing Berneil Water Company System. The first connection will take place approximately 1,700 ft north of Northern Avenue in Gold Drive. This connection includes approximately 580 LF of waterline extension. Second connection will take place at the intersection of Golf Drive and Northern Avenue. This connection includes approximately 1,440 LF of waterline connection.



- LEGEND**
- 
- EXISTING 6" WATERLINE
  - PROPOSED 8" WATERLINE

SCALE 1" = 200'  
 FIGURE 2  
 4550 North 12th Street  
 Phoenix, Arizona 85014  
 Phone 602-264-6831  
<http://www.cvlci.com>

**WATER SYSTEM LAYOUT**

THE VILLAS AT CHENEY ESTATES



1.01.0288101

## **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 10<sup>th</sup>, 2016. Results from this fire flow test may be seen in Appendix D.

The pipes were sized based on pressure requirements for average day, maximum 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 E. Table 2 summarizes the results. We note that the system modeled did not include the emerging connection to the Scottsdale Water System.

**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	2.70	68	J-19	79	J-7	0.03	P-22
Maximum Day	5.40	68	J-19	79	J-7	0.06	P-22
Peak Hour	9.44	68	J-19	79	J-7	0.411	P-22

### 5.3 Network Analysis Fire Flows

The network analysis was performed as described in subsection 5.1 above with the following modifications

- The water system was expanded to include the emergency water connection with the City of Scottsdale located at 9000 N. Scottsdale Road. It was assumed to be delivering water to the Berneil Water Company system.
- The system conditions were determined by a fire flow test performed on October 10<sup>th</sup>, 2016 with the emergency interconnection OPEN. See Appendix D for results.

### 5.4 Modeling Results Fire Flows

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**

Nodes	Flow (gpm)	Pressure (psi)				Maximum Velocity (fps)	Pipe ID
		Minimum	Node	Maximum	Node		
J-5	1,500	20	J-5	58	J-26	10.55	P-25
J-6	1,500	21	J-5	58	J-26	10.62	P-25

The nodes identified correspond to the proposed fire hydrant locations within the new development.

## **6.0 SUMMARY**

This Water Service Impact Study presents the proposed water system design, and an overview of existing infrastructure surrounding the project site. The following summarizes CVL's findings of the proposed water system to serve The Villas at Cheney Estates.

- The water system will be owned and operated by Berneil Water Company.
- A Water Quality Report for the Berneil Water System may be found in Appendix G of this report.
- Distribution lines for The Villas at Cheney Estates will consist of 8" waterlines. Distribution mains are sized to accommodate all demand requirements.
- Pressures at the property line within the proposed development are approximately 78 psi for all domestic demand scenarios which exceeds the Town of Paradise Valley's minimum requirement of 20 psi.
- Fire flows of 1,500 gpm at Node J-5 and Node J-6 result in pressures above 20 psi and meet Town of Paradise Valley standards.