A Multi Phased Master Development Plan

Developed by:

The Vineyards at Cottonwood I, LLC

Managed By

Granite Mountain Asset Management LLC

7765 N Williamson Valley Road Prescott,

Arizona 86305

Submitted May 2016

Revised June 2016

2nd Revision August 2016

EXECUTIVE SUMMARY

Property: 100.83 acres consisting of parcels 406-23-036V, 406-23-036W, 406-23-174, 406-32-080A, 406-32-080H. Parcels will be re-assigned new parcel numbers by the County.

Zoning: This property is currently zoned light commercial and multifamily per the 2001 PUD, ORD #408. GMAM and The Vineyards at Cottonwood I, LLC propose to rezone to PAD for single family, multifamily and commercial/residential zoning.

Management: Granite Mountain Asset Management L.L.C. (GMAM) is an investment and development company. The managing members are Clark Pettit, KJ Kasun and Swayze McCraine (Principals). The Principals have a 28-year history of developing and managing over $25 million in investors' funds, with gross returns of over $125 million in revenues. GMAM is the manager of The Vineyards at Cottonwood I, LLC (Vineyards). GMAM and the Vineyards jointly purchased 100.83 acres from Aultman Land and Cattle, LLC.

Project Name: The new development will be named "The Vineyards at Cottonwood".

Project Length: The project will consist of 9 development phases over an estimated 8-10 year duration.

PROJECT NARRATIVE

GMAM, as managers of The Vineyards, wishes to build and provide infrastructure, city and private streets and walkways to "Old Town Cottonwood" to service approximately 555 new residences on this 100+/- acres. The terrain and gentle grades will also allow for a community/commercial center with shops and markets along with a small community farm growing produce and vegetables for the local Farmer's Market. Further in keeping with the Wine Theme prevalent through Cottonwood the majority of the open space will be oriental vines and while using the natural arroyos as walkways to access the public attractions as well as the "Old Town" area.

The current design of homes allows for front and side porches inviting a "hometown" feel and allowing neighbors to meet and greet one another. Exterior finishes, in keeping with the Americana theme shall consist of a cement product lap siding complimented with stone, stone veneer accents, stucco walls, architectural shingles, all neatly coordinated and integrated with Craftsman style paints and trim colors to create some individual feel. “The Vineyards at Cottonwood” will offer four distinct products all constructed within the same Craftsman Americana architecture style.

Starting with our patio home series we intend to bring the families together with porches that face your neighbor and side entry garages. Larger patio homes 1400s-2100sf constructed on 4950-6050sf lots will be offered initially in 1st phase. Our smaller patio home series ranging from 1100-1400sf on a minimum 4000sf flaglot with shared driveways may be offered during later building phases based on consumer demand.

Single family home series will range from 1500sf to 2300sf and offer the same architecture and style as the patio homes. Set on lots 45' x110', 55'x 110' and some larger custom lots, with options for front entry or side entry garages, and front porches. Single family homes will be offered during all building phases.

Townhouses may be offered during phase's 3, 6, 7, and 8 of the project based on consumer demand. The units located around the community/commercial center will be built on 4000sf lots and offer Craftsman Style architecture and range from 1100sf-1250sf with common wall design and garages for each unit.

Condominiums will balance out the community with a Craftsman style design 4 up/4 down building set on a 10,000sf lot. Ranging in size from 1000sf to 1200sf, covered parking, ample open space, and access to the amenities offered within the development, these upscale units will offer an affordable option for those individuals looking for a turn-key option with no maintenance.

All our products will be engineered and constructed to Energy Star ® specifications and furnished with Energy Star ® appliances and features to reduce our energy consumption and carbon footprint.

“The Vineyards at Cottonwood” offers a beautiful and tranquil setting with views of the Mingus Mountains to the South and the Red Rocks to the North. Each phase of the development will be designed to capture those amazing panoramic views. With open space to the NW, and the community of Pine Shadows, On the Greens development and Coyote Hills Golf Course to the N, open space to the E and crossroads development on the S side of SR-89A, our development will feel open and not boxed in.

With a multitude of arroyos, ravines, flood plain and washes, our trail system will offer miles of adventure and natural undisturbed setting for wildlife viewing. A short walk or bicycle ride through the development to Main Street will put you in the heart of “Old Town” with all the amenities it has to offer. Golf cart use on the Northern most part of the trail system leading to Old Town may be allowed in future phased development only if the City, police, and fire department approve the usage.

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FOLDERS

Folders contain respective name items and exhibits for the project

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2. Conceptual Exhibits
3. Engineering Exhibits
4. House and Condo Elevation Exhibits
5. Nursery Plant Exhibits

PDF FILES

6. MDP Final Print Revised
7. Neighborhood Meeting Sign In and Comments
8. Proposed Street and Lane Names

TITLE PAGE

Development Name:
The Vineyards at Cottonwood

Development Location:
The approximate 100.83 acres that comprises The Vineyards at Cottonwood is located at SR-89A and Groseta Ranch Road on the north side of SR-89A and north east and northwest side of Groseta Ranch Road, located within the city limits of Cottonwood, Arizona, County of Yavapai.

Applicant/Developer name and contact information:
The Vineyards at Cottonwood I, LLC, and Granite Mountain Asset Management, LLC

Swayze McCraine
7765 N. Williamson Valley Road
Prescott, AZ 86305
928-771-0673 T
928-771-0747 F

KJ Kasun
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Prescott, AZ 86305
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Clark Pettit
7765 N. Williamson Valley Road
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928-771-0747 F

Email: info@granitemountainasset.com

Website: www.granitemountainasset.com

DATE SUBMITTED: May 20, 2016 Revised June 2016

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Z. Landscape Sketch

PROJECT NARRATIVE

Name:

"The Vineyards at Cottonwood" is the name of this multi-phased master planned development recognizing the City of Cottonwood and its strong affiliation to the Arizona Wine Country.

Property Owners Contact Information:

The Vineyards at Cottonwood I, LLC and Granite Mountain Asset, LLC

Swayze McCraine
7765 N. Williamson Valley Road
Prescott, AZ 86305
928-771-0673 T
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Developers Contact information:

The Vineyards at Cottonwood I, LLC, Managed by Granite Mountain Asset, LLC

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KJ Kasun
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PROJECT NARRATIVE

Clark Pettit
7765 N. Williamson Valley Road
Prescott, AZ 86305
928-460-0840 T
928-771-0747 F

Email: info@granitemountainasset.com

Website: www.granitemountainasset.com

Location:

"The Vineyards at Cottonwood" is located at SR-89A and Groseta Ranch Road on the north side of SR-89A and north east and northwest side of Groseta Ranch Road, located within the city limits of Cottonwood, Arizona, County of Yavapai. (Complete Legal Description is included in the MDP)

PROJECT NARRATIVE SUMMARY

A comprehensive project narrative summary that addresses all the required information requested, has been assembled within the MDP and can be found in the Table of Contents, Appendix Exhibits and the Digital DVD of the submitted MDP.

Disclosure:

THE VINEYARDS AT COTTONWOOD CAFÉ AND COMMERCIAL CENTER ARE INTENDED TO BE CONCEPTUAL DEPICTIONS ONLY.

Actual architecture design and building plans will be finalized and submitted during future phases of the MDP and community development.

A CONCEPTUAL PRESENTATION

OF

The Vineyards at Cottonwood Legal Description

The Vineyards project consist of multiple parcels which total 100.83 acres. The following parcels are included in the project. Parcel numbers

406-32 -080A and 406-32 -080H will be re-parceled and assigned new parcel numbers by the County.

406-23-036R
406-23-036V
406-23-036W
406-23-174
406-32-080A
406-32-080H

The complete legal description is described below:

Order No.: **01838725-295-NA** Policy No.: **AZ-FXDK-IMP-81306-1-16-01838725**

Commonwealth Land Title Insurance Company

SCHEDULE A

Name and Address of Title Insurance Company: **Lawyers Title of Arizona, Inc.**
1500 E Woolford Road ,Suite 102
Show Low, AZ 85901

Policy No.: **AZ-FXDK-IMP-81306-1-16-01838725** Order No.: **01838725-295-NA**

Address Reference: **Vacant Lots, Yavapai, , AZ**

Amount of Insurance: **$2,848,044.00**

Date of Policy: **March 31, 2016 at 2:27 PM**

1. Name of Insured:

   The Vineyards At Cottonwood I L.L.C., an Arizona limited liability company

2. The estate or interest in the Land that is insured by this policy is:

   A FEE

3. Title is vested in:

   The Vineyards At Cottonwood I L.L.C., an Arizona limited liability company

4. The Land referred to in this policy is described as follows:

   See Exhibit A attached hereto and made a part hereof.

THIS POLICY VALID ONLY IF SCHEDULE B IS ATTACHED

EXHIBIT A

LEGAL DESCRIPTION

PARCEL NO. 1:

That portion of Sections 28 and 33, Township 16 North, Range 3 East, Gila and Salt River Meridian, Yavapai County, Arizona, being portions of those certain parcels described in Book 3984 of Official Records at Page 64 and Book 3984 of Official Records at Page 67, records of Yavapai County, more particularly described as follows:

COMMENCING at the south quarter corner of said Section 28 marked with a found 1/2 inch rebar with set tag "LS 48100 (from which the southwest corner of said Section 28, marked with a found, bent, rebar with aluminum cap "RLS 40622", bears North 88°51'34" West, along the Basis of Bearing, a distance of 2648.46 feet);

Thence North 88°51'35" West, along the south line of the southwest quarter of said Section 28 a distance of 1645.61 feet to a point;

Thence South 05°37'52" East a distance of 407.23 feet to a point;

Thence South 57°33'17" West a distance of 204.00 feet to a point;

Thence North 86°33'06" West a distance of 335.72 feet to a point on the easterly right-of-way of the PRESCOTT-FLAGSTAFF HIGHWAY per Drawing Number D-13-T-464 on file with the Arizona Department of Transportation and the Warranty Deed re-recorded in Book 4768 of Official Records at Page 553, records of Yavapai County marked with a found aluminum cap "ADOT ROW 2009 RLS 40622";

Thence North 51°07'57" West, along said easterly right-of-way, a distance of 230.49 feet to a found aluminum cap "ADOT ROW 2009 RLS 40622", the TRUE POINT OF BEGINNING;

Thence North 40°41'19" West, along said easterly right-of-way, a distance of 449.08 feet to a found aluminum cap "ADOT ROW 2009 RLS 40622";

Thence North 01°41'55" East, along said easterly right-of-way, a distance of 28.05 feet to a point on said south line of the southwest quarter of said Section 28 marked with a found aluminum cap "ADOT ROW 2009 RLS 40622";

Thence North 01°47'45" East, along said easterly right-of-way, a distance of 31.34 feet to a found aluminum cap "ADOT ROW 2009 RLS 40622";

Thence North 56°54'34" East, along said easterly right-of-way, a distance of 259.24 feet to a found aluminum cap "ADOT ROW 2009 RLS 40622";

Thence North 25°08'18" West, along said easterly right-of-way, a distance of 13.31 feet to a found aluminum cap "ADOT ROW 2009 RLS 40622";

Thence North 24°52'54" West, along said easterly right-of-way, a distance of 25.00 feet to a point on the southerly line of that certain exception described as PARCEL 1 in said Book 3984 at Page 67 marked with a set 1/2 inch rebar with plastic cap "LS 48100" in pavement;

EXHIBIT A
(Continued)

Thence North 64°15'46" East, along said southerly line of exception, a distance of 90.24 feet to a found spindle with washer "LS 13015" in pavement;

Thence North 63°56'12" East, along said southerly line of exception, a distance of 28.82 feet to a point on the southerly line of that certain right-of-way granted to the City of Cottonwood and described on EXHIBIT B in Book 4217 of Official Records at Page 577 marked with a set 1/2 inch rebar with plastic cap "LS 48100" in pavement;

Thence North 73°50'09" East, along said southerly line of right-of-way, a distance of 252.98 feet to a point marked with a set 1/2 inch rebar with plastic cap "LS 48100;

Thence easterly, along said southerly line of right-of-way, along a curve to the right having a radius of 360.00 feet, a central angle of 17°50'56", a chord of North 82°45'37" East, 111.70 feet, for an arc length of 112.15 feet to a point marked with a set ½ inch rebar with plastic cap "LS 48100;

Thence South 88°18'55" East, along said southerly line of right-of-way, a distance of 10.84 feet to a point;

Thence South 00°41'18" East a distance of 145.53 feet to a point;

Thence South 01°08'25" West a distance of 249.50 feet to a point;

Thence South 50°02'37" West a distance of 493.65 feet to the TRUE POINT OF BEGINNING.

PARCEL NO. 2:

That portion of Sections 28 and 33, Township 16 North, Range 3 East, Gila and Salt River Meridian, Yavapai County, Arizona, being portions of those certain parcels described in Book 3984 of Official Records at Page 64 and Book 3984 of Official Records at Page 67, records of Yavapai County, more particularly described as follows:

BEGINNING at the south quarter corner of said Section 28 marked with a found 1/2 inch rebar with set tag "LS 48100 (from which the southwest corner of said Section 28, marked with a found, bent, rebar with aluminum cap "RLS 40622", bears North 88°51'34" West, along the Basis of Bearing, a distance of 2648.46 feet);

Thence North 88°51'35" West, along the south line of the southwest quarter of said Section 28 a distance of 1645.61 feet to a point;

Thence South 05°37'52" East a distance of 407.23 feet to a point;

Thence South 57°33'17" West a distance of 204.00 feet to a point;

Thence North 86°33'06" West a distance of 335.72 feet to a point on the easterly right-of-way of the PRESCOTT-FLAGSTAFF HIGHWAY per Drawing Number D-13-T-464 on file with the Arizona Department of Transportation and the Warranty Deed re-recorded in Book 4768 of Official records at Page 553, records of Yavapai County marked with a found aluminum cap "ADOT ROW 2009 RLS 40622";

EXHIBIT A
(Continued)

Thence North 51°07'57" West, along said easterly right-of-way, a distance of 230.49 feet to a found aluminum cap "ADOT ROW 2009 RLS 40622";

Thence North 50°02'37" East a distance of 493.95 feet to a point;

Thence North 01°08'25" East a distance of 249.50 feet to a point;

Thence North 00°41'18" West a distance of 145.53 feet to a point on the southerly line of that certain right-of-way granted to the City of Cottonwood and described on EXHIBIT B in Book 4217 of Official Records at Page 577;

Thence South 88°18'55" East, along said southerly line of right-of-way, a distance of 844.00 feet to a point marked with a set 1/2 inch rebar with plastic cap "LS 48100";

Thence northeasterly, along said southerly line of right-of-way, along a curve to the left having a radius of 440.00 feet, a central angle of 34°07'26", a chord of North 74°37'22" East, 258.20 feet, for an arc length of 262.05 feet to a point marked with a set 1/2 inch rebar with plastic cap "LS 48100";

Thence North 57°33'39" East, along said southerly line of right-of-way, a distance of 686.99 feet to a point marked with a set 1/2 inch rebar with plastic cap "LS 48100";

Thence northeasterly, along said southerly line of right-of-way, along a curve to the left having a radius of 440.00 feet, a central angle of 04°25'16", a chord of North 55°21'01" East, 33.94 feet, for an arc length of 33.95 feet to a point marked with a set 1/2 inch rebar with plastic cap "LS 48100"

Thence North 53°08'23" East, along said southerly line of right-of-way, a distance of 263.69 feet to a point on the locally accepted north-south mid-section line of said Section 28 marked with a set 1/2 inch rebar with plastic cap "LS 48100";

Thence South 00°01'22" West, along said mid-section line, a distance of 834.67 feet to a found 1/2 inch rebar with tag "LS 32224";

Thence South 00°17'19" West, along said mid-section line, a distance of 150.03 feet to the POINT OF BEGINNING.

PARCEL NO. 3:

That portion of Section 29, Township 16 North, Range 3 East, Gila and Salt River Meridian, Yavapai County, Arizona, being a portion of that certain parcel described as PARCEL 2 in Book 3984 of Official Records at Page 66, records of Yavapai County, more particularly described as follows:

COMMENCING at the south quarter corner of Section 28, said Township and Range marked with a found 1/2 inch rebar with set tag "LS 48100;

Thence North 88°51'34" West along the south line of the southwest quarter of said Section 28 and the Basis of Bearing, a distance of 2648.46 feet to the southeast corner of said Section 29 marked with a found, bent, rebar with aluminum cap "RLS 40622";

EXHIBIT A
(Continued)

Thence North 00°01'30" West a distance of 150.74 feet to a point on the easterly right-of-way of the PRESCOTT-FLAGSTAFF HIGHWAY per Drawing Number D-13-T-464 on file with the Arizona Department of Transportation and the Warranty Deed re-recorded in Book 4768 of Official Records at Page 553, records of Yavapai County marked with a found aluminum cap "ADOT ROW 2009 RLS 40622";

Thence South 65°35'15" West, along said easterly right-of-way, a distance of 50.75 feet to a found aluminum cap "ADOT ROW 2009 RLS 40622";

Thence North 74°40'47" West, along said easterly right-of-way, a distance of 155.85 feet to a found aluminum cap "ADOT ROW 2009 RLS 40622";

Thence North 44°38'55" West, along said easterly right-of-way, a distance of 405.00 feet to a found aluminum cap "ADOT ROW 2009 RLS 40622";

Thence North 05°18'05" West, along said easterly right-of-way, a distance of 91.04 feet to a point on the southerly line of said PARCEL 2 marked with a set 1/2 inch rebar with plastic cap "LS 48100", the TRUE POINT OF BEGINNING;

Thence North 05°18'05" West, continuing along said easterly right-of-way, a distance of 9.86 feet to a found aluminum cap "ADOT ROW 2009 RLS 40622";

Thence North 61°45'06" West, along said easterly right-of-way, a distance of 220.77 feet to a found aluminum cap "ADOT ROW 2009 RLS 40622";

Thence North 44°39'12" West, along said easterly right-of-way, a distance of 431.99 feet to a found aluminum cap "ADOT ROW 2009 RLS 40622";

Thence North 07°00'05" East, along said easterly right-of-way, a distance of 48.39 feet to a found aluminum cap "ADOT ROW 2009 RLS 40622";

Thence North 35°09'52" West, along said easterly right-of-way, a distance of 164.23 feet to a found aluminum cap "ADOT ROW 2009 RLS 40622";

Thence North 44°39'27" West, along said easterly right-of-way, a distance of 127.33 feet to a point on the north line of said PARCEL 2 marked with a set 1/2 inch rebar with plastic cap "LS 48100";

Thence North 82°38'00" East, leaving said right-of-way, along said north line, a distance of 721.71 feet to the end of the westerly line of that certain right-of-way granted to the City of Cottonwood and described on EXHIBIT B in Book 4217 of Official Records at Page 577 marked with a set 1/2 inch rebar with plastic cap "LS 48100";

Thence South 44°41'05" East, along said westerly line of right-of-way, a distance of 628.44 feet to a point on the southerly line of said PARCEL 2 marked with a set 1/2 inch rebar with plastic cap "LS 48100";

Thence South 55°45'19" West, along said southerly line, a distance of 110.11 feet to a found 5/8 inch rebar with illegible plastic cap and set tag "LS 48100;

EXHIBIT A
(Continued)

Thence South 51°42'35" West, along said southerly line, a distance of 259.86 feet to a found 5/8 inch rebar with set tag "LS 48100";

Thence South 61°30'43" West, along said southerly line, a distance of 192.34 feet to a found 5/8 inch rebar with plastic cap "LS 13015";

Thence South 32°52'33" West, along said southerly line, a distance of 30.33 feet to the TRUE POINT OF BEGINNING.

PARCEL NO. 4:
That portion of Sections 28 and 29, Township 16 North, Range 3 East, Gila and Salt River Meridian, Yavapai County, Arizona, being a portion of that certain parcel described as PARCEL 1 in Book 3984 of Official Records at Page 66, records of Yavapai County, more particularly described as follows:

COMMENCING at the south quarter corner of said Section 28 marked with a found 1/2 inch rebar with set tag "LS 48100;

Thence North 88°51'34" West along the south line of the southwest quarter of said Section 28 and the Basis of Bearing, a distance of 2648.46 feet to the southwest corner of said Section 28 marked with a found, bent, rebar with aluminum cap "RLS 40622";

Thence North 00°01'30" West a distance of 150.74 feet to a point on the easterly right-of-way of the PRESCOTT-FLAGSTAFF HIGHWAY per Drawing Number D-13-T-464 on file with the Arizona Department of Transportation and the Warranty Deed re-recorded in Book 4768 of Official Records at Page 553, records of Yavapai County marked with a found aluminum cap "ADOT ROW 2009 RLS 40622", the TRUE POINT OF BEGINNING;

Thence South 65°35'15" West, along said easterly right-of-way, a distance of 50.75 feet to a found aluminum cap "ADOT ROW 2009 RLS 40622";

Thence North 74°40'47" West, along said easterly right-of-way, a distance of 155.85 feet to a found aluminum cap "ADOT ROW 2009 RLS 40622";

Thence North 44°38'55" West, along said easterly right-of-way, a distance of 405.00 feet to a found aluminum cap "ADOT ROW 2009 RLS 40622";

Thence North 05°18'05" West, along said easterly right-of-way, a distance of 91.04 feet to a point on the northerly line of said PARCEL 1 marked with a set 1/2 inch rebar with plastic cap "LS 48100";

Thence North 32°52'33" East, along said northerly line, a distance of 30.33 feet to a found 5/8 inch rebar with plastic cap "LS 13015";

Thence North 61°30'43" East, along said northerly line, a distance of 192.34 feet to a found 5/8 inch rebar with set tag "LS 48100;

Thence North 51°42'35" East, along said northerly line, a distance of 259.86 feet to a found 5/8 inch rebar with illegible plastic cap and set tag "LS 48100;

EXHIBIT A
(Continued)

Thence North 55°45'19" East, along said northerly line, a distance of 110.11 feet to a point on the westerly line of that certain right-of-way granted to the City of Cottonwood and described on EXHIBIT B in Book 4217 of Official Records at Page 577 marked with a set 1/2 inch rebar with plastic cap "LS 48100";

Thence South 44°41'05" East, along said westerly line of right-of-way, a distance of 266.82 feet to a point marked with a set 1/2 inch rebar with plastic cap "LS 48100";

Thence southeasterly, along said westerly line of right-of-way, along a curve to the left having a radius of 440.00 feet, a central angle of 11°18'53", a chord of South 50°20'32" East, 86.75 feet, for an arc length of 86.89 feet to a point marked with a set 1/2 inch rebar with plastic cap "LS 48100";

Thence South 55°59'58" East, along said westerly line of right-of-way, a distance of 160.73 feet to a point marked with a set 1/2 inch rebar with plastic cap "LS 48100";

Thence southerly, along said westerly line of right-of-way, along a curve to the right having a radius of 260.00 feet, a central angle of 39°50'07", a chord of South 36°04'55" East, 177.15 feet, for an arc length of 180.77 feet to a point marked with a set 1/2 inch rebar with plastic cap "LS 48100";

Thence South 16°09'51" East, along said westerly line of right-of-way, a distance of 37.03 feet to an angle point (the intersection of said westerly line of right-of-way and the northerly line of the same right-of-way) marked with a set 1/2 inch rebar with plastic cap "LS 48100";

Thence South 73°50'09" West, along said northerly line of right-of-way, a distance of 252.15 feet to a point marked with a set 1/2 inch rebar with plastic cap "LS 48100";

Thence southwesterly, along said northerly line of right-of-way, along a curve to the left having a radius of 540.00 feet, a central angle of 28°29'01", a chord of South 59°35'39" West, 265.70 feet, for an arc length of 268.45 feet to a point marked with a set 1/2 inch rebar with plastic cap "LS 48100";

Thence South 45°21'09" West, along said northerly line of right-of-way, a distance of 28.66 feet to a point on the easterly right-of-way of said PRESCOTT-FLAGSTAFF HIGHWAY marked with a set 1/2 inch rebar with plastic cap "LS 48100";

Thence South 65°34'31" West, along said easterly right-of-way, a distance of 1.68 feet to the TRUE POINT OF BEGINNING.

APN:

SCHEDULE B

EXCEPTIONS FROM COVERAGE

PART I

This policy does not insure against loss or damage, and the Company will not pay costs, attorneys' fees, or expenses that arise by reason of:

1. (a) Taxes or assessments that are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the Public Records; (b) proceedings by a public agency that may result in taxes or assessments, or notices of such proceedings, whether or not shown by the records of such agency or by the Public Records.

2. Any facts, rights, interests or claims that are not shown by the Public Records but that could be ascertained by an inspection of the Land or that may be asserted by persons in possession of the Land.

3. Easements, liens or encumbrances, or claims thereof, not shown by the Public Records.

4. Any encroachment, encumbrance, violation, variation, or adverse circumstance affecting the Title that would be disclosed by an accurate and complete land survey of the Land and not shown by the Public Records.

5. (a) Unpatented claims; (b) reservations or exceptions in patents or in acts authorizing the issuance thereof; (c) water rights, claims or title to water; whether or not the matters excepted under (a), (b), or (c) are shown by the Public Records.

6. Any lien, or right to a lien, for services, labor or material heretofore or hereafter furnished, imposed by law and not shown by the Public Records.

END OF SCHEDULE B– PART I

SCHEDULE B

PART II

1. Property taxes, which are a lien not yet due and payable, including any assessments collected with taxes to be levied for the year 2016.

2. Intentionally Deleted

3. Intentionally Deleted

4. Intentionally Deleted

5. Liabilities and obligations imposed upon said Land by its inclusion within any district formed pursuant to Title 48, Arizona Revised Statutes.

6. Reservation, exceptions, covenants, conditions, smoke easement and rights reserved or imposed in Deed:

   Recorded in Book 187 of Deeds
   Page 331
   (all parcels)

7. Easement(s) for the purpose(s) shown below and rights incidental thereto as set forth in a document:

Purpose:	drainage
Recorded in Book:	301 of Official Records
Page:	21

   (all parcels)

8. Easement(s) for the purpose(s) shown below and rights incidental thereto as set forth in a document:

Purpose:	construction
Recorded in Book:	328 of Official Records
Page:	414

   (all parcels)

9. Easement(s) for the purpose(s) shown below and rights incidental thereto as set forth in a document:

Purpose:	electric lines
Recorded in Book:	930 of Official Records
Page:	660

   And thereafter Release of Easement

Recorded in Book:	4465 of Official Records
Page:	560

   (Affects Section 33)

10. Easement(s) for the purpose(s) shown below and rights incidental thereto as set forth in a document:

Purpose:	communication and other facilities
Recorded in Book:	1361 of Official Records
Page:	410

    (Parcels 1, 2 and 4)

Schedule B
(Continued)

11. Easement(s) for the purpose(s) shown below and rights incidental thereto as set forth in a document:

Purpose:	slope
Recorded in Book:	2012 of Official Records
Page:	120
(Parcels 1, 2 and 4)	

12. Easement(s) for the purpose(s) shown below and rights incidental thereto as set forth in a document:

Purpose:	drainage
Recorded in Docket:	2012 of Official Records
Page:	123
(Affects Section 33)	

13. Easement(s) for the purpose(s) shown below and rights incidental thereto as set forth in a document:

Purpose:	public road
Recorded in Book:	2019 of Official Records
Page:	116
(Affects Section 33)	

14. Matters shown on record of survey:

Recording No.:	Book 49 of Land Surveys, page 87
(all parcels)	

15. Matters shown on record of survey:

Recording No.:	Book 63 of Land Surveys, page 20
(all parcels)	

16. Matters shown on record of survey:

Recording No.:	Book 80 of Land Surveys, page 56
(all parcels)	

17. Matters shown on record of survey:

Recording No.:	Book 81 of Land Surveys, page 99
(Affects Section 33)	

Schedule B
(Continued)

18. Easement(s) for the purpose(s) shown below and rights incidental thereto as set forth in a document:

Purpose:	underground electric lines
Recorded in Book:	3253 of Official Records
Page:	879
(Affects Section 28)	

19. Easement(s) for the purpose(s) shown below and rights incidental thereto as set forth in a document

Purpose:	underground electric
Recorded in Book:	3253 of Official Records
Page:	883
(Affects Section 28)	

20. The effect of Resolution No. 2002-01 by the Verde Rural Fire District and the Cornville/Page Springs Fire District recorded in

Recorded in Book:	3892 of Official Records
Page:	665
Concerning	Fire District boundaries
(all parcels)	

21. Matters shown on record of survey disclosing Territory in the Vicinity of the Cottonwood Airport:

Recording No.:	Book 55 of Maps, page 98
(all parcels)	

22. Easement(s) for the purpose(s) shown below and rights incidental thereto as set forth in a document:

Purpose:	public road
Recorded in Book:	4217 of Official Records
Page:	577
(Affects Section 28)	

23. Resolution of Establishment by the Arizona Department of Transportation

For:	highway
Recorded in Book:	4519 of Official Records
Page:	34
(all parcels)	

Order No.: **01838725-295-NA** Policy No.: **AZ-FXDK-IMP-81306-1-16-01838725**

Commonwealth Land Title Insurance Company

SCHEDULE A

Name and Address of Title Insurance Company: **Lawyers Title of Arizona, Inc.**
1500 E Woolford Road ,Suite 102
Show Low, AZ 85901

Policy No.: **AZ-FXDK-IMP-81306-1-16-01838725** Order No.: **01838725-295-NA**

Address Reference: **Vacant Lots, Yavapai, , AZ**

Amount of Insurance: **$2,848,044.00**

Date of Policy: **March 31, 2016 at 2:27 PM**

1. Name of Insured:

   The Vineyards At Cottonwood I L.L.C., an Arizona limited liability company

2. The estate or interest in the Land that is insured by this policy is:

   A FEE

3. Title is vested in:

   The Vineyards At Cottonwood I L.L.C., an Arizona limited liability company

4. The Land referred to in this policy is described as follows:

   See Exhibit A attached hereto and made a part hereof.

THIS POLICY VALID ONLY IF SCHEDULE B IS ATTACHED

DEVELOPMENT PHASE OVERVIEW

During the last housing boom developers started clearing and developing land, building walls, adding infrastructure at record pace all in speculation of completing as fast as possible and starting the next project. As we saw with the prolonged economic downturn, most of these developments sat idle, and became community eyesores. Many projects financially failed leaving the municipalities to pick up the cost for HOA services, maintaining the common and open areas, along with the nuisance of unfinished projects.

"The Vineyards at Cottonwood" will implement strategic phasing to best manage all resources available, realize cost savings to both the city and developer by only adding infrastructure, utilities, and offsite improvements as needed to complete each phase of the development.

"The Vineyards at Cottonwood" will be a project length of 8 to 10 + years and 9 development phases. Each construction phase will be started at 50% absorption rate of the current phase. This allows the current land to remain natural until each phase is started for construction.

The overall conceptual vision of this project will be refined over the course of the project to reflect evolving residential and commercial demands. *(See Master Phase Plan Appendix A)*

While this is our first project in Cottonwood, we are committed to building a long term relationship with the city and the community as we have with all of our past projects.

Design that is appealing, innovative, and controlled phased development throughout the this project will make *"The Vineyards at Cottonwood"* a success for the City of Cottonwood, community and the Heart of Wine Country Arizona.

PHASE I PLAN

The 9.37 acre parcel 406-23-036W will be the site of Phase I. The site boundaries will be SR-89A on the S, Anna's Avenue on the N-NW, Parcel 406-23-036V on the W, and Groseta Ranch Road on the SE-E. 1st phase will consist of 20 patio homes on 4950sf lots and 21-single family homes on 6050sf lots constructed on 5.97 acres. The remaining 3.40 acres is split as follows: 2.04 acres toward open/ green space requirements and the remaining 1.36 acres as Public Right-Of-Way

(Appendix B Phase I site plan)

Model Homes

Three model homes will be constructed as part of Phase I and located within phase I boundary. The models will be located in decorative wrought iron or other type of fenced area which will be accessed through the sales office only. This arrangement will allow our potential residents safe, convenient pedestrian access to the model homes and development.

“The Vineyards at Cottonwood” will offer various lot sizes within the first phase development. Lots of 45' x 110' and 55' x 110' and some larger corner lots will be offered during 1st phase.

The unique location of *“The Vineyards at Cottonwood”* offers spectacular views of the Mingus Mountains to the South and the beautiful Red Rocks of “Red Rock Country” to the North allows Phase I lots to capture those panoramic views.

LAND USE AREA SUMMARIES

Located in the “Heart of Arizona Wine Country”, being the “Primary destination in Arizona Wine Country and the “Central hub for the industry as a whole within the State” as identified in Cottonwood General Plan 2025, the Land Use of *“The Vineyards at Cottonwood”* project supports the continuing efforts of the City to successfully promote the Verde Valley Vineyards, Viticulture and Enology programs at Yavapai College, wineries, industry related commercial business and tourism.

“The Vineyards at Cottonwood” as the name suggest is to be developed with a vineyard theme community and a proposed commercial/community center that will likely include amenities such as small retail businesses, café, wine tasting room, organic farm, and farmers market for the enjoyment of all the residents of Verde Valley area. Located at SR-89A and Groseta Ranch Road and a convenient short walk through the development to “Old Town”, “*The Vineyards at Cottonwood”* will be the be one of first locations in Cottonwood to introduce the influx of visitors driving in from Jerome to Arizona vintners and their award winning wines.

The pre-existing 144 acre PAD *(Ord 408 Zoning map 2014 Appendix D*) was originally approved in 2001 but never developed so there are no existing land uses. 100.83 acres of the original PAD was jointly purchased by The Vineyards at Cottonwood I, LLC *(Developer)* and Granite Mountain Asset Management, LLC *(Project Manager)* on March 31, 2016 with the intent to developing a multi-mix residential community with a small commercial/community center *(master conceptual site plan Appendix E)* following the vision and wine theme focus of the Cottonwood General Plan 2025.

"The Developer" is proposing to rezone 100.83 acres of the pre-existing approved PAD and rezone into single family, multi-family and commercial/residential zoning.

Situated between our neighbors, "Pine Shadows" to the N-NE, "On the Greens" to the N-NE, "The Crossroads" on the E-SE on SR-89A, "Kindra Heights" to the N and our future planned project phases to the S-SE, this acreage is comprised of multiple parcels *(Land Legal description appendix F)* in which the terrain consist of desert vegetation, native trees, plants, and bushes throughout the property. Arroyos and well defined washes *(Topographic Map Appendix G)* will be utilized as part of the

trail system, common and open space throughout the project. The terrain has an approximate elevation range from 3,525’ along SR-89A to 3,388’ in Kindra Heights and a natural slope southeast to northwest of approximate 3%.

This project development is a multi-phased and multi-year project that requires a degree of flexibility in preliminary and final platting of the entire project to best benefit both the City of Cottonwood and the *"Developer"*. Projects of this magnitude being driven by economic conditions, consumer demand, and product offered by *“Developer”* where, it is more prudent to submit a preliminary plat for each phase of the project. *“The Developer”* currently proposes to develop 555 homes on the 100.83 acres as follows: 68 acres of single family, multi-family and commercial/residential development, 2.83 acres of commercial/mixed use development and 30 acres of open space. The overall density of the project will range from 6.22 DU/AC for single family homes, 10.88 DU/AC for patio homes and townhouses to 16 DU/AC for condominium units. The mixed use areas are currently scheduled to be introduced during phase III-IV of the project.

The proposed commercial center/community center is projected to be approximately 3000-4000sf building located on approximately 2.83 acres

and will consist of a café, small retail spaces, farmers market and meeting/events room, organic farm, and parking. Vegetables and a small vineyard will be grown in the organic farm area with the help and support of local vintners and residents. *(Commercial/Community Center Conceptual Appendix H)*

Further descriptive land uses will follow in other sections of the MDP.

PUD/PAD ZONING APPROVAL

In 2001, subject property was rezoned to Planned Unit Development (PUD-C & PUD-R) Zone for the “Groseta Ranch Master Plan,” which included approximately 144 acres. PUD zoning city-wide was subsequently renamed Planned Area Development (PAD) Zone. The former project did not proceed past the zoning approval process. *(Ord # 408 zoning map Appendix D)*

VINEYARDS PROJECT OBJECTIVES

"The Vineyards at Cottonwood" brings an exciting style and innovative product to the Cottonwood Community and Arizona's Wine Country. Stepping back in time to offer Craftsman style architecture to its home design, concept and Vineyard themed development providing a sense of identity and unique style, rather than the common stucco box garage fronted neighborhood.

"The Vineyards at Cottonwood" will offer four distinct products constructed to Energy Star® Specifications with a variety of options and floor plans that will offer affordable price points for all of our products. To capture the beautiful views and features, our setting offers, our development will maintain our building heights to 19'+- on single family and patio homes, and 35' or less on townhouses and condominiums. All within the City of Cottonwoods standard.

SINGLE FAMILY HOMES

Craftsman style family homes approximately 1500sf to 2300sf will be offered on ample 4950sf -6050sf lots utilizing 32%-41% of the lot area. Side entry and front entry 2 car garages, ample covered porches, and a variety of options and color choices.

PATIO HOMES

Patio homes will be offered in approximately 1100sf to1400sf offered on a minimum 4000Ssf lot and 1400sf-2100sf of 4950sf-6050sf utilizing 23%-41% of the lot area. Front and side entry 2 car garages, ample covered porches, and a variety of options and color choices, along with a design created to encourage interaction with your neighbor.

Single Family Homes, Patio Homes and Townhouse Standard Model Designs may be constructed or modified to meet certain lot configurations or if market demands require additional product options.

TOWNHOUSES

Townhouses will be offered during phase's 3, 6, 7, and 8 of the project. The units located around the community/commercial center will be built on 4000sf lots utilizing 28%-32% of the lot area and offer Craftsman Style architecture. Units will range from 1100sf-1250sf with common wall design and garages for each unit.

CONDOMINIUMS

Our Craftsman styled multi-family two story 8 unit condominiums will be offered during future phased construction as consumer demand dictates.

Condominium size will range from 1000sf to 1200sf, and offer 2-3 bedroom units in 4 units up and 4 units down configuration, ample storage, covered parking, spacious balconies, and future planned amenities that include spa, outdoor gazebo, access to hiking trails and all other development amenities.

All homes within the development will be constructed to Energy Star® Specifications and incorporate Architectural shingles, Hardie Board® siding, high Performance Low e Windows, energy efficient doors, sealed duct work, high efficiency heating and cooling systems, programmable thermostats, low water use plumbing fixtures and Energy Star® appliances.

SITE LOCATION AND SURROUNDING FEATURES

"The Vineyards at Cottonwood" offers a beautiful and tranquil setting with views of the Mingus Mountains to the South and the Red Rocks to the North. Each phase of the development will be designed to capture those amazing panoramic views. With open space to the NW, and the community of Pine Shadows, On the Greens development and Coyote Hills Golf Course to the N, open space to the E and crossroads development on the S side of SR-89A, our development will feel open and not boxed in. With a multitude of arroyos, ravines, flood plain and washes, our trail system will offer miles of adventure and natural undisturbed setting for wildlife viewing. A short walk or bicycle ride through the development to Main Street will put you in the heart of "Old Town" with all the amenities it has to offer.

LOW IMPACT DEVELOPMENT STRATEGY

The initial infrastructure stage of the project is the most critical stage of the project and will utilize a planned strategy that provides the least impact and disturbance to the land in each phase of the project. This strategy will continue into each construction phase of the project keeping as much of the natural terrain features undisturbed for protection of animal habitat, natural drainage management, and project overall community perception and aesthetics.

DEVELOPMENT SIGNAGE

The signage plan for *"The Vineyards at Cottonwood"* will be themed to the development primarily at SR-89A and Groseta Ranch Road, Groseta Ranch Road and Main Street and the entryway feature proposed for the commercial center/community center within the development. LED down cast lighting will be used to illuminate entryway signs on Hwy 89A and Groseta Ranch Rd. and future entryway from Main Street and Groseta Ranch Rd. All signage and lighting plans will be submitted to the Zoning Administrator with the appropriate permits in accordance to the City of Cottonwoods sign ordinance for approval.

COTTONWOOD GENERAL PLAN 2025 REVIEW

The City of Cottonwood General Plan 2025 has identified the location for *"The Vineyards at Cottonwood"* as a growth area in the Northern part of the city. *(Growth Plan 2025 Appendix C)* Located at SR-89A and Groseta Ranch Rd., *"The Vineyards at Cottonwood"* brings a dynamic and creative design for this development while providing a "sense of place and identity" to its residents and Cottonwood and the community.

Following the vision of the City of Cottonwood 2025 General plan in growth, "Traditional Small Town Qualities", and the increasing presence of Cottonwood being the "Primary destination in Arizona Wine Country and the "Central hub for the industry as a whole within the State", The pre-existing 144 acre PAD *(Ord 408 Zoning map 2014 Appendix D*) was originally approved in 2001 but never developed so there are no existing land uses.

Vines, native and xeriscape plants will be located throughout the development in the common/open space areas and at the proposed commercial/community center that will likely showcase a small farmers market and area for organic farming of vegetables, and grapes, and offer some community amenities such as; small café, retail business space, and a community area for community events, addressing the social components of the General Plan 2025. *(Conceptual Café and Commercial Center Appendix H)*

Further following the "Small Town Qualities concept" of "Well Planned, Focused Development", "Healthy Natural Environment", "Affordable Housing", "Human Scale and Walk-ability", "Diversity of Housing" walking trails, bicycle lanes, well designed streets will allow safe access throughout the development. Future connection to Old Town Cottonwood through Groseta Ranch Road and Main Street, will be designed in future phases to promote a healthy active lifestyle.

"The Vineyards at Cottonwood" offers a unique and dynamic property concept with all its products that encourages human interaction with your neighbor through the broad mix and diversity of land uses, development design, circulation and open space plans, commercial/community center, café, organic farm, and the vast network of hiking trails, all essential elements of the General Plan 2025 goals.

Water Conservation is a controversial topic in Arizona and our community design, practices and goals aligns itself with the General Plan 2025, through water conservation practices, xeriscape and natural native plant selections, utilizing alternative water sources such as well water and effluent to irrigate the open space/common areas, low water use irrigation systems throughout the development, and low water use toilets, and fixtures are all key elements within the Water Resources Element of the General Plan.

Using the natural land resources of washes, arroyos and flood plain, and other sustainable development features utilized for natural drainage of the development will further the Environmental Planning Element of the General Plan Goals.

"The Vineyards at Cottonwood" is providing the public infrastructure required to serve this development in accordance to the Cost of Development Element of the General Plan.

The City of Cottonwood and Valley Verde region will embrace the Economic Development goals that generates from this project. Hiring local trades, buying material locally, supporting the retail and service sector of the community are a

few of the key objectives in keeping revenues in Cottonwood in accordance to the Economic Development Element of the General Plan.

"The Vineyards at Cottonwood" open space will consist of 30 acres and provide over 3 miles of multi-use hiking, bicycling trails around the perimeter of the development and through the development for resident enjoyment, meeting physical components of the General Plan 2025 Goals. The trail system will lead into Main Street and Old Town as a means for our residents to enjoy the amenities of the town without having to drive into town. Main trails will have trail markers and pet waste disposal stations and trash cans. Selected trails will have benches to enjoy the natural landscape and the panoramic views of the Red Rocks and the Mingus Mountains. Proposed future golf cart use on the Northern most part of the trail system leading to Old Town will be allowed only if the City, Police, and Fire departments approve the usage,

The circulation plan for *"The Vineyards at Cottonwood"* will provide safety, traffic calming devices, hammerhead designs on streets rather than Cul De Sacs, and street design that will address both neighborhood and local traffic in a safe and efficient manner, while providing marked bike lanes and a beautiful streetscape for all to enjoy.

"*The Vineyards at Cottonwood"* aligns itself with the City of Cottonwood and our Neighbors' by embracing the same visions and goals set forth in the Cottonwood General Plan 2025.

Those visions and goals include "positive economic opportunity, a healthy natural environment, safe prosperous neighborhoods, effective physical infrastructure and a great quality of life."

Project Graphic Exhibits

Graphic Exhibits for “The Vineyards at Cottonwood” can be located in the appendix section of the MDP and the Digital DVD disk included in the front pocket of each MDP Book.

PROPERTY DEVELOPMENT STANDARDS

"The Developer" will adhere to all City of Cottonwood Applicable building codes and subdivision ordinance standards for all Construction phases within the development.

PRELIMINARY AND FINAL PLAT GUIDELINE

The project development is a multi-phase and multi-year project that requires a degree of flexibility in preliminary and final platting of the entire project to best benefit both the City of Cottonwood and the Developer. As most projects of this magnitude being driven by market demand it is more prudent to submit a preliminary plat for each phase of the project. That submitted will then become valid for 24 months after date of approval. Final Plats will be prepared in accordance to the approved preliminary plat and submitted with all documentation required by the City of Cottonwood.

LOT MIX DESIGN GUIDELINE

Lots offered in the development will be 40', 45', 55' and 70' wide and 110' deep with a slight degree of variance for corner lots, flaglots, condo lots, and view lots. The total lot count of the project will remain the same as specified in the MDP zoning Ordinance and closely monitored throughout each building phase. Product mix and lot size mix will be determined by buyer demand in all building phases.

PROPERTY PERIMETER SETBACK

All property perimeters, lots, and corner lot setbacks will be in accordance and conform to the City of Cottonwood Building Standards, Subdivision and Zoning Ordinances. Typical Lot layout setbacks fronting Collector street will be 5' on both sides, 15' rear and 8' front. On Local streets 5' on both sides, 15' rear and 8' ESMNT and front.

WATER AND SEWER

The City of Cottonwood has a Designation of Adequate Water Supply Certificate issued by the ADWR that shows the City has ample water supply to supply *the "The Vineyards at Cottonwood"* development without the *"Developer"* having to seek alternative water supplies. *(2014 ADWR Designation of Water Adequate Supply Appendix S).*

The development will connect into the City sewer System for its waste water collection. Both water and sewer services are provided and maintained by the City of Cottonwood. *"The Developer"* will provide a new sewer lift station when the City deems the flow rates within the development dictate the need for the new lift station. The site location will be mutually agreed upon for the lift station in accordance with easements already obtained. The lift station and infrastructure will become property and responsibility of the City of Cottonwood to maintain and operate.

GREY WATER DISPOSAL

"The Vineyards at Cottonwood" will be connected into the City sewer system and no other alternative dual drainage system is required for this project. The development will also follow the Water Resource Element of the General 2025 plan found on pg. 29 of the MDP.

EFFLUENT WATER

"The Vineyards at Cottonwood" will utilize the City of Cottonwood effluent for all open space, and common space irrigation when the City makes the line improvement and extension to our development. Effluent lines and infrastructure within the development and off-site will be maintained and operated by the city of Cottonwood.

MISCELLANEOUS DEVELOPMENT DESIGN STANDARDS

- All waste containers must be screened from the street and neighboring property or stored in garages.
- All stored items must be stored in garages or must not be visible from the street or neighboring property.
- On street parking is not allowed within the development after dusk.

CONSTRUCTION OFFICE, MODEL HOMES AND SALES OFFICE

Model homes may be constructed in each phase of the project by the developer. Sales offices and construction offices may be located in the model home or temporary mobile construction trailers or offices may be established throughout the development by developer upon approval from the Community Development Director, City Fire Marshal and City Manager.

BUILDING HEIGHT

To capture the beautiful views and features, our setting offers, the *"Developer"* will maintain the building height to 20'+- on single family and patio homes, and 35' or less on townhouses and condominiums. All buildings will conform to the City of Cottonwoods Building Standards.

PROJECT DESIGN AND GUIDELINES

A project themed natural planted screen wall will be constructed within the development in various heights to follow the natural terrain of the property. The screen wall will be essential for bird and other wildlife habitat and will be constructed in Phases and follow the same master phase plan of home construction. View fence or other wall screen may be added in specific locations throughout the development to enhance the natural features of the development. Themed project entryway features will be added by *"Developer"* at SR-89A and Groseta Ranch Road and Main Street and Groseta Ranch Road.

SCREEN WALL

In order to provide seclusion and reduce noise from SR-89A, The *"Developer"* has selected a natural planted screen wall rather than typical block wall. This natural hedge wall will be constructed parallel with SR-89A and will run from our North and South property lines to the corner of Groseta Ranch Road *(Screen Wall design features Appendix I)*. The Screen wall will be complimented with a Masonry project themed entryway into the development. All Screen walls at project entryways and corner lots will be constructed to City of Cottonwood Code.

SCREEN WALL CONSTRUCTION

Utilizing a natural alternative, the screen wall along SR-89A will be constructed using (Red Tip Photinia "*Photinia x fraseri*") to create a solid hedge screen wall. The wall will follow the topography of the terrain and will have various levels of vertical relief. Stone veneer columns will be placed at 150' intervals for overall continuity and uniformity of the themed project. *(Screen Wall design features Appendix I)* to enhance the appearance of the natural screen wall.

PROJECT THEMED MONUMENTATION

A masonry entry feature will be constructed at the intersection of SR-89A and Groseta Ranch road with "The Vineyards at Cottonwood" logo integrated into the feature to identify and promote *"The Vineyards at Cottonwood"*.

The masonry feature will include a project themed *"The Vineyards at Cottonwood"* signage integrated into the feature. This same design themed entry

wall screen will be used at Groseta Ranch Road and Main Street when this road is extended during future development phases. *(Entry design features Appendix J)*.

MARQUEE

Entry into the proposed commercial/community center development will be enhanced with an Entryway Feature *(Marquee Appendix K)* strategically placed to enhance overall vineyard theme and appearance of the commercial/community area. The vineyard theme of the project will be projected in the metal art laser cut top of the Marquee itself, positioned on stone veneer faced columns *(Marquee design features Appendix L)* with a step down pergola across both sides of the sidewalk leading into the commercial/community center.

DEVELOPMENT FENCING

While our project intent and design is to promote an open feel and to encourage human interaction, we realize some residents will want to fence their individual property and we encourage the use of view fence rather than a solid wall. Therefore only fencing that keeps the theme and uniform appearance of the subdivision will be allowed in the project. Residents wishing to build fencing will

need to submit the design to the HOA design committee for approval. All fences will be constructed to the City of Cottonwood zoning Code section 404 General Provisions.

GATES

Due to our property size single entry fence gates are allowed up to 5’ wide. In order to maintain the integrity of the development and project continuity, RV or double gates will be allowed only on specific lots designated by *“Developer”*. Wrought iron gates or wrought iron gates with wood slats are the only permitted gate approved for the subdivision.

LANDSCAPING

“The Vineyards at Cottonwood” landscape plan will be designed in accordance to the City of Cottonwood Zoning Ordinance section 407 guidelines and approved plant selections.

The development will utilize low water use drip irrigation and xeriscape plant materials throughout the community to minimize water usage from both a supplementary water well *(AZDWR Well Registration Appendix M)* registered with

Arizona Department of Water Resources #55-905196 located on parcel 406-2036R of the property and future use of effluent from the City of Cottonwood when it becomes available to connect into the system at future development phases.

The low water drip irrigation system and irrigation well located within the subdivision property lines will be maintained by the community HOA. Supplemental effluent water from the City of Cottonwood will be maintained by the City of Cottonwood from the source of origin to the connection point within the subdivision.

Tree and plant species native to the Cottonwood area will be utilized throughout the common areas, arterial and collector streetscapes with a common theme throughout the development with the exception of the themed development entryway and areas around the commercial/community center.

The main entry into the development accessed from HWY 89A and Groseta Ranch Road will have a vine's, flowering trees, and native trees and shrubs along both sides of Groseta Ranch Road to Anna's Avenue utilizing drought resistant vines, trees, xeriscape and native plants and shrubs that will run parallel with the road. *(Entryway Landscaping Appendix N)* and *(landscape plan Appendix Z)*

A secondary entry into the subdivision will be at Groseta Ranch Road and Main Street will be developed during later building phases and will incorporate some of

the same design features as the main entrance to keep continuity throughout the development.

Decomposed granite products in various colors and sizes will be used for residential, common areas, pathways and trails throughout the development to create a uniformed continuity throughout the development.

Boulders, rocks, and other compatible landscaping material is encouraged to enhance the design, character, and overall xeriscape theme to the subdivision.

All front yard landscaping and drip irrigation will be installed by the builder and will consist of drip irrigation and basic xeriscape plant and tree landscaping.

The homeowner can choose to upgrade landscaping from the basic package at their own expense and design approval by the HOA.

All residents will be required to obtain landscape design approval from the HOA design committee and landscape their backyards within 90 days of closing on their residence. A waiver or extension may be granted by the HOA upon filing for such waiver with the governing body of the HOA.

All landscaping other than builder provided will be at the home owner’s expense.

Although discouraged, grass/turf will be allowed in backyard landscaping plans. The grass area is not to exceed 300sf and must be irrigated with low water use irrigation system.

The community HOA will approve the decomposed granite, plant and tree selections for front and back yard landscaping to comply with the City's Zoning Ordinance Section 407.

Decomposed granite color selection chart will be provided to homeowners along with approved plant selections by the HOA. The recommended selections and list are shown in *(Home Landscaping Appendix O)*

SITE LIGHTING

Lighting throughout the development will utilize LED down cast fixtures to comply with the Dark Sky Requirement. Street lights will be used around the condominiums in phase 1, and at the entryway off of Anna's Avenue into the phase 1 development. Dark Sky Compliant coach light fixtures will be used on all houses and LED lights will be used under the parking canopies. In addition to this lighting, LED down cast lighting will be used for the entryway sign into the development. (See phase 1 lighting plan located in Digital Copy disc included in each MDP). An additional APS Dark Sky Compliant down cast street light will be strategically placed at the corner of Anna's Avenue and Groseta Ranch road and be the responsibility of the city to maintain. Light specifications can be obtained from APS. Future phase developing will include a lighting lumen cut sheet utilizing same or comparable Dark Sky Compliant fixtures as each phase is platted.

OPEN SPACE/COMMON SPACE/TRAILS

Open Space and Common area landscaping will retain much of the natural native vegetation throughout the washes and walking trails. Trees will be pruned, brush thinned and trails will be constructed that will run around the perimeter of the property as well through the property utilizing the development natural features.

Benches will be selectively placed throughout the trail system with Trash/Doggie stations located at trailheads. Trail markers will be placed at main trailheads.

Trails will be constructed 6' -8' wide in a manner that optimizes natural terrain features and will be covered with compacted decomposed granite rock to promote drainage, keeping weeds and dust to a minimum, while providing a consistent uniformed trail surface throughout the community. *(Trail Amenities Appendix P)*

With 30% of open space in the development, the trail system will offer over 3.45 miles of walking/bicycle trails for resident enjoyment. The trail system will also connect the development to "Old Town Cottonwood" through Kindra Heights *(Trail Map Appendix Q)* to offer our residents a means to enjoy the "Entertainment District" and its amenities. Removable steel bollards will be placed at trail heads and street crossings to ensure no vehicle traffic enters the trail system other than maintenance vehicles.

Open Space Standards

All trails that cross streets within the development will be marked at pedestrian crossing with both painted crossing area and posted pedestrian crossing signs at trail intersections to ensure pedestrian safety. Sidewalks and bike lanes on collector streets will connect to the open space, common space and trail system to allow pedestrian access. Golf cart use on the Northern most part of the trail system leading to Old Town may be allowed in future phased development only if the City, police, and fire department approve the usage.

Consistent to the vineyard theme, specific common areas, commercial/ community center, organic farm area will also have low water use vines to enhance the project theme and promote the regions Viticulture and Enology resources and industry. *(Project Vines Appendix R)*

Low water use drip irrigation and low water use irrigation systems will be utilized for common areas and some open space areas to supplement and sustain plant and tree growth. All landscaping, irrigation, and maintenance in common areas, open space and trails will be maintained and serviced by the community HOA.

STREET STANDARDS AND CIRCULATION PATTERN

All streets within The Vineyards at Cottonwood will be constructed to the City of Cottonwoods Standards. The circulation pattern has been designed and engineered for the safe and efficient travel throughout the development. Bicycle lanes, attractive landscape will adorn all collector streets. Traffic calming devices and engineering features will be implemented to safely control speed and convey regional and local traffic throughout the development and the future expansion of Groseta Ranch Road to Main Street. All public streets within the development will be maintained by the City of Cottonwood. Typical street construction for Hammerhead Turn-Arounds will be 40" R.O.W., 24' curb to curb, with a 5' sidewalk on the opposite side of the hammerhead turn-around. Local streets will be 45' R.O.W., 30' curb to curb with a 7' sidewalk on one side of the street. Collector Streets will be 60' R.O.W. 32' curb to curb with a 6' wide sidewalk on both sides of the street.

TRAFFIC IMPACT ANALYSIS STUDY

At this point, the site is only conceptually designed with preliminary layout and unit orientation. We expect this concept to change after we commence engineering analyses.

The access to the site will be onto Groseta Ranch Road. Ultimately, traffic will distribute west onto SR 89A and/or east on Kendra heights to Main Street (to be developed).

The “developer” proposes to only commence the project with approximately 41 units. The purpose of this plan is to minimize development impacts and “test the market” to determine if a future phase can be developed or will be acceptable to the market.

Although the “grand plan” envisions another phase of development, there is not enough confidence in the market to propose the full build out at this time.

The build out time-frame will depend on how well the 41 units are received in the market. If this initial project is well received, the developer will proceed with planning of the future phase. However, a future phase may take 10 years or more

if this initial market test is slow. Hence, for the traffic analysis, we propose the project be reviewed and analyzed as only this smaller initial phase at this time.

In the future, if the project is well received, a full Traffic Impact Study is proposed for all units including this first phase's 41 units. The time between this project and a future phase will assist the developer in understanding the market demand as well as to refine the future layout / site plans accordingly.

In addition it should be clearly noted if the "developer" performs a full Traffic Impact Study at this point in time, the results may not be valid due to the potential unknown variables.

The final site plan may substantially change in a future phase and the amount of lapsed time or delay between the small initial "market test" build and the future phase build could easily be beyond 4-5 years. This could render the traffic study "out of date" and new analyses / results would be needed to update the original study.

As a result of the above description, the "developer" would like to proceed with submitting the appropriate documentation for a 41 unit subdivision. With respect to traffic, the trip generation analyses has been performed and is attached as *(Traffic Trip Generation Report Appendix W)* submitted for record and future reference if a future phase can proceed. With this low quantity of units proposed, we are not

anticipating any further analyses other than a Trip Generation Analysis letter report. With the City's current guidelines of less than 50 units, no significant impacts are anticipated.

MAINTENANCE AND OPERATION RESPONSIBILITIES

The Vineyards at Cottonwood I, LLC will create a Master HOA and establish sub HOA's for single family homes, patio homes and condominiums along with CC&R’s established for this community to ensure the integrity of the development. Townhouses will be managed under the patio homes HOA. The Articles of HOA Incorporation and CCR's will be submitted upon approval of final plat. The HOA's will be controlled and managed by the *"Declarant"* until the project is 85% sold and turned over to the homeowners.

The community HOA will be responsible for maintaining all open space, common areas, trail system, private drives on flag lots, condominium trash service, landscaping and irrigation system, water well and delivery system, maintenance on all open space and common space areas, condominium parking areas, condominium grounds keeping, commercial center/ community center parking areas and grounds keeping around that facility. Street lights in and around the condominiums and commercial center/ community center parking areas will be maintained by the community HOA.

Public Streets, sidewalks, fire hydrants, water, sewer, effluent lines, lift station, delivery system facilities and all infrastructure related, owned and operated by the City of Cottonwood, will be maintained, repaired, and operated by the City of Cottonwood.

PRELIMINARY DESIGN REPORT
MASTER WATER AND SEWER STUDY

for:

Vineyards at Cottonwood Subdivision
Cottonwood, Arizona

Prepared for:

Granite Mountain Asset Management
Mr. Swayze McCrain
Mr. KJ Kasun
7765 N. Williamson Valley Road
Prescott, AZ 86305

Prepared by:

Kelley/Wise Engineering, Inc.
146 Grove Avenue
Prescott, Arizona 86301

KWE #15-078

May 18, 2016

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Attachment

The Vineyards at Cottonwood – Master Water and Sewer Plan

Appendix

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Existing Sewer System Capacity Calculation Summary Sheets

Appendix B:

Rating Table for 8-inch Pipe – Full Flow Capacity
Rating Table for 10-inch Pipe – Full Flow Capacity
Rating Table for 12-inch Pipe – Full Flow Capacity

I. GENERAL LOCATION AND DESCRIPTION

A. Location

The subject site consists of multiple parcels totaling approximately 101 acres in Cottonwood, Arizona. Access to the site is from Groseta Ranch Road east of State Route 89A. The site occupies portions of the Southwest Quarter of Section 28, the Southeast Quarter of Section 29 and the Northwest Quarter of Section 33, Township 16 North, Range 3 East Gila and Salt River Meridian, Yavapai County. The subject site is bound on the north by Pine Shadows Subdivision; on the north and east by Annas Avenue, Groseta Ranch Road/Yuma Street and On the Green Subdivision, on the east by various privately owned metes and bounds parcels and Verde Heights Plat 2 Subdivision; on the south by privately owned metes and bounds parcels; on the west by State Route 89A (SR 89A) right of way (ROW).

B. Description of Property

The Vineyards at Cottonwood Subdivision is a proposed residential Planned Area Development (PAD) on ±101-acres consisting of approximately 555 lots (see Master Water and Sewer Plan). The property is comprised of various adjoining parcels owned by the same owner, all of which are located within the City of Cottonwood corporate limits. The assessor's parcel numbers (APN) for the parcels are 406-23-036V, 036W, 174B, 174C, and 406-32-080P. Groseta Ranch Road divides parcels 036V and 036W on the north from the remaining parcels. The parcels are located in gently easterly sloping (slopes less than 5%) terrain with various existing ravine drainage ways that also flow easterly. Current City of Cottonwood development standards would apply to development of this land.

The conceptual layout consists of various development densities and lot layouts. The preliminary lot layout that this study is based on was created in several development phases which are subject to change based on demand and market performance. The initial phase is planned to be a mixture of single family residential lots and one condominium totaling approximately 46 dwelling units (38 lots, 8 condominiums).Phase 1 is located north of Groseta Ranch Road between Annas Avenue and SR 89A. The proposed layout consists of a looping road off of Annas Ave with the land on the outside of the loop divided as single family lots and the land on the interior used for condominium development.

II. WATER AND SEWER

A. Water System

1. Existing/Proposed Facilities

The proposed subdivision will be served water from the City of Cottonwood's existing water system. A 12-inch water main exists on the easterly side of the SR 89A ROW adjacent to the site. This water main is relatively new and was constructed in 2010-2011. It is assumed that this 12-inch main will provide adequate water volume and pressure to all phases of development for the Vineyards at Cottonwood project in accordance with ADEQ Engineering Bulletin No. 10 "Guidelines for the Construction of Water Systems", Chapter 7, Section C2, which states that "The normal working pressure in the distribution system should be approximately 75 PSI and not less than 40 PSI."

2. Point of Connection(s)

This project will likely ultimately connect to the existing 12-inch main in SR 89A ROW at multiple points, extending easterly into a looping water network to provide water service to the various development phases. The initial point of connection will be to serve phase 1 and will be located approximately 350 feet northerly of the intersection of SR 89A/Groseta Ranch, at a ground elevation of about 3515. An 8-inch water main would be extended easterly to the phase 1 ROW where it would split and loop around to Annas Ave. Additionally, an 8-inch main would be extended southerly in Annas Ave to Groseta Ranch Road for connection for future Vineyards at Cottonwood phases. It is anticipated that 8-inch mains will be adequate to supply fire flows and water service for phase 1. The existing elevations of phase 1 vary from about 3485 to 3515.

3. Requirements for Service

The proposed 555 dwelling unit (DU) subdivision will generate the following estimated water flows using design parameters of 2.5 people per DU and 100 GPD per person.

Average Daily Flow (ADF) = 555 DU x 250 GPD/DU =138,750 GPD=96.4 GPM

Maximum Daily Flow = 2 ADF = 192.7 GPM

Maximum Hourly Flow = 3 ADF = 289.1 GPM

The minimum flow requirement for new fire hydrants is assumed to be 1500 GPM at 20 PSI residual pressure. It is assumed that the existing 12-inch main will provide adequate flow and pressure to this proposed development. Phased development may cause the need for additional points of connection to meet fire flow requirements. Also, longer non-looping segments of water main may need to increase to 12-inches to achieve required fire flows.

B. Sewer System

1. Existing Facilities

The City of Cottonwood operates a gravity sewer collection system to the east of the proposed Vineyards at Cottonwood Subdivision. The existing sewer system drains through a system of 8-inch sewer pipes, to a trunk main in Main Street and Yavapai St. The trunk main drains easterly in Yavapai Street, southerly in 3rd Street, easterly in Pinal, northerly in 5th and overland to 10th street, easterly in 10th Street to Riverfront and easterly in Riverfront to a sewer lift station. Several reports indicate that the trunk main transitions from 10-inch to 12-inch in 10th street, while the most recent ProPipe report (2015) indicates that the trunk main changes from 10-inch to 12-inch near the intersection of Main/Yavapai Streets. The lift station pumps effluent to another lift station (#4 per Coe & Van Loo report) adjacent to the City of Cottonwood Fire/Police Station, which pumps to the City of Cottonwood Water Reclamation Facility east of the Cottonwood Airport.

The proposed Vineyards at Cottonwood subdivision sewer system would connect to the existing network of 8-inch sewer mains near the intersection of Yuma Street/Kindra Heights Road. The new sewer would extend easterly down an existing drainageway beyond the subdivision eastern boundary approximately 0.3 miles to reach this point. This point of connection is upstream of the trunk main in Main Street which drains to the Riverfront lift station. Preliminary analysis indicates that the existing trunk main is adequate to serve the entire buildout (555 DU) for the Vineyards at Cottonwood project, (regardless of the actual location of the transition point between 10-inch and 12-inch). However, the preliminary analysis also indicates that a portion of the existing 8-inch system will need to be up-sized to accommodate 555 DU's. The existing 8-inch pipe to be upsized is

located where the existing 8-inch system combines with the upstream flow from multiple existing developments, approximately between MH 3-1-7 to MH 3-4-7. Approximately half of the proposed DU's could be served using the existing 8-inch sewer mains. It is assumed that the existing capacity of the lift station is sufficient for the additional sewer flow from the proposed subdivision.

Existing sewer inverts and as-built slopes were not used for this preliminary analysis. For the purposes of this preliminary study, the analysis was conducted on the assumption that the critical flow capacity in the existing system is based on minimum allowable design slopes for 8, 10 and 12-inch sewers. The existing sewer system contains 8-inch, 10-inch and 12-inch pipe which will receive sewer flow from the entire Vineyards at Cottonwood Subdivision. Using the minimum allowable design slopes of 0.33%, 0.25% & 0.20% respectively, the full flow capacities of 8-inch, 10-inch and 12-inch sewer pipes are 313 GPM, 492 GPM , and 715 GPM respectively. Using the City's design criteria of 200 GPD or 0.139 GPM per DU (80 GPD per person and 2.5 people per DU) provides an average daily flow of ±77 GPM for full buildout for the Vineyards at Cottonwood subdivision.

Projected Gravity Sewer Demands:

The following design parameters were used for predicting gravity sewer flows for the proposed subdivision:

- Average Daily Flow (ADF) per DU = 200 GPD/DU = 0.14 GPM/DU
- Peaking Factor per AAC R18-9-E301.D.1.b.i = (6.330 xp^-0.231)+1.094
  The peaking factor was calculated for multiple locations, changing slightly due to the changing upstream population p= upstream population
- Peak Flow = 163.26 GPM

Based upon the design parameters referenced above, Table A below lists the variable flow rates based on development at the maximum anticipated number of dwelling units.

TABLE A

	Projected Gravity Sewer Flow Rates (GPM)		
	Number of Dwelling Units	**Average Daily Flow (ADF)**	**Peak Flow**
Proposed Vineyards at Cottonwood	555	77	163
Existing	±768	71	150
Combined	1323	148	313

Appendix B contains reports showing the capacities of an 8, 10 and 12-inch pipes flowing full at varying slopes.

REFERENCES

City of Cottonwood Wastewater Collection System Master Plan, Coe & Van Loo Consultants, Inc. Project No. 1.01.0154017, March 1, 2013

ProPipe Existing Sewer Inspection Report, "Vineyards Running Line – Cottonwood, AZ" December 24, 2015

ProPipe Existing Sewer Inspection Report, "2009 PROPIPE REPORT CCF12172015_0001" February 27, 2009

ProPipe Existing Sewer Inspection Report, "2008 PROPIPE REPORT CCF12172015" May 28, 2008

APPENDIX A

EXISTING SEWER SYSTEM CAPACITY CALCULATION

SUMMARY SHEETS

Subdivision	DWELLING UNITS	PER CAPITA	GPD/PER CAPITA	GPD/DU	ADF/GPD	ADF/GPM	PEAK FLOW
Pine Shadows	349	1.5	80	120	41,880	29.08	61.60
On the Green	300	1.5	80	120	36,000	25.00	52.95
Grey Fox Ridge	99	2.5	80	200	19,800	13.75	29.12
Kindra Heights	20	2.5	80	200	4,000	2.78	5.88
Vineyards at Cottonwood	555	2.5	80	200	111,000	77.08	163.26
	1323	2658.5					

PEAKING FACTOR= 2.11803

8" PIPE FULL FLOW CAPACITY @ 0.33% SLOPE= 313.11 gpm

10" PIPE FULL FLOW CAPACITY @ 0.25% SLOPE= 491.67 gpm

12" PIPE FULL FLOW CAPACITY @0.20% SLOPE= 715.1 gpm

EX 8" SEWER TO ± MH 3-2-7	
PEAK FLOW-GPM	312.8213
Available GPM	313.1100
GPM-net	0.2887
Daily-net [GPD]	415.7994
PER CAPITA net	5.1975
DWELLING UNITS-net	2.0790
Trigger point (in lots)	557

APPROXIMATE SERVICE AREA	APPROX AREA [AC]	DU PER ACRE	DU	APPROX POPULATION	ADF/GPD	ADF/GPM	PEAK FLOW
CACTUS SEWER	75.44	2	150.88	377.2	30,176	20.96	43.74
VERDE HEIGHTS	72.4	3	217.2	543	43,440	30.17	61.84
YAVAPAI	26.41	4	105.64	264.1	21,128	14.67	29.85
MAIN	143.96	6.5	935.74	2339.35	187,148	129.96	251.70
				3523.65			

PEAKING FACTOR CS	2.08712
PEAKING FACTOR VH	2.050078
PEAKING FACTOR Y	2.034481
PEAKING FACTOR MAIN	1.936656

This information is based on sewer pipes flowing full with minimum allowable slopes and a dry weather peaking factor per AAC R18-9-E301.D.1.b.i

EX 8" SEWER MH 3-2-7 TO 3-1-7	
PEAK FLOW-GPM	356.5580
Available GPM	313.1100
GPM-net	-43.4480
Daily-net [GAL]	-62565.1467
PER CAPITA net	-782.0643
DWELLING UNITS-net	-312.8257
Trigger point (in lots)	242

EX 10" SEWER FROM MH 3-1-7 TO YAV	
PEAK FLOW-GPM	418.4020
Available GPM	491.6700
GPM-net	73.2680
Daily-net [GAL]	105505.8801
PER CAPITA net	1318.8235
DWELLING UNITS-net	527.5294
Trigger point (in lots)	1083

EX 10" SEWER FROM YAV TO 12"	
PEAK FLOW-GPM	448.2524
Available GPM	491.6700
GPM-net	43.4176
Daily-net [GAL]	62521.3634
PER CAPITA net	781.5170
DWELLING UNITS-net	312.6068
Trigger point (in lots)	868

EX 12" SEWER MAIN	
PEAK FLOW-GPM	699.9478
Available GPM	715.1000
GPM-net	15.1522
Daily-net [GAL]	21819.2085
PER CAPITA net	272.7401
DWELLING UNITS-net	109.0960
Trigger point (in lots)	664

APPENDIX B

RATING TABLE FOR 8-INCH PIPE – FULL FLOW CAPACITY

RATING TABLE FOR 10-INCH PIPE – FULL FLOW CAPACITY

RATING TABLE FOR 12-INCH PIPE – FULL FLOW CAPACITY

Rating Table for 8" Circular Pipe - flowing full

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.33330	% → 313.11 gpm
Normal Depth	8.00	in
Diameter	8.00	in

Channel Slope (%)	Discharge (gal/min)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
0.00000			0.35	2.09	0.00
0.10000	171.50	1.09	0.35	2.09	0.00
0.20000	242.54	1.55	0.35	2.09	0.00
0.30000	297.05	1.90	0.35	2.09	0.00
0.40000	343.01	2.19	0.35	2.09	0.00
0.50000	383.49	2.45	0.35	2.09	0.00
0.60000	420.10	2.68	0.35	2.09	0.00
0.70000	453.76	2.90	0.35	2.09	0.00
0.80000	485.09	3.10	0.35	2.09	0.00
0.90000	514.51	3.28	0.35	2.09	0.00
1.00000	542.34	3.46	0.35	2.09	0.00
1.10000	568.81	3.63	0.35	2.09	0.00
1.20000	594.11	3.79	0.35	2.09	0.00
1.30000	618.37	3.95	0.35	2.09	0.00
1.40000	641.71	4.10	0.35	2.09	0.00
1.50000	664.23	4.24	0.35	2.09	0.00
1.60000	686.02	4.38	0.35	2.09	0.00
1.70000	707.13	4.51	0.35	2.09	0.00
1.80000	727.63	4.64	0.35	2.09	0.00
1.90000	747.57	4.77	0.35	2.09	0.00
2.00000	766.99	4.90	0.35	2.09	0.00

Rating Table for 10" SEWER FULL FLOW

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.25000	% =491.67
Normal Depth	10.00	in
Diameter	10.00	in

Channel Slope (%)	Discharge (gal/min)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
0.00000			0.55	2.62	0.00
0.10000	310.96	1.27	0.55	2.62	0.00
0.20000	439.76	1.80	0.55	2.62	0.00
0.30000	538.59	2.20	0.55	2.62	0.00
0.40000	621.92	2.54	0.55	2.62	0.00
0.50000	695.32	2.84	0.55	2.62	0.00
0.60000	761.69	3.11	0.55	2.62	0.00
0.70000	822.72	3.36	0.55	2.62	0.00
0.80000	879.52	3.59	0.55	2.62	0.00
0.90000	932.87	3.81	0.55	2.62	0.00
1.00000	983.33	4.02	0.55	2.62	0.00
1.10000	1031.33	4.21	0.55	2.62	0.00
1.20000	1077.19	4.40	0.55	2.62	0.00
1.30000	1121.17	4.58	0.55	2.62	0.00
1.40000	1163.50	4.75	0.55	2.62	0.00
1.50000	1204.33	4.92	0.55	2.62	0.00
1.60000	1243.83	5.08	0.55	2.62	0.00
1.70000	1282.11	5.24	0.55	2.62	0.00
1.80000	1319.28	5.39	0.55	2.62	0.00
1.90000	1355.43	5.54	0.55	2.62	0.00
2.00000	1390.65	5.68	0.55	2.62	0.00

Rating Table for 12" SEWER FULL FLOW

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.20000	% = 715.10 gpm
Normal Depth	12.00	in
Diameter	12.00	in

Channel Slope (%)	Discharge (gal/min)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
0.00000			0.79	3.14	0.00
0.10000	505.65	1.43	0.79	3.14	0.00
0.20000	715.10	2.03	0.79	3.14	0.00
0.30000	875.81	2.48	0.79	3.14	0.00
0.40000	1011.30	2.87	0.79	3.14	0.00
0.50000	1130.67	3.21	0.79	3.14	0.00
0.60000	1238.59	3.51	0.79	3.14	0.00
0.70000	1337.83	3.80	0.79	3.14	0.00
0.80000	1430.20	4.06	0.79	3.14	0.00
0.90000	1516.95	4.30	0.79	3.14	0.00
1.00000	1599.01	4.54	0.79	3.14	0.00
1.10000	1677.06	4.76	0.79	3.14	0.00
1.20000	1751.63	4.97	0.79	3.14	0.00
1.30000	1823.15	5.17	0.79	3.14	0.00
1.40000	1891.97	5.37	0.79	3.14	0.00
1.50000	1958.38	5.56	0.79	3.14	0.00
1.60000	2022.61	5.74	0.79	3.14	0.00
1.70000	2084.85	5.91	0.79	3.14	0.00
1.80000	2145.30	6.09	0.79	3.14	0.00
1.90000	2204.08	6.25	0.79	3.14	0.00
2.00000	2261.34	6.41	0.79	3.14	0.00

City of Cottonwood

Vineyards at Cottonwood

Yavapai County, Arizona

Phase 1 Drainage Report

January 2016

J2 Project Number: 15.0867

Prepared for: **Kelley/Wise Engineering, Inc.**
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Section 1: Introduction

1.1 Purpose of Study

The Vineyards at Cottonwood are a proposed development within the City of Cottonwood. The proposed development may include 185 – 200 single family homes, 115 – 120 patio homes, 115 – 120 town homes, and 320 apartments with 30% open space for drainage corridor and trail system. The purpose of this package is to document the hydraulic analysis and 100-year floodplain delineation for the five culvert crossings that converge into two major wash corridors at the downstream end of the project area.

This Technical Data Notebook (TDN) documents the updated detailed hydraulic modeling and study work maps.

1.2 Authority for Study

J2 Engineering and Environmental Design (J2) was contracted by Kelley/Wise Engineering Inc. to complete the requirements. J2's Project Manager for this project is Jeff Holzmeister, P.E.

1.3 Project Location

The proposed 100 acre development is located northeast of SR-89A between Pine Shadows Dr and North Verde Heights Road. The subject project includes the following parcels as defined by the Yavapai County Assessor's Office (APN 406-23-036V, 406-23-036W, 406-23-174, 406-23-036R, 406-23-080A, and 406-23-080H). The proposed development includes the dissolution of the 4 parcels 406-23-036W, 406-23-174, 406-23-036R, and 406-32-080A into 3 parcels. The following figure shows the new parcel formation. The proposed development will occur on parcels A, B, C1 and C2. Parcel D will remain under the current owner.

Figure 1.1 below shows the Project Location Map.

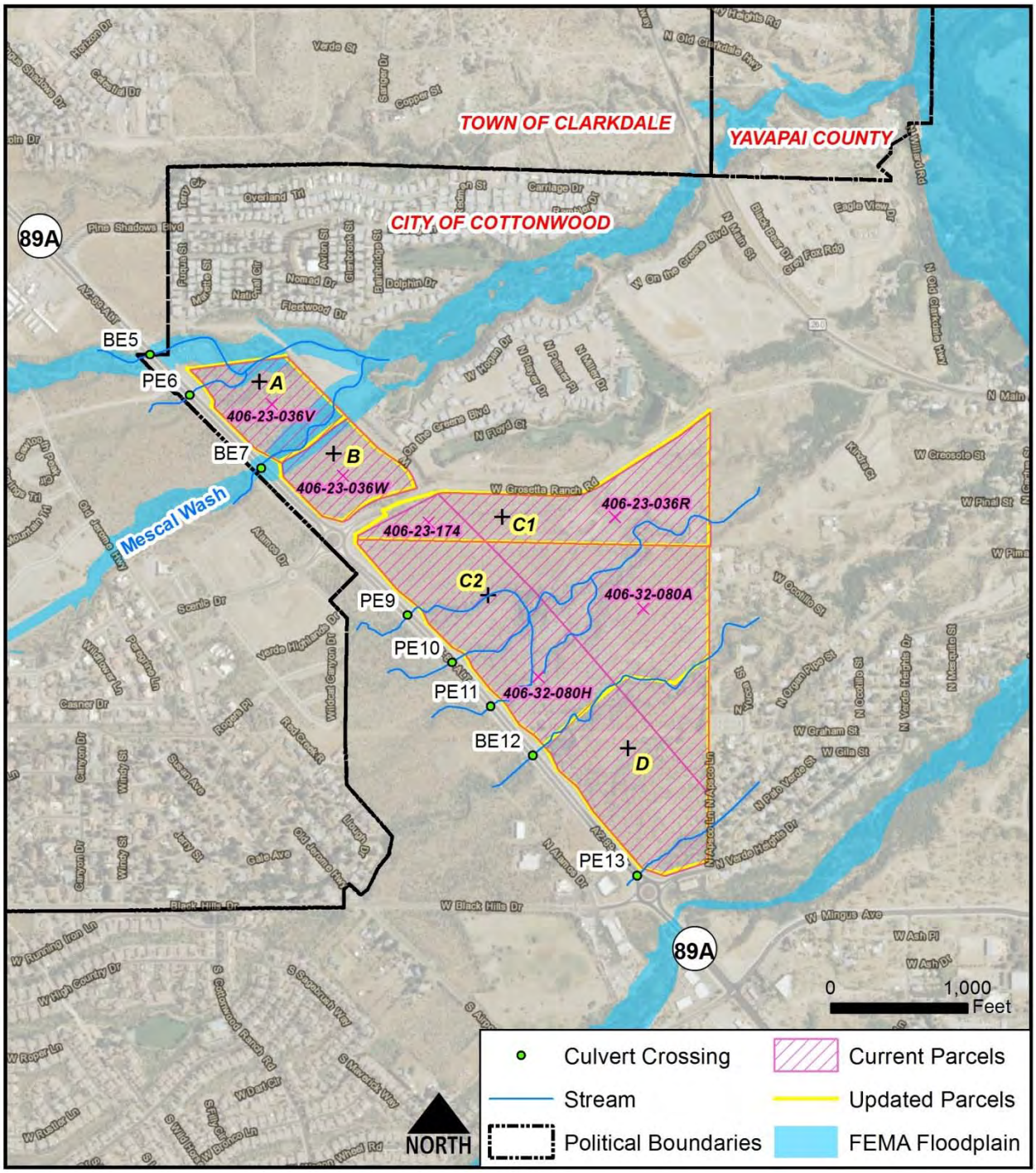


Figure 1.1 - Project Location Map

1.4 Methods of Analysis

Hydrology:

Hydrology was obtained from the SR89A – Cement Plant Road to Black Hills Drive Final Drainage Report prepared by Primatech in August 2008.

Hydraulics:

Hydraulic analyses and floodplain delineations were performed using HEC-RAS version 4.1. HEC-RAS input data and floodplain delineations were prepared using the HEC-GeoRAS extension for ESRI GIS version 10.1.

Section 2: Survey and Mapping Information

2.1 Digital Projection Information

All survey data was collected using vertical datum of NAVD 88 and horizontal datum defined by Kelley/Wise Engineering Inc. Data was converted to NAD1983 State Plane Arizona Central (International Foot) by applying a transformation of the coordinates consisting of adding 611,744' to the Easting and 1,313,953' to the Northing.

2.2 Mapping

The updated detailed mapping consists of 1' contour interval mapping from a flight date of December 8, 2015, performed by AeroTech Mapping (ATM) under ATM project number P1215-126.

Section 3: Hydrology and Hydraulic Analysis

3.1 Hydrology

Hydrology was not updated per this study. Hydrology was obtained from the SR89A – Cement Plant Road to Black Hills Drive Final Drainage Report prepared by Primatech in August 2008, which is included in Appendix F. Primatech reviewed discharges from a previous study by Arizona Department of Transportation (ADOT) using United States Geological Survey (USGS) regression equations. HEC-1 modeling was used for the basins with the drainage area near or exceeding 0.25 square mile. The basin delineation is shown below in Figure 3.1 and is also included in Appendix F.

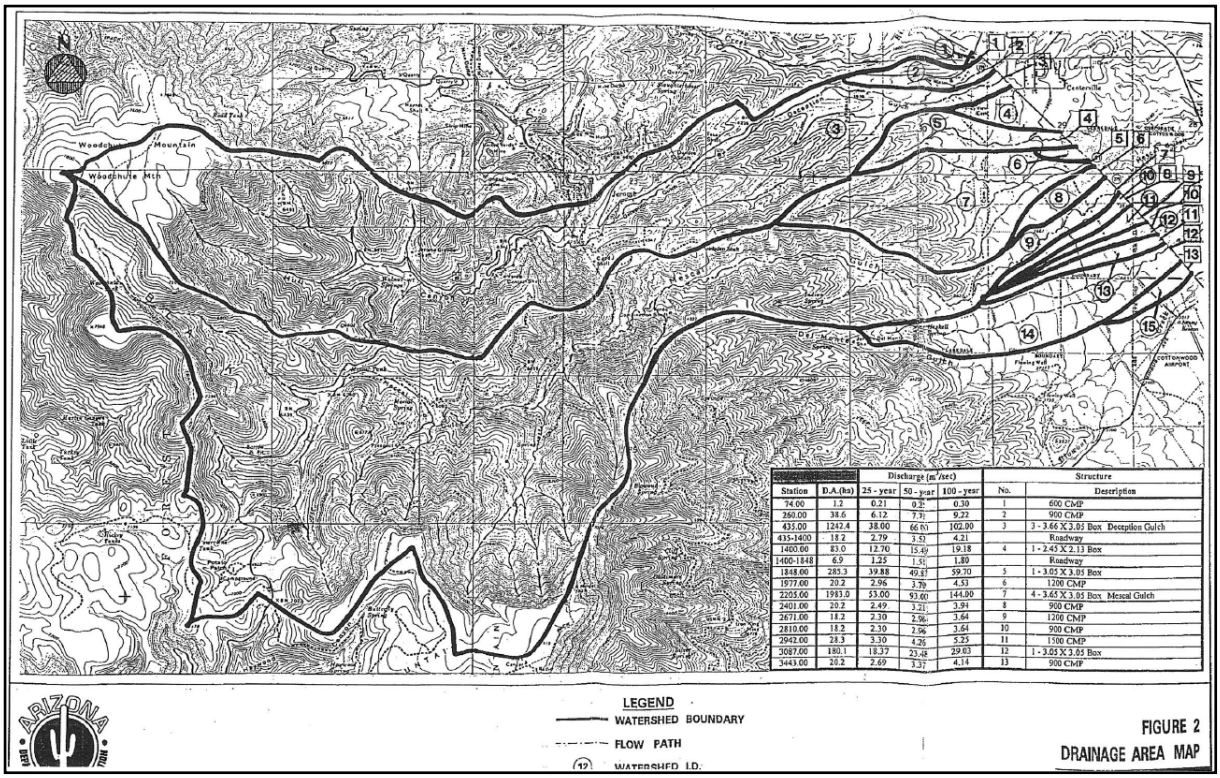
Discharges were reviewed using the current 1997 USGS regression 100-Year discharge equation as shown below, which is outlined in the USGS Southwest Regression manual in Appendix H. Table 3.1 shows the summary of discharges. Column 3 shows the discharges produced in the previous ADOT study. Column 4 shows the discharges used in this hydraulic study produced by Primatech. Column 5 shows discharges produced using the referenced equation which serve as a check. It should be noted that the regression equation has an average standard error of prediction of 39%. The discharges for the larger basins (BE5, BE7, and BE12) differ greatly, which is reasonable because the HEC-1 model is much more detailed than the regression results. The discharges are reasonably similar in the smaller basins.

$$Q_{100(cfs)} = 10^{6.55-3.17(AREA)^{-0.11}}(ELEV/1000)^{-0.454}$$

$AREA = Drainage\ area\ in$ mi^2
$ELEV = Mean\ basin\ elevation\ in\ ft$

1	*2*	*3*	*4*	*5*
		100-Year Discharge		
Culvert	Drainage Area (mi²)	ADOT	Primatech	1997 Regression
BE5	1.10	2108	921	1414
PE6	0.08	160	160	126
BE7	7.66	5085	3020	5089
PE9	0.07	129	128.5	113
PE10	0.07	129	128.5	113
PE11	0.11	185	185	179
BE12	0.70	1025	542	984
PE13	0.08	146	146	126

Table 3.1 – Summary of Discharges



Station	D.A.(ha)	Discharge (m³/sec) 25 - year	50 - year	100 - year	Structure No.	Description
74.00	1.2	0.21	0.25	0.30	1	600 CMP
260.00	38.6	6.12	7.71	9.22	2	900 CMP
435.00	1242.4	38.00	66.61	102.00	3	3 - 3.66 X 2.05 Box Deception Gulch
435-1400	18.2	2.79	3.52	4.21		Roadway
1400.00	83.0	12.70	15.49	19.18	4	1 - 2.45 X 2.13 Box
1400-1848	6.9	1.25	1.51	1.89		Roadway
1848.00	285.3	39.88	49.47	59.70	5	1 - 3.05 X 3.05 Box
1977.00	20.2	2.96	3.79	4.53	6	1200 CMP
2205.00	1983.0	53.00	93.00	144.00	7	4 - 3.65 X 3.05 Box Mescal Gulch
2401.00	20.2	2.49	3.21	3.94	8	900 CMP
2671.00	18.2	2.30	2.96	3.64	9	1200 CMP
2810.00	18.2	2.30	2.96	3.64	10	900 CMP
2942.00	28.3	3.30	4.26	5.25	11	1500 CMP
3087.00	180.1	18.37	23.48	29.03	12	1 - 3.05 X 3.05 Box
3443.00	20.2	2.69	3.37	4.14	13	900 CMP

Figure 3.1 – Basin Delineation

3.2 Study Work Maps

The floodplain delineations are presented at a scale of 1" = 200' with the 1-foot contour interval topography and a rectified aerial photographic background on 24" x 36" sheets. The study work maps are on the North American Vertical Datum of 1988 (NAVD 88) and include: cross-section locations, parcels, floodplain water surface elevations, floodplain boundaries, and road names. The full-size sheet is located in the appendix.

3.3 Parameter Estimation

3.3.1 Roughness Coefficients

Manning's roughness coefficient (n value) describes the friction attributable to the channel, banks, and overbanks areas. The majority of the vegetation in this area is characterized as chaparral. N values for the vegetated areas were varied based on the density of the vegetation. Table 3.2 below shows the n values used.

Landuse	N value
Roadway/Pavement	0.015
Light Vegetation	0.045
Medium Vegetation	0.055
Heavy Vegetation	0.075
Golf Course	0.03
Bare Ground	0.035
Channel	0.045
Small Lot Residential	0.055

Table 3.2 – Manning's n Values

3.3.2 Expansion and Contraction Coefficients

Typical values of 0.3 and 0.1 for areas away from structures (fairly uniform floodplain width) were used for expansion and contraction coefficients. Values of 0.5 and 0.3 were applied for culvert expansions and contractions.

3.4 Cross Section Description

Cross sections were placed at significant locations, including bends in the stream, contraction and expansion regions near culverts, and along any ridgelines transverse to the flow. Cross sections were spaced no farther than 350 ft apart in more uniform regions of channel.

3.5 Modeling Considerations

3.5.1 Hydraulic Jump and Drop Analysis

No significant hydraulic jumps and drops exist within this study reaches.

3.5.2 Bridges and Culverts

The bridge and culvert options within the HEC-RAS program were utilized to model the existing culverts in this study. Eight (8) culverts were modeled in this study, as shown in Table 3.3 below. Refer to the previous Figure 1.1 for culvert locations. The ADOT SR-89A plans are contained in Appendix F

.

Name	Type	Length (ft)	100Yr Flow (cfs)	Upstream Invert (ft)	Downstream Invert (ft)
BE5	1-10'x10' RCBC	168	921	3512.76	3504.42
PE6	1-4' CMP	135	160	3513.04	3508.67
BE7	4-12'x10' RCBC	104	3020	3503.66	3501.66
PE9	1-4' CMP	125	128.5	3498.19	3495.75
PE10	2-3' CMP	175	128.5	3486.84	3482.09
PE11	1-5' CMP	120	185	3482.58	3480.89
BE12	1-10'x10' RCBC	114	542	3474.16	3470.56
PE13	3-3' CMP	107	146	3477.97	3475.83

Table 3.3 – Culvert Summary

3.5.3 Levees and Dikes

No levees are present within the modeling area.

3.5.4 Non-Levee Embankments

No non-levee embankments were modeled in this study.

3.5.5 Islands and Flow Splits

Small islands (dry areas within the floodplain measuring less than one acre and where the ground is less than one foot above the water surface) are included as part of the floodplain.

3.5.6 Ineffective Flow Areas and Blocked Obstructions

Ineffective flow areas were modeled near culvert crossings where flow contracts upstream of the structure and expands downstream of the structure. In these cases, a contraction rate of 1:1 was used upstream of the culvert and an expansion rate of 4:1 was used downstream of the culvert.

Blocked Obstructions were evaluated for the modeling of buildings. No buildings were within flooding limits after the initial modeling, negating the need to model blocked obstructions.

3.5.7 Supercritical Flow

The natural slopes in this project area are naturally steep and supercritical flow does occur. HEC-RAS models were run using a subcritical flow regime.

3.6 Issues Encountered During the Study

Modeling Warning and Error Messages
The HEC-RAS models contain some non-critical warning and error messages. The majority of them are related to the conveyance ratio and velocity head differences between cross sections exceeding the standard HEC-RAS values. These warnings are deemed insignificant since they do not have any impact on the floodplain modeling results.

3.7 Calibration

No hydraulic calibration of the model was performed during this study.

3.8 Final Results

3.8.1 Hydraulic Analysis Results

All culverts along SR-89A pass the 100-year flow. The stream downstream of culvert PE13 overtops and ponds up on the West side of Aposco Ln. The HEC-RAS cross section and profile plots, as well as summary profile tables are included in the Appendix. Figure 3.2 below shows the preliminary floodplain results.

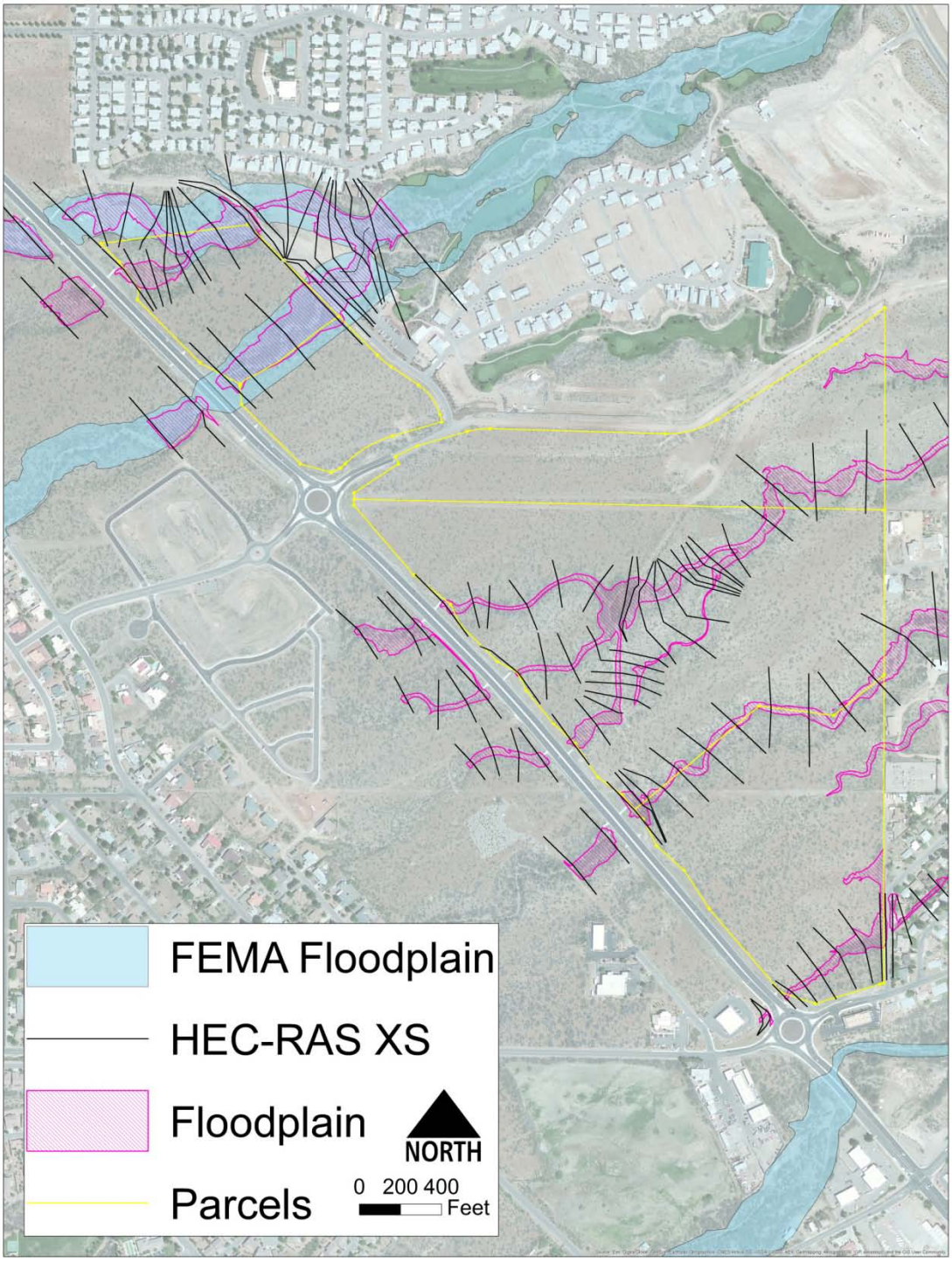


Figure 3.2 – Preliminary Floodplain Results

3.8.2 Verification or Comparison of Results

Mescal Wash is located North of Groseta Ranch Rd. A Letter of Map Revision (LOMR) for Mescal Wash (which flows through culvert BE7) on the west side of SR89A became effective on December 8, 2011. The downstream end of the LOMR intersects with the upstream end of this study. A comparison was done using the effective profile of the wash and is shown below in Figure 3.3. The main reason for these differences is most likely due to the updated topographic mapping.

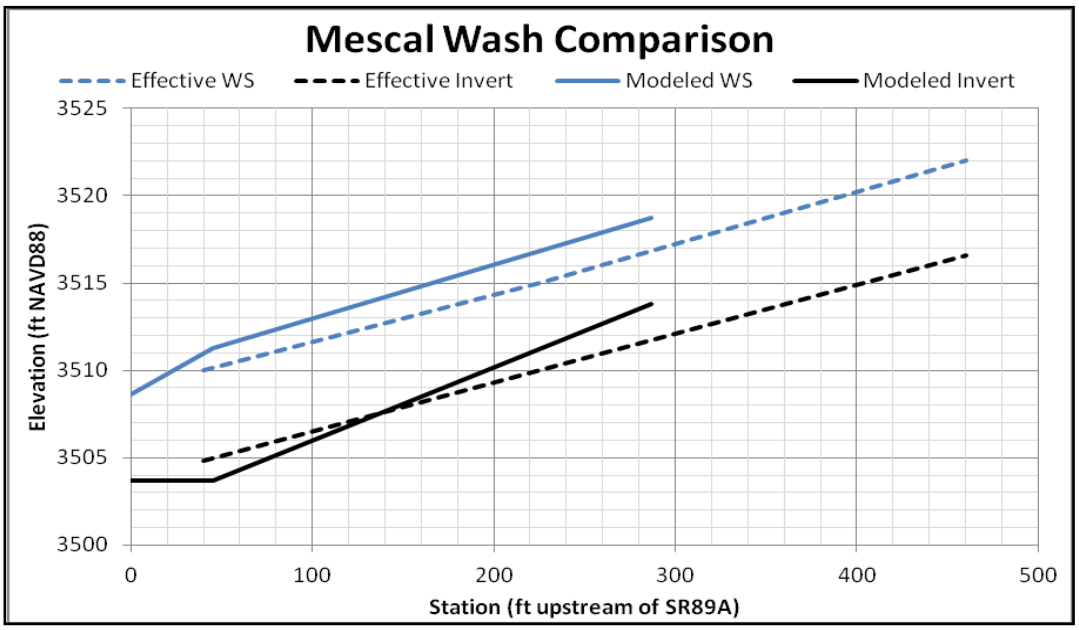


Figure 3.3 – Mescal Wash Water Surface Elevation Comparison

ENGINEERING & TESTING CONSULTANTS INC.

December 28, 2015

Mr. KJ Kasun
Granite Mountain Asset Management
7765 N. Williamson Valley Road
Prescott, Arizona 86305

SUBJECT: PRELIMINARY SUBSURFACE SOIL EXPLORATION FOR GROSETA RANCH ROAD PARCELS, COTTONWOOD, ARIZONA

Dear Mr. Kasun:

Engineering & Testing Consultants, Inc., (ETC) has completed a limited subsurface soil exploration throughout the above referenced properties. The purpose of this exploration was to determine general subsurface soil/rock conditions that may affect site development.

A more detailed description of the subsurface soils encountered by the test borings is shown on the boring logs included in Appendix A.

Site Conditions

The properties are generally located on the north/northwest and south/southeast sides of Groseta Ranch Road, on the east/northeast side of State Route 89A.

Topography typically consists of mildly sloping grades with a moderate amount of brush throughout. However, a large drainage channel is located northwest of Groseta Ranch Road. Our borings on this side of Groseta Ranch were located between the large drainage channel and Groseta Ranch Road.

Subsurface Soil Conditions

ETC performed five exploratory test borings at locations located for us during our site visit by Mr. Michael Foster with Granite Mountain Asset Management.

The subsurface soils encountered typically consist of clayey sand and gravel with varying amounts of cobbles and occasional boulders (Unified Soil Classification SC & GC). The rocky subsurface soils are typically dense to very dense. The upper soils also contain a moderate amount of low to medium plasticity clayey fines.

In Boring B-2, drilled in the north portion of the property on the northwest side of Groseta Ranch Road, southeast of the first large wash. This boring encountered a light brown to white, hard, sandy clay (CL) at a depth of approximately 4 feet, to depths explored, 10 feet. Similar, hard clay soil was also encountered in the east boring, B-3, drilled on the south side of Groseta Ranch, at 2.75 to 6.5 feet depth. The clay soil encountered 2 was hard, and typically low in plasticity.

Bedrock was not encountered by the test borings, to the depths explored, 10 feet below existing grade.

A more detailed description of the subsurface soils encountered by each of the test borings is shown on the boring logs included in Appendix A.

Laboratory

Atterberg limits, gradation, and moisture content laboratory testing was performed for two selected soil samples collected during the field operation. A summary of the laboratory test results is presented below in Table 1. Laboratory testing was performed in accordance with applicable ASTM standards.

As shown in Table 1, the soils tested have a low to medium plasticity. The clay soil from Boring B-2 was tested. However, this more fine-grained soil was only encountered in two of the test borings, B-2 and B-3.

TABLE 1
SUMMARY OF LABORATORY TEST RESULTS

Boring	Depth (feet)	Liquid Limit (percent)	Plasticity Index	Moisture Content (percent)	Fines Content (percent)	Gravel Content (percent)	Unified Soil Classification
B – 1	0 – 3	31	12	5.8	44	19	SC
B – 2	5 – 8	28	8	5.9	58	5	CL

Site Development

As discussed herein, dense to very dense, rocky material was typically encountered throughout the property. Any significant excavations in the dense material will likely require the use of larger equipment, such as excavators and dozers.

Loose soil, which would require over-excavation and compaction prior to fill placement, was not encountered. The soils were found to be medium dense to dense near the surface.

The fine-grained clayey soil encountered by borings B-1 and B-3 will likely may require a somewhat increased pavement structural section for collector roads, where encountered at pavement subgrade elevations.

Due the very dense, rocky material encountered, consideration may be given to utilizing screened fill material within the upper portion of building pads. This would provide more favorable excavation conditions during construction for completion of foundations, plumbing trenches, and other shallow excavations.

The on-site soils encountered will be adequate for use in site grading, provided that larger cobbles and boulders which may limit adequate compaction are removed.

During fill placement, coarse rock shall be adequately distributed to prevent "nesting" of larger rock pieces. An adequate amount of finer material must be mixed with the coarser material to create a dense fill without the creation of voids. Fill material with a large percentage of rock will still require significant water (sluicing) to promote fines migration and provide for long-term stability and a dense fill section.

Limitations

The information provided in this report is only preliminary and not intended for construction. Any contractor reviewing this report must draw his own conclusions regarding site conditions and specific construction techniques to be used on this project.

For your use. Should you have any questions or concerns, please contact us at (928) 778-9001.

Sincerely,

ENGINEERING & TESTING CONSULTANTS, INC.

Expires 09/30/17

Michael P. Wilson, P.E.
Project Engineer

Attachments: Appendix A

cc: ETC File No. 9074

APPENDIX A

FIELD EXPLORATION

LOG OF BORING NO. B-1

ENGINEERING & TESTING CONSULTANTS, INC.

PROJECT: S.R. 89A & Groseta Ranch Road **PROJECT NO.:** 9074
CLIENT: Granite Mountain Asset Management **DATE:** 12-23-2015
LOCATION: S. Area - NW. side of Groseta **ELEVATION:** ---
DRILLER: ETC **LOGGED BY:** MPW
DRILLING METHOD: Continuous Flight Auger

DEPTH (feet)	Description	GROUP SYMBOL	SOIL TYPE	SAMPLERS	TEST RESULTS (Plastic Limit — Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)	Remarks
2	CLAYEY SAND WITH GRAVEL, brown, medium plasticity, some cobbles, occasional boulder, high clayey fines, Medium Dense	SC				
4	CLAYEY GRAVEL WITH SAND, brown, medium plasticity, with cobbles, occasional boulder, Medium Dense to dense	GC				
6	Decreased amount of coarse rock 6' to 9'					
8						
10	Boring terminated at 10 feet depth.					
12						
14						

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

Figure A-4 PAGE 1 of 1

LOG OF BORING NO. B-2

ENGINEERING & TESTING CONSULTANTS, INC.

PROJECT: S.R. 89A & Groseta Ranch Road — **PROJECT NO.:** 9074
CLIENT: Granite Mountain Asset Management — **DATE:** 12-23-2015
LOCATION: N. Area - NW. side of Groseta — **ELEVATION:** ---
DRILLER: ETC — **LOGGED BY:** MPW
DRILLING METHOD: Continuous Flight Auger

DEPTH (feet)	Description	GROUP SYMBOL	SOIL TYPE	SAMPLERS	TEST RESULTS (Plastic Limit ⊢ Water Content - ● Liquid Limit; Penetration - ▨; 10 20 30 40 50)	Remarks
	CLAYEY SAND WITH GRAVEL, brown, medium plasticity, Medium Dense	SC				
2	CLAYEY GRAVEL WITH SAND, light brown to white, some cobbles, occasional boulder, medium plasticity, damp, Medium Dense to dense	GC				
4	SANDY CLAY, light brown to white, low to medium plasticity, Very Stiff to Hard	CL				
6					● ⊢	
8						
10	Boring terminated at 10 feet depth.					
12						
14						

Figure A-5 PAGE 1 of 1

LOG OF BORING NO. B-3

ENGINEERING & TESTING CONSULTANTS, INC.

PROJECT: S.R. 89A & Groseta Ranch Road — **PROJECT NO.:** 9074
CLIENT: Granite Mountain Asset Management — **DATE:** 12-23-2015
LOCATION: E. Area - South side of Groseta — **ELEVATION:** ---
DRILLER: ETC — **LOGGED BY:** MPW
DRILLING METHOD: Continuous Flight Auger

DEPTH (feet)	Description	GROUP SYMBOL	SOIL TYPE	SAMPLERS	TEST RESULTS (Plastic Limit ⊢ Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)	Remarks
0	CLAYEY SAND, brown, moist, medium plasticity, Dense	SC				
2						
4	SANDY CLAY, light brown to white, low to medium plasticity, Very Stiff to Hard	CL				
6	Hard					
8	CLAYEY GRAVEL WITH SAND, light brown, with cobbles, occasional boulder, Very Dense	GC				
10	Boring terminated at 10 feet depth.					
12						
14						

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

Figure A-6 PAGE 1 of 1

LOG OF BORING NO. B-4

ENGINEERING & TESTING CONSULTANTS, INC.

PROJECT: S.R. 89A & Groseta Ranch Road **PROJECT NO.:** 9074
CLIENT: Granite Mountain Asset Management **DATE:** 12-23-2015
LOCATION: S. Area - South side of Groseta **ELEVATION:** ---
DRILLER: ETC **LOGGED BY:** MPW
DRILLING METHOD: Continuous Flight Auger

DEPTH (feet)	Description	GROUP SYMBOL	SOIL TYPE	SAMPLERS	TEST RESULTS (Plastic Limit ⊢ Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)	Remarks
	CLAYEY SAND WITH GRAVEL, reddish-brown, damp-moist, medium plasticity, some cobble, medium to high clayey fines, Medium Dense to Dense	SC				
2						
	Less rock, 2.5'-3.25'					
	CLAYEY GRAVEL WITH SAND, light dark brown, with cobbles, occasional boulder, Dense to Very Dense	GC				
4						
6						
8						
10						
	Boring terminated at 10 feet depth.					
12						
14						

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

Figure A-7 PAGE 1 of 1

LOG OF BORING NO. B-5

ENGINEERING & TESTING CONSULTANTS, INC.

PROJECT: S.R. 89A & Groseta Ranch Road — **PROJECT NO.:** 9074
CLIENT: Granite Mountain Asset Management — **DATE:** 12-23-2015
LOCATION: NW. Area - South side of Groseta — **ELEVATION:** ---
DRILLER: ETC — **LOGGED BY:** MPW
DRILLING METHOD: Continuous Flight Auger

DEPTH (feet)	Description	GROUP SYMBOL	SOIL TYPE	SAMPLERS	TEST RESULTS (Plastic Limit ⊢ Liquid Limit; Water Content - ●; Penetration - ▨; 10 20 30 40 50)	Remarks
	CLAYEY GRAVEL WITH SAND, reddish-brown, damp-moist, medium plasticity, some cobble, occasional boulder, Dense	GC				
2	Light dark brown					
4						
6						
	Medium Dense to Dense					
8						
10	Boring terminated at 10 feet depth.					
12						
14						

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

Figure A-8 PAGE 1 of 1

KEY TO SYMBOLS

Symbol Description

Strata symbols

 Clayey sand

 Clayey gravel

 Low plasticity clay

Soil Samplers

 Bulk sample taken from 4 in. auger

Notes:

1. Exploratory borings were drilled on 12-23-2015 using a 4-inch diameter continuous flight power auger.
2. No free water was observed at the time of drilling.
3. Boring locations were shown to us in the field.
4. These logs are subject to the limitations, conclusions, and recommendations in this report.
5. Results of tests conducted on samples recovered are reported on the logs.