WOOD PATEL

CONCEPTUAL DRAINAGE ASSESSMENT
FOR
SAN TAN VALLEY URBAN CORE L-MPC

January 10, 2025
WP# 235485

EXPIRES 03-31-25

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1.0 INTRODUCTION

The proposed San Tan Valley Urban Core Large Master Plan Community (L-MPC) requests zoning for approximately 3,200-acre site of Arizona State Trust Land.

This Conceptual Drainage Assessment has been prepared in accordance with Wood, Patel & Associates, Inc.'s (WOODPATEL's) understanding of Pinal County's technical requirements for stormwater drainage and collection systems and based on the L-MPC land use plan.

2.0 LOCATION

The L-MPC is located north of Bella Vista Road, east of Hunt Highway, south of Empire Boulevard, and west of Schnepf Road in Pinal County, Arizona within Sections 4, 5, 7, 8, 9, 16, 17 and 18 of Township 3 South, Range 8 East of the Gila and Salt River Base and Meridian, Maricopa County, Arizona. Refer to Exhibit 1 – *Vicinity Map.*

3.0 SITE DESCRIPTION AND PROPOSED DEVELOPMENT

The L-MPC consists of approximately 3,200 acres of Arizona State Trust Land that historically operates as agricultural land. The Union Pacific Railroad bisects the L-MPC with a northwest-southeast alignment. Gantzel Road bisects the L-MPC with a north-south alignment then parallels the Union Pacific Railroad alignment. An existing channel along the northeast side of the railroad conveys offsite stormwater flows to the northwest. Existing culverts are placed along the railroad channel and convey a portion of the offsite stormwater to the west side of the railroad and Gantzel Road. The Skyline Drive alignment bisects the site with an east-west alignment. Skyline Drive's existing improvements terminate before entering the L-MPC and do not cross the railroad. An existing channel along the Skyline Drive alignment conveys offsite stormwater to the west along its historic path. Bella Vista Road borders the south edge of the L-MPC. Sonoqui Wash enters the L-MPC near the intersection of Bella Vista Road and Gantzel Road. Sonoqui Wash crosses Bella Vista Road and Gantzel Road, continues along its historic path through the L-MPC and outfalls at Skyline Drive at Skyline Ranch. An existing utility corridor bisects the site with a north-south alignment on the west side of Gantzel Road. Refer to Exhibit 4 – *Conceptual Channel and Flow Exhibit* for additional detailed information.

The proposed roadway network for the L-MPC includes connecting Skyline Drive through the L-MPC assuming an overpass railroad crossing and a new road connecting Hunt Highway to Gantzel Road. Refer to Exhibit 5 – *L-MPC Land Use Plan and Conceptual Transportation Framework Plan* for the proposed roadway system. The limits of the proposed development areas were created based on many factors such as site constraints and development area size. See Exhibit 5 - *L-MPC Land Use Plan and Conceptual Transportation Framework Plan* for the limits of the nine (9) development areas established. Each of the development areas and site constraints were considered in layout of drainage channels and calculations of onsite retention requirements. Proposed drainage corridors are designed to convey offsite flows through the L-MPC and outfall at the historic location(s). Drainage corridors were placed adjacent to proposed roadways, existing utility corridors and the railroad alignment to optimize the developable land. See Exhibit 4 – *Conceptual Channel and Flow Exhibit*. Development area boundaries, interior road alignment and drainage channel alignment revisions may be necessary for the best performance of the drainage and transportations systems and shall be allowed.

4.0 FEMA FLOODPLAIN CLASSIFICATION

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map, Map Number 04021C0475E, dated December 4th, 2007, the Site is located within Zone "X". Refer to Exhibit 2 - *FEMA FIRM*.

Zone "X" shaded is defined by FEMA as follows:

> *"Area of 0.2% annual chance flood; areas of 1% annual chance flood with average depths less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood".*

5.0 OFFSITE DRAINAGE

5.1 Background

The L-MPC currently receives offsite flows from Sonoqui Wash, Johnson Ranch, and drainage channels along the Union Pacific Railroad and Skyline Drive. Offsite flows pass through the L-MPC and exit at historic outfall locations.

5.2 Pre-Development Offsite Drainage

WOODPATEL completed an assessment of the existing conditions using published drainage reports of the surrounding areas. Using published data, offsite flows entering the L-MPC were determined to be 2,066 cubic feet-per-second (cfs) where Sonoqui Wash crosses Bella Vista Road to the south (*Sonoqui Wash Final Drainage Report, Atwell, LLC. page 3*), 1,465 cfs exiting the Johnson Ranch community to the southwest (*Master Drainage Report for Johnson Ranch, Wood, Patel & Associates, Inc. Page 3)*, 1,064 cfs on the northeast side of the Union Pacific Railroad (*Master Drainage Report for Bella Vista Farms, Wood Patel & Associates, Inc. Plate 9)*, 329 cfs from a drainage structure north of the Poston Butte High School (*Master Drainage Report for Bella Vista Farms, Wood Patel & Associates, Inc. Plate 9 and Poston Butte High School Flood Mitigation Alternatives Design Concept Report, Stanley Consultants, Inc. Page 2)*, and 1,165 cfs at Skyline Drive to the east (*Master Drainage Report for Bella Vista Farms, Wood Patel & Associates, Inc. Plate 9)*. Historical outfalls downstream of the L-MPC were designed to accept 2,134 cfs where Sonoqui Wash enters Skyline Ranch at Skyline Road (*Sanokai Wash Analysis, Erie & Associates, Page 6),* and 243 cfs at a drainage channel through Circle Cross Ranch (*Circle Cross Ranch Parcel 9, JMI & Associates, Inc. Page 2).* See Appendix B – *Drainage Report Excerpts.*

Each of the offsite drainage sources show varying timing of impact to the L-MPC leading to the post-development offsite drainage approach of channel sizing based on the largest upstream offsite drainage flows. See Exhibit 4 – *Conceptual Channel and Flow Exhibit.*

5.3 Post-Development Offsite Drainage

Offsite runoff upstream of the L-MPC will be directed to proposed drainage channels that convey the flow through the site and outfall at the historic location(s).

Offsite stormwater runoff from Sonoqui Wash will be captured in Channel H directed through a portion of Development Area 9 to the historic outfall at Gantzel Road. Sonoqui Wash continues offsite and re-enters the L-MPC along the southern border. Channel A captures the offsite flows from Sonoqui Wash and continues the flows to the historic outfall location through a series of drainage channels.

Offsite stormwater runoff from the Johnson Ranch community is captured in Channel B and continues the flows to the historic outfall location through a series of drainage channels.

Offsite stormwater from the Poston Butte High School crossing Gantzel Road via a box culvert will be captured by Channel I and continue the flows to the historic outfall location through a series of drainage channels. The box culvert crossing Gantzel Road for the Poston Butte High School offsite stormwater flows has not been constructed at the time of this assessment.

Offsite stormwater runoff for the channel along the east side of the Union Pacific Railroad is captured in Channel K and follows the historic path along the railroad. Offsite stormwater runoff for the channel along the Skyline Drive alignment is captured in Channel L and follows the historic path along the alignment. Channels K and L converge at the intersection of the Union Pacific Railroad and Skyline Drive alignment. Existing culverts along the railroad direct portions of the flow from Channel K to the west side of the railroad and Gantzel Road. Channels D, F, and J capture the offsite flows from the culvert crossings and continues the flows to the historic outfall location through a series of drainage channels.

Drainage channels were generally placed adjacent to the road rights-of-way of the L-MPC transportation system and existing utility corridors to optimize developable land. Drainage channels will cross the road right-of-way via culvert crossings designed to accommodate 100-year storm events. All properties are required to have all weather access per the Pinal County Drainage Ordinance.

Portions of Channels A, M, C, E, and G alignments parallel the existing Western Area Power Administration (WAPA) transmission corridor. Addition coordination with WAPA will be required to determine easement restrictions and access requirements. See Exhibit 4 – *Conceptual Channel and Flow Exhibit.*

Flowmaster was utilized to determine the required cross-sections for the channels. All channels were designed as earthen channels, with 4:1 side slopes and 1-foot of freeboard. Design slopes were chosen based on existing site conditions. Refer to Appendix A – *Hydrology Calculations* and Exhibit 4 – *Conceptual Channel and Flow Exhibit.*

6.0 ONSITE DRAINAGE

Onsite drainage has been evaluated to retain the stormwater runoff for the various development areas. Fourteen (14) drainage basins are identified for onsite retention. Onsite at-grade retention basins are assumed to have a maximum water depth of 3-feet with 1-foot of freeboard and will retain stormwater runoff for the drainage areas.

Onsite retention basins have been strategically placed at the low side of the development areas to optimize the design. Development Area stormwater runoff, greater than the design storm, would outfall to an adjacent drainage channel or to an adjacent road right-of-way and subsequently to an adjacent drainage channel. Development Area 1 would outfall to either the existing Encanterra channel along the Hash Knife Draw Road alignment or to the Union Pacific Railroad channel. The retention system has been evaluated to retain the 100-year, 2-hour rainfall event. Refer to Exhibit 3 –*Conceptual Retention Exhibit* for the drainage retention system.

7.0 RETENTION REQUIREMENTS

The L-MPC is required to retain stormwater for the 100-year, 2-hour event. Stormwater retention requirement we evaluated per development area. The method used to calculate required runoff for this method is as follows:

Retention Volume Required = (C) (D) (A)/12

C = coefficient of runoff
D = rainfall depth in inches, for the 100-year, 2-hour event per NOAA Atlas 14
A = drainage area, in acres

Onsite retention will be provided by fourteen (14) retention basins.
Refer to Appendix A – *Hydrology Calculations* for retention requirement calculations.

8.0 CONCLUSIONS

Based on our analysis of the L-MPC, the following conclusions can be made:

1. The proposed L-MPC lies within a FEMA designated “Other Flood Areas” Zone “X” shaded. Per the FEMA map (Panel 04021C0475E), the FIRM information is as follows:

   “Area of 0.2% annual chance flood; areas of 1% annual chance flood with average depths less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood”.

2. Offsite flows will be accepted at historical locations and conveyed toward the historical outfall through earthen channels and spreader basins. Offsite drainage infrastructure will be designed for the 100-year storm event and include 1-foot freeboard as required by Pinal County.

3. The onsite retention was designed to retain the 100-year, 2-hour storm runoff.

4. Onsite drainage has been evaluated to retain the stormwater runoff for the various development areas. fourteen (14) drainage basins are identified for onsite retention. Onsite at-grade retention basins are assumed to have a maximum water depth of 3-feet with 1-foot freeboard and will retail stormwater runoff for the drainage areas.

5. Onsite and offsite stormwater infrastructure design will conform to the Pinal County Drainage Manual and comply with the Pinal County Drainage Ordinance.

9.0 REFERENCES

1. *Pinal County Drainage Manual, Design Criteria, Volume I, Pinal County (2004)*
2. *Pinal County Drainage Manual, Design Methodology and Procedures, Volume II, Pinal County (2004)*
3. *Drainage Design Manual, Hydrology, Edition 4, Flood Control District of Maricopa County (2013).*
4. *Drainage Design Manual, Hydraulic, Edition 4, Flood Control District of Maricopa County, (2013).*
5. *Circle Cross Ranch Phase II Collector Roads, JMI & Associates, Inc. (2004).*
6. *Final Drainage Report for Circle Cross Ranch, Parcel 9, JMI & Associates, Inc. (2004).*
7. *Master Drainage Report for Bella Vista Farms, Wood, Patel & Associates, Inc. (2013).*
8. *Technical Memorandum Report for Bella Vista – Flood Investigation and Peak Flow Determination, Je Fuller Hydrology & Geomorphology (2010).*
9. *Poston Butte High School Flood Mitigation Alternatives Design Concept Report, Stanley Consultants Inc. (2022).*
10. *Technical Memorandum – Drainage Mitigation Alternatives, Engineering and Environmental Consultants, Inc. (2013).*
11. *Drainage Report for Sierra Vista Ward LDS Church, D & M Engineering (2016).*
12. *Sonoqui Wash Final Drainage Report, Atwell, LLC. (2016).*
13. *Final Drainage Report for Bella Camino, Coe & Van Loo Consultants, Inc. (2021).*
14. *Master Drainage Report for Johnson Ranch, Wood, Patel & Associates, Inc. (2006).*
15. *Drainage Report – New Florence High School – Florence Unified School District, Bogardus Engineering, LLC (2008).*
16. *Sanokai Wash Hydrologic / Hydraulic Master Plan, Erie & Associates, Inc. (2003).*
17. *Gantzel road Phase D-1 Bella Vista Road to Omega Drive Drainage Study, T.Y.Lin International (2014).*
18. *Master Drainage report for Shea Homes at Johnson Farms, Coe & Van Loo Consultants, Inc. (2013).*

APPENDIX A – HYDROLOGY CALCULATIONS

WOOD PATEL

SITE I-D-F CURVE

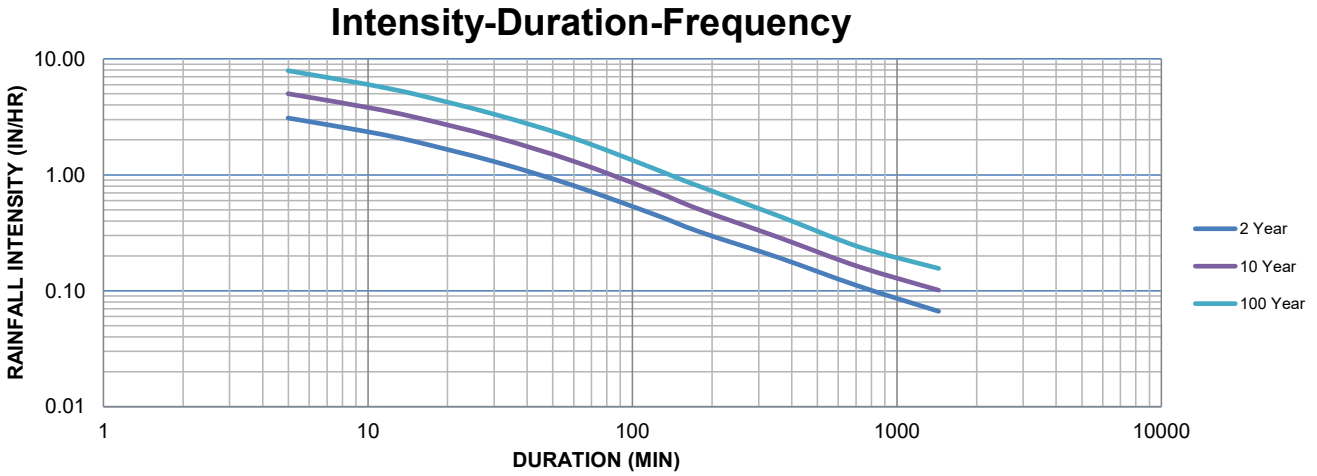
Project	San Tan Valley Urban Core L-MPC
Location	San Tan Valley, AZ
Project Number	235485
Project Engineer	Reece Heinle, EIT
References	NOAA Atlas 14

RAINFALL DEPTHS, INCHES

Duration	Average Reccurence Interval (years)					
	2	5	10	25	50	100
5-min	0.257	0.348	0.417	0.511	0.584	0.658
10-min	0.391	0.529	0.634	0.778	0.889	1.00
15-min	0.484	0.655	0.786	0.964	1.10	1.24
30-min	0.651	0.883	1.06	1.30	1.48	1.67
60-min	0.806	1.09	1.31	1.61	1.84	2.07
2-hr	0.917	1.22	1.46	1.77	2.02	2.27
3-hr	0.963	1.26	1.50	1.84	2.10	2.37
6-hr	1.15	1.47	1.72	2.07	2.34	2.63
12-hr	1.31	1.66	1.93	2.30	2.58	2.87
24-hr	1.60	2.05	2.42	2.92	3.31	3.73

RAINFALL INTENSITY, INCHES/HOUR

Duration minutes	Frequency, years					
	2	5	10	25	50	100
5	3.08	4.18	5.00	6.13	7.01	7.90
10	2.35	3.17	3.80	4.67	5.33	6.00
15	1.94	2.62	3.14	3.86	4.40	4.96
30	1.30	1.77	2.12	2.60	2.96	3.34
60	0.81	1.09	1.31	1.61	1.84	2.07
120	0.46	0.61	0.73	0.89	1.01	1.14
180	0.32	0.42	0.50	0.61	0.70	0.79
360	0.19	0.25	0.29	0.35	0.39	0.44
720	0.11	0.14	0.16	0.19	0.22	0.24
1440	0.07	0.09	0.10	0.12	0.14	0.16



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COMPOSITE WEIGHTED "C" FACTOR CALCULATIONS
100 YEAR

Project San Tan Valley Urban Core L-MPC
Location San Tan Valley, AZ
Project Number 235485
Project Engineer Reece Heinle, EIT

Drainage Subbasin ID	Area	Multifamily Residential		Medium Density Residential		Desert Landscaping		Commercial		100 YR Runoff Coefficient
(Description/ID)	(Acres)	%	"C"	%	"C"	%	"C"	%	"C"	"C"
Development Area 1	410	0	0.94	80	0.82	18	0.50	2	0.95	**0.68**
Development Area 2	281	0	0.94	80	0.82	18	0.50	2	0.95	**0.77**
Development Area 3	382	0	0.94	80	0.82	18	0.50	2	0.95	**0.77**
Development Area 4	619	41	0.94	0	0.82	18	0.50	41	0.95	**0.86**
Development Area 5	241	20	0.94	0	0.82	18	0.50	62	0.95	**0.87**
Development Area 6	392	0	0.94	0	0.82	18	0.50	82	0.95	**0.87**
Development Area 7	314	0	0.94	80	0.82	18	0.50	2	0.95	**0.77**
Development Area 8	239	0	0.94	80	0.82	18	0.50	2	0.95	**0.77**
Development Area 9	304	0	0.94	80	0.82	18	0.50	2	0.95	**0.77**

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RETENTION BASIN VOLUMES
100 YEAR, 2-HOUR VOLUME

Project San Tan Valley Urban Core L-MPC
Location San Tan Valley, AZ
Project Number 235485
Project Engineer Reece Heinle, EIT

2.27 inches

Drainage Subbasin ID	Drainage Area "A" (Acres)	Weighted Runoff Coefficient "C"	Required Retention AF	Basin Name	Basin Depth* FT	Surface Area Required Acre	Provided Retention AF
Development Area 1	410	0.68	52.35	1	4	23.13	52.35
Development Area 2	281	0.77	40.66	2	4	18.00	40.66
Development Area 3	382	0.77	55.28	3	4	24.41	55.28
Development Area 4	619	0.86	101.27	4.1, 4.2	4	44.54	101.27
Development Area 5	241	0.87	39.53	5.1, 5.2, 5.3	4	17.50	39.53
Development Area 6	392	0.87	64.44	6	4	28.42	64.44
Development Area 7	314	0.77	45.44	7.1, 7.2	4	20.10	45.44
Development Area 8	239	0.77	34.59	8.1, 8.2	4	15.34	34.59
Development Area 9	304	0.77	43.99	9	4	19.46	43.99
TOTAL	3182		477.55			211	478

* Basin depth includes 1-foot freeboard

Calculated Values

Required Retention = Vrequired = (P/12)*C*A
Weighted "C" = ((A1*C1)+(A2*C2))/(A1+A2)

Worksheet for CHANNEL A

Project Description	
Friction Method	Manning Formula
Solve For	Bottom Width

Input Data	
Roughness Coefficient	0.035
Channel Slope	0.001 ft/ft
Normal Depth	72.0 in
Left Side Slope	4.000 H:V
Right Side Slope	4.000 H:V
Discharge	2,066.00 cfs

Results	
Bottom Width	90.63 ft
Flow Area	687.8 ft²
Wetted Perimeter	140.1 ft
Hydraulic Radius	58.9 in
Top Width	138.63 ft
Critical Depth	29.2 in
Critical Slope	0.014 ft/ft
Velocity	3.00 ft/s
Velocity Head	0.14 ft
Specific Energy	6.14 ft
Froude Number	0.238
Flow Type	Subcritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	0.00 ft/s
Upstream Velocity	0.00 ft/s
Normal Depth	72.0 in
Critical Depth	29.2 in
Channel Slope	0.001 ft/ft
Critical Slope	0.014 ft/ft

Worksheet for CHANNEL B

Project Description	
Friction Method	Manning Formula
Solve For	Bottom Width

Input Data	
Roughness Coefficient	0.035
Channel Slope	0.005 ft/ft
Normal Depth	72.0 in
Left Side Slope	4.000 H:V
Right Side Slope	4.000 H:V
Discharge	1,456.00 cfs

Results	
Bottom Width	11.20 ft
Flow Area	211.2 ft²
Wetted Perimeter	60.7 ft
Hydraulic Radius	41.8 in
Top Width	59.20 ft
Critical Depth	58.3 in
Critical Slope	0.013 ft/ft
Velocity	6.89 ft/s
Velocity Head	0.74 ft
Specific Energy	6.74 ft
Froude Number	0.644
Flow Type	Subcritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	0.00 ft/s
Upstream Velocity	0.00 ft/s
Normal Depth	72.0 in
Critical Depth	58.3 in
Channel Slope	0.005 ft/ft
Critical Slope	0.013 ft/ft

Worksheet for CHANNEL C

Project Description	
Friction Method	Manning Formula
Solve For	Bottom Width

Input Data	
Roughness Coefficient	0.035
Channel Slope	0.001 ft/ft
Normal Depth	72.0 in
Left Side Slope	4.000 H:V
Right Side Slope	4.000 H:V
Discharge	2,066.00 cfs

Results	
Bottom Width	67.50 ft
Flow Area	549.0 ft²
Wetted Perimeter	117.0 ft
Hydraulic Radius	56.3 in
Top Width	115.50 ft
Critical Depth	34.8 in
Critical Slope	0.013 ft/ft
Velocity	3.76 ft/s
Velocity Head	0.22 ft
Specific Energy	6.22 ft
Froude Number	0.304
Flow Type	Subcritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	0.00 ft/s
Upstream Velocity	0.00 ft/s
Normal Depth	72.0 in
Critical Depth	34.8 in
Channel Slope	0.001 ft/ft
Critical Slope	0.013 ft/ft

Worksheet for CHANNEL D

Project Description	
Friction Method	Manning Formula
Solve For	Bottom Width

Input Data	
Roughness Coefficient	0.035
Channel Slope	0.001 ft/ft
Normal Depth	36.0 in
Left Side Slope	4.000 H:V
Right Side Slope	4.000 H:V
Discharge	145.00 cfs

Results	
Bottom Width	11.18 ft
Flow Area	69.5 ft²
Wetted Perimeter	35.9 ft
Hydraulic Radius	23.2 in
Top Width	35.18 ft
Critical Depth	17.4 in
Critical Slope	0.018 ft/ft
Velocity	2.09 ft/s
Velocity Head	0.07 ft
Specific Energy	3.07 ft
Froude Number	0.262
Flow Type	Subcritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	0.00 ft/s
Upstream Velocity	0.00 ft/s
Normal Depth	36.0 in
Critical Depth	17.4 in
Channel Slope	0.001 ft/ft
Critical Slope	0.018 ft/ft

Worksheet for CHANNEL E

Project Description	
Friction Method	Manning Formula
Solve For	Bottom Width

Input Data	
Roughness Coefficient	0.035
Channel Slope	0.002 ft/ft
Normal Depth	72.0 in
Left Side Slope	4.000 H:V
Right Side Slope	4.000 H:V
Discharge	2,066.00 cfs

Results	
Bottom Width	43.92 ft
Flow Area	407.5 ft²
Wetted Perimeter	93.4 ft
Hydraulic Radius	52.4 in
Top Width	91.92 ft
Critical Depth	43.7 in
Critical Slope	0.013 ft/ft
Velocity	5.07 ft/s
Velocity Head	0.40 ft
Specific Energy	6.40 ft
Froude Number	0.424
Flow Type	Subcritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	0.00 ft/s
Upstream Velocity	0.00 ft/s
Normal Depth	72.0 in
Critical Depth	43.7 in
Channel Slope	0.002 ft/ft
Critical Slope	0.013 ft/ft

Worksheet for CHANNEL F

Project Description	
Friction Method	Manning Formula
Solve For	Bottom Width

Input Data	
Roughness Coefficient	0.035
Channel Slope	0.005 ft/ft
Normal Depth	24.0 in
Left Side Slope	4.000 H:V
Right Side Slope	4.000 H:V
Discharge	124.00 cfs

Results	
Bottom Width	9.04 ft
Flow Area	34.1 ft²
Wetted Perimeter	25.5 ft
Hydraulic Radius	16.0 in
Top Width	25.04 ft
Critical Depth	17.4 in
Critical Slope	0.018 ft/ft
Velocity	3.64 ft/s
Velocity Head	0.21 ft
Specific Energy	2.21 ft
Froude Number	0.550
Flow Type	Subcritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	0.00 ft/s
Upstream Velocity	0.00 ft/s
Normal Depth	24.0 in
Critical Depth	17.4 in
Channel Slope	0.005 ft/ft
Critical Slope	0.018 ft/ft

Worksheet for CHANNEL G

Project Description	
Friction Method	Manning Formula
Solve For	Bottom Width

Input Data	
Roughness Coefficient	0.035
Channel Slope	0.001 ft/ft
Normal Depth	72.0 in
Left Side Slope	4.000 H:V
Right Side Slope	4.000 H:V
Discharge	2,066.00 cfs

Results	
Bottom Width	67.50 ft
Flow Area	549.0 ft²
Wetted Perimeter	117.0 ft
Hydraulic Radius	56.3 in
Top Width	115.50 ft
Critical Depth	34.8 in
Critical Slope	0.013 ft/ft
Velocity	3.76 ft/s
Velocity Head	0.22 ft
Specific Energy	6.22 ft
Froude Number	0.304
Flow Type	Subcritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	0.00 ft/s
Upstream Velocity	0.00 ft/s
Normal Depth	72.0 in
Critical Depth	34.8 in
Channel Slope	0.001 ft/ft
Critical Slope	0.013 ft/ft

Worksheet for CHANNEL H

Project Description	
Friction Method	Manning Formula
Solve For	Bottom Width

Input Data	
Roughness Coefficient	0.035
Channel Slope	0.002 ft/ft
Normal Depth	72.0 in
Left Side Slope	4.000 H:V
Right Side Slope	4.000 H:V
Discharge	2,066.00 cfs

Results	
Bottom Width	48.77 ft
Flow Area	436.6 ft²
Wetted Perimeter	98.3 ft
Hydraulic Radius	53.3 in
Top Width	96.77 ft
Critical Depth	41.5 in
Critical Slope	0.013 ft/ft
Velocity	4.73 ft/s
Velocity Head	0.35 ft
Specific Energy	6.35 ft
Froude Number	0.393
Flow Type	Subcritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	0.00 ft/s
Upstream Velocity	0.00 ft/s
Normal Depth	72.0 in
Critical Depth	41.5 in
Channel Slope	0.002 ft/ft
Critical Slope	0.013 ft/ft

Worksheet for CHANNEL I

Project Description	
Friction Method	Manning Formula
Solve For	Bottom Width

Input Data	
Roughness Coefficient	0.035
Channel Slope	0.001 ft/ft
Normal Depth	48.0 in
Left Side Slope	4.000 H:V
Right Side Slope	4.000 H:V
Discharge	329.00 cfs

Results	
Bottom Width	21.32 ft
Flow Area	149.3 ft²
Wetted Perimeter	54.3 ft
Hydraulic Radius	33.0 in
Top Width	53.32 ft
Critical Depth	20.9 in
Critical Slope	0.016 ft/ft
Velocity	2.20 ft/s
Velocity Head	0.08 ft
Specific Energy	4.08 ft
Froude Number	0.232
Flow Type	Subcritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	0.00 ft/s
Upstream Velocity	0.00 ft/s
Normal Depth	48.0 in
Critical Depth	20.9 in
Channel Slope	0.001 ft/ft
Critical Slope	0.016 ft/ft

Worksheet for CHANNEL J

Project Description	
Friction Method	Manning Formula
Solve For	Bottom Width

Input Data	
Roughness Coefficient	0.035
Channel Slope	0.002 ft/ft
Normal Depth	48.0 in
Left Side Slope	4.000 H:V
Right Side Slope	4.000 H:V
Discharge	237.00 cfs

Results	
Bottom Width	2.29 ft
Flow Area	73.2 ft²
Wetted Perimeter	35.3 ft
Hydraulic Radius	24.9 in
Top Width	34.29 ft
Critical Depth	32.0 in
Critical Slope	0.016 ft/ft
Velocity	3.24 ft/s
Velocity Head	0.16 ft
Specific Energy	4.16 ft
Froude Number	0.391
Flow Type	Subcritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	0.00 ft/s
Upstream Velocity	0.00 ft/s
Normal Depth	48.0 in
Critical Depth	32.0 in
Channel Slope	0.002 ft/ft
Critical Slope	0.016 ft/ft

Worksheet for CHANNEL K

Project Description	
Friction Method	Manning Formula
Solve For	Bottom Width

Input Data	
Roughness Coefficient	0.035
Channel Slope	0.001 ft/ft
Normal Depth	72.0 in
Left Side Slope	4.000 H:V
Right Side Slope	4.000 H:V
Discharge	1,064.00 cfs

Results	
Bottom Width	28.15 ft
Flow Area	312.9 ft²
Wetted Perimeter	77.6 ft
Hydraulic Radius	48.4 in
Top Width	76.15 ft
Critical Depth	36.5 in
Critical Slope	0.014 ft/ft
Velocity	3.40 ft/s
Velocity Head	0.18 ft
Specific Energy	6.18 ft
Froude Number	0.296
Flow Type	Subcritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	0.00 ft/s
Upstream Velocity	0.00 ft/s
Normal Depth	72.0 in
Critical Depth	36.5 in
Channel Slope	0.001 ft/ft
Critical Slope	0.014 ft/ft

Worksheet for CHANNEL L

Project Description	
Friction Method	Manning Formula
Solve For	Bottom Width

Input Data	
Roughness Coefficient	0.035
Channel Slope	0.003 ft/ft
Normal Depth	72.0 in
Left Side Slope	4.000 H:V
Right Side Slope	4.000 H:V
Discharge	1,216.00 cfs

Results	
Bottom Width	13.34 ft
Flow Area	224.0 ft²
Wetted Perimeter	62.8 ft
Hydraulic Radius	42.8 in
Top Width	61.34 ft
Critical Depth	51.2 in
Critical Slope	0.013 ft/ft
Velocity	5.43 ft/s
Velocity Head	0.46 ft
Specific Energy	6.46 ft
Froude Number	0.501
Flow Type	Subcritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	0.00 ft/s
Upstream Velocity	0.00 ft/s
Normal Depth	72.0 in
Critical Depth	51.2 in
Channel Slope	0.003 ft/ft
Critical Slope	0.013 ft/ft

Worksheet for CHANNEL M

Project Description	
Friction Method	Manning Formula
Solve For	Bottom Width

Input Data	
Roughness Coefficient	0.035
Channel Slope	0.001 ft/ft
Normal Depth	72.0 in
Left Side Slope	4.000 H:V
Right Side Slope	4.000 H:V
Discharge	2,066.00 cfs

Results	
Bottom Width	57.65 ft
Flow Area	489.9 ft²
Wetted Perimeter	107.1 ft
Hydraulic Radius	54.9 in
Top Width	105.65 ft
Critical Depth	38.0 in
Critical Slope	0.013 ft/ft
Velocity	4.22 ft/s
Velocity Head	0.28 ft
Specific Energy	6.28 ft
Froude Number	0.345
Flow Type	Subcritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	0.00 ft/s
Upstream Velocity	0.00 ft/s
Normal Depth	72.0 in
Critical Depth	38.0 in
Channel Slope	0.001 ft/ft
Critical Slope	0.013 ft/ft

APPENDIX B – DRAINAGE REPORT EXCERPTS

Sonoqui Wash
Final Drainage Report
Job No. 16000308

DRAINAGE
CLEARANCE
1998 DRAINAGE ORDINANCE
Scott Elmer 1/6/2017
COUNTY ENGINEER DATE

Prepared for

Sketch Architecture
2454 E. Southern Ave, Suite 110
Mesa, Arizona,85204

Prepared by

Atwell, LLC
4700 E Southern Avenue
Mesa, Arizona 85206

Registered Professional Engineer (Civil)
CERTIFICATE NO.
54619
SCOTT R.
BALDWIN
DATE SIGNED 11-15-16
ARIZONA U.S.A.

EXPIRES 6-30-2019

November, 2016

ATWELL

FINAL DRAINAGE REPORT FOR SONOQUI WASH

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EXPIRES 6-30-2019

4.2 HEC-HMS Model

A HEC-HMS hydrologic model was created by JMI for the Rancho Bella Vista South development to define the offsite design discharges for that site. Exhibit 1 and Appendix C of the RBVS report show the offsite watershed exhibit and a complete summary of parameters used in the model. According to that report, the total contributing drainage area of the Sonoqui Wash at Bella Vista Road was defined at 10,239 acres per USGS Quadrangle maps. The results of the HEC-HMS model by JMI show a predeveloped 100-yr, 24-hr peak discharge of 2,066 cfs of the Sonoqui Wash at Bella Vista Road.

This discharge will cross the farmland just north of Bella Vista Road and eventually cross Gantzel Road. Large portions of these off-site flows will cross the northeasterly corner of Bella Camino. There is an existing 24" pipe under Gantzel that establishes where this offsite flow crosses Gantzel Road. The 24" pipe conveys the lesser flows and bleed-off from RBVS. The remainder of the larger flows will cross over Gantzel Road; enter the Bella Camino site and also discharge into the roadway ditches on both sides of Gantzel Road. Portions of this flow will remain in the Gantzel Road right of way and continue north and not affect Bella Camino. However, the Sonoqui Wash is designed to be capable of accepting all the upstream flows, and convey them through the site and discharge them in their historic condition.

4.3 Offsite Watersheds Along Railroad Track

According to the Rancho Bella Vista South Report, large culvert structures or trestles were not found across the railroad tracks, adjacent to that site. However, there is a pipe that crosses under the railroad immediately adjacent to RBVS that was not accounted for. The effects of this pipe are being evaluated by Pinal County. Please refer to the Ranch Bella Vista Investigation Mitigation: Phase 3 Design Concept. The impact of that additional off-site flow is not expected to have any significant effect on the peak flows crossing Bella Vista Road at the Sonoqui Wash.

4.4 Offsite Watershed Effecting the Site

The drainage conditions that surround the site consist of various offsite storm water flows. The existing developments to the south and west control their storm water and have no significant effect on the site. The farm fields to the north flow away from the site and also do not affect the site. However, the offsite flows from the southeast consist primarily of the storm water flows that develop in the Sonoqui Wash alignment and its tributary areas.

Sanokai Wash
Hydrologic/Hydraulic Master Plan

For Submittal to:

Pinal County Public Works Department

COPY

Prepared for:

Beazer Homes,

Dave LeSueur & Associates,

and

El Dorado Holdings

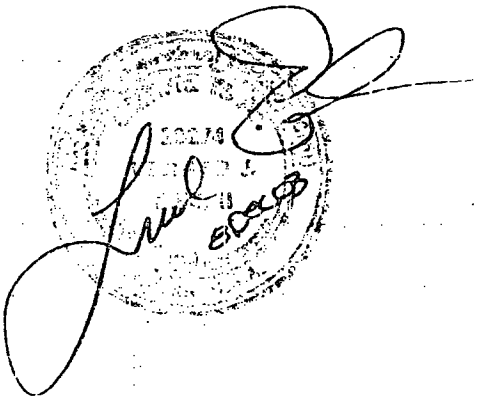
Prepared by:

Erie & Associates, Inc.

3120 N. 24th St.

Phoenix, AZ 85016

602-954-6399



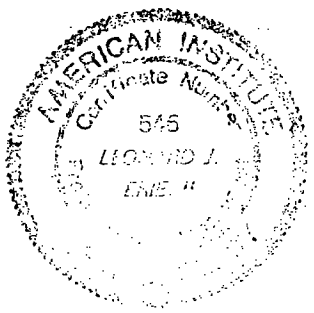
EA# 1802.01

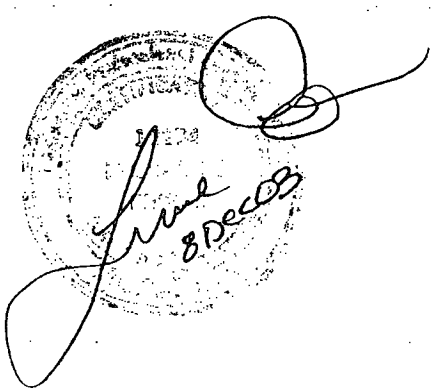
November 4, 2003

2197

Erie & Associates, Inc.
CONSULTING ENGINEERS
3120 N. 24th St. / Phoenix, Arizona 85016 / (602) 954-6399

1. 0 Table of Contents **Page**





2.0 List of Plates & Tables

parameters are summarized in *Table 4* and the Green and Ampt parameters are in *Table 5*. The 100-year peak at Skyline with this model is calculated at 2,134 cfs.

4.4 Fully Developed Conditions Hydrology (Option 2 no channel storage)

The possible future conditions hydrology model (option 2) is a modification of the option 1 model. The option 2 model uses fully developed land use conditions, and also models the possible future channelization of this tributary. This model uses narrower routing sections with lower Manning's n values than were used in the existing conditions model or option 1 model to simulate a typical channelization to carry the flows without extra capacity for channel storage. The routing sections were sized for conveyance only, without any consideration of replacing the channel storage volume. The purpose of this model is to illustrate the significant increase in peak flows that can occur if channel storage is not considered. Peak flows at key locations are shown in *Table 1* and on *Plate 2*. The peak 100-year flow at Skyline for this condition increases to 6,890 cfs. This is approximately 3 times the fully developed flow with channel storage maintained.

4.5 Fully Developed Conditions Hydrology (Option 3 proposed onsite channel storage)

The developed conditions hydrology model is a modification of the possible future conditions hydrology (option 1). The channel storage volume within the "Morning Sun Farms", "Circle Cross Ranch", and "Skyline Ranch", that is modeled with channel routing is instead modeled as detention basins with stage-storage-discharge relationships. The detention basins are integrated into the Sanokai Wash corridor and have box culvert or trapezoidal notch openings. No additional onsite detention is required to maintain existing peak flows leaving the three sites at Empire Road. Retention for the additional volume generated on the 100-year, 1-hour storm could also be added to the channel basin as "dead storage" below the outfalls of the constrictions.

The box culverts and notches are designed as restrictions to flow which increase the water surface and also increase the volume passing thru the channel.

The linear basins are designed to provide channel volume and onsite detention which is equal to the volume under existing conditions. Developed conditions peak flows at key locations are summarized in *Table 1* and shown on *Plate 2*. The developed conditions 100-year peak entering at Skyline is 2,100 cfs, the same as option 1.

The HEC-1 Input/Output for the five different hydrologic conditions is included in *Appendix B*. The design flows proposed for these three projects is per option 3.

MASTER DRAINAGE REPORT
FOR
BELLA VISTA FARMS

March 27, 2013
WP# 123937
Revised June 3, 2013

Prepared for:

BVF LAND LLC
BVF Opportunity, LLC
c/o Harvard Investments
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Scottsdale, AZ 85255
Phone: (480)348-1118

Submitted to:

Pinal County Flood Control District
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Florence, Arizona 85132
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Prepared by:

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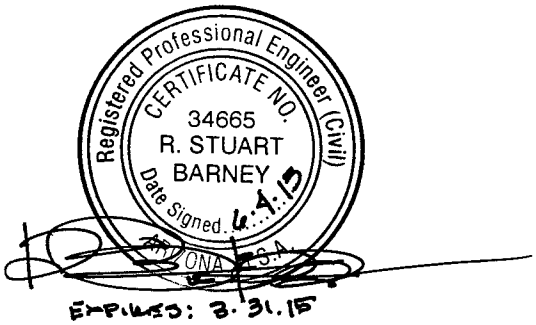


APPENDICES

TABLES

Hydrology Tables

Hydraulic Tables

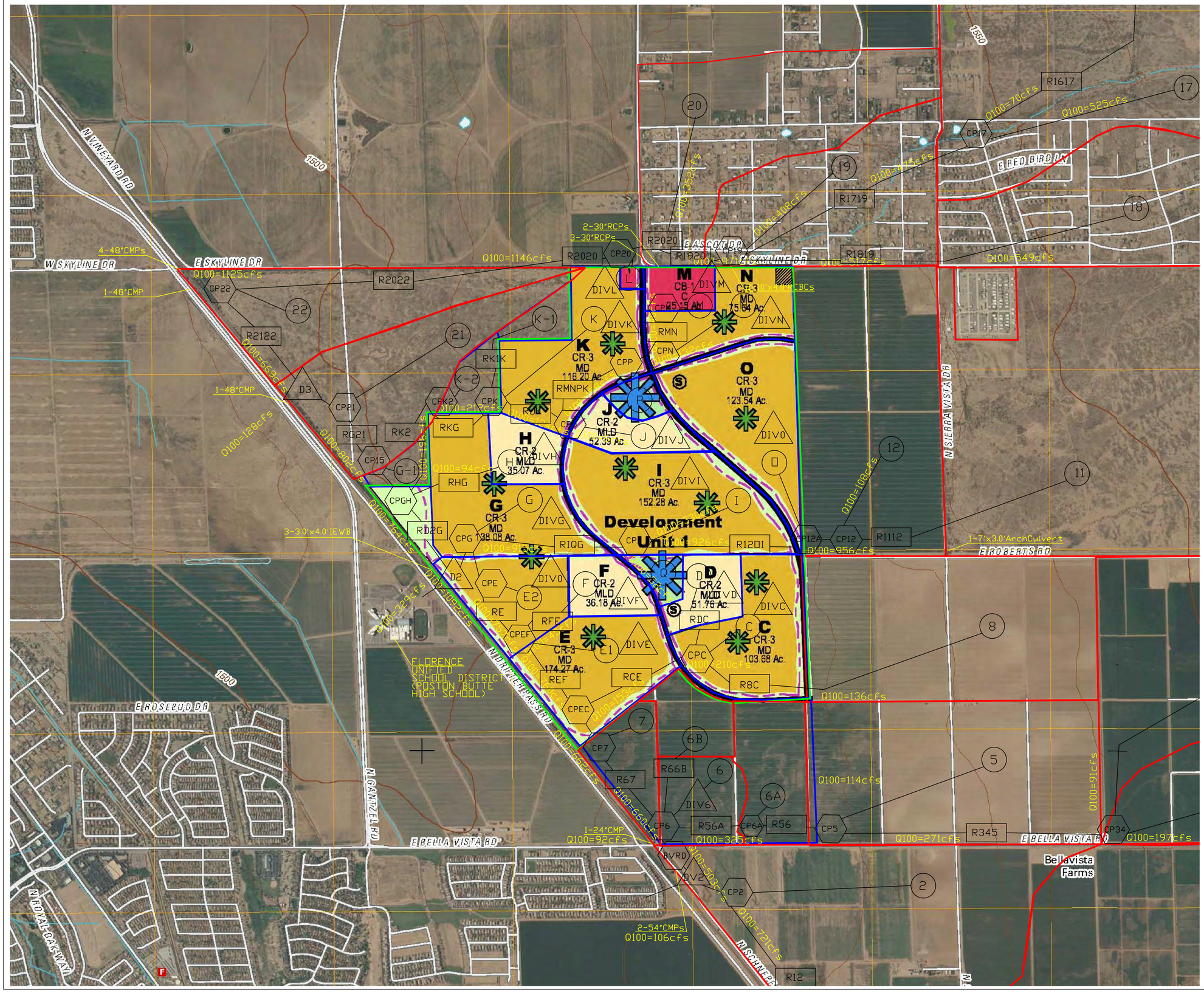
PLATES

REPORT CD

Electronic PDF Copy of Report, Tables & Plates
Hydrologic Models
Hydraulic Models

Plate 9

Proposed Condition HEC-1 Drainage Map



LEGEND

- PROPERTY BOUNDARY
- PROPOSED DRAINAGE CHANNELS
- PROPOSED ONSITE DRAINAGE AREAS
- EXISTING OFF-SITE DRAINAGE AREAS

Q_{100} = 984 cfs — 100-YR PEAK WASH FLOW

G-1 — HEC-1 SUB BASIN

RK2 — HEC-1 ROUTING PATH

CPG1 — HEC-1 COMBINATION POINT

D_ — HEC-1 DIVERSION

DIV_ — HEC-1 RETENTION

800 0 400 800

1 inch = 800 ft.

WOOD/PATEL
CIVIL ENGINEERS
HYDROLOGISTS
LAND SURVEYORS
CONSTRUCTION MANAGERS

2051 W. Northern Ave.
Phoenix, AZ 85021
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PHOENIX • MESA • TUCSON

PLATE 9 BELLA VISTA FARMS PROPOSED CONDITION HEC-1 DRAINAGE MAP

DATE	SCALE	SHEET
03/28/2013	1" = 800'	1 OF 1
JOB NO.	DESIGN JCD	CHECK MY
123937	DRAWN JCD	FILE PLATE 9

POSTON BUTTE HIGH SCHOOL
FLOOD MITIGATION ALTERNATIVES
DESIGN CONCEPT REPORT

PREPARED FOR:

PINAL COUNTY
WIDE OPEN OPPORTUNITY

PINAL COUNTY FLOOD CONTROL DISTRICT
PUBLIC WORKS DEPARTMENT
31 NORTH PINAL STREET
BUILDING F
FLORENCE, AZ 85132

PREPARED BY:

Stanley Consultants INC.

April 2022

Expires 9-30-2022

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1.0 INTRODUCTION

1.1 Background

Stanley Consultants was requested by Pinal County, as part of the current On-Call contract, to prepare a Design Concept Report that analyzed flood mitigation improvements for Poston Butte High School. The County requested five alternatives be studied to provide flood mitigation. Large storm events, the most recent in August 2021, have caused flooding that inundate a majority of the campus except for buildings which are elevated. The alternatives are based on the 100-year design storm event.

1.2 Purpose

The overall objective for this project is to provide flood mitigation alternatives for Poston Butte High School from the 100-year design event.

1.3 Project Description

Poston Butte High School is bordered by Gantzel Road on the west and Union Pacific Railroad (UPRR) tracks on the east and located about ¾ mile north of Bella Vista Road. It is situated in the Santan Valley area of north central Pinal County. The land adjacent to the high school is primarily farmland with some residential development.

This portion of Pinal County is being developed and is mostly comprised of single-family residences with the typical lot size being about one fifth of an acre. The relatively flat natural grade coupled with increased impervious areas associated with development have exacerbated flooding problems.

1.4 FEMA Flood Zones

The project site is within Flood Zone X which is defined as “Future Conditions 1% Annual Chance Flood Hazard.” Coordination with the Federal Emergency Management Agency (FEMA) for floodplain mitigation is not anticipated. Refer to Appendix A for a map of the project.

2.0 STUDY AREA

2.1 Drainage Patterns

Generally, offsite flows approach the school from the northeast to the southwest with the natural ground slope being less than 0.20%. This area receives rainfall runoff from the surrounding agricultural fields, desert lands and developed areas to the east and north. There are no well-defined washes or drainageways in the project area therefore storm water runoff predominantly sheet flows when a sufficient depth is reached.

The UPRR tracks are elevated along the east side of the school. There is a 3 cell 3 ft x 4 ft drainage structure that discharges flows under the railroad tracks onto the east side of the school property. East of the tracks, a new subdivision development (Bella Vista Farms) is being constructed. Wood/Patel and Associates, Inc. (Wood/Patel) prepared the master

drainage report (Ref. 1). The report identified a post-development 100-year, 24-hour flow of 329 cfs that discharges through the drainage structure.

Figure 1: Project Vicinity Map

MASTER DRAINAGE REPORT
FOR
JOHNSON RANCH

Revised April 10, 2006
Revised May 31, 2001
April 30, 2001
WP #052630.01

DRAINAGE CLEARANCE
1998 DRAINAGE ORDINANCE
COUNTY ENGINEER 5/26/06 DATE

Prepared For:

Johnson Ranch Holdings, L.L.C.
4546 East Havencrest Drive
Gilbert, Arizona 85297
(480) 988-5716

Submitted To:

Pinal County
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31 North Pinal Street, Building F
Florence, Arizona 85232

Prepared By:

Wood, Patel & Associates, Inc.
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Mesa, Arizona 85203
(480) 834-3300

Registered Professional Engineer (Civil)
CERTIFICATE NO. 32853
MICHAEL T. YOUNG
Date Signed 4.10.06
ARIZONA, U.S.A.

OK to Approve

MASTER DRAINAGE REPORT
FOR
JOHNSON RANCH

Revised April 10, 2006
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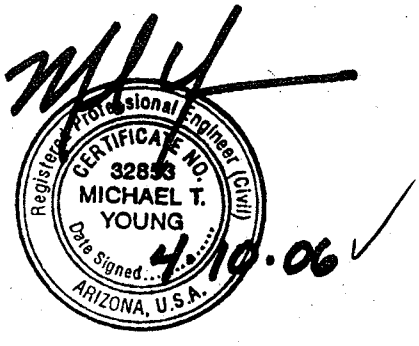

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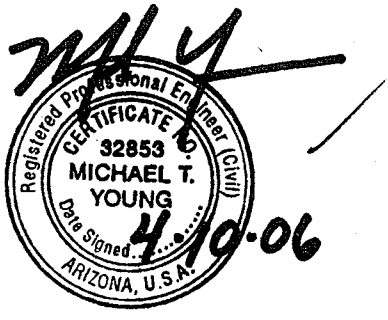

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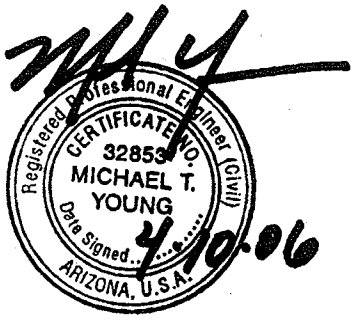

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3.0 OFFSITE DRAINAGE PLAN

The general offsite drainage concept is to collect offsite flows and convey them across the site to be released in a manner similar to the existing condition.

Offsite flows were modeled using the United States Army Corps of Engineers HEC- I, Flood Hydrograph Package, Version 4.1, (June 1998). The HEC-1 model and schematic are included in Appendix A. This model is the original model included in the approved MDR prepared by Wood/Patel and was the basis for designing the watershed channel improvements. The HEC-1 model assumes a rainfall amount is uniformly imposed over a watershed over a specified time distribution. Mass rainfall is converted to mass runoff by using the Green and Ampt infiltration method. Runoff is then converted into a hydrograph by using the Clark Unit Hydrograph. Routing of subbasin hydrographs is performed using the Normal Depth Routing Method.

For clarity purposes, the project is divided into three watershed sections; north, central, and south, based on the locations where offsite flows enter the site. This naming convention will be used for the further discussion of the existing and proposed drainage conditions.

3.1 Northern Offsite Watershed Drainage Plan

Offsite flows from the west are collected along the western boundary of the northern watershed along Unit 42, passed through the site through Units 1, 50, 51, and 52, and released on the downstream side of the site in Unit 14. The channel enters a retention spreader basin in the northeast corner of Unit 14 and is released in a similar manner to pre-development conditions. The expected 100-year offsite flow from the northern watershed is 1,456 cfs. Refer to Plate 3 for an overall view of the conveyance route.

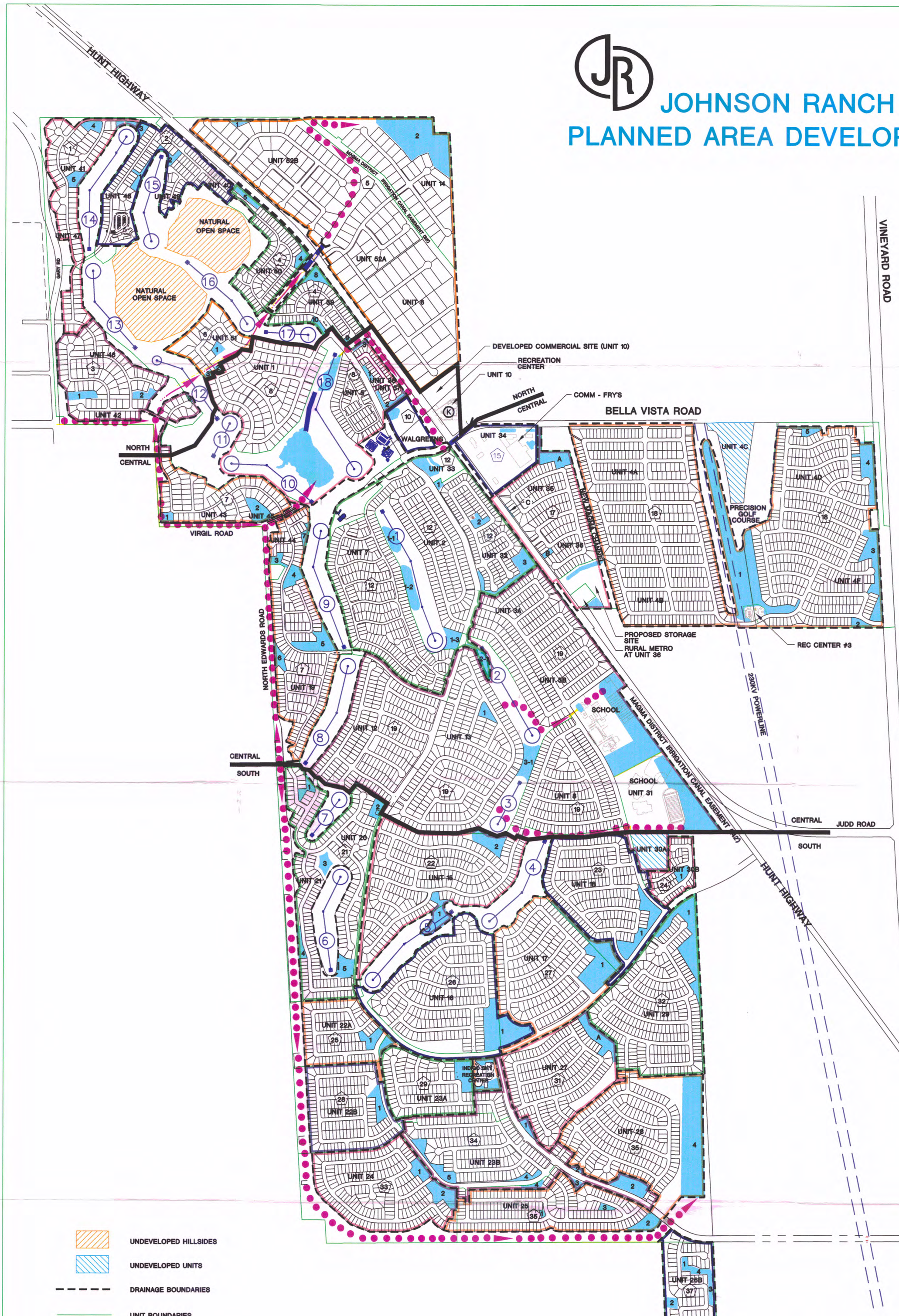
The existing wash has been channelized to reduce the drainage corridor to a reasonable cross-section from the western to eastern boundary. The adjacent developed parcels were to be required to be above the expected 100-year water surface elevation. At Hunt Highway it was recommended that improvements be made by increasing the existing 4-barrel box culvert to a 6-barrel 8' x 4' concrete box culvert to convey the entire 100-year flow under the road.

East of the New Magma Canal in Unit 14, the flow is carried in a channel to a retention spreader basin. This basin was designed to retain the 100-year, 1-hour runoff from the developed parcels immediately upstream. In addition, it will allow the offsite flows to enter above the retention portion and then weir out the downstream side along the property boundary in a sheet flow condition. This is intended to release the offsite flows in a manner similar to the existing condition. Refer to Plate 3 for the general drainage plan and Appendix

PLATE 3

Drainage Map

JOHNSON RANCH
PLANNED AREA DEVELOPMENT



Drainage Map

WOOD/PATEL

Civil Engineers ~ Hydrologists ~ Land Surveyors ~ Construction Managers

Johnson Ranch Holdings, LLC

April, 2006

S-055-00

CIRCLE CROSS RANCH
PARCEL 9
PINAL COUNTY, ARIZONA

Prepared For:

CIRCLE CROSS LLC
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Phoenix AZ 85008

Prepared By:

DRAINAGE
CLEARANCE
1988 DRAINAGE ORDINANCE
COUNTY ENGINEER
11/3/04
DATE

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SCOTTSDALE, ARIZONA 85251
(480) 945-1400 FAX (480) 945-4229

Civil Engineering
Subdivisions Land Planning

JMI Job No. 04888.01
June 24, 2004

Registered Professional Engineer (Civil)
MATTHEW C. OLSEN
19248
Signed 10/11/04
ARIZONA, U.S.A.

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APPENDIX

5. OFF-SITE DRAINAGE

Offsite flows impacting Circle Cross Ranch at Gantzel Road will be conveyed in a safe and non-erosive manner via an incised channel adjacent to Parcel 7,8, & 9. The 100-Year peak discharge of this channel is 243 cfs, per the Master Drainage Report prepared by JMI & Associates, date November 2000. This channel identified as Channel "A" is existing and was designed and constructed with Parcels 2,3, & 6. Grading modifications will be necessary for channel "A" for the construction for Parcel 7,8, & 9. These modifications include providing additional "in-line" retention volume and modifications for a culvert crossing at Charbray street.

A river analysis using HEC-RAS was created to model channel "A" with the proposed modifications, for the 100-yr peak discharge. The results of this model were used to establish the minimum finished floor elevations for Parcels 7,8, & 9. Refer to the HEC-RAS map and Appendix I for HEC-RAS printouts.

6. ON-SITE DRAINAGE

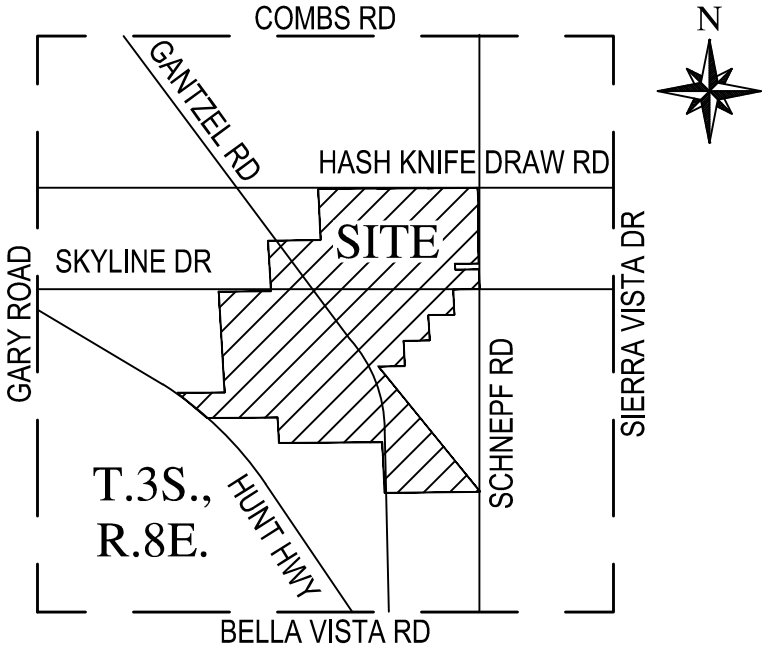
Parcel 9 will be developed as single-family residential housing. The lots will be graded such that they drain to the streets and are then conveyed to the appropriate outfall locations (see Appendix B: Fig 3 – On-site Drainage Map).

The Rational Method was used to determine peak runoff rates. Calculations can be found in Appendix C: Rational Method (Note: the ADOT method was used to determine times of concentration). Table 1 (see below) presents a summary of this analysis. Runoff will be conveyed in the streets to the appropriate outfall locations. The runoff generated by the 100-year event will be contained within the right-of-way and at a depth of less than 8 inches. (see Appendix D: Street Rating).

Depressed curb openings were provided to intercept stormwater runoff conveyed within residential roadways. A design depth of 8 inches was used to size curb openings for the 100-year storm to justify the maximum depth of flow in the street will not exceed this depth. See Appendix D for depressed curb opening calculations.

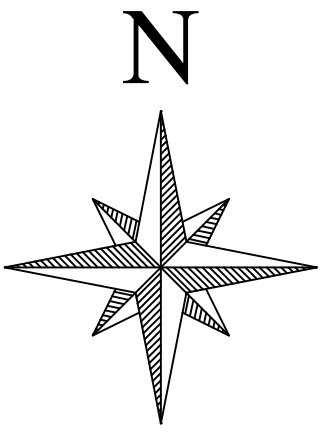
Ultimate outfall for Parcel 6B will be the improved Sanokai Wash. The Sanokai Wash will be conveyed under Gary Road, at station 37+00 with the low point elevation of the road being 1466.13, through twelve 5' x 10' RCBCs and around Parcels 12 and 13. A spreader basin located at Empire Road will allow the flow of the Sanokai to sheet flow across the roadway and tie into the unimproved Sanokai Wash.

EXHIBIT 1 – VICINITY MAP



VICINITY MAP

N.T.S.



NOT
FOR
CONSTRUCTION
OR RECORDING

WOOD PATEL

SAN TAN VALLEY L-MPC

VICINITY MAP

DATE	1-6-2025	SCALE	NTS	SHEET	1 OF 1
JOB NO.	235485	DESIGN	NB/JM/RH	CHECK	NB/JM
		DRAWN	SH		

\\filesvr\res\2023\235485\Project Support\Reports\Drainage\Exhibits\5485-EXH1-VM.dwg

EXHIBIT 2 – FEMA FIRM

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' NAVD 88. Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations shown in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations tables should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 12. The **horizontal datum** was NAD 83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

Spatial Reference System Division
National Geodetic Survey, NOAA
Silver Spring Metro Center
1315 East-West Highway
Silver Spring, Maryland 20910
(301) 713-3191

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit its website at http://www.ngs.noaa.gov.

Base map information shown on this FIRM was derived from U.S. Geological Survey Digital Orthophoto Quadrangles produced at a scale of 1:12,000 from photography dated 1992 or later.

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, an accompanying Flood Insurance Study Report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at http://www.msc.fema.gov.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov.

LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

- **ZONE A** No base flood elevations determined.
- **ZONE AE** Base flood elevations determined.
- **ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.
- **ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- **ZONE AR** Area of Special Flood Hazard formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- **ZONE A99** Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no base flood elevations determined.
- **ZONE V** Coastal flood zone with velocity hazard (wave action); no base flood elevations determined.
- **ZONE VE** Coastal flood zone with velocity hazard (wave action); base flood elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

- **ZONE X** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

- **ZONE X** Areas determined to be outside the 0.2% annual chance floodplain.
- **ZONE D** Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

- A — A — Cross section line
- 23 — 23 — Transect line
- 97° 07' 30", 32° 22' 30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
- 4275000 mN — 1000-meter Universal Transverse Mercator grid values, zone 12
- 600000 FT — 5000-foot grid ticks: Arizona State Plane coordinate system, central zone (FIPSZONE 0202), Transverse Mercator
- DX5510 x — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

MAP REPOSITORY
Refer to listing of map repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
December 4, 2007
EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 2000'

1000 0 2000 4000 FEET

600 0 600 1200 METERS

NFIP

PANEL 0475E

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

PINAL COUNTY, ARIZONA AND INCORPORATED AREAS

PANEL 475 OF 2575

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
PINAL COUNTY, UNINCORPORATED AREAS	040077	0475	E
QUEEN CREEK, TOWN OF	040132	0475	E

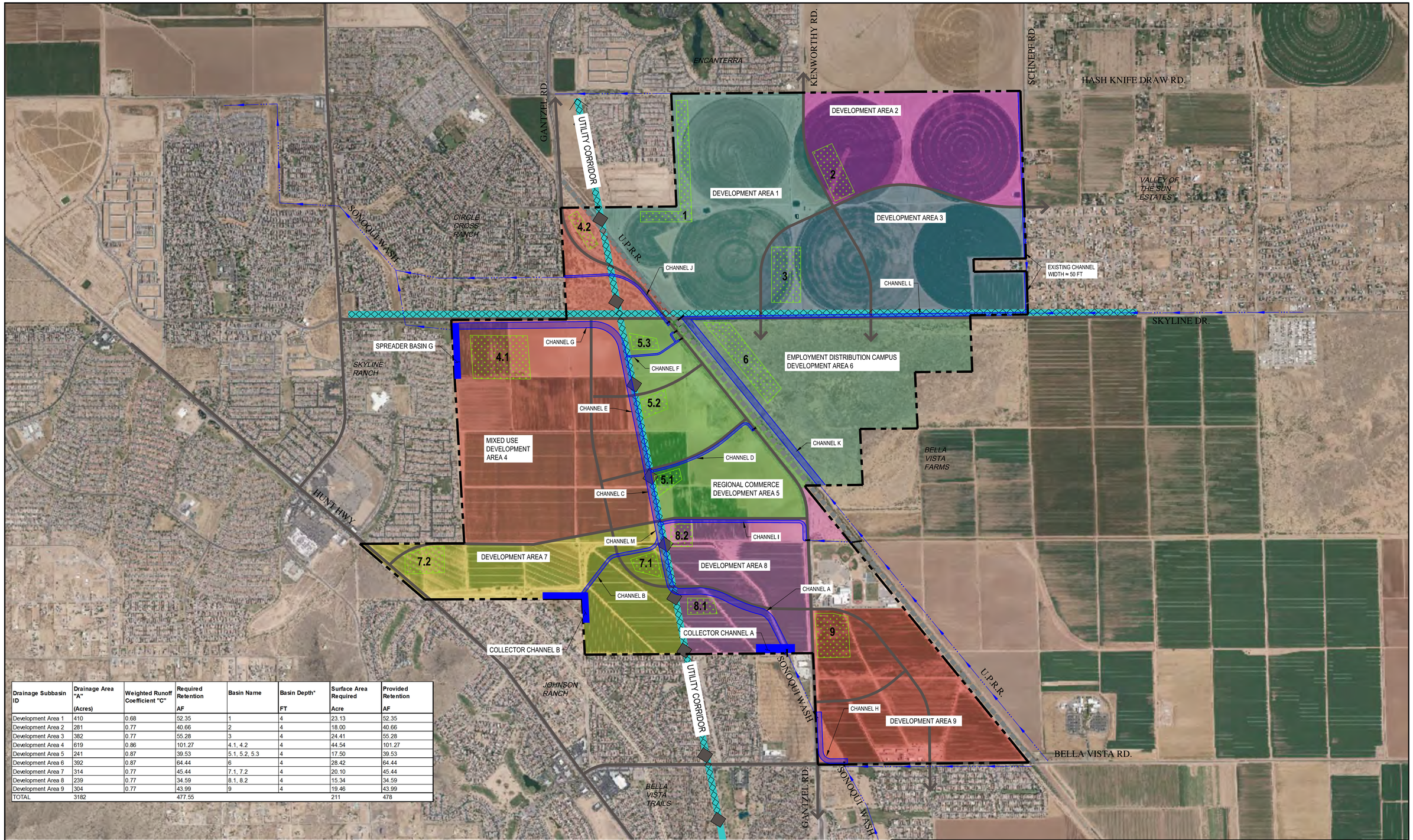
Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
04021C0475E

EFFECTIVE DATE
DECEMBER 4, 2007

Federal Emergency Management Agency

EXHIBIT 3 –CONCEPTUAL RETENTION EXHIBIT



Drainage Subbasin ID	Drainage Area "A" (Acres)	Weighted Runoff Coefficient "C"	Required Retention AF	Basin Name	Basin Depth* FT	Surface Area Required Acre	Provided Retention AF
Development Area 1	410	0.68	52.35	1	4	23.13	52.35
Development Area 2	281	0.77	40.66	2	4	18.00	40.66
Development Area 3	382	0.77	55.28	3	4	24.41	55.28
Development Area 4	619	0.86	101.27	4.1, 4.2	4	44.54	101.27
Development Area 5	241	0.87	39.53	5.1, 5.2, 5.3	4	17.50	39.53
Development Area 6	392	0.87	64.44	6	4	28.42	64.44
Development Area 7	314	0.77	45.44	7.1, 7.2	4	20.10	45.44
Development Area 8	239	0.77	34.59	8.1, 8.2	4	15.34	34.59
Development Area 9	304	0.77	43.99	9	4	19.46	43.99
TOTAL	3182		477.55			211	478

N

0 1000 2000

Horz. 1 in. = 1000 ft.

LEGEND

- ONSITE DRAINAGE CHANNEL
- OFFSITE DRAINAGE CHANNEL
- ONSITE SPREADER BASIN
- CORE STUDY PROJECT BOUNDARY
- Q100 = X CFS — DOCUMENTED 100YR STORMWATER FLOW
- QMAX = X CFS — DOCUMENTED OUTFLOW CAPACITY
- RETENTION AREA

Registered Professional Engineer Civil — NOT FOR CONSTRUCTION OR RECORDING — EXPIRES 03-31-25

WOOD PATEL

SAN TAN VALLEY

CONCEPTUAL RETENTION EXHIBIT

DATE	1-9-2025	SCALE	1" = 1000'	SHEET	2 OF 2
JOB NO	235485	DESIGN	JM / RH	DRAWN	RH

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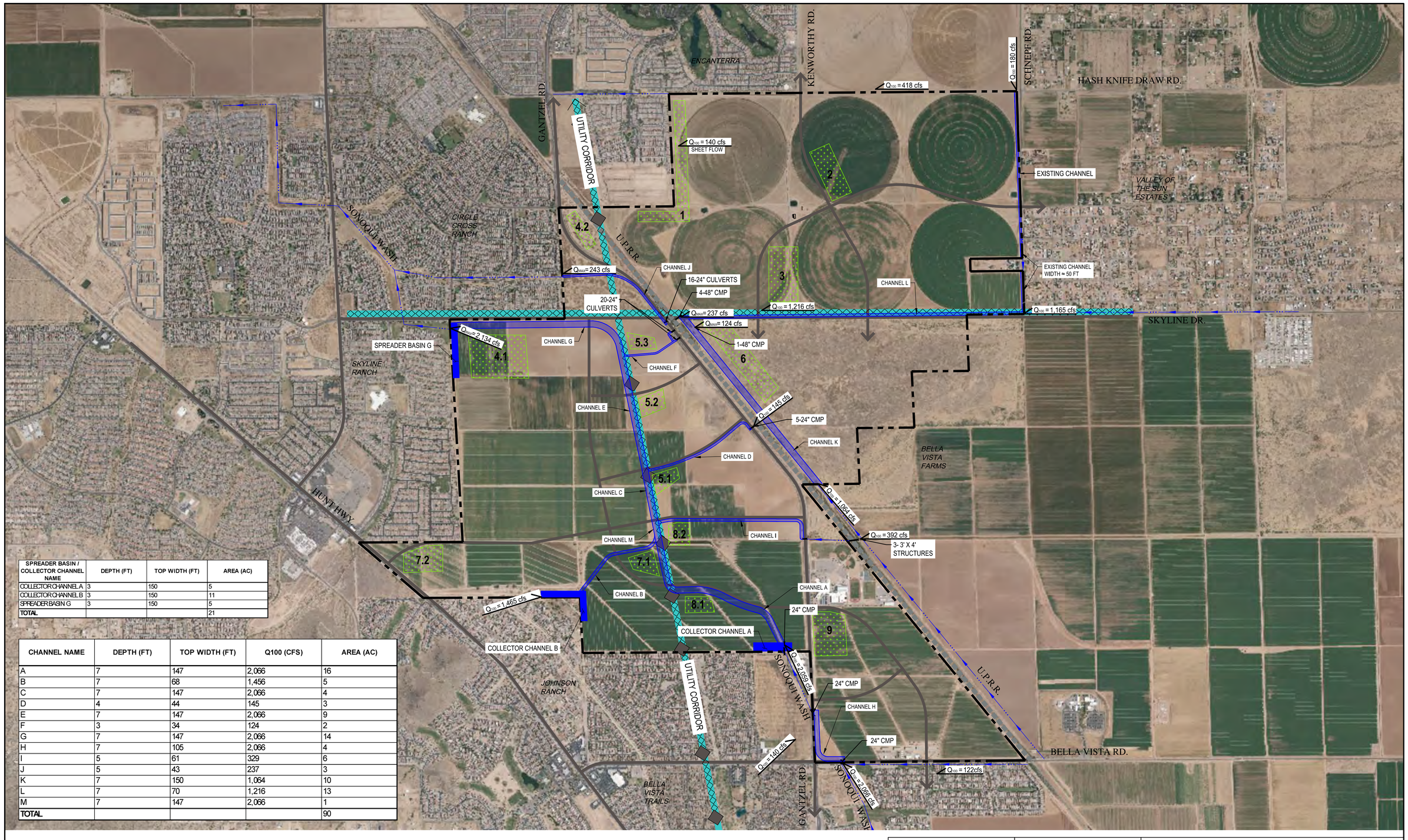
EXHIBIT 4 – CONCEPTUAL CHANNEL AND FLOW EXHIBIT



SPREADER BASIN / COLLECTOR CHANNEL NAME	DEPTH (FT)	TOP WIDTH (FT)	AREA (AC)
COLLECTOR CHANNEL A	3	150	5
COLLECTOR CHANNEL B	3	150	11
SPREADER BASIN G	3	150	5
TOTAL			21

CHANNEL NAME	DEPTH (FT)	TOP WIDTH (FT)	Q100 (CFS)	AREA (AC)
A	7	147	2,066	16
B	7	68	1,456	5
C	7	147	2,066	4
D	4	44	145	3
E	7	147	2,066	9
F	3	34	124	2
G	7	147	2,066	14
H	7	105	2,066	4
I	5	61	329	6
J	5	43	237	3
K	7	150	1,064	10
L	7	70	1,216	13
M	7	147	2,066	1
TOTAL				90

N

0 1000 2000
Horz. 1 in. = 1000 ft.

ONSITE DRAINAGE CHANNEL

OFFSITE DRAINAGE CHANNEL

ONSITE SPREADER BASIN

LEGEND

CORE STUDY PROJECT BOUNDARY

Q100 = X CFS — DOCUMENTED 100YR STORMWATER FLOW

QMAX = X CFS — DOCUMENTED OUTFLOW CAPACITY

RETENTION AREA

NOT FOR CONSTRUCTION OR RECORDING

EXPIRES 03-31-25

WOOD PATEL

SAN TAN VALLEY

CONCEPTUAL CHANNEL AND FLOW EXHIBIT

DATE	1-9-2025	SCALE	1" = 1000'	SHEET	1 OF 2
JOB NO	235485	DESIGN	JM / RH	DRAWN	RH

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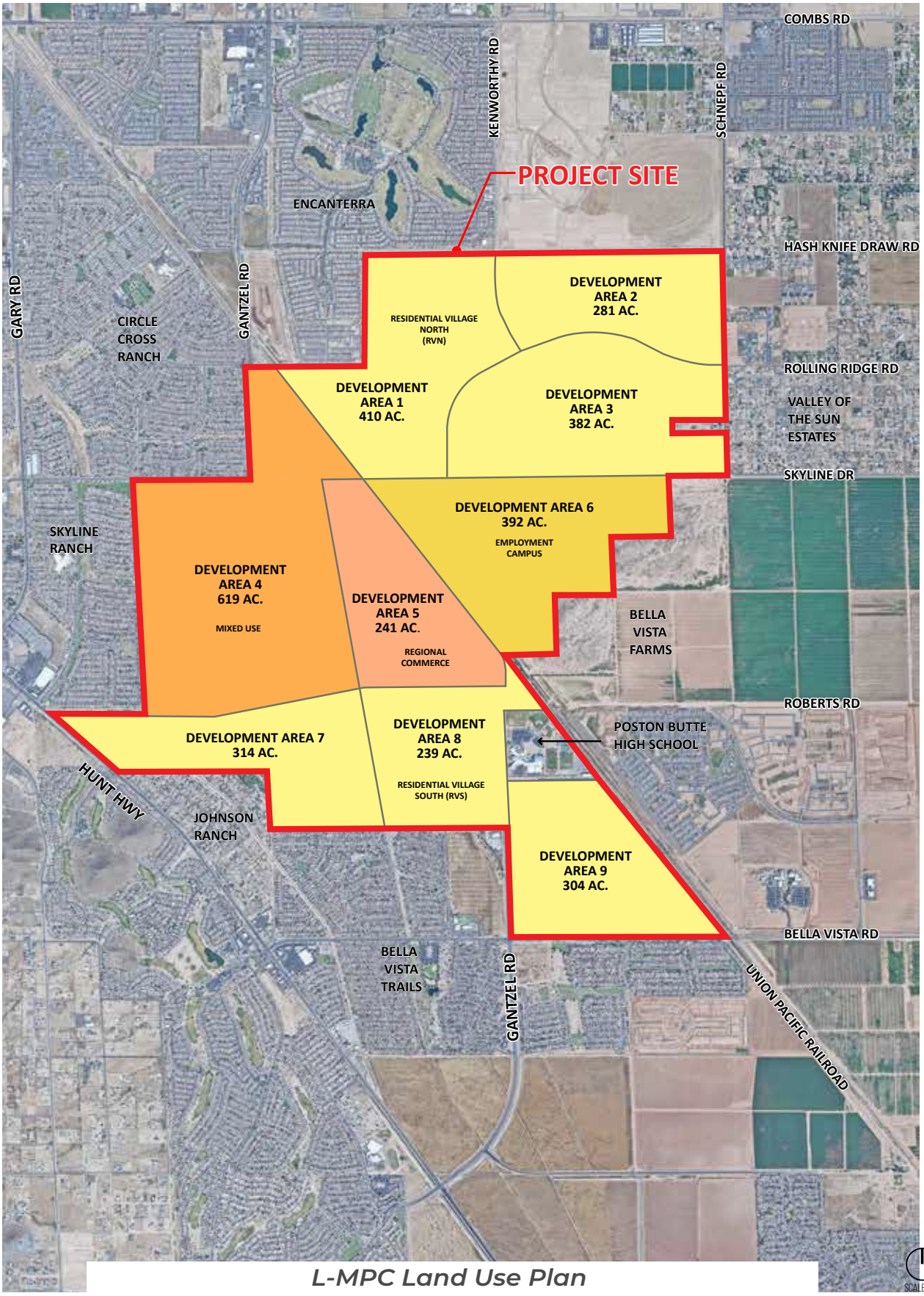
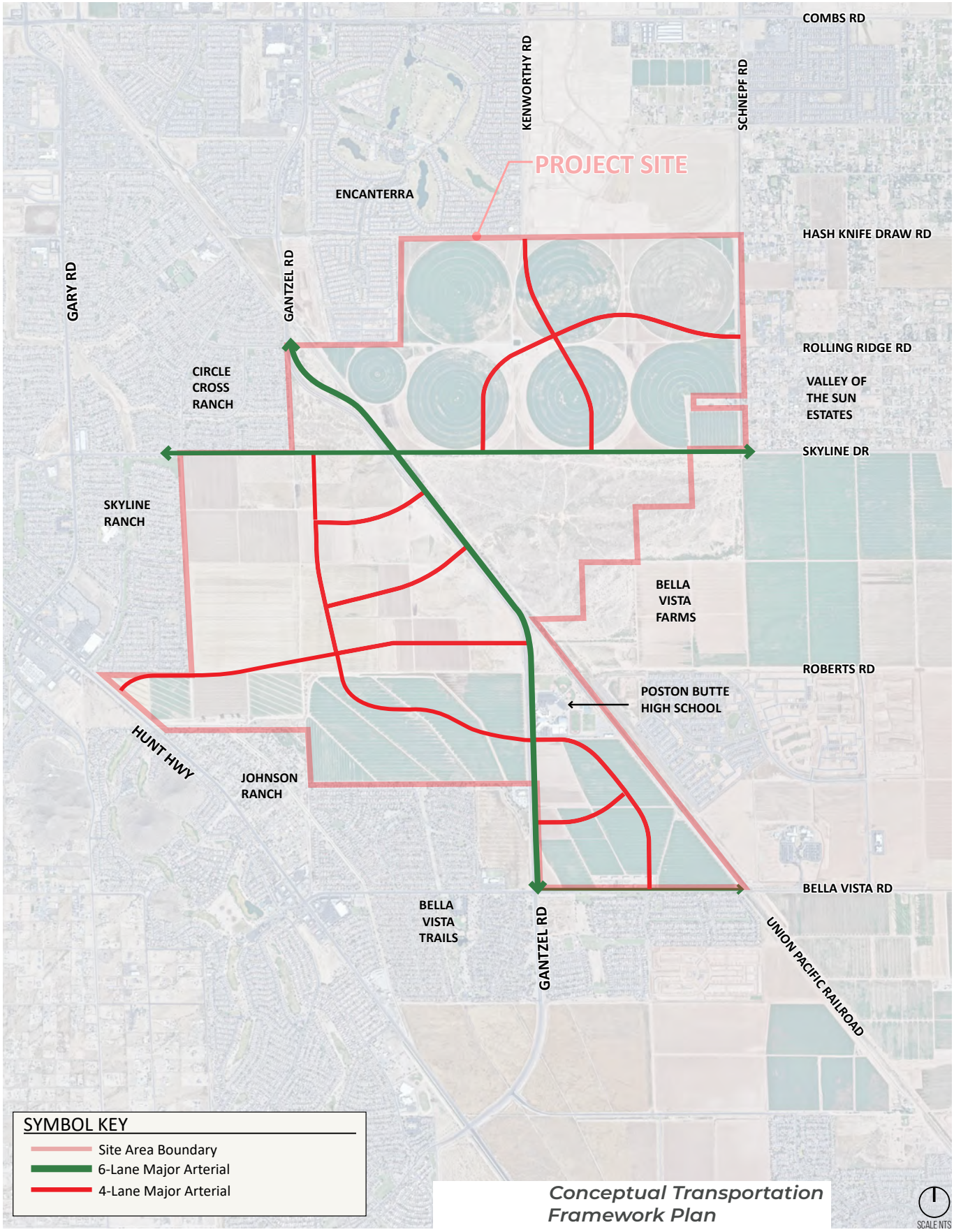
EXHIBIT 5 – L-MPC LAND USE PLAN AND CONCEPTUAL TRANSPORTATION FRAMEWORK PLAN



L-MPC Land Use Plan



Conceptual Transportation Framework Plan

WOOD PATEL

WATER DISTRIBUTION SYSTEM
CONCEPTUAL ASSESSMENT
FOR
SAN TAN VALLEY URBAN CORE LARGE MASTER PLANNED COMMUNITY

January 10, 2025
WP# 235485

EXPIRES 03-31-25

TABLE OF CONTENTS

TABLES

EXHIBITS

EXPIRES 03-31-25

cp

Y:\WP\Reports\Municipal\235485 San Tan Valley Urban Core Conceptual Water BOD.docx

1.0 INTRODUCTION

1.1 General Background and Project Layout

The proposed San Tan Valley Urban Core Large Master Plan Community (L-MPC) requests zoning for approximately 3,200-acre site of Arizona State Trust Land. The L-MPC is north of Bella Vista Road, east of Hunt Highway, south of Empire Boulevard, and west of Schnepf Road in Pinal County, Arizona within Sections 4, 5, 7, 8, 9, 16, 17 and 18 of Township 3 South, Range 8 East of the Gila and Salt River Base and Meridian, Maricopa County, Arizona. Refer to Exhibit 1 – Vicinity Map for project location.

This Conceptual Water Distribution System Assessment has been prepared in accordance with Wood, Patel & Associates, Inc.'s (WOODPATEL's) understanding of the EPCOR and Town of Queen Creek technical requirements for water distribution systems and based on the L-MPC Land Use Plan by SWABACK. Refer to Exhibit 2 – L-MPC Land Use Plan.

1.2 Scope of Water Assessment

This Assessment presents water design demands and supply requirements as required to provide water service to the proposed L-MPC.

2.0 EXISTING CONDITIONS

2.1 Topographic Conditions

The topography of the L-MPC generally slopes from the southeast to the northwest from an approximate high elevation of 1495 to an approximate low elevation of 1475. The Union Pacific Railroad bisects the L-MPC and creates a grade separation between the northeast and southwest portions of the L-MPC.

2.2 Existing Offsite Water Infrastructure

Portions of the L-MPC lies within the existing Town of Queen Creek and EPCOR water service areas. The majority of the L-MPC does not lie within an existing water service area. The existing water infrastructure adjacent to the L-MPC serves the surrounding development. According to EPCOR and the Town of Queen Creek, there is no existing water supply available for the development within the L-MPC. Any future developer will be obligated to identify, secure and convey the necessary volume of water to supply those lands for approximately 100 years to the utility that will be serving them. This requirement is necessary to comply with the Assured Water Supply program administered by the Arizona Department of Water Resources. Offsite water infrastructure capacity and water infrastructure tie-in points to serve the L-MPC are unknown at this time. Future development will require additional planning and coordination with the appropriate water service provider through master water plans.

2.3 Existing Onsite Water Infrastructure

Onsite water infrastructure exists within this L-MPC to serve the surrounding development. There is a 12" main south of Circle Cross Ranch in Skyline Road on the northwest corner of the L-MPC site. Another 12" main exists in Gantzel road, spanning from the north end to south end of the L-MPC site. Another

12” main is along Hunt Highway in the southwest corner of the site. The existing water infrastructure within the L-MPC does not have available capacity to service the development. According to EPCOR and the Town of Queen Creek, there is no existing water supply available for the development within the L-MPC. Any future developer will be obligated to identify, secure and convey the necessary volume of water to supply those lands for approximately 100 years to the utility that will be serving them. This requirement is necessary to comply with the Assured Water Supply Program administered by the Arizona Department of Water Resources.

3.0 DESIGN CRITERIA AND PROJECTED WATER DEMANDS

3.1 Design Criteria

For the purpose of this Assessment, water demand design flow criteria utilized in this plan are based on WOODPATEL’s understanding of the following:

- *ADWR Assured Water Supply Calculator*
- Applicable water system design criteria listed in the *2013 Design and Construction Standards Manual for Water, Wastewater and Irrigation Systems for Town of Queen Creek.*
- Applicable water system design criteria listed in the *2020 EPCOR Developer & Engineering Guide.*

For further information regarding the design criteria used, refer to Table 1 – *Water System Design Criteria.*

3.2 Water Demand Design Flows

Water demand was calculated using the design criteria listed in Section 3.1. For detailed calculations, refer to Table 2 – *Water Demand Design Flows*.

4.0 PROPOSED WATER DISTRIBUTION SYSTEM

4.1 System Layout

According to EPCOR and the Town of Queen Creek, there is no existing water capacity in the adjacent infrastructure and there is no existing water supply available for development in the L-MPC. Any future developer will be obligated to identify, secure, and convey the necessary volume of water to supply those lands for approximately 100 years to the utility that will be serving them. This requirement is necessary to comply with the Assured Water Supply program administered by the Arizona Department of Water Resources. Future development of the L-MPC will be required to fund and construct the necessary water infrastructure improvements. Water distribution master plans will be required with future development and are to be coordinated with the appropriate service provider. The watermain public improvements are to be located within the road rights-of-way of the L-MPC transportation system to service surrounding development areas. Refer to Exhibit 3– *Proposed Water System Map*.

The proposed water distribution system for the L-MPC includes a service provider split between Town of Queen Creek and EPCOR. The existing grade break of the Union Pacific Railroad will serve as the conceptual delineation line between the service providers to be further evaluated with each future developer. Refer to Exhibit 3 – *Proposed Water System Map*. Co-locations of water mains within road rights-of-way may be necessary for the best performance of the systems and shall be allowed. Public water mains will be required in all public road rights-of-way and will be sized according to the water service providers requirements.

EPCOR and the Town of Queen Creek have advised that the recovery goal for treated wastewater to recharge is 40-60%. Recharge and recovery is a major component of the Town of Queen Creek's and EPCOR's water portfolio and will be required with development of the L-MPC.

5.0 CONCLUSIONS

The Water Distribution System Assessment for San Tan Valley Urban Core L-MPC meets WOODPATEL's understanding of the Town of Queen Creek and EPCOR requirements for the water distribution system design. The following are critical conclusions:

1. The L-MPC will be located within two (2) water service areas served by the Town of Queen Creek and EPCOR.

2. The approximate average daily demand and max day demand is 2,968,930 gpd and 5,344,074 gpd, respectively, for the Town of Queen Creek service area, and 4,078,800 gpd and 7,341,840 gpd, respectively, for the EPCOR service area per section 3.2 of this Assessment.

3. The planned onsite water distribution system for the L-MPC consists of two separate water systems (EPCOR and Town of Queen Creek) intended to serve future developments in the L-MPC.

4. According to EPCOR and the Town of Queen Creek, there is no existing water supply available for the development within the L-MPC. Land developers will be required to provide the water supply required for their portion of the development. Any future developer will be obligated to identify, secure and convey the necessary volume of water to supply those lands for approximately 100 years to the utility that will be serving them. This requirement is necessary to comply with the Assured Water Supply Program administered by the Arizona Department of Water Resources.

5. This Water Distribution System Assessment for San Tan Valley Urban Core L-MPC provides water demands created by the L-MPC in accordance with the Town of Queen Creek and EPCOR Standards.

6.0 REFERENCES

1. *ADWR Assured Water Supply Calculator*
2. *2020 EPCOR Developer & Engineering Guide*
3. *2013 Design and Construction Standards Manual for Water, Wastewater and Irrigation Systems for Town of Queen Creek*

TABLE 1 – WATER SYSTEM DESIGN CRITERIA

TABLE 1
WATER DISTRIBUTION SYSTEM DESIGN CRITERIA - EPCOR

Project San Tan Valley Urban Core L-MPC
Location San Tan Valley, AZ
Project Number 235485
Project Engineer Reece Heinle, EIT
References EPCOR Developer Engineering Guide - 2020

RESIDENTIAL WATER DEMANDS[1]			
LAND USE	AVERAGE DAILY DEMAND (ADD)		NOTES
	VALUE	UNITS	
Active Adult	304	GPDU	Note 1
Single Family	360	GPCD	Note 1
Multi Family	240	GPCD	Note 1
Commercial	1,700	GPCD	Note 1

NON-RESIDENTIAL WATER DEMANDS[1]			
LAND USE	AVERAGE DAILY DEMAND (ADD)		NOTES
	VALUE	UNITS	
Warehouse / big box retail	30	GPD/1000SF	Note 1

HYDRAULIC MODELING CRITERIA				
DESCRIPTION		VALUE	UNITS	NOTES
PEAK FLOW[1]				
	Max Day Flow = Peaking Factor (PF) x ADD	1.8 x ADD	GPD	Note 1
	Peak Hour Flow = Peaking Factor (PF) x MD	3 x ADD	GPD	Note 1
MODELED FIRE HYDRANT FLOW (MINIMUM)				
☑	Commercial, Industrial, Multi-family Residential	3,500	GPM	Note 1
☑	1 & 2 Family Dwelling Unit Residential Properties	1,500	GPM	Note 1
HYDRAULICS				
	Residual Pressure Range, Peak Flow	40-80	PSI	Note 1
	Minimum Residual Pressure, Peak Flow + Fire Flow	20	PSI	Note 1
	Maximum Velocity, Peak Flow	5	FT/SEC	Note 1
	Maximum Velocity, Peak Day + Fire Flow	10	FT/SEC	Note 1
	Minimum Pipe Diameter, Looped System	4	IN	Note 1
	Hazen-Williams C-value	150	-	

Notes
1. Per EPCOR Developer Engineering Guide - 2020
2. Per Arizona Administrative Code, Title 18, Chapter 9

TABLE 1
WATER DISTRIBUTION SYSTEM DESIGN CRITERIA - TOQC

Project	San Tan Valley Urban Core L-MPC
Location	San Tan Valley, AZ
Project Number	235485
Project Engineer	Reece Heinle, EIT
References	Town of Queen Creek Water, Wastewater, Irrigation Design Manual

RESIDENTIAL WATER DEMANDS[1]			
LAND USE	**AVERAGE DAILY DEMAND (ADD)**		**NOTES**
	VALUE	**UNITS**	
Age Restricted	140	GPCD	Note 1
Multi Family	110	GPCD	Note 1
Single Family , High Density	125	GPCD	Note 1
Single Family, Low Density	200	GPCD	Note 1

NON-RESIDENTIAL WATER DEMANDS[1]			
LAND USE	**AVERAGE DAILY DEMAND (ADD)**		**NOTES**
	VALUE	**UNITS**	
Commercial	1,700	GPAD	Note 1

HYDRAULIC MODELING CRITERIA				
DESCRIPTION		**VALUE**	**UNITS**	**NOTES**
PEAK FLOW[1]				
	Max Day Flow = Peaking Factor (PF) x ADD	1.8 x ADD	GPD	Note 1
	Peak Hour Flow = Peaking Factor (PF) x MD	3 x ADD	GPD	Note 1
MODELED FIRE HYDRANT FLOW (MINIMUM)				
☑	Commercial, Industrial, Multi-family Residential	3,500	GPM	Note 1
☑	1 & 2 Family Dwelling Unit Residential Properties	1,500	GPM	Note 1
HYDRAULICS				
	Residual Pressure Range, Peak Flow	40-80	PSI	Note 1
	Minimum Residual Pressure, Peak Flow + Fire Flow	20	PSI	Note 1
	Maximum Velocity, Peak Flow	5	FT/SEC	Note 1
	Maximum Velocity, Peak Day + Fire Flow	10	FT/SEC	Note 1
	Minimum Pipe Diameter, Looped System	4	IN	Note 1
	Hazen-Williams C-value	150	-	

Notes
1. Per Town of Queen Creek Water, Wastewater, Irrigation Design Manual
2. Per ADEQ Bulletin No. 11

TABLE 2 – WATER DEMAND DESIGN FLOWS

WOOD PATEL

TABLE 2
EPCOR WATER DEMAND
DESIGN FLOWS

Project	San Tan Valley Urban Core L-MPC
Location	San Tan Valley, AZ
Project Number	235485
Project Engineer	Reece Heinle, EIT
References	EPCOR Developer Engineering Guide - 2020

LAND USE							DEMANDS PER PUBLISHED CRITERIA								ACTUAL DEMANDS PER ADWR	
LAND USE	LAND DEVELOPMENT AREA	LAND USE BREAKDOWN	DEMAND MULTIPLIER	UNITS	DEMAND VALUE (CRITERIA)	UNITS	AVERAGE DAILY DEMAND		MAX DAY PEAKING FACTOR	MAX DAY FLOW		PEAK HOUR PEAKING FACTOR	PEAK HOUR FLOW			
							(GPD)	(GPM)		(GPD)	(GPM)		(GPD)	(GPM)	(GPD)	(GPM)
REGIONAL COMMERCE	5	Multi Family	1,200	DWELLING	240	GPDU	288,000	200.0	1.8	518,400	360.0	3.0	1,555,200	1,080.0	584,331	405.8
	5	Commercial	181	ACRE	1,700	GPAD	307,700	213.7	1.8	553,860	384.6	3.0	1,661,580	1,153.9		
			REGIONAL COMMERCE			**TOTAL:**	**595,700**	**414**	**1.8**	**1,072,260**	**745**	**3.0**	**3,216,780**	**2,234**	**584,331**	**406**
MIXED USE	4	Multi Family	4,643	DWELLING	240	GPDU	1,114,320	773.8	1.8	2,005,776	1,392.9	3.0	3,610,397	2,507.2	1,583,139	1,099.4
	4	Commercial	310	ACRE	1,700	GPAD	527,000	366.0	1.8	948,600	658.8	3.0	1,707,480	1,185.8		
			MIXED USE			**TOTAL:**	**1,641,320**	**1,140**	**1.8**	**2,954,376**	**2,052**	**3.0**	**5,317,877**	**3,693**	**1,583,139**	**1,099**
RESIDENTIAL VILLAGE NORTH		Single Family	--	DWELLING	360	GPDU	--	--	1.8	--	--	3.0	--	--		--
	1	Commercial	--	ACRE	1,700	GPAD	--	--	1.8	--	--	3.0	--	--	--	--
	2	Single Family		DWELLING	360	GPDU	--	--	1.8	--	--	3.0	--	--		--
	2	Commercial		ACRE	1,700	GPAD	--	--	1.8	--	--	3.0	--	--	--	--
	3	Single Family	--	DWELLING	360	GPDU	--	--	1.8	--	--	3.0	--	--		--
	3	Commercial	--	ACRE	1,700	GPAD	--	--	1.8	--	--	3.0	--	--		--
			RESIDENTIAL VILLAGE NORTH			**TOTAL:**	**--**	**--**	1.8	**--**	**--**	3.0	**--**	**--**	**--**	**--**
EMPLOYMENT DISTRIBUTION CAMPUS	6	Multi Family	--	DWELLING	240	GPDU	--	--	1.8	--	--	3.0	--	--		--
	6	Commercial	--	ACRE	1,700	GPAD	--	--	1.8	--	--	3.0	--	--		--
			--			**TOTAL:**	**--**	**--**	**1.8**	**--**	**--**	**3**	**--**	**--**	**--**	**--**
RESIDENTIAL VILLAGE SOUTH	7	Single Family	1,836	DWELLING	360	GPDU	660,960	459.0	1.8	1,189,728	826.2	3.0	2,141,510	1,487.2	580,892	403.4
	7	Commercial	8	ACRE	1,700	GPAD	13,600	9.4	1.8	24,480	17.0	3.0	44,064	30.6		
	8	Single Family	1,386	DWELLING	360	GPDU	498,960	346.5	1.8	898,128	623.7	3.0	1,616,630	1,122.7	442,971	307.6
	8	Commercial	9	ACRE	1,700	GPAD	15,300	10.6	1.8	27,540	19.1	3.0	49,572	34.4		
	9	Single Family	1,776	DWELLING	360	GPDU	639,360	444.0	1.8	1,150,848	799.2	3.0	2,071,526	1,438.6	562,087	390.3
	9	Commercial	8	ACRE	1,700	GPAD	13,600	9.4	1.8	24,480	17.0	3.0	44,064	30.6		
			RESIDENTIAL VILLAGE SOUTH			**TOTAL:**	**1,841,780**	**1,279**	**1.8**	**3,315,204**	**2,302**	**3.0**	**5,967,366**	**4,144**	**1,585,950**	**1,101**
TOTAL							**4,078,800**	**2,833**		**7,341,840**	**5,099**		**14,502,023**	**10,071**	**3,753,420**	**2,606**

TABLE 2
TOQC WATER DEMAND DESIGN FLOWS

Project	San Tan Valley Urban Core L-MPC
Location	San Tan Valley, AZ
Project Number	235485
Project Engineer	Reece Heinle, EIT
References	Town of Queen Creek Water, Wastewater, Irrigation Design Manual

LAND USE							DEMANDS PER PUBLISHED CRITERIA								ACTUAL DEMANDS PER ADWR	
LAND USE	LAND DEVELOPMENT AREA	LAND USE BREAKDOWN (QUEEN CREEK)	DEMAND MULTIPLIER ***	UNITS	DEMAND VALUE	UNITS	AVERAGE DAILY DEMAND		MAX DAY PEAKING FACTOR	MAX DAY FLOW		PEAK HOUR PEAKING FACTOR	PEAK HOUR FLOW			
							(GPD)	(GPM)		(GPD)	(GPM)		(GPD)	(GPM)	(GPD)	(GPM)
REGIONAL COMMERCE	5	Multi Family		PERSON	110	GPCD	--	--	1.8	--	--	3.0	--	--		--
	5	Commercial		ACRE	1,700	GPAD	--	--	1.8	--	--	3.0	--	--		--
			REGIONAL COMMERCE			**TOTAL:**	**--**	**--**	**1.8**	**--**	**--**	**3.0**	**--**	**--**	**--**	**--**
MIXED USE	4	Multi Family		PERSON	110	GPCD	--	--	1.8	--	--	3.0	--	--		--
	4	Commercial		ACRE	1,700	GPAD	--	--	1.8	--	--	3.0	--	--		--
			MIXED USE			**TOTAL:**	**--**	**--**	**1.8**	**--**	**--**	**3.0**	**--**	**--**	**--**	**--**
RESIDENTIAL VILLAGE NORTH	1	Single Family, Low Density	5,784	PERSON	200	GPCD	1,156,800	803	1.8	2,082,240	1,446	3.0	6,246,720	4,338	759,288	527
	1	Commercial	9	ACRE	1,700	GPAD	15,300	11	1.8	27,540	19	3.0	82,620	57		
	2	Single Family, Low Density	3,926	PERSON	200	GPCD	785,200	545	1.8	1,413,360	982	3.0	4,240,080	2,945	519,192	361
	2	Commercial	8	ACRE	1,700	GPAD	13,600	9	1.8	24,480	17	3.0	44,064	31		
	3	Single Family, Low Density	5,381	PERSON	200	GPCD	1,076,200	747	1.8	1,937,160	1,345	3.0	5,811,480	4,036	705,878	490
	3	Commercial	8	ACRE	1,700	GPAD	13,600	9	1.8	24,480	17	3.0	73,440	51		
			RESIDENTIAL VILLAGE NORTH				**1,888,600**	**1,310**	**1.8**	**3,399,480**	**2,361**	**3.0**	**10,169,064**	**7,063**	**1,225,070**	**851**
EMPLOYMENT DISTRIBUTION CAMPUS	6	Commercial	392	ACRE	1,700	GPAD	666,400	463	1.8	1,199,520	833	3.0	3,598,560	2,499	1,020,347	709
	6	Multi Family	3,763	PERSON	110	GPCD	413,930	287	1.8	745,074	517	3.0	2,235,222	1,552		
			EMPLOYMENT DISTRIBUTION CAMPUS			**TOTAL:**	**1,080,330**	**750**	**1.8**	**1,944,594**	**1,350**	**3.0**	**5,833,782**	**4,051**	**1,020,347**	**709**
RESIDENTIAL VILLAGE SOUTH	7	Single Family, Low Density		PERSON	200	GPCD	--	--	1.8	--	--	3.0	--	--		--
	7	Commercial		ACRE	1,700	GPAD	--	--	1.8	--	--	3.0	--	--		--
	8	Single Family, Low Density		PERSON	200	GPCD	--	--	1.8	--	--	3.0	--	--		--
	8	Commercial		ACRE	1,700	GPAD	--	--	1.8	--	--	3.0	--	--		--
	9	Single Family, Low Density		PERSON	200	GPCD	--	--	1.8	--	--	3.0	--	--		--
	9	Commercial		ACRE	1,700	GPAD	--	--	1.8	--	--	3.0	--	--		--
			RESIDENTIAL VILLAGE SOUTH			**TOTAL:**	**--**	**--**	**1.8**	**--**	**--**	**3.0**	**--**	**--**	**--**	**--**
TOTAL							**2,968,930**	**2,060**		**5,344,074**	**3,711**		**16,002,846**	**11,114**	**2,245,417**	**1,560**

*** Population rate of 2.4 people per dwelling unit per Design and Construction Standards manual for Water, Wastewater and Irrigation Systems for Town of Queen Creek, Table 2.1.1

December 19, 2024

PROJECT DEMAND CALCULATOR

Name of Proposed Project: **San Tan Valley Urban Core L-MPC - Development Area 1**

INSTRUCTIONS: This spreadsheet is designed to help you calculate the water demand for your proposed development for purposes of applying for a Certificate of Assured Water Supply, Water Adequacy Report or Analysis of Assured (or Adequate) Water Supply. Please enter information into the blue boxes as applicable. If you need help with this form, please contact the Office of Assured and Adequate Water Supply at (602) 771-8599.

NOTE: This sheet, when completed, does not constitute approval of the demand estimate for your proposed development. It is intended for general estimation purposes only. The final, official demand estimates will be determined by the Department upon review of your complete application.

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Enter the COUNTY the subdivision is located in: PINAL — * Enter either APACHE, COCHISE, COCONINO, GILA, GRAHAM, GREENLEE, LA PAZ, MARICOPA, MOHAVE, NAVAJO, PIMA, PINAL, SANTA CRUZ, YAVAPAI, or YUMA.

Residential Usage*

Category	PPHU	GPCD or per house/day	Demand/HU/YR (af/yr)	No. HU (Lots)	Residential Demand/Yr (af/yr)
Single Family (int)	2.40	45.00	0.12	2410.00	291.55
Multi-Family (int)	2.40	45.00	0.12	0.00	0.00
Single Family Landscape (ext)	1.00	132.00	0.15	2410.00	356.34
Multi-Family Landscape (ext)	1.00	77.00	0.09	0.00	0.00
Single family Demand/HU/YR			0.27		
Multifamily Demand/HU/YR			0.21		

	Square Feet	Acres	Demand Factor (af/yr)	No. HU (Lots)	Large Lot Adjustment Demand/Yr (af/yr)
Average Lot Size (sq. ft)**	7302.17	0.17			
TMP Model Lot Size (sq. ft)	7,500 - 10,000	0.17 - 0.23			
Large Lot Adjustment	0.00	0.00			
1/2 low water use	0.00	0.00	1.50	0.00	0.00
1/2 turf	0.00	0.00	4.90	0.00	0.00

**NOTE: If the subdivision contains several groupings of lot sizes, the large lot adjustment needs to be calculated for each grouping of large lot sizes. If CC&Rs with landscaping restrictions for the residential lots will be adopted, a modified large lot adjustment can be calculated based on the specific landscaping restrictions. Contact the Office of Assured and Adequate Water Supply for assistance in calculating the large lot adjustment for subdivisions with several groupings of large lot sizes or if CC&Rs limiting landscaping within the residential lots will be adopted.

Total Residential Demand **647.89**

Non-Residential Usage***

For each category please enter either square feet or acres of land for that type of non-residential use within your subdivision

Category	Square Feet	Acres	Demand Factor (af/ac)		Non-Residential Demand (af/yr)
Common Area1		73.00	1.50	low water use	109.50
Common Area2		0.00	4.90	turf	0.00
Right of Way		0.00	1.50	low water use	0.00
Golf Course		0.00	AMA Turf Program - contact AMA		0.00
Commercial use		9.00	1.67	all acres	15.03
Public Pool (length x width = square feet)		0.00	Based on closest AMA	pool	0.00
Parks1		0.00	1.50	low water use	0.00
Parks2		0.00	4.90	turf	0.00
Retention/Detention Basins		0.00	1.50	low water use	0.00
Retention/Detention Basins		0.00	4.90	turf	0.00
School Landscape1		0.00	1.50	low water use	0.00
School Landscape2		0.00	4.90	turf	0.00
	Number of students				
Elementary school interior use	0.00		25 GPCD	interior demand	0.00
Middle/High School interior use	0.00		43 GPCD	interior demand	0.00

***NOTE: If your application is for a change of ownership from a previously issued Certificate of Assured Water Supply, and is for only a portion of the original Certificate, contact the Office of Assured and Adequate Water Supply to pro-rate non-residential area acreage.

Total Non-Residential Demand **124.53**

Distribution Losses

	Residential	Non-Residential	Total	Loss Factor %	Distribution Losses (af/yr)
Demand af/yr	647.89	124.53	772.42	10.00	**77.24**

Construction

No. of Lots	Demand (gals/lot)	100 yr demand (af)		Construction Demand (af/yr)
2410.00	10000.00	84.92		**0.85**

Total Demand Per Year

Residential Usage **af/yr**	Non-Residential Usage	Lost & Unaccounted for	Construction	Total Non-Res	**Total Demand Per Year (af/yr)**
647.89	**124.53**	**77.24**	**0.85**	**202.62**	**850.51**
Residential Usage **GPCD**					Total Demand **GPCD**
100					**131**
Annual Build Out Demand					**Total Demand Per Year (Gal/Day)**
850.51					**759288.28**

December 19, 2024

PROJECT DEMAND CALCULATOR

Name of Proposed Project: **San Tan Valley Urban Core L-MPC - Development Area 2**

INSTRUCTIONS: This spreadsheet is designed to help you calculate the water demand for your proposed development for purposes of applying for a Certificate of Assured Water Supply, Water Adequacy Report or Analysis of Assured (or Adequate) Water Supply. Please enter information into the blue boxes as applicable. If you need help with this form, please contact the Office of Assured and Adequate Water Supply at (602) 771-8599.

NOTE: This sheet, when completed, does not constitute approval of the demand estimate for your proposed development. It is intended for general estimation purposes only. The final, official demand estimates will be determined by the Department upon review of your complete application.

Enter the AMA the subdivision is located in*: PHX — * Enter PHX for Phoenix, TUC for Tucson, PIN for Pinal, PRE for Prescott or SCR for Santa Cruz.

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Enter the COUNTY the subdivision is located in: PINAL — * Enter either APACHE, COCHISE, COCONINO, GILA, GRAHAM, GREENLEE, LA PAZ, MARICOPA, MOHAVE, NAVAJO, PIMA, PINAL, SANTA CRUZ, YAVAPAI, or YUMA.

Residential Usage*

Category	PPHU	GPCD or per house/day	Demand/HU/YR (af/yr)	No. HU (Lots)	Residential Demand/Yr (af/yr)
Single Family (int)	2.40	45.00	0.12	1636.00	197.92
Multi-Family (int)	2.40	45.00	0.12	0.00	0.00
Single Family Landscape (ext)	1.00	132.00	0.15	1636.00	241.90
Multi-Family Landscape (ext)	1.00	77.00	0.09	0.00	0.00
Single family Demand/HU/YR			0.27		
Multifamily Demand/HU/YR			0.21		

	Square Feet	Acres	Demand Factor (af/yr)	No. HU (Lots)	Large Lot Adjustment Demand/Yr (af/yr)
Average Lot Size (sq. ft)**	7322.13	0.17			
TMP Model Lot Size (sq. ft)	7,500 - 10,000	0.17 - 0.23			
Large Lot Adjustment	0.00	0.00			
1/2 low water use	0.00	0.00	1.50	0.00	0.00
1/2 turf	0.00	0.00	4.90	0.00	0.00

**NOTE: If the subdivision contains several groupings of lot sizes, the large lot adjustment needs to be calculated for each grouping of large lot sizes. If CC&Rs with landscaping restrictions for the residential lots will be adopted, a modified large lot adjustment can be calculated based on the specific landscaping restrictions. Contact the Office of Assured and Adequate Water Supply for assistance in calculating the large lot adjustment for subdivisions with several groupings of large lot sizes or if CC&Rs limiting landscaping within the residential lots will be adopted.

Total Residential Demand **439.81**

Non-Residential Usage***

For each category please enter either square feet or acres of land for that type of non-residential use within your subdivision

Category	Square Feet	Acres	Demand Factor (af/ac)		Non-Residential Demand (af/yr)
Common Area1		50.00	1.50	low water use	75.00
Common Area2		0.00	4.90	turf	0.00
Right of Way		0.00	1.50	low water use	0.00
Golf Course		0.00	AMA Turf Program - contact AMA		0.00
Commercial use		8.00	1.67	all acres	13.36
Public Pool (length x width = square feet)		0.00	Based on closest AMA	pool	0.00
Parks1		0.00	1.50	low water use	0.00
Parks2		0.00	4.90	turf	0.00
Retention/Detention Basins		0.00	1.50	low water use	0.00
Retention/Detention Basins		0.00	4.90	turf	0.00
School Landscape1		0.00	1.50	low water use	0.00
School Landscape2		0.00	4.90	turf	0.00
	Number of students				
Elementary school interior use	0.00		25 GPCD	interior demand	0.00
Middle/High School interior use	0.00		43 GPCD	interior demand	0.00

***NOTE: If your application is for a change of ownership from a previously issued Certificate of Assured Water Supply, and is for only a portion of the original Certificate, contact the Office of Assured and Adequate Water Supply to pro-rate non-residential area acreage.

Total Non-Residential Demand **88.36**

Distribution Losses

	Residential	Non-Residential	Total	Loss Factor %	Distribution Losses (af/yr)
Demand af/yr	439.81	88.36	528.17	10.00	**52.82**

Construction

	No. of Lots	Demand (gals/lot)	100 yr demand (af)		Construction Demand (af/yr)
	1636.00	10000.00	57.96		**0.58**

Total Demand Per Year

Residential Usage **af/yr**	Non-Residential Usage	Lost & Unaccounted for	Construction	Total Non-Res	**Total Demand Per Year (af/yr)**
439.81	**88.36**	**52.82**	**0.58**	**141.76**	**581.57**
Residential Usage **GPCD**					Total Demand **GPCD**
100					**132**
Annual Build Out Demand					**Total Demand Per Year (Gal/Day)**
581.57					**519192.16**

December 19, 2024

PROJECT DEMAND CALCULATOR

Name of Proposed Project: **San Tan Valley Urban Core L-MPC - Development Area 3**

INSTRUCTIONS: This spreadsheet is designed to help you calculate the water demand for your proposed development for purposes of applying for a Certificate of Assured Water Supply, Water Adequacy Report or Analysis of Assured (or Adequate) Water Supply. Please enter information into the blue boxes as applicable. If you need help with this form, please contact the Office of Assured and Adequate Water Supply at (602) 771-8599.

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Enter the COUNTY the subdivision is located in: PINAL — * Enter either APACHE, COCHISE, COCONINO, GILA, GRAHAM, GREENLEE, LA PAZ, MARICOPA, MOHAVE, NAVAJO, PIMA, PINAL, SANTA CRUZ, YAVAPAI, or YUMA.

Residential Usage*

Category	PPHU	GPCD or per house/day	Demand/HU/YR (af/yr)	No. HU (Lots)	Residential Demand/Yr (af/yr)
Single Family (int)	2.40	45.00	0.12	2242.00	271.23
Multi-Family (int)	2.40	45.00	0.12	0.00	0.00
Single Family Landscape (ext)	1.00	132.00	0.15	2242.00	331.50
Multi-Family Landscape (ext)	1.00	77.00	0.09	0.00	0.00
Single family Demand/HU/YR			0.27		
Multifamily Demand/HU/YR			0.21		

	Square Feet	Acres	Demand Factor (af/yr)	No. HU (Lots)	Large Lot Adjustment Demand/Yr (af/yr)
Average Lot Size (sq. ft)**	7305.33	0.17			
TMP Model Lot Size (sq. ft)	7,500 - 10,000	0.17 - 0.23			
Large Lot Adjustment	0.00	0.00			
1/2 low water use	0.00	0.00	1.50	0.00	0.00
1/2 turf	0.00	0.00	4.90	0.00	0.00

**NOTE: If the subdivision contains several groupings of lot sizes, the large lot adjustment needs to be calculated for each grouping of large lot sizes. If CC&Rs with landscaping restrictions for the residential lots will be adopted, a modified large lot adjustment can be calculated based on the specific landscaping restrictions. Contact the Office of Assured and Adequate Water Supply for assistance in calculating the large lot adjustment for subdivisions with several groupings of large lot sizes or if CC&Rs limiting landscaping within the residential lots will be adopted.

Total Residential Demand **602.73**

Non-Residential Usage***

For each category please enter either square feet or acres of land for that type of non-residential use within your subdivision

Category	Square Feet	Acres	Demand Factor (af/ac)		Non-Residential Demand (af/yr)
Common Area1		68.00	1.50	low water use	102.00
Common Area2		0.00	4.90	turf	0.00
Right of Way		0.00	1.50	low water use	0.00
Golf Course		0.00	AMA Turf Program - contact AMA		0.00
Commercial use		8.00	1.67	all acres	13.36
Public Pool (length x width = square feet)		0.00	Based on closest AMA	pool	0.00
Parks1		0.00	1.50	low water use	0.00
Parks2		0.00	4.90	turf	0.00
Retention/Detention Basins		0.00	1.50	low water use	0.00
Retention/Detention Basins		0.00	4.90	turf	0.00
School Landscape1		0.00	1.50	low water use	0.00
School Landscape2		0.00	4.90	turf	0.00
	Number of students				
Elementary school interior use	0.00		25 GPCD	interior demand	0.00
Middle/High School interior use	0.00		43 GPCD	interior demand	0.00

***NOTE: If your application is for a change of ownership from a previously issued Certificate of Assured Water Supply, and is for only a portion of the original Certificate, contact the Office of Assured and Adequate Water Supply to pro-rate non-residential area acreage.

Total Non-Residential Demand **115.36**

Distribution Losses

	Residential	Non-Residential	Total	Loss Factor %	Distribution Losses (af/yr)
Demand af/yr	602.73	115.36	718.09	10.00	**71.81**

Construction

No. of Lots	Demand (gals/lot)	100 yr demand (af)		Construction Demand (af/yr)
2242.00	10000.00	78.96		**0.79**

Total Demand Per Year

Residential Usage **af/yr**	Non-Residential Usage	Lost & Unaccounted for	Construction	Total Non-Res	**Total Demand Per Year (af/yr)**
602.73	**115.36**	**71.81**	**0.79**	**187.96**	**790.69**
Residential Usage **GPCD**					Total Demand **GPCD**
100					**131**
Annual Build Out Demand					**Total Demand Per Year (Gal/Day)**
790.69					**705878.03**

December 19, 2024

PROJECT DEMAND CALCULATOR

Name of Proposed Project: **San Tan Valley Urban Core L-MPC - Development Area 4**

INSTRUCTIONS: This spreadsheet is designed to help you calculate the water demand for your proposed development for purposes of applying for a Certificate of Assured Water Supply, Water Adequacy Report or Analysis of Assured (or Adequate) Water Supply. Please enter information into the blue boxes as applicable. If you need help with this form, please contact the Office of Assured and Adequate Water Supply at (602) 771-8599.

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Residential Usage*

Category	PPHU	GPCD or per house/day	Demand/HU/YR (af/yr)	No. HU (Lots)	Residential Demand/Yr (af/yr)
Single Family (int)	2.40	45.00	0.12		0.00
Multi-Family (int)	2.40	45.00	0.12	4643.00	561.69
Single Family Landscape (ext)	1.00	132.00	0.15	0.00	0.00
Multi-Family Landscape (ext)	1.00	77.00	0.09	4643.00	400.46
Single family Demand/HU/YR			0.27		
Multifamily Demand/HU/YR			0.21		

	Square Feet	Acres	Demand Factor (af/yr)	No. HU (Lots)	Large Lot Adjustment Demand/Yr (af/yr)
Average Lot Size (sq. ft)**	2504.96	0.06			
TMP Model Lot Size (sq. ft)	7,500 - 10,000	0.17 - 0.23			
Large Lot Adjustment	0.00	0.00			
1/2 low water use	0.00	0.00	1.50	0.00	0.00
1/2 turf	0.00	0.00	4.90	0.00	0.00

**NOTE: If the subdivision contains several groupings of lot sizes, the large lot adjustment needs to be calculated for each grouping of large lot sizes. If CC&Rs with landscaping restrictions for the residential lots will be adopted, a modified large lot adjustment can be calculated based on the specific landscaping restrictions. Contact the Office of Assured and Adequate Water Supply for assistance in calculating the large lot adjustment for subdivisions with several groupings of large lot sizes or if CC&Rs limiting landscaping within the residential lots will be adopted.

Total Residential Demand **962.15**

Non-Residential Usage***

For each category please enter either square feet or acres of land for that type of non-residential use within your subdivision

Category	Square Feet	Acres	Demand Factor (af/ac)		Non-Residential Demand (af/yr)
Common Area1		87.00	1.50	low water use	130.50
Common Area2		0.00	4.90	turf	0.00
Right of Way		0.00	1.50	low water use	0.00
Golf Course		0.00	AMA Turf Program - contact AMA		0.00
Commercial use		310.00	1.67	all acres	517.70
Public Pool (length x width = square feet)		0.00	Based on closest AMA	pool	0.00
Parks1		0.00	1.50	low water use	0.00
Parks2		0.00	4.90	turf	0.00
Retention/Detention Basins		0.00	1.50	low water use	0.00
Retention/Detention Basins		0.00	4.90	turf	0.00
School Landscape1		0.00	1.50	low water use	0.00
School Landscape2		0.00	4.90	turf	0.00
	Number of students				
Elementary school interior use	0.00		25 GPCD	interior demand	0.00
Middle/High School interior use	0.00		43 GPCD	interior demand	0.00

***NOTE: If your application is for a change of ownership from a previously issued Certificate of Assured Water Supply, and is for only a portion of the original Certificate, contact the Office of Assured and Adequate Water Supply to pro-rate non-residential area acreage.

Total Non-Residential Demand **648.20**

Distribution Losses

	Residential	Non-Residential	Total	Loss Factor %	Distribution Losses (af/yr)
Demand af/yr	962.15	648.20	1610.35	10.00	**161.04**

Construction

No. of Lots	Demand (gals/lot)	100 yr demand (af)		Construction Demand (af/yr)
4643.00	10000.00	195.56		**1.96**

Total Demand Per Year

Residential Usage **af/yr**	Non-Residential Usage	Lost & Unaccounted for	Construction	Total Non-Res	**Total Demand Per Year (af/yr)**
962.15	**648.20**	**161.04**	**1.96**	**811.19**	**1773.34**
Residential Usage **GPCD**					Total Demand **GPCD**
77					**142**
Annual Build Out Demand					**Total Demand Per Year (Gal/Day)**
1773.34					**1583138.75**

December 19, 2024

PROJECT DEMAND CALCULATOR

Name of Proposed Project: **San Tan Valley Urban Core L-MPC - Development Area 5**

INSTRUCTIONS: This spreadsheet is designed to help you calculate the water demand for your proposed development for purposes of applying for a Certificate of Assured Water Supply, Water Adequacy Report or Analysis of Assured (or Adequate) Water Supply. Please enter information into the blue boxes as applicable. If you need help with this form, please contact the Office of Assured and Adequate Water Supply at (602) 771-8599.

NOTE: This sheet, when completed, does not constitute approval of the demand estimate for your proposed development. It is intended for general estimation purposes only. The final, official demand estimates will be determined by the Department upon review of your complete application.

Enter the AMA the subdivision is located in*: PHX — * Enter PHX for Phoenix, TUC for Tucson, PIN for Pinal, PRE for Prescott or SCR for Santa Cruz.

If you are not sure if your are located inside or outside of an AMA, contact the Office of Assured and Adequate Water Supply at (602) 771-8599.

Enter the COUNTY the subdivision is located in: PINAL — * Enter either APACHE, COCHISE, COCONINO, GILA, GRAHAM, GREENLEE, LA PAZ, MARICOPA, MOHAVE, NAVAJO, PIMA, PINAL, SANTA CRUZ, YAVAPAI, or YUMA.

Residential Usage*

Category	PPHU	GPCD or per house/day	Demand/HU/YR (af/yr)	No. HU (Lots)	Residential Demand/Yr (af/yr)
Single Family (int)	2.40	45.00	0.12		0.00
Multi-Family (int)	2.40	45.00	0.12	1200.00	145.17
Single Family Landscape (ext)	1.00	132.00	0.15	0.00	0.00
Multi-Family Landscape (ext)	1.00	77.00	0.09	1200.00	103.50
Single family Demand/HU/YR			0.27		
Multifamily Demand/HU/YR			0.21		

	Square Feet	Acres	Demand Factor (af/yr)	No. HU (Lots)	Large Lot Adjustment Demand/Yr (af/yr)
Average Lot Size (sq. ft)**	2178.00	0.05			
TMP Model Lot Size (sq. ft)	7,500 - 10,000	0.17 - 0.23			
Large Lot Adjustment	0.00	0.00			
1/2 low water use	0.00	0.00	1.50	0.00	0.00
1/2 turf	0.00	0.00	4.90	0.00	0.00

**NOTE: If the subdivision contains several groupings of lot sizes, the large lot adjustment needs to be calculated for each grouping of large lot sizes. If CC&Rs with landscaping restrictions for the residential lots will be adopted, a modified large lot adjustment can be calculated based on the specific landscaping restrictions. Contact the Office of Assured and Adequate Water Supply for assistance in calculating the large lot adjustment for subdivisions with several groupings of large lot sizes or if CC&Rs limiting landscaping within the residential lots will be adopted.

Total Residential Demand **248.67**

Non-Residential Usage***

For each category please enter either square feet or acres of land for that type of non-residential use within your subdivision

Category	Square Feet	Acres	Demand Factor (af/ac)		Non-Residential Demand (af/yr)
Common Area1		29.00	1.50	low water use	43.50
Common Area2		0.00	4.90	turf	0.00
Right of Way		0.00	1.50	low water use	0.00
Golf Course		0.00	AMA Turf Program - contact AMA		0.00
Commercial use		181.00	1.67	all acres	302.27
Public Pool (length x width = square feet)		0.00	Based on closest AMA	pool	0.00
Parks1		0.00	1.50	low water use	0.00
Parks2		0.00	4.90	turf	0.00
Retention/Detention Basins		0.00	1.50	low water use	0.00
Retention/Detention Basins		0.00	4.90	turf	0.00
School Landscape1		0.00	1.50	low water use	0.00
School Landscape2		0.00	4.90	turf	0.00
	Number of students				
Elementary school interior use	0.00		25 GPCD	interior demand	0.00
Middle/High School interior use	0.00		43 GPCD	interior demand	0.00

***NOTE: If your application is for a change of ownership from a previously issued Certificate of Assured Water Supply, and is for only a portion of the original Certificate, contact the Office of Assured and Adequate Water Supply to pro-rate non-residential area acreage.

Total Non-Residential Demand **345.77**

Distribution Losses

	Residential	Non-Residential	Total	Loss Factor %	Distribution Losses (af/yr)
Demand af/yr	248.67	345.77	594.44	10.00	**59.44**

Construction

No. of Lots	Demand (gals/lot)	100 yr demand (af)		Construction Demand (af/yr)
1200.00	10000.00	64.90		**0.65**

Total Demand Per Year

Residential Usage **af/yr**	Non-Residential Usage	Lost & Unaccounted for	Construction	Total Non-Res	**Total Demand Per Year (af/yr)**
248.67	**345.77**	**59.44**	**0.65**	**405.86**	**654.54**
Residential Usage **GPCD**					Total Demand **GPCD**
77					**203**
Annual Build Out Demand					**Total Demand Per Year (Gal/Day)**
654.54					**584331.00**

December 19, 2024	**PROJECT DEMAND CALCULATOR**				
Name of Proposed Project:	**San Tan Valley Urban Core L-MPC - Development Area 6**				
INSTRUCTIONS: This spreadsheet is designed to help you calculate the water demand for your proposed development for purposes					
of applying for a Certificate of Assured Water Supply, Water Adequacy Report or Analysis of Assured (or Adequate) Water Supply. Please enter information into					
the blue boxes as applicable. If you need help with this form, please contact the Office of Assured and Adequate Water Supply at (602) 771-8599.					
NOTE: This sheet, when completed, does not constitute approval of the demand estimate for your proposed development. It is intended for general					
estimation purposes only. The final, official demand estimates will be determined by the Department upon review of your complete application.					
Enter the AMA the subdivision is located in*:	PHX	* Enter PHX for Phoenix, TUC for Tucson, PIN for Pinal, PRE for Prescott or SCR for Santa Cruz.			
If you are not sure if your are located inside or outside of an AMA, contact the Office of Assured and Adequate Water Supply at (602) 771-8599.					
Enter the COUNTY the subdivision is located in:	PINAL	* Enter either APACHE, COCHISE, COCONINO, GILA, GRAHAM, GREENLEE, LA PAZ, MARICOPA,			
		MOHAVE, NAVAJO, PIMA, PINAL, SANTA CRUZ, YAVAPAI, or YUMA.			
Residential Usage*					
Category	PPHU	GPCD or per house/day	Demand/HU/YR (af/yr)	No. HU (Lots)	Residential Demand/Yr (af/yr)
Single Family (int)	2.40	45.00	0.12	0.00	0.00
Multi-Family (int)	2.40	45.00	0.12	1568.00	189.69
Single Family Landscape (ext)	1.00	132.00	0.15	0.00	0.00
Multi-Family Landscape (ext)	1.00	77.00	0.09	1568.00	135.24
Single family Demand/HU/YR			0.27		
Multifamily Demand/HU/YR			0.21		
	Square Feet	Acres	Demand Factor (af/yr)	No. HU (Lots)	Large Lot Adjustment Demand/Yr (af/yr)
Average Lot Size (sq. ft)**	2166.89	0.05			
TMP Model Lot Size (sq. ft)	7,500 - 10,000	0.17 - 0.23			
Large Lot Adjustment	0.00	0.00			
1/2 low water use	0.00	0.00	1.50	0.00	0.00
1/2 turf	0.00	0.00	4.90	0.00	0.00
**NOTE: If the subdivision contains several groupings of lot sizes, the large lot adjustment needs to be calculated for each grouping of large lot sizes.					
If CC&Rs with landscaping restrictions for the residential lots will be adopted, a modified large lot adjustment can be calculated based on the specific landscaping restrictions.					
Contact the Office of Assured and Adequate Water Supply for assistance in calculating the large lot adjustment for subdivisions with several groupings of large lot sizes or					
if CC&Rs limiting landscaping within the residential lots will be adopted.					
Total Residential Demand					**324.93**
Non-Residential Usage***					
For each category please enter either square feet or acres of land for that type of non-residential use within your subdivision					
Category	Square Feet	Acres	Demand Factor (af/ac)		Non-Residential Demand (af/yr)
Common Area1		39.00	1.50	low water use	58.50
Common Area2		0.00	4.90	turf	0.00
Right of Way		0.00	1.50	low water use	0.00
Golf Course		0.00	AMA Turf Program - contact AMA		0.00
Commercial use		392.00	1.67	all acres	654.64
Public Pool (length x width = square feet)		0.00	Based on closest AMA	pool	0.00
Parks1		0.00	1.50	low water use	0.00
Parks2		0.00	4.90	turf	0.00
Retention/Detention Basins		0.00	1.50	low water use	0.00
Retention/Detention Basins		0.00	4.90	turf	0.00
School Landscape1		0.00	1.50	low water use	0.00
School Landscape2		0.00	4.90	turf	0.00
	Number of students				
Elementary school interior use	0.00		25 GPCD	interior demand	0.00
Middle/High School interior use	0.00		43 GPCD	interior demand	0.00
***NOTE: If your application is for a change of ownership from a previously issued Certificate of Assured Water Supply, and is for only a portion of the original Certificate, contact the					
Office of Assured and Adequate Water Supply to pro-rate non-residential area acreage.					
Total Non-Residential Demand					**713.14**
Distribution Losses					
	Residential	Non-Residential	Total	Loss Factor %	Distribution Losses (af/yr)
Demand af/yr	324.93	713.14	1038.07	10.00	**103.81**
Construction					
	No. of Lots	Demand (gals/lot)	100 yr demand (af)		Construction Demand (af/yr)
	1568.00	10000.00	105.74		**1.06**
Total Demand Per Year					
Residential Usage **af/yr**	Non-Residential Usage	Lost & Unaccounted for	Construction	Total Non-Res	**Total Demand Per Year (af/yr)**
324.93	**713.14**	**103.81**	**1.06**	**818.00**	**1142.94**
Residential Usage **GPCD**					Total Demand **GPCD**
77					**271**
Annual Build Out Demand					**Total Demand Per Year (Gal/Day)**
1142.94					**1020346.82**

December 19, 2024

PROJECT DEMAND CALCULATOR

Name of Proposed Project: **San Tan Valley Urban Core L-MPC - Development Area 7**

INSTRUCTIONS: This spreadsheet is designed to help you calculate the water demand for your proposed development for purposes of applying for a Certificate of Assured Water Supply, Water Adequacy Report or Analysis of Assured (or Adequate) Water Supply. Please enter information into the blue boxes as applicable. If you need help with this form, please contact the Office of Assured and Adequate Water Supply at (602) 771-8599.

NOTE: This sheet, when completed, does not constitute approval of the demand estimate for your proposed development. It is intended for general estimation purposes only. The final, official demand estimates will be determined by the Department upon review of your complete application.

Enter the AMA the subdivision is located in*: PHX — * Enter PHX for Phoenix, TUC for Tucson, PIN for Pinal, PRE for Prescott or SCR for Santa Cruz.

If you are not sure if your are located inside or outside of an AMA, contact the Office of Assured and Adequate Water Supply at (602) 771-8599.

Enter the COUNTY the subdivision is located in: PINAL — * Enter either APACHE, COCHISE, COCONINO, GILA, GRAHAM, GREENLEE, LA PAZ, MARICOPA, MOHAVE, NAVAJO, PIMA, PINAL, SANTA CRUZ, YAVAPAI, or YUMA.

Residential Usage*

Category	PPHU	GPCD or per house/day	Demand/HU/YR (af/yr)	No. HU (Lots)	Residential Demand/Yr (af/yr)
Single Family (int)	2.40	45.00	0.12	1836.00	222.11
Multi-Family (int)	2.40	45.00	0.12	0.00	0.00
Single Family Landscape (ext)	1.00	132.00	0.15	1836.00	271.47
Multi-Family Landscape (ext)	1.00	77.00	0.09	0.00	0.00
Single family Demand/HU/YR			0.27		
Multifamily Demand/HU/YR			0.21		

	Square Feet	Acres	Demand Factor (af/yr)	No. HU (Lots)	Large Lot Adjustment Demand/Yr (af/yr)
Average Lot Size (sq. ft)**	7260.00	0.17			
TMP Model Lot Size (sq. ft)	7,500 - 10,000	0.17 - 0.23			
Large Lot Adjustment	0.00	0.00			
1/2 low water use	0.00	0.00	1.50	0.00	0.00
1/2 turf	0.00	0.00	4.90	0.00	0.00

**NOTE: If the subdivision contains several groupings of lot sizes, the large lot adjustment needs to be calculated for each grouping of large lot sizes. If CC&Rs with landscaping restrictions for the residential lots will be adopted, a modified large lot adjustment can be calculated based on the specific landscaping restrictions. Contact the Office of Assured and Adequate Water Supply for assistance in calculating the large lot adjustment for subdivisions with several groupings of large lot sizes or if CC&Rs limiting landscaping within the residential lots will be adopted.

Total Residential Demand **493.58**

Non-Residential Usage***

For each category please enter either square feet or acres of land for that type of non-residential use within your subdivision

Category	Square Feet	Acres	Demand Factor (af/ac)		Non-Residential Demand (af/yr)
Common Area1		56.00	1.50	low water use	84.00
Common Area2		0.00	4.90	turf	0.00
Right of Way		0.00	1.50	low water use	0.00
Golf Course		0.00	AMA Turf Program - contact AMA		0.00
Commercial use		8.00	1.67	all acres	13.36
Public Pool (length x width = square feet)		0.00	Based on closest AMA	pool	0.00
Parks1		0.00	1.50	low water use	0.00
Parks2		0.00	4.90	turf	0.00
Retention/Detention Basins		0.00	1.50	low water use	0.00
Retention/Detention Basins		0.00	4.90	turf	0.00
School Landscape1		0.00	1.50	low water use	0.00
School Landscape2		0.00	4.90	turf	0.00
	Number of students				
Elementary school interior use	0.00		25 GPCD	interior demand	0.00
Middle/High School interior use	0.00		43 GPCD	interior demand	0.00

***NOTE: If your application is for a change of ownership from a previously issued Certificate of Assured Water Supply, and is for only a portion of the original Certificate, contact the Office of Assured and Adequate Water Supply to pro-rate non-residential area acreage.

Total Non-Residential Demand **97.36**

Distribution Losses

	Residential	Non-Residential	Total	Loss Factor %	Distribution Losses (af/yr)
Demand af/yr	493.58	97.36	590.94	10.00	**59.09**

Construction

No. of Lots	Demand (gals/lot)	100 yr demand (af)		Construction Demand (af/yr)
1836.00	10000.00	64.90		**0.65**

Total Demand Per Year

Residential Usage **af/yr**	Non-Residential Usage	Lost & Unaccounted for	Construction	Total Non-Res	**Total Demand Per Year (af/yr)**
493.58	**97.36**	**59.09**	**0.65**	**157.10**	**650.68**
Residential Usage **GPCD**					Total Demand **GPCD**
100					**132**
Annual Build Out Demand					**Total Demand Per Year (Gal/Day)**
650.68					**580892.24**

December 19, 2024

PROJECT DEMAND CALCULATOR

Name of Proposed Project: **San Tan Valley Urban Core L-MPC - Development Area 8**

INSTRUCTIONS: This spreadsheet is designed to help you calculate the water demand for your proposed development for purposes of applying for a Certificate of Assured Water Supply, Water Adequacy Report or Analysis of Assured (or Adequate) Water Supply. Please enter information into the blue boxes as applicable. If you need help with this form, please contact the Office of Assured and Adequate Water Supply at (602) 771-8599.

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Enter the AMA the subdivision is located in*: PHX * Enter PHX for Phoenix, TUC for Tucson, PIN for Pinal, PRE for Prescott or SCR for Santa Cruz.

If you are not sure if your are located inside or outside of an AMA, contact the Office of Assured and Adequate Water Supply at (602) 771-8599.

Enter the COUNTY the subdivision is located in: PINAL * Enter either APACHE, COCHISE, COCONINO, GILA, GRAHAM, GREENLEE, LA PAZ, MARICOPA, MOHAVE, NAVAJO, PIMA, PINAL, SANTA CRUZ, YAVAPAI, or YUMA.

Residential Usage*

Category	PPHU	GPCD or per house/day	Demand/HU/YR (af/yr)	No. HU (Lots)	Residential Demand/Yr (af/yr)
Single Family (int)	2.40	45.00	0.12	1386.00	167.67
Multi-Family (int)	2.40	45.00	0.12	0.00	0.00
Single Family Landscape (ext)	1.00	132.00	0.15	1386.00	204.93
Multi-Family Landscape (ext)	1.00	77.00	0.09	0.00	0.00
Single family Demand/HU/YR			0.27		
Multifamily Demand/HU/YR			0.21		

	Square Feet	Acres	Demand Factor (af/yr)	No. HU (Lots)	Large Lot Adjustment Demand/Yr (af/yr)
Average Lot Size (sq. ft)**	7260.00	0.17			
TMP Model Lot Size (sq. ft)	7,500 - 10,000	0.17 - 0.23			
Large Lot Adjustment	0.00	0.00			
1/2 low water use	0.00	0.00	1.50	0.00	0.00
1/2 turf	0.00	0.00	4.90	0.00	0.00

**NOTE: If the subdivision contains several groupings of lot sizes, the large lot adjustment needs to be calculated for each grouping of large lot sizes. If CC&Rs with landscaping restrictions for the residential lots will be adopted, a modified large lot adjustment can be calculated based on the specific landscaping restrictions. Contact the Office of Assured and Adequate Water Supply for assistance in calculating the large lot adjustment for subdivisions with several groupings of large lot sizes or if CC&Rs limiting landscaping within the residential lots will be adopted.

Total Residential Demand **372.60**

Non-Residential Usage***

For each category please enter either square feet or acres of land for that type of non-residential use within your subdivision

Category	Square Feet	Acres	Demand Factor (af/ac)		Non-Residential Demand (af/yr)
Common Area1		42.00	1.50	low water use	63.00
Common Area2		0.00	4.90	turf	0.00
Right of Way		0.00	1.50	low water use	0.00
Golf Course		0.00	AMA Turf Program - contact AMA		0.00
Commercial use		9.00	1.67	all acres	15.03
Public Pool (length x width = square feet)		0.00	Based on closest AMA	pool	0.00
Parks1		0.00	1.50	low water use	0.00
Parks2		0.00	4.90	turf	0.00
Retention/Detention Basins		0.00	1.50	low water use	0.00
Retention/Detention Basins		0.00	4.90	turf	0.00
School Landscape1		0.00	1.50	low water use	0.00
School Landscape2		0.00	4.90	turf	0.00
	Number of students				
Elementary school interior use	0.00		25 GPCD	interior demand	0.00
Middle/High School interior use	0.00		43 GPCD	interior demand	0.00

***NOTE: If your application is for a change of ownership from a previously issued Certificate of Assured Water Supply, and is for only a portion of the original Certificate, contact the Office of Assured and Adequate Water Supply to pro-rate non-residential area acreage.

Total Non-Residential Demand **78.03**

Distribution Losses

	Residential	Non-Residential	Total	Loss Factor %	Distribution Losses (af/yr)
Demand af/yr	372.60	78.03	450.63	10.00	**45.06**

Construction

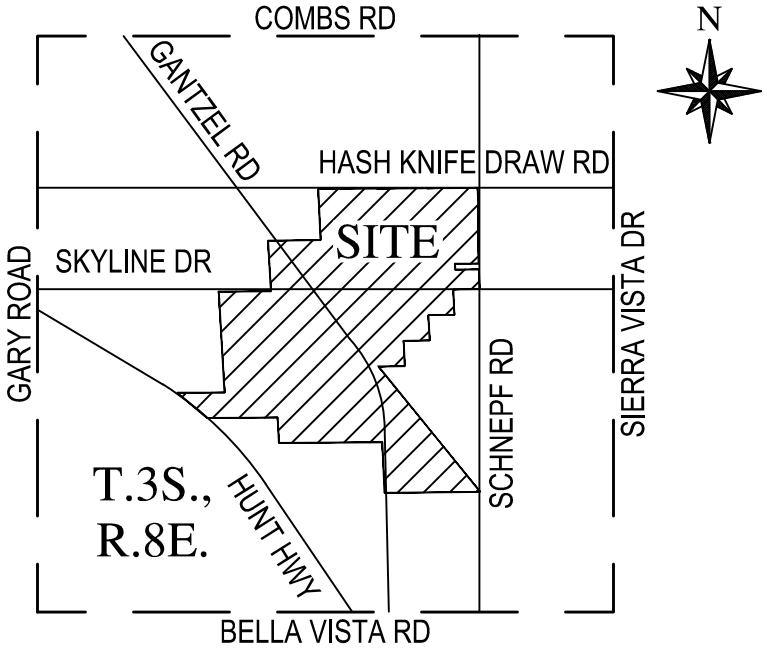
	No. of Lots	Demand (gals/lot)	100 yr demand (af)		Construction Demand (af/yr)
	1386.00	10000.00	49.35		**0.49**

Total Demand Per Year

Residential Usage **af/yr**	Non-Residential Usage	Lost & Unaccounted for	Construction	Total Non-Res	**Total Demand Per Year (af/yr)**
372.60	**78.03**	**45.06**	**0.49**	**123.59**	**496.19**
Residential Usage **GPCD**					Total Demand **GPCD**
100					**133**
Annual Build Out Demand					**Total Demand Per Year (Gal/Day)**
496.19					**442971.12**

December 19, 2024	**PROJECT DEMAND CALCULATOR**				
Name of Proposed Project:	**San Tan Valley Urban Core L-MPC - Development Area 9**				
INSTRUCTIONS: This spreadsheet is designed to help you calculate the water demand for your proposed development for purposes					
of applying for a Certificate of Assured Water Supply, Water Adequacy Report or Analysis of Assured (or Adequate) Water Supply. Please enter information into					
the blue boxes as applicable. If you need help with this form, please contact the Office of Assured and Adequate Water Supply at (602) 771-8599.					
NOTE: This sheet, when completed, does not constitute approval of the demand estimate for your proposed development. It is intended for general					
estimation purposes only. The final, official demand estimates will be determined by the Department upon review of your complete application.					
Enter the AMA the subdivision is located in*:	PHX	* Enter PHX for Phoenix, TUC for Tucson, PIN for Pinal, PRE for Prescott or SCR for Santa Cruz.			
If you are not sure if your are located inside or outside of an AMA, contact the Office of Assured and Adequate Water Supply at (602) 771-8599.					
Enter the COUNTY the subdivision is located in:	PINAL	* Enter either APACHE, COCHISE, COCONINO, GILA, GRAHAM, GREENLEE, LA PAZ, MARICOPA,			
		MOHAVE, NAVAJO, PIMA, PINAL, SANTA CRUZ, YAVAPAI, or YUMA.			
Residential Usage*					
Category	PPHU	GPCD or per house/day	Demand/HU/YR (af/yr)	No. HU (Lots)	Residential Demand/Yr (af/yr)
Single Family (int)	2.40	45.00	0.12	1776.00	214.85
Multi-Family (int)	2.40	45.00	0.12	0.00	0.00
Single Family Landscape (ext)	1.00	132.00	0.15	1776.00	262.60
Multi-Family Landscape (ext)	1.00	77.00	0.09	0.00	0.00
Single family Demand/HU/YR			0.27		
Multifamily Demand/HU/YR			0.21		
	Square Feet	Acres	Demand Factor (af/yr)	No. HU (Lots)	Large Lot Adjustment Demand/Yr (af/yr)
Average Lot Size (sq. ft)**	7260.00	0.17			
TMP Model Lot Size (sq. ft)	7,500 - 10,000	0.17 - 0.23			
Large Lot Adjustment	0.00	0.00			
1/2 low water use	0.00	0.00	1.50	0.00	0.00
1/2 turf	0.00	0.00	4.90	0.00	0.00
**NOTE: If the subdivision contains several groupings of lot sizes, the large lot adjustment needs to be calculated for each grouping of large lot sizes.					
If CC&Rs with landscaping restrictions for the residential lots will be adopted, a modified large lot adjustment can be calculated based on the specific landscaping restrictions.					
Contact the Office of Assured and Adequate Water Supply for assistance in calculating the large lot adjustment for subdivisions with several groupings of large lot sizes or					
if CC&Rs limiting landscaping within the residential lots will be adopted.					
Total Residential Demand					**477.45**
Non-Residential Usage***					
For each category please enter either square feet or acres of land for that type of non-residential use within your subdivision					
Category	Square Feet	Acres	Demand Factor (af/ac)		Non-Residential Demand (af/yr)
Common Area1		54.00	1.50	low water use	81.00
Common Area2		0.00	4.90	turf	0.00
Right of Way		0.00	1.50	low water use	0.00
Golf Course		0.00	AMA Turf Program - contact AMA		0.00
Commercial use		8.00	1.67	all acres	13.36
Public Pool (length x width = square feet)		0.00	Based on closest AMA	pool	0.00
Parks1		0.00	1.50	low water use	0.00
Parks2		0.00	4.90	turf	0.00
Retention/Detention Basins		0.00	1.50	low water use	0.00
Retention/Detention Basins		0.00	4.90	turf	0.00
School Landscape1		0.00	1.50	low water use	0.00
School Landscape2		0.00	4.90	turf	0.00
	Number of students				
Elementary school interior use	0.00		25 GPCD	interior demand	0.00
Middle/High School interior use	0.00		43 GPCD	interior demand	0.00
***NOTE: If your application is for a change of ownership from a previously issued Certificate of Assured Water Supply, and is for only a portion of the original Certificate, contact the					
Office of Assured and Adequate Water Supply to pro-rate non-residential area acreage.					
Total Non-Residential Demand					**94.36**
Distribution Losses					
	Residential	Non-Residential	Total	Loss Factor %	Distribution Losses (af/yr)
Demand af/yr	477.45	94.36	571.81	10.00	**57.18**
Construction					
	No. of Lots	Demand (gals/lot)	100 yr demand (af)		Construction Demand (af/yr)
	1776.00	10000.00	62.79		**0.63**
Total Demand Per Year					
Residential Usage **af/yr**	Non-Residential Usage	Lost & Unaccounted for	Construction	Total Non-Res	**Total Demand Per Year (af/yr)**
477.45	**94.36**	**57.18**	**0.63**	**152.17**	**629.62**
Residential Usage **GPCD**					Total Demand **GPCD**
100					**132**
Annual Build Out Demand					**Total Demand Per Year (Gal/Day)**
629.62					**562087.37**

EXHIBIT 1 – VICINITY MAP



VICINITY MAP

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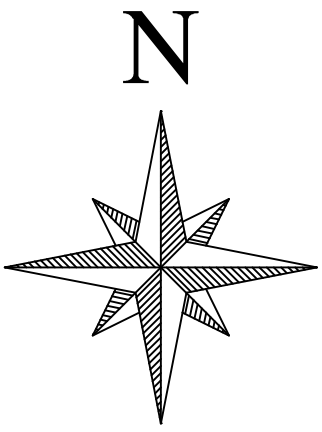

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WOOD PATEL

SAN TAN VALLEY L-MPC

VICINITY MAP

DATE	1-6-2025	SCALE	NTS	SHEET	1 OF 1
JOB NO.	235485	DESIGN	NB/JM/RH	CHECK	NB/JM
		DRAWN	SH		

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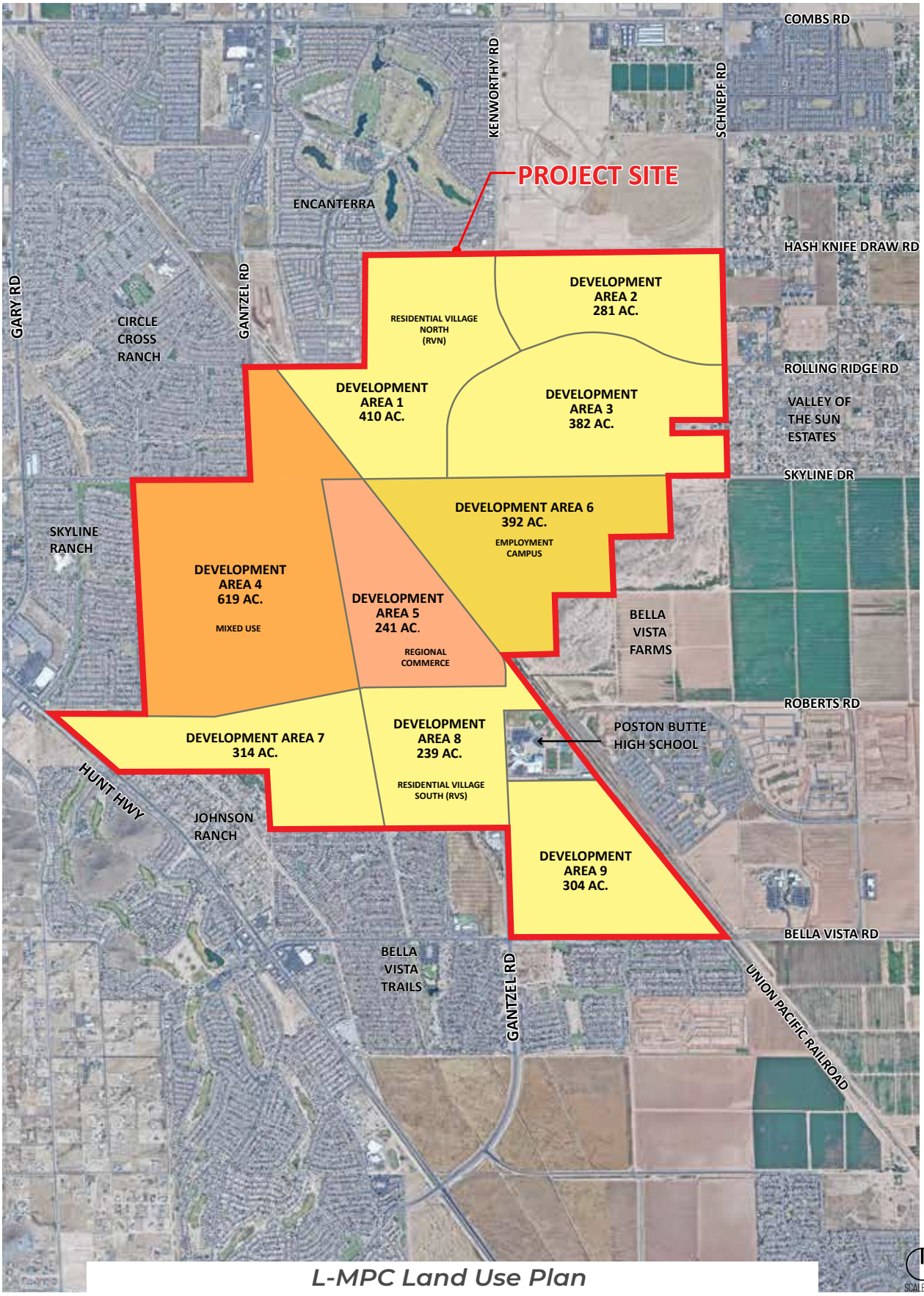
EXHIBIT 2 – L-MPC LAND USE PLAN



L-MPC Land Use Plan

EXHIBIT 3 –PROPOSED WATER SYSTEM MAP

TOWN OF QUEEN CREEK - WATER DEMANDS			
LAND USE	DEVELOPMENT AREA	PUBLISHED CRITERIA (GPD)	PER ADWR (GPD)
REGIONAL COMMERCE	5		
MIXED USE	4		
RESIDENTIAL VILLAGE NORTH	1	1,172,100	759,288
	2	798,880	519,192
	3	1,089,760	705,878
EMPLOYMENT DISTRIBUTION CAMPUS	6	1,080,352	1,020,347
RESIDENTIAL VILLAGE SOUTH	7		
	8		
	9		
TOTAL		4,141,092	3,004,705

EPCOR - WATER DEMANDS			
LAND USE	DEVELOPMENT AREA	DEMANDS PER PUBLISHED CRITERIA (GPD)	ACTUAL DEMANDS PER ADWR (GPD)
REGIONAL COMMERCE	5	595,700	584,331
MIXED USE	4	1,641,320	1,583,139
RESIDENTIAL VILLAGE NORTH	1		
	2		
	3		
EMPLOYMENT DISTRIBUTION CAMPUS	6		
RESIDENTIAL VILLAGE SOUTH	7	674,560	580,892
	8	514,260	442,971
	9	652,960	562,087
TOTAL		4,078,800	3,753,420

N

0 1000 2000

Horz. 1 in. = 1000 ft.

LEGEND

- UTILITY CORRIDOR
- TRANSMISSION TOWER
- CORE STUDY PROJECT BOUNDARY
- EXISTING EPCOR WATER SERVICE AREA
- EXISTING QUEEN CREEK WATER SERVICE AREA
- RAILROAD & OVERHEAD UTILITY CORRIDOR
- PROPOSED EPCOR WATER SERVICE AREA
- PROPOSED QUEEN CREEK WATER SERVICE AREA
- SPINE ROAD

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EXPIRES 03-31-25

WOOD PATEL

SAN TAN VALLEY

WATER SERVICE AREAS WITH LAND USE MAP OVERLAY

DATE	1-6-2025	SCALE	1" = 1000'	SHEET	1 OF 2
JOB NO	235485	DESIGN	JM	DRAWN	SH/RH

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WOOD PATEL

WASTEWATER COLLECTION SYSTEM
CONCEPTUAL ASSESSMENT
FOR
SAN TAN VALLEY URBAN CORE L-MPC

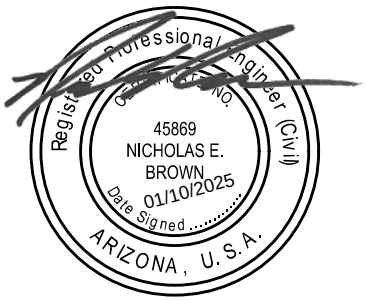
January 10, 2025
WP# 235485

EXPIRES 03-31-25

TABLE OF CONTENTS

TABLES

EXHIBITS



EXPIRES 03-31-25

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EXECUTIVE SUMMARY

The proposed San Tan Valley Urban Core Large Master Plan Community (L-MPC) requests zoning for approximately 3,200-acre site of Arizona State Trust Land. The L-MPC is north of Bella Vista Road, east of Hunt Highway, south of Empire Boulevard, and west of Schnepf Road in Pinal County, Arizona within Sections 4, 5, 7, 8, 9, 16, 17 and 18 of Township 3 South, Range 8 East of the Gila and Salt River Base and Meridian, Maricopa County, Arizona. Refer to Exhibit 1 – *Vicinity Map.*

This Conceptual Wastewater Collection System Basis of Design Assessment has been prepared in accordance with Wood, Patel & Associates, Inc.'s (WOODPATEL's) understanding of the EPCOR and Town of Queen Creek technical requirements for wastewater collection systems, as applicable for the L-MPC. It presents wastewater design demands required to provide wastewater service to the L-MPC. The Average Day Demand (ADD) and peaking factor was determined per *2020 EPCOR Developer & Engineering Guide* and based on the L-MPC Land Use Plan by SWABACK. Refer to Exhibit 2 - *L-MPC Land Use Plan.*

According to EPCOR and the Town of Queen Creek, there is no existing capacity in the wastewater collection system adjacent to the L-MPC. Offsite wastewater infrastructure capacity and wastewater infrastructure tie-in points to serve the L-MPC are unknown at this time. Future development will require additional planning and coordination with the appropriate wastewater service provider through wastewater master plans. The proposed wastewater collection system for the L-MPC includes a service provider split between Town of Queen Creek and EPCOR. The existing grade break of the Union Pacific Railroad will serve as the conceptual delineation line between the service providers to be further evaluated with each future development. Refer to Exhibit 3 - *Proposed Wastewater System Map*.

The results of the wastewater model indicate the Average Day Demand generated by the L-MPC is 1,922,580 gallons per day (gpd) and the Peak Flow Demand is 5,767,740 gpd for the Town of Queen Creek service area. The Average Day Demand of 2,725,380 (gpd) and the Peak Flow Demand of 8,176,140 gpd is generated for the EPCOR service areas. Refer to Table 2 – *Wastewater Model.*

1.0 INTRODUCTION

The proposed San Tan Valley Urban Core Large Master Plan Community (L-MPC) requests zoning for approximately 3,200-acre site of Arizona State Trust Land.

This Conceptual Wastewater Collection System Basis of Design Assessment has been prepared in accordance with WOODPATEL's understanding of the Town of Queen Creek and EPCOR technical requirements for wastewater collection systems. It presents wastewater demands as required to provide wastewater service to the proposed L-MPC.

2.0 LOCATION

The L-MPC is north of Bella Vista Road, east of Hunt Highway, south of Empire Boulevard, and west of Schnepf Road in Pinal County, Arizona within Sections 4, 5, 7, 8, 9, 16, 17 and 18 of Township 3 South, Range 8 East of the Gila and Salt River Base and Meridian, Maricopa County, Arizona. Refer to Exhibit 1 – *Vicinity Map*.

3.0 PURPOSE OF ASSESSMENT

This Assessment presents wastewater design demands as required to provide wastewater service to the proposed L-MPC and meet the Town of Queen Creek and EPCOR technical requirements for wastewater collection systems.

4.0 EXISTING WASTEWATER SYSTEM CONDITION

4.1 Topographic Conditions

The topography of the L-MPC generally slopes from the southeast to the northwest from an approximate high elevation of 1495 to an approximate low elevation of 1475. The Union Pacific Railroad bisects the L-MPC and creates a grade separation between the northeast and southwest portions of the L-MPC.

4.2 Existing Offsite Wastewater Collection System Infrastructure

Portions of the L-MPC lie within the existing EPCOR wastewater service area. The majority of the L-MPC does not lie within an existing wastewater service area. The existing wastewater infrastructure adjacent to the L-MPC serves the surrounding development. According to EPCOR and the Town of Queen Creek, there is no existing wastewater capacity available for the development within the L-MPC. Offsite wastewater infrastructure capacity and wastewater infrastructure tie-in points to serve the L-MPC are unknown at this time.

5.0 DESIGN CRITERIA

For the purpose of this Assessment, wastewater demand design flows and pipe-sizing criteria utilized in this plan are based on WOODPATEL's understanding of the following:

- Applicable wastewater system design criteria listed in the *2020 EPCOR Developer & Engineering Guide.*

- Applicable water system design criteria listed in the *2013 Design and Construction Standards Manual for Water, Wastewater and Irrigation Systems for Town of Queen Creek.*

For further information regarding the design criteria used, refer to Table 1 – *Wastewater Design Criteria*.

6.0 PROPOSED WASTEWATER SYSTEM CONDITION

6.1 Design Flow Calculations

Wastewater design flows are estimated using the design criteria listed in Table 1 – *Wastewater Design Criteria.* For detailed calculations, refer to Table 2 – *Wastewater Model*.

6.2 Planned Wastewater Collection System

According to EPCOR and the Town of Queen Creek, there is no existing wastewater capacity in the adjacent infrastructure nor the nearest wastewater treatment facility for the development in the L-MPC. Future development of the L-MPC will be required to fund and construct the necessary wastewater infrastructure improvements. Wastewater distribution master plans will be required with future development and are to be coordinated with the appropriate service provider. The wastewater public improvements are to be located within the road rights-of-way of the L-MPC transportation system to service surrounding development areas. EPCOR and the Town of Queen Creek have advised that the recovery goal for treated wastewater to recharge is 40-60%. Recharge and recovery is a major component of the Town of Queen Creek's and EPCOR's water portfolio and will be required with development of the L-MPC.

The proposed wastewater collection system for the L-MPC includes three (3) outfall locations according to the existing elevations within the L-MPC. There is potential lift stations may be required to convey wastewater downstream. This is to be further identified with master planning future development and coordination with the Town of Queen Creek and/or EPCOR. The Town of Queen Creek Service area has one outfall, serving development areas 1, 2, 3 and 6. The EPCOR service area has two outfalls; outfall north servicing development areas 4 and 6, and outfall south servicing development areas 7, 8 and 9. The proposed outfall locations will need to be further analyzed to determine infrastructure requirements to continue the flows to the preferred treatment facility. Refer to Exhibit 3 – *Proposed Wastewater System Map* for the wastewater collection system outfall locations and overall proposed wastewater service limits for the town of Queen Creek and EPCOR. Co-locations of wastewater mains within road rights-of-way may be necessary for the best performance of the systems and shall be allowed.

7.0 DESIGN METHODOLOGY

A Microsoft Excel spreadsheet was used to estimate the Average Day Demand and Peak Flow Demand from the L-MPC. These flows are based on the proposed land use budget for each development parcel.

The gravity pipe capacity for each main is calculated using Manning’s equation based on the following flow ratios:

- d/D=0.75 for sewer line 8 inches and greater

The Manning's roughness coefficients are based on the following:

- Polyvinyl Chloride (PVC): 0.013

8.0 WASTEWATER MODEL AND RESULTS

The analysis of the L-MPC's wastewater system shows an expected Average Day Demand of 1,922,580 gpd and a Peak Flow Demand of 5,767,740 gpd at the Town of Queen Creek outfall. An expected Average Day Demand of 1,788,240 gpd and a Peak Flow Demand of 5,364,720 gpd at the EPCOR north outfall. An expected Average Day Demand of 937,140 gpd and a Peak Flow Demand of 2,811,420 gpd at the EPCOR south outfall.

9.0 CONCLUSIONS

This Conceptual Wastewater Collection System Assessment for San Tan Valley Urban Core L-MPC meets WOODPATEL's understanding of the Town of Queen Creek and EPCOR requirements for the wastewater collection system design. The following are critical conclusions:

1. The L-MPC requests zoning of 3,200-acres of Arizona State Trust Land in Pinal County, Arizona.

2. The proposed wastewater collection system for the L-MPC includes three (3) sewer outfalls according to the existing elevation within the L-MPC. The sewer outfalls will need to be further analyzed to determine infrastructure requirements to continue the flows to the preferred treatment facility. There is potential lift stations may be required to convey wastewater downstream. This is to be further identified with master planning future development and coordination with the Town of Queen Creek and/or EPCOR.

3. The wastewater demand generated from the L-MPC is approximately 1,922,580 gpd for Average Day Demand and 5,767,740 gpd for Peak Flow Demand at the Town of Queen Creek outfall; 1,788,240 gpd for Average Day Demand and 5,364,720 gpd for Peak Flow Demand at the EPCOR north outfall; 937,140 gpd for Average Day Demand and 2,811,420 gpd for Peak Flow Demand at the EPCOR south outfall.

4. This Conceptual Wastewater Collection System Basis of Design Assessment demonstrates the sufficiency of the proposed wastewater collection system to serve the L-MPC in accordance with the wastewater design criteria found in the *2013 Design and Construction Standards Manual for Water, Wastewater and Irrigation Systems for Town of Queen Creek* and *2020 EPCOR Developer & Engineering Guide*.

10.0 REFERENCES

1. *EPCOR Developer & Engineering Guide (2020)*
2. *Design and Construction Standards Manual for Water, Wastewater and Irrigation Systems for Town of Queen Creek (2013)*

TABLE 1 – WASTEWATER DESIGN CRITERIA

WOOD PATEL

TABLE 1
EPCOR WASTEWATER DESIGN CRITERIA

Project	San Tan Valley Urban Core L-MPC
Location	San Tan Valley, AZ
Project Number	235485
Project Engineer	Reece Heinle, EIT
References	EPCOR Developer Engineering Guide 2020

RESIDENTIAL WASTEWATER DEMANDS			
LAND USE	**AVERAGE DAILY DEMAND (ADD)[2]**		**POPULATION[1]**
	VALUE	**UNITS**	
Active Adult	190	GPDU	
Single Family	240	GPDU	
Multi Family	180	GPDU	

NON-RESIDENTIAL WASTEWATER DEMANDS			
LAND USE	**AVERAGE DAILY DEMAND (ADD)[2]**		**POPULATION[1]**
	VALUE	**UNITS**	
Commercial	1,500	GPAD	
Warehouse/Big Box Retail	25	GPD/1000 S.F.	
Schools	1,500	GPAD	
Resort	380	GPR	
Hotel	100	GPR	
Hotel with Restaurant	150	GPR	

HYDRAULIC MODELING CRITERIA			
DESCRIPTION			**VALUE[2]**
PEAK FLOW[2]			
EPCOR Developer Engineering Guide 2020	Peak Factor	3.0	
HYDRAULICS[2]			
	Minimum Pipe Diameter (in)		8
	Manning's "n" value		0.013
	Maximum d/D ratio at peak flow		0.75

PIPE SIZE	MEAN VELOCITY[2]		DESIGN SLOPE[2]	
(in)	Minimum (ft/sec)	Maximum (ft/sec)	Minimum (%)	Maximum (%)
8	2.1	9.0	0.3680	6.7600
10	2.2	9.0	0.3000	0.0992
12	2.3	9.0	0.2570	5.0200
15	2.4	9.0	0.2080	3.9370
18	2.4	9.0	0.1630	2.9240
24	2.6	9.0	0.1300	2.2930
27	2.6	9.0	0.111	1.335
30	2.7	9.0	0.104	1.160

Notes
1. Based on Arizona Administrative Code, Title 18, Chapter 9 value of 100 gallons per capita per day.
2. Per EPCOR Developer Engineering Guide 2020

TABLE 1
TOQC WASTEWATER DESIGN CRITERIA

Project	San Tan Valley Urban Core L-MPC
Location	San Tan Valley, AZ
Project Number	235485
Project Engineer	Reece Heinle, EIT
References	Town of Queen Creek Water, Wastewater, Irrigation Design Manual

RESIDENTIAL WASTEWATER DEMANDS			
LAND USE	**AVERAGE DAILY DEMAND (ADD)[2]**		**POPULATION[1]**
	VALUE	**UNITS**	
Residential - 0-1 DU per acre	180	GPAD	Residential - 0-1 DU per acre
Residential - 1-2 DU per acre	359	GPAD	Residential - 1-2 DU per acre
Residential - 2-3 DU per acre	530	GPAD	Residential - 2-3 DU per acre
Residential - 3-5 DU per acre	718	GPAD	Residential - 3-5 DU per acre
Residential - 5-8 DU per acre	1,167	GPAD	Residential - 5-8 DU per acre
Multifamily Residential - 8-25 DU per acre*	185	GPDU	Residential - 8+ DU per acre

* Land use utilizes modified average daily demand values measured in GPDU, derived from Town of Queen Creek Water, Wastewater, Irrigation Design Manual.

NON-RESIDENTIAL WASTEWATER DEMANDS			
LAND USE	**AVERAGE DAILY DEMAND (ADD)[2]**		**POPULATION[1]**
	VALUE	**UNITS**	
Mixed Use	928	GPAD	
Town Center	928	GPAD	
Regional Commercial Center	928	GPAD	
Commercial Services	707	GPAD	

HYDRAULIC MODELING CRITERIA		
DESCRIPTION		**VALUE[2]**
PEAK FLOW		
Town of Queen Creek Comprehensive Utility Master Plan 2022	Peak Factor[2]	
Scenario		
Minimum Population	1.91	
Maximum Population	1.86	
HYDRAULICS		
Minimum Pipe Diameter (in)		8
Manning's "n" value		0.013
Maximum d/D ratio at peak flow		0.75

PIPE SIZE	MEAN VELOCITY[3]		DESIGN SLOPE[3]	
(in)	Minimum (ft/sec)	Maximum (ft/sec)	Minimum (%)	Maximum (%)
8	2.0	9.0	0.3300	0.0676
10	2.0	9.0	0.2400	0.0502
12	2.5	9.0	0.1900	0.0486
15	2.5	9.0	0.1400	0.0361
18	2.5	9.0	0.1100	0.0283
24	2.5	9.0	0.0770	0.0193

Notes
1. Based on Arizona Administrative Code, Title 18, Chapter 9 value of 100 gallons per capita per day.
2. Per Town of Queen Creek Comprehensive Utility Master Plan 2022
3. Per ADEQ Bulletin No. 11

TABLE 2 – WASTEWATER MODEL

TABLE 2
EPCOR WASTEWATER MODEL, FULL BUILD-OUT CONDITION

Project	San Tan Valley Urban Core L-MPC
Location	San Tan Valley, AZ
Project Number	235485
Project Engineer	Reece Heinle, EIT
References	EPCOR Developer Engineering Guide 2020
	ADEQ Bulletin No. 11

		Land Use			Demands per Published Criteria			Actual Demands		
LAND USE		**Single Family (Dwelling Unit)**	**Multi Family (Dwelling Unit)**	**Commercial (Acre)**	**SEWER NODE ADD (gpd)**	**PEAKING FACTOR**	**PEAK FLOW (gpd)**	**SEWER NODE ADD (gpd)**	**PEAKING FACTOR**	**PEAK FLOW (gpd)**
Regional Commercial	Development Area 5		1,200	181	487,500	3	1,462,500	487,500	3	1,462,500
Mixed Use	Development Area 4		4,643	310	1,300,740	3	3,902,220	1,300,740	3	3,902,220
OUTFALL NORTH TOTAL			**5,843**	**491**	**1,788,240**	**3**	**5,364,720**	**1,788,240**	**3**	**5,364,720**
Residential Village North	Development Area 1				0	0	0	0	0	0
Residential Village North	Development Area 2				0	0	0	0	0	0
Residential Village North	Development Area 3				0	0	0	0	0	0
Employment Distribution Campus	Development Area 6				0	0	0	0	0	0
Residential Village South	Development Area 7	1,836		8	452,640	3	1,357,920	342,480	3	1,027,440
Residential Village South	Development Area 8	1,386		9	346,140	3	1,038,420	262,980	3	788,940
Residential Village South	Development Area 9	1,776		8	438,240	3	1,314,720	331,680	3	995,040
OUTFALL SOUTH TOTAL		**4,998**		**25**	**1,237,020**	**3**	**3,711,060**	**937,140**	**3**	**2,811,420**
TOTAL		**4,998**	**5,843**	**516**	**3,025,260**	**3**	**9,075,780**	**2,725,380**	**3**	**8,176,140**

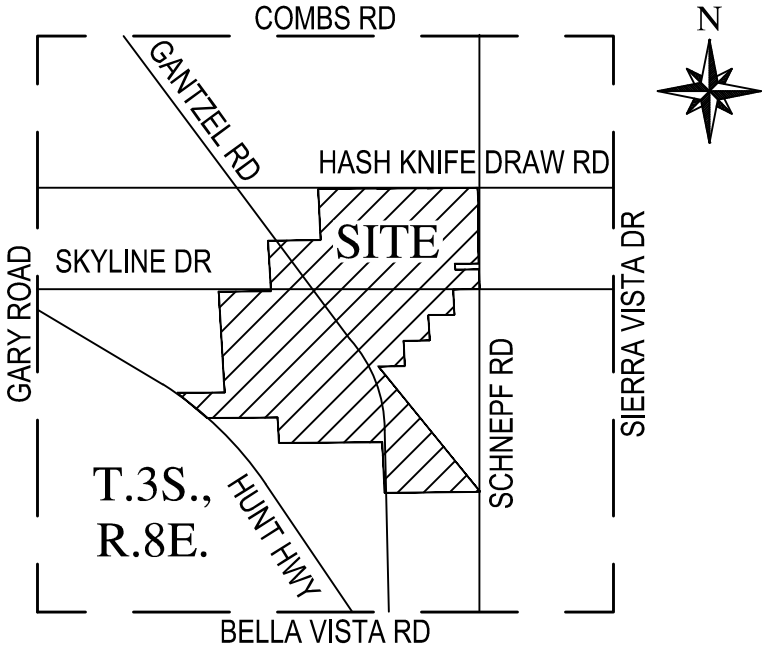
TABLE 2
TOQC WASTEWATER MODEL, FULL BUILD-OUT CONDITION

Project	San Tan Valley Urban Core L-MPC
Location	San Tan Valley, AZ
Project Number	235485
Project Engineer	Reece Heinle, EIT
References	Town of Queen Creek Comprehensive Utility Master Plan 2022
	ADEQ Bulletin No. 11

		LAND USE (TOQC)							LAND USE (EPCOR)			DEMANDS PER PUBLISHED CRITERIA			ACTUAL DEMANDS		
LAND USE		**Residential - 3-5 DU per acre (acres)**	**Residential - 5-8 DU per acre (acres)**	**Multifamily Residential - 8-25 DU per acre* (DU)**	**Mixed Use (acres)**	**Regional Commercial Center (acres)**	**Neighborhood Commercial (acres)**	**Commercial Services (acres)**	**Single Family (Dwelling Unit)**	**Multi Family (Dwelling Unit)**	**Commercial (Acre)**	**SEWER ADD (gpd)**	**PEAKING FACTOR**	**PEAK FLOW (gpd)**	**SEWER ADD (gpd)**	**PEAKING FACTOR**	**PEAK FLOW (gpd)**
Regional Commercial	Development Area 5																
Mixed Use	Development Area 4																
Residential Village North	Development Area 1		402				9		2,410		9	475,497	1.91	909,052	447,300	3.00	1,341,900
Residential Village North	Development Area 2		273				8		1,636		8	324,247	1.91	619,893	306,480	3.00	919,440
Residential Village North	Development Area 3		374				8		2,242		8	442,114	1.91	845,230	415,560	3.00	1,246,680
Employment Distribution Campus	Development Area 6			1,568			314			1,568	314	512,078	1.91	978,987	753,240	3.00	2,259,720
Residential Village South	Development Area 7																
Residential Village South	Development Area 8																
Residential Village South	Development Area 9																
TOTAL		**0**		**1,568**	**0**	**0**	**339**	**0**	**6,288**	**1,568**	**339**	**1,753,936**		**3,353,162**	**1,922,580**		**5,767,740**

* Land use utilizes modified average daily demand values measured in GDPU, derived from Town of Queen Creek Water, Wastewater, Irrigation Design Manual

EXHIBIT 1 – VICINITY MAP



VICINITY MAP

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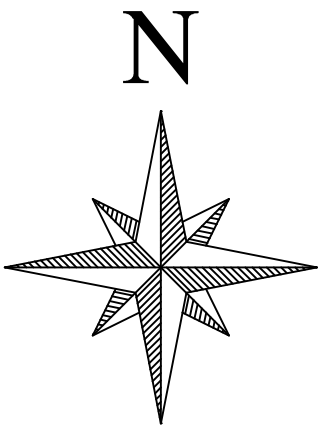

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WOOD PATEL

SAN TAN VALLEY L-MPC

VICINITY MAP

DATE	1-6-2025	SCALE	NTS	SHEET	1 OF 1
JOB NO.	235485	DESIGN	NB/JM/RH	CHECK	NB/JM
		DRAWN	SH		

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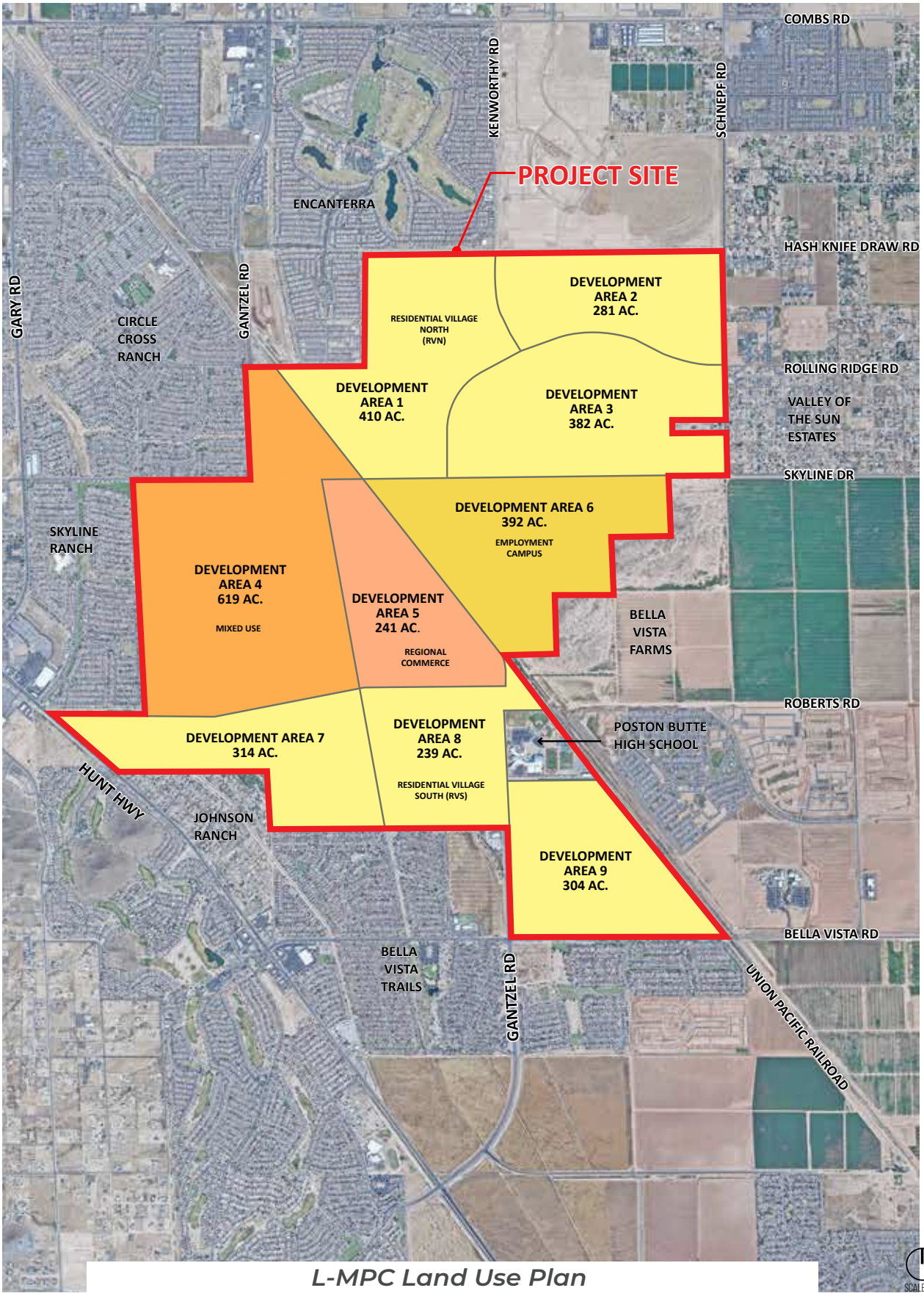
EXHIBIT 2 – L-MPC LAND USE PLAN



L-MPC Land Use Plan

EXHIBIT 3 – PROPOSED WASTEWATER SYSTEM MAP

TOWN OF QUEEN CREEK SEWER

LAND USE		Demands per Published Criteria			Actual Demands		
		SEWER ADD (gpd)	PEAKING FACTOR	PEAK FLOW (gpd)	SEWER ADD (gpd)	PEAKING FACTOR	PEAK FLOW (gpd)
Regional Commercial	Development Area 5						
Mixed Use	Development Area 4						
Residential Village North	Development Area 1	475,497	1.91	909,052	447,300	3.00	1,341,900
Residential Village North	Development Area 2	324,247	1.91	619,893	306,480	3.00	919,440
Residential Village North	Development Area 3	442,114	1.91	845,230	415,560	3.00	1,246,680
Employment Distribution Campus	Development Area 6	512,078	1.91	978,987	753,240	3.00	2,259,720
Residential Village South	Development Area 7						
Residential Village South	Development Area 8						
Residential Village South	Development Area 9						
TOTAL		**1,753,936**		**3,353,162**	**1,922,580**		**5,767,740**

EPCOR SEWER

LAND USE		Demands per Published Criteria			Actual Demands		
		SEWER NODE ADD (gpd)	PEAKING FACTOR	PEAK FLOW (gpd)	SEWER NODE ADD (gpd)	PEAKING FACTOR	PEAK FLOW (gpd)
Regional Commercial	Development Area 5	216,000	3	648,000	216,000	3	648,000
Mixed Use	Development Area 4	1,300,740	3	3,902,220	1,300,740	3	3,902,220
OUTFALL NORTH TOTAL		**1,516,740**	**3**	**4,550,220**	**1,516,740**	**3**	**4,550,220**
Residential Village North	Development Area 1	0	0	0	0	0	0
	Development Area 2	0	0	0	0	0	0
	Development Area 3	0	0	0	0	0	0
Employment Distribution Campus	Development Area 6	0	0	0	0	0	0
Residential Village South	Development Area 7	452,640	3	1,357,920	342,480	3	1,027,440
	Development Area 8	346,140	3	1,038,420	262,980	3	788,940
	Development Area 9	438,240	3	1,314,720	331,680	3	995,040
OUTFALL SOUTH TOTAL		**1,237,020**	**3**	**3,711,060**	**937,140**	**3**	**2,811,420**
TOTAL		**2,753,760**	**3**	**8,261,280**	**2,453,880**	**3**	**7,361,640**

N

0 1000 2000

Horz. 1 in. = 1000 ft.

LEGEND

- UTILITY CORRIDOR
- TRANSMISSION TOWER
- CORE STUDY PROJECT BOUNDARY
- EXISTING EPCOR WASTEWATER SERVICE AREA
- EXISTING QUEEN CREEK WASTEWATER SERVICE AREA
- RAILROAD & OVERHEAD UTILITY CORRIDOR
- PROPOSED EPCOR WASTEWATER SERVICE AREA
- PROPOSED QUEEN CREEK WASTEWATER SERVICE AREA
- SPINE ROAD

NOT FOR CONSTRUCTION OR RECORDING

EXPIRES 03-31-25

WOOD PATEL

SAN TAN VALLEY

WASTEWATER SERVICE AREAS WITH LAND USE MAP OVERLAY

DATE 1-6-2025	SCALE 1" = 1000'	SHEET 2 OF 2
JOB NO 235485	DESIGN JM/RH	DRAWN SH

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